

5325 S. VALENTIA WAY

A PART OF DENVER TECHNOLOGICAL CENTER SUPERBLOCK J,
 LOCATED IN SECTION 16, TOWNSHIP 5 SOUTH,
 RANGE 67 WEST OF THE 6TH PRINCIPAL MERIDIAN
 CITY OF GREENWOOD VILLAGE, COUNTY OF ARAPAHOE, STATE OF COLORADO

STANDARD ABBREVIATIONS

AC	- ASPHALTIC CONCRETE
BCR	- BEGINNING OF CURB RETURN
BM	- BENCH MARK
BW	- BOTTOM OF WALL
C1	- CURVE LABEL (SEE CURVE TABLE)
CL	- CENTER LINE
CP	- CONTROL POINT
CPP	- CORRUGATED PLASTIC PIPE
DIA	- DIAMETER
E	- ELECTRIC
EL	- ELEVATION
EXIST	- EXISTING
FF	- FINISHED FLOOR
FG	- FINISHED GRADE
FL	- FIRE HYDRANT
FL	- FLOW LINE
G	- GAS
MH	- MANHOLE
RCP	- REINFORCED CONCRETE PIPE
SAN	- SANITARY
SF	- SQUARE FOOTAGE
STM	- STORM
T	- TELEPHONE
TC	- TOP OF CURB
TW	- TOP OF WALL
TYP	- TYPICAL
W	- WATER

LEGEND

SYMBOL	DESCRIPTION
	FIRE HYDRANT
	OPEN GATE VALVE
	BUTTERFLY VALVE
	TAPPING SLEEVE & VALVE
	ABANDONED
	PROPOSED FIRELINE
	PROPOSED HYDRANT LINE
	PROPOSED DOMESTIC LINE
	EXISTING DOMESTIC LINE
	EXISTING FIRELINE
	3" WATER
	6" WATER
	EXISTING 12" WATER
	EXISTING WATER CONDUIT
	EASEMENT
	EXISTING WATER METER IN MANHOLE
	PROPERTY LINE
	EXISTING OPEN GATE VALVE
	PROPOSED CORP STOP
	PROPOSED CURB STOP
	PROPOSED WATER METER IN MANHOLE
	TRANSITION COUPLING
	BACKFLOW PREVENTER - REDUCED PRESSURE
	BACKFLOW PREVENTER - DOUBLE CHECK (LOW HAZARD)



VICINITY MAP

1"=1000'

00001 - FIRE (Corey Stanley)
 Fire flow for the V-B 13,215 sq ft building is 3,000 GPM. Sprinklers are being provided and allow the fire flow to be reduced to 1,500 GPM. One hydrant is required on a 500-foot average spacing.



SHEET INDEX

- COVER SHEET
- GENERAL NOTES SHEET
- WATER ONLY PLAN
- OVERALL UTILITY PLAN
- DETAILS
- DETAILS

MATERIALS LIST

DESCRIPTION	QTY.	UNIT
FIRE HYDRANT ASSEMBLY (INCL. 6" GATE VALVE AND BOX)	1	EA
12"x6" TAPPING SLEEVE	1	EA
6" GATE VALVE	2	EA
6" BUTTERFLY VALVE	1	EA
6" TAPPING VALVE	1	EA
6" DI	101	LF
2" DI	113	LF
2" WATER METER	1	EA
2" RP BACKFLOW PREVENTER	2	EA
12"x6" SWIVEL TEE	1	EA
12" GATE VALVE	1	EA
12" TRANSITION COUPLING	2	EA
48LB MAGNESIUM ANODE	2	EA
12" PVC	6	LF
CURB STOP	1	EA
CORP STOP	1	EA
90° 6" BEND	1	EA
11 1/2" 6" BEND	1	EA

Fire hydrants shall be installed according to Denver Water Standards. The number and location(s) of fire hydrant(s) and fire flow as shown on this water main installation is correct as specified by the _____ Fire Department.

Signature of Fire Chief or Designated Representative _____
 Date Signed _____ gpm fire flow

FIRE FLOW DATA:

FIRE FLOW REQUIREMENTS ARE 2,500 GPM
 THIS BUILDING REQUIRES 2 FIRE HYDRANTS TO MEET FIRE FLOW REQUIREMENTS
 EACH FIRE HYDRANT MUST SUPPLY 1500 GPM MINIMUM @ 20 PSI RESIDUAL PRESSURE

CODE USED FOR ANALYSIS: NFPA 13, 2007 EDITION

OCCUPANCY GROUP: MERCANTILE

CONSTRUCTION TYPE: II-B

FIRE AREA: ENTIRE BUILDING, 7,379 SQ. FT.

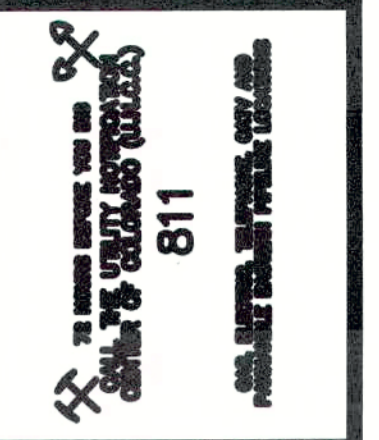
THIS BUILDING IS FULLY SPRINKLERED

LEGAL DESCRIPTION:

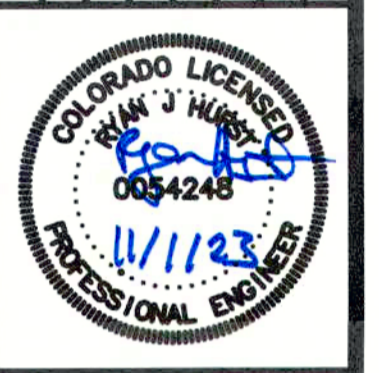
A PART OF LOT 2, BLOCK 3, IN A RESUBDIVISION OF BLOCK 2, DENVER TECHNOLOGICAL CENTER AND BLOCK 5, DENVER TECHNOLOGICAL CENTER FILING NO. 2 MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE POINT OF INTERSECTION BETWEEN THE CENTERLINES OF EAST PRENTICE AVENUE AND SOUTH VALENTIA WAY;
 THENCE SOUTHERLY ALONG SAID CENTERLINE OF SOUTH VALENTIA WAY, 354.04 FEET;
 THENCE ON AN ANGLE TO THE RIGHT OF 77°11'47", A DISTANCE OF 33.84 FEET TO THE TRUE POINT OF BEGINNING, WHICH IS ALSO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF SOUTH VALENTIA WAY;
 THENCE CONTINUING ALONG THE LAST MENTIONED COURSE AN ADDITIONAL DISTANCE OF 198.35 FEET;
 THENCE ON AN ANGLE TO THE RIGHT OF 90°, A DISTANCE OF 140.00 FEET;
 THENCE ON AN ANGLE TO THE RIGHT OF 90°, A DISTANCE OF 230.19 FEET TO A POINT SAID WESTERLY RIGHT-OF-WAY LINE OF SOUTH VALENTIA WAY;
 THENCE ON AN ANGLE TO THE RIGHT OF 102°48'13" AND ALONG SAID RIGHT-OF-WAY, 143.57 FEET THE TRUE POINT OF BEGINNING,
 COUNTY OF ARAPAHOE,
 STATE OF COLORADO.

BENCHMARK:

ARAPAHOE COUNTY BENCHMARK UAP13, BEING A 3.25" ALUMINUM CAP STAMPED "2010 PLS 30822". LOCATED AT THE NORTHWEST CORNER OF EAST BELLEVUE AVENUE AND SOUTH MONACO STREET, AT THE SOUTHEAST FENCE CORNER. ELEVATION 5592.29' NAVD88.



NO.	DESCRIPTION	DATE	BY



HURST & ASSOCIATES, INC.
 1265 S. Public Road, Suite B
 Lafayette, CO 80026
 303.449.9105

HURST
 CIVIL ENGINEERING
 PLANNING
 SURVEYING

5325 S. VALENTIA WAY
 GREENWOOD VILLAGE, COLORADO
COVER SHEET
 Prepared for
HIGHER GROUND

SOUTHGATE WATER DISTRICT
 3722 E. ORCHARD RD
 CENTENNIAL, CO 80121
 PHONE: 303-779-0261
 CONTRACT: DAVID KAHLICH

DRAWN BY: RH	DESIGNED BY: RH	CHECKED BY: COREY STANLEY	APPROVED BY: RH
JOB NUMBER: 2568-4			
DATE: 11/1/23			
SCALE: N/A			
SHEET NO: 1			

LAST SAVED: 11/1/2023 3:09 PM

C:\25684\Site Plan\COVER-25684.dwg

General Construction and Water Notes:

- 1. Projects located in Distributor Contract Areas shall require the District to contact Denver Water's Construction Engineering personnel at 303-628-6671, prior to the pre-construction meeting.
2. All materials and workmanship shall be in accordance with Denver Water's Engineering Standards, Capital Projects Construction Standards (CPCS), Materials Specifications, and Drawings.
3. Contractors shall maintain a copy of the current Engineering Standards and CPCS on-site at all times during construction.

Material Specification Quick References:

Table with 2 columns: CPCS Technical Specification and Description. Lists various pipe types, fittings, valves, and materials like Ductile Iron Pipe, Polyvinyl Chloride Pressure Pipe, etc.

- 4. The depth of cover over the pipe, measured from official street grade to the top of the pipe, shall be a minimum of 4-1/2 feet...
5. Any changes in alignment and grade shall be authorized by Denver Water and shall be accomplished by the installation of additional fittings.
6. Prior to the installation of water mains, road construction must have progressed to at least the sub-grade state.

- 15. The Contractor is responsible for:
a. Notifying customers verbally or in writing who may be affected by a water outage during construction.
b. Obtaining, at the Contractor's expense, applicable licenses, permits, bonds, etc., that are required for the main installation/system modification.

Tap and Meter Notes (for Denver, Total Service, and Read and Bill Areas only. In Master Meter Districts please refer to the Specification for that District).

- 1. Before any taps are made on mains, tap applications and payment must be received and approved by the Distributor and Denver Water, and the water main has passed water quality testing.
2. Denver Water will make all taps that are 2 inches and smaller.
3. Individual service line PRVs shall be installed by the licensee when area pressure exceeds 80 psi.
4. Services and Meters:
a. The Contractor may request an on-site pre-construction conference with the Meter Inspector for all taps, service lines, all meter sizes, and projects involving more than one tap and service.

Cross-Connection Control Requirements:

The licensees listed below shall be in conformance with Denver Water's Engineering Standards, Chapter 5.05, Backflow Prevention and Cross-Connection Control Program Cross-Connection Control and Backflow Prevention. Backflow prevention assemblies are required to be installed on the following water service lines:

- 1. Commercial domestic service lines
2. Multi-Family domestic service lines (depending on potential hazard)
3. Fire service lines
4. Irrigation service lines
5. Single family residential domestic service lines with an auxiliary water source (Dual Water Service Agreement required)
6. Recycled Water service lines, if system design includes chemical injection or pumps.
7. It is at the sole discretion of Denver Water's Cross-Connection Control section to approve or deny a variance request related to a proposed backflow prevention assembly installation.

Fax: 303-794-8325
E-Mail: CrossConnectionControl@denverwater.org

Denver International Airport (DEN) Requirements:

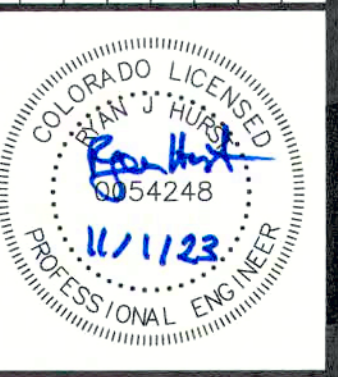
- 1. Contractors shall maintain a copy of the current Engineering Standards and Capital Project Construction Standards, when applicable, on site at all times during construction.
2. Wax tape, metallic fittings, and appurtenances shall be in accordance with Denver Water Capital Projects Construction Standards, 4th Edition SECTION 09 97 13.04.
3. An AMI endpoint is required to be purchased by the contractor at the time of meter installation.
4. Contact the following Denver Water personnel prior to construction for project coordination and inspection services at DEN:
DEN Airside and Landside Construction Inspection
a. Minimum of 48 hours prior to construction
b. Denver Water Construction Engineering - 303-628-6671
DEN Cathodic Protection Inspection
a. Minimum of 48 hours prior to construction
b. Denver Water Construction Management Lee Burke 303-628-6293



11/3/2023, 11:03:49 AM
AMEND23-05150
Corey Stanley

72 HOURS BEFORE YOU DO
CENTER OF COLORADO (U.R.C.C.)
811
GAS, ELECTRIC, TELEPHONE, CTV, AND
PANHANLE EASTERN PIPELINE LOCATIONS

Table with 2 columns: NO, DESCRIPTION, REVISIONS. Shows revision history for the drawing.

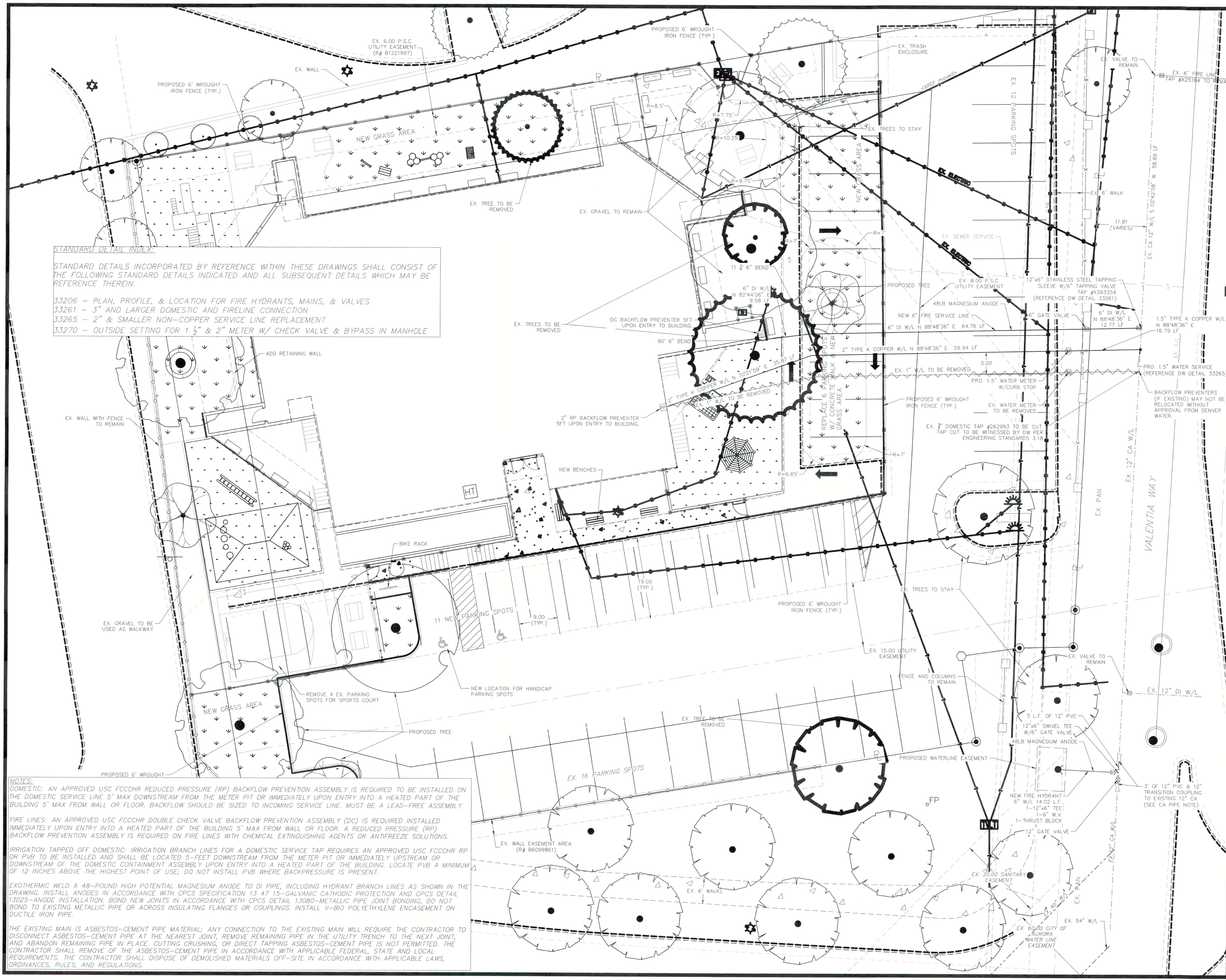


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CIVIL ENGINEERING
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SURVEYING

5225 S. VALENTIA WAY
GREENWOOD VILLAGE, COLORADO
GENERAL NOTES SHEET
Prepared for: HIGHER GROUND

Table with 2 columns: FIELD, VALUE. Contains drawing metadata like JOB NUMBER (2568-4), DATE (10/11/23), SCALE (N/A), SHEET NO. (2).



STANDARD DETAIL INDEX:

STANDARD DETAILS INCORPORATED BY REFERENCE WITHIN THESE DRAWINGS SHALL CONSIST OF THE FOLLOWING STANDARD DETAILS INDICATED AND ALL SUBSEQUENT DETAILS WHICH MAY BE REFERENCE THEREIN.

33206 - PLAN, PROFILE, & LOCATION FOR FIRE HYDRANTS, MAINS, & VALVES
 33261 - 3" AND LARGER DOMESTIC AND FIRELINE CONNECTION
 33265 - 2" & SMALLER NON-COPPER SERVICE LINE REPLACEMENT
 33270 - OUTSIDE SETTING FOR 1 1/2" & 2" METER W/ CHECK VALVE & BYPASS IN MANHOLE

NOTES:

DOMESTIC: AN APPROVED US FCCCHR REDUCED PRESSURE (RP) BACKFLOW PREVENTION ASSEMBLY IS REQUIRED TO BE INSTALLED ON THE DOMESTIC SERVICE LINE 5' MAX DOWNSTREAM FROM THE METER PIT OR IMMEDIATELY UPON ENTRY INTO A HEATED PART OF THE BUILDING 5' MAX FROM WALL OR FLOOR. BACKFLOW SHOULD BE SIZED TO INCOMING SERVICE LINE. MUST BE A LEAD-FREE ASSEMBLY.

FIRE LINES: AN APPROVED US FCCCHR DOUBLE CHECK VALVE BACKFLOW PREVENTION ASSEMBLY (DC) IS REQUIRED INSTALLED IMMEDIATELY UPON ENTRY INTO A HEATED PART OF THE BUILDING 5' MAX FROM WALL OR FLOOR. A REDUCED PRESSURE (RP) BACKFLOW PREVENTION ASSEMBLY IS REQUIRED ON FIRE LINES WITH CHEMICAL EXTINGUISHING AGENTS OR ANTIFREEZE SOLUTIONS.

IRRIGATION TAPPED OFF DOMESTIC: IRRIGATION BRANCH LINES FOR A DOMESTIC SERVICE TAP REQUIRES AN APPROVED US FCCCHR RP OR PVB TO BE INSTALLED AND SHALL BE LOCATED 5- FEET DOWNSTREAM FROM THE METER PIT OR IMMEDIATELY UPSTREAM OR DOWNSTREAM OF THE DOMESTIC CONTAINMENT ASSEMBLY UPON ENTRY INTO A HEATED PART OF THE BUILDING. LOCATE PVB A MINIMUM OF 12 INCHES ABOVE THE HIGHEST POINT OF USE; DO NOT INSTALL PVB WHERE BACKPRESSURE IS PRESENT.

EXOTHERMIC WELD A 48-POUND HIGH POTENTIAL MAGNESIUM ANODE TO DI PIPE, INCLUDING HYDRANT BRANCH LINES AS SHOWN IN THE DRAWING. INSTALL ANODES IN ACCORDANCE WITH CPSC SPECIFICATION 13 47 15-GALVANIC CATHODIC PROTECTION AND CPSC DETAIL 13025-ANODE INSTALLATION. BOND NEW JOINTS IN ACCORDANCE WITH CPSC DETAIL 13080-METALLIC PIPE JOINT BONDING. DO NOT BOND TO EXISTING METALLIC PIPE OR ACROSS INSULATING FLANGES OR COUPLINGS. INSTALL V-BIO POLYETHYLENE ENCASUREMENT ON DUCTILE IRON PIPE.

THE EXISTING MAIN IS ASBESTOS-CEMENT PIPE MATERIAL; ANY CONNECTION TO THE EXISTING MAIN WILL REQUIRE THE CONTRACTOR TO DISCONNECT ASBESTOS-CEMENT PIPE AT THE NEAREST JOINT, REMOVE REMAINING PIPE IN THE UTILITY TRENCH TO THE NEXT JOINT, AND ABANDON REMAINING PIPE IN PLACE. CUTTING CRUSHING, OR DIRECT TAPPING ASBESTOS-CEMENT PIPE IS NOT PERMITTED. THE CONTRACTOR SHALL REMOVE OF THE ASBESTOS-CEMENT PIPE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL REQUIREMENTS. THE CONTRACTOR SHALL DISPOSE OF DEMOLISHED MATERIALS OFF-SITE IN ACCORDANCE WITH APPLICABLE LAWS, ORDINANCES, RULES, AND REGULATIONS.



11/3/2023, 11:03:49 AM
 AMEND 23-05150
 Corey Stanley

DATE	BY	REVISIONS
11/17/23	RH	1
11/17/23	RH	2
11/17/23	RH	3
11/17/23	RH	4
11/17/23	RH	5
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11/17/23	RH	7
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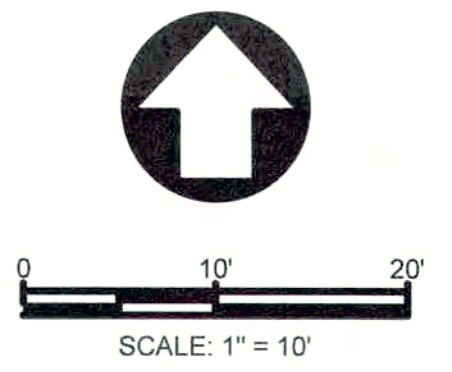
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 SURVEYING

5325 S. VALENTIA WAY
 GREENWOOD VILLAGE, COLORADO
 OVERALL UTILITY PLAN
 Prepared for: HIGHER GROUND

DESIGNED BY:	RH
CHECKED BY:	RH
DATE:	10/17/23
SCALE:	1"=10'
SHEET NO.:	4

NOTE:
 FIELD VERIFY EXISTING UTILITIES HORIZONTAL AND VERTICAL LOCATION BEFORE CONSTRUCTION.



LAST SAVED: 11/17/2023 3:26 PM

C:\25684\S16 P16\STATE PLANE\OVERALL UTIL-STATE PLANE.dwg

PLAN-TYPE 1
UNDISTURBED SOIL
STA LOC
1'-0" MIN THK AT SPRINGLINE

PLAN-TYPE 2
UNDISTURBED SOIL
STA LOC
1'-0" MIN THK AT SPRINGLINE

PLAN-TYPE 3
UNDISTURBED SOIL
STA LOC
BOND BREAKER
UNDISTURBED SOIL

ELEVATION-TYPE 1&2
UNDISTURBED SOIL
STA LOC
BOND BREAKER
UNDISTURBED SOIL

ELEVATION-TYPE 3
UNDISTURBED SOIL
STA LOC
BOND BREAKER
UNDISTURBED SOIL

MINIMUM BEARING SURFACE AREA (N SQUARE FEET)

NOMINAL PIPE	11 1/4"	22 1/2"	45"	90"	TEE OR DEAD END
4"	1.00	1.00	1.00	1.75	1.25
6"	1.00	1.25	2.25	3.25	2.75
8"	1.00	2.00	3.75	6.75	5.00
12"	2.25	4.25	8.25	15.00	10.75
16"	3.25	7.50	14.25	26.50	18.75
20"	5.00	9.75	19.25	35.50	25.00

24" & LARGER-SEE DRAWINGS FOR DIMENSIONS TABLE

NOTE:
THE MINIMUM BEARING SURFACE AREAS SHOWN IN THE TABLE ARE BASED ON 150 POUNDS PER SQUARE INCH INTERNAL PIPE PRESSURE PLUS WATER HAMMER AND 3000 POUNDS PER SQUARE FOOT ALLOWABLE SOIL BEARING CAPACITY.
A. WATER HAMMER = 110 POUNDS PER SQUARE INCH FOR 4 INCH, 6 INCH, 8 INCH, 12 INCH, AND 16 INCH.
B. WATER HAMMER = 70 POUNDS PER SQUARE INCH FOR 20 INCH.

DRWN BY: **MC MILLEN**
CHKD BY: **K ROSS/KIR**
APPD BY: **JK**
ORIGINATION DATE: JULY 2021
REVISION DATE:

03001 CONCRETE KICKBLOCKS

DENVER WATER
1600 West 12th Ave
Denver, Colorado 80204-3412
T: 303.628.6000
F: 303.628.6199
denverwater.org

WATER MAIN AND TAP SIZE COMBINATIONS WHICH REQUIRE A CONC KB BEHIND THE MAIN AT THE TAPPING SLV, SADDLE, OR TEE

MAIN SIZE (IN)
4 6 8 10 12 14 16 18 20

TAP SIZE (IN)
4 6 8 10 12 14 16 18 20

LEGEND:
[Symbol] CONCRETE KICKBLOCK REQUIRED

NOTE:
KICKBLOCK REQUIREMENTS FOR WATER MAIN AND TAP SIZE COMBINATIONS OTHER THAN THOSE SHOWN WILL REQUIRE SPECIAL DESIGN APPROVAL BY DENVER WATER.

DRWN BY: **BAIRES**
CHKD BY: **K ROSS/KIR**
APPD BY: **JK**
ORIGINATION DATE: JULY 2021
REVISION DATE:

03005 CONCRETE KICKBLOCK REQUIREMENTS FOR WATER MAIN AND TAP SIZE COMBOS

DENVER WATER
1600 West 12th Ave
Denver, Colorado 80204-3412
T: 303.628.6000
F: 303.628.6199
denverwater.org

STEP-1
PE TUBE
PIPE
PLASTIC TAPE (TYP)

STEP-2
PIPE
PE TUBE
PLASTIC TAPE UNDER CORP STOP (TYP)

STEP-3
CORP STOP (SEE NOTE)
PE TUBE
PLASTIC TAPE UNDER CORP STOP (TYP SEE NOTE)

CORP STOP

FIELD INSTALLATION - POLYETHYLENE WRAP

STEP-1 PLACE THE TUBE OF POLYETHYLENE MATERIAL AROUND THE PIPE PRIOR TO LOWERING IT INTO THE TRENCH.

STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE THE TUBE TO THE PIPE AT THE JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF 2 INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP-3 ADJACENT TUBE OVERLAPS FIRST TUBE AND SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE, AND HELD IN PLACE BY MEANS OF PIECES OF PLASTIC TAPE AT APPROXIMATELY 3 FOOT INTERVALS.

NOTES:
1. AT LOCATION OF TAP, APPLY FOUR WRAPS OF PLASTIC TAPE AROUND THE PIPE FOR A WIDTH THAT WILL PROVIDE PROTECTION OF THE POLYETHYLENE WRAP FROM THE TAPPING MACHINE.
2. APPLIES TO STANDARD AND V-BIO POLYETHYLENE WRAP INSTALLATIONS.

DRWN BY: **BERKNESS**
CHKD BY: **K ROSS/KIR**
APPD BY: **JK**
ORIGINATION DATE: JULY 2021
REVISION DATE:

13020 FIELD INSTALLATION - POLYETHYLENE WRAP

DENVER WATER
1600 West 12th Ave
Denver, Colorado 80204-3412
T: 303.628.6000
F: 303.628.6199
denverwater.org

NOTE:
NUMBER OF ANODES, MATERIAL, AND SIZE MAY VARY.

DRWN BY: **BERKNESS**
CHKD BY: **K ROSS/KIR**
APPD BY: **JK**
ORIGINATION DATE: JULY 2021
REVISION DATE:

13025 ANODE INSTALLATION

DENVER WATER
1600 West 12th Ave
Denver, Colorado 80204-3412
T: 303.628.6000
F: 303.628.6199
denverwater.org

PIPE COATING
PIPE OR STRUCT
WELD CAP
EXOTHERMIC WELD
ELASTOMERIC MASTIC & ADH
TEST OR BOND WIRE

3/4" MIN
2 1/2" MAX

DRWN BY: **BERKNESS**
CHKD BY: **K ROSS/KIR**
APPD BY: **JK**
ORIGINATION DATE: JULY 2021
REVISION DATE:

13040 EXOTHERMIC WELD CONNECTION

DENVER WATER
1600 West 12th Ave
Denver, Colorado 80204-3412
T: 303.628.6000
F: 303.628.6199
denverwater.org

INSUL STRANDED CU WIRE (SIZE IN ACCORDANCE W/ TABLE) EXOTHERMIC WELD TO BARE MET. ACROSS JT-COAT W/ APPD EXOTHERMIC WELD PATCH
BOND WIRE (TYP, SEE TABLE)
GASKET

NOMINAL PIPE # WIRE SIZE AND TYPE (AWG)

4" - 12"	#8 HMWPE
16" - 20"	#4 HMWPE
24" < 36"	#4 HMWPE
36" < 60"	#2 HMWPE
60" OR LARGER	2x #2 HMWPE

NOTES:
1. PROVIDE AND INSTALL REDUNDANT BOND WIRES, EVENLY SPACED AROUND THE PIPE.
2. REMOVE A 2 1/2 INCH SQUARE (MAXIMUM) OF PIPE COATING FOR EXOTHERMIC WELD CONNECTION.
3. WELD CAP SHALL EXTEND AT LEAST 3/4 INCH OVER PIPE COATING.
4. EXOTHERMIC WELDS SHALL BE CLEANED AND COATED. SIZE EXOTHERMIC WELD CHARGE BASED ON PIPE MATERIAL.
5. JOINT TYPE MAY VARY.

DRWN BY: **BERKNESS**
CHKD BY: **K ROSS/KIR**
APPD BY: **JK**
ORIGINATION DATE: JULY 2021
REVISION DATE:

13080 METALLIC PIPE JOINT BONDING

DENVER WATER
1600 West 12th Ave
Denver, Colorado 80204-3412
T: 303.628.6000
F: 303.628.6199
denverwater.org

PLAN
OUTSIDE METER SETTING MANHOLE
FLOW

ELEVATION
OUTSIDE METER SETTING MANHOLE
BLDG WALL
5'-0" MIN (NOTE 2)
5'-0" MAX (NOTE 2)
NO CONN, BENDS, OR PIPE SIZE CHANGE
TYPE K CU TUBING FROM METER TO BFP ASSY
USC FCCOHR APPD BFP ASSY
12" MIN HT (NOTE 3)
BLDG SHUT OFF VALV (NOTE 3)

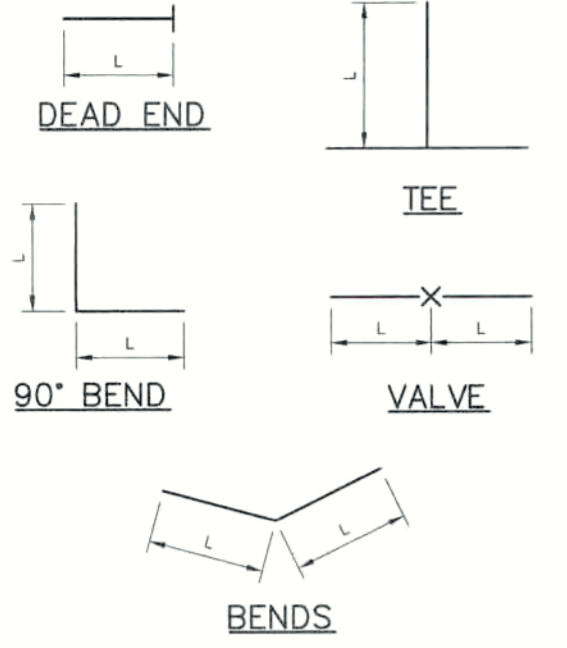
NOTES:
1. USC FCCOHR APPROVED DOUBLE CHECK VALVE OR REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY SHALL BE DETERMINED BY THE DEGREE OF HAZARD POSED BY INTERNAL PLUMBING USE.
2. PLACEMENT OF BACKFLOW PREVENTION ASSEMBLY SHALL BE A MAXIMUM OF 5 FEET FROM THE INSIDE WALL OF BUILDING.
3. REFER TO LOCAL CODES AND MANUFACTURER REQUIREMENTS FOR INSTALLATION INSTRUCTIONS.
4. INSTALL STANDARD ADJUSTABLE SUPPORTS WITHIN 12 INCHES OF INLET AND OUTLET FOR SHUT OFF VALVES.
5. BACKFLOW PREVENTION ASSEMBLY SHALL BE THE SAME SIZE AS THE SERVICE LINE SIZE. UPSIZING THE BACKFLOW PREVENTION ASSEMBLY IS NOT ALLOWED.

DRWN BY: **BAIRES**
CHKD BY: **K ROSS/KIR**
APPD BY: **JK**
ORIGINATION DATE: JULY 2021
REVISION DATE: NOVEMBER 2022

22015 INSIDE BACKFLOW PREVENTION ASSEMBLY FOR OUTSIDE SETTING OF 1 1/2" & 2" METER & BYPASS IN A MANHOLE

DENVER WATER
1600 West 12th Ave
Denver, Colorado 80204-3412
T: 303.628.6000
F: 303.628.6199
denverwater.org

USC FCCOHR APPD RP BFP ASSY
SPEC ENCLOSURE (HEATED/NON-HEATED)
SEAL PIPE PENETRATIONS W/ ELASTOMERIC SEALANT (TYP)
4" THK CONC PAD TOP OF SLAB TO BE 1" ABOVE GROUND LINE. ALL EXPOSED CONC EDGES TO HAVE A 3/4" CHFR
GROUND LINE
12" MIN
2" CURB STOP W/ SWV
BRONZE UNION
BRASS ELEC WTR PIPE GND CLAMP W/ #6 AWG BARE CU
2" CURB STOP W/ SWV
5'-0" MIN
10'-0" MAX TO METER PIT
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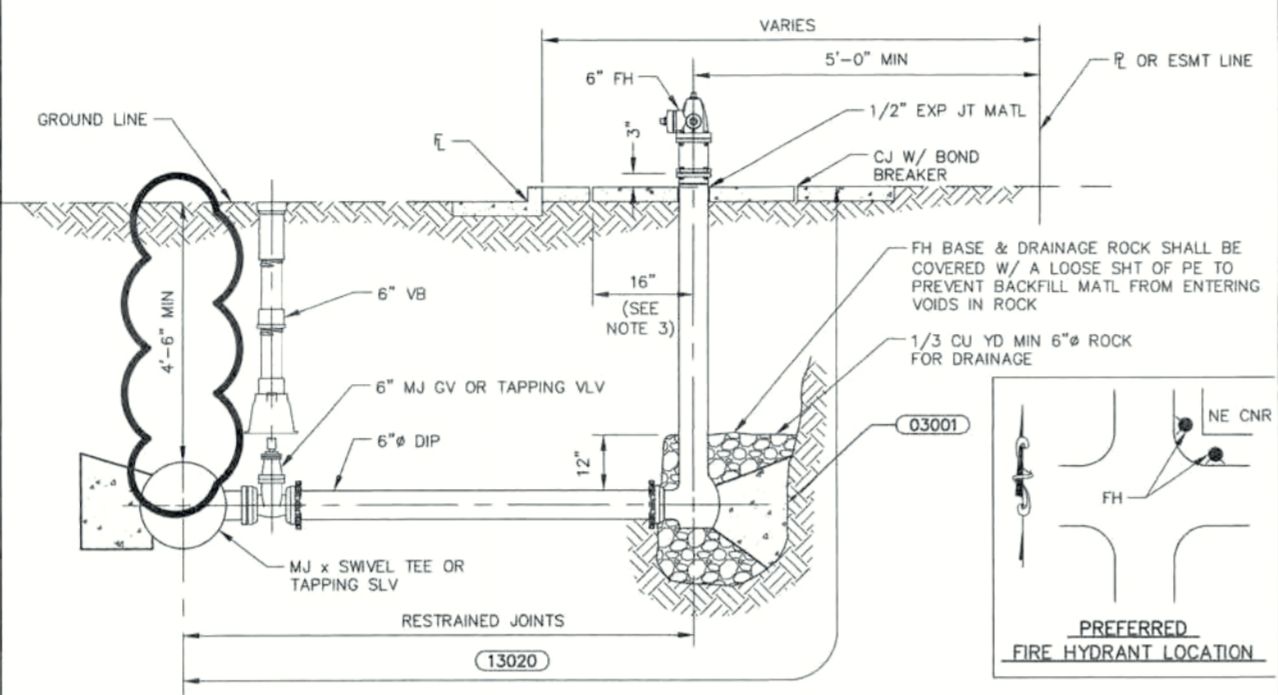
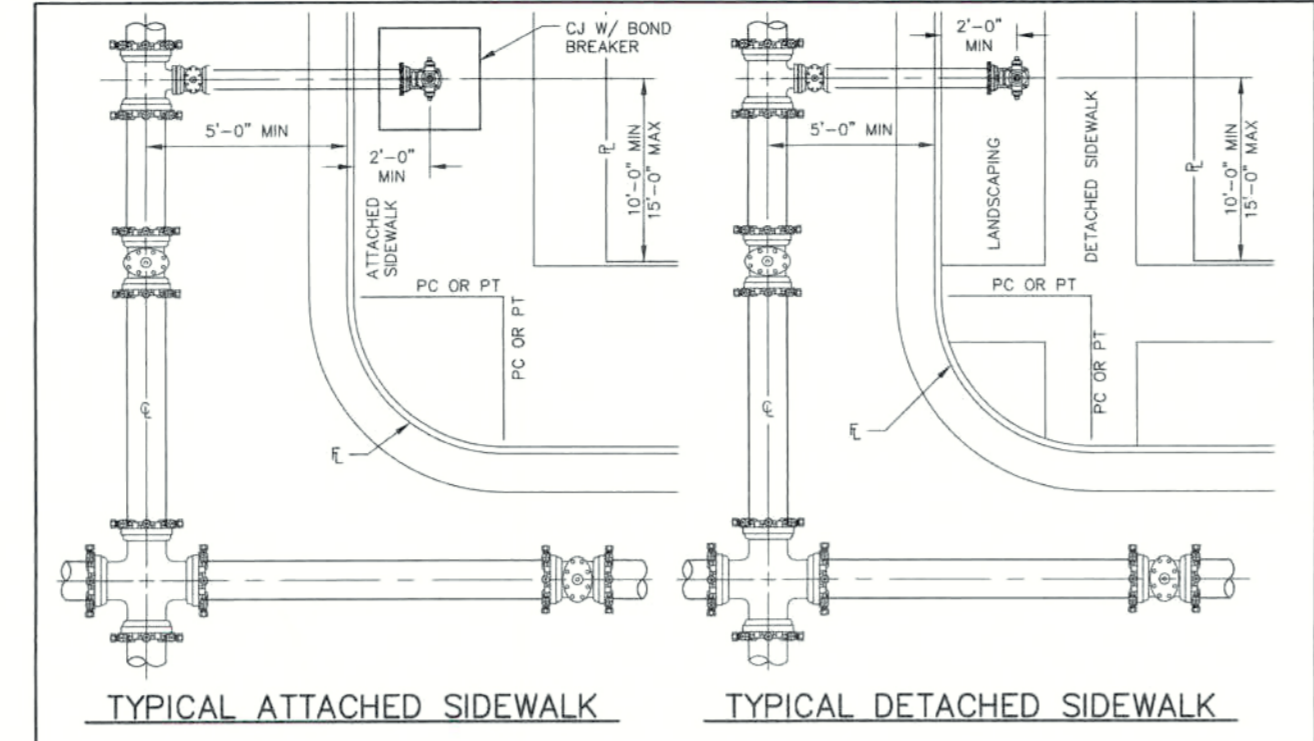
LENGTH OF RESTRAINED PIPE

NOMINAL PIPE #	FITTING				
	90° BEND, TEE, DEAD END, VALVE	45° BEND	22 1/2° BEND	11 1/4° BEND	
4"	30'	9'	2'	1'	
6"	46'	13'	3'	1'	
8"	61'	18'	5'	1'	
12"	90'	28'	7'	2'	
16"	116'	34'	9'	2'	
20"	141'	41'	11'	3'	

- NOTES:**
- LENGTH OF RESTRAINED PIPE IS MEASURED DISTANCE EACH WAY FROM VALVES AND BENDS.
 - MINIMUM 4 FEET 6 INCH BURY DEPTH REQUIRED.
 - BASED ON 150 POUNDS PER SQUARE INCH WORKING PRESSURE.
 - RESTRAIN CROSSES IN ALL DIRECTIONS.
 - WHEN REDUCERS ARE USED ON A VALVE INSTALLATION THE LENGTH OF RESTRAINT SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.

33144
LENGTH OF RESTRAINED PIPE

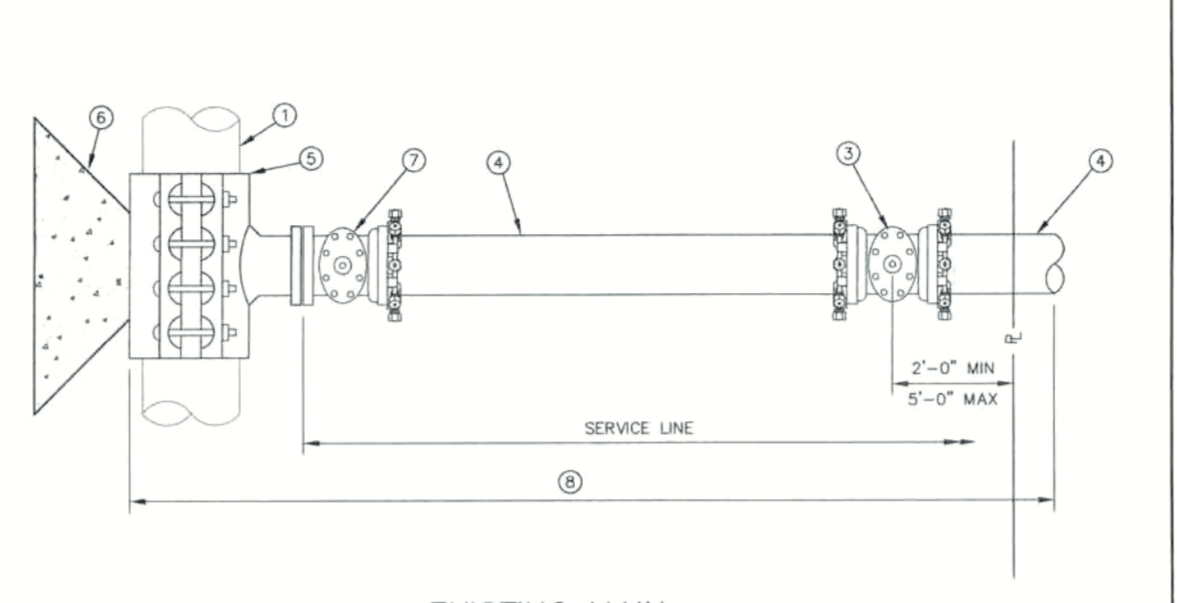
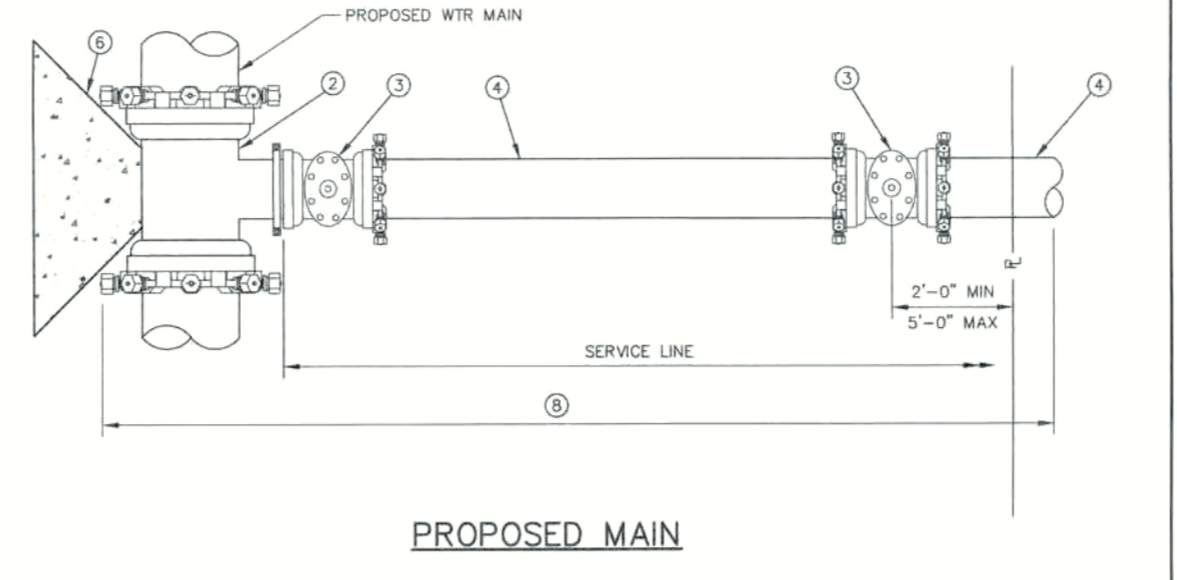
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- NOTES:**
- NO HORIZONTAL OR VERTICAL BENDS ARE ALLOWED IN FIRE HYDRANT BRANCH.
 - DO NOT COVER OR PLUG DRAIN HOLES WITH CONCRETE.
 - PROVIDE A 32 INCH BY 32 INCH BY 4 INCH CONCRETE PAD WITH CONSTRUCTION JOINT BOND BREAKERS WHEN FIRE HYDRANT IS INSTALLED IN SIDEWALK OR SIMILAR PAVED AREA.
 - FIRE HYDRANT SHALL NOT BE INSTALLED WITH CURB RAMP.

33206
PLAN, PROFILE, & LOCATION
FOR FIRE HYDRANTS, MAINS,
& VALVES

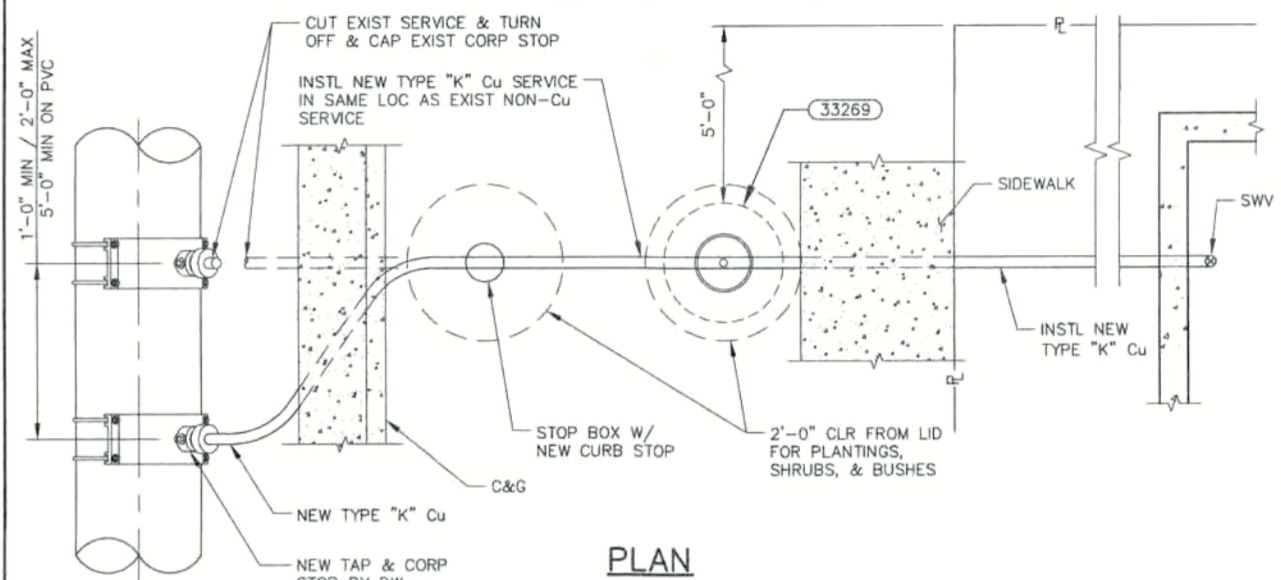
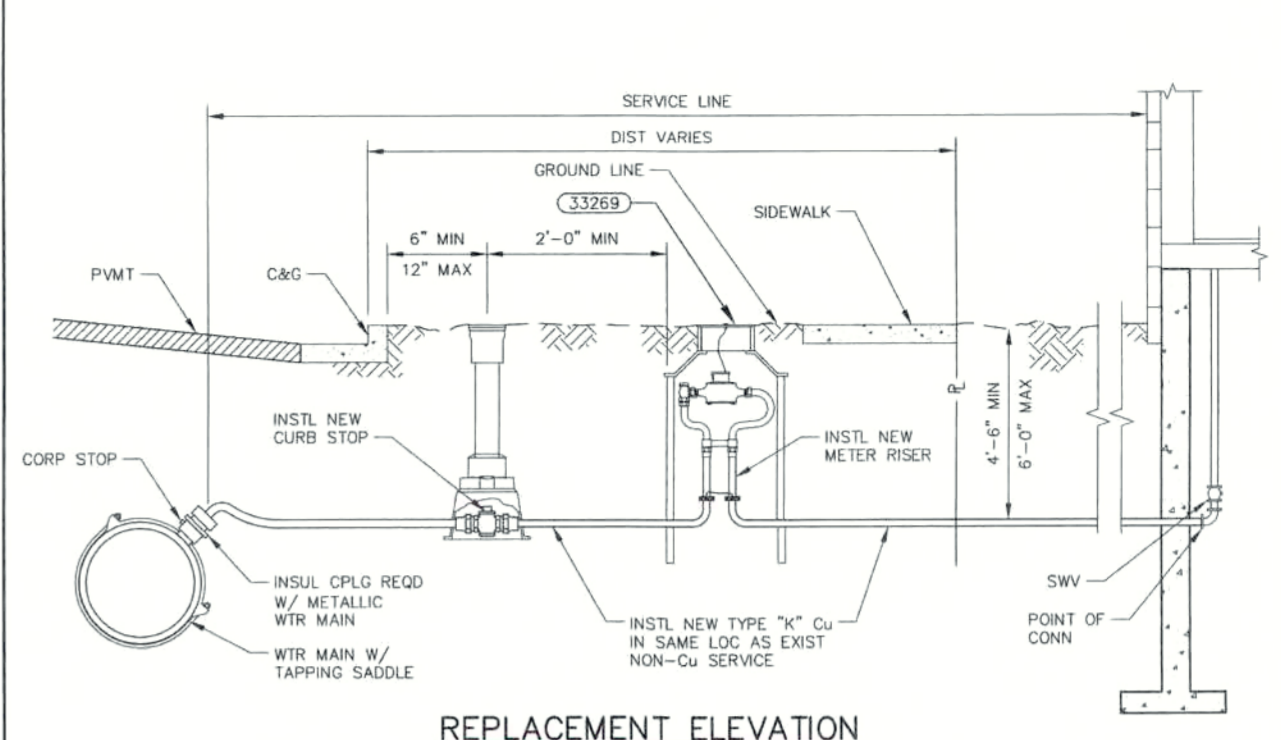
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- KEYED NOTES:**
- EXIST WTR MAIN
 - MJ ANCHORING TEE
 - MJ CV
 - DIP FULLY RESTRAINED
 - TAPPING SLV
 - CONC KB
 - TAPPING VLV FLG X MJ
 - PE WRAPPED

33261
3" AND LARGER DOMESTIC
AND FIRELINE CONNECTION

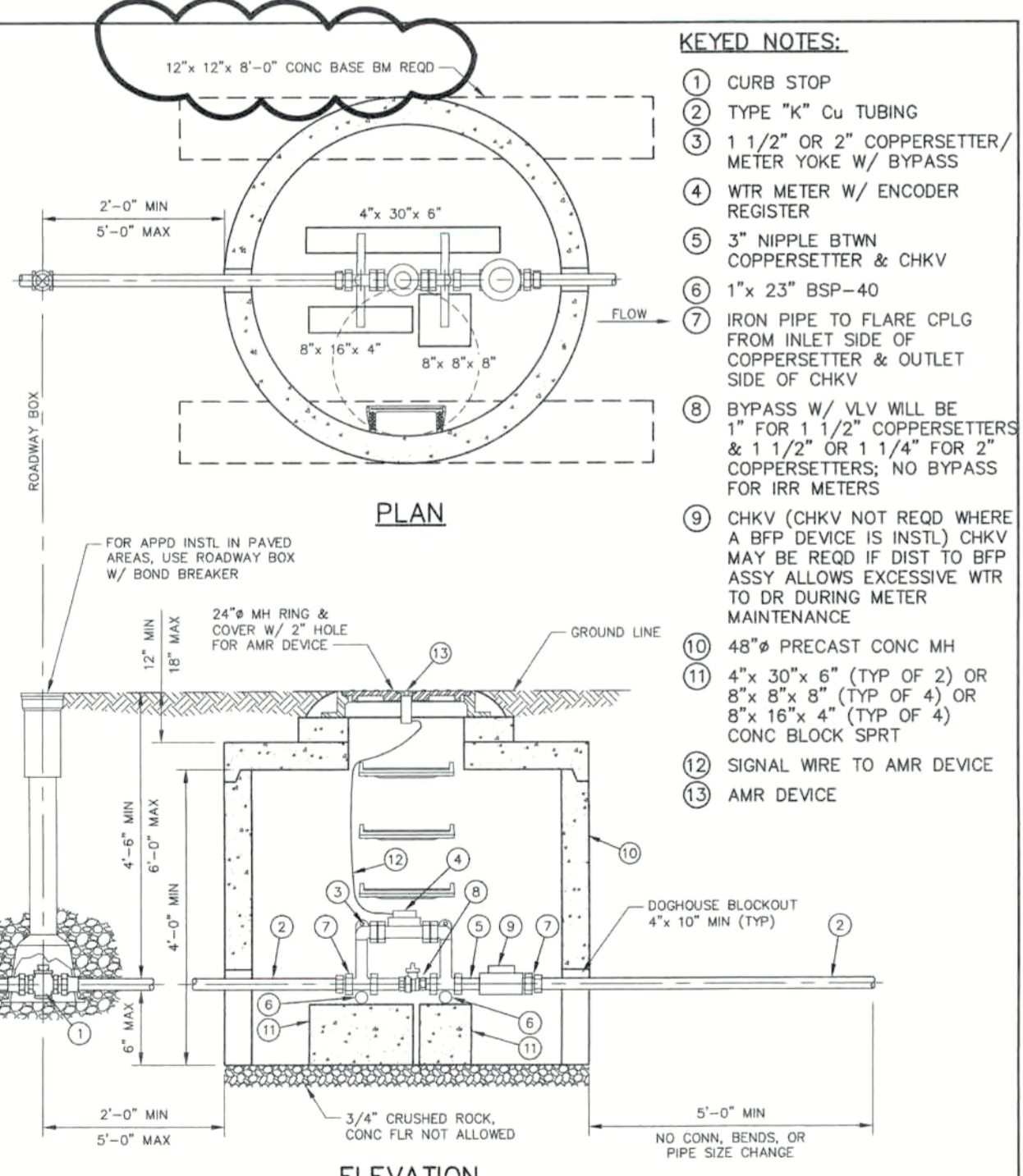
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- NOTES:**
- LIMITS OF NON-COPPER SERVICE LINE REPLACEMENT EXTENDS FROM THE TAP TO THE FIRST BRASS FITTING INSIDE THE STRUCTURE.
 - INSTALL METER PIT AND SERVICE LINE IN ACCORDANCE WITH SPECIFICATION SECTION 33 19 13.
 - REPLACE ALL NON-COPPER COMPONENTS OF THE SERVICE LINE FROM THE MAIN TO THE FIRST COPPER OR BRASS FITTING WITHIN THE STRUCTURE.

33265
2" & SMALLER NON-COPPER
SERVICE LINE REPLACEMENT

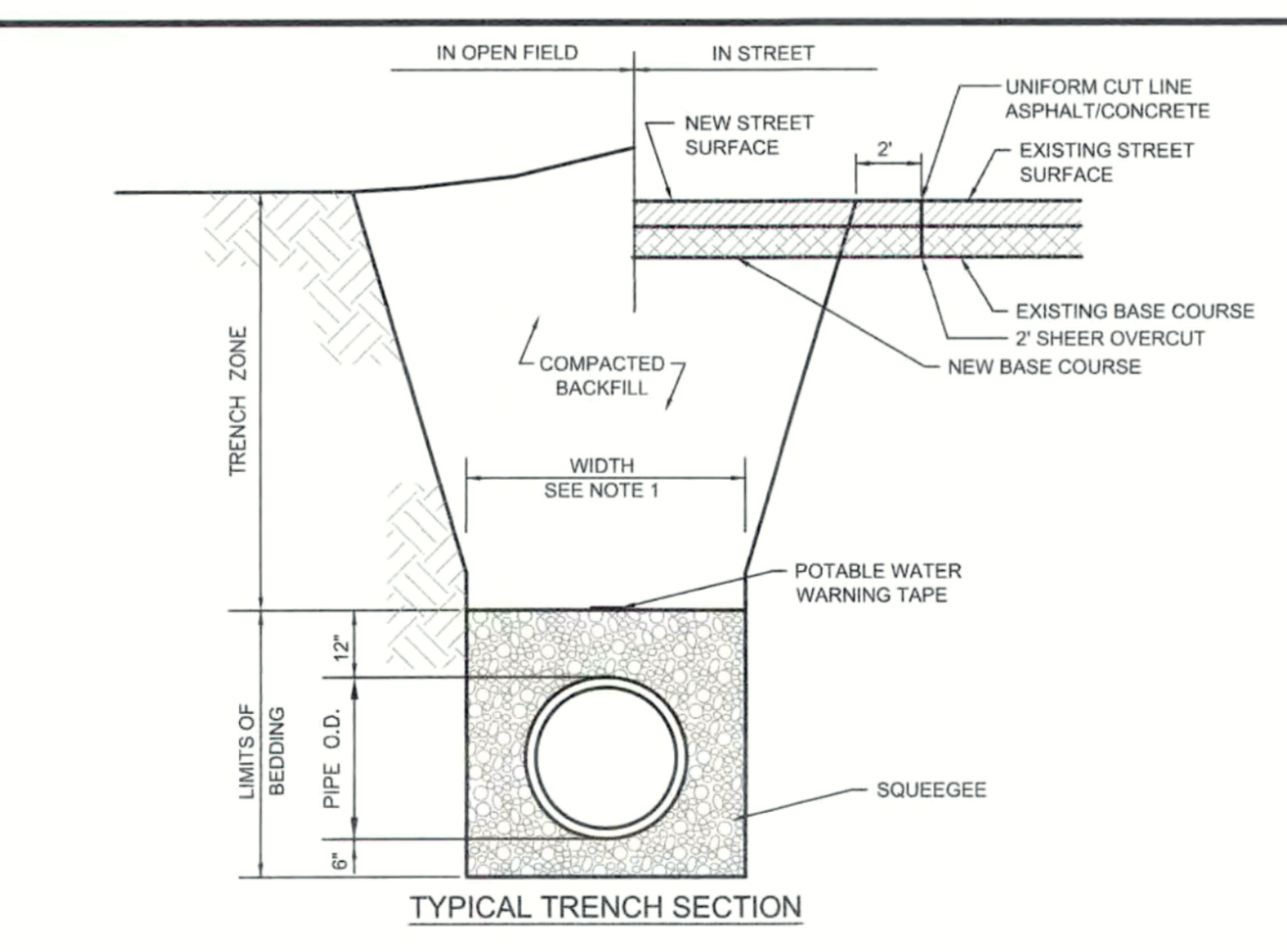
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- KEYED NOTES:**
- CURB STOP
 - TYPE "K" CU TUBING
 - 1 1/2" OR 2" COPPERSETTER/METER YOKE W/ BYPASS
 - WTR METER W/ ENCODER REGISTER
 - 3" NIPPLE BTWN COPPERSETTER & CHKV
 - 1" x 23" BSP-40
 - IRON PIPE TO FLARE CPLG FROM INLET SIDE OF COPPERSETTER & OUTLET SIDE OF CHKV
 - BYPASS W/ VLV WILL BE 1" FOR 1 1/2" COPPERSETTERS & 1 1/2" OR 1 1/4" FOR 2" COPPERSETTERS; NO BYPASS FOR IRR METERS
 - CHKV (CHKV NOT REQ WHERE A BFP DEVICE IS INSTL) CHKV MAY BE REQ IF DIST TO BFP ASSY ALLOWS EXCESSIVE WTR TO DR DURING MAINTENANCE
 - 48" x 30" x 6" (TYP OF 2) OR 8" x 8" x 8" (TYP OF 4) OR 8" x 18" x 4" (TYP OF 4) CONC BLOCK SPRT
 - SIGNAL WIRE TO AMR DEVICE
 - AMR DEVICE

33270
OUTSIDE SETTING FOR
1 1/2" & 2" METER W/ CHECK
VALVE & BYPASS IN MANHOLE

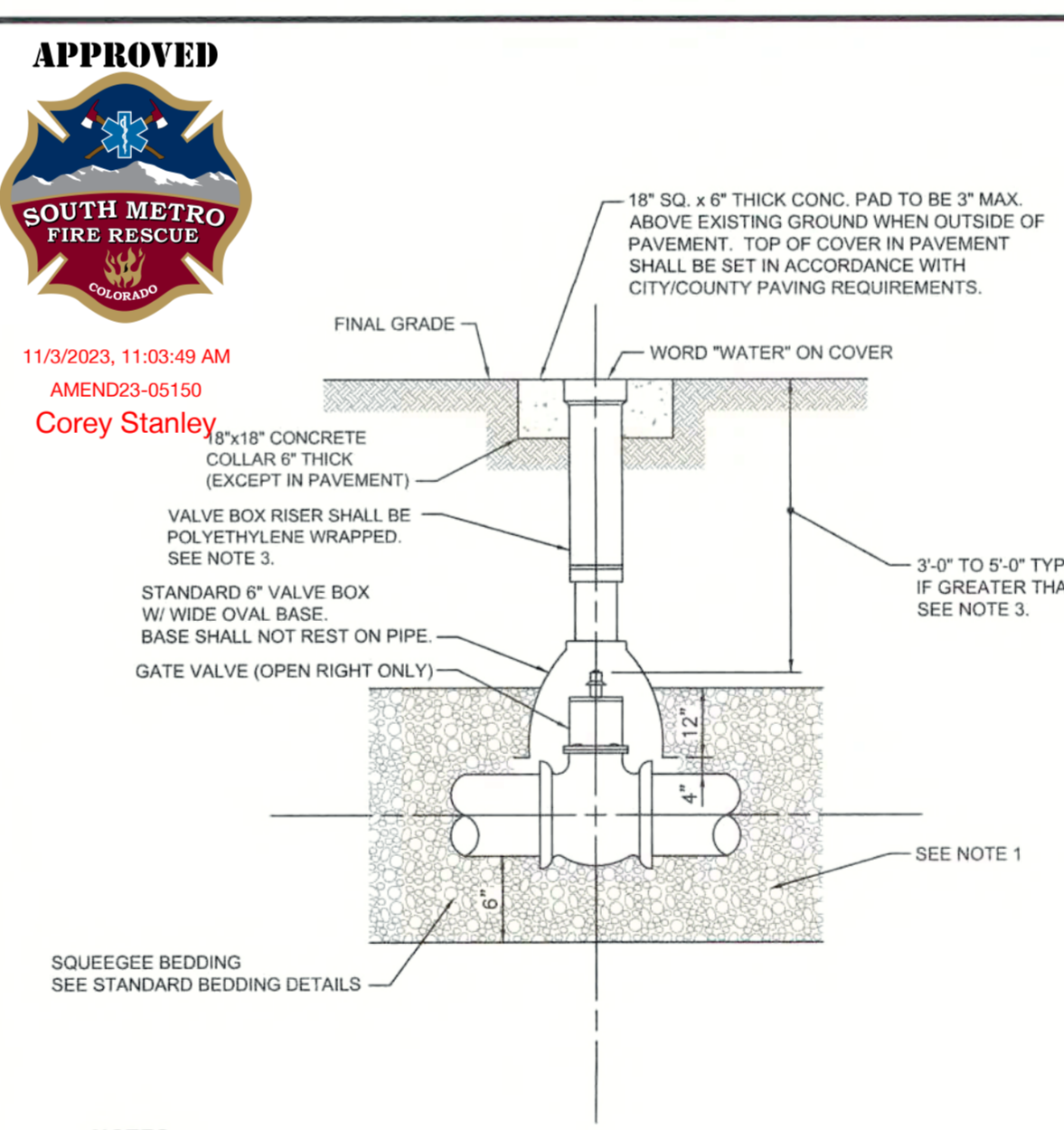
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- NOTES:**
- TRENCHES SHALL BE BRACED OR SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKMEN AND FOR THE PROTECTION OF EXISTING UTILITIES IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATIONS. PVC PIPE TRENCH WIDTHS SHALL BE IN ACCORDANCE WITH THE UNI-BELL HANDBOOK OF PVC PIPE, LATEST EDITION. DUCTILE IRON PIPE TRENCH WIDTHS AT THE TOP OF PIPE SHALL BE IN ACCORDANCE WITH AWWA C-600 LATEST EDITION. SHOULD TRENCHES BE EXCAVATED WIDER THAN ALLOWED, THE DISTRICT MAY REQUIRE THAT A CONCRETE CRADLE BE PLACED AROUND THE PIPE IN CONFORMANCE WITH THE SPECIAL BEDDING DETAIL.
 - BEDDING: CONTRACTORS SHALL SUBMIT BEDDING GRADATION TEST RESULTS TO THE DISTRICT FOR REVIEW, PRIOR TO DELIVERING ANY MATERIAL TO THE PROJECT SITE. SEE REFERENCED SPECIFICATION 5.3 (DENVER WATER, CHAPTER 7) FOR BEDDING GRADATION REQUIREMENTS. BEDDING LIMITS SHALL EXTEND FROM SIX INCHES UNDER THE PIPE TO TWELVE INCHES ABOVE THE PIPE. THE LIMITS OF BEDDING DEFINE THE "PIPE ZONE".
 - COMPACTION: MINIMUM PIPE ZONE (BEDDING) COMPACTION SHALL BE 90% STANDARD PROCTOR DENSITY OR EQUIVALENT RELATIVE DENSITY. TRENCH ZONE COMPACTION SHALL BE: 95% STANDARD OR MODIFIED PROCTOR DENSITY OR EQUIVALENT RELATIVE DENSITY INSIDE STREET RIGHTS-OF-WAY; AND 90% STANDARD OR MODIFIED PROCTOR DENSITY OR EQUIVALENT RELATIVE DENSITY OUTSIDE STREET RIGHTS-OF-WAY UNLESS SPECIFIED OTHERWISE.

Southgate
STANDARD BEDDING
FOR WATER LINES

SCALE: NOT TO SCALE
ISSUE DATE: FEBRUARY 2016
SHEET: 1 OF 1
DRAWING NO: W-01



- NOTES:**
- CARE SHALL BE TAKEN WHEN INSTALLING VALVES TO ENSURE PROPER SUPPORT OF THE VALVE. THE DISTRICT RESERVES THE RIGHT TO REQUIRE 3/4" CRUSHED ROCK TO BE INSTALLED UNDER THE VALVE TO PROVIDE PROPER SUPPORT.
 - FOR VALVE OPERATING NUTS DEEPER THAN FIVE (5) FEET FROM FINAL GRADE, THE DISTRICT RESERVES THE RIGHT TO REQUIRE A 1 1/4" DIAMETER OPERATOR EXTENSION SHAFT WITH CENTERING RINGS BE CONNECTED TO THE VALVE OPERATOR USING SET SCREW.
 - FOR VALVE BOX ASSEMBLIES THAT REQUIRE MORE THAN TWO (2) EXTENSION PIECES, THE DISTRICT RESERVES THE RIGHT TO REQUIRE A MODIFIED VALVE BOX CONFIGURATION USING 6" VERTICAL PIPING. THIS DETAIL CAN BE MADE AVAILABLE UPON REQUEST.
 - GATE VALVE AND VALVE BOX SHALL BE POLYETHYLENE WRAPPED.
 - VALVES SHALL NOT BE PLACED IN CONCRETE CROSS PANS.

Southgate
GATE VALVE

SCALE: NOT TO SCALE
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WATER SYSTEM - GENERAL NOTES:

- ALL WATER LINES, SYSTEM PLANS AND CONSTRUCTION SHALL CONFORM TO CURRENT SOUTHWATER DISTRICT SPECIFICATIONS AND THE COLORADO STATE BOARD OF ELECTRICAL ENGINEERING STANDARDS. THE DISTRICT RESERVES THE RIGHT TO OBSERVE AND SUPERVISE CONSTRUCTION BY SOUTHWATER PERSONNEL OR A SOUTHWATER REPRESENTATIVE. SOUTHWATER SHALL BE NOTIFIED IN WRITING AT LEAST 14 DAYS PRIOR TO THE START OF CONSTRUCTION. APPROVED CONTRACTOR PLANS, PERMITS, AND SPECIFICATIONS SHALL BE SUBMITTED TO SOUTHWATER FOR REVIEW AND APPROVAL. SOUTHWATER ENGINEER WILL BE DISTRIBUTED AT THE PRE-CONSTRUCTION MEETING.
- ONLY AFTER CONSTRUCTION PLANS HAVE BEEN REVIEWED AND APPROVED BY SOUTHWATER, THE OWNER, ENGINEER OR CONTRACTOR, WILL SCHEDULE A PRE-CONSTRUCTION MEETING WITH SOUTHWATER AT LEAST 2 BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTION. APPROVED CONTRACTOR PLANS, PERMITS, AND SPECIFICATIONS SHALL BE SUBMITTED TO SOUTHWATER FOR REVIEW AND APPROVAL. SOUTHWATER ENGINEER WILL BE DISTRIBUTED AT THE PRE-CONSTRUCTION MEETING.
- NEW WATER LINES WILL REQUIRE A CLEAR WATER TEST TAKEN AT A STATE CERTIFIED LAB FOR BACTERIOLOGICAL RESULTS. THE RESULTS MUST BE SUBMITTED TO SOUTHWATER AND DENVER WATER. CLEAR WATER TESTS WILL BE TAKEN AT THE CONTRACTOR'S EXPENSE FROM PIPELINE ACCEPTANCE, START OF THE WARRANTY PERIOD, AND PRIOR TO THE BELIEVABLE TAP OR CONNECTION TO EXISTING PIPE.
- ADDITIONAL TESTS MAY BE REQUIRED AT THE DISCRETION OF SOUTHWATER.
- SOUTH METRO FIRE RESCUE AUTHORITY SHALL INSPECT FINISHES AND WILL OBSERVE TESTING.
- EXISTING VALVES OWNED AND OPERATED BY SOUTHWATER MAY ONLY BE OPERATED BY SOUTHWATER PERSONNEL. VALVES INSTALLED BY THE CONTRACTOR WILL BE OPERATED UNTIL SOUTHWATER ACCEPTS THE SYSTEM, COORDINATE WITH SOUTHWATER A MINIMUM OF 2 BUSINESS DAYS BEFORE RELEASE OF SECURITY AND WARRANTY OF FACILITIES TO SOUTHWATER.
- RELEASE OF SECURITY AND WARRANTY OF FACILITIES IS DEPENDENT UPON THE SUCCESSFUL COMPLETION OF A MINIMUM OF ONE (1) YEAR WARRANTY PERIOD AND CONVEYANCE DOCUMENTS.
- THE OWNER IS RESPONSIBLE FOR MAINTENANCE OF THE SYSTEM FROM PIPE INSTALLATION TO RELEASE OF SECURITY AND WARRANTY. FAILURE TO MAINTAIN WATER LINES BY THE TERMS OF THE IMPROVEMENTS AGREEMENT MAY BE CONSIDERED GROUNDS FOR TERMINATION OF FACILITIES.
- STIP IN AGREEMENTS ARE AVAILABLE THROUGH SOUTHWATER AND DENVER WATER. ONLY AFTER COMPLETION OF TESTING AND MAKE LINE INSTALLATION, BUT MAY BE OBTAINED PRIOR TO PIPELINE ACCEPTANCE AND START OF THE WARRANTY PERIOD.
- WATER SERVICE TAPS WILL NOT BE SOLD UNLESS PRODUCT ACCEPTANCE IS ACHIEVED.
- ONLY THE FOLLOWING FIRE HYDRANTS ARE PERMITTED BY SOUTHWATER:
 - WATERLOO PAPER MODEL W847 WITH BRONZE BUSHED SHOD AND SHAWT SCOURING
 - AVN SERIES 27
- ONLY ONE (1) CONNECTION POINT IS PERMITTED TO EXISTING SYSTEM PRIOR TO COMPLETION OF TESTING.
- CONTRACTOR SHALL VERIFY ELEVATIONS OF EXISTING LINES AND THE CONNECTION POINTS BY MEANS OF CERTIFIED SURVEY PRIOR TO STAKING AND INSTALLATION.
- THE ALIGNMENT SHALL BE STAKED AND GRADED EVERY FIFTY (50) FEET. ALL FITTINGS AND VERTICAL SECTIONS ARE TO BE STAKED. THE FIRE HYDRANT WILL BE STAKED AND GRADED TO THE BOTTOM OF FLANGE FITTING. THIS GRADE WILL BE SET THREE (3) INCHES ABOVE PROPOSED GRADING PAINT (ELEVATION) STATE BOTH SIDES OF EASEMENTS WHERE THE WATER LINE IS NOT LOCATED IN PAVED AREAS.
- WATER LINES SHALL HAVE A MINIMUM OF FOUR AND ONE-HALF (4.5) FEET OF COVER.
- ALL WATER LINES SHALL BE LOCATED A MINIMUM OF TEN (10) FEET FROM SANITARY SEWER LINES AND THREE (3) FEET FROM THE EDGE OF CONCRETE CURBS AND UTILITY OR CONCRETE PAIS.
- PRIOR TO INSTALLATION OF WATER MAINS, ROAD CONSTRUCTION AT A MINIMUM, MUST HAVE PROCEEDED TO "SUB-GRADE" STAGE. SUB-GRADE IS DEFINED AS AN ELEVATION OF NO MORE THAN SEVEN (7) INCHES BELOW THE FINISHED 2" FREE BOARD TO FINAL GRADE.
- RESOUR CONTRACTOR IN STREET RIGHTS-OF-WAY IS TO CONFORM TO APPLICABLE MUNICIPAL STANDARDS (COLORADO DEPARTMENT OF TRANSPORTATION, COLORADO COUNTY ENGINEERING DIVISION, CITY OF DENVER, CITY OF CENTENNIAL, OR THE CITY OF LONGMONT).
- THE BEDDING WILL BE PER SOUTHWATER'S STANDARD DETAIL, I.E. 8 INCHES UNDERNEATH THE PIPE AND 12 INCHES OVER THE TOP OF THE PIPE.
- ALL FIRE HYDRANTS ARE TO BE PAINTED RED.
- A MINIMUM OF FOUR (4) FEET, TWO (2) FEET EITHER SIDE OF A SERVICE TAP SHALL BE EXPOSED FOR EACH CONNECTION.
- ALL PRIVATE SERVICE LINES MUST BE INSPECTED BEFORE BACKFILL. CALL SOUTHWATER AT 303-779-2911 TO SCHEDULE YOUR INSPECTION.
- WATER SERVICE LINES MUST BE SCHEDULED WITH SOUTHWATER A MINIMUM OF 2 BUSINESS DAYS IN ADVANCE. CALL 303-779-2911 TO SCHEDULE. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING CUSTOMER AFFECTED BY SHUT-OFF A MINIMUM OF 48 HOURS NOTICE.
- THEORETICAL STATIC WATER PRESSURES ARE ESTIMATED TO RANGE FROM 150 TO 175 PSI AT USUAL ELEVATIONS. THE FIRE LINE PIPE ELEVATION SOUTHWATER HAS PROVIDED ONLY THE HYDRAULIC GRADIENT ELEVATION. THIS HYDRAULIC GRADIENT OF WHICH WAS PROVIDED AT THE TIME OF PLAN REVIEW, MAY CHANGE IN THE FUTURE AS OVERALL WATER SYSTEM OPERATIONS VARY.

Southgate
SOUTHGATE WATER DISTRICT
GENERAL NOTES

SCALE: NOT TO SCALE
ISSUE DATE: FEBRUARY 2016
SHEET: 1 OF 1
DRAWING NO: W-19

LAST SAVED: 10/11/2023 2:09 PM G:\25884\Site Plan\DET-25884.dwg

72 HOURS BEFORE YOU DIG
CALL 811
GAS, ELECTRIC, TELEPHONE, CATV AND
FIRE ALARMS CENTER OF COLORADO (UNIG.CC)

REVISIONS

NO.	DESCRIPTION	DATE	BY
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PROFESSIONAL ENGINEER
11/1/23

HURST & ASSOCIATES, INC.
1265 S. Public Road, Suite B
Lafayette, CO 80026
303.449.9105

HURST
CIVIL ENGINEERING
PLANNING
SURVEYING

5325 S. VALENTIA WAY
GREENWOOD VILLAGE, COLORADO
Project No: 25884
HIGHER GROUND

DATE: 10/11/23
SCALE: N/A
SHEET NO: 6

JOB NUMBER: 2588-4
DRAWING NAME: DET-25884
APPROVED BY: R.H.