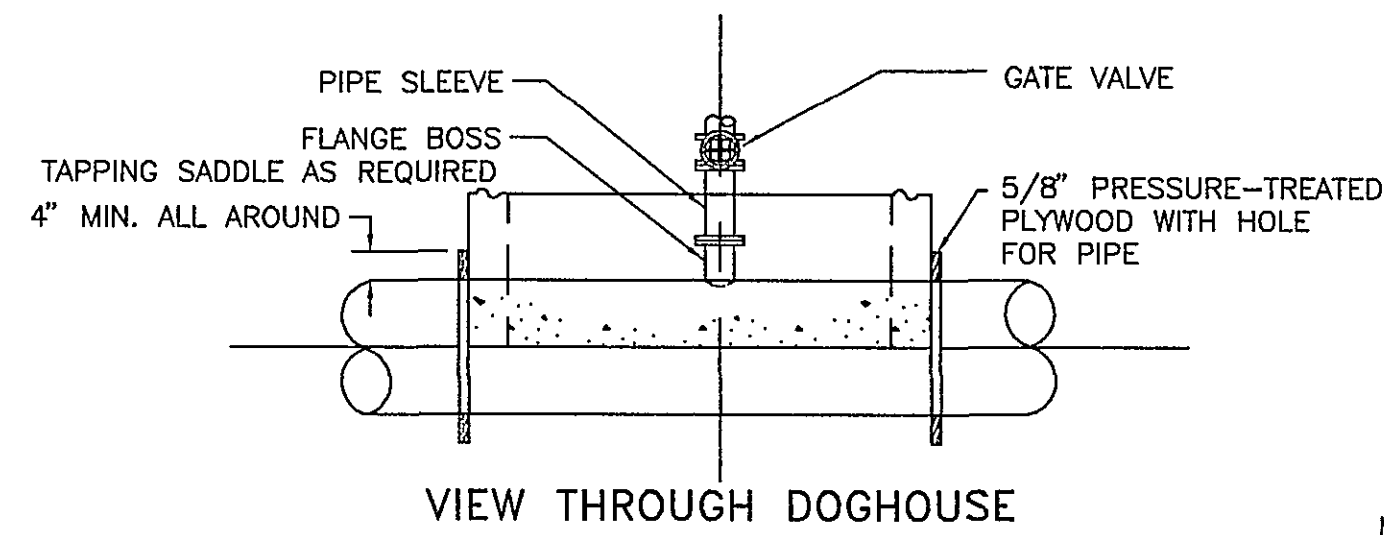
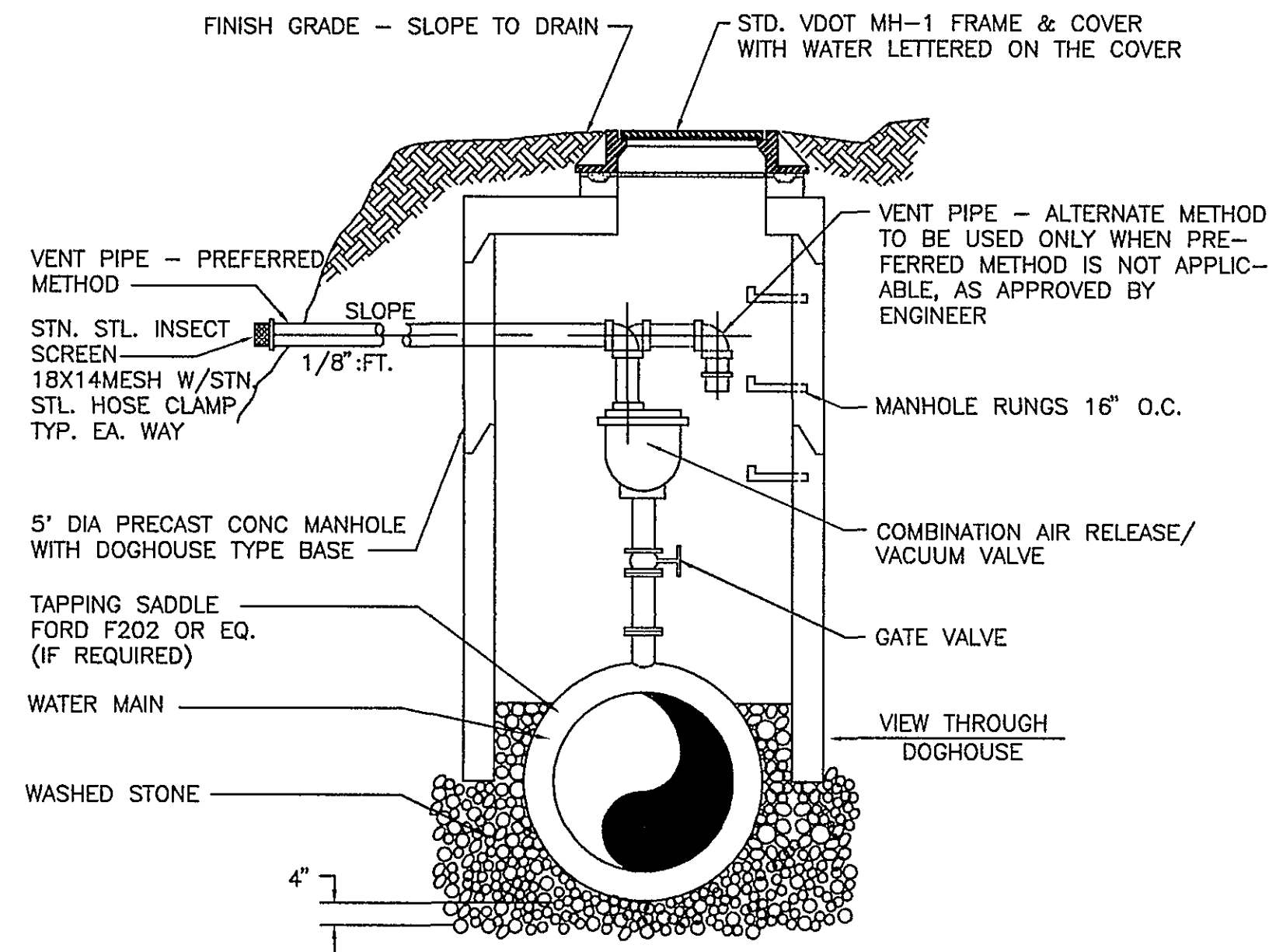
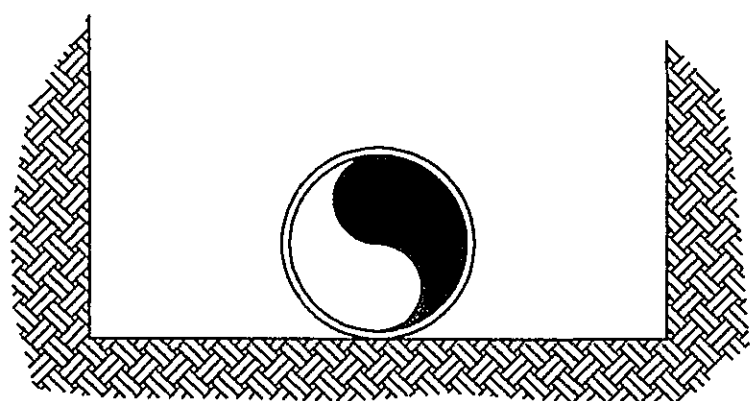


AIR VACUUM VALVE CHART

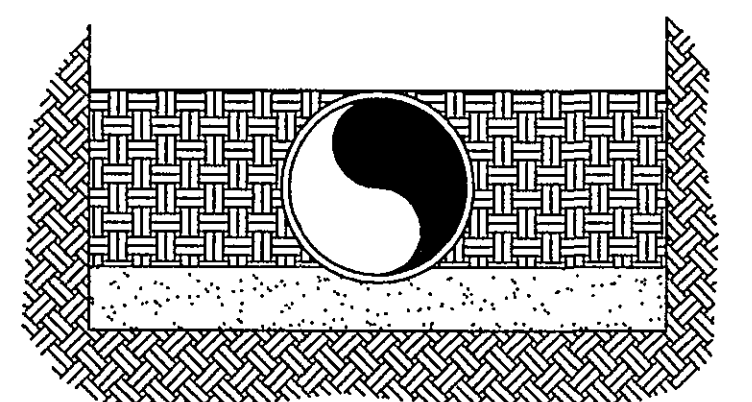
PIPE SIZE	VALVE SIZE	CONNECTOR	VALVE
30" - 36"	4"	4" FLANGE	4" BALL VALVE
24"	4"	4" FLANGE	4" BALL VALVE
18"	3"	TAPPING SADDLE	BALL VALVE
10" - 16"	2"	TAPPING SADDLE	BALL VALVE
6" - 8"	1"	TAPPING SADDLE	BALL VALVE



COMBINATION AIR RELEASE/ VACUUM VALVE DETAIL
NTS

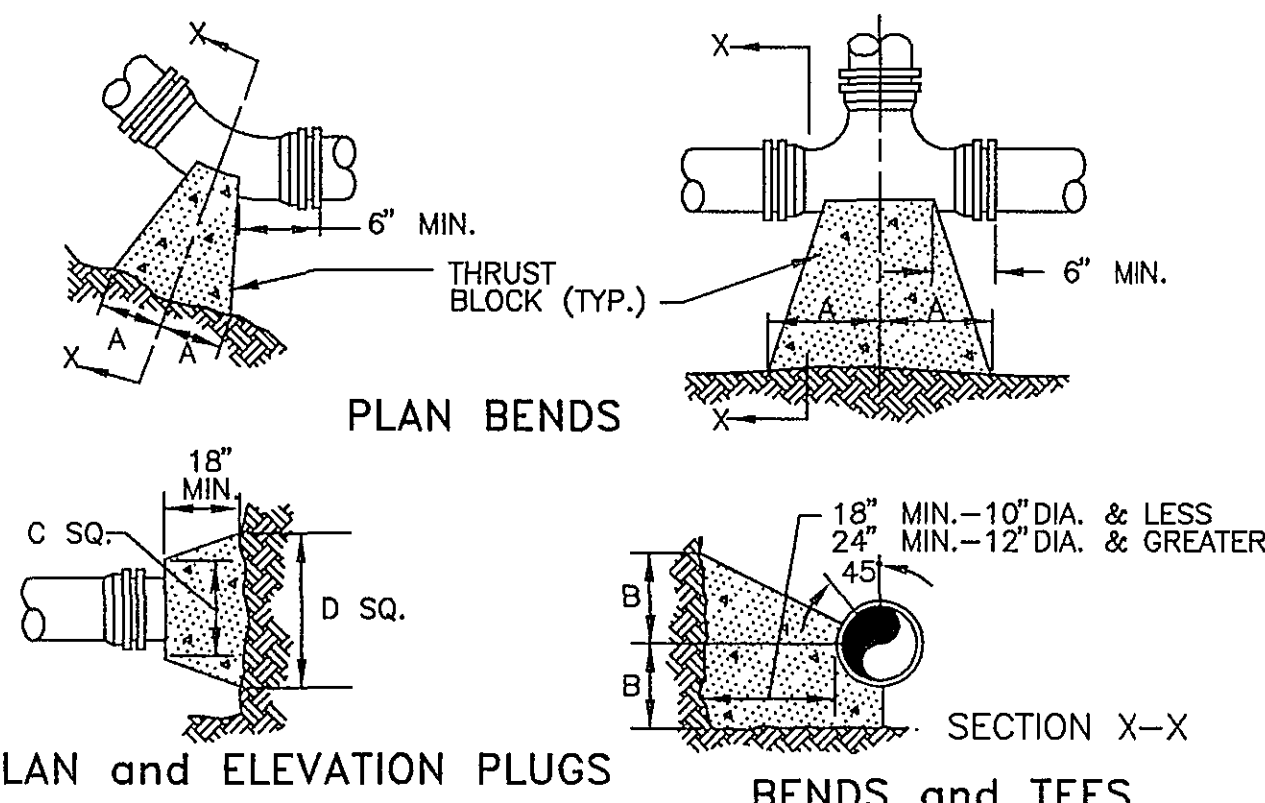


TYPE 1
FLAT BOTTOM TRENCH. LOOSE BACKFILL.



TYPE 3
PIPE BEDDED IN 4 in. MINIMUM OF LOOSE SOIL. BACKFILL LIGHTLY CONSOLIDATED TO TOP OF PIPE.

BEDDING DETAIL
NTS

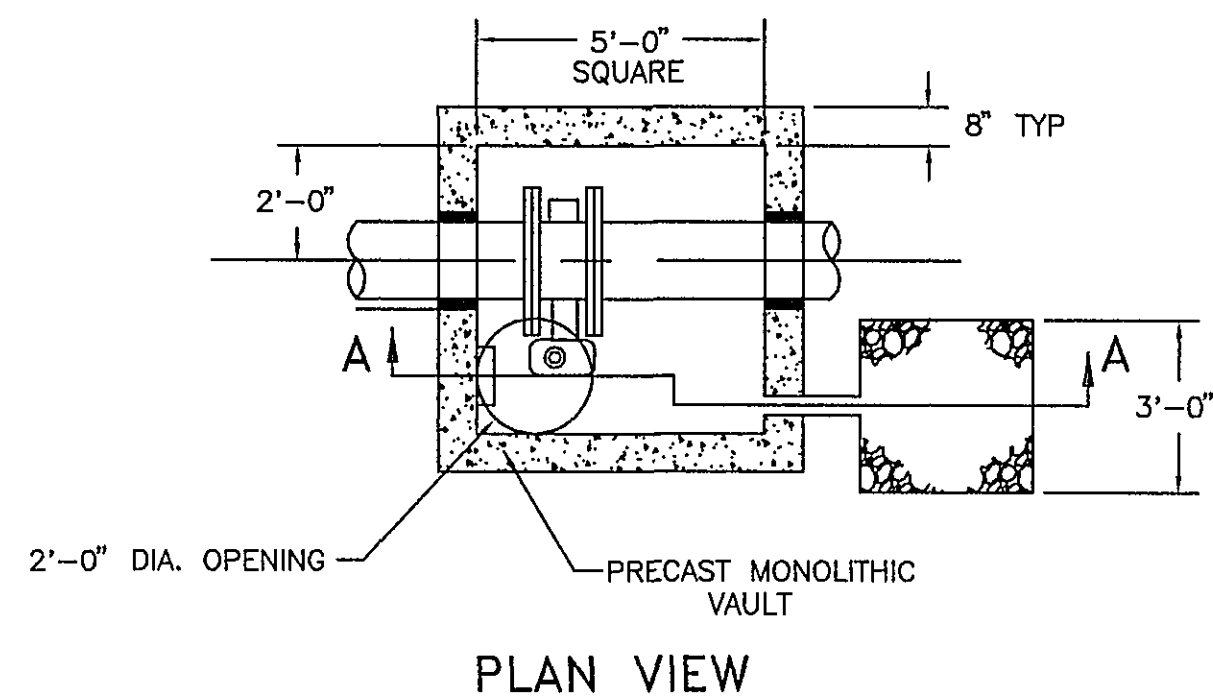
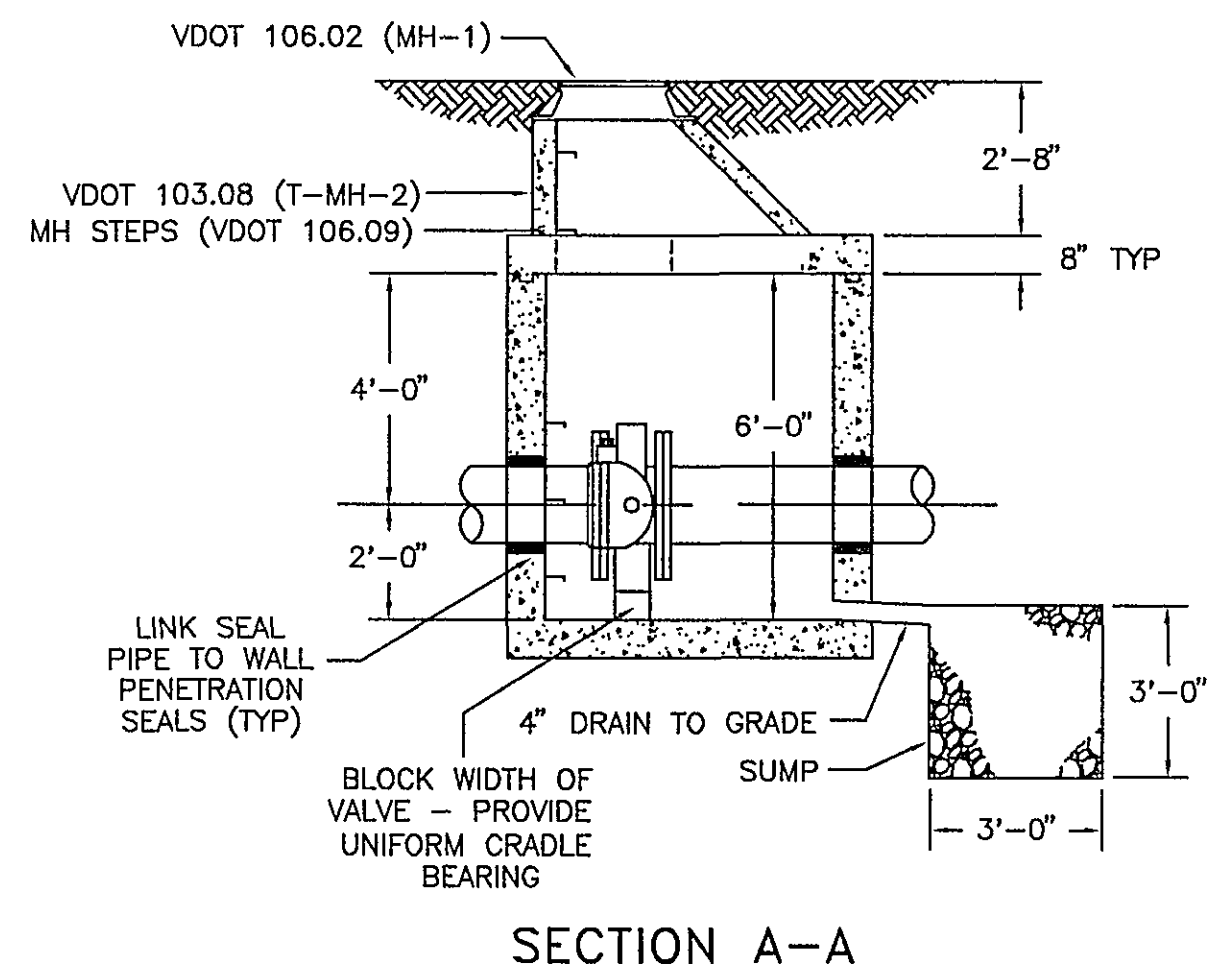


- NOTES:
- FOR VERT. BEND DOWN IN EXCESS OF 1.25', ANCHORAGE SHALL BE RECOMMENDED BY ENGINEER.
 - FOR VERT. BEND UPWARD, BLOCKING TO BE SIMILAR TO THAT FOR HORIZ. BEND
 - GLANDS & BOLTS SHALL BE PROTECTED FROM CONC. WHEN POURING THRUST BLOCKS
 - ALL THRUST BLOCK & SUPPORT CONC. SHALL BE CLASS B.
 - THRUST BLOCKS WITH 'B' DIMENSION GREATER THAN 30" SHALL HAVE THE RESTRAINED PIPE INSTALLED WITH A MINIMUM OF 4' OF COVER.

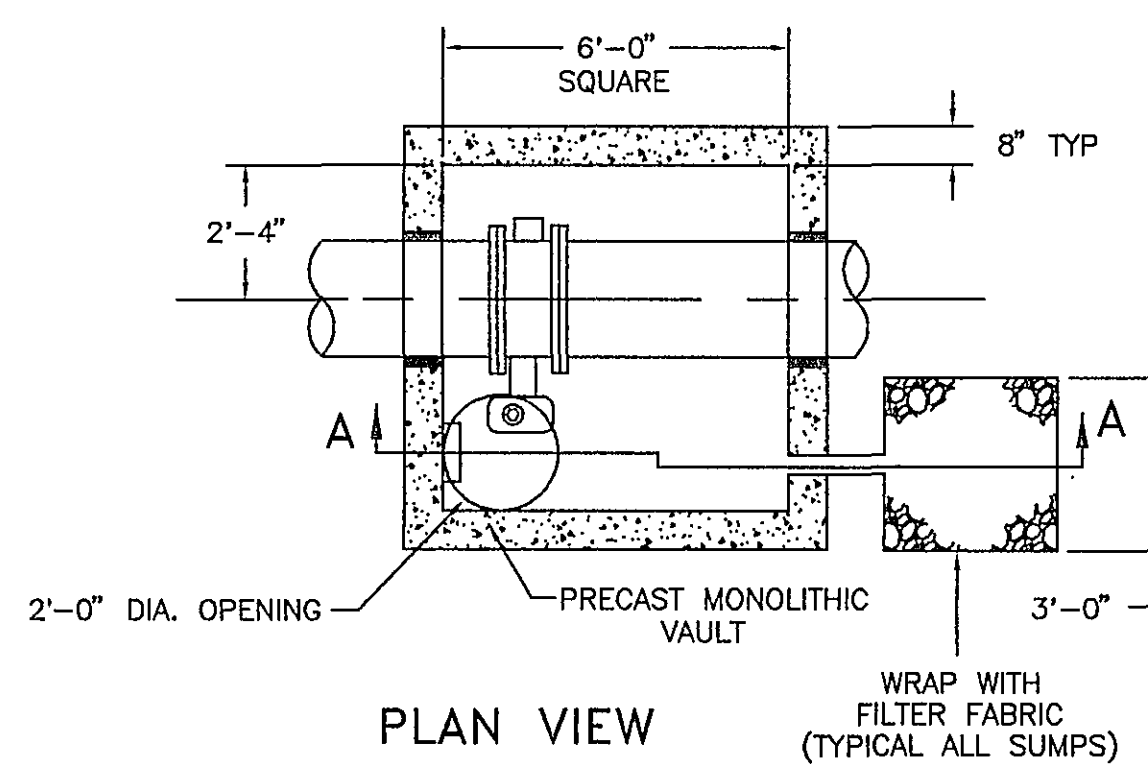
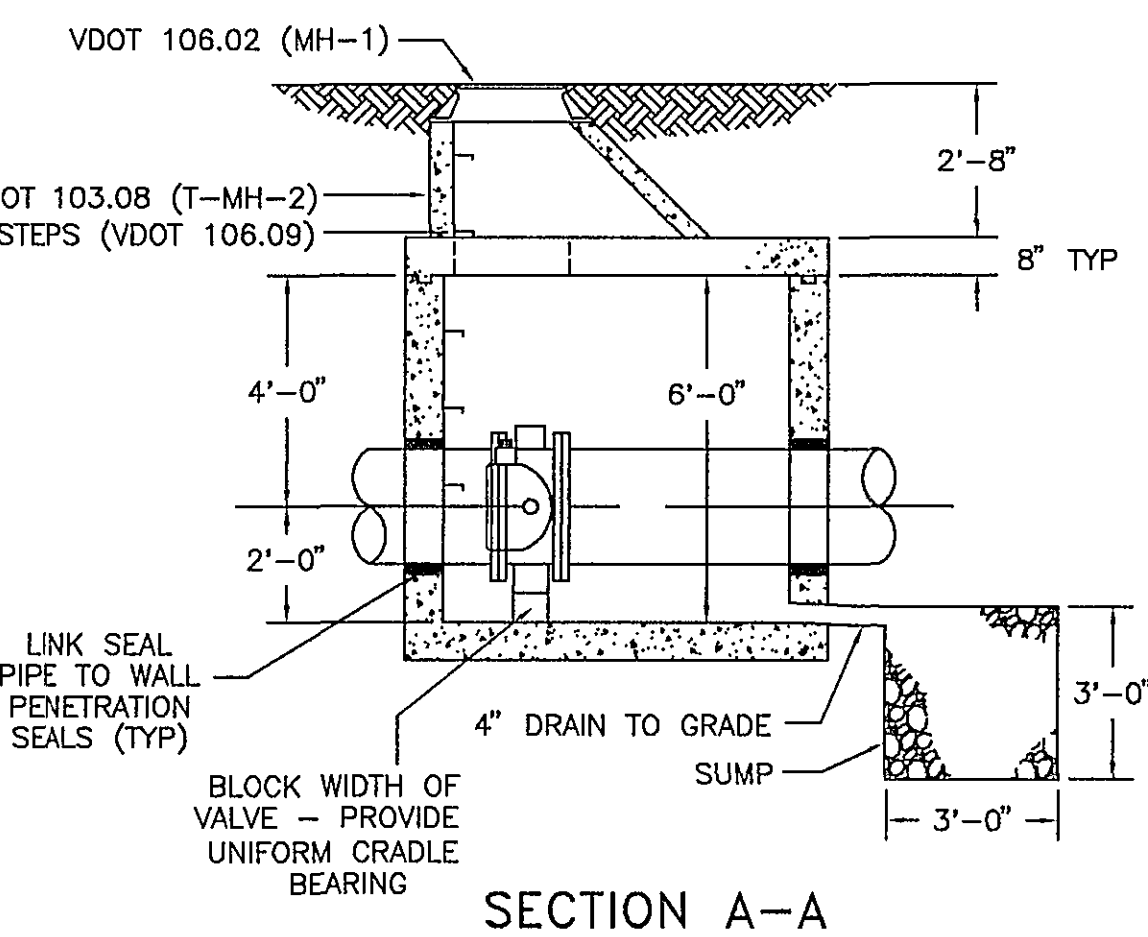
SECTION of VERTICAL BEND

PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE		PLUG	
	A	B	A	B	A	B	A	B	A	B	C	D
4"	8"	12"	8"	8"	6"	6"	6"	6"	11"	9"	10"	6"
6"	18"	12"	8"	10"	8"	8"	8"	8"	10"	10"	12"	18"
8"	15"	13"	10"	10"	8"	8"	8"	8"	10"	12"	12"	24"
10"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
12"	20"	16"	12"	14"	8"	12"	8"	12"	14"	16"	16"	30"
16"	26"	20"	16"	18"	11"	13"	11"	13"	18"	20"	20"	36"
24"	82"	42"	62"	30"	44"	22"	22"	16"	82"	42"	82"	42"
36"	185"	42"	100"	42"	52"	42"	40"	30"	185"	42"	185"	42"

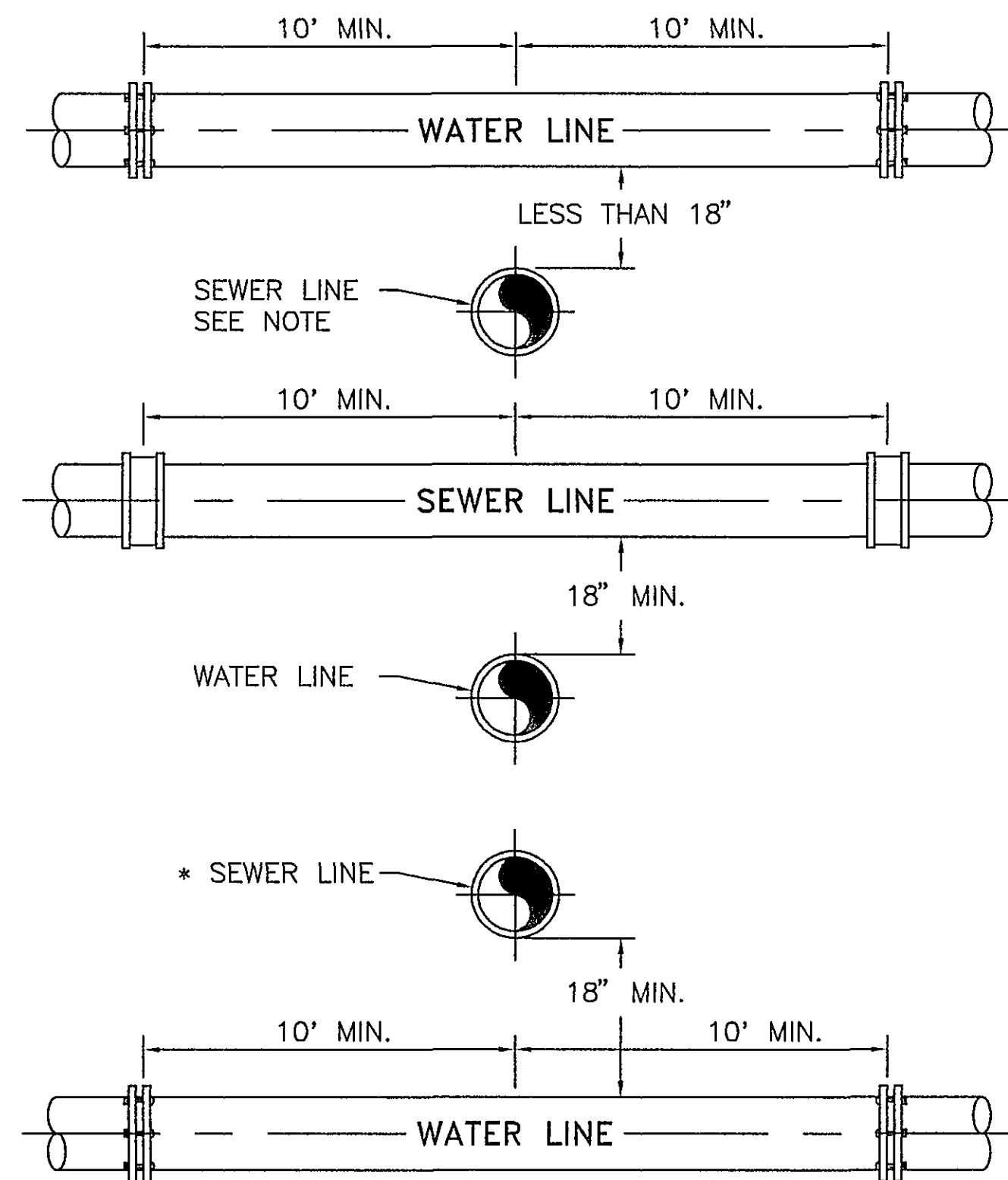
THRUST BLOCK DETAILS
NTS



16" BUTTERFLY VALVE VAULT
NTS

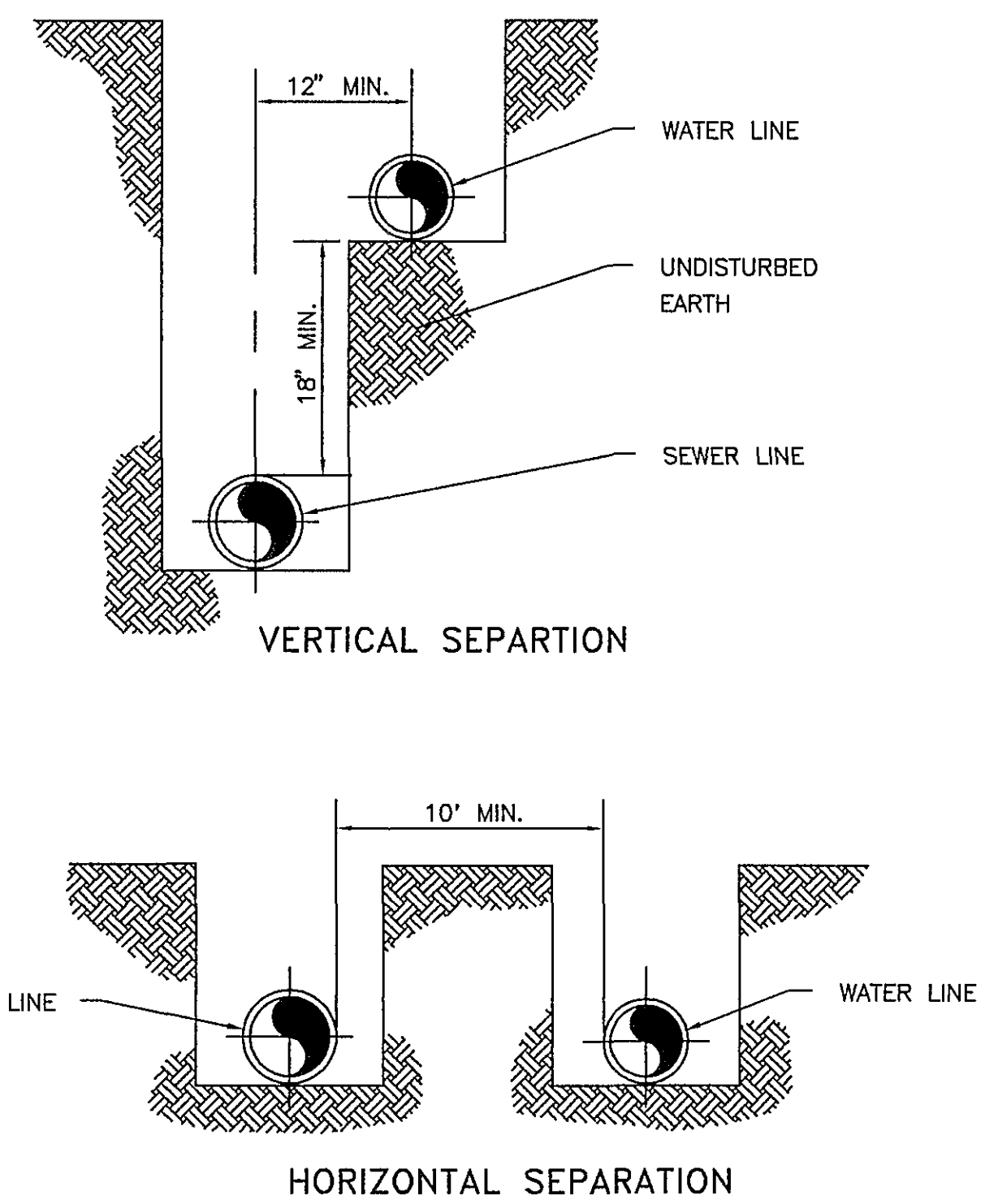


24" BUTTERFLY VALVE VAULT
NTS

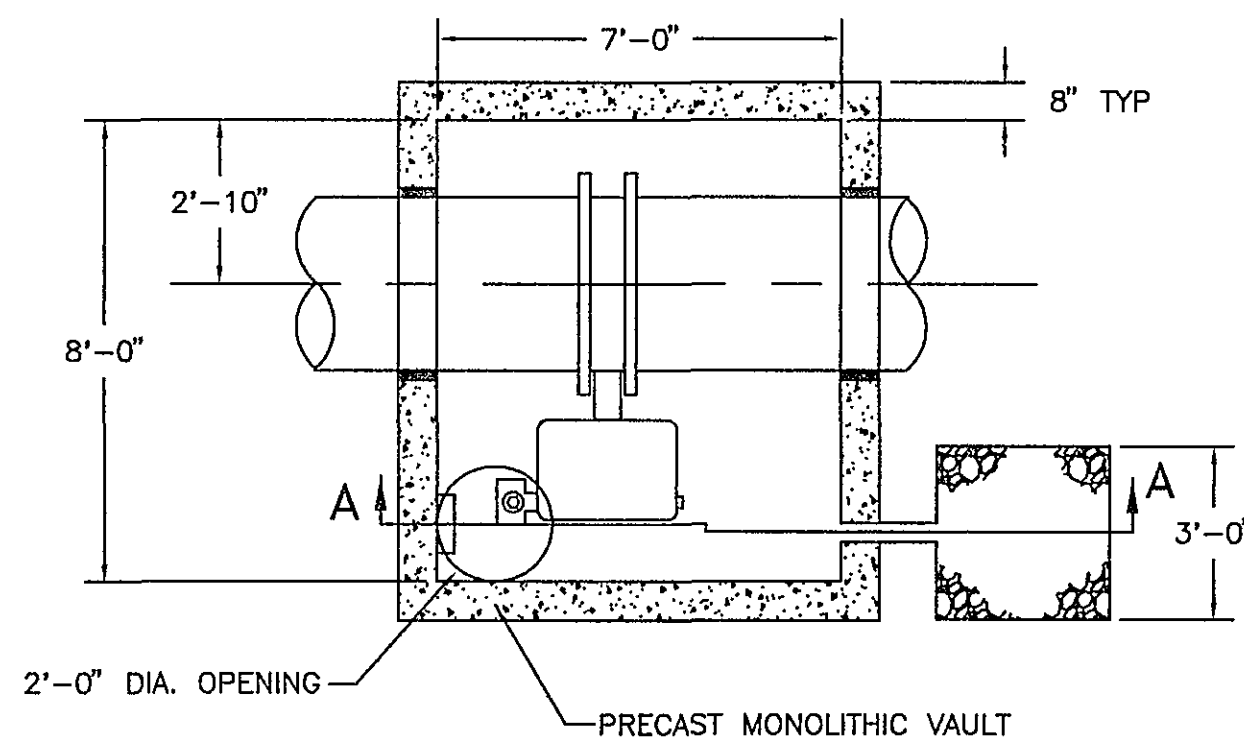
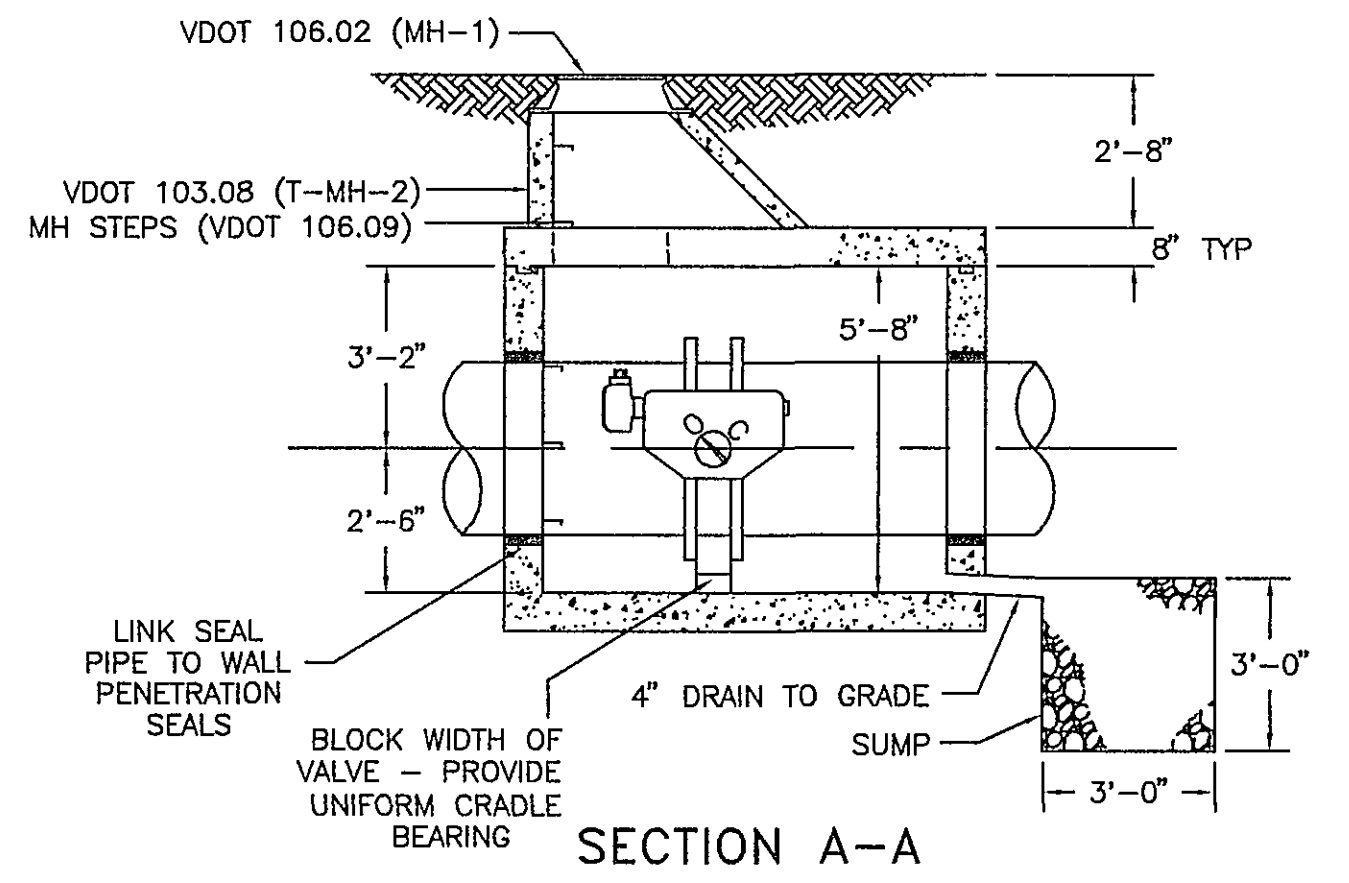


- NOTE:
- * SEWER LINE ABOVE WATERLINE TO BE CONSTRUCTED OF AWWA WATER LINE MATERIAL & PRESSURE TESTED (SEE SPEC.) AT NO ADDITIONAL COST (SEE SEWER LINE COUPLING DETAIL).

WATER and SEWER CROSSING DETAIL
NTS

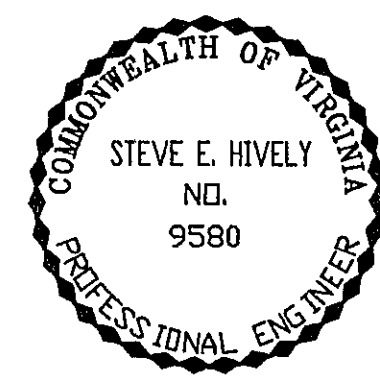


WATER and SEWER SEPARATION DETAIL
NTS



36" BUTTERFLY VALVE VAULT
NTS

AS BUILT



ENGINEER'S SEAL

Architects
Engineers
Planners
Surveyors

Dewberry & Davis
5238 Valleypointe Parkway, Suite One-B
Roanoke, Virginia 24019
703 362-7725

Carvins Cove, Phase II
City of Roanoke
Roanoke, Virginia

CONTRACT "A-1"
DETAILS

Drawn By ACF
Designed By RBS
Checked By SEH
Date DEC. 1993
Scale AS SHOWN
Plan Number ADTRWL1A
Zoned NONE
Sheet 7 of 9
File Number C1160