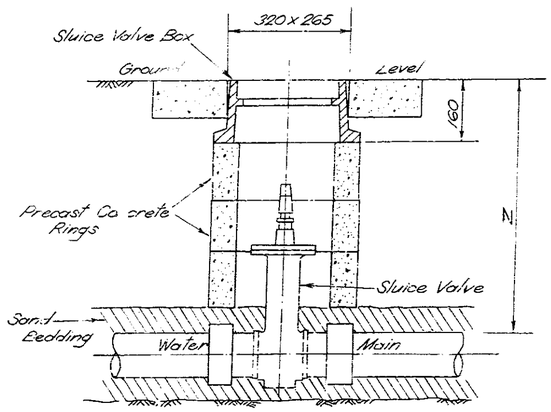
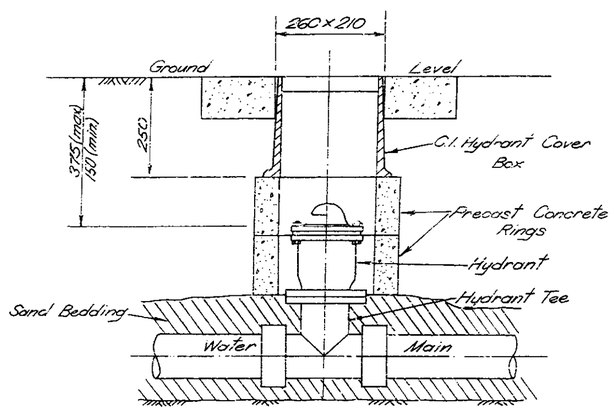
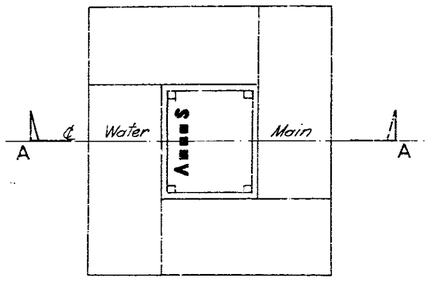


SECTION A-A



SECTION B-B



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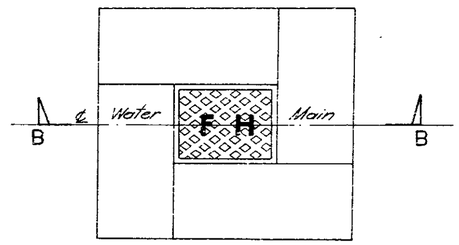

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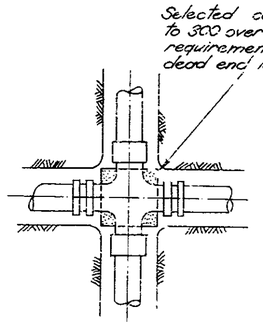
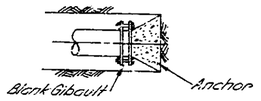
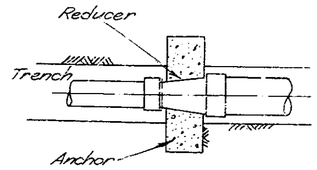


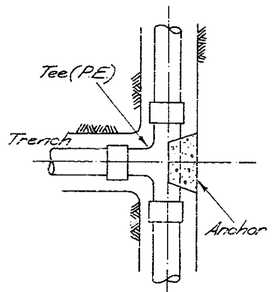
CROSS



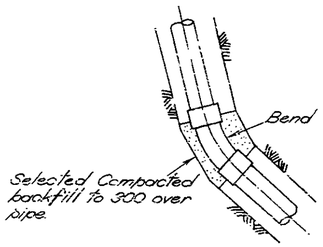
DEAD END



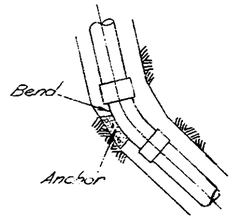
REDUCER



TEE



NOMINAL THRUST LOADS



DESIGN THRUST LOADS

BENDS
(See table for minimum anchorage requirements)

ANCHORAGE DETAILS

MINIMUM THRUST AREA FOR ANCHORAGE WITH TEST PRESSURE 1200 K.Pa. — M^2

SAFE BEARING CAPACITY OF GROUND	DIA. OF BEND OR TEE BRANCH	90° BENDS & TEES			45° BENDS			22½° BENDS			11¼° BENDS			DEAD ENDS		
		55 K.Pa.	110 K.Pa.	220 K.Pa.	55 K.Pa.	110 K.Pa.	220 K.Pa.	55 K.Pa.	110 K.Pa.	220 K.Pa.	55 K.Pa.	110 K.Pa.	220 K.Pa.	55 K.Pa.	110 K.Pa.	220 K.Pa.
	100	·28	·14	·09	·14	·09	N	·09	N	N	N	N	N	·19	·12	·07
	150	·62	·31	·17	·34	·17	N	·17	N	N	N	N	N	·44	·24	·12
	200	1·09	·54	·23	·59	·31	·17	·31	·17	N	·17	N	N	·74	·37	·19
	250	1·63	·82	4·2	·88	·46	·26	·46	·26	·14	·26	·14	N	1·12	·59	·31
	300	2·34	1·18	·64	1·28	·65	·34	·65	·34	·17	·36	·19	N	1·67	·86	·44
	375	3·64	1·84	·96	2·00	1·00	·54	1·00	·52	·28	·54	·28	·14	2·56	1·30	·65

VALVE SIZE	DEPTH Z
80	640
100	660
150	740
200	840
225	810
250	910
300	990
375	1070

MAXIMUM SAFE BEARING CAPACITIES

S.B.C. used in any particular case to be approved by the Engineer.

GROUND DESCRIPTION	SAFE BEARING CAPACITY
Solid Rock	220K.Pa.
Hard Clays Cohesive Gravels Shales	220K.Pa.
Sandy Clays Non-cohesive Well Graded Sands & Gravel	110K.Pa.
Soft Clays Blocksoil	55K.Pa.
In solid rock minimum areas as approved by engineer.	

NOTES

1. All fittings to be provided with thrust anchor of minimum area against solid ground to transfer unbalanced forces from fittings to solid ground.
2. Permanent anchors to = 15 M.Pa. concrete, temporary may be approved timber forms.
3. Crosses to be anchored as for tees where one or more branches closed off.
4. Minimum area of anchors for reducers to be equal to difference in area for dead ends of diameters of each end of reducer.
5. Where nominal area 'N' detailed, anchorage may be effected by compaction of selected backfill to 300 over fitting for full width of trench and full length of fitting.
6. Tabulated minimum areas apply for test pressure of 1200 K.Pa. Areas may be adjusted pro-rata for other specified test pressures except normal 'N' anchorage shall not be used over 1400 K.Pa. without the engineer's approval.
7. Shape and dimensions of concrete anchors shown hereon are diagrammatic only.
8. Where P.V.C. solvent jointed pipes are used anchor blocks are not required except in special circumstances. When placing the concrete on a P.V.C. pipe care shall be taken to avoid encasing the pipe completely, the maximum encasement shall be 180°.
9. Where P.V.C. rubber ring jointed pipes are used the normal practice of anchoring of bends, tees, crosses, dead ends & reducers shall be followed.
10. When setting pipes in concrete a membrane of polythene, P.V.C. or felt shall surround the pipe and fittings to permit movement.

ZONE	REF.	REVISIONS	BY	CKD.	DATE
	A	Notes 8, 9 and 10 added	G.N.S.		14-2-74
	B	Anchorage details altered	G.N.S.		6-11-74

ASSOCIATED DRAWINGS

LEVEL DATUM | F.B. | L.B.

T.R. | F.B. | P.M.G. | D.O. FILE NO.

TOWNSVILLE CITY COUNCIL

APPROVED DES.

DRN. J.G.

CITY ENGINEER TCD.

CKD.

DESIGN ENGINEER 22-11-73 CD.

WATER SUPPLY — STANDARDS

ANCHORAGE DETAILS FOR VALVES HYDRANT AND PIPE SPECIALS

DATE	M/FILM	SCALE	DRAWING NO.	
29.10.73		N.T.S.	13433/B	A1