6.3.3 Fire Protection

A. General

1) **Purpose.** The purpose of this section is to ensure that proposed development is reviewed in consideration of the need to provide adequate fire protection, minimize the hazard to public health, safety, and welfare, and provide requirements for the protection of structures and facilities.
2) **Applicability.** This section shall apply to all development applications and permits within the unincorporated areas of El Paso County. Unless otherwise exempted, all development located within the boundaries of a Fire District shall be reviewed by the Fire District for compliance with their adopted fire code. Development within the boundaries of a Fire District that has been exempted from the adopted fire code shall be reviewed under this section by the County. These exemptions include the following:
    i. Detached one- or two-family dwellings or townhomes that are constructed on an unplatted parcel (legal lot), on a lot platted as part of a subdivision containing four or fewer such platted lots, or on a lot platted as part of a subdivision recorded before December 10, 2013
    ii. Factory-built units certified by the State of Colorado
    iii. Factory-built units constructed to federal standards
    iv. Accessory use structures
3) **Responsibility of Fire Authority.** It is the responsibility of the Fire Authority to provide recommendations as to whether a new development meets the applicable fire code standards for the respective area. If a new development does not meet the applicable standards, then the Fire Authority should provide comments regarding areas of non-compliance and recommendations for achieving compliance.
4) **Basis of Standards.** Where this section references specific standards from an organization, the most current edition of referenced standards applies.
5) **Combustible Materials for Commercial Use.** Propane tanks and other combustible liquids storage shall conform to NFPA 30: Flammable and Combustible Liquids Code

and NFPA 58: Liquefied Petroleum Gas Code. A Fire Protection Report and/or a report detailing mitigation of wildland fuels may be required.

B. Reports and Standards for Subdivisions

1) Fire Protection Report.

A Fire Protection Report is required for any subdivision application and shall include an analysis of compliance with this Code, the applicable fire code, and at a minimum the following:

i. Description of proposed development to include acreage, number of lots/dwelling units, etc.

ii. Water supply to be used for fire suppression (fire hydrants, dry hydrants, cisterns, automatic sprinkler system, etc.).

iii. Maintenance plan if cisterns and dry hydrants will be used.

iv. Information regarding the internal and external roadways and if an emergency vehicle can utilize those roadways.

v. Information on any emergency access roads and/or gates.

vi. The fire intensity classification when located within the wildland urban interface area and an analysis of compliance with Appendix E (when applicable).

2) Fire Protection Commitment. A written commitment to provide structural fire protection may be required for any proposed subdivision located outside the boundaries of a Fire District or otherwise exempt from the adopted fire code. The PCD Director may require a written commitment for other development applications.

3) Development Outside Fire Authority Boundaries. Proposed subdivisions outside the boundaries of a Fire District shall annex into a district or provide evidence of a contract for service from a Fire District or Fire Department. Waivers of this requirement may only be approved by the Board of County Commissioners. An applicant's waiver request shall, at a minimum, include the following:

• A letter from the nearest fire district or fire department demonstrating that annexation is not economically feasible.

• A letter or report from a Third Party Fire Reviewer providing a recommendation to the Board of County Commissioners that the proposed development complies with the Fire Protection and Wildfire Mitigation Section of this Code. In the case of a conflict between adopted standards and this Code, the Third Party Fire Reviewer may recommend an alternative design which accomplishes the purposes of this section and provides an equivalent benefit to the development.

C. Design Standards

1) Water Supply

a) General. Water supply systems used for fire protection purposes shall be calculated, installed, and maintained in accordance with NFPA standards. The required fire flow for one or more buildings shall be calculated per the following conditions:

i. For areas without municipal-type water systems, NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting, shall be applied.

ii. For those areas with municipal-type water systems, nationally recognized criteria, such as NFPA, National Fire Academy (NFA), or International Organization for Standardization (ISO) standards, shall be applied.

b) Automatic Fire Protection. Design for automatic fire protection shall comply with the NFPA 13, 13R, and/or 13D Standard for the Installation of Sprinkler Systems. The PCD Director, or Fire District, when located within the boundaries of a Fire District, may approve a reduction of required water supply for structures with automatic fire protection.

c) Areas with Central Water Systems.

i. Water Distribution System Pressure. The water distribution system shall be capable of delivering fire flow at a minimum rating of 20 pounds per square inch for each hydrant connected to the distribution system within the proposed subdivision.

ii. Dead-End Mains. Dead-end mains shall not exceed 600 feet in length for main sizes less than 10 inches in diameter.

iii. Fire Hydrant Spacing. Fire hydrants shall be located so that all residential structures are within 500 feet, and all commercial structures are within 400 feet of a hydrant. Where the proposed buildings warrant, the Fire Authority may recommend a greater spacing distance or require additional hydrants and closer spacing based upon the applicable fire code or NFPA standards.

iv. Fire Hydrant Accessibility. Fire hydrants shall be accessible to fire district or fire department apparatus from a road (i.e., maintained public roads, privately maintained roads, or emergency vehicle access roads) or unobstructed emergency access lanes (i.e., driveway, parking drive aisle, or emergency access lane).

v. Fire Hydrant Supply Lines. Fire hydrants shall be supplied by not less than a 6-inch diameter main installed on a looped system, or by not less than an 8-inch diameter main if the system is not looped or the fire hydrant is installed on a dead-end main exceeding 300 feet in length.

vi. Fire Hydrants in Parking Areas. Fire hydrants located in parking areas shall be protected by barriers that will prevent physical damage from vehicles without obstructing hydrant operation.

vii. Fire Hydrant Relationship to Roads. Fire hydrants shall be located within 6 feet of the edge of the pavement unless there is a conflict with the ECM or the Fire Authority recommends another location is more acceptable for fire district or fire department use. All roads and emergency vehicle lanes shall be designed to maintain a minimum unobstructed clearance of 3 feet around fire hydrants.

viii. Fire Hydrant Easements. Easements for fire hydrants shall be provided and dedicated to the appropriate fire or water authority when the hydrants are not within a public road right-of-way. The easement shall afford accessibility to the hydrant from the right-of-way.

ix. Release of Financial Assurance for Water Supply Systems. The contractor, installer, or owner of water supply systems shall provide a letter of acceptance from the water district or public utility prior to release of construction financial assurance for the system.

d) Areas without Central Water Systems

i. Fire Cisterns.

- **Fire Cisterns Required.** Fire cisterns shall be provided in areas which are not served by hydrants, unless an alternative fire protection water supply that complies with NFPA standards is approved. All currently recognized water supplies may be considered when determining the need for and the placement of new water storage sites.
- **Construction Standards.** Construction of fire cisterns shall comply with the approved plans and the requirements of NFPA 1142.
- **Design Standards for Subdivisions with More than One Cistern:** For subdivisions where more than one fire cistern is required, fire cisterns shall meet the requirements of NFPA 1142. For this type of subdivision, fire cisterns shall be designed for the largest building allowed by zoning in the worst-case hazard and construction class.
- **Design Standards for Subdivisions with One Cistern:** For subdivisions where only one fire cistern is required, the minimum capacity of the fire cistern shall meet the requirements of NFPA 1142 or shall have a total capacity equal to 300 gallons for each acre within the subdivision plus 3,000 gallons per dwelling unit, whichever is greater.
- **Cistern Turnaround.** A dedicated turnaround shall be placed no more than 50 feet from a fire cistern, and the standpipe shall be within 8 feet of the nearest usable portion of the dedicated right-of-way or approved easement, unless otherwise recommended by the Fire Authority.

- **Easements Required.** Cistern easements shall be provided and dedicated to the appropriate Fire District at the time of platting to afford accessibility of the cistern from a public road. Easements shall be of sufficient size to facilitate maintenance.

ii. Dry Hydrants

- **Use of Dry Hydrants.** Dry hydrants may be provided in combination with fire cisterns or other approved fire protection water supply systems. Plans for dry hydrants shall be submitted to the Fire District, or the County when located outside the boundaries of Fire District, for approval and be identified on the final plat and/or site development plan.
- **Construction Standards.** Construction and installation of dry hydrants shall comply with the approved plans and requirements of NFPA 1142.
- **Accessible.** Dry hydrants shall be located to be accessible under all weather conditions.
- **Clearance.** Dry hydrants shall have a minimum clearance of 20 feet on each side and be located a minimum of 100 feet from any structure. Highway or road traffic shall not be impaired during the use of the dry hydrant.
- **Protected.** Dry hydrants shall be protected from damage by vehicles and other perils, including freezing and damage from ice and other objects.
- **Visible.** Dry hydrant locations shall be made visible from the main roadway during emergencies by reflective marking and signage and shall be in conformance with NFPA 1142 requirements. All identification signs located within public right-of-way or subject to Colorado law shall be approved by the appropriate authority prior to installation.

- **Access to Hydrant.** Vehicle access shall be designed and constructed to support the imposed load of fire apparatus weighing up to 75,000 pounds with a minimum single axle weight of 27,000 pounds.
- **Easements Required.** Dry hydrant easements shall be provided and dedicated to the appropriate Fire District at the time of platting to afford accessibility of the dry hydrant from a public road. Easements shall be of sufficient size to facilitate maintenance.

iii. **Maintenance**. Cisterns and dry hydrants shall be inspected, tested, and maintained at least quarterly and in accordance with NFPA 1142. Any owner of a cistern and/or dry hydrant is responsible for the planning, developing, permitting, and continual maintenance and provision of a sufficient water supply necessary to maintain the fire protection requirements of a cistern or dry hydrant system.

- A maintenance plan is required for cisterns and/or dry hydrants and shall be submitted with the Fire Protection Report. The plan shall include at a minimum the location of cisterns and/or dry hydrants, owner(s) name and contact information, and inspection and testing schedule.
- Inspection and maintenance reports shall be made available to the County and Fire District upon request.

iv. **Alternative Fire Protection Water Supply**. The County or Fire District, when located within the boundaries of a Fire District, may determine a cistern or dry hydrant is not required upon an evaluation of recognized water supplies from a qualified professional, including the applicable Fire District. Alternative water supply must be capable of providing 250 gpm fire flow, and maintain the fire flow, without interruption, for 2 hours. The water supply shall not be more than two (2) miles travel distance from any vehicle entrance to a parcel that is served by the water supply.

v. **Water Use Agreements.** If a private water supply source is to be used, a legal agreement establishing access to and use of the water source is required.

vi. **Qualified Professional.** The PCD Director may require any reports, plans, specifications, etc. required for water supply to be completed by a qualified professional.

vii. **Plat Notes Required.** Plans for cisterns and dry hydrants shall be identified on the final plat and/or site development plan.

2) **Roads.** This Section shall apply to all roads providing access to a development whether or not they are dedicated as public roads.

a) **Roads Constructed to County Standards.** All roads, including private roads and emergency vehicle access roads, shall be designed and constructed according to this Code and the ECM.

b) **Emergency Vehicle Access Roads.** Emergency vehicle access roads shall, at a minimum, be constructed to the County's gravel road standard if open to public travel. Emergency vehicle access roads which are not open to public travel shall meet the non-road access standards.

c) **Roads within 150 Feet of Development.** Roads or emergency access lanes shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is within 150 feet as measured by an approved route around the exterior of the building or facility. Single family residential development excepted.

d) **Two Access Routes Required.** Access to a development shall be provided by a minimum of two separate routes in accordance with the requirements of this Code and the ECM if a single access exceeds the cul-de-sac length allowed by the ECM. Access routes shall be placed a distance apart equal to not less than one-half the length of the maximum overall diagonal dimension of the property, measured in a straight line between accesses unless a greater distance is required by the ECM.

e) **Turnaround Required on Dead-End Roads.** Dead-end roads more than 300 feet in length shall be provided with a roadway termination meeting ECM standards.

3) **Non-Road Access.**

The following minimum standards apply to any access, driveway, lane, etc. serving as emergency access lanes.

a) **Emergency Access Provided.** Access for emergency responders, ingress, egress, and evacuation shall be provided for all buildings.

b) **Driveways Required.** Where any point of a building is greater than 150 feet from a road, a driveway meeting the standards of this Code shall be provided to within 150 feet of the furthest point on the building.

c) **Emergency Access Lanes Required.** The County may require emergency access lanes be provided.

d) **Emergency Access Lane Design.** An emergency access lane shall be designed and constructed to enable fire-fighting apparatus to maneuver broadside or directly forward within a minimum of 5 feet and a maximum of 25 feet of structures.

e) **Width of Driveway and Emergency Access Lanes.** Where the driveway is greater than 150 feet in length, it shall be not less than 10 feet in unobstructed width. Emergency access lanes shall have a minimum unobstructed width of 16 feet for approved one-way travel and 24 feet for two-way travel.

f) **Vertical Clearance.** A minimum vertical clearance of 13 feet 6 inches shall be provided and maintained over the full width of the emergency access lane or driveway.

g) **Turns.** Required driveways shall be designed, constructed, and maintained to accommodate the turning radius of the largest apparatus typically used to respond to that location. A turn in an emergency access lane shall have a minimum inside turning radius of 25 feet and a minimum outside turning radius of 50 feet.

h) **Grade.** Emergency vehicle access roads shall not exceed 10 percent grade unless mitigation measures are approved.

i) **Emergency Access Lanes Connecting to Roads.** Emergency access lanes connecting to roads shall be provided with curb cuts, or other acceptable alternatives, extending at least 2 feet beyond each edge of the emergency access lane.

j) **Turnouts and Turnarounds Required.**

i. Driveways. Where the required driveway is greater than 300 feet, it shall be provided with turnouts or turnarounds at approved locations based on recommendation from the Fire Authority.

ii. Turnarounds Required. Dead-end emergency access lanes exceeding 300 feet in length shall be provided with turnouts or turnarounds in one of the following minimum configurations:

- A circular turnaround having a minimum 50-foot outside radius; or
- A "T" or hammerhead turnaround providing a three-point turn; or
- An alternative turnaround configuration that provides equivalent maneuverability and accommodates fire apparatus.

k) **Load Design.** Emergency access lanes and required driveways must be designed, constructed, and maintained to accommodate the imposed load of fire apparatus weighing up to 75,000 pounds with a minimum single axle weight of 27,000 pounds.

l) **Bridges or Drainage Crossings.** A bridge or drainage crossing on an emergency vehicle access road shall be designed to accommodate the imposed load of fire apparatus weighing up to 75,000 pounds with a minimum single axle weight of 27,000 pounds. The load limit shall be clearly posted at the approaches to the bridge.

m) **Landscaping Maintained.** Landscaping or other obstructions shall be maintained in a manner that provides unobstructed access for fire department operations.

4) **Gates.**

a) **Gate Location and Dimensions.** Gates shall be located at a minimum of 30 feet from the public right-of-way and shall not open outward. The clear opening provided through a gate shall be a minimum of 16 feet in width.

b) **Locks.** Fire District personnel shall have ready access to locking mechanisms on a gate restricting access to a fire lane. Use of Knox products shall be coordinated with the applicable Fire Authority.

6.3.4. WILDLAND-URBAN INTERFACE AREAS

A. **Applicability.** This section applies to areas within unincorporated El Paso County that are not located within a Fire District and are located within the Wildland-Urban Interface as defined in Appendix E to the Code. Where there is a conflict between Appendix E and other provisions of this Code, Appendix E shall govern.

B. **General**

1) **Wildland-Urban Interface Requirements.** Properties within the Wildland-Urban Interface shall comply with Appendix E and the requirements of this section.

2) **Road Grades.** Within Wildland-Urban Interface Areas, road grades may not exceed 10 percent unless mitigation measures are approved.

3) **Access to Structures.** At least one approved means of vehicular access shall be provided to each structure or other nonstructural fire hazard in accordance with the following:

i. For structures or nonstructural fire hazards exceeding two stories or 30 feet in height above average adjacent ground level, or 12,000 square feet of gross floor area, no less than 2 separate approved means of access shall be provided.

ii. Approved vehicular access shall be provided to within 150 ft of any point of the exterior wall of each structure.

4) **Access to Structures Not Protected by Automatic Sprinklers.** An approved means of vehicular access shall be provided to within 30 feet of all points of at least 2 exterior

walls for any structure not protected by automatic sprinklers that exceed 2 stories or 30 feet in height above average adjacent ground elevation. Single and two-family dwellings are exempt from this requirement.

5) **Access to Structures Protected by Automatic Sprinklers.** For any structure protected by an automatic sprinkler system, an approved means of vehicular access shall be provided to within 400 feet of any point of the exterior wall. For any structure exceeding 3 stories or 35 feet in height above average adjacent ground elevation and protected by an automatic sprinkler system, an approved means of vehicular access shall be provided to within 30 feet of all points of at least 2 exterior walls.
6) **Separation Between Structures.** A structure in a development shall be separated from another structure by at least 30 feet and shall be located at least 25 feet from a lot, parcel, or tract line. A structure in a development that exceeds 2 stories or 30 feet in height above average adjacent ground elevation and is not protected by an automatic sprinkler system shall be separated from other structures by at least 50 feet and shall be located at least 25 feet from a lot, parcel, or tract line.
7) **Plat Notes Required.** Notice of any wildfire mitigation issues or obligations may be required by the County through conditions of approval or notes placed on the face of the plat.

C. **Wildland Hazard and Mitigation Plan.** A wildland fire risk and hazard mitigation plan prepared by a qualified professional shall be required for commercial use of any property located within the Wildland Urban Interface area that is not subject to the standards for structure hardening and site and area requirements of Appendix E. A Wildland Hazard Mitigation Plan shall include at a minimum the following:

- Access, ingress, egress, and evacuation.
- Water supply for fire protection.
- Structure location and construction.
- Ignition potential.

- Vegetation management and defensible space.
- Structure hardening and defensible space requirements
- Historical wildfire behavior patterns and environmental conditions.
- Potential for structure-to-structure and vegetation-to-structure fire spread. Slope and aspect shall be evaluated as to their potential to increase the threat of wildland fire to life or improved lot, parcel, or tract.
- Other site-specific factors affecting wildfire.

1.15 DEFINITIONS

Alternative Fire Protection Water Supply: Water supplies provided to meet the minimum fire flow/duration requirements where no municipal-type water system exists or to supplement an inadequate municipal-type water supply.

Cistern. A water storage tank, usually underground and designed with positive pressure, designed to contain a designated volume of water and to permit the removal of water at no less than 1,000 gallons per minute ("gpm").

Dry Hydrant. An outlet for suction supply of fire protection water connected to a natural body of water or cistern, which is designed without positive pressure or does not require freeze protection.

Emergency Access Lane. An emergency vehicle access road or portion thereof designated and maintained to provide unobstructed access for fire department operations. A, emergency access lane is intended to allow the passage, positioning, staging, and operation of fire apparatus, including the deployment of aerial apparatus outriggers, hose lines, and other emergency equipment.

Emergency Vehicle Access Roads: Any road, driveway, lane, or other route, whether public or private, that provides fire department access to one or more buildings, structures, fire protection water supplies, or fire department connections.

Fire Protection Report: An analysis of compliance with the Fire Protection and Wildfire Mitigation sections of this Code. May also include an analysis of compliance with the IFC as applicable.

Recognized Water Supply: A legally and physically accessible water source demonstrated to furnish a minimum flow rate of 250 gpm (950 L/m) for a two-hour duration from a defined usable volume, as demonstrated by means of an availability study.