PROJECT REFERENCE NO.	SHEET NO.
U-2717	UC-26

DESIGNED BY: DMP
DRAWN BY: DMP
CHECKED BY: DMP
APPROVED BY:
REVISED:

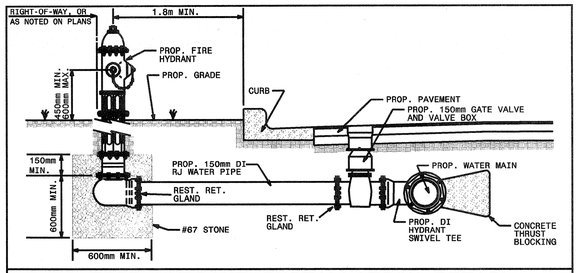
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN SERVICES UNIT
PHONE:(919)250-4128
FAX:(919)250-4119

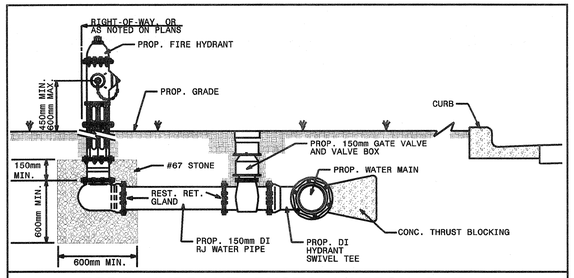
NORTH CAROLINA PROFESSIONAL SEAL 10217 ENGINEER RANDY L. MCNEILL 6/3/04

UTILITY CONSTRUCTION PLANS ONLY

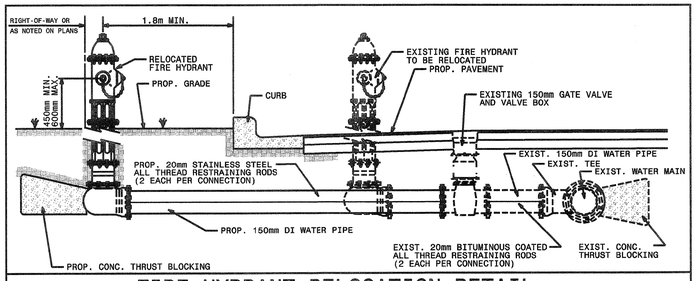
UTILITY CONSTRUCTION



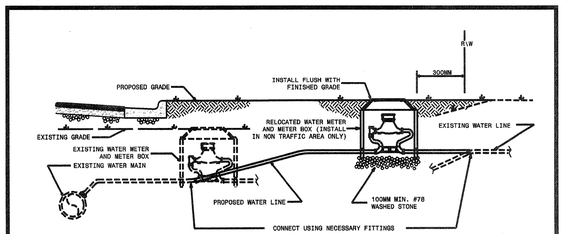
FIRE HYDRANT INSTALLATION DETAIL (PAVED AREAS)



FIRE HYDRANT INSTALLATION DETAIL (UNPAVED AREAS)



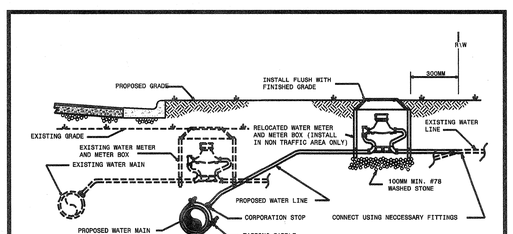
FIRE HYDRANT RELOCATION DETAIL



NOTES:

1. RELOCATION SHALL INCLUDE THE REMOVAL AND INSTALLATION AT THE APPROPRIATE LOCATION OF THE WATER METER, METER SETTER AND YOKE, METER VALVES, AND METER BOX WITH LID.
2. THE NEW WATER SERVICE LINE SHALL BE OF THE SAME TYPE AND GRADE AS THE EXISTING WATER SERVICE LINE UNLESS OTHERWISE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.
3. THE NEW WATER SERVICE LINE SHALL BE INSTALLED WITH A MINIMUN OF 900MM COVER BELOW FINISHED GRADE.

WATER METER RELOCATION DETAIL



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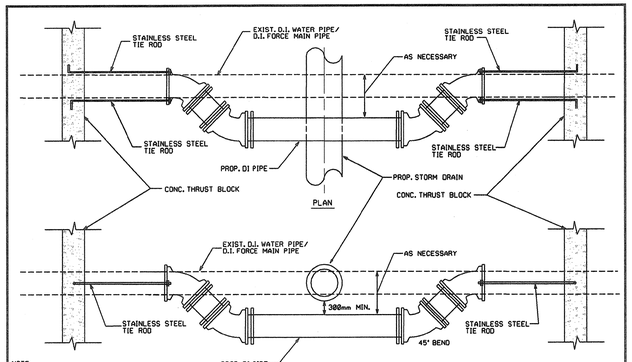
WATER METER RELOCATION DETAIL

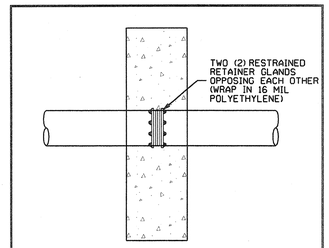


NOTE:

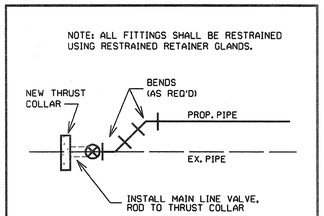
1. ALL FITTINGS BETWEEN TIE RODS SHALL BE RESTRAINED BY USING RESTRAINED RETAINER GLANDS.
2. CONC. THRUST BLOCK SHALL BE PLACED AND CURED THREE DAYS PRIOR TO CUTTING EXISTING PIPE.

*NTS

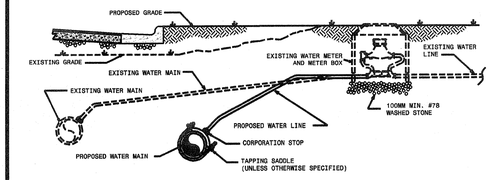
RELOCATION OF D.I. WATER PIPE OR D.I. FORCE MAIN PIPE AT PROPOSED STORM DRAINAGE AS SHOWN ON PLANS



THRUST COLLAR ANCHOR



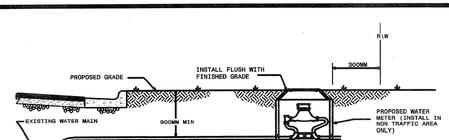
PROPOSED WATER MAIN TIE-IN TO EXISTING WATER MAIN



NOTES:

1. THE NEW WATER SERVICE LINE SHALL BE OF THE SAME TYPE AND GRADE AS THE EXISTING WATER SERVICE LINE UNLESS OTHERWISE SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER.
2. THE NEW WATER SERVICE LINE SHALL BE INSTALLED WITH A MINIMUN OF 900MM COVER BELOW FINISHED GRADE.

RECONNECT EXISTING WATER METER DETAIL



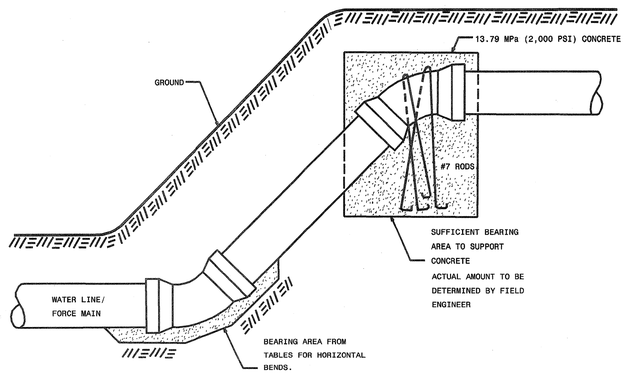
NOTES:

1. INSTALLATION SHALL INCLUDE THE APPROPRIATE LOCATION OF THE WATER METER, METER SETTER AND YOKE,METER VALVES, AND METER BOX WITH LID.
2. THE NEW WATER SERVICE LINE SHALL BE INSTALLED WITH A MINIMUN OF 900MM COVER BELOW FINISHED GRADE.

WATER METER INSTALLATION DETAIL

REQUIRED BEARING AREAS

SIZE (MM)	SIZE (INCHES)	DEGREE OF BEND	STATIC THRUST (NEWTONS)	STATIC THRUST (LBS)	FAIRLY DRY CLAY 0.192 Mpa (+4,000 PSF) (SM)	(SF)	SOFT CLAY 0.096 Mpa (+2,000 PSF) (SM)	(SF)	GRAVEL, COARSE SAND 0.796 Mpa (+16,000 PSF) (SM)	(SF)	ALWAYS DRY CLAY 0.383 Mpa (+8,000 PSF) (SM)	(SF)	SAND, COMPACT, FIRM 0.383 Mpa (+8,000 PSF) (SM)	(SF)	SAND, CLEAN, DRY 0.192 Mpa (+4,000 PSF) (SM)	(SF)	QUICKSAND, VERY POOR SOIL 0.148 Mpa (1,000 PSF) (SM)	(SF)	ROCK, POOR 0.479 Mpa (+10,000 PSF) (SM)	(SF)
150	6	11.25	3612	812	0.09	1	0.09	1	0.09	1	0.09	1	0.09	1	0.09	1	0.09	1	0.09	1
		22.5	7353	1653	0.09	1	0.09	1	0.09	1	0.09	1	0.09	1	0.09	1	0.19	2	0.09	1
		45	14443	3247	0.09	1	0.19	2	0.09	1	0.09	1	0.09	1	0.09	1	0.37	4	0.09	1
		90	26663	5994	0.19	2	0.28	3	0.09	1	0.09	1	0.09	1	0.19	2	0.56	6	0.09	1
		PLUG	18856	4239	0.09	1	0.19	2	0.09	1	0.09	1	0.19	1	0.09	1	0.37	4	0.09	1
200	8	11.25	6423	1444	0.09	1	0.09	1	0.09	1	0.09	1	0.09	1	0.09	1	0.19	2	0.09	1
		22.5	13073	2939	0.09	1	0.19	1	0.09	1	0.09	1	0.09	1	0.09	1	0.28	3	0.09	1
		45	25680	5773	0.19	2	0.28	3	0.09	1	0.09	1	0.09	1	0.19	2	0.56	6	0.09	1
		90	47400	10656	0.28	3	0.56	6	0.09	1	0.19	2	0.19	2	0.28	3	1.02	11	0.19	2
		PLUG	33522	7536	0.19	2	0.37	4	0.09	1	0.09	1	0.09	1	0.19	2	0.74	8	0.09	1
300	12	11.25	14448	3248	0.09	1	0.19	2	0.09	1	0.09	1	0.09	1	0.09	1	0.28	3	0.09	1
		22.5	29412	6612	0.19	2	0.37	4	0.09	1	0.09	1	0.09	1	0.19	2	0.65	7	0.09	1
		45	57774	12988	0.28	3	0.65	7	0.09	1	0.19	2	0.19	2	0.28	3	1.21	13	0.19	2
		90	106651	23976	0.56	6	1.11	12	0.19	2	0.28	3	0.28	3	0.56	6	2.23	24	0.28	3
		PLUG	75424	16956	0.37	4	0.84	9	0.09	1	0.19	2	0.19	2	0.37	4	1.58	17	0.19	2
400	16	11.25	25688	5775	0.19	2	0.28	3	0.09	1	0.09	1	0.09	1	0.19	2	0.56	6	0.09	1
		22.5	52293	11756	0.28	3	0.56	6	0.09	1	0.19	2	0.09	1	0.28	3	1.11	12	0.09	1
		45	102709	23090	0.56	6	1.11	12	0.19	2	0.28	3	0.28	3	0.56	6	2.14	23	0.28	3
		90	189601	42624	1.02	11	2.04	22	0.28	3	0.56	6	0.56	6	1.02	11	3.99	43	0.37	4
		PLUG	134087	30144	0.74	8	1.39	15	0.19	2	0.37	4	0.37	4	0.74	8	2.79	30	0.28	3



CONCRETE REQUIRED TO ANCHOR VERTICAL BEND
(BASED ON TEST PRESSURE OF 1.03 MPa (150 PSI)

PIPE DIA. (INCHES)	PIPE DIA. (MM)	11.25° BEND RESULTANT FORCE (LBS.)	11.25° BEND RESULTANT FORCE (NEWTONS)	11.25° BEND CONC. REQ'D (CY)	11.25° BEND CONC. REQ'D (CM)	22.5° BEND RESULTANT FORCE (LBS.)	22.5° BEND RESULTANT FORCE (NEWTONS)	22.5° BEND CONC. REQ'D (CY)	22.5° BEND CONC. REQ'D (CM)	45° BEND RESULTANT FORCE (LBS.)	45° BEND RESULTANT FORCE (NEWTONS)	45° BEND CONC. REQ'D (CY)	45° BEND CONC. REQ'D (CM)
6	150	812	3612	--	--	1653	7353	0.50	0.014	3247	14443	1.00	0.028
8	200	1444	6423	0.50	0.014	2939	13073	0.75	0.021	5773	25680	1.50	0.042
12	300	3248	14448	1.00	0.028	6612	29412	1.75	0.050	12988	57774	3.50	0.099
16	400	5775	25688	1.50	0.042	11756	52293	3.00	0.085	23090	102709	6.00	0.170

UTILITY CONSTRUCTION PLANS DESIGNED BY:
DAVIS-MARTIN-POWELL & ASSOC., INC.
ENGINEERING-LAND PLANNING-SURVEYING
HIGH POINT, NORTH CAROLINA