

### 3.6 Signature Blocks, Forms, and Notes

#### A. Colorado Springs Utilities Signature Blocks

**COLORADO SPRINGS UTILITIES  
WASTEWATER PLAN APPROVAL**

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT NUMBER: \_\_\_\_\_ WORK ORDER NUMBER: \_\_\_\_\_

CSU SHEET \_\_\_\_ OF \_\_\_\_

APPROVAL EXPIRES ONE (1) YEAR FROM THE DATE ABOVE AND RESUBMITTAL OF  
THESE PLANS FOR REVIEW AND APPROVAL IS REQUIRED IF CONSTRUCTION DOES  
NOT BEGIN DURING THIS PERIOD.

**COLORADO SPRINGS UTILITIES  
WATER PLAN APPROVAL**

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT NUMBER: \_\_\_\_\_ WORK ORDER NUMBER: \_\_\_\_\_

CSU SHEET \_\_\_\_ OF \_\_\_\_

APPROVAL EXPIRES ONE (1) YEAR FROM THE DATE ABOVE AND RESUBMITTAL OF  
THESE PLANS FOR REVIEW AND APPROVAL IS REQUIRED IF CONSTRUCTION DOES  
NOT BEGIN DURING THIS PERIOD.

**COLORADO SPRINGS UTILITIES  
COMMERCIAL UTILITY SERVICE PLAN APPROVAL**

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

PROJECT NUMBER: \_\_\_\_\_ WORK ORDER NUMBER: \_\_\_\_\_

CSU SHEET \_\_\_\_ OF \_\_\_\_

APPROVAL EXPIRES ONE (1) YEAR FROM THE DATE ABOVE AND RESUBMITTAL OF  
THESE PLANS FOR REVIEW AND APPROVAL IS REQUIRED IF CONSTRUCTION DOES  
NOT BEGIN DURING THIS PERIOD.

## B. Owner/Developer Signature Block

OWNER/DEVELOPER PLAN APPROVAL	
<p>THE UNDERSIGNED OWNER/DEVELOPER AGREES THAT THEY SHALL, AT THEIR EXPENSE, BE SOLELY RESPONSIBLE FOR 1) THE INSTALLATION OF THE PROPOSED UTILITY INFRASTRUCTURE IN ACCORDANCE WITH THESE PLANS, AND 2) ALL DAMAGES AND DEFECTS ARISING FROM, OR RELATED TO, THE INSTALLATION, MAINTENANCE OR OPERATION OF THE PUBLIC UTILITY INFRASTRUCTURE FROM THE DATE OF PRELIMINARY ACCEPTANCE FOR A PERIOD OF TWO YEARS, OR UNTIL FINAL ACCEPTANCE, WHICHEVER IS LATER.</p> <p>THE UNDERSIGNED UNDERSTANDS THAT ALL PRIVATE UTILITY INFRASTRUCTURE, AS INDICATED ON THESE PLANS, SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE MAINTAINED BY THE OWNER, AS REQUIRED BY COLORADO SPRINGS UTILITIES' LINE EXTENSION AND SERVICE STANDARDS.</p>	
<input type="checkbox"/> PUBLIC FACILITIES PROPOSED	<input type="checkbox"/> PRIVATE FACILITIES PROPOSED
SIGNED: _____ OWNER/DEVELOPER	DATE: _____
_____ OWNER/DEVELOPER (PRINT NAME)	
DBA: _____	
ADDRESS: _____ _____	
PHONE: _____	

## C. Fire Flow Information

### BUILDING DATA

BUILDING TYPE:  
 TYPE OF CONSTRUCTION:  
 LARGEST BUILDING SQUARE FOOTAGE:  
 REQ GPM FIRE FLOW:  
 REQ. MIN NUMBER HYDRANTS:  
 AVG. DIST. BETWEEN HYD:  
 MAX. HOSE LAY DIST.:  
 BUILDING SPRINKLED:  
 AREA SEPARATION/FIRE WALLS:

### FIRE FLOW

ACCORDING TO CALCULATIONS REVIEWED BY COLORADO SPRINGS UTILITIES, THE THEORETICAL AVAILABLE FIRE FLOW AT EACH FIRE HYDRANT NODE UNDER MAXIMUM DAY DEMAND CONDITIONS WITH A 20 PSI RESIDUAL IS AS FOLLOWS (ACTUAL FIRE FLOW MAY VARY DUE TO VARIOUS PARAMETERS):

NODE	FIRE FLOW (GPM)	PSI @ MDD

## D. CSFD Signature Block

### **CSFD ACCEPTANCE**

ALL FIRE HYDRANTS SHALL BE INSTALLED ACCORDING TO COLORADO SPRINGS UTILITIES' WATER LINE EXTENSION AND SERVICE STANDARDS.

THE NUMBER OF HYDRANTS AND HYDRANT LOCATIONS AS SHOWN ON THIS WATER PLAN ARE CORRECT AND ADEQUATE TO SATISFY THE FIRE PROTECTION REQUIREMENTS AS SPECIFIED BY THE CITY OF COLORADO SPRINGS FIRE DEPARTMENT.

SIGNED: \_\_\_\_\_  
CSFD, DIVISION OF THE FIRE MARSHAL

CSFD PLAN REVIEW NO.: \_\_\_\_\_

### **NOTICE OF FIRE SERVICE LINE INTEGRITY TEST:**

PRIOR TO ACCEPTANCE OF ANY FIRE SERVICE LINE BY THE COLORADO SPRINGS FIRE DEPARTMENT:

- ALL FIRE SERVICE LINES SHALL BE HYDROSTATICALLY TESTED AND FLUSHED PER COLORADO SPRINGS FIRE DEPARTMENT REQUIREMENTS
- ALL ACCEPTANCE TESTING OF WATER SUPPLY SYSTEMS FOR FIRE PROTECTION SHALL BE WITNESSED BY AN APPROVED COLORADO SPRINGS FIRE DEPARTMENT REPRESENTATIVE

#### PRESSURE TEST

PRESSURIZE THE FIRE SERVICE LINE FROM THE POINT OF CONNECTION AT THE MAIN TO THE POINT OF CONNECTION TO THE SPRINKLER SYSTEM AT 200 PSI, OR 50 PSI ABOVE STATIC PRESSURE FOR A MINIMUM OF 2 HOURS. THIS TEST IS BEST PERFORMED BEFORE COMPLETELY BACKFILLING SO THAT ALL JOINTS ARE EXPOSED.

#### FLUSH TEST

THE FIRE SERVICE LINE SHALL BE FLUSHED AT PER NFPA 24 "STANDARD FOR THE INSTALLATION OF PRIVATE FIRE SERVICE MAINS AND THEIR APPURTENANCES"

## **E. Utility Grade Review Signature Block**

### **UTILITY GRADE REVIEW**

CENTERLINE LINE AND GRADE IS REVIEWED FOR CONFORMANCE TO STANDARDS TO ALLOW FOR THE DESIGN AND CONSTRUCTION OF UTILITY MAINS. DRAINAGE FACILITIES DESIGN HAS BEEN CHECKED BY THE DESIGN ENGINEER TO AVOID CONFLICTS WITH UTILITY MAINS. THIS IS NOT A CURB & GUTTER REVIEW AND THE DEVELOPER WILL BE RESPONSIBLE FOR ANY COST DUE TO DESIGN CHANGES PRIOR TO CURB & GUTTER REVIEW. THIS REVIEW EXPIRES IN 180 DAYS.

SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_

## **F. Plan Information Block**

FIMS MAP NUMBER:

TAX SCHEDULE NO.:

PRESSURE ZONE:

MAX STATIC PRESSURE: XX PSI

UTILITY DESIGN CAD FILE NO.:

UAP FILE NO:

DEVELOPMENT PLAN NO.:

APPROVAL DATE:

PLAT REC. NO.:

PUBLIC UTILITY EASEMENT REC. NO:

NOTICE OF PRIVATE WASTEWATER SYSTEM REC. NO.:

NOTICE OF PRIVATE WATER SYSTEM REC. NO.:

**G. Notice of Private Water System**  
**NOTICE OF PRIVATE WATER SYSTEM**

This Notice of Private Water System, dated \_\_\_\_\_, 20\_\_\_\_, is executed by \_\_\_\_\_ as the present owner(s) of Lots \_\_\_\_\_ of the \_\_\_\_\_ Subdivision, City of Colorado Springs, El Paso County, Colorado, as reflected on the plat recorded at reception number \_\_\_\_\_ (or Book \_\_\_\_\_, Page \_\_\_\_\_) with the Clerk and Recorder of El Paso County, Colorado (the "Property").

All parties who now have, or who may hereafter acquire, any interest in the Property, or any portion thereof, are hereby notified that the Private Water System which services the Property is privately owned by the owner(s) of the Property, or any portion thereof, and such Water System shall continue to be so owned upon the sale or other transfer of all or any portion of the Property.

The Private Water System, for purposes of this notice, shall include, but is not limited to, all water pipes, valves, fire hydrants, conduits, and any other items (the "Improvements"), which are necessary in order to enable water to be transferred from Colorado Springs Utilities' (an enterprise of the City of Colorado Springs, a home rule city and municipal corporation) Public Water System to the Property, or any portion thereof, regardless of whether such items are located on the Property or within rights-of-way, easements, or roadways held by Colorado Springs Utilities, the City of Colorado Springs, or others.

Nothing contained in the Colorado Springs Utilities Water Line Extension and Service Standards shall require the owners of the Property to be responsible for any public water mains, public pipelines, or other public items, which are necessary to service properties other than, or in addition to, the Property.

Until such other agreement is reached by the owner(s) of the Property and properly recorded with the Clerk and Recorder of El Paso County, Colorado, all matters regarding the Private Water System, including, but not limited to, all repairs and maintenance, shall be borne and equitably shared by the owner(s) of the Property, or any portion thereof.

This Notice shall be deemed to run with the land and touch and concern the land.

Executed as of the date first written above.

Signed \_\_\_\_\_

For and on behalf of \_\_\_\_\_

STATE OF COLORADO        )  
  ) §  
COUNTY OF EL PASO )

The foregoing instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ by \_\_\_\_\_ . Witness my hand and official seal.

My Commission Expires: \_\_\_\_\_

## H. Water Plan Notes

### WATER PLAN NOTES

THE CONTRACTOR SHALL NOTIFY COLORADO SPRINGS UTILITIES' INSPECTIONS OFFICE (NORTH: 668-4396 OR SOUTH: 668-4658) A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

#### GENERAL:

1. ALL CONSTRUCTION METHODS AND MATERIALS SHALL MEET *COLORADO SPRINGS UTILITIES' WATER LINE EXTENSION AND SERVICE STANDARDS (WATER LESS)*.
2. THE CONTRACTOR SHALL OBTAIN LOCATES PRIOR TO ANY EXCAVATION.
3. COLORADO SPRINGS UTILITIES DOES NOT GUARANTEE THE ACCURACY OF LOCATIONS OF EXISTING PIPELINES, HYDRANTS, VALVES AND SERVICE LINES. IF FIELD CONDITIONS ARE FOUND TO BE DIFFERENT THAN SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE INSPECTOR AND THE ENGINEER OF RECORD IMMEDIATELY.
4. NO TREES OR STRUCTURES ARE PERMITTED WITHIN FIFTEEN FEET (15') OF A WATER MAIN.
5. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY FACILITIES AS A RESULT OF HIS ACTIONS. THE CONTRACTOR SHALL MAKE ALL THE REQUIRED REPAIRS IMMEDIATELY TO THE SATISFACTION OF COLORADO SPRINGS UTILITIES.
6. ALL FIELD STAKING SHALL COMPLY WITH THE *WATER LESS*.
7. THE CONTRACTOR SHALL MAKE THEIR BEST EFFORT TO ENSURE THAT WATER SERVICE TO ADJACENT PROPERTIES IS MAINTAINED DURING CONSTRUCTION.
8. CORROSION PROTECTION MEASURES SHALL COMPLY WITH THE *WATER LESS*.
9. NO SERVICE TAPS WILL BE ALLOWED UNTIL THE MAIN IS EXTENDED TO THE NEXT MAIN-LINE VALVE.
10. NO SERVICE TAPS SHALL BE MADE UNTIL AUTHORIZATION HAS BEEN GRANTED BY THE COLORADO SPRINGS UTILITIES' INSPECTOR.
11. ALL BENDS SHALL BE FIELD STAKED PRIOR TO CONSTRUCTION AND THE STATIONING ON THE FIELD STAKES SHALL MATCH THE STATIONING ON THE PLANS.
12. FIELD MODIFICATIONS TO A FIRE SERVICE LINE OR FIRE HYDRANT DESIGN OR LOCATION MAY NEED TO BE APPROVED BY THE DESIGN ENGINEER, COLORADO SPRINGS FIRE DEPARTMENT AND COLORADO SPRINGS UTILITIES, AS REQUIRED BY THE INSPECTOR.
13. REUSE OR SALVAGE OF ANY MATERIAL IS LEFT TO THE DISCRETION OF THE COLORADO SPRINGS UTILITIES INSPECTOR.
14. ALL TRENCH BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE *CITY OF COLORADO SPRINGS STANDARD SPECIFICATIONS MANUAL*.

**WATER PROJECT - SPECIFIC NOTES**

- | APPLICABLE                  | NOT-<br>APPLICABLE       |   |
|-----------------------------|--------------------------|---|
| 1. <input type="checkbox"/> | <input type="checkbox"/> | ANY EXISTING STUBS AND APPURTENANCES THAT WILL NOT BE USED SHALL BE REMOVED AND REPLACED WITH AN ACCEPTABLE SECTION OF MAIN AT THE EXPENSE OF THE CONTRACTOR.                           |
| 2. <input type="checkbox"/> | <input type="checkbox"/> | A CONNECTION TO AN EXISTING STUB IS PROPOSED. COLORADO SPRINGS UTILITIES DOES NOT GUARANTEE THE ACCURACY OF THE DEPTHS OR LOCATIONS OF EXISTING STUBS SHOWN ON ANY "AS-BUILT" DRAWINGS. |
| 3. <input type="checkbox"/> | <input type="checkbox"/> | A WATER STUB-OUT(S) IS/ARE PROPOSED. COLORADO SPRINGS UTILITIES DOES NOT GUARANTEE THAT THE DESIGN OR INSTALLATION OF THE PROPOSED WATER STUB-OUT WILL MEET FUTURE DEVELOPMENT NEEDS.   |
| 4. <input type="checkbox"/> | <input type="checkbox"/> | A WATER QUALITY PLAN HAS BEEN APPROVED FOR THIS PROJECT   |

## I. Utility Service Plan Notes

### UTILITY SERVICE PLAN NOTES

THE CONTRACTOR SHALL NOTIFY COLORADO SPRINGS UTILITIES' INSPECTIONS OFFICE (NORTH: 668-4396 OR SOUTH: 668-4658) A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION.

#### GENERAL:

1. ALL CONSTRUCTION METHODS AND MATERIALS SHALL MEET *COLORADO SPRINGS UTILITIES' WASTEWATER AND WATER LINE EXTENSION AND SERVICE STANDARDS (WATER/WASTEWATER LESS)*.
2. COLORADO SPRINGS UTILITIES DOES NOT GUARANTEE THE ACCURACY OF LOCATIONS OF EXISTING PIPELINES, MANHOLES, HYDRANTS, VALVES AND SERVICE LINES. IF FIELD CONDITIONS ARE FOUND TO BE DIFFERENT THAN SHOWN ON THE PLANS, THE CONTRACTOR SHALL NOTIFY THE INSPECTOR AND THE DESIGN ENGINEER IMMEDIATELY.
3. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO ANY UTILITY FACILITIES AS A RESULT OF HIS ACTIONS. THE CONTRACTOR SHALL MAKE ALL THE REQUIRED REPAIRS IMMEDIATELY TO THE SATISFACTION OF COLORADO SPRINGS UTILITIES.
4. ALL FIELD STAKING SHALL COMPLY WITH THE *WATER/WASTEWATER LESS*.
5. CORROSION PROTECTION MEASURES SHALL COMPLY WITH THE *WATER/WASTEWATER LESS*.
6. FINAL LOCATION OF ALL WASTEWATER AND WATER SERVICES SHALL BE APPROVED IN THE FIELD BY THE COLORADO SPRINGS UTILITIES INSPECTOR.
7. ALL TRENCH BACKFILL AND COMPACTION SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE *CITY OF COLORADO SPRINGS STANDARD SPECIFICATIONS MANUAL AND SECTION 5.18 OF THE WATER LESS*.

#### WASTEWATER:

1. SERVICE STUBS SHALL BE INSTALLED A MINIMUM OF SEVEN FEET (7') INTO THE PROPERTY, UNLESS OTHERWISE SHOWN, AND THE END OF THE STUB SHALL BE MARKED WITH A 2"X4"X12' STEEL OR WOODEN POST.
2. SERVICES SHALL BE CONNECTED A MINIMUM OF FIVE FEET (5') FROM THE OUTSIDE EDGE OF ANY MANHOLE ON THE MAIN LINE AND SHALL MAINTAIN TWO FEET (2') OF SEPARATION BETWEEN TAPS CENTER TO CENTER.
3. ALL CLEANOUTS SHALL BE THE SAME SIZE AS THE SERVICE LINE.
4. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT WHEN ANY SEPTIC TANK IS TO BE ABANDONED AND PAY ALL FEES NECESSARY TO OBTAIN A PERMIT.

#### WATER:

1. SERVICE STUBS SHALL BE INSTALLED WITH THE CURB STOP AT OR NEAR PROPERTY LINE AND SHALL NOT BE INSTALLED WITHIN DRIVEWAYS OR SIDEWALKS (SEE DETAIL DRAWING B2-3).
2. SERVICE TAPS SHALL BE MADE A MINIMUM OF THREE FEET (3') FROM THE BELL OR APPURTENANCE ON THE WATER MAIN. TAPS SHALL BE A MINIMUM OF THREE FEET (3') APART ON THE SAME SIDE OF THE WATER MAIN AND A MINIMUM OF ONE-AND-A-HALF FEET (1.5') WHEN TAPS ARE MADE ON OPPOSITE SIDES OF THE WATER MAIN.
3. ALL SERVICES FOR COMMERCIAL USE AND SOME RESIDENTIAL USES REQUIRE INSTALLATION OF A BACKFLOW PREVENTION ASSEMBLY IMMEDIATELY AFTER THE METER. THE BACKFLOW PREVENTION ASSEMBLY SHALL BE APPROVED BY THE FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH OF THE UNIVERSITY OF SOUTHERN CALIFORNIA (USC-FCCCHR) AND INSTALLED IN ACCORDANCE WITH THIS LISTING. PLEASE REFERENCE THE WATER LINE EXTENSION STANDARDS FOR ADDITIONAL REQUIREMENTS.
4. ALL TAPS ON COLORADO SPRINGS UTILITIES WATER MAINS SHALL BE PERFORMED BY COLORADO SPRINGS UTILITIES. ALL OTHER TAPS SHALL BE PERFORMED BY THE CONTRACTOR.
5. ANY ABANDONED SERVICES MUST BE PHYSICALLY DISCONNECTED AT THE MAIN. ANY NECESSARY REPAIRS TO THE MAIN AND/OR SHUT DOWN OF THE TAPPING VALVE SHALL BE AS DIRECTED BY COLORADO SPRINGS UTILITIES.

## J. Utilities Addressing Plan Checklist

### FORM 1

#### Utilities Addressing Plan Check List

- 1 Name of the Utilities Addressing Plan
- 2 Name and address of the legal owner and/or manager of the project.
- 3 Name and address of the preparer of the Utilities Addressing Plan
- 4 Date of preparation
- 5 North arrow
- 6 Vicinity Map
- 7 Graphic scale
- 8 Delinate all lands to be conveyed or reserved for public use or reserved for the common use of all property owners in the proposed subdivision/project.
- 9 The dimensions of the exterior boundary of the proposed project, which must be the result of a boundary survey. All lines are to be annotated with a bearing and distance. All curved lines should be annotated with a minimum of three curve elements. Non-tangent curves should have a bearing reference (i.e., bearing to radius point or chord bearing).
- 10 The dimensions of all interior streets and lots. All lines are to be annotated with a bearing and distance. All curved lines should be annotated with a minimum of three curve elements. Non-tangent curve should have a bearing reference (i.e., bearing to radius point or chord bearing).
- 11 Lot and block numbers
- 12 Dimensions sufficient to clearly locate and define the extents of all easements to allow for the final design of the associated utilities. Side and rear lot easements may be described as text rather than graphical if a blanket statement is possible.
- 13 Names of the public or private streets or other public or private ways. Any private street name shall be clearly labeled "Private".
- 14 Area in square feet of each lot within the Utilities Addressing Plan.
- 15 Addressing is complete and legible (If Addressing is obtained from the Enumerator prior to UAP submittal. Note: This will not speed up the processing as SU will need to get verification from Enumerator that addressing is correct).

---

UAP ID #

---

Utilities Addressing Plan Name

---

Checked by:

---

Date:

#### NOTES:

- 1) Although not a requirement for the acceptance or approval of a UAP, in the instances of multi-family, commercial, or industrial developments where the plans for the development have progressed to the point of having final building locations and configurations, this plan may (at the discretion of the submitter) accompany the UAP submittal to assist the enumerator in assigning addresses to the project.
- 2) A final plat document prepared in accordance with City of Colorado Springs specifications will be acceptable as a UAP document.

**K. Utilities Addressing Plan Submittal Form**

**FORM 2**  
**Colorado Springs Utilities**  
**Utilities Addressing Plan Submittal Form**

**UAP Number** \_\_\_\_\_ **Date** \_\_\_\_\_

**Project Name:** \_\_\_\_\_  
**Legal Description/Location:** \_\_\_\_\_

**Submitted By:** \_\_\_\_\_  
**Company Name:** \_\_\_\_\_  
**Company Address:** \_\_\_\_\_

**Contact Name:** \_\_\_\_\_  
**Telephone:** \_\_\_\_\_  
**Contact email address:** \_\_\_\_\_

**Resubmittal Date:**

**Processing Information**

**Received by:**  FIMS  Dev Services **Date Rec'd** \_\_\_\_\_

**Entry/Check by:** \_\_\_\_\_ **Date/Time** \_\_\_\_\_

**Notes:**

**Customer Copy of Addressing**  pickup  mail **Date:** \_\_\_\_\_  
**Utility Notification**  **Date:** \_\_\_\_\_

Rev 2.2 \*\* 11/01/2008

**L. Utility Design CAD File Submittal Form**

FORM 3 Colorado Springs Utilities <b>Utility Design CAD File Submittal Form</b>		
UDCF Number		Date <span style="border-bottom: 1px solid black;"></span>
UAP Number		
<b>Project Name:</b>		
Legal Description/Location:		
<b>Recorded Plat (Y/N)</b>		
<b>Submitted By:</b>		
Company Name:		
Company Address:		
<b>Contact Name:</b>		
<b>Telephone:</b>		
<b>Contact email address:</b>		
Resubmittal Date:		
<b>Acknowledgements</b>		
<p>By submitting the attached Utility Design CAD File (UDCF) the contact person (CUSTOMER) acknowledges that he/she is acting on behalf of the named organization and that he/she or the named organization has the <b>ownership rights</b> to the data contained in the attached CAD file.</p> <p>The CUSTOMER acknowledges the UDCF submitted to the City and SU herein are to be made available to the desktops of those SU employees performing system modeling and design work based on the UDCF and that this is to be accomplished using a high-speed communications network, personal computers, CAD and geographic information systems software.</p> <p>The CUSTOMER grants to the City and SU the right to use the data submitted to update FIMS' database and other facilities databases and records. SU may at a later date have the FIMS database and other Utilities databases and / or records, registered with the U.S. Copyright Office.</p> <p>The City and SU acknowledge that the data contained in the UDCF is design data and that the CUSTOMER is not responsible for any changes that occur in the construction phases of the named project.</p>		
Ver 2.1 ** 10/2008		

## M. Utility Design CAD File Recommended Feature Data

**Table A**

Recommended Feature Data	Residential	All Others	Recommended CAD Layer Name
Lot Lines	X	X	xx-lots-ln
Project Exterior Boundary Lines	X	X	xx-sub-bdy
Street Lines	X	X	xx-row-street
Easements	X	X	<b>see list below</b>
			xx-esmt-access
			xx-esmt-avig
			xx-esmt-drain
			xx-esmt-pub
			xx-esmt-scenic
			xx-esmt-trail
			xx-esmt-util
			xx-easmt-util-gas
			xx-easmt-util-elec
			xx-easmt-util-water
			xx-easmt-util-ww
			xx-esmt-util_drain
			xx-esmt-util_pub
			xx-esmt-util-misc
Building Footprints		X	xx-building-ftpnt
Water Lines	X	X	xx-water-line
Water Services	X	X	xx-water-serv
Water Valves		X	xx-water-valve
Fire Hydrants	X	X	xx-water-fh
Gas main lines (proposed)	X	X	pp-gas-line
Gas service lines (proposed)	X	X	pp-gas-stub
Electric lines (proposed)	X	X	pp-elec-line-ug (underground)
			pp-elec-line-ug (overhead)
Transformer Location		X	pp-elec-tr_pad
Elec sevice attachment points (proposed)		X	pp-elec-serv_att_pt
Secondary Electric		X	xx-electric-line-ug (overhead)
			xx-electric-line-ug (underground)
Sanitary Sewer Lines	X	X	xx-ww-line
Sanitary Sewer Manholes	X	X	xx-ww-mh
Sanitary Sewer Services	X	X	xx-ww-serv
Underdrains	X	X	xx-drain-udline
Storm Sewer Lines	X	X	xx-drain-line
Storm Sewer Inlets (Catch Basins)	X	X	xx-drain-catch
Curb Lines	X	X	xx-curb-back
			xx-curb-fl
			xx-curb-lip
Hard Surfaces (Paved Areas)		X	<b>see list below</b>
			xx-alley-pvd
			xx-drain-chan-lnd
			xx-drain-cross
			xx-drive-pvd

Recommended Feature Data	Residential	All Others	Recommended CAD Layer Name
			xx-parking-pvd
			xx-sidewalk-ln
			xx-street-pvd
			xx-trail-rec
Private Lighting		X	xx-landscape-light
Private Signs		X	xx-sign-post
Grading / Contours		X	xx-cont-index
			xx-cont-int
Project Phase Lines		X	xx-devel-phase
Existing Adjacent Utilities (non SU)		X	<b>see list below</b>
			xx-phone-serv
			xx-phone-line-oh (overhead)
			xx-phone-line-ug (underground)
			xx-phone-mh
			xx-phone-pole
			xx-phone-riser
			xx-phone-vault
			xx-pipeline-oh (overhead)
			xx-pipeline-ug (underground)
			xx-tower-loc
			xx-catv-line-oh (overhead)
			xx-catv-line-ug (underground)
			xx-catv-riser
			xx-fibop-line
			xx-fibop-box
<b>Annotation</b>			
Lot Dimensions	X	X	xx-lot-anno
Lot/ Block Numbers	X	X	xx-lots-anno
Addresses	X	X	xx-building-add

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## CHAPTER 4

### Approved Materials

#### 4.1 General

The purpose of Chapter 4 of these Water Line Extension & Service Standards (*Water LESS*) is to establish the material Specifications for pipe, pipe fittings, hydrants and appurtenances used within the Colorado Springs Utilities Water System (including private systems served by Colorado Springs Utilities).

All material to be used within the Colorado Springs Utilities Water System shall be designed and constructed in accordance with these *Water LESS*, and all applicable industry standards, such as AWWA, ANSI, ASTM, etc.

All materials shall conform to these materials Specifications and to all limitations on acceptable make, style and Approved Manufacturers. For actual detailed material specification of an approved product contact Colorado Springs Utilities. Material Safety Data Sheets (MSDS) shall be supplied with all materials when required.

Note that some technical information, weights, and dimensions vary with each manufacturer and may be slightly different than what is listed in this Chapter.

#### 4.2 Materials and Testing

This chapter of approved materials does not include all materials approved by Colorado Springs Utilities due its large inventory of small parts; therefore any materials not listed, must first be verified that it has been tested and approved by Colorado Springs Utilities, before being used in the Water Distribution System.

If Colorado Springs Utilities deems that a new water industry product or material has some merit, it will establish the criteria for testing or evaluating the product. New products or materials will be installed and tested by Colorado Springs Utilities, who reserves the right to accept or reject any product or material regardless of the test results.

All pipe and materials utilized in the Water Distribution System shall be Ductile Iron Pipe Sized (DIPS), Cast Iron Pipe size (CI) or Copper Tube Sized (CTS). Any other proposed material must be evaluated and accepted by Colorado Springs Utilities prior to use.

Where no manufacturer is specified, any product that meets the specification may be used.

All Materials used in the Water Distribution System must comply with *NSF 61* regulations. All pipe, fittings, fixtures, solder and flux including all valves, fittings, hydrants and appurtenances or parts made from a brass or bronze component used in the Potable Water System for permanent or temporary water supply for human consumption shall be constructed of a *UNS* Copper Alloy or “No-Lead Brass” and shall be in compliance with the *Safe Drinking Water Act, Federal Public Law 111-380*, effective 1-04-2014.

#### 4.3 Pressure Classes

Water Main materials and thicknesses shall meet the internal pressure requirements for maximum static pressure and occasional surge conditions dictated in the table below.

Reoccurring surge should be evaluated in areas where the operation of pumps and or valves

causes frequent surges in the Water System. Materials and thickness shall also be designed for trench loads including earth loads and any anticipated live loads. Additional factors that should be considered when choosing materials include the presence of Contaminants, geotechnical concerns, corrosivity of the soil, and any other conditions which may affect material longevity.

The following chart shall be used for determining the appropriate pipe material based on Maximum Static Pressure and Occasional Surge Pressure for the proposed Water System (calculations were made in accordance with AWWA C150, C900, C905, C906, and ASTM F714. See Section 2.6B- for design information.

### Water Main Materials and Pressure Classes

Pipe Material	Nominal Size	DR	Max Working Pressure	Pressure Class
	inches		psi	psi
PVC C900	4-12	14	170	305
PVC C905	16-24	18	170	235
HDPE PE4710	4-24	9	200	250
DIP	4- 24*	NA	250	350

Note: 3, 10 and 18 inch pipe sizes are not allowed for use in Colorado Springs Utilities Water System.

\* Pipelines larger than 24 inches shall be constructed of Ductile Iron Pipe (DIP) or Steel pipe. Calculations for the thickness of DIP or steel pipelines larger than 24 inches shall be provided to Colorado Springs Utilities for review.

When steel is utilized in the Water System it shall be designed by a qualified Design Engineer and in accordance with AWWA M-11 Steel Pipe a Guide for Design and Installation.

Definitions applying to this Chapter 4:

Pressure Class: The design capacity to resist Working Pressure.

Working Pressure: Maximum internal pressure exerted under normal operating conditions

Surge Pressure: Internal pressure in excess of the Working Pressure caused by rapid changes in pipeline flow velocity also includes Occasional Surge Pressure.

Working Pressure: The Manufacturer tested psi rating of a pipe, valve or fitting for use in a Water System.

#### Flanges

All flanges, unless otherwise specified, will be *Class 125/ANSI 150* or *Class 250 /ANSI 300* per these *Water LESS*.

#### Valves

Due to high pressures in the Colorado Springs Utilities Water Distribution System, all valves shall be rated for a minimum Working Pressure of 250 psi. At times this will necessitate the use of a class 250 valve body with an ANSI 150 bolt hole pattern flange.

## 4.4 Water Main Materials

### A. Pipe Bedding

#### 1. Well Graded Sand

##### General

The bedding material shall be a clean, non-corrosive, well-graded sand or other approved material as determined by the Inspector. The well-graded sand shall have the following gradation limit when tested by means of laboratory sieves:

<b>WELL-GRADED SAND</b>	
<b>Sieve Size</b>	<b>Total Percent Passing by Weight</b>
3/8 Inch	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10

## B. Pipe

### 1. Ductile Iron Pipe -Slip Joint

Approved Manufacturer(s): N/A



**General:** All ductile iron pipe shall be manufactured in accordance with *AWWA C151*, with the following additional requirements or exceptions for slip joint pipe:

**Size(s):** This specification shall cover ductile iron pipe in 4, 6, 8, 12, 16, 20, 24, 30, 36 and 42-inch nominal diameters. Note that 3, 10 and 18 inch pipe sizes are not allowed for use in Colorado Springs Utilities Water System.

**Pressure Class:** Pipes 4 inch thru 24 inch shall conform to pressure class 350 as defined in *AWWA C150* and *C151*, Pressure Class for pipes greater than 24 inch shall be calculated utilizing the Working Pressure and a Surge Pressure of 1.5 times maximum static pressure per *AWWA C150*.

Pipe is available with thicknesses greater than Pressure Class 350. Higher pressure class pipe will be required when Colorado Springs Utilities or the Design Engineer determines that internal pressure, excessive dead load or other conditions warrant increased wall thickness.

#### **Specifications:**

**Joint Type.** “Push-on single gasket” type conforming to applicable requirements of *AWWA C111*.

Where flanged fitting are used the lowest nominal thicknesses shall meet *ANSI/AWWA C115/A21.15*.

Pipe with grooved and shouldered joints may be used only at the discretion of Colorado Springs Utilities and in accordance to *ANSI/AWWA C606*.

**Pipe Length.** Pipe furnished under this specification shall have normal laying lengths of either 18 feet or 20 feet.

**Material Strength.** Iron used in the manufacture of pipe furnished under this specification shall be grade 60/42/10:

Minimum tensile strength: 60,000 psi

Minimum yield strength: 42,000 psi

Minimum elongation: 10%

**Cement Mortar Lining.** Pipe furnished under this specification shall have standard thickness cement mortar linings in accordance with *AWWA C104/A21.4*.

#### **Installation:**

**Pipe Lubricant.** Joint lubricant may be supplied by the pipe manufacturer or purchased separately. Joint lubricant shall be non-toxic and water-soluble and meet current *EPA* and *NSF* Standards.

## 2. Ductile Iron Pipe Restrained Joint

### Approved Manufacturer(s):



- US Pipe – TR Flex
- Pacific States – Thrust-Lock
- Griffin Pipe – Snap-Lok
- American – Flex-Ring

**General:** All ductile iron restrained joint pipe shall be manufactured in accordance with *AWWA C151*, with the following additional requirements or exceptions for restrained joint pipe:

**Size(s):** This specification shall cover ductile iron pipe in 4, 6, 8, 12, 16, 20, 24, 30, 36, 42, 48, 54, 60 and 64-inch nominal diameters.

### Specifications:

**Joint Type.** “Restrained push-on single gasket” type conforming to applicable requirements of *AWWA C111*.

**Class and Type.** Pipe furnished under this specification shall conform to the pressure classes as shown in *AWWA C150* and *C151*

**Pipe Length.** Pipe furnished under this specification shall have normal laying lengths of either 18 feet or 20 feet.

**Material Strength.** Iron used in the manufacture of pipe furnished under this specification shall be grade 60/42/10:

Minimum tensile strength: 60,000 psi

Minimum yield strength: 42,000 psi

Minimum elongation: 10%

**Cement Mortar Lining.** Pipe furnished under this specification shall have standard thickness cement mortar linings in accordance with *AWWA C104/A21.4*.

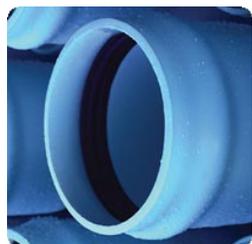
**Bell Type Restrained Joint.** Bell Type Restrained Joint Pipe shall incorporate an MJ type socket with an MJ restraint.

### Installation:

**Pipe Lubricant.** Joint lubricant shall be supplied by the pipe manufacturer or purchased separately. Joint lubricant shall be non-toxic and water-soluble and meet current *EPA* and *NSF* Standards.

### 3. Polyvinyl Chloride (PVC) C900 Pressure Pipe

#### Approved Manufacturer(s);



- **Diamond Plastics Corporation** “Diamond PVC Pipe”.
- **JM/Eagle Manufacturing** “Blue Brute” PVC water pipe.
- **Vinyltech PVC pipe**
- **North American Pipe Corporation**
- **Pipelife Jet Stream**

**General:** All PVC pipe shall be manufactured in accordance with *AWWA C900*, with the following additional requirements or exceptions:

**Size(s):** This specification shall cover PVC pipe in 4, 6, 8 and 12-inch nominal diameters with equivalent Cast Iron Outside Diameters (CIOD).

**Pressure Class:** Pipe shall be Pressure Class 305 (DR-14),  
(Factory Mutual (FM) rating = 200 psi)

Note: C900 PVC pipe is to be used only to 170 psi in the Colorado Springs Water Systems

**Material(s):** PVC Pipe materials shall be manufactured in accordance with *AWWA C900*, made from class 12454 A or 12454 B virgin compounds as defined in *ASTM D1784*. All compounds shall qualify for a rating of 4000 psi for water at 73.4° F (23° C) per the requirements of *PPI TR-3* as well as be *NSF 61* approved.

#### Specifications:

**Joint Type.** Slip joints shall be made using an integral bell with an elastomeric gasket push-on type joint or using machined couplings of a sleeve type with rubber ring gaskets and machined pipe ends to form a push-on type joint. Elastomeric Gaskets shall conform to *ASTM F477*.

**NOTE:** Pipelife Jet Stream pipe has a deeper bell; home line must be adjusted when using another manufacturer’s pipe.

**Pipe Length.** Each length of pipe will be a standard laying length of 20 feet. Random lengths shall not be acceptable, unless approved by the Inspector.

**Dimensions** (Average) Cast Iron Sized (CIOD)

Nominal Pipe Size (In.)	Outside Dia. (In.)	Inside Dia. (In.)
4”	4.80	4.07
6”	6.90	5.86
8”	9.05	7.68
12”	13.20	11.20

**Color(s):** Blue-Potable

Purple- Nonpotable

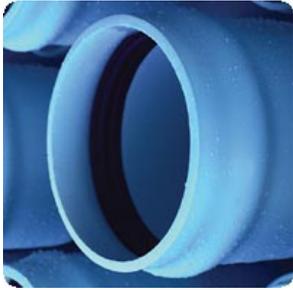
#### Installation:

**Pipe Lubricant.** Joint lubricant shall be supplied by the pipe manufacturer or purchased separately. Joint lubricant shall be non-toxic and water-soluble and meet current *EPA* and *NSF* Standards.

**Note:** C909 pipe is not accepted in Colorado Springs Utilities' Water Distribution System.

#### 4. Polyvinyl Chloride (PVC) C905 Pressure Pipe

##### Approved Manufacturer(s).



- **JM/Eagle Manufacturing**  
“Big Blue” PVC water pipe.
- **North American Pipe Corporation**
- **Northern Pipe Products**

##### **General:**

All PVC pipe shall be manufactured in accordance with *AWWA C905*, with the following additional requirements or exceptions:

**Size(s):** This specification shall cover PVC pipe in 16, 20 and 24 -inch nominal diameters with equivalent Cast Iron Outside Diameters (CIOD).

**Pressure Class:** All PVC 16-24 inch pipe shall be Class 235 (DR-18)

Note: C905 PVC pipe is to be used only to 170 psi in the Colorado Springs Water Systems.

**Material(s):** PVC Pipe materials shall be manufactured in accordance with *AWWA C905*, made from class 12454 A or 12454 B virgin compounds as defined in *ASTM D1784*. All compounds shall qualify for a rating of 4000 psi for water at 73.4° F (23° C) per the requirements of *PPI TR-3* as well as be *NSF 61* approved.

##### **Specifications:**

**Joint Type.** Pipe joints shall be made using an integral bell with an elastomeric gasket push-on type joint or using machined couplings of a sleeve type with rubber ring gaskets and machined pipe ends to form a push-on type joint. Elastomeric Gaskets shall conform to *ASTM F477*.

**Pipe Length.** Each length of pipe will be a standard laying length of 20 feet. Random lengths shall not be acceptable, unless approved by the Inspector.

**Pipe Dimensions.** (Average) 235 PSI (DR18)

Pipe Size (In.)	Outside Dia. (In.)	Nom. Inside Dia. (In.)
16”	17.40	15.35
20”	21.60	19.06
24”	25.80	22.76

**Color(s):** Blue-Potable Water

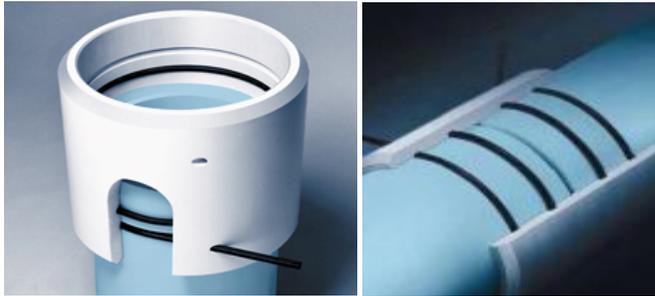
Purple- Nonpotable Water

##### **Installation:**

**Pipe Lubricant.** Joint lubricant shall be supplied by the pipe manufacturer, and approved by Colorado Springs Utilities. Joint lubricant shall be non-toxic and water-soluble and meet current *EPA* and *NSF* Standards.

## 5. Restrained Joint Polyvinyl Chloride (PVC) Pressure Pipe and Fittings

### Approved Manufacturer(s):



- **North American Specialty Products, “Certa-Lok” C900/RJ** PVC restrained joint municipal water pipe. DR14 (305 psi)

**General:** All PVC pipe shall be manufactured in accordance with *AWWA C900*, with the following additional requirements or exceptions:

**Size(s):** This specification shall cover restrained joint PVC pipe in 4, 6, 8 and 12-inch nominal diameters with cast iron equivalent outside diameters.

**Pressure Class:** All sizes of pipe shall be Pressure Class 305 (DR-14) per manufactured in accordance with *AWWA C900*.

Note: C900 PVC pipe is to be used only to 170 psi in the Colorado Springs Water Systems.

### **Material:**

PVC Pipe materials shall be made from class 12454 A or 12454 B virgin compounds as defined in *ASTM D1784*. All compounds shall qualify for a rating of 4000 psi for water at 73.4° F (23° C) per the requirements of *PPI TR3* and complies with *NSF 61* for Potable Water Service.

### **Specifications:**

**Joint Type.** Pipe joints shall be non-metallic restrained joint design by utilizing precision-machined grooves on the pipe and in the coupling. When aligned, a nylon spline is inserted, resulting in a fully circumferential restrained joint that locks the pipe and coupling together. A flexible elastomeric seal (o-ring) in the coupling provides a hydraulic pressure seal. Elastomeric Gaskets shall conform to *ASTM F477*.

**Pipe Length.** Each length of pipe will be a standard laying length of 20 feet. Random lengths shall not be acceptable, unless approved by the Inspector.

**Color.** Blue

### **Installation:**

**Pipe Lubricant.** Joint lubricant shall be supplied by the pipe manufacturer, and approved by Colorado Springs Utilities. Joint lubricant shall be non-toxic and water-soluble and meet current *EPA* and *NSF* Standards.

**Note:** Used only in special conditions as determined by Colorado Springs Utilities.

## 6. High Density Polyethylene Pipe (HDPE)

### Approved Manufacturer(s):



- **CPChem™ – Performance Pipe - Driscoplex™ 4000 Piping for Potable Water Distribution and Transmission.**
- **WL Plastics Corporation – Blue striped WL HDPE pipe**
- **Dura-Line-PolyPipe.**
- **+GF+ Georg Fischer Central Plastics, LLC Company- acquired IPPI- Independent Pipe Products, Inc. – Design-Flow**
- **JM Eagle**

### General:

All High Density Polyethylene Pipe (HDPE) pipe shall be manufactured in accordance with *AWWA C906*, and *ASTM F714*, with the following additional requirements or exceptions:

**Size(s):** This specification shall cover HDPE DR9 pipe in 4, 6, 8, 12, 16, 20 and 24 inch nominal diameter with ductile iron pipe size (DIPS) equivalent outside diameters.

**Pressure Class:** All HDPE pipe shall be DR9 PE4710.

Note: HDPE pipe is to be used only to a maximum Working Pressure of 200 psi in the Colorado Springs Water Systems.

**Material:** Black PE materials used for the manufacture of HDPE pipe and fittings shall be PE4710 high density polyethylene meeting *ASTM D3350* cell classification 445574C and the Manufacturer shall be listed in the Plastic Pipe Institute (PPI) TR-4. The HDPE pipe or fitting shall have a standard grade HDB rating of 1600 psi at 73°F per *ASTM D2837*. Colored HDPE material, when used, shall meet the same *ASTM D3350* cell classification 445574C. HDPE material shall be listed and approved for Potable Water in accordance with NSF 61. The manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.

### Specifications:

The manufacturer shall have manufacturing and quality assurance facilities capable of producing and assuring the quality of the pipe and fittings required by these Specifications. Colorado Springs Utilities shall approve qualified manufacturers.

Joint Type. HDPE pipe shall be joined by thermal butt fusion or mechanical joint.

Pipe Length. Each length of pipe will be a standard laying length of 40 feet. Random lengths shall not be acceptable, unless approved by the Inspector.

Pipe Dimensions. (Average) 250 PSI (DR9) Matching DIP Outside Diameters

Size of pipe	Nominal DIPS OD (in)	Minimum Wall (in)	Average ID (in)
4"	4.80	0.533	3.67
6"	6.90	0.767	5.274
8"	9.05	1.006	6.917
12"	13.20	1.467	10.090
16"	17.40	1.933	13.302
20"	21.60	2.400	16.512
24"	25.80	2.867	19.722

Pipeline Identification. Permanent identification of piping shall be provided by co-extruding multiple equally spaced color stripes into the pipe outside surface or by solid colored pipe shell, or colored print line. The striping material shall be the same material as the pipe material except for the color. The following colors shall be used to identify the various piping within the Colorado Springs Utilities Water Distribution System:

- Blue for Potable Water
- Purple for Nonpotable Water

Note: Plain Black HDPE Pipe without color code markings may not be used in the Colorado Springs Water Distribution System.

## 7. Steel Pipe

### Approved Manufacturer(s):



**Vender Supplied per engineered  
Project Specifications**

**General:** All steel pipe, fittings and specials (specials-are designed and specially fabricated steel fittings) shall be designed and fabricated in accordance with *AWWA C200, C208* and *AWWA M-11 Steel Pipe Manual*, and the requirements on the drawings.

**Approvals:** Steel pipe layout and design will require review and approval by Colorado Springs Utilities prior to submittal for fabrication. Any time a design involves steel pipe (installing new steel, replacing or retiring existing steel, or transitions between PVC, DIP and steel) a review shall be done by the Colorado Springs Utilities

**Size(s):** Colorado Springs Utilities' requirements for nominal diameter of fabricated steel pipe shall be as follows:

4 through 12-inch - ID (Inside Diameter),  
14 and Greater - OD (Outside Diameter),

Specified pipe shall be to the nominal inside or outside diameter of the pipe as indicated above. Minimum wall thickness shall be designed based *AWWA M11* and shall be no less than 0.25 inch minimum wall thickness.

**Drawings:** Complete Shop Drawings, design drawings, and Specifications shall be submitted to Colorado Springs Utilities for approval prior to any fabrication. Steel pipe, fittings, and specials shall be fabricated to the sizes, dimension, and shapes as indicated in the Shop Drawings.

**Material:** All material used shall be acceptable per *ASTM A283*, Grade C or D. Mill pipe shall meet *ASTM A53* grade B or *ASTM A139* grade B.

When mating to flat faced ductile iron or cast flanges, all steel flanges shall be flat faced and manufactured in accordance with *AWWA C207* Class E.

Built-up ends and harness lugs shall be a part of the fabrication as indicated on the Shop Drawings.

**Specifications:**

Protective Coatings. All steel pipe, fittings, and specials shall be prepared, primed, lined, coated, painted or wrapped as hereinafter specified. Exterior Surfaces in Interior Locations. Exterior surfaces of all pipe, fittings, specials, flanges and accessories exposed in interior locations shall be thoroughly cleaned by sand-blasting and given a prime coat of rust inhibitive, lead and chromate free, primer, with a minimum thickness of 2 mils. Primer shall be Tnemec 37 Chem Prime or equal.

Exterior Surfaces Underground. Exterior surfaces of all pipe, fittings, and specials which are to be installed underground shall be cleaned by sand-blasting, primed and coated with a shop applied tape coating system in accordance with *AWWA C214*. Alternatively, a plural component polyurethane coating system in accordance with *AWWA C222* with a minimum 30 mils Dry Film Thickness (DFT) may be used.

When underground pipe extends through a concrete vault wall, the coating shall terminate at a minimum of 1-inch inside the edge of the vault wall.

Coating shall be held back a minimum of 6-inches from ends of pipe to be mechanically coupled or welded.

Interior Surfaces. The interior of all steel pipe, fittings and specials shall be sandblasted, primed and lined with one of the following *NSF 61* approved coatings:

- Cement Mortar in accordance with *AWWA C205*
- Liquid Epoxy according to *AWWA C210*
- Plural Component Polyurethane coating system in accordance with *AWWA C222* with a minimum 30 mils DFT.
- 

Colorado Springs Utilities reserves the right to specify which type of lining is to be used. No coal tar shall be used as a coating inside the pipe.

Welding. All shop fabricated welding shall be in compliance with *AWWA C200*

Testing. All pipe sections shall be hydrostatically tested in accordance with *AWWA C604*.

**Installation:**

All field welding shall be in compliance with *AWWA C206*, and *AWS D1.1*.

All welders involved with field welding shall be certified in welding procedures in accordance with *AWWA C206* and *AWS D1.1*.

Coat exterior pipe joints and unwrapped sections of pipe with a heat shrinkable sleeve in accordance with *AWWA C216*.

Quality Control. All welds for steel pipe, fittings, and specials shall be performed under the supervision of a certified welding inspector and non-destructively tested in accordance with *AWWA C200*. All test records and data shall be submitted to Colorado Springs Utilities before acceptance of the materials. All newly installed pipeline shall be hydrostatically tested and pass a leakage test prior to acceptance.