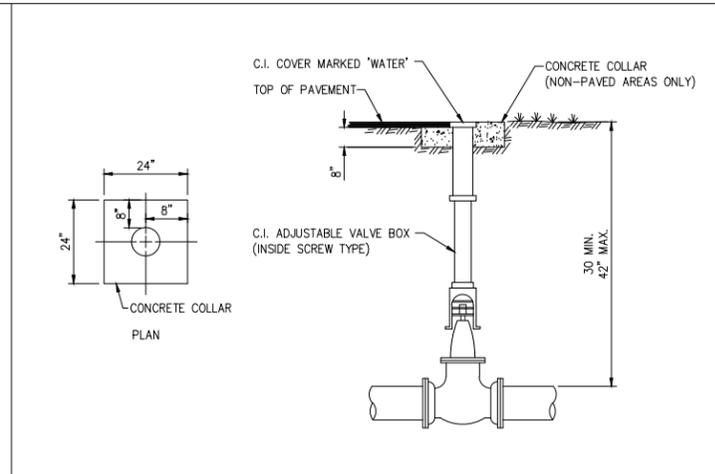
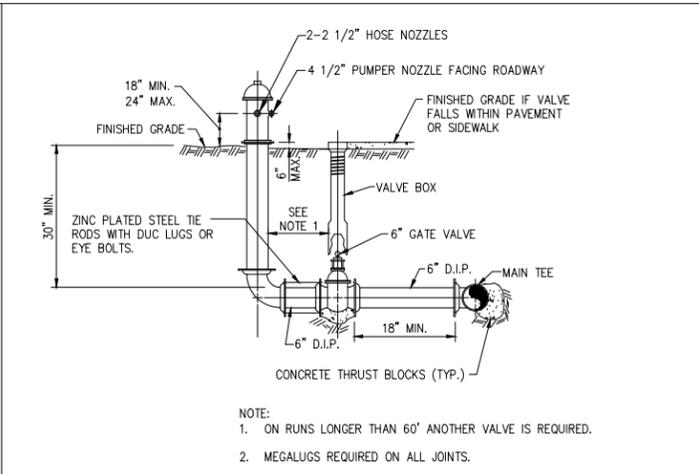


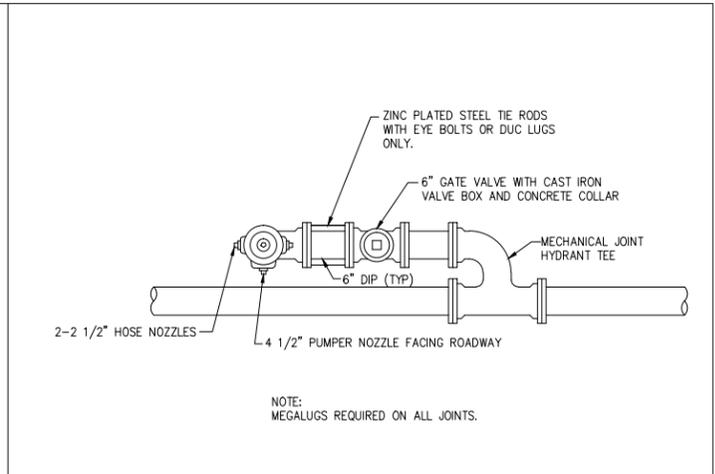
PIGGING AND CANNON FLUSHING 1



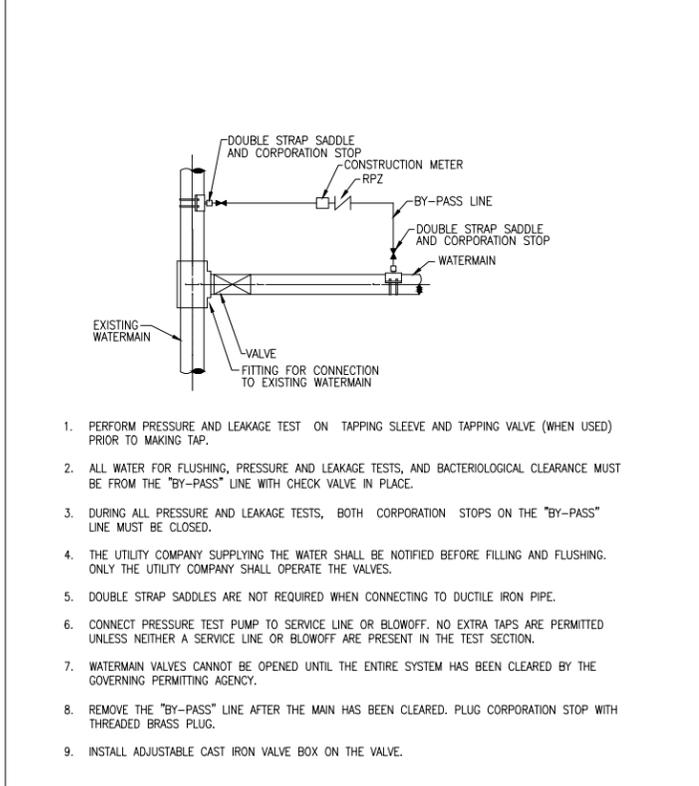
VALVE SETTING 2



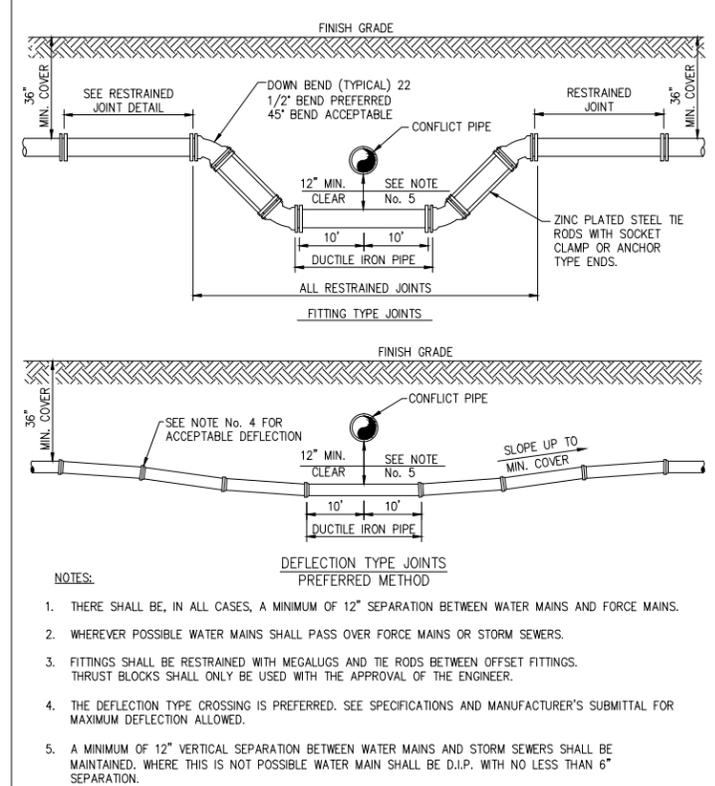
FIRE HYDRANT INSTALLATION 3



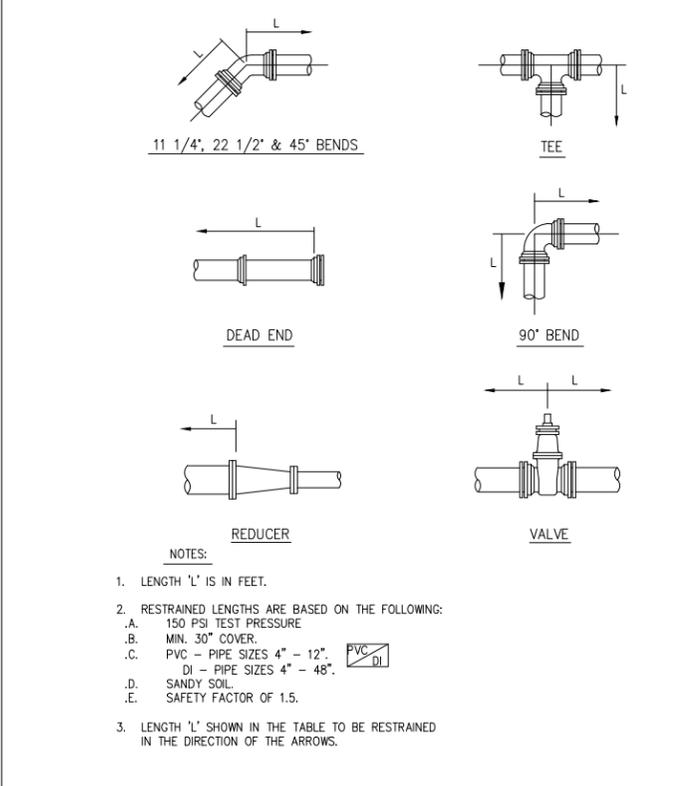
FIRE HYDRANT INSTALLATION PARALLEL TO WATERMAIN 4



DOUBLE VALVE CONNECTION 5



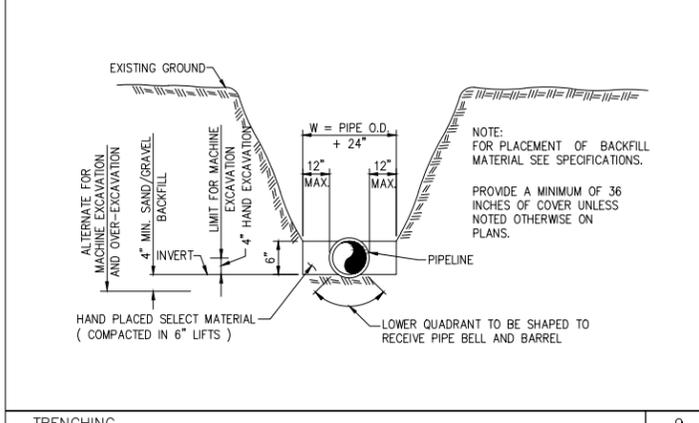
PRESSURE PIPE CONFLICT 6



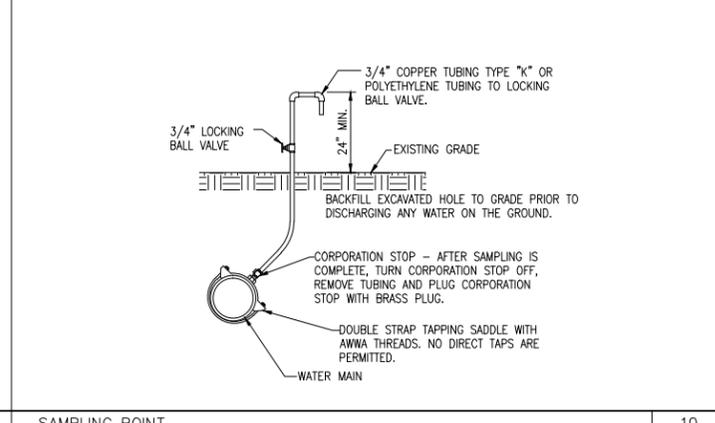
RESTRAINED PIPE JOINTS 7

FITTING TYPE	PIPE SIZE															
	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"		
90° HORIZ. BEND	17	14	20	31	42	53	64	75	86	97	108	119	130	141	152	
45° HORIZ. BEND	7	6	10	13	16	19	22	25	29	33	37	40	44	49	53	
22.5° HORIZ. BEND	3	3	4	5	6	7	8	9	10	12	14	16	18	19	21	
11.25° HORIZ. BEND	2	2	3	3	4	4	5	5	6	7	8	9	10	11	12	
45° VERT. OFFSET	19	12	17	22	27	32	36	40	44	48	55	67	77	86	95	
22.5° VERT. OFFSET	9	6	8	10	12	14	15	17	19	21	23	26	29	32	35	
11.25° VERT. OFFSET	5	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
DEAD END AND INLINE VALVE	46	38	50	62	74	86	97	107	117	127	136	162	186	208	229	
TEE (BRANCH RESTRAINT)	4"x	21	18	21	24	27	30	33	36	39	42	45	48	51	54	
	6"x	29	25	31	37	43	49	55	61	67	73	79	85	91	97	
	8"x	37	31	39	46	53	60	67	74	81	88	95	102	109	116	
	10"x	45	37	47	55	63	71	79	87	95	103	111	119	127	135	
	12"x	53	43	55	64	73	82	91	100	109	118	127	136	145	154	
	14"x	61	49	63	73	83	93	102	111	120	129	138	147	156	165	
	16"x	69	55	71	82	93	103	112	121	130	139	148	157	166	175	
	18"x	77	61	79	91	102	112	121	130	139	148	157	166	175	184	
REDUCER (LARGER PIPE RESTRAINT)	6"x	34	27	31	35	39	43	47	51	55	59	63	67	71	75	
	8"x	42	33	39	45	51	57	63	69	75	81	87	93	99	105	
	10"x	50	39	47	55	63	71	79	87	95	103	111	119	127	135	
	12"x	58	45	55	64	73	82	91	100	109	118	127	136	145	154	
	14"x	66	51	62	73	83	93	102	111	120	129	138	147	156	165	
	16"x	74	57	69	81	92	102	111	120	129	138	147	156	165	174	
	18"x	82	63	76	88	99	109	118	127	136	145	154	163	172	181	
	20"x	90	69	83	96	107	117	126	135	144	153	162	171	180	189	

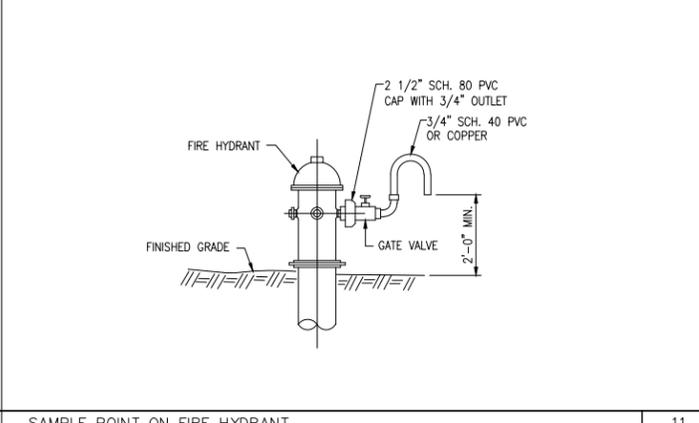
MECHANICAL THRUST RESTRAINT - MINIMUM PIPE LENGTHS 8



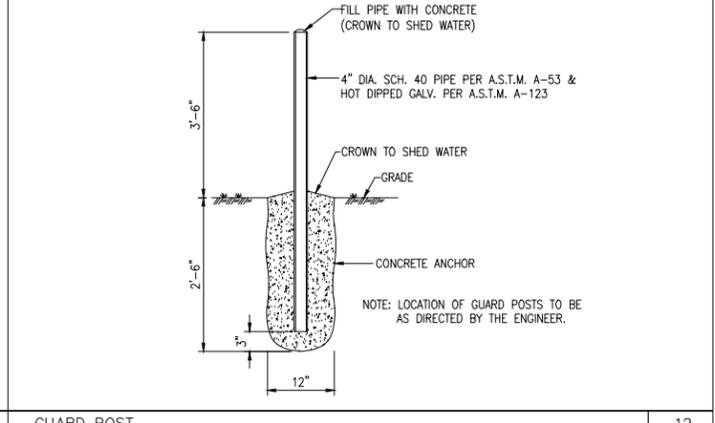
TRENCHING 9



SAMPLING POINT 10



SAMPLE POINT ON FIRE HYDRANT 11



GUARD POST 12