

SITE DEVELOPMENT: STANDARD, HILLSIDE & TND COMMENTS GUIDE

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COLORADO SPRINGS FIRE DEPARTMENT **Division of the Fire Marshal**



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PURPOSE

To provide the customers of the Colorado Springs Fire Department insight to the intent behind our requirements as they pertain to site development.

SCOPE

This guide is intended for contractors, developers, and other individuals within the development arena.

DEFINITIONS

Authority Having Jurisdiction (AHJ) – The fire chief or other designated authority charged with the administration and enforcement of the code, or a duly authorized representative.

Traditional Neighborhood Development (TND) - A specific type of development permitted within the city. Its design promotes pedestrian orientation through narrower streets and higher density of buildings and residents within the development.

Hillside Overlay – Areas within the City which have special and unique characteristics (i.e. excessive slopes, unique vegetation, geologic conditions, etc.) which in turn, require modified regulations from that of the remainder of the City. These modified regulations are found within the Hillside Ordinance.

COMMENTS

Introduction

As the Fire Authority Having Jurisdiction, one of our many functions is to review site and development plans for compliance with the Fire Code for fire department access. This process is typically a coordinated effort with the Land Use Review, Development Services, Traffic Engineering, City Engineering, and many other departments within the City. When plans have been routed through each division or department, they come back to the City Planning Department with a series of comments. Many City departments, including the fire department, have a list of standard comments that are used when evaluating these plans. When receiving a response letter from Land Use Review regarding the status of a specific project, the standard comments are normally contained within the letter.

The format for this document is that the comment is **boldface** with the commentary in regular type. The standard comments contained within this document, that are followed with a reference (i.e. 2009 IFC §503.1.1) come straight from a code or other legal published document. This updated information document does not include clerical or administrative comments as in previous editions.

Section I - General Fire Department Access Standard Comments

- A. 150-FT ACCESS: Fire apparatus access roads shall be provided for every structure constructed or moved into or within the jurisdiction and shall be extended to within 150-feet of all exterior portions of the first story of any building. (2009 IFC §503.1.1)**

Fire department access roads are to extend to within 150 feet of ALL PORTIONS of every structure's exterior first floor constructed within the City. The amount of preconnected hose that the CSFD carries on each apparatus is 200-ft. During a fire, this preconnected hose is carried by the firefighters 150 feet around the structure. Keep in mind that this measurement is how the hose will lay and not as how the crow flies. The remaining 50-ft of hose is used to actually enter the building and fight the fire. The 150-ft distance must be measured from an approved fire department apparatus access.

- B. 150-FT ACCESS FROM STREET: The plans appear to show all portions of the structure's first floor appear accessible within 150-feet of a main City street and additional access onto the site is not necessary. Since additional access is not necessary, fire lane signage will not be required for this site. This will be field verified "on site" by CSFD inspectors.**

This comment implies that the structure is fully accessible from an existing main city street. Therefore, we do not have to make vehicular access onto the property to fight a fire, thus eliminating the need for fire lane signs. Although it appears adequate access is met on the plans, fire inspections will ensure this to be true.

C. ADDITIONAL ACCESS: Additional fire apparatus access roads are required for this site due to the potential for impairment of the proposed single road by vehicle congestion, condition of terrain, climatic conditions or other factors listed below, that could limit access. (2009 IFC §503.1.2)

The fire code allows the AHJ, the ability to require additional access, than what is currently shown on plans, where deemed necessary. Typically, there are solid reasons for the AHJ to make this request.

D. WIDTH: Fire apparatus access roads shall have an unobstructed width of not less than 20 feet, exclusive of shoulders, except for approved security gates. (2009 IFC §503.2.1)

The minimum width for fire lanes is 20 feet, unless otherwise approved. The theory behind why the 20 foot dimension is based on the width of fire apparatus and their operating space requirements. Typically, fire apparatus are between 9 and 11 feet in width. Therefore a 20 foot fire lane would generally allow apparatus to pass each other if needed. Fire apparatus that utilize aerial devices require apparatus stabilization when the aerial device is deployed. The apparatus stabilization comes in the form of outriggers that extend out from the apparatus which provide a wider overall base in which to operate the aerial device. These outriggers, when fully extended, range between 16 and 19 feet. Because of these fire apparatus features, the minimum width of fire lanes is 20 feet.

E. VERTICAL CLEARANCE: Fire apparatus access roads shall have an unobstructed vertical clearance of not less than 13 feet 6 inches. (2009 IFC §503.2.1)

This vertical clearance is the standard used for highway bridges and underpasses. This clearance pertains to anything and everything that overhangs the fire apparatus access road such as trees, signs, wires, etc.

F. AUTHORITY/INCREASED WIDTH: The Fire Code Official shall have the authority to require an increase in the minimum access widths where they are inadequate for fire rescue operations. (2009 IFC §503.2.2)

There are times in which proposed access is not adequate for the hazards at a given site. Because of this, additional access, or increased width of proposed access may provide the needed adequate access to a given site. As an example, access may be increased to allow for adequate fire apparatus turning movements.

G. ACCESS/LOADING: Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an approved fire apparatus access road with an asphalt, concrete or other approved driving surface capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds (34,050 kg) with a minimum single axle weight of 27,000 pounds (12,247.2 kg). (2009 IFC §D102.1 as amended)

Fire apparatus access roads must support the weight of the apparatus that can respond along it. Otherwise the apparatus could become stuck by sinking into the access road. This could place the lives of the citizens as well as firefighters in jeopardy. The numbers above are based on and will support the largest apparatus within the CSFD fleet. It is up to the developer/engineer to ensure all fire apparatus access roads are designed to support apparatus loading requirements.

H. SURFACE: Fire apparatus access roads shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all weather driving capabilities. (2009 IFC §503.2.3)

Similar to the ACCESS/LOADING comment above, fire apparatus access roads must be surfaced in such a way that will provide all weather driving capabilities, otherwise the apparatus may sink and/or slip. An example is a poorly designed gravel or dirt access drive that during rain weakens and allows the apparatus to either sink into the soil or becomes muddy and slippery allowing the apparatus to slide off the access road. CSFD allows the use of many materials for a roadway surface, they just need to provide adequate loading and allow all weather driving.

I. TURNING RADIUS: The required turning radius of a fire apparatus access road shall be determined by the fire code official. (2009 IFC §503.2.4) All fire apparatus access roads are to provide a minimum of 33-feet inside and 48-feet outside turning radius.

The City of Colorado Springs Fire Department is a dynamic fire department. Apparatus located within specific areas of the city do not respond to just one specific area. Four or five companies may respond to an emergency in a given location within the city. When another emergency close to this given location comes in, companies from other portions of the city would respond. In other words, any apparatus within the CSFD fleet can be expected and does respond to any and all portions of the city at any given instance. Therefore, ensuring that all roadways meet the turning requirements of all apparatus is imperative.

Typically, the apparatus turning requirements that roadways must meet are those of ladder/trucks or aerial apparatus. Their standardized turning radius is 33-ft inside and 48-ft outside. This design criterion is sufficient for roadways to be used for all fire department apparatus. However, criteria that can be inputted into the AutoTURN program are available on the Division of the Fire Marshal's website. This criterion is based on a "worst-case" apparatus scenario for CSFD and has been found to allow tighter turning movements than the general turning radii.

J. DEAD-END ACCESS: Dead end fire apparatus access roads in excess of 200 feet (61 m) in length shall be provided with an approved area for turning around fire apparatus in accordance with Table D103.4. (2009 IFC §503.2.5 and §D103.4 as amended)

A dead-end access road is a road that does not provide approved capabilities of allowing apparatus to turn around and would require apparatus to back out the full length of the dead-end. This requirement states that apparatus may back out a maximum of 200 feet. If the provided dead-end apparatus road requires fire apparatus to drive more than 200-ft in order to reach the required 150-ft access, then an approved Fire Department turnaround must be provided. More information regarding this may be found in the Site Plan/Development information document.

This comment also includes cul-de-sacs (although not specifically stated, but in the code references). Cul-de-sacs are similar to dead-ends in that there is one-way in and one-way out. With dead-ends, apparatus will back-up 200-ft out or if provided with a turnaround, back to the turnaround then drive out. With cul-de-sacs, the "turnaround" is the bulb located at the end of the road.

Cul-de-sacs more than 500-ft in length present unique inherent hazards, specifically with those cul-de-sacs located within the Hillside areas. One-way in, one-way out roads can be potentially deadly when a wildfire is approaching. It is imperative that fire department apparatus and personnel are able to vacate the area as quickly and efficiently as possible. The 96-ft bulb diameter is determined to provide adequate pavement to effectively turn around any apparatus in a single continuous motion. Bulb diameters less than 96-ft, require a minimum 3-point turn in order to completely turn apparatus around.

Cul-de-sacs over 500-ft in length, in addition to the larger bulb, may require intermediate turnarounds as needed. For extremely long cul-de-sacs, these intermediate turnarounds are typically spaced every 500-ft. Intermediate turnarounds allow companies to stage without blocking access on the roadway. Additionally, the intermediate turnarounds provide areas where apparatus are able to turn around in an emergency without having to drive to the end of the cul-de-sac. Again, during a wildfire event, this may be the difference between life and death.

K. BRIDGES AND ELEVATED SURFACES: Where a bridge or an elevated surface is part of a fire apparatus access road, the bridge or elevated surface shall be constructed and maintained in accordance with AASHTO-HB-17. Bridges and elevated surfaces shall be designed for a live load sufficient to carry the imposed loads of fire apparatus. Vehicle load limits shall be posted at both entrances to bridges when required by the fire code official. Where elevated surfaces designed for emergency vehicle use are adjacent to surfaces which are not designed for such use, approved barriers, approved signs or both shall be installed and maintained when required by the fire code official. (2009 IFC §D503.2.6)

It doesn't happen often, but there are some instances in which fire lanes are elevated. Parking garage decks serving as a fire lane is an example. Elevated roadways such as interchanges and pass/flyovers, which are used by the general public, must be designed in accordance with the AASHTO criteria above. Bridges and any

elevated surface serving as a fire lane must meet the same criteria to meet the loading requirements of CSFD apparatus.

- L. GRADE: The grade of the fire apparatus access road shall be within the limits established by the fire code official based on the fire department's apparatus. Fire apparatus access road shall not exceed 10 percent in grade. Exception: Grades steeper than 10 percent as permitted by the hillside ordinance or as approved by the fire code official. (2009 IFC §503.2.7 and §D103.2)**

This specific grade comes from Zoning's Subdivision Policy's Manual: Public Works Design Manual. Within this manual various different criteria are given for any specific road type. The maximum slope allowed for a given road is 10%. Although safety and traffic flow, primarily in the winter months are the main reasons behind this requirement; apparatus manufacturers have limits to the pitch and roll that apparatus may operate under. For example, a ladder truck may not be able to deploy its aerial device due to the slope of the road being too steep which translates to potentially unstable footing. Hillside overlay areas permit up to a 12% slope (this is discussed within the Hillside section).

- M. ANGLES OF APPROACH/DEPARTURE: The angles of approach and departure for fire apparatus access roads shall be within the limits established by the fire code official based on the fire department's apparatus. (2009 IFC §503.2.8)**

This is a new code requirement which CSFD has had issues with in the past. Essentially this requirement addresses roadway designs that would cause apparatus to bottom out, high center or cause the front/rear bumpers to scrape along a roadway. CSFD requires that the angles of approach and/or departure are no more than 8 degrees between intersecting roadways. Note that the units are degrees and not a percentage.

- N. FIRE LANE LOCATIONS GENERAL: Where required by the fire code official, fire apparatus access roads shall be marked with permanent NO PARKING - FIRE LANE markings consisting of signage complying with Section D103.7 and/or striping complying with Section D103.8. Approved markings shall be posted on one or both sides of the fire apparatus road as required below.**

-Fire apparatus access roads less than 28 feet (8.5 m) in width shall be posted on both sides as a fire lane.

-Fire apparatus access roads more than 28 feet (8.5 m) and less than 34 feet (10.4 m) wide shall be posted on one side of the road as a fire lane.

-Fire apparatus access roads 34 feet (10.4 m) in width or greater do not require marking as a fire lane. (2009 IFC §D103.6 as amended)

Fire Lane signage is based on the code requirement that fire department access roadways drivable widths be at least 20-ft in width. CSFD uses 8-ft width per vehicle, when one row of vehicles are parked along one curb and 7-ft width per vehicle when vehicles are parked along both curbs. Keeping in mind the minimum clear width of 20-ft, parking on one-side pushes the street width to 28-ft. Parking on both side of the roadway pushes the street width to 34-ft.

Street Width and Permitted Parking

	34' Wide Street	28' Wide Street
Parking Allowed	Both Sides	One Side
Space for Parking	14' (2 vehicles at 7' wide each)	8' (1 vehicle at 8' wide each)
Clearance Left for FD Access	20'	20'

Note that roadway measurements are taken from edge-of-asphalt to edge-of-asphalt or face-of-curb to face-of-curb. For more information on the specific requirements for Fire Lane markings, please refer to our *Fire Lane Marking Requirements* Information Packet.

- O. FIRE LANE - SIGNS/STRIPING**

SIGNS

When signage is used to identify fire lanes, the signage shall comply with this Section and Figure D103.8 or as approved otherwise. Signage shall be permanent, bearing the words "NO PARKING FIRE

LANE". Signage shall have a white background with red letters and borders using not less than two (2) inch (50.8 mm) lettering and have a minimum dimension of twelve (12) inches (304.8 mm) wide by eighteen (18) inches (457.2 mm) high. Signage shall provide directional arrows as applicable unless otherwise permitted. Signage shall be posted on one or both sides of the fire lane as required by Section D103.6. Signage shall indicate the beginning and ending of the fire lane and shall be spaced no more than one hundred (100) feet (30.5 m) apart. Additional signage may be required at changes in roadway direction. Signage may be installed on permanent buildings or walls in an approved manner or as approved by the fire code official. Signage shall meet applicable requirements of the Federal Highway Administrations Manual on Uniform Traffic Control Devices (MUTCD). (2009 IFC §D103.8 as amended)

STRIPING

When striping is used to identify fire apparatus access roads, the striping shall comply with this Section and Figure D103.7. Striping shall consist of painted lines of red traffic paint six (6) inches (152.4 mm) in width to show the boundaries of the fire lane. The words "NO PARKING FIRE LANE" shall appear in four (4) inch (101.6 mm) high white reflective letters having a three-quarter ($\frac{3}{4}$) inch (19.1 mm) stroke and spacing in twenty-five (25) feet (635 mm) intervals on the red traffic paint. Striping shall be located along one or both sides of the fire lane as required by Section D103.6. Where a curb is available, the striping shall be on the vertical face of the curb. (2009 IFC §D103.7 as amended)

These comments just outline how the fire lane signage and/or fire lane striping is to be installed. For additional information regarding fire lane signage and striping, please refer to the Fire Lane Marking Requirements information document.

- P. FIRE LANE MARKING:** Where required by the fire code official, approved signs or other approved notices or markings that include the words **NO PARKING - FIRE LANE** shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. The means by which fire lanes are designated shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility. (2009 IFC §503.3)

The fire code requires fire apparatus access roads to be installed where required. They also need to be identified so that citizen vehicles know when they are accessing a fire lane as well as for responding apparatus to know where the fire lanes are located.

Typically when submitting plans, the extents of fire lane locations are all that needs to be shown. Exact locations of fire lane signage are not needed. The extents are usually depicted as a thicker line running parallel to the curbs or edge of roadways that will be marked as a fire lane.

- Q. OBSTRUCTED 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 shall be maintained at all times. (2009 IFC §503.4)

The CSFD must be able to access all buildings/sites from required access roads that are well maintained at all times. Potholes, cracks, uneven pavement, etc., all must be repaired in a timely fashion. The roads must be maintained during all weather events such as removing snow, proper water drainage, removing any debris from water run-off, etc. Any obstructions such as illegally parked vehicles, dumpsters, trailers, etc., must be removed so that proper and adequate widths are maintained. There must be a minimum of 13 feet 6 inches of vertical clearance above fire access roads. This includes trees, wires, signs, roof overhangs, bridges, etc.

- R. GATES.** Gates securing the fire apparatus access road shall comply with all of the following criteria:

- 1. The minimum gate width shall be 16 feet (4877 mm) or as wide as necessary to facilitate the required turning radius.**
- 2. Gates shall be of the swinging, sliding, or specifically approved lift type.**
- 3. Construction of gate shall be of materials that allow manual operation by one person.**
- 4. Gate components shall be maintained in an operative condition at all times and replaced or repaired when defective.**

5. Electric gates shall be equipped with a Knox electronic override switch for all inbound directions of travel and any outbound direction of travel where automatic opening of the gate when a vehicle is present does not occur.

6. Manual opening gates shall not be locked with a padlock, or chain and padlock, unless they are provided with a Knox padlock in series with the padlock, or chain and padlock.

7. Locking device specifications shall be submitted for approval by the fire code official.

8. Electric gate operators, where provided, shall be listed in accordance with UL 325.

9. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F2200.

10. Electronically operated gates must stay open a minimum of 30 seconds when the Knox electronic override switch is turned on/off and must remain in the open position when the switch is turned on and left on.

11. A Knox fire department decal shall be placed adjacent to the Knox electronic override switch unless other approved fire department marking is provided. (2009 IFC §506.1.1, §D103.5)

Gates are permitted across fire apparatus access roads when approved. Gate are either manually operated or electronically operated. For any type of gate operation, swinging and sliding movement gates are preferred. Lift type gates must be specifically approved. This means any and all details regarding the gate must be submitted for review.

Manual gates may be secured with a Knox padlock in series with a facility padlock. Electronically operated gates require a Knox Override Switch. New to the 2009 Colorado Springs Fire Code for electronically operated gates are items #8, #9 and #10. Item #10 has been a CSFD policy in years past but finally incorporated into the code. Items #8 and #9 are new from the International Code Council (who produces the fire codes). Information indicating that the electronically operated gate is meeting these requirements must be submitted as part of the site/development plan review.

The minimum clear width opening for gates is 16 feet. This minimum width may be increased if the gate is positioned in such a way that it affects apparatus turning movements. An example of this is a gate placed close to a "T" type intersection of drives with narrow widths. The clear width opening for the gate means there are absolutely no obstructions whatsoever. No key pad posts, no bollards, nothing. Additional information regarding gates may be found in the "Electronic Gate Inspection" document on the Division of the Fire Marshal's website.

- S. KNOX (TM) KEY: 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 box shall be of an approved type and shall contain keys to gain necessary access as required by the fire code official. (2009 IFC §506.1)**

The approved key box for Colorado Springs is the Knox Box. The Knox Box, along with the other products Knox sells, may only be opened by a specifically cut key per jurisdiction. In Colorado Springs, only the fire department has this key and it's secured in all vehicles by an electronically operated vault that needs a code to unlock. The Knox system allows the fire department faster access into an area or building. Building keys are placed within the boxes that must be kept current. This allows firefighters into the building during an emergency and limits the amount of building damage the fire department may cause due to gaining access.

- T. REMOTE ADDRESS: A remote address sign is required for this structure because it sits over 100 feet from the addressing street. The building, therefore, is required to have a minimum of two address numbers posted. One address must be posted on the structure itself. The second must be a remote address sign clearly posted at all of the street entrances to the structure. All addressing is to comply with the 2005 Regional Building Code §312.**

This comment follows suit with the Enumerations Code and allows emergency responders an increased chance of easily finding an address when the address sits off the road a distance. An address may be on a building, however if the building is far enough away from the street, spotting the address can be near impossible. Signs, trees, other buildings all can obstruct the view of the address on a building. Having the address posted out on the street, emergency responders can find the route to the building easier.

- U. C/I BLDGS GREATER THAN 3 STORIES OR 30-FT. Buildings or facilities exceeding 30 feet (9144 mm) or three stories in height shall have at least two means of fire apparatus access for each structure. Exception: A single fire apparatus access road is acceptable when all buildings serviced by the single access road are provided with an approved fire sprinkler system. (2009 IFC §D104.1 as amended)**

The “C/I” in this comment (and next) refers to “Commercial” and “Industrial” buildings. The need for more than one fire apparatus access road for buildings of this type and height is partly due to the unique methods needed to fire a fire or other emergency in these buildings. Access from multiple sides of the building is needed to perform rescues and/or fight fires. For the purposes of this comment, multiple fire department access roads are interpreted to be fronting a side of the given building and not how many fire apparatus access roads are provided to the site. The addition of sprinklers throughout the building provides the benefit of allowing a single access road.

- V. C/I BLDGS GREATER THAN 62000SF IN AREA: Buildings or facilities having a gross building area of more than 62,000 square feet shall be provided with two separate and approved fire apparatus access roads. Exception: Project having a gross building area of up to 124,000 square feet that have a single approved fire apparatus access road when all buildings are equipped throughout with approved fire sprinkler systems. (2009 IFC §D104.2)**

Similar to tall buildings, expansive buildings also present unique firefighting methods. Multiple access points along building sides are needed due to the potential high fire loss if access isn’t made quickly. The exception allows a building up to 124,000 sq. ft. to have a single access point if provided with fire sprinklers throughout. Once the building goes over the 124,000 sq. ft size, multiple points of access are again required.

- W. REMOTENESS: Where two access roads are required, they shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the property or area to be served, measured in a straight line between accesses. Exception: The fire code official is authorized to modify this requirement when the required remoteness is not possible due to location on property, topography, water ways, non-negotiable grades or similar. (2009 IFC §D104.3)**

When two or more access points to a site are provided, they should be placed as far from each other as possible. Doing so prevents both access points becoming inaccessible when one of them is affected for whatever reason. Colorado Springs is unique due to the topography found throughout the city. Because of this, the exception allows the remoteness to be modified when necessary.

- X. 100+ UNIT R1/R2 DEVELOPMENTS: Multiple-family residential projects having more than 100 dwelling units shall be equipped throughout with two separate and approved fire apparatus access roads. Exception: Projects having up to 200 dwelling units may have a single approved fire apparatus access road when all buildings, including non-residential occupancies, are equipped throughout with approved automatic sprinkler systems. (2009 IFC §D106.1)**

R1 and R2 developments (R1= hotels/motels, R2=apartments/dorms) present a greater hazard due to the life safety aspect of the occupancies. Large numbers of dwelling units as this has potential for large losses. Lack of adequate access should not be a factor in any such large losses. Developments greater than 200 dwelling units must be provided with more than one access road to the site as well as having buildings being fully sprinklered. Note that for project up to 200 dwelling units, all buildings, including non-residential buildings must be sprinklered. This means garages and any other building on site would be sprinklered.

- Y. 200+ R1/R2 DEVELOPMENTS: Multiple-family residential projects having more than 200 dwelling units shall be provided with two separate and approved fire apparatus access roads, regardless of whether they are equipped with an approved automatic sprinkler system. (2009 IFC §D106.2)**

This simply reiterates what was stated in the previous comment in that developments with more than 200 dwelling units must be provided with more than one access and provided with fire sprinklers throughout the buildings.

- Z. 1- OR 2- FAMILY DWELLING RESIDENTIAL DEVELOPMENTS: Developments of one- or two-family dwellings where the number of dwelling units exceeds 30 shall be provided with separate and approved fire apparatus access roads and shall meet the requirements of REMOTENESS.**

Exceptions: 1- 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, access from two directions shall not be required.

2- The number of dwelling units on a single fire apparatus access road shall not be increased unless fire apparatus access road will connect with future development, as determined by the fire code official. (2009 IFC §D107.1)

This is a new requirement adopted in the 2009 fire code. Essentially this has been done in the past through plan review however it is now part of the code. This boils down to the common theme for the fire department... access. More access allows the fire department to respond quicker to emergencies. Since the majority of fires are in residential structures such as single family homes, it is imperative to have adequate access to and throughout the sites. The dual access requirement also considers the possibility of a single access becoming impassible for whatever reason. Broken down vehicles, traffic accidents, blown over trees, piled up snow, flooding, etc. The second access ensures that the neighborhood will be accessible.

AA. CONTINUITY OF NAMES: Any street which is a continuation or an approximate or logical continuation of an existing dedicated street shall bear the same name as the existing street. (Traffic Criteria Manual, April 1, 2011, §14.3)

This comes from the Traffic Criteria Manual. Whenever additions to an existing road are made, to make the existing road longer, the new portion of the road must take the name of the existing road. Pretty straight forward but problems occur when two existing roads, with different names, ultimately connect after development of a property has finally occurred. Which road name is used? One is a logical continuation of the other. When this is seen on plans, the recommendation is generally to redesign the joining of the roads such that they create in intersection and thus eliminate the “logical continuation.” This allows both roads to keep their existing names and keeps all addresses along the roads the same as well.

BB. SPEED BUMPS. No speed bumps are shown on the plans. The installation of any speed bump on this site must be specifically approved by the Division of the Fire Marshal prior to installation.

Speed bumps affect response and access. When speed bumps are shown on the plans they are reviewed for their design, total number and spacing. Speed bumps wreak havoc on apparatus when the apparatus traverse them. The “bump” feeling transmits 10-fold through the cab of the apparatus as it does through an automobile. Therefore the fire department wants to make sure any speed bumps used will not only perform well as a traffic control devices, but will also go easy on apparatus. This comment appears when no speed bumps are noted on the plans as an FYI if speed bumps are added in the future, plans for them are routed to the Division of the Fire Marshal prior to installation.

Section II – Hillside Overlay Standard Comments

A. HILLSIDE DRIVEWAYS: When driveways serve as a fire department access road, the width shall be a minimum of twelve feet (12-ft) and having a slope of twelve percent (12%) or less. (Zoning Code §7.3.504.D.2.d.(2)(A)(ii))

This usually applies when a shared access drive serves two or more hillside homes and generally only refers to the portion of the drive that is shared. These shared drives are what are interpreted as serving fire department access” as the fire code is allowed to modify the 150-ft access requirement (see comment in previous section) when there are not more than two Group R-3 occupancies. With this said, access may still be an issue depending upon the scope of the project.

B. HILLSIDE GRADE: The absolute maximum street grade allowed is 12%. The maximum run for the 12% street grade is 250-feet. (Hillside Standards as identified in the Public Works Design Manual for Hillside Development)

The intent behind this requirement is to give apparatus as well as other vehicles a “fighting chance” in climbing the slope. Keeping the steep slopes to runs of 250-ft or less will enable vehicles to regain lost speed and power to continue the climb. It also serves as a safety measure during the winter months. See also “GRADE” comment in previous section.

- C. **EXCESSIVE CULDESAC LENGTHS:** Culdesacs in excess of 500-ft in length shall be provided with intermediate fire department turnarounds or additional access connections as necessary and bulbs not less than 96-ft in diameter. (Subdivision/Policy Works Design Manual, 1990 Revision, §3- XII and 2003 IFC §503.1.2)

See commentary for “DEAD-ENDS” in previous section as that commentary applies for this comment as well.

- D. **WILDFIRE HAZARD ASSESSMENT:** An assessment of the wildfire hazard potential is required for all Hillside Development Plans. This assessment is conducted by CSFD's Wildland Risk Management Office at no cost to the developer. This assessment will be forwarded to the applicant via email.

In years past, a wildfire hazard assessment had to be completed and submitted as part of the development plan submittal. For the past few years however, our own Wildfire Mitigation Section within the Division of the Fire Marshal, now performs these assessments.

The assessments will result in recommendations that when followed, will reduce the fire hazard for the particular plan. The fire hazard will not be eliminated, but will be reduced.

- E. **HILLSIDE FIRE INDEX-** This project is identified as "HIGH/VERY HIGH/EXTREME" on the CSFD Wildfire Behavior Index. "IGNITION-RESISTANT CONSTRUCTION" is required for use as specifically enabled by the International Fire Code.

1. A Class A roof covering (excluding solid wood materials) shall be installed on all Residential Occupancies and a minimum Class B roof covering shall be installed on remaining occupancies, unless otherwise permitted.

2. Exterior walls, siding, soffits, and eaves shall be of noncombustible or a minimum of 1hr rated fire-resistive construction. Heavy timber or log wall construction exempted.

3. Buildings or structures shall have all under-floor areas enclosed to the ground with exterior walls.

4. Exterior doors shall be noncombustible or solid core not less than 1 3/4-inches thick. Windows within doors and glazed doors shall be tempered safety glass or multi-layered glazed panels.

5. Attic vents shall be screened with wire mesh with openings no larger than 1/8-inch. Soffit vents shall not be permitted.

6. Exterior windows, window walls and skylights shall be tempered safety glass or multi-layered glazed panels.

7. Gutters and downspouts shall be of noncombustible materials.

8. **Appendages and Projections:** Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be heavy timber construction or constructed of approved materials. When any portion of the attached structure is located, constructed or projects over a descending slope surface greater than 10%, the area below the structure shall have all under-floor areas enclosed to within 6-inches of the ground, with exterior wall of noncombustible or one hour fire-resistive construction.

9. Chimneys serving fireplaces, as well as other heating appliances in which solid or liquid fuel is used shall be provided with a spark arresters constructed of woven or welded 12 USA standard gage wire screening with openings not exceeding 1/2-inch.

The Fire Behavior Index is the result of a combination of variables that have an influence on structure survivability during a wildfire event. These variables include fuel type, elevation, slope, and aspect, that are data inputs to a fire behavior model.

The Fire Behavior Index classifies specified areas within the city as High, Moderate, or Low. Those areas that are classified as “High” represent a greater hazard potential in the event of a wildfire. In an attempt to reduce this hazard potential, building construction methods, that improve the chances of structural survivability, are required in Standard Comment 28, as listed above. This is also known as “hardening the structure.”

F. HILLSIDE FIRE INDEX- This project is identified as "LOW/MODERATE" on the CSFD Wildfire Behavior Index. "IGNITION-RESISTANT CONSTRUCTION" is required for use as specifically enabled by the International Fire Code.

1. A Class A roof covering (excluding solid wood materials) shall be installed on all Residential Occupancies and minimum Class B roof covering shall be installed on remaining occupancies, unless otherwise permitted.

2. Exterior walls, siding, soffits, and eaves should be of noncombustible or a minimum of 1hr rated fire-resistive construction. Heavy timber or log wall construction exempted.

3. Buildings or structures should have all under-floor areas enclosed to the ground with exterior walls.

4. Exterior doors should be noncombustible or solid core not less than 1 3/4-inches thick. Windows within doors and glazed doors should be tempered safety glass or multi-layered glazed panels.

5. Attic vents should be screened with wire mesh with openings no larger than 1/8-inch. Soffit vents should not be permitted.

6. Exterior windows, window walls and skylights should be tempered safety glass or multi-layered glazed panels.

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8. Appendages and Projections: Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, should be heavy timber construction or constructed of approved materials. When any portion of the attached structure is located, constructed or projects over a descending slope surface greater than 10%, the area below the structure should have all under-floor areas enclosed to within 6-inches of the ground, with exterior wall of noncombustible or one hour fire-resistive construction.

9. Chimneys serving fireplaces, as well as other heating appliances in which solid or liquid fuel is used should be provided with a spark arresters constructed of woven or welded 12 USA standard gage wire screening with openings not exceeding 1/2-inch.

The only difference between the two above standard comments is that "HIGH/VERY HIGH/EXTREME" standard comment requires (shall) the items listed to take place whereas "LOW/MODERATE" standard comment recommends (should) them.

G. HILLSIDE ORDINANCE: This lot/development is subject to the requirements of section of 20-4-10 5 CE (2) (Ordinances 93-48 and 93-49) of the City Code establishing minimum safety criteria for residential construction in the City's Hillside Areas. Ensure all landscaping complies with the wildfire interface specifications as required by the fire department and zoning/planning departments.

This comment simply serves as a reminder that the proposed plans comply with the specific landscaping requirements for all hillside developments. This comment also serves as a reminder that the lot or development in question must adhere to the requirements set forth by the City Code.

H. HILLSIDE FIRE ALARM SYSTEMS: After April 1, 1993, development plans for all new homes located on lots that lie beyond 1,000 feet along a dead-end or cul-de-sac/roadway; or lie on or beyond roadways with grades in excess of ten percent (10%) with said roadways being the only point of access, a minimum of a monitored fire alarm system is required in each home. However, a residential fire sprinkler system is an acceptable alternative or can be installed in addition to the fire alarm requirement. (Zoning Code § 7.3.504.E.4)

The minimum requirement of a monitored fire alarm system is based on fire department accessibility and response times. The areas indicated in the standard comment lie beyond specific topographical characteristics that limit the effectiveness for the fire department to respond in a timely manner. As a result, a fire has a better chance of gaining the upper hand and even breaking the confines of the structure and spreading into the interface. Typically residential fire alarm systems will send notification of a fire while it is in its incipient stage. Residents typically do not notice a fire until there is significant smoke, if the occupants are home, or visible fire is seen from neighbors or passerbies. A monitored fire alarm system serves as an early notification for an emergency and gives the fire department early detection and warning of a potential fire.

As an option and greater level of protection for the homeowner, monitored residential fire sprinkler systems may be installed instead of the monitored residential fire alarm system.

- I. HILLSIDE FIRE SPRINKLERS/SOC: An automatic fire sprinkler system is required for any/all lots that lie beyond the CSFD interim Standard of Response Coverage. This states that 90% of structure fires within the given PEZ shall have a full effective fire-fighting complement on scene (two engine companies, 1 ladder/truck company) within 12 minutes.**

A fire that starts within a hillside home and spreading to the natural fuels in the interface, resulting in a wildland fire is a MAJOR concern with the Fire Department. This comment refers to response times. Simply stated, the longer the response time, the greater the chance of a fire escaping a residence and spreading into the interface. So for areas that require an extended response time or areas that lie outside the Standards of Response Coverage, residential fire sprinkler systems are required in an attempt to contain the fire within the area of origin long enough for the fire department to arrive.

- J. HILLSIDE PARKING REGULATIONS: "No Parking" signs shall be placed along the roadways as indicated below:**

1. On both sides of hillside roads twenty feet (20') wide or less.

2. On one side of hillside roads with widths greater than twenty feet (20') up to and including twenty-four feet (24').

No parking signs should be on the same side of the road as fire hydrant placement. (Hillside Development Design Manual, May 2000)

In order to retain the hillside characteristic, narrower roads are permitting within Hillside overlays as compared to general areas of the city. This helps prevent more of the hillside being destroyed or changed to the point where the hillside characteristics no longer remain. This is why the parking/no parking requirements are different within the Hillside overlays.

- K. PLAT/DP NOTES: Add the following notes to the Plat and/or Development Plan.**

"At a minimum, a monitored fire alarm system or alternatively, a fire sprinkler system is required for residences built upon the following lot(s): LOTS 1, 2 and 3. The Colorado Springs Fire Department shall review all building plans, determine system requirements and issue appropriate permits. A visual piping inspection must be secured through the Fire Department prior to requesting the framing inspection for fire sprinkler installations. Final inspection and approval of either system must be secured through the Fire Department prior to final inspection by the Building Department and/or occupancy of the residence. Current and subsequent homeowners shall maintain and keep in service required monitored fire alarm and/or fire sprinkler systems in accordance with applicable codes and standards."

This comment is an effort to help keep the requirement for systems "known." In the past, the development plan review has called out lots that required certain systems however, subsequent plan reviews have missed the requirement for these systems and the homes were built without them. Another issue is home ownership. In that the original homeowner may be aware of the requirement, but the fact that a system is present due to a requirement is not passed on and future homeowners thought it was an "extra" and turns the system off. Having this comment on the Plat and/or development plan will help ensure the requirement is known as the plans process through to permitting as well helping in notifying future homeowners of the requirement.

Section III –TND Standard Comments

- A. TND NO PARKING ZONES: No parking is permitted within thirty (30) feet of the intersection of streets of twenty-eight (28) feet in width of pavement or less. Such areas shall be designated as fire lanes with no parking (No Parking Zones). These zones shall be shown on the development plans. (Traditional Neighborhood Developments, Policies, Standard and Guidelines Manual, p. 31)**

The primary function of a TND is to promote pedestrian access versus vehicular access. In order to achieve this desired function, streets within TNDs are typically narrower than generally found throughout the rest of the city. These narrower streets present maneuverability issues for our apparatus, specifically, the turning radius needed for our apparatus. In an attempt to ensure that the apparatus are able to make a turn, specific street intersections are required to be clear and free of vehicle parking. This enables apparatus driver/engineers to use the full pavement of the intersection to make the turn.

- B. TND QUEING AREAS:** For firefighting purposes, sixty (60) foot queing areas shall be provided at the midblock of streets of twenty-eight (28) feet in width of pavement or less and blocks three-hundred (300) feet or more. Such queing area shall be designated as fire lanes with no parking. These areas shall be shown on the development plans. (Traditional Neighborhood Developments, Policies, Standard and Guidelines Manual, p. 30)

The queing areas provide a clear space or the full width of the road to set up aerial operations during an emergency. The outriggers or supports that stabilize the elevated ladders are approximately 17-ft in width and streets with parking on both sides only allows approximately 14-ft clear space to operate.

- C. TND QUEING AREAS VEGETATION:** Only approved trees/greenery shall be placed adjacent to required queing areas. (Traditional Neighborhood Developments, Policies, Standard and Guidelines Manual, p. 37)

Since the queing areas are intended to provide adequate space for aerial operations, care must be taken to ensure that tree and other landscaping will not impede aerial operations once the aerial is up. Trees that grow fairly tall present maneuverability issues for aerial operators by preventing the ladders to fully reach all portions of a given building.

- D. TND FIRE LANE SIGNS:** Where applicable, fire lanes shall be posted by signs by the developer as indicated below:

1. On both sides of fire department access roadways less than 22-feet wide.
2. On one side of access roadways with widths of 22-feet or more but less than 28-feet.
3. No signage is required for access roadways 28-feet or more in width.

Striping as an alternative to fire lane signs is only permitted along private roadways. (2003 IFC §D103.6 as amended)

Although the minimum fire department access roadway per the UFC is 20-ft, in order to meet the intent and desired effects of the TND, roadways are narrower and still allow for parking at given locations. CSFD uses 8-ft width per vehicle, when one row of vehicles are parked along one curb and 7-ft width per vehicle when vehicles are parked along both curbs. Table 3.1 demonstrates the need for queing areas in order to perform aerial operations. For more information on the specific requirements for Fire Lane signage, please refer to our *Fire Lane Sign Requirements* Information Packet.

Street Width vs. Parking Signage Requirements within TNDs.

	28' Wide Street	20' Wide Street
Parking Allowed	Both Sides	One Side
Space for Parking	14' (2 vehicles at 7' wide each)	8' (1 vehicle at 8' wide each)
Clearance Left for FD Access	14'	12'

- E. TND ALLEYS:** Alleys shall not be used as the primary means of access in any location unless they meet the minimum requirements for fire lanes. (2003 IFC §503.2.1)

The design features of a typical TND alley do not allow adequate access or minimum requirements for our apparatus. Therefore they are not permitted unless specifically approved.

Section IV –Miscellaneous Standard Comments

- A. NO PRELIMINARY HYDRANT PLACEMENT REVIEW.** Adequate data was not provided for preliminary hydrant placement review. See Colorado Springs Fire Department Water Packet for requirement for a preliminary review. **NOTE: Supplying this data is not a requirement for this plans approval.**

It's important to note first that water plans are not formally review and/or approved during the development plan review. With that said however, if certain information is provided on the development plans (see

following comment for information needed to make comments), comments will be made to allow the applicant to know whether or not they are on the right path in terms of fire hydrant numbers and spacing. The comments are informational only and not final comments for a fire hydrant/water line review. Again, they are just to let the applicant know if they will or will not encounter any major issues during the fire hydrant/water line review.

B. PRELIMINARY HYDRANT PLACEMENT REVIEW DATA:

Building Data

Type of Construction:

Gross Square Footage:

Fire Flow Required:

Sprinklered:

Hydrant Required:

Avg. Spacing:

Hose Lay:

DISCLAIMER: This is only a preliminary review. A separate water/hydrant plan review is required prior to submittal of construction plans. Construction for hydrant, FDC or water lines may not begin until the water plans have been signed.

When the above information is provided on a development plan, the information will be transferred to this comment for reference. In doing so, it serves as an advance warning to the fire hydrant/water line review that the plans have had a preliminary review and to look for any specific comments that may have been made.

C. HYDRANT PLACEMENT MODIFICATION(S): The development plans have been reviewed for preliminary hydrant placement. The following items should be corrected before submittal of water supply/fire hydrant plans:

POTENTIAL HYDRANT ADDITION: Based on the information provided, /// hydrants are required when /// hydrants are shown on the plans. Ensure that the minimum number of required hydrants is provided for and shown on the fire hydrant/water supply plans.

HYDRANT SPACING: Due to inadequate hydrant spacing as shown on the plans, the following hydrants should be relocated as follows:

HYDRANT RELOCATION: Due to operational tactics, the hydrant(s) in the following location(s) should be relocated as follows:

During a site/development plan review, the reviewer will look at hydrant placement if only to ensure they are accessible. Should it be discovered that a hydrant is not accessible, this comment will call those hydrants out. This comment may not always be in the form of a disapproved comment but may be in the form of an "FYI" or "Attention" comment. This comment will most likely be disapproved only when landscaping, parking or other development plan related issue is causing the concern.

D. FIRE DEPARTMENT CONNECTION (FDC) PLACEMENT CONSIDERATIONS: The plans indicate that the building(s) will be provided with a fire sprinkler system but no FDC shown. Ensure the water supply/fire hydrant plans show the location of each FDC and ensure that each FDC meets the following requirements:

The FDC shall be located in an approved location. The FDC shall be located on the street addressed side of the structure. (NFPA 13 8.16.2.4.6 and NFPA 14 4-3.5.1)

There shall be a fire hydrant capable of supplying the fire flow requirements for the system no further than 100 feet of the FDC. (NFPA 14 - 6.3.5.4)

The FDC shall be located within 40 feet of an approved fire department access road.

The FDC shall have a listed horn/strobe indicating device, which notifies fire crews of system flow, within 20 feet of any FDC. Proper signage shall be posted at all FDC locations per NFPA standards.

This FDC shall be mounted not less than 18-inches and not more than 4-foot above the level of the adjacent grade or access level. (NFPA 14 4-3.6)

The FDC is not to be placed behind proposed vehicle parking, obstructed by landscaping or other vegetation or obstructed either by visibility or access by other means.

If a remote FDC is installed, there must be indications on the submitted water plans that a outside horn/strobe unit will be provided in a highly visible and acceptable locations, and it must be within 20 feet of the FDC.

As with fire hydrant accessibility, if the plans indicate the building will be sprinklered and/or its anticipated the building will be sprinklered, the FDC will be looked at for accessibility. Again, this comment will not always be in the form of a disapproved comment. It will only be in that form if an FDC is shown and parking, landscaping or some other development plan specific issue is causing the concern. Other wise this comment will generally be an "FYI" or "Attention."

E. DISAPPROVED FIRE HYDRANT LOCATIONS: Fire hydrant locations as shown on the plans must be relocated or issues causing concern must be corrected as follows:

OBSTRUCTED CLEAR SPACE AROUND HYDRANTS: A 3-foot clear space shall be maintained around the circumference of fire hydrants as indicated: (2003 IFC §508.5.5)

INACCESSIBLE FIRE HYDRANTS: Due to inadequate access, the following hydrant locations must be modified:

See commentary for Item C above as it applies to this comment as well.

F. DISAPPROVED FDC LOCATION(S): The fire department connections as shown on the plans must be relocated or issues causing concern must be corrected:

OBSTRUCTED FDC LOCATIONS: The FDC locations shown on the plans are placed in such a way that the proposed landscaping may obstruct the access or visibility to these devices. Either relocate the indicated FDC's or modify the landscaping plans such that the proposed landscaping will not obstruct access or visibility to these devices.

FDC DISTANCE TO FIRE LANE: The plans indicate the proposed FDC location is greater than 40 feet from a fire lane. The FDC shall be located within 40 feet of an approved fire department access road. Either relocate the FDC to within the required distance or provide a fire lane to within the required distance to the FDC.

See commentary for Item D above as it applies to this comment as well.

G. CHANGE OF USE/OCCUPANCY: It appears that this project is a change of use or occupancy for this building. As such, the building must meet the current adopted fire codes for its new use/occupancy. Additionally, a new certificate of occupancy must be obtained for the new use/occupancy.

To verify if this application is in fact a change of use and/or occupancy, please contact the Regional Building Department at 719-327-2880.

This comment serves as a heads-up for the applicant that the applicant appears to be a change of use and/or occupancy. In either case, the new use or occupancy must meet current code requirements. Typically this comment is made whenever plans are reviewed that include a new Institutional Use/Occupancy within an existing building. Chances are good that the proposed use/occupancy is more hazardous than the existing use/occupancy which drives specific code requirements.

H. PLAT AMENDMENT W/EXISTING BUILDINGS: The site for which this plat is being submitted appears to include existing buildings. Any changes to lot lines adjacent to any/all existing structures requires building construction related reviews and approvals from the Regional Building Department PRIOR to the approval of the plat change. Additionally, utilities are not permitted to cross property lines. Please contact the Regional Building Department (RBD) and/or Colorado Springs Utilities (CSU) with any questions regarding these matters.

This is another comment that serves as a heads-up for the applicant. In years past, existing buildings have been subdivided to form individual lots. Doing so without all departments looking at the proposal becomes problematic down the road. The intent is to catch it on paper than in person which makes the whole process easier for everyone involved.