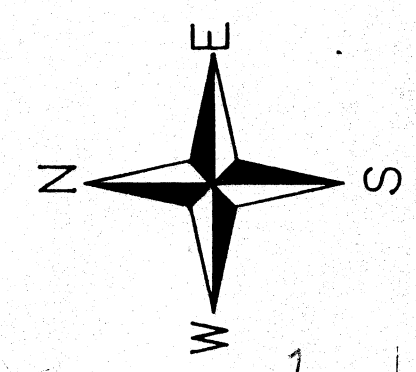


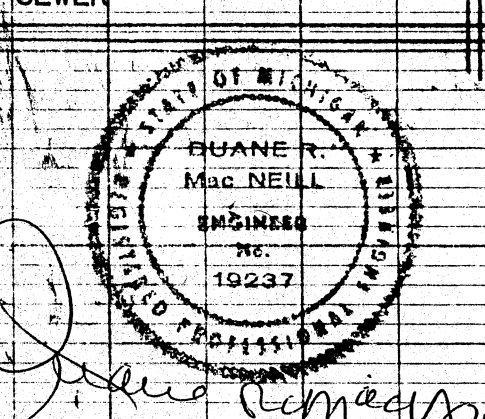
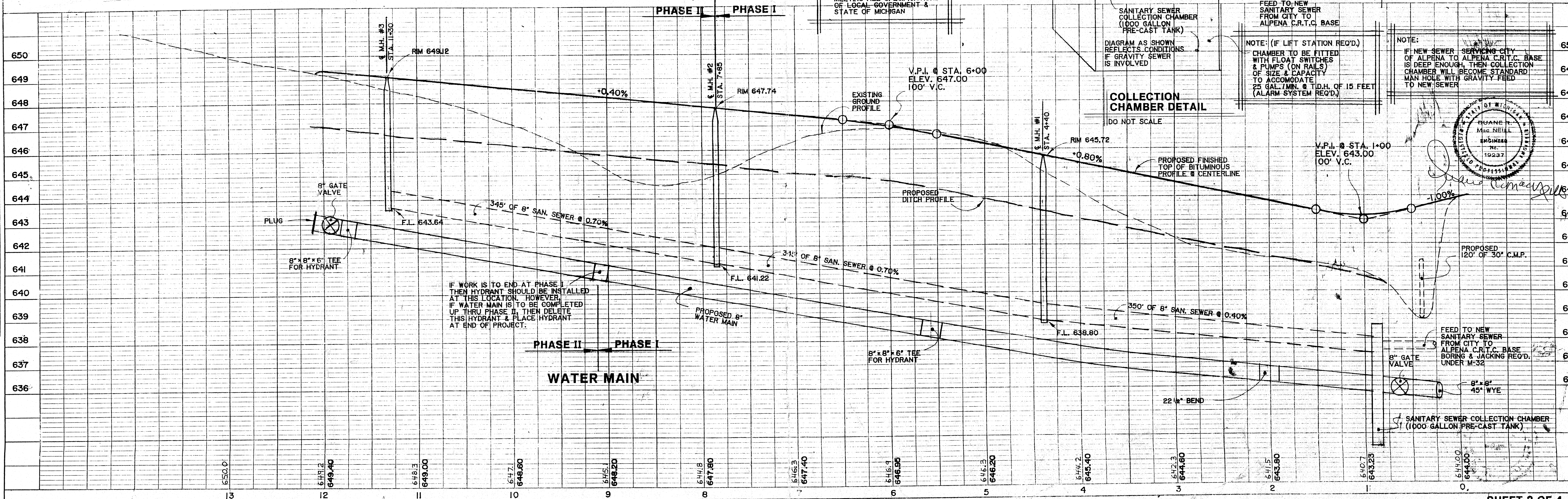
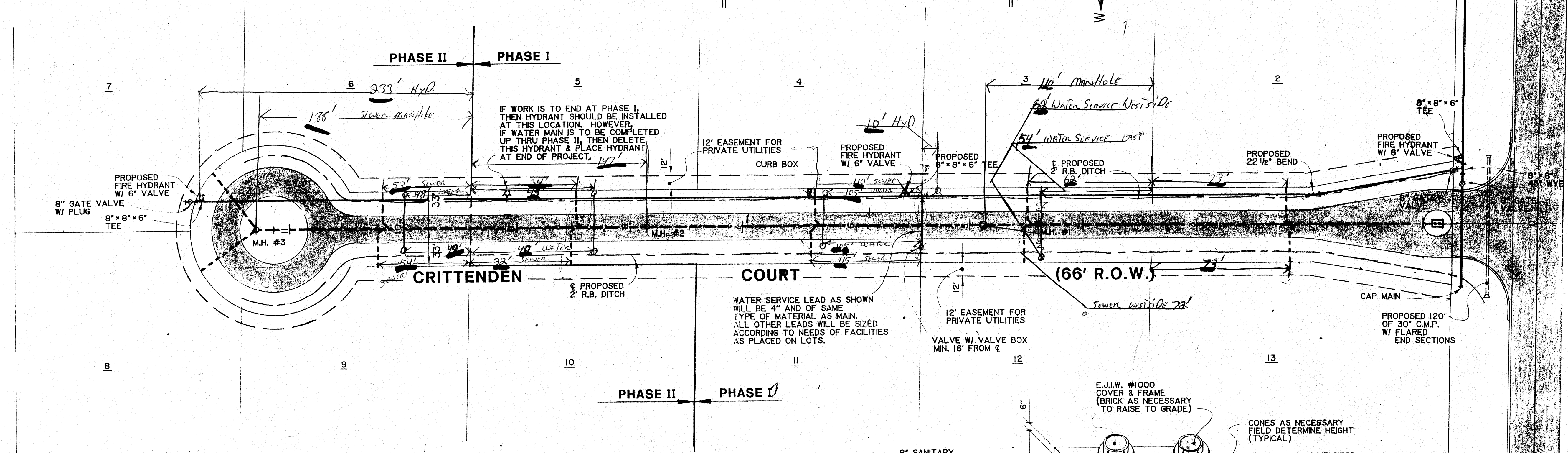
DATE	BY	REVISION
		1. SURVEYED
		2. PLOTTED
		3. CHECKED
		4. APPROVED
		5. NO.

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		1. SURVEYED
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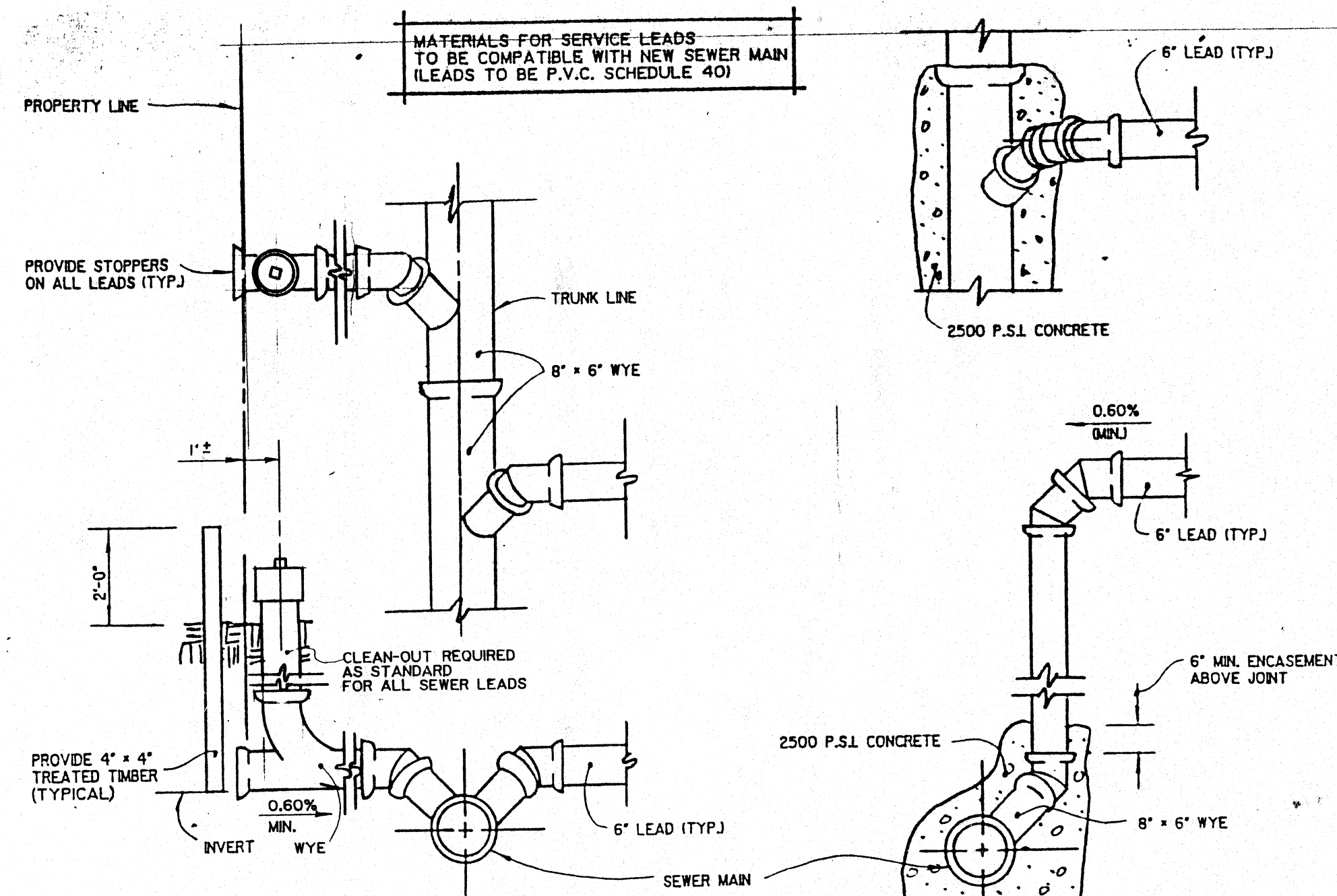
NOTE: CALL "MISSDIG" (1-800-482-7171)
3 WORKING DAYS PRIOR TO ANY EXCAVATION
FOR UNDERGROUND UTILITY INFORMATION



SCALE
PLAN 1" = 50'-0" HOR
PROFILE 1" = 50'-0" HORIZONTAL
2" = 2'-0" VERTICAL



SEWER DETAILS



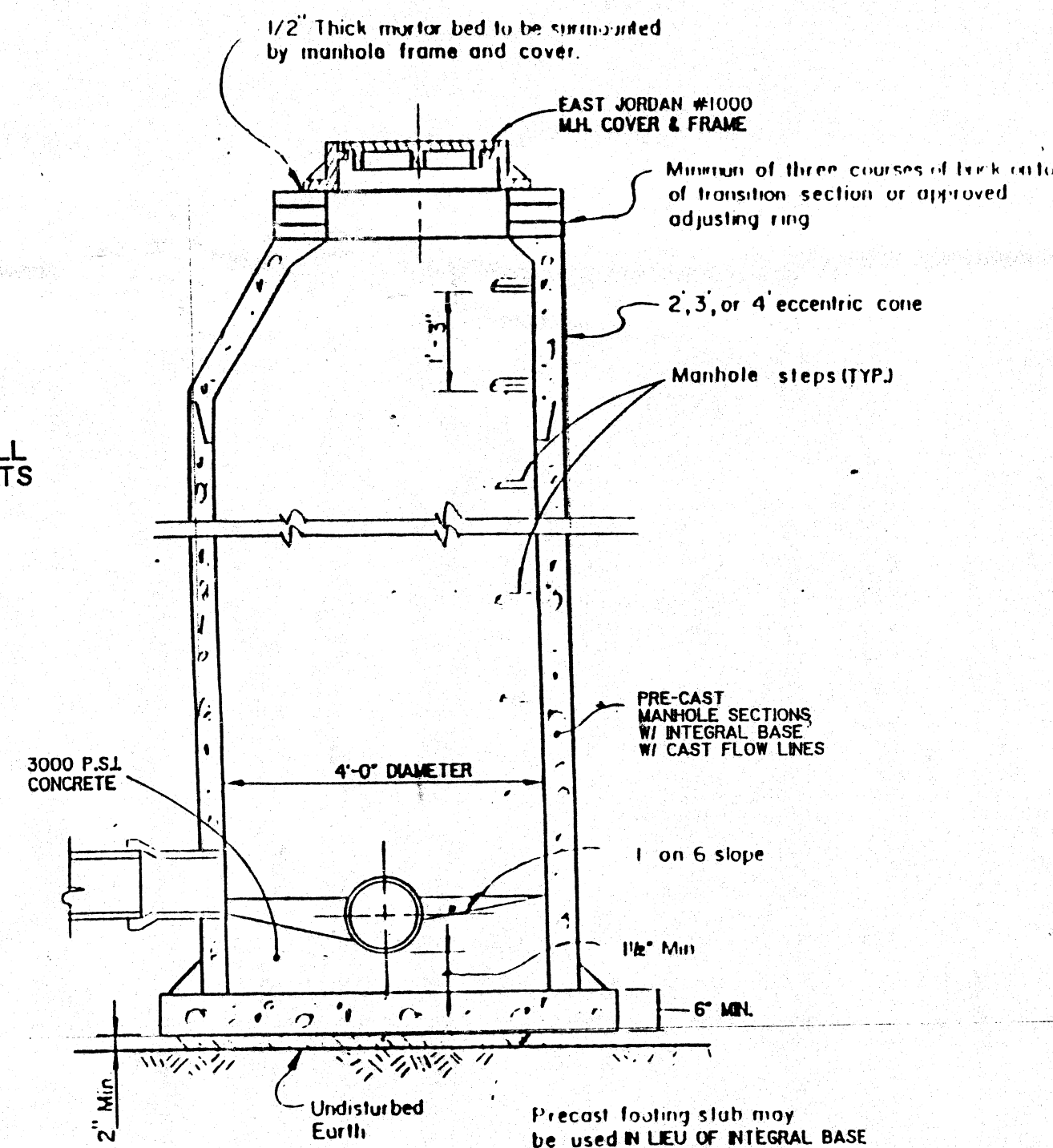
SINGLE WYE NO RISER
NO SCALE

SINGLE WYE AND RISER
NO SCALE

NOTE: CONSTRUCTION MATERIALS

FORCE MAIN P.V.C.-SDR 26
SEWER MAIN P.V.C.-SDR 35
WATER MAIN P.V.C. DR 18-C (900)
MANHOLE COVERS E.J.L.W. #1000
FIRE HYDRANTS TRAVERSE CITY OR E.J.L.W.
GATE VALVES WATEROUS 200 SERIES

ALL MATERIALS & CONSTRUCTION MUST MEET ALL LOCAL, STATE, & MANUFACTURER'S REQUIREMENTS



STANDARD MANHOLE DETAIL
NO SCALE

GENERAL NOTES

SEWER

- WHERE SANITARY SEWER LEADS CROSS WATERMAIN, PROVIDE 18" VERTICAL CLEARANCE BETWEEN FACILITIES.
- GROUND WATER INFILTRATION SHALL NOT EXCEED 100 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOURS IN ALL SEWER LINES.
- SEWER LEADS SHALL BE PLUGGED AT PROPERTY LINE W/ WATERTIGHT PLUG & MARKED W/ A 4" x 4" TREATED TIMBER EXTENDED FROM INVERT TO 2' ABOVE GRADE.
- INSTALLED SANITARY SEWER SYSTEM SHALL BE AIR TESTED.
- WHEN USING PLASTIC SEWER PIPE, A REQUIREMENT FOR DEFLECTION TESTING WILL BECOME PART OF THE SPECIFICATIONS, ALLOWABLE DEFLECTION HAS TO BE LESS THAN 5% 30 DAYS AFTER COMPLETION OF BACKFILL

WATER MAIN DETAILS

STANDARD THRUST BLOCKS

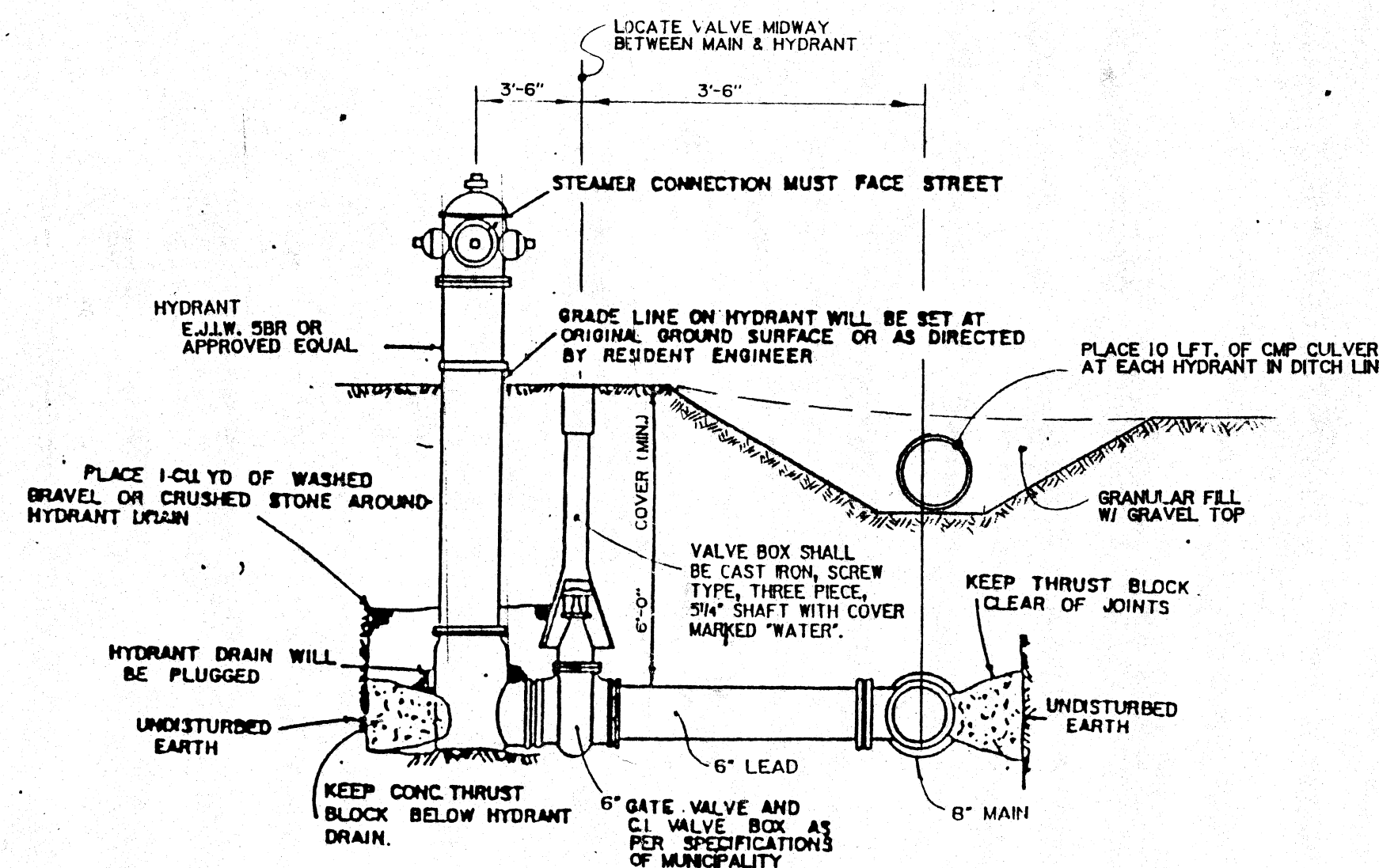
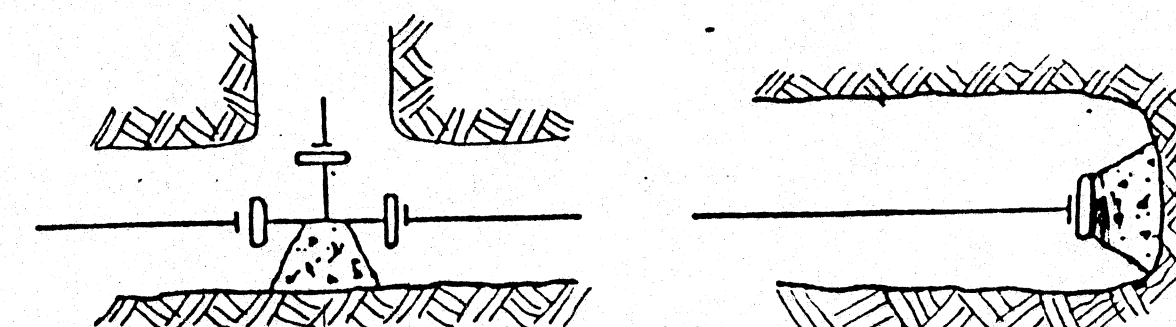
DIAMETER OF PIPE OR BRANCH OF TEE	90° BEND			45° BEND			22 1/2° BEND			TEE			PLUG	
	A	B	C	A	B	C	A	B	C	A	B	C	A	C
6"			9"			9"							10"	9"
8"			1'-10"			1'-3"							1'-9"	10"
12"			1'-3"			1'-6"			1'-6"				2'-0"	1'-3"

THRUST LOAD TABLES

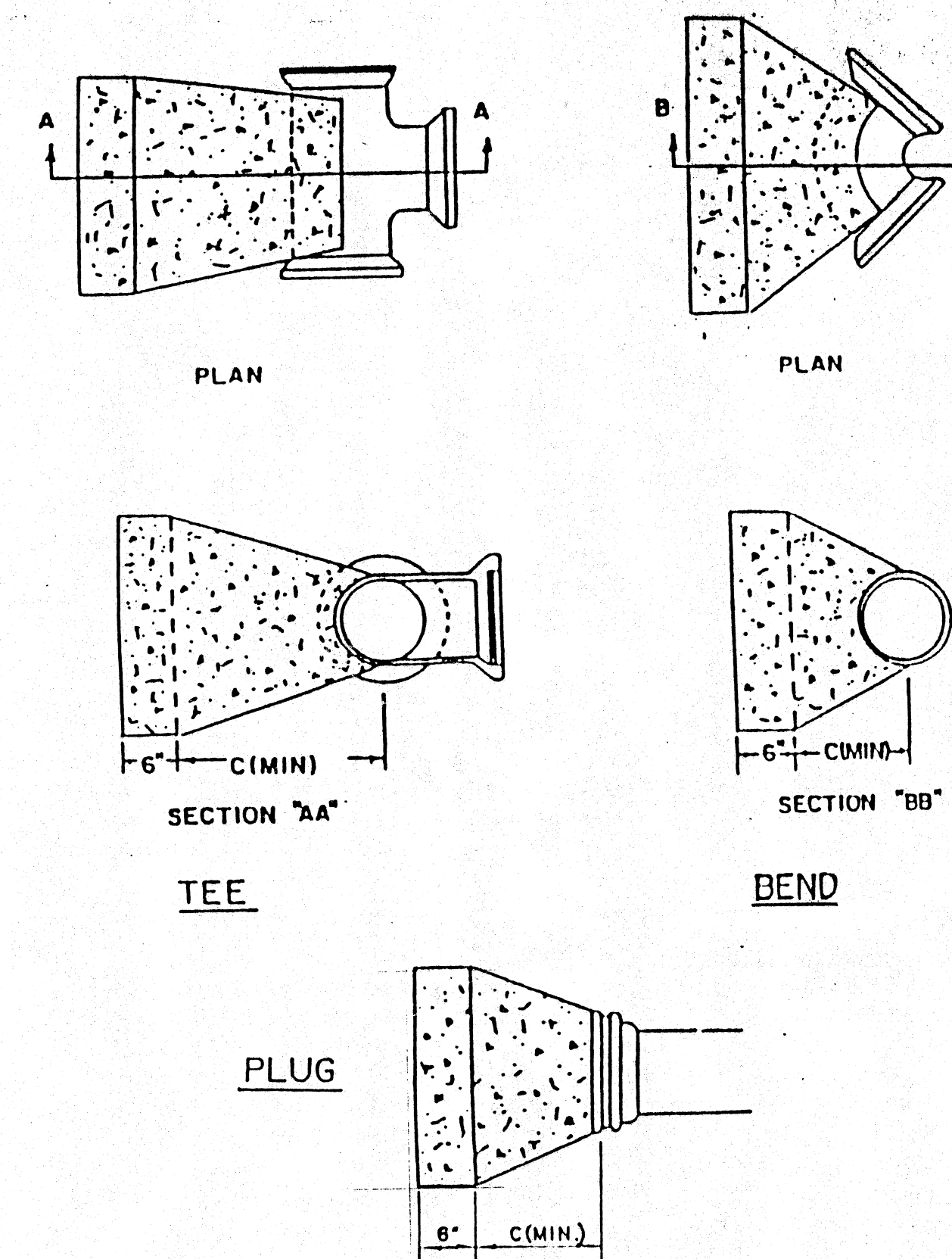
SOIL BEARING LOADS --		HORIZONTAL THRUST
TYPE OF SOIL		SBL LBS SQ FT
MUCK, PEAT, ETC.		0
SOFT CLAY		1000
SAND		2000
SAND & GRAVEL		3000
SAND & GRAVEL W/ CLAY		4000
HARD COMPACTED CLAY		5000

THRUST TABLE				
MAIN SIZE	TEES DEAD ENDS	90° BENDS	45° BENDS	22 1/2° BENDS
6"	4,250	6,000	3,250	1,660
8"	7,540	10,670	5,770	2,940
12"	16,970	23,990	12,980	6,620
16"	30,180	42,850	23,090	11,770
20"	47,120	66,650	36,070	18,390
24"	67,860	96,000	51,940	26,480
36"	152,880	215,920	116,860	59,580

ALL THRUST BLOCKS SHALL EXTEND TO UNDISTURBED SOIL. CONCRETE SHALL BE 3000 P.S.I. (5 BAG WET MIX) COAT PIPE TO PREVENT BOND TO CONCRETE.



HYDRANT & VALVE DETAILS
NO SCALE



THRUST BLOCK DETAILS
NO SCALE

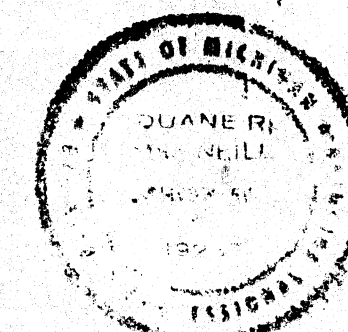
GENERAL NOTES

GATE VALVES

- GATE VALVES SHALL BE CONSTRUCTED TO A.W.W.A. C509 SPECIFICATIONS. VALVES SHALL BE WATEROUS, AS APPROVED, OR EQUAL WITH NON-RISING STEM, RESILIENT WEDGE TYPE WITH MECHANICAL JOINT A.N.S.I. A 21.11 & SHALL OPEN COUNTER CLOCKWISE.
- VALVE BOXES SHALL BE CAST IRON, SCREW TYPE, THREE PIECE, 5/8" SHAFT WITH COVER MARKED "WATER".

WATERMAIN

- WHERE WATERMAIN AND SANITARY SEWER CROSS, PROVIDE 18" VERTICAL CLEARANCE BETWEEN WATERMAIN AND SANITARY SEWER WITH WATERMAIN ABOVE SEWER, OTHERWISE SLEEVE IS REQUIRED
- WATER SERVICES LEADS SHALL BE TYPE K COPPER, WITH MUELLER H-10350, 100E OR APPROVED EQUAL CURB BOX WITH STATIONARY ROD & GUIDE RING. W/ BRONZE PIN CONNECTING ROD TO CURB STOP.
- WATER SERVICE LEADS SHALL BE MADE USING A DOUBLE SADDLE TYPE SERVICE CLAMP W/ MUELLER H 15207 CURB STOP OR APPROVED EQUAL.
- WATERMAIN FITTINGS SHALL BE CL-52, SHORT BODY, D.I., WITH NO TAP CLOSER THAN 18" TO ANY COUPLING OR JOINT.
- ALL PLASTIC WATERMAIN SHALL REQUIRE CONTINUITY WIRE ALONG ENTIRE LENGTH.
- WATERMAINS SHALL BE PRESSURE TESTED AT 150 POUNDS PER SQUARE INCH FOR A TWO-HOUR PERIOD. LEAKAGE SHALL NOT EXCEED 11 GALLONS PER INCH DIAMETER OF MAIN PER MILE OF PIPE IN 24 HOURS FOR EACH SECTION TESTED.
- WATERMAINS SHALL BE FLUSHED AND DISINFECTED ACCORDING TO AWWA FOR C601-81 SPECIFICATIONS. TWO SAFE BACTERIOLOGICAL TESTS SHALL BE OBTAINED 24 HOURS APART. BACTERIOLOGICAL TESTS SHALL BE CONDUCTED BY A LABORATORY APPROVED BY THE MICHIGAN DEPARTMENT OF PUBLIC HEALTH.
- PROVIDE 10' MINIMUM HORIZONTAL SEPARATION BETWEEN WATERMAIN AND SANITARY SEWERS.



D.R. MacNeill & Associates
418 RIPLEY BLVD., ALPENA, MICH. 49707
517-356-9792

NOTES & DETAILS
PROPOSED SEWER & WATER
FOR CRITTENDEN COURT SUBDIVISION
ALPENA, MICHIGAN 49707

Date JAN. 1999
Scale AS SHOWN
Drawn D.C.H.
Job
Sheet 4
Of 4 Sheets