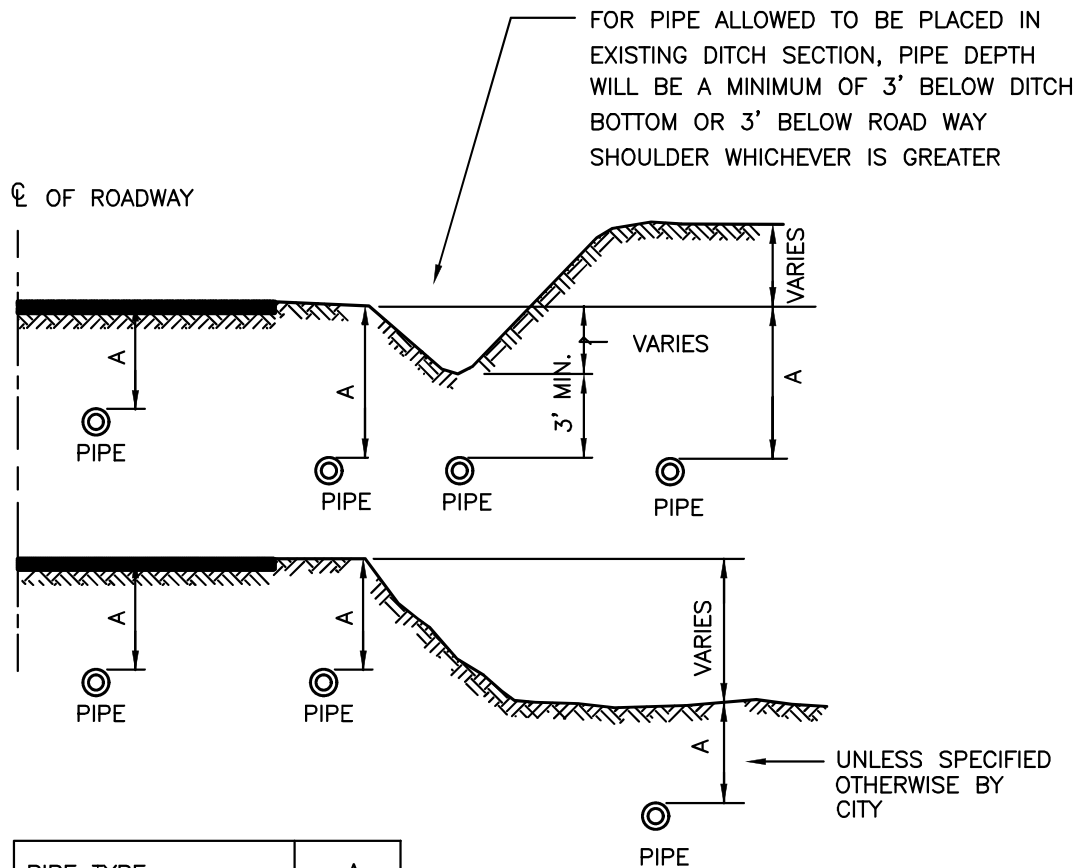


WATER DETAILS



PIPE TYPE	A
TRANSMISSION	42"
DISTRIBUTION	36"

* MINIMUM DEPTH

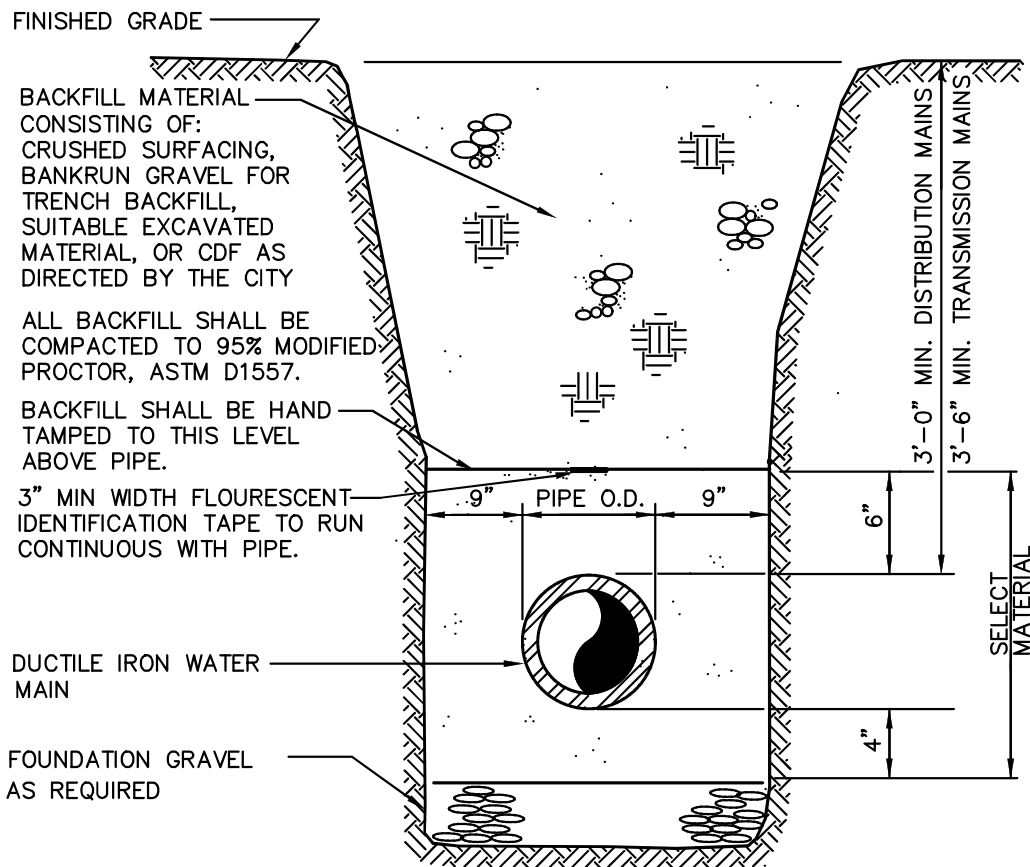


CITY OF GRANITE FALLS

WATER MAIN DEPTH REQUIREMENTS

DATE: 1/01/2021

DWG. NO.
WA-MAIN



NOTE:

BACKFILL MATERIAL AND COMPACTION SHALL BE IN CONFORMANCE WITH THE CITY'S STANDARDS AND/OR STATE OR COUNTY PERMIT REQUIREMENTS.

SELECT MATERIAL SHALL BE CRUSHED SURFACING OR GRAVEL BACKFILL FOR PIPE ZONE BEDDING.

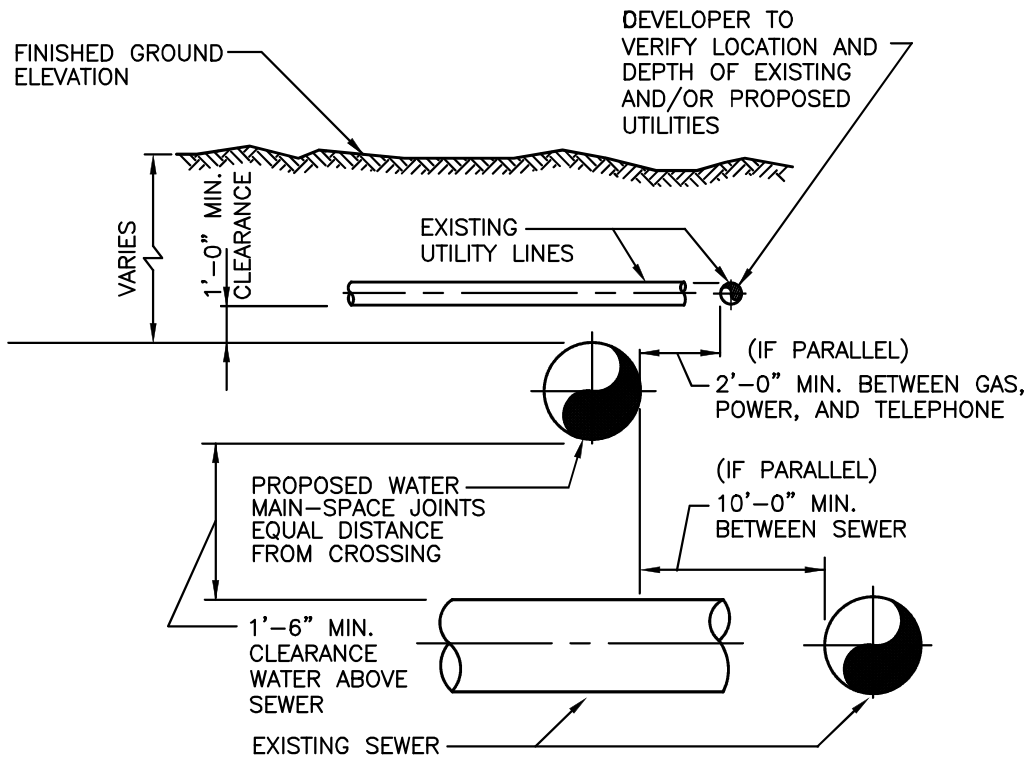


CITY OF GRANITE FALLS

TRENCH SECTION FOR RIGID PIPE

DATE: 1/01/2021

DWG. NO.
WA-MAIN2



NOTES:

1. CDF ENCASUREMENT SHALL BE UTILIZED, IF APPROVED BY THE CITY, AT LOCALIZED UTILITY CROSSING IF MINIMUM PIPE SEPARATION (ELEVATION) CANNOT BE MAINTAINED OR ACHIEVED.

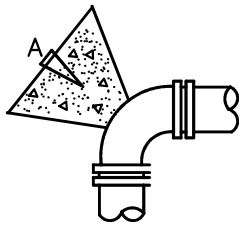


CITY OF GRANITE FALLS

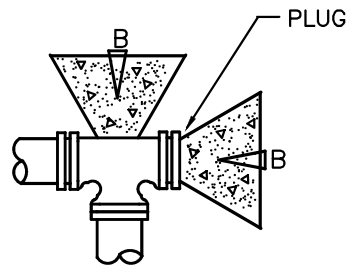
MINIMUM UTILITY SPACING

DATE: 1/01/2021

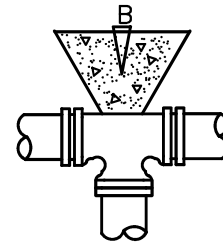
DWG. NO.
TYP-UTIL



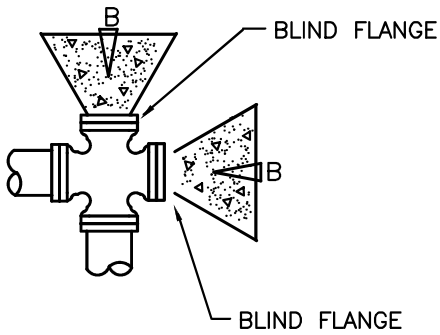
90 BEND



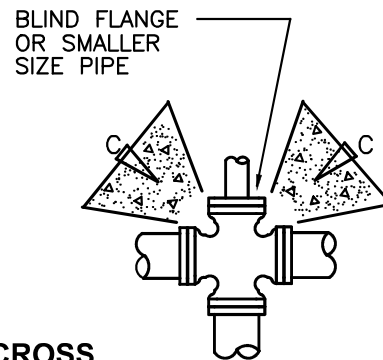
TEE



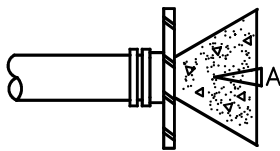
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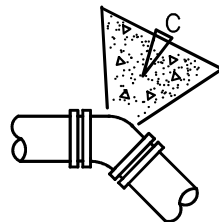
CAPPED CROSS



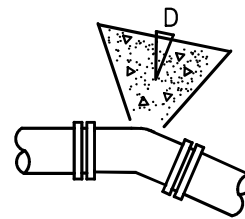
CROSS



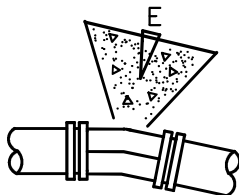
CAP



45 BEND



22 1/2 BEND



11 1/4 BEND



CITY OF GRANITE FALLS

THRUST BLOCK DETAIL (1 OF 2)

DATE: 1/01/2021

DWG. NO.
THRU-BLO2

THRUST BLOCK – TABLE
MIN. BEARING AREA AGAINST UNDISTURBED SOIL
SQUARE FEET

PIPE SIZE	A(FT ²)	B(FT ²)	C(FT ²)	D(FT ²)	E(FT ²)
4"	3	1	1	1	1
6"	4	4	2	1	1
8"	7	6	4	2	1
10"	11	10	6	3	2
12"	16	14	9	5	3
14"	22	19	12	6	3
16"	29	25	16	8	4
18"	36	31	20	10	5

NOTES:

1. BEARING AREA OF CONCRETE THRUST-BLOCK BASED ON 200 PSI PRESSURE AND SAFE SOIL BEARING LOAD OF 2,000 POUNDS PER SQUARE FOOT.
2. AREAS MUST BE ADJUSTED FOR OTHER PIPE SIZES, PRESSURES AND SOIL CONDITIONS.
3. CONCRETE BLOCKING SHALL BE CAST IN PLACE AND HAVE A MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING. WRAP ALL FITTINGS IN 6 MIL PLASTIC PRIOR TO POURING BLOCK. NO CONCRETE SHALL BE PLACED NEAR BOLTS.
4. BLOCK SHALL BEAR AGAINST FITTINGS ONLY AND SHALL BE CLEAR OF JOINTS TO PERMIT TAKING UP OR DISMANTLING OF JOINT.
5. CONTRACTOR SHALL INSTALL BLOCKING ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

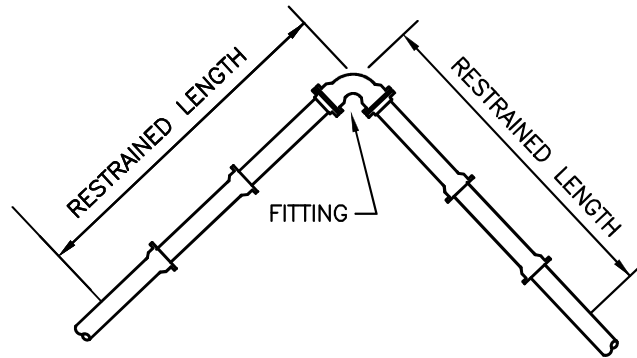


CITY OF GRANITE FALLS

THRUST BLOCK DETAIL (2 OF 2)

DATE: 1/01/2021

DWG. NO.
THRU-BLO2



PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE OR DEAD END CAP
RESTRAINED LENGTH IN FEET					
4"	40	17	8	4	30
6"	55	23	11	6	39
8"	73	31	15	8	53
10"	88	37	18	9	67
12"	103	43	21	10	82
16"	133	55	27	13	110
18"	145	60	29	15	124

NOTES:

- ① RESTRAINED LENGTHS SHOWN ARE MINIMUM AND FOR LINEAL FEET REQUIRED ON EACH SIDE OF FITTING INDICATED.
- ② FOOTAGES ARE BASED ON 250 PSI PRESSURE AND 42 INCHES COVER. IF PRESSURE IS GREATER OR COVER IS LESS, THE RESTRAINED LENGTH SHALL BE INCREASED ACCORDINGLY



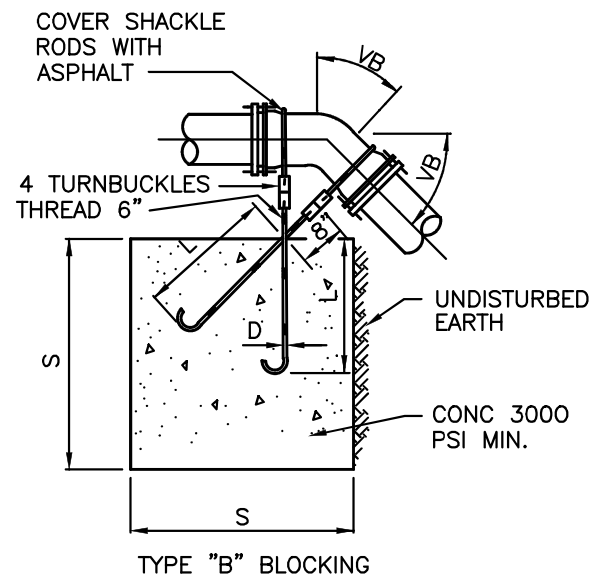
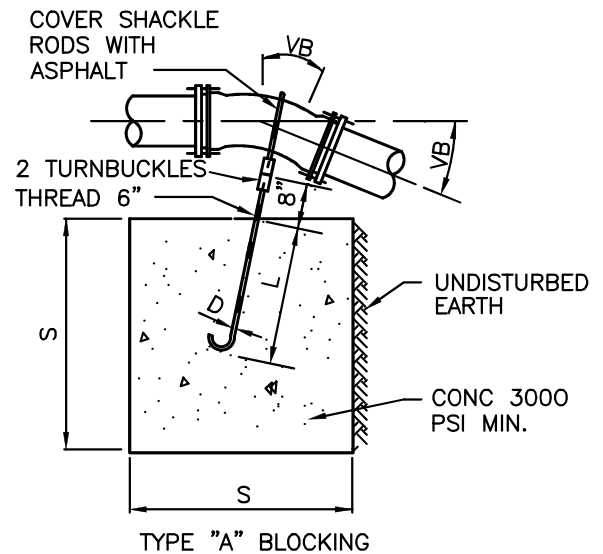
CITY OF GRANITE FALLS

THRUST RESTRAINT FOR DUCTILE
IRON PIPE

DATE: 1/01/2021

DWG. NO.
DUCT-PIP

TYPE "A" BLOCKING						
FOR 11 1/4"-22 1/2"-30" VERTICAL BENDS						
PIPE SIZE NOMINAL DIAMETER- INCHES	TEST PRESSURE PSI	VB VERTICAL BEND DEGREES	No. OF CU. FT. OF CONC. BLOCKING	S SIDE OF CUBE LIN. FT.	D DIAM. OF SHACKLE RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE LIN. FT.
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
		30	17	2.6		
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
		30	41	3.5		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
		30	70	4.1	3/4"	2.5
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
		30	132	5.1		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
		30	275	6.5	1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
		30	330	6.9	1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5
		30	480	7.9	1 7/8"	5.5
TYPE "B" BLOCKING						
FOR - 45° VERTICAL BENDS						
		VB		S	D	L
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5



THIS TABLE REPRESENTS THE "MINIMUM"
CONSTRUCTION STANDARD. APPROPRIATELY
SIZED ANCHOR BLOCKS BASED ON
EXISTING AND LOCAL CONDITIONS ARE
REQUIRED

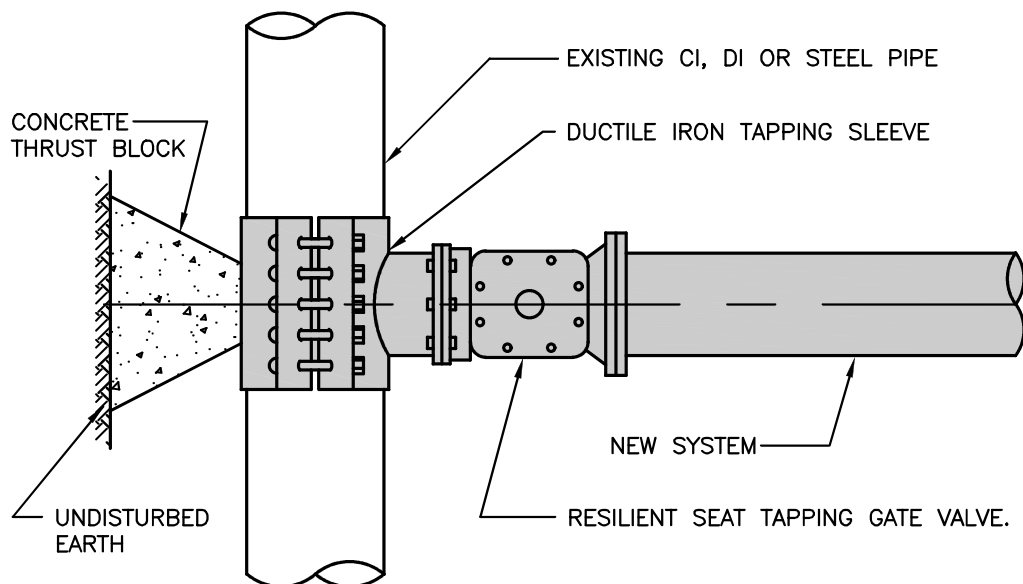


CITY OF GRANITE FALLS

VERTICAL ANCHOR BLOCK

DATE: 1/01/2021

DWG. NO.
ANCH-BLO



NOTES:

1. THE TAPPING SLEEVES SHALL BE CONSTRUCTED IN TWO SECTIONS AND RATED FOR A WORKING PRESSURE OF 250 PSI MINIMUM AND FURNISHED COMPLETE WITH JOINT ACCESSORIES.
2. MECHANICAL JOINT STYLE SLEEVES SHALL BE DUCTILE IRON AND COMPLY WITH AWWA C110. DUCTILE IRON MECHANICAL JOINT STYLE SLEEVES ARE REQUIRED FOR ALL SIZE-ON-SIZE CONNECTIONS. MECHANICAL JOINT SLEEVES SHALL BE CAST BY CLOW, DRESSER, MUELLER, TYLER, U.S. PIPE OR APPROVED EQUAL.
3. FABRICATED STEEL STYLE SLEEVES SHALL BE FUSION BONDED EPOXY-COATED, ACCEPTABLE FOR POTABLE WATER. FABRICATED STEEL STYLE SLEEVES WILL NOT BE ALLOWED FOR SIZE-ON-SIZE CONNECTIONS.
4. TAPPING VALVES SHALL BE PROVIDED WITH A STANDARD MECHANICAL JOINT OUTLET FOR USE WITH DUCTILE IRON PIPE AND SHALL HAVE OVERSIZED SEAT RINGS TO PERMIT ENTRY OF THE TAPPING MACHINE CUTTERS. IN ALL OTHER RESPECTS, THE TAPPING VALVES SHALL CONFORM TO THE RESILIENT SEAT GATE VALVES HEREIN SPECIFIED WITH REGARDS TO OPERATION AND MATERIALS.
5. THE TAPPING SLEEVE AND VALVE SHALL BE TESTED TO 100 PSI (AIR) PRIOR TO TAPPING THE MAIN.

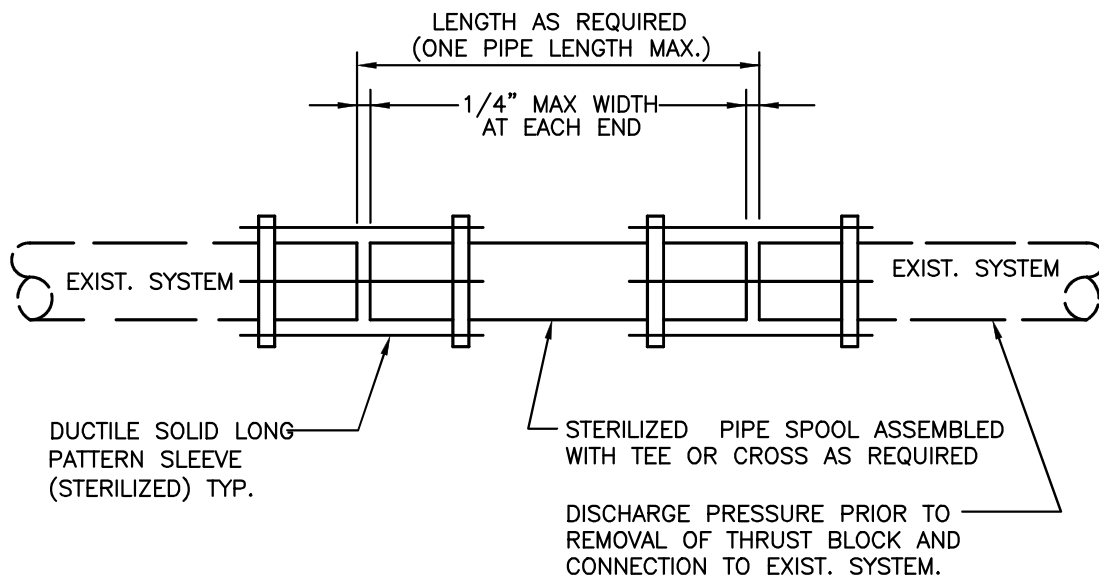


CITY OF GRANITE FALLS

WET OR HOT TAP CONNECTION

DATE: 1/01/2021

DWG. NO.
TAP-CONN



NOTE:

1. NO DEFLECTION SHALL BE ALLOWED AT EITHER COUPLING.
2. CUT-IN CONNECTIONS ON NON-DI PIPE SHALL USE EXTENDED RANGE COUPLING (ROMAC XR501 OR EQUAL).
3. IN-LINE VALVE(S) IN EXISTING SYSTEM MAY BE REQUIRED AT THE SOLE DISCRETION OF THE CITY AT ALL NEW INTERTIE LOCATIONS. (NOTE: VALVE(S) ARE NOT SHOWN ABOVE FOR CLARITY)

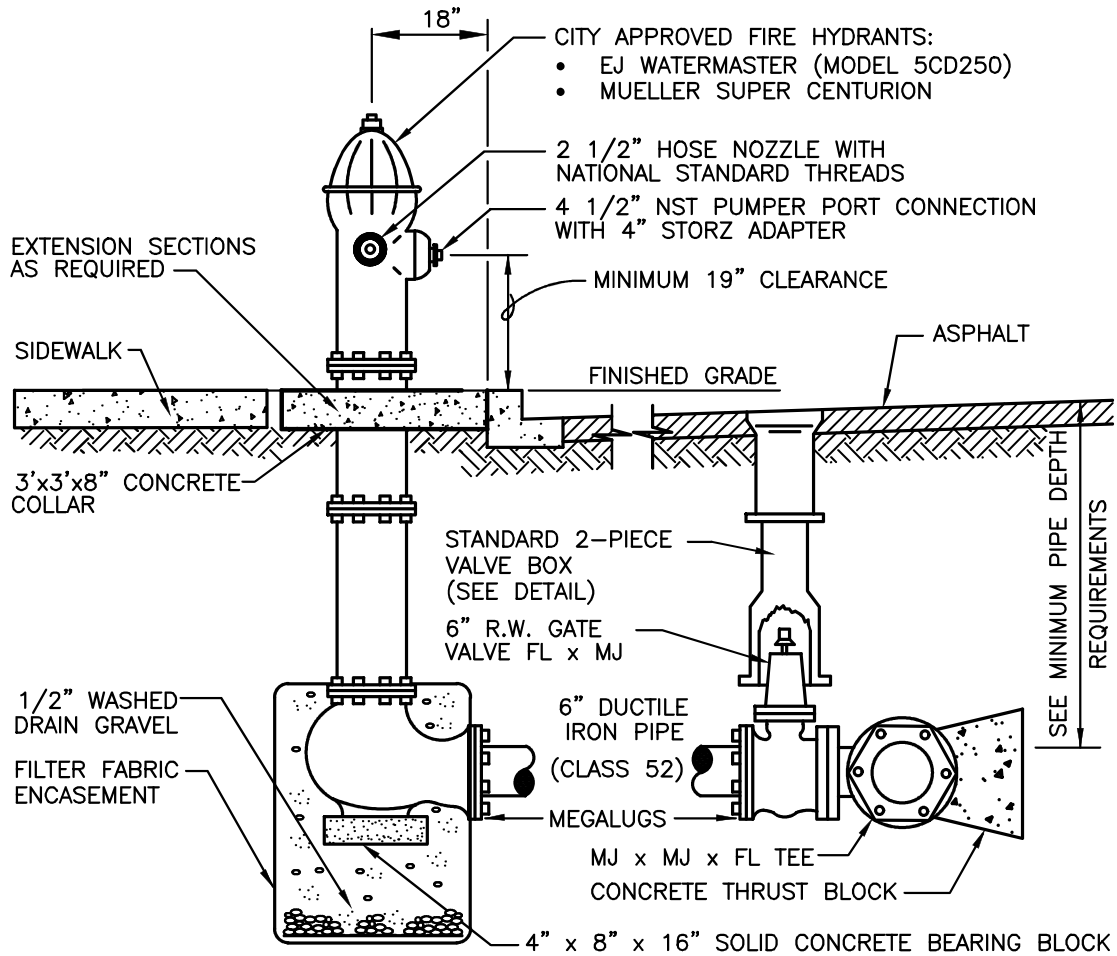


CITY OF GRANITE FALLS

CUT IN CONNECTION

DATE: 1/01/2021

DWG. NO.
CUT-CONN



NOTES:

1. FIRE HYDRANTS TO BE PAINTED AS FOLLOWS:
 - A. IF IN CITY: RUSTOLEUM 31-144 CATERPILLAR YELLOW. ENAMEL GLOSS
 - B. IF IN COUNTY: APPLY SNOHOMISH COUNTY P.U.D. REQUIREMENTS
2. INSTALL BLUE LANE REFLECTOR IN PAVEMENT.
3. STANDARD 4 1/2" NST PUMPER PORT CAP SUPPLIED WITH HYDRANT SHALL BE SALVAGED FOR CITY USE.

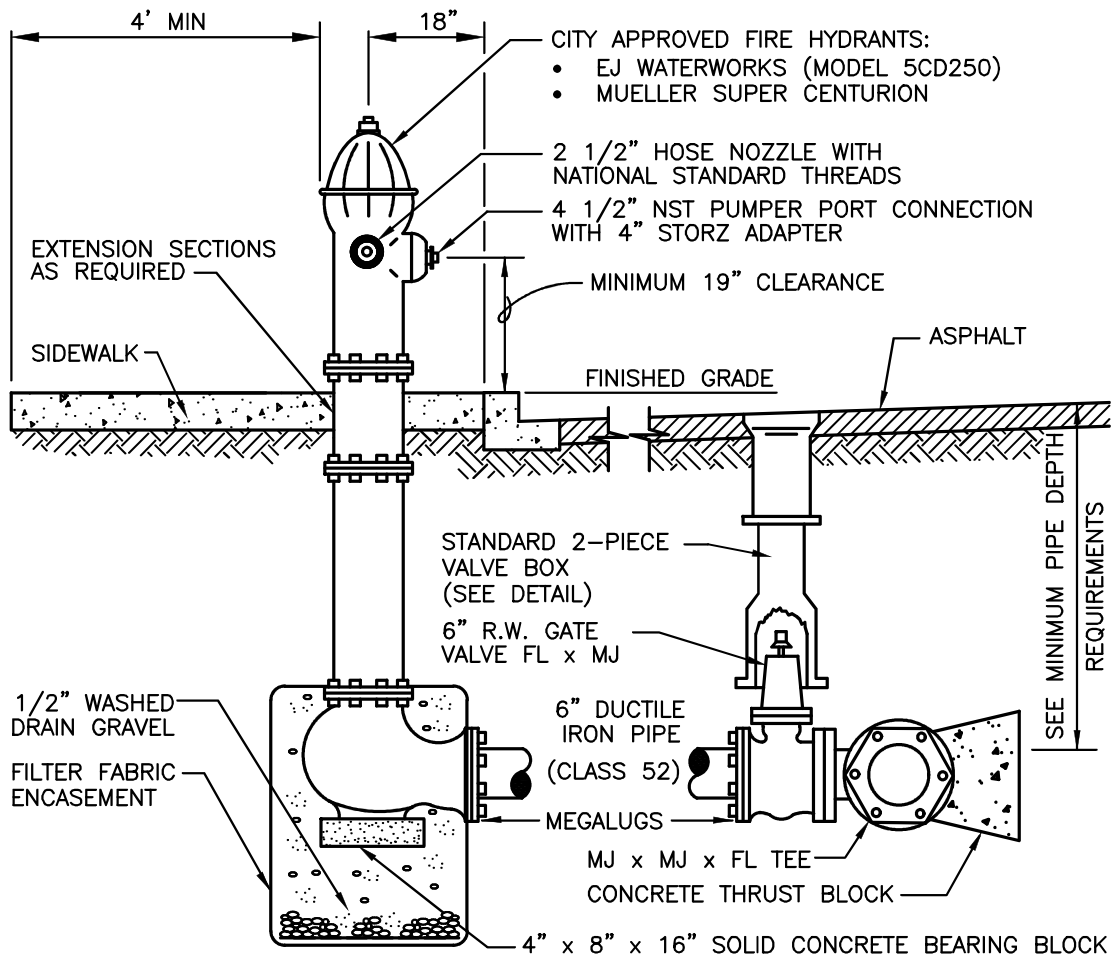


CITY OF GRANITE FALLS

FIRE HYDRANT IN PLANTER STRIP
(CURB, GUTTER, SIDEWALK)

DATE: 1/01/2021

DWG. NO.
FIRE-HYD7



NOTES:

1. FIRE HYDRANTS TO BE PAINTED AS FOLLOWS:
 - A. IF IN CITY: RUSTOLEUM 31-144 CATERPILLAR YELLOW. ENAMEL GLOSS
 - B. IF IN COUNTY: APPLY SNOHOMISH COUNTY P.U.D. REQUIREMENTS
2. INSTALL BLUE LANE REFLECTOR IN PAVEMENT.
3. STANDARD 4 1/2" NST PUMPER PORT CAP SUPPLIED WITH HYDRANT SHALL BE SALVAGED FOR CITY USE.

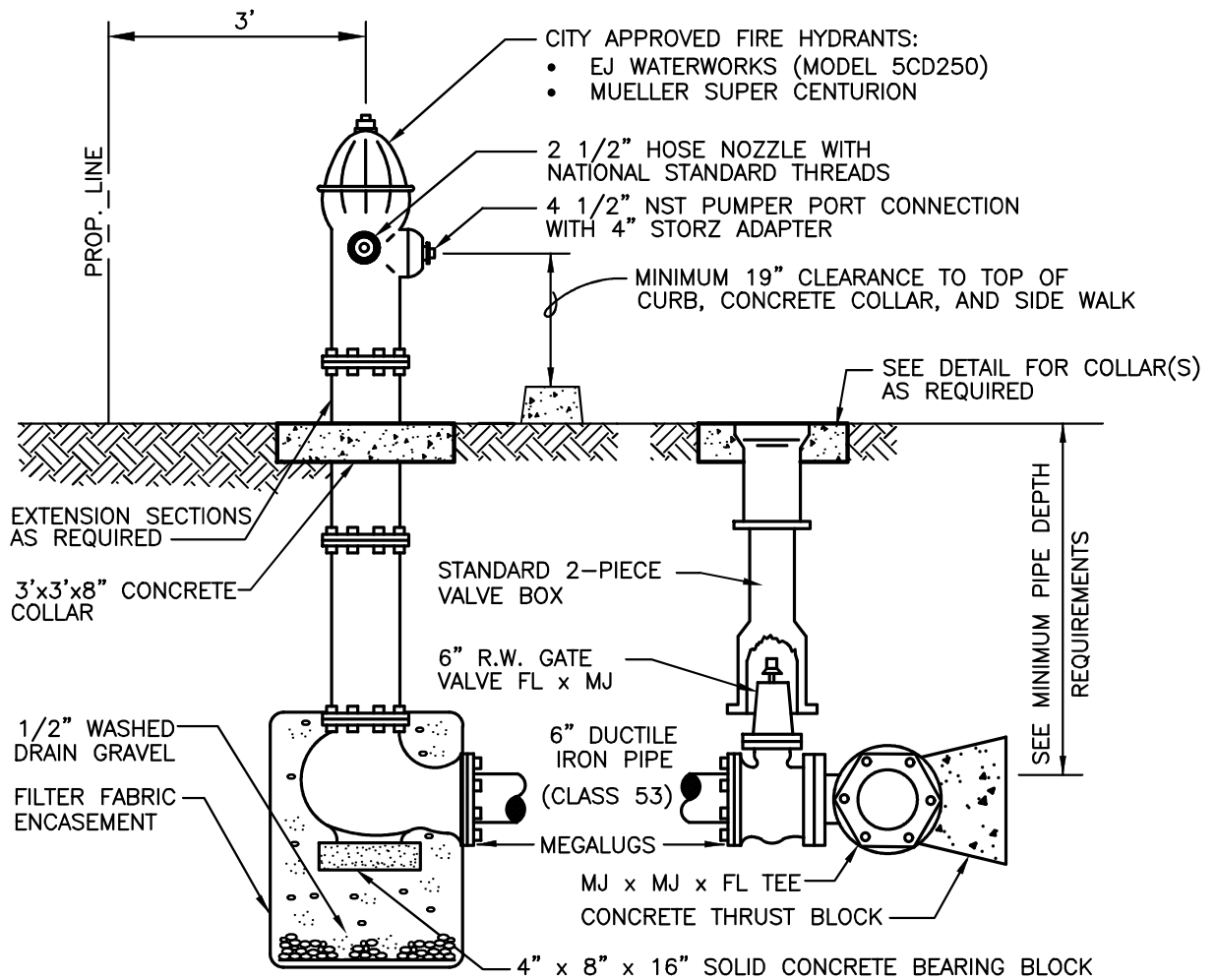


CITY OF GRANITE FALLS

FIRE HYDRANT IN SIDEWALK
(CURB, GUTTER, SIDEWALK)

DATE: 1/01/2021

DWG. NO.
FIRE-HYD2



NOTES:

1. FIRE HYDRANTS TO BE PAINTED AS FOLLOWS:
 - A. IF IN CITY: RUSTOLEUM 31-144 CATERPILLAR YELLOW. ENAMEL GLOSS
 - B. IF IN COUNTY: APPLY SNOHOMISH COUNTY P.U.D. REQUIREMENTS
2. INSTALL BLUE LANE REFLECTOR IN PAVEMENT.
3. STANDARD 4 1/2" NST PUMPER PORT CAP SUPPLIED WITH HYDRANT SHALL BE SALVAGED FOR CITY USE.

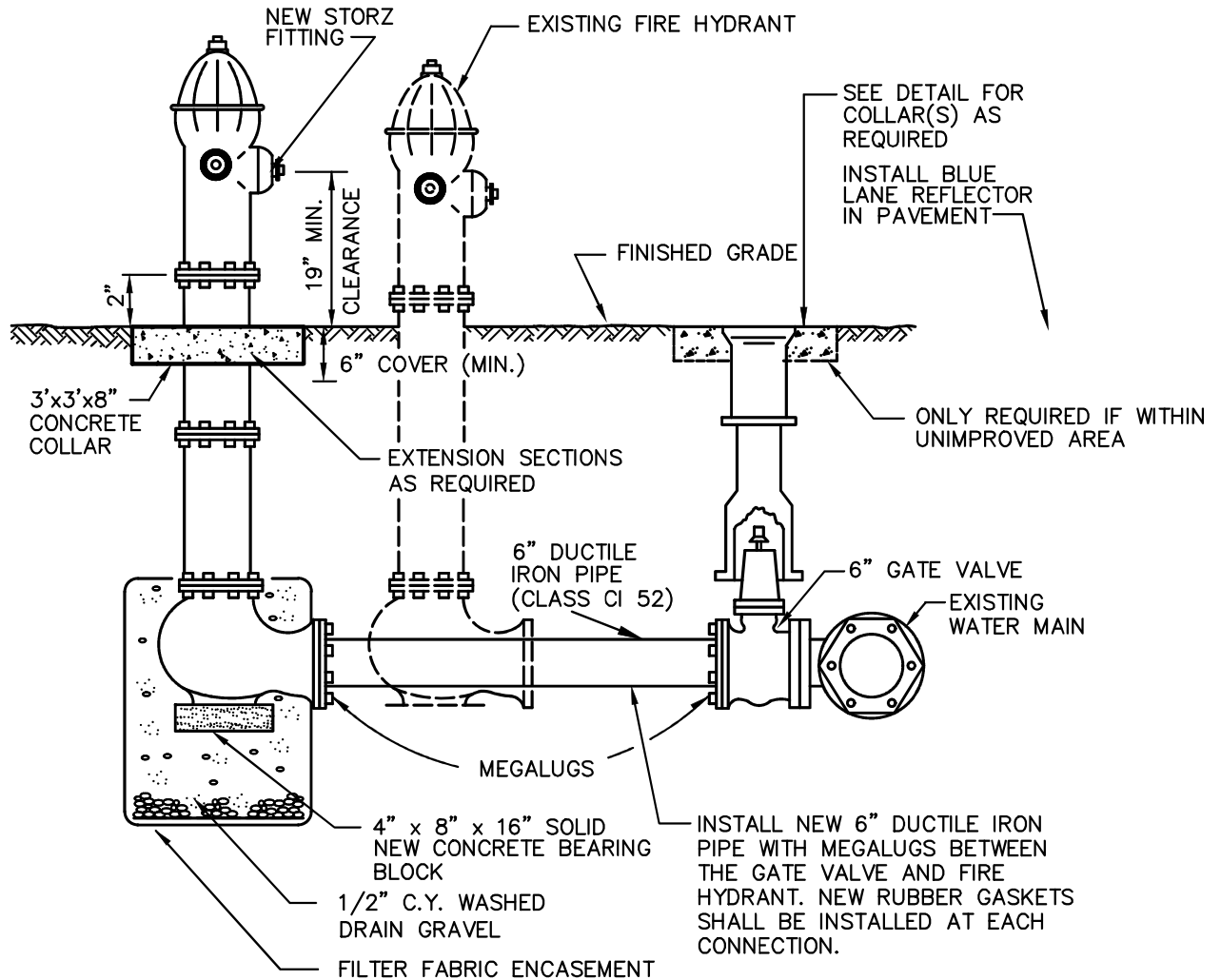


CITY OF GRANITE FALLS

FIRE HYDRANT INSTALLATION
(EXTRUDED CURB)

DATE: 1/01/2021

DWG. NO.
FIRE-HYD6



NOTES :

1. ALL RELOCATED 4 1/2" PUMPER PORTS ON FIRE HYDRANTS SHALL BE FITTED WITH 4" STORZ ADAPTOR.
2. PROVIDE MIN. 3' - 0" CLEARANCE AND LEVEL AREA AROUND RELOCATED HYDRANT.

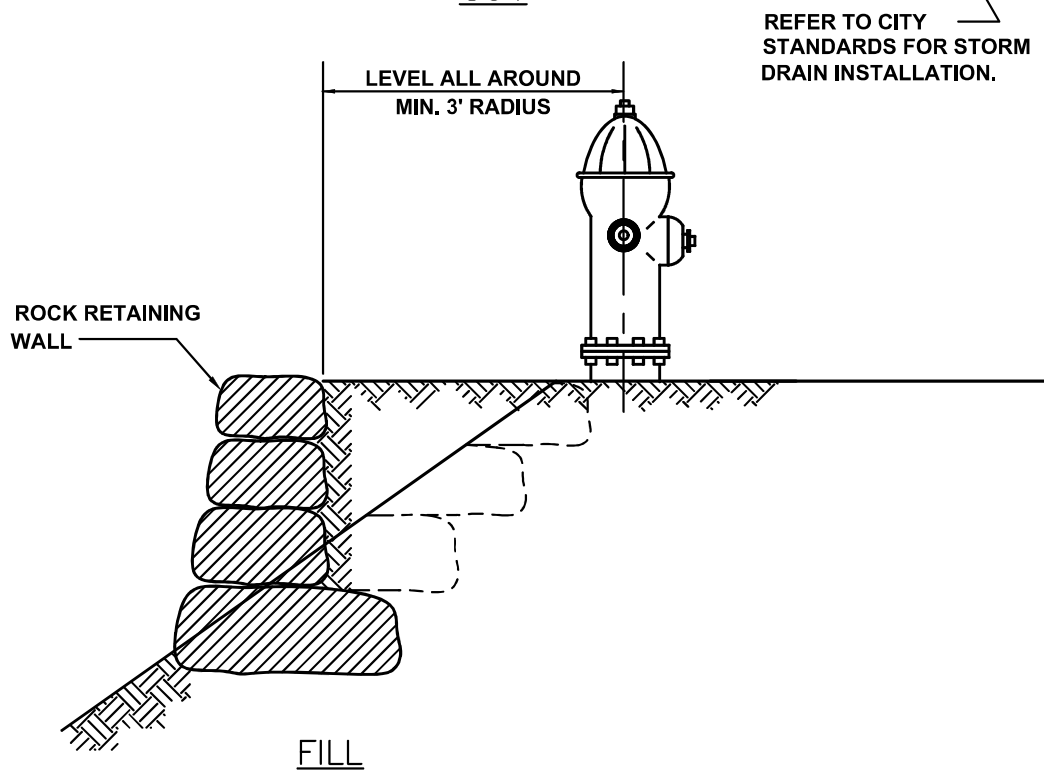
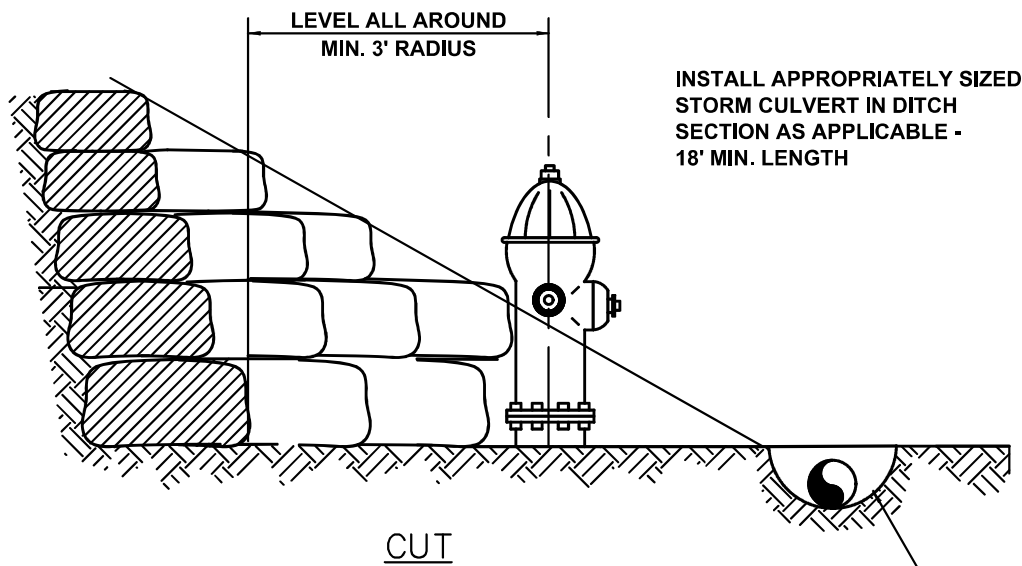


CITY OF GRANITE FALLS

FIRE HYDRANT RELOCATION

DATE: 1/01/2021

DWG. NO.
FIRE-HYD3

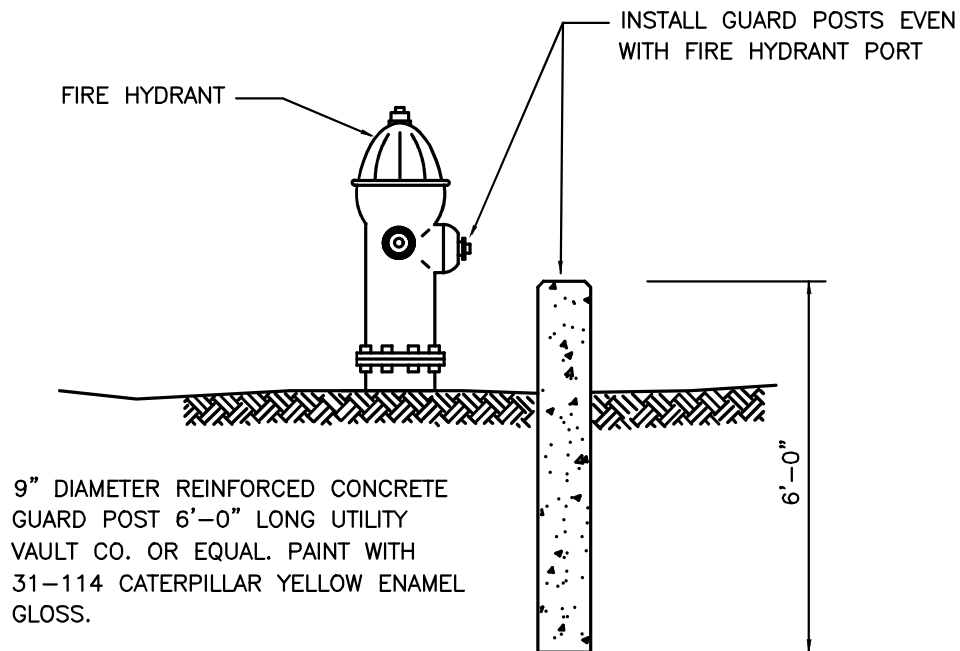


CITY OF GRANITE FALLS

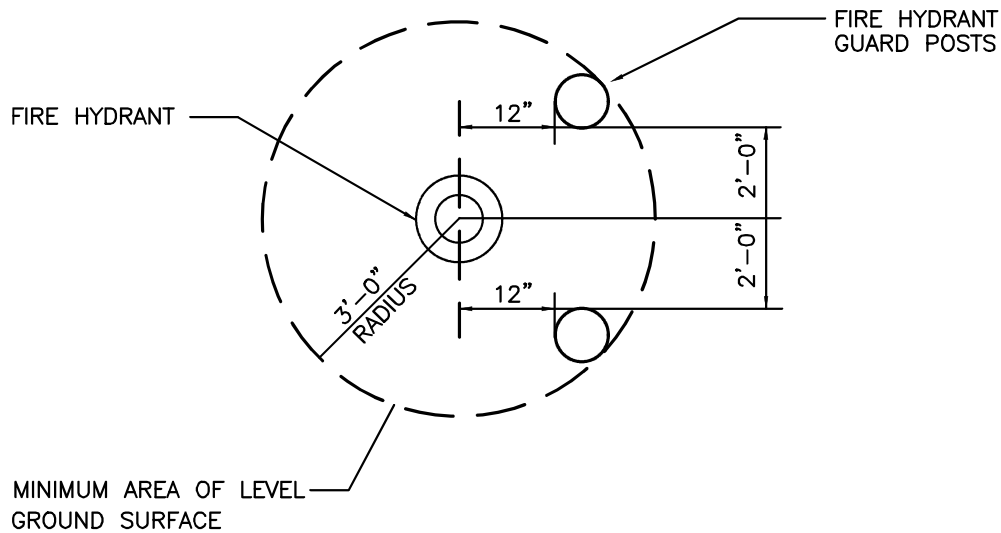
FIRE HYDRANT IN CUT OR FILL

DATE: 1/01/2021

DWG. NO.
FIRE-HYD4



ELEVATION



PLAN



CITY OF GRANITE FALLS

FIRE HYDRANT GUARD POST
INSTALLATION

DATE: 1/01/2021

DWG. NO.
FIRE-HYD5