

# Water Supplies for Fire Protection



**Colorado Springs Fire Department**  
Division of the Fire Marshal

October 2013

# TABLE OF CONTENTS

<b>PURPOSE</b> .....	<b>3</b>
<b>SCOPE</b> .....	<b>3</b>
<b>DEFINITIONS</b> .....	<b>3</b>
<b>GUIDELINES</b> .....	<b>4</b>
<b>I. INTRODUCTION</b> .....	<b>4</b>
<b>A. APPLICABLE CODES AND STANDARDS.</b> .....	<b>4</b>
<b>B. ADMINISTRATIVE REQUIREMENTS.</b> .....	<b>4</b>
<b>II. SUBMITTAL INFORMATION</b> .....	<b>4</b>
<b>A. MINIMUM REQUIREMENTS.</b> .....	<b>4</b>
<b>B. PRELIMINARY REVIEW ON THE DEVELOPMENT PLAN.</b> .....	<b>5</b>
<b>III. GENERAL INFORMATION AND REQUIREMENTS</b> .....	<b>6</b>
<b>A. FIRE FLOW.</b> .....	<b>6</b>
<b>B. HYDRANTS.</b> .....	<b>7</b>
<b>C. FIRE LINES (FIRE SERVICE MAINS).</b> .....	<b>7</b>
<b>D. FIRE DEPARTMENT CONNECTIONS.</b> .....	<b>8</b>
<b>E. DEAD END MAINS.</b> .....	<b>8</b>
<b>F. LOOPED WATER LINES.</b> .....	<b>8</b>
<b>G. FIRE WALLS.</b> .....	<b>9</b>
<b>LINKS</b> .....	<b>9</b>
<b>ATTACHMENTS</b> .....	<b>9</b>
<b>A. CSFD SUBMITTAL CHECKLIST.</b> .....	<b>10</b>
<b>B. APPENDICES B AND C OF THE 2003 IFC.</b> .....	<b>11</b>
<b>C. HOW TO FIGURE FIRE FLOW AND # OF HYDRANTS REQUIRED.</b> .....	<b>12</b>
<b>D. SUPPLEMENTAL INFORMATION.</b> .....	<b>14</b>
<b>E. Flow Chart for Water Plan Submittals</b> .....	<b>16</b>

## PURPOSE

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This information packet has been developed in an effort to provide the highest level of service to the customers of the Colorado Springs Fire Department. The Colorado Springs Fire Department and the Colorado Springs Utilities work closely reviewing water plans each year to ensure that minimum design criteria are met. The major goal of the water system plan reviews conducted by the CSFD is to insure adequate fire flow and the number of hydrants meets the minimum requirements of the adopted codes and ordinances of the City of Colorado Springs. To meet this goal, the submitted plans and supporting documentation must contain all the necessary information needed to conduct a thorough review.

Water is our most precious resource. This is especially true when considering firefighting applications. When it comes down to it, water is the Fire Department's ammunition. Despite all the equipment, training, and efficiency of the firefighting personnel, an adequate water supply for firefighting plays the most important role in our ability to protect life and property from fire.

***Please keep in mind that modifications to these requirements may be necessary, depending upon individual conditions and circumstances.*** Although we will work diligently to maintain consistency, we reserve the right to require modifications, if necessary, in order to ensure an adequate fire protection water supply is provided.

## SCOPE

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This packet outlines the requirements set forth in the adopted International Fire Code, local amendments, departmental policies, and appropriate NFPA standards as they relate to the installation of fire hydrants and fire lines for commercial and residential occupancies having access to city water supplies. Also included in this packet is information covering items required to be included on the working drawings and supporting documents. This packet is not intended to provide an all-inclusive listing of submittal and inspection requirements, as it would be virtually impossible to cover all situations.

## DEFINITIONS

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AHJ	Authority Having Jurisdiction
CSFD	Colorado Springs Fire Department
CSU	Colorado Springs Utilities
DFM	Division of the Fire Marshal
FDC	Fire Department Connection
Fire Area	The Gross Square footage of all floors
Fire Flow	The rate of water in gpm measured at 20 psi residual pressure
Fire Line	That portion of underground pipe from water main to a building dedicated to the fire sprinkler system.
Ft <sup>2</sup>	Square Feet
GPM	Gallons per Minute
IBC	International Building Code
IFC	International Fire Code
NFPA	National Fire Protection Association
PIV	Post Indicator Valve
PSI	Pounds per square foot

# GUIDELINES

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## I. INTRODUCTION

### A. APPLICABLE CODES AND STANDARDS.

1. Adopted International Fire Code and local amendments.
2. 2013 NFPA 24 Installation of Private Fire Service Mains and Their Appurtenances.
3. Colorado Springs City Ordinances.
4. CSFD Administrative Rulings and Interpretations.

### B. ADMINISTRATIVE REQUIREMENTS.

1. **Approved Contractors.** All fire lines must be installed by contractors who are registered with the State of Colorado as a "Fire Suppression System Contractor – Underground." Please contact the Colorado Division of Fire Safety at 303-239-4600 for additional information.
2. **Code/Standard Editions.** All water system designs shall meet the criteria of the adopted IFC as amended and all applicable requirements of the most recent edition of NFPA 24. NFPA standards are effective on the January 1<sup>st</sup> of the year following the effective date printed in the standard. All water system designs shall also meet the requirements set forth in adopted ordinances, CSFD administrative rulings and CSU standards.
3. **Plan Reviews/Inspections.** Required plans submittal with approvals and associated inspections must be secured through the CSFD. This is in addition to inspections conducted by CSU.
4. **Revisions.** All revisions shall be clouded and identified with a sequential numbering or lettering system, such as Revision A, B, etc or Revision 1, 2, etc. Revisions are date sensitive, thus each revised sheet must bear the date of the revision.

## II. SUBMITTAL INFORMATION

Submittals shall be of sufficient clarity and quality to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of the IFC, and other relevant laws, ordinances, rules and regulations adopted by Colorado Springs, as determined by the Fire Marshal and Colorado Springs Utilities. You may refer to the attachments section of this packet for a more complete checklist of items required to be provided on the submitted plans. Please refer to CSU standards for their requirements on submittal information.

### A. MINIMUM REQUIREMENTS.

1. **Drawing Size.** Drawings shall be submitted on sheets no less than 24x36 inches and shall be drawn to an engineering scale no less than 1/50.
2. **Number of Drawing Sets.** One set of plans may be submitted for the initial review. The plans shall include the items found in the checklist provided at the end of this packet. Please roll the plans, as opposed to folding them, as this method is more appropriate for

our plan bins and easier to transport within the office. Please note: when we are signing plans, one extra set must be provided for our records.

3. **CSFD Plan Review Application.** Fill out the plan review application form and attach to all submittals. Please indicate on the form if this is an initial review, re-review, final signatures, hard copy for CSFD or any other requests. If you would like to be notified when your plans are finished by email, include your email address on the form.
4. **Fire Flow Report.** We will provide you with the required fire flow and number of hydrants to be met at the time of the first review. This process will reduce the number of requests for flow reports to CSU and thus reduce the amount of time it takes to get one back.
5. **Tax Schedule Number.** Drawings shall be provided with the Tax Schedule Number found on the approved development plan or through the El Paso County Tax Assessor.
6. **Signature Block.** When all requirements have been met, the water plans will be signed off by this office. The following must be included on plans:

*According to calculations reviewed by Colorado Springs Utilities, the theoretical available fire flow at node \_\_\_\_\_ is \_\_\_\_\_ gallons per minute under maximum day demand conditions with a 20 psi residual. Actual fire flow may vary due to various parameters.*

*All Fire Hydrants shall be installed according to Colorado Springs Utilities Specifications.*

*The number of fire hydrants and hydrant locations as shown on this water installation plan are correct and adequate to satisfy the fire protection requirements as specified by the City of Colorado Springs Fire Department.*

\_\_\_\_\_  
CSFD FIRE PREVENTION DIVISION, CSFD  
CSFD Plan Review Number. 200X-XXXX-FH-1

\_\_\_\_\_  
Date

7. **Building Data.** At the very minimum, you must supply the gross square footage and the construction type of the building. Before we approve the plans for signature, you must provide all of the following information on the plans:
  - a. Building Name
  - b. Address, if known
  - c. Gross Square Footage
  - d. Construction Type
  - e. Required Fire Flow
  - f. Required Number of Hydrants
  - g. Average Spacing of Hydrants
  - h. Maximum Hose Lay
  - i. Fire Sprinkler:  Y  N (If Yes, SHOW 50% REDUCTION DATA)
    - i. Reduced Required Fire Flow (round to nearest 250 gpm increment)
    - ii. Reduced Required Hydrants
    - iii. Reduced Average Spacing
    - iv. Reduced Maximum Hose Lay
  - j. Fire Walls:  Y  N

## B. PRELIMINARY REVIEW ON THE DEVELOPMENT PLAN.

CSFD will look at hydrant placement and number of required hydrants during the development plan review stage if specifically requested. You must provide, at a minimum, the type of construction and square footage for this review to take place. Keep in mind, this is only a preliminary review. Construction for hydrant, FDC or water lines may not begin until the water plans have been signed.

## III. GENERAL INFORMATION AND REQUIREMENTS.

- A. **FIRE FLOW.** Fire flow requirements may be ascertained by applying Appendices B and C of the adopted IFC (See Attachment 2) to the building in question. At a minimum you must know the construction type of the building and the gross square footage of the building.

Fire flows older than 1 year will not be accepted. Calculations must be obtained from Colorado Springs Utilities. Requests can be made over the internet at [www.csu.org](http://www.csu.org). Under Business click on [Development Services](#), then on [Construction Drawing Review](#) then on [Request a Fire Flow Report](#).

1. **Type of Construction.** The type of construction that the architect has assigned to the structure must be indicated on the plans.
2. **Gross Square Footage.** The fire area to be considered in determining the fire flow for these buildings shall be the total floor area of all floor levels within the exterior walls. For type IA and IB construction, it is the three largest consecutive floors. If fire walls are going to be used to “split” the structure into smaller areas, the gross square footage of each of these sections, as well as the total building gross square footage, must be provided.
3. **Fire Sprinklers.** A 50% reduction in fire flow is allowed by the use of fire sprinkler systems, whether they are required or not. For example, if your building requires 5000 gpm by the table, and the building is sprinklered, then the required fire flow is now 2500 gpm. Your required number of hydrants and spacing will be determined by the reduced fire flow. The minimum flow accepted is 1500 gpm. When reducing the fire flows, you will occasionally end up with an odd number such as 1825, in these cases you must round up to the nearest 250 gpm.
4. **Simultaneous Fire Flows.** If you do not meet the required fire flow, CSFD accepts the practice of using hydrants that are open simultaneously to determine fire flow.
5. **Alternatives.** If the required fire flow still cannot be met by any reasonable means (changing construction type, increasing pipe sizes, looping mains) there are alternatives that may be considered.
  - a. Fire Sprinkler Systems if not already provided allow for a 50% reduction in required fire flow.
  - b. Fire Walls dividing the building into two or more distinct areas constructed in accordance with the adopted IBC.
  - c. On Site Stored Water with an automatic pump supply providing the required fire flow and duration.

**6. Reminders.**

- a. 1,500 gallons per minute (gpm) @ 20 pounds per square inch (psi) are the minimum flows and pressures that CSFD permits for both residential and commercial sites when hydrants are flowing individually.
- b. 750 gpm @ 20 pounds per square inch (psi) are the minimum flows and pressures the CSFD permits per hydrant for both residential and commercial sites when hydrants are flowing simultaneously.
- c. "On Site/Actual" fire flows are NOT acceptable for plan review purposes. We have worked with the Colorado Springs Utilities to insure the theoretical fire flow calculations are accurate.

**B. HYDRANTS.** The primary purpose of fire hydrants is for professional firefighting. The proper location, operation and water flow capability of fire hydrants is essential to the successful execution of fire department operations during a fire incident.

Providing appropriate flow to a system is the responsibility of the developer or property owner. These systems must meet CSFD and CSU standards and gain approvals prior to installation.

1. **Existing Hydrants.** Label all existing hydrants with the CSU number.
2. **Private Hydrants.** Private hydrants become the ultimate responsibility of the property owner with regards to maintenance and repair. They must be flow tested and painted prior to issuance of a Certificate of Occupancy. Should the property owner not be willing to undertake this responsibility, it is strongly recommended they seek a solution with CSU to allow the installation of public hydrants. Use of a private hydrant owned by another property owner requires the use of a *Private Hydrant Agreement*, copies of which are available from the DFM Construction Services office. This is a legal document and must be registered through the El Paso County Clerk and Recorder's Office.
3. **Placement.**
  - a) Hydrants should be placed at intersections for increased flexibility. Where this is not possible, it may be placed along a curb or in a parking lot island. Access and turning radius must always be in consideration.
  - b) Hydrants must face the direction of water flow i.e. the lateral line they are connected to. Keep this in mind when laying the water mains, as the steamer connection on the hydrant must face the street.
  - c) In most cases, fire hydrants should be on the same side of the street that the building is located on. Having to lay hose across streets or driveways could prohibit access for additional fire apparatus.
  - d) Avoid putting hydrants at the end of dead end streets.
  - e) Hydrants shall be located so that the center of the large diameter outlet is not less than 18-inches above final grade.
4. **Spacing.** Hydrants shall be located with the following considerations in mind:
  - a) Meet the requirements of Appendix C of the adopted IFC (See Attachment 2)

- b) Fire Hydrants are to be a minimum of 40 feet from any building to insure they are kept out of the "Collapse Zone."
  - c) A 3 foot clearance is required around all hydrants.
  - d) If an FDC is required, a hydrant must be within 100' of it.
5. **Protection from Vehicular Damage.** Posts or concrete barriers may be used to protect hydrants from vehicular damage. Please refer to our information packet titled "Protection of Equipment from Vehicular Damage" for additional requirements.

**C. FIRE LINES.**

- 1. Fire lines shall be installed by an underground contractor registered with the State of Colorado as a "Fire Suppression Contractor – Underground."
- 2. The minimum size of a fire line for a commercial building is typically 4-inches. If a smaller size is desired, it must be hydraulically proven to provide the necessary water supply for the fire sprinkler system.
- 3. Fire lines must be flushed and hydrostatically tested prior to the connection of any aboveground piping. Be advised the chlorination flush performed by Colorado Springs Utilities does not satisfy the requirements of the CSFD for flushing the fire lines, as it is not at the required 10 feet per second velocity. Keep in mind if a fire pump is to be installed, the required flushing velocity is 20 feet per second.
- 4. Fire lines shall NOT be run underneath buildings!

**D. FIRE DEPARTMENT CONNECTIONS.** Fire department connections provide a way for the CSFD to supplement the water supply to a fire sprinkler system. By considering the location of the FDC at the water plan stage, all parties involved can prepare for this requirement.

- 1. FDC's shall be located with the following considerations in mind:
  - a) On the main entrance or street addressed side of the building.
  - b) Cannot be obstructed by parking, landscaping, planters, columns, etc.
  - c) A 3-foot radius of clearance shall be provided around the FDC to provide for our hose connections.
  - d) Within 100-feet of a hydrant.
  - e) Within 40-feet of a fire department access road.
  - f) Away and on a separate wall from any utility meters.
- 2. FDC's shall be mounted not less than 18-inches and not more than 4-foot above the level of the adjacent grade or access level.
- 3. FDC's shall have a listed horn/strobe indicating device within 20 feet, to notify fire crews of system flow and assist them in the location of the FDC. Proper signage shall be posted at all FDC locations per NFPA standards.

4. If a remote FDC is installed, there must be indications on the submitted water plans that an outside horn/strobe unit will be provided in a highly visible and acceptable locations, and it must be within 20 feet of the FDC.
- E. FIRE WALLS.** In buildings utilizing fire walls, it is important that they be listed slightly differently in the fire department building data, than buildings without.
1. Please use this format, and list each structure as follows:
    - Business Name
    - Business Address
    - Tax ID Number
    - Total Gross Square Footage of Building
    - Types of Construction for each Area
    - Occupancy Group for Each Side of the Fire Wall-Per IBC 705.4
    - Ratings of Fire Walls Being Installed
    - Building Being Fire Sprinkled
    - List Size of Separate Areas formed by Fire Walls
      - Area A – Sq Ft
      - Area B – Sq Ft
    - Required Fire Flow for Each Area
      - Area A –
      - Area B –
    - Required Number of Hydrants for Each Area
      - Area A –
      - Area B –
    - Max Spacing Between Hydrants
      - Area A –
      - Area B –
    - Max Hose Lay
      - Area A –
      - Area B –
  2. Fire walls shall be not less than 2-hour fire-resistance rated
- F. DEAD END SERVICE LINES.** Unless approved by the fire code official, dead end fire service mains shall not be used when there is not a reliable secondary or redundant means of water supply within 500 feet of a structure along an approved route.

## LINKS

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- a) Colorado Division of Fire Safety Web site.  
<http://dfs.state.co.us>
- b) CSU Water & Wastewater specifications.  
<http://www.csu.org/>
- c) Administrative Rulings and IFC Amendments can be found on the CSFD web site at <http://www.springsgov.com/SectionIndex.asp?SectionID=5>. Click on Commercial.

## **ATTACHMENTS**

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1. CSFD Submittal Checklist
2. Appendices B and C of the Adopted IFC
3. How to Figure Fire Flow Required and # of Hydrants Needed
4. Supplemental Information
5. Flow Chart for Water Plan Submittals.

## ATTACHMENT 1 - CSFD SUBMITTAL CHECKLIST

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### HYDRANTS & WATER MAINS

*The following must be included on all plans to ensure a complete submittal. Specific details for each item are found in this packet:*

- Attach completed CSFD Fax Form
- Attach Fire Flow Report from Colorado Springs Utilities (CSU)
- Attach all red-lined plans for re-reviews
- Attach Private Hydrant Agreement, if required
- Development Plan must be approved before water plans can be signed
- Provide CSFD Plan Review # on all pages
- Provide CSFD Signature Block on each page
- Provide El Paso County Tax ID Number
- Provide Building Data, if required
- Provide City Water Map Page Numbers
- Show Fire Department Connection (FDC) location, if applicable
- Show Water Supply Feeds for the sprinklers, standpipes, domestic water systems, all valves, including post indicator valves
- Show tie-ins to all existing water lines
- Label new and existing hydrants with CSU number and fire flow, ensure numbers match flow report.
- Label all hydrants and water mains as public or private
- Ensure looped water lines.
- Label all streets
- For gates, fences and walls: show how CSFD will get access on fire lanes and around building
- Provide Required Statements: see "Required Water Flow and Service Line Integrity Statement for All City Water Main/Hydrant Submittal" Sheet on the following page.

**ATTACHMENT 2 - APPENDICES B AND C OF THE ADOPTED IFC**

**Table 1: Required Fire Flow and Duration**

FIRE AREA (*GROSS* square feet) <sup>1</sup> × 0.0929 for sq. meters					FIRE FLOW GPM	FLOW DURATION (hours)
Type I-A I-B <sup>2</sup>	Type IIA IIIA <sup>2</sup>	Type IV V-A <sup>2</sup>	Type IIB IIIB <sup>2</sup>	Type V-B <sup>2</sup>	× 3.785 for L/min.	
22,700	12,700	8,200	5,900	3,600	1,500	2
30,200	17,000	10,900	7,900	4,800	1,750	
38,700	21,800	12,900	9,800	6,200	2,000	
48,300	24,200	17,400	12,600	7,700	2,250	
59,000	33,200	21,300	15,400	9,400	2,500	
70,900	39,700	25,500	18,400	11,300	2,750	
83,700	47,100	30,100	21,800	13,400	3,000	3
97,700	54,900	35,200	25,900	15,600	3,250	
112,700	63,400	40,600	29,300	18,000	3,500	
128,700	72,400	46,400	33,500	20,600	3,750	
145,900	82,100	52,500	37,900	23,300	4,000	4
164,200	92,400	59,100	42,700	26,300	4,250	
183,400	103,100	66,000	47,700	29,300	4,500	
203,700	114,600	73,300	53,000	32,600	4,750	
225,200	126,700	81,100	58,600	36,000	5,000	
247,700	139,400	89,200	65,400	39,600	5,250	
271,200	152,600	97,700	70,600	43,400	5,500	
295,900	166,500	106,500	77,000	47,400	5,750	
Greater	Greater	115,800	83,700	51,500	6,000	
		125,500	90,600	55,700	6,250	
		135,500	97,900	60,200	6,500	
		145,800	106,800	64,800	6,750	
		156,700	113,200	69,600	7,000	
		167,900	121,300	74,600	7,250	
		179,400	129,600	79,800	7,500	
		191,400	138,300	85,100	7,750	
		Greater	Greater	Greater	8,000	

- Notes:** 1. The areas listed in this table represent the maximum allowable areas for the listed flow rates.  
2. Types of construction are based on the International Building Code

**Table 2: Fire Hydrant Number & Distribution Requirements**

FIRE FLOW REQUIREMENT (gpm)	MINIMUM Number of HYDRANTS	Average Spacing between Hydrants (feet)	Maximum Hose Lay Distance from Hydrant to Engine Stopping Point on a Drivable Surface (feet)
× 3.785 for L/min		× 0.3048 for meters	
1,750 or less	1	500	250
2,000 - 2,250	2	450	225
2,500 - 2,750	3	450	225
3,000 - 3,250	3	400	225
3,500 - 4,250	4	350	210
4,500 - 5,250	5	300	180
5,500 - 5,750	6	300	180
6,000 - 6,250	6	250	150
6,500 - 7,250	7	250	150
7,500 - 8,000	8	200	120

## ATTACHMENT 3- HOW TO FIGURE FIRE FLOW REQUIRED AND # OF HYDRANTS NEEDED

**Example Problem: You have a Type V-B Construction Building, at 12, 000 square feet.**

Table 1: Required Fire Flow and Duration

FIRE AREA (*GROSS* square feet) <sup>1</sup> × 0.0929 for sq. meters					FIRE FLOW GPM × 3.785 for L/min.	FLOW DURATION (hours)
Type I-A I-B <sup>2</sup>	Type IIA IIIA <sup>2</sup>	Type IV V-A <sup>2</sup>	Type IIB IIIB <sup>2</sup>	Type V-B <sup>2</sup>		
22,700	12,700	8,200	5,900	3,600	1,500	2
30,200	17,000	10,900	7,900	4,800	1,750	
38,700	21,800	12,900	9,800	6,200	2,000	
48,300	24,200	17,400	12,600	7,700	2,250	
59,000	33,200	21,300	15,400	9,400	2,500	
70,900	39,700	25,500	18,400	11,300	2,750	
83,700	47,100	30,100	21,800	<b>13,400</b>	<b>3,000</b>	<b>3</b>
97,700	54,900	35,200	25,900	15,600	3,250	
112,700	63,400	40,600	29,300	18,000	3,500	
128,700	72,400	46,400	33,500	20,600	3,750	
145,900	82,100	52,500	37,900	23,300	4,000	4
164,200	92,400	59,100	42,700	26,300	4,250	
183,400	103,100	66,000	47,700	29,300	4,500	
203,700	114,600	73,300	53,000	32,600	4,750	
225,200	126,700	81,100	58,600	36,000	5,000	
247,700	139,400	89,200	65,400	39,600	5,250	
271,200	152,600	97,700	70,600	43,400	5,500	
295,900	166,500	106,500	77,000	47,400	5,750	
Greater	Greater	115,800	83,700	51,500	6,000	
		125,500	90,600	55,700	6,250	
		135,500	97,900	60,200	6,500	
		145,800	106,800	64,800	6,750	
		156,700	113,200	69,600	7,000	
		167,900	121,300	74,600	7,250	
		179,400	129,600	79,800	7,500	
		191,400	138,300	85,100	7,750	
		Greater	Greater	Greater	8,000	

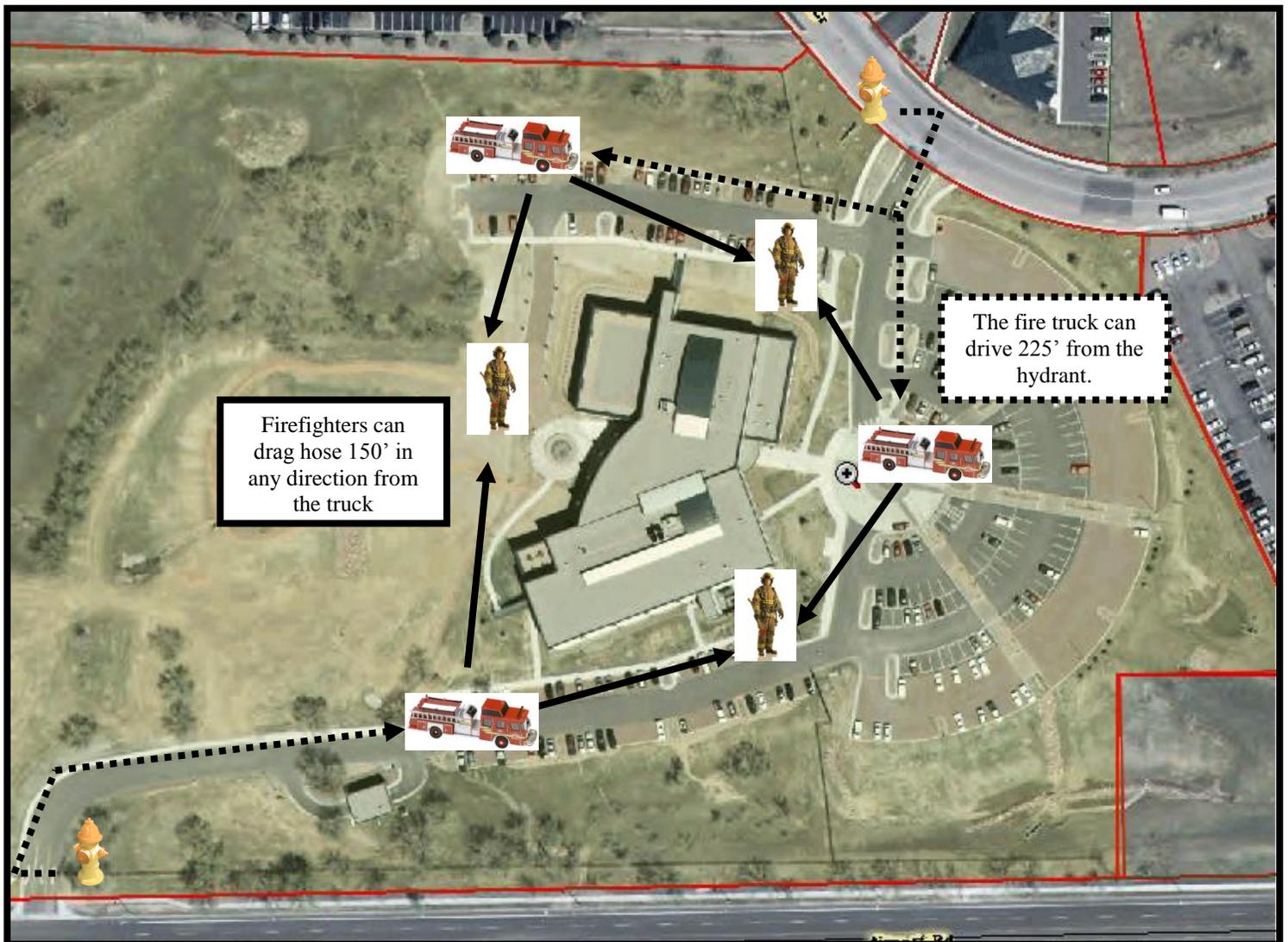
**Notes:** 1. The areas listed in this table represent the maximum allowable areas for the listed flow rates.  
2. Types of construction are based on the International Building Code

Table 2: Fire Hydrant Number & Distribution Requirements

FIRE FLOW REQUIREMENT (gpm)	MINIMUM Number of HYDRANTS	Average Spacing between Hydrants (feet)	Maximum Hose Lay Distance from Hydrant to Engine Stopping Point on a Drivable Surface (feet)
× 3.785 for L/min		× 0.3048 for meters	
1,750 or less	1	500	250
2,000 - 2,250	2	450	225
2,500 - 2,750	3	450	225
<b>3,000 - 3,250</b>	<b>3</b>	<b>400</b>	<b>225</b>
3,500 - 4,250	4	350	210
4,500 - 5,250	5	300	180
5,500 - 5,750	6	300	180
6,000 - 6,250	6	250	150
6,500 - 7,250	7	250	150
7,500 - 8,000	8	200	120

**Example Problem (Con't): Type V-B Construction Building, at 12, 000 square feet.**

1. Select the column for the Building Type (V-B)
2. Move down that column to your building square footage (12,000, which will round up to 13,400)
3. Follow that row to see what fire flow is required (3, 000 GPM)
4. Find your required fire flow in Table 2. \* If you have a required fire flow of 1,850 gpm, you need to round up to 2,000 gpm.
5. Follow that row for your hydrant requirements (3 hydrants required, spaced 400 ft apart, with a maximum hose lay of 225 ft)
6. What does this tell you? Your building needs to be accessible on all sides for firefighters. From the numbers you found in the chart, the following picture will explain how you can meet the access requirement.



## ATTACHMENT 4 - SUPPLEMENTAL INFORMATION

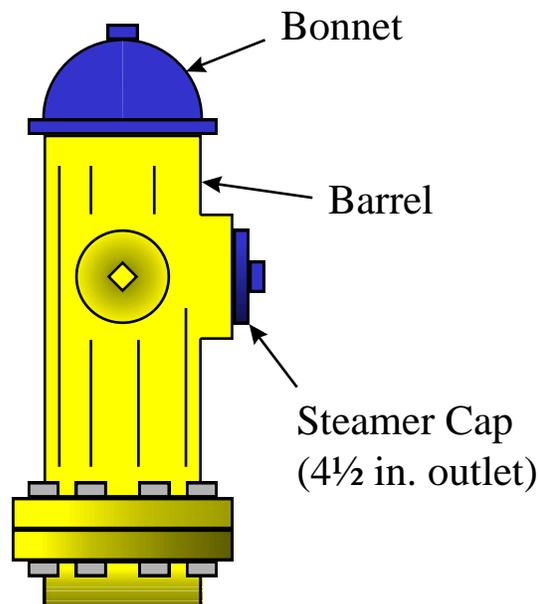
This information is provided to explain, in further detail, the requirements of CSFD.

### A. Hydrants.

1. **Colors and Painting.** Hydrant colors are based upon the available flow measured at 20 psi residual pressure under maximum day demand conditions. Due to the excellent water supply we enjoy in our community, we had to modify the National Standard somewhat. All hydrants, public or private, shall be painted in accordance with the table below. Also included for your convenience, are the manufacturers and specifications for the paint used on public hydrants. This is not to imply only these manufacturer's products are acceptable. Any manufacturer's products that are equivalent in color and quality are acceptable.

Fire Flows (gpm)	Color	Painted on:
0 - 499	Red	Bonnet
500 - 999	Orange	Bonnet
1,000 - 1,499	Green	Bonnet
1,500 - 3,000	Blue	Bonnet
Above 3,000	Blue	Bonnet & Steamer Cap
-	Yellow	Barrel

Color	Manufacturer	Specification
Red	Rustoleum	Safety Red #2163
Orange	Aervoe	Orange #305
Green	Aervoe	Fluor Green #184
Blue	Aervoe	Ford Blue #560
Yellow	Rustoleum	Equipment Yellow #2148



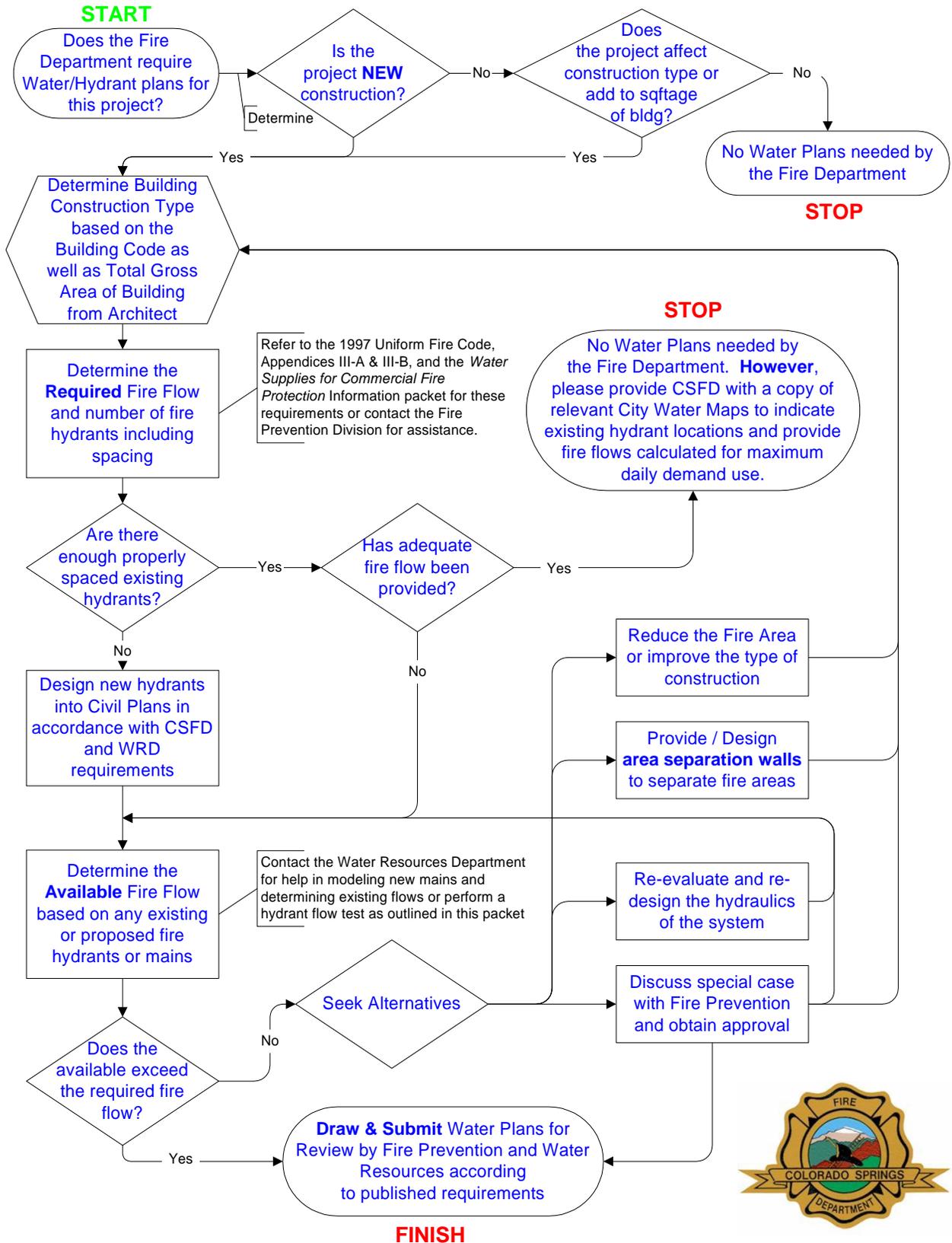
**2. FIRE LINES.**

Fire lines must be flushed and hydrostatically tested prior to the connection of any aboveground piping. Be advised the chlorination flush performed by Colorado Springs Utilities does not satisfy the requirements of the CSFD for flushing the fire lines, as it is not at the required 10 feet per second velocity. Please refer to NFPA 24 Installation of Private Fire Service Mains and Their Appurtenances for additional information. The table below is taken from NFPA 24 Installation of Private Fire Service Mains and Their Appurtenances to assist you in selecting the proper equipment to flush a fire line.

Fire Lines shall also be hydrostatically tested at a minimum of 200 psi or 50 psi over the static pressure for a minimum of 2 hours.

<i>Underground Pipe Size (in)</i>	<i>Required Flow Rate (gpm)</i>	<i>Hose/Pipe Sizes</i>					
		2½"	3"	4"	5"	6"	8"
4	390	1	1	1	-	-	-
6	880	2	2	1	1	1	-
8	1560	4	3	2	1	1	1
10	2440	6	4	3	2	1	1
12	3520	8	6	4	2	2	1

# ATTACHMENT 5 – FLOW CHART FOR WATER PLAN SUBMITTALS





# Water Plan Review Application

This form must be completed and attached to the front of plans

Initial Review     
  Re-Review     
  Overtime Review     
  Signatures

Date of Drop off: \_\_\_\_\_

Company Name: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Address: \_\_\_\_\_

Contact Person: \_\_\_\_\_

Company Phone: \_\_\_\_\_ Fax Number: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Type of Work:     
  Main Extension     
  Utility Service Plan     
  Hydrants/Water Plan

Fire Sprinklers:     
  Yes     
  No

Fire Flow Report:     
  Yes     
  No

Signature: \_\_\_\_\_

## THIS PLAN IS READY FOR PICK-UP

### THIS PLAN IS READY FOR PICK-UP

APPROVED/APPROVED AS CORRECTED  
 DISAPPROVED/WITHDRAWN  
 FEES DUE: \_\_\_\_\_

- Reviewer:      Withee       Embres       Other  \_\_\_\_\_

Comments:

**Please do not call our office regarding plan review comments until after pickup and review by your office.**

Plan Review Status/Comments available online at: [www.SpringsGov.com](http://www.SpringsGov.com)  
Follow Links "City Agency – Fire - Fire Code Enforcement - Plan Review Status"

**\*\* All plans remaining in our office more than 30 days will be discarded as abandoned.**