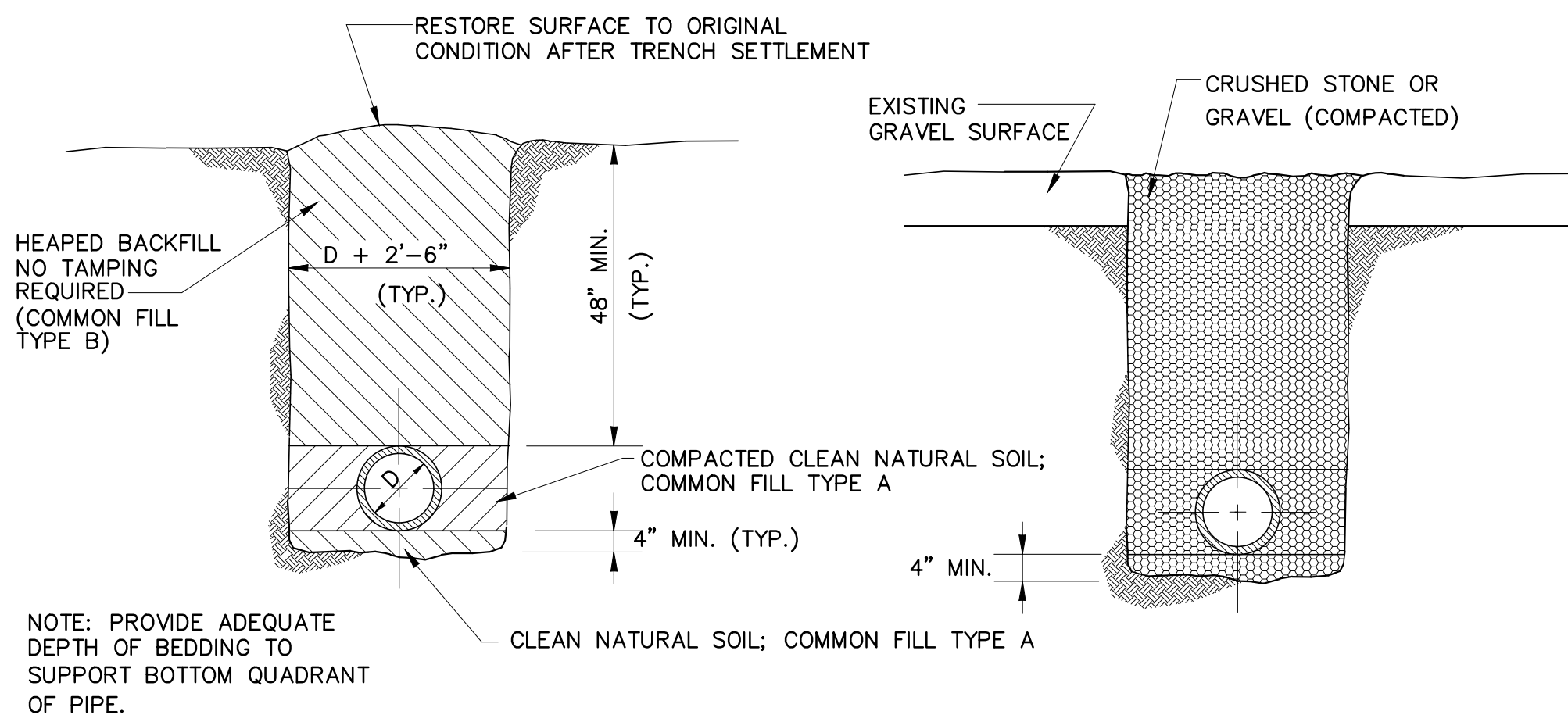
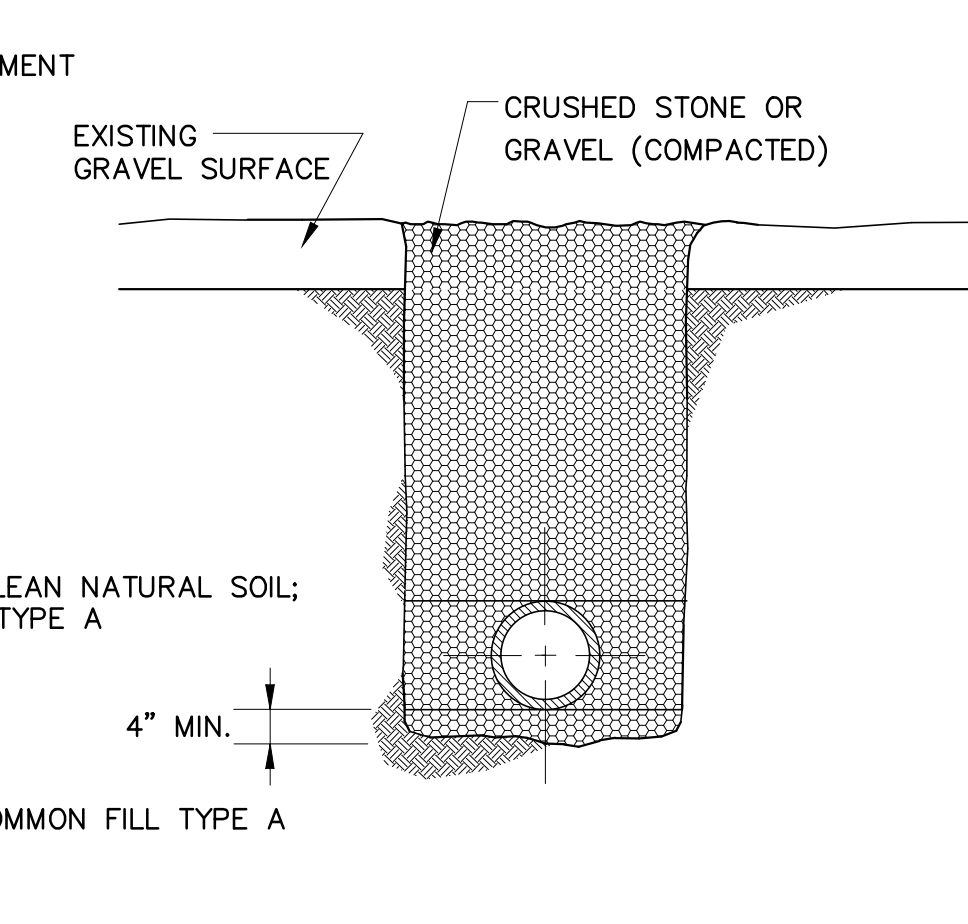
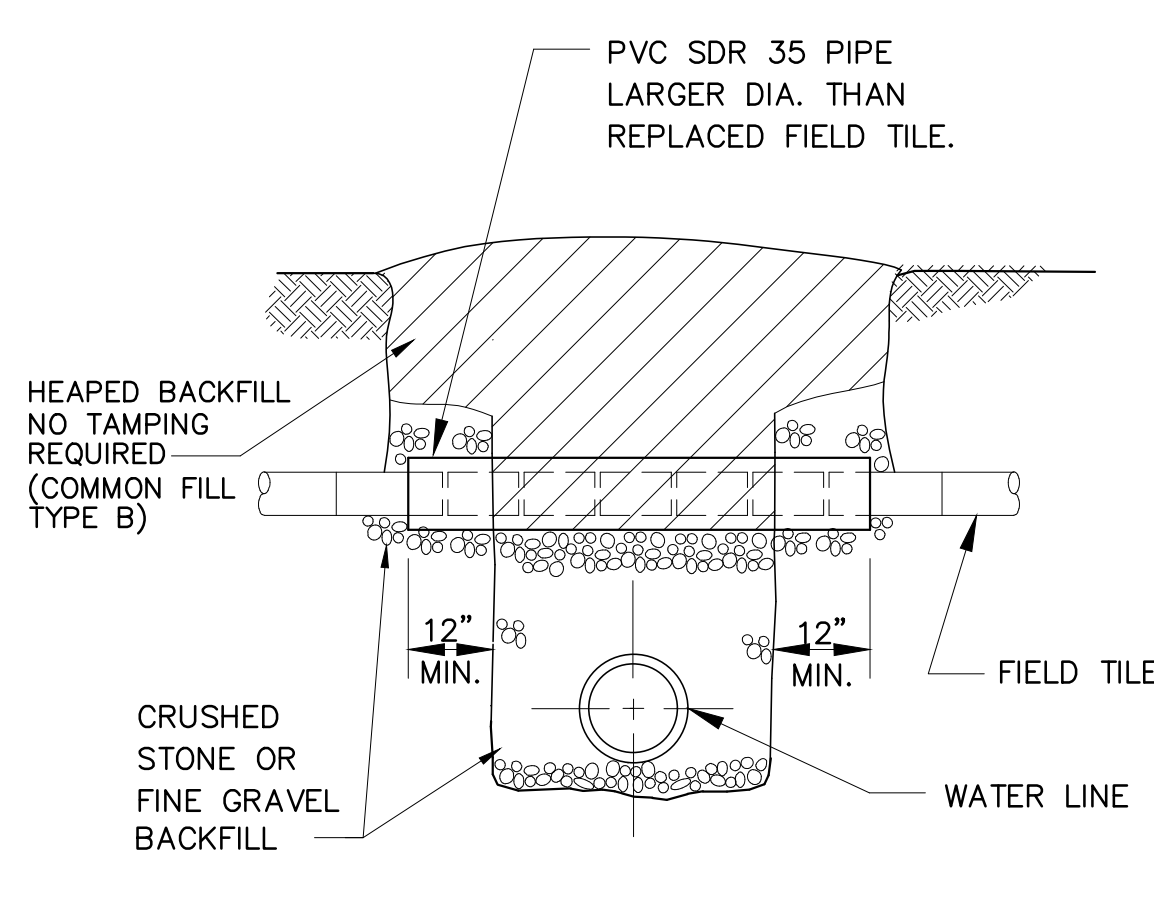




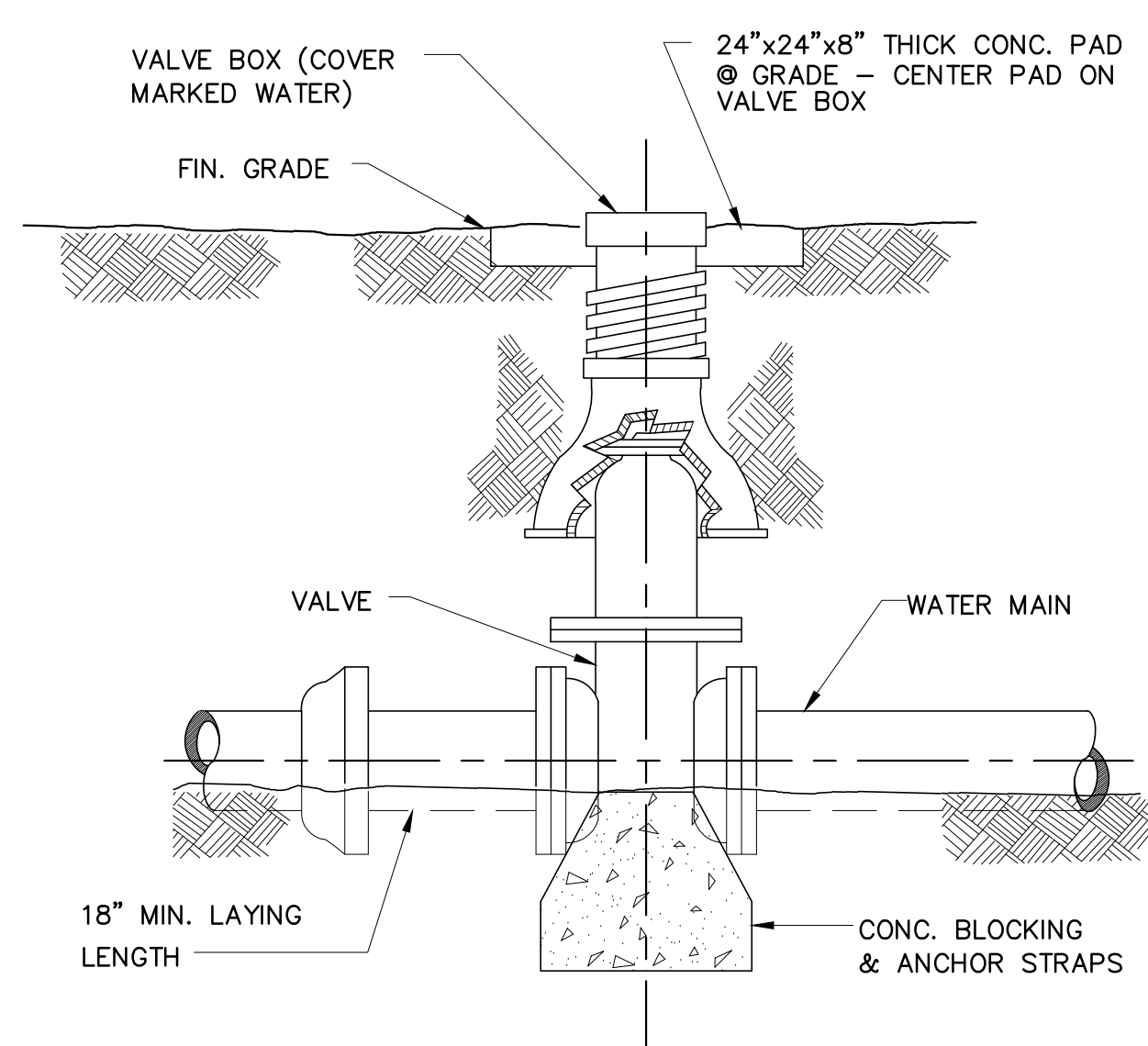
METHOD A
OPEN TERRAIN



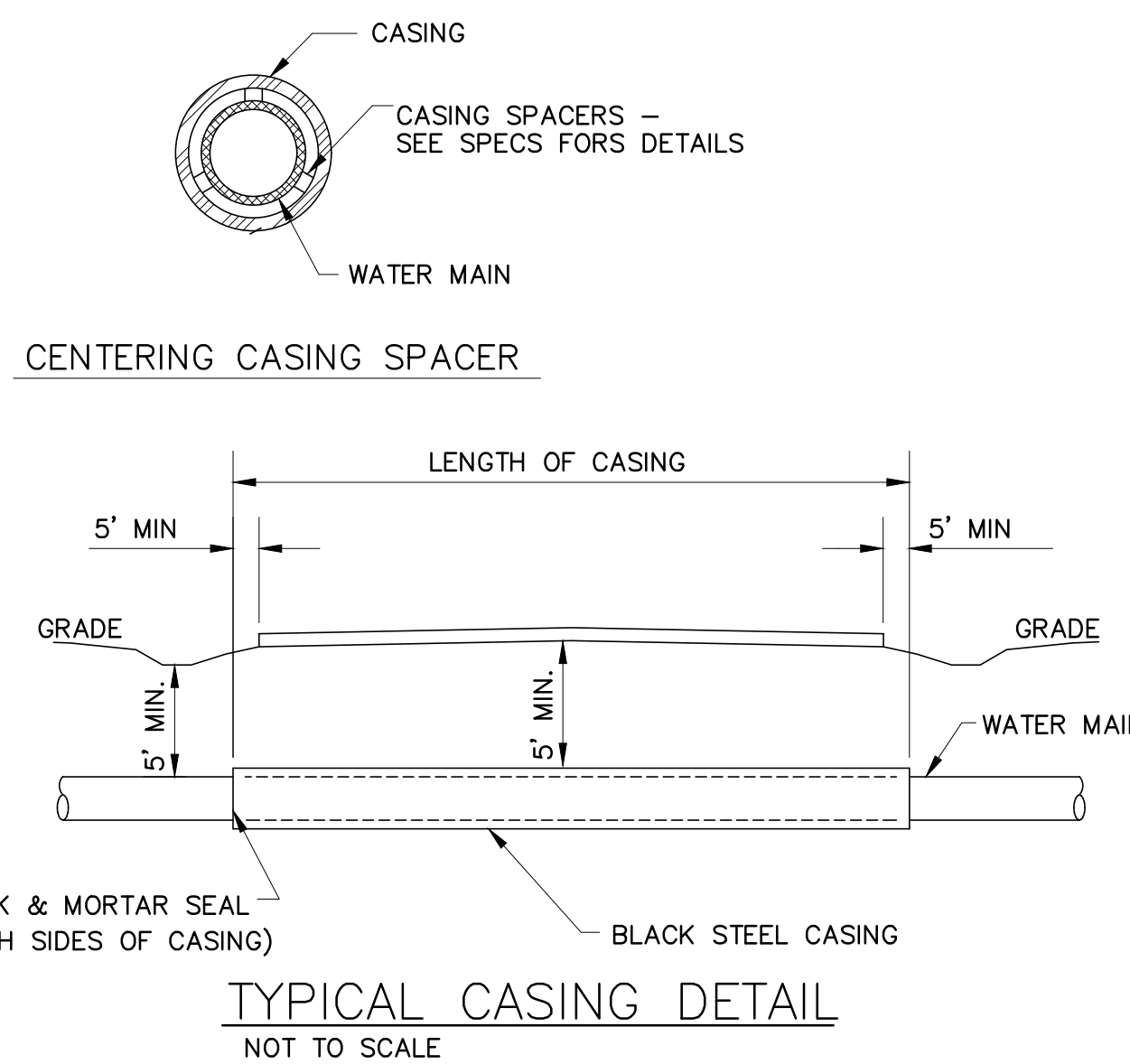
METHOD B
UNPAVED DRIVEWAYS



FIELD DRAIN REPLACEMENT DETAIL
NOT TO SCALE



TYPICAL WATER VALVE SETTING
NOT TO SCALE



PLUGS								
SIZE	4"	6"	8"	12"	16"	18"	20"	24"
D	16"	18"	18"	24"	24"	30"	30"	30"
L	16"	18"	22"	30"	48"	48"	48"	48"
T	10"	12"	12"	12"	12"	18"	24"	24"
W	16"	18"	22"	24"	30"	30"	48"	48"

11 1/4", 22 1/2" & 45" BENDS								
SIZE	4"	6"	8"	12"	16"	18"	20"	24"
D	6"	6"	6"	6"	6"	8"	16"	16"
L	12"	14"	16"	20"	34"	40"	45"	52"
T	12"	14"	14"	16"	28"	33"	37"	46"
W	10"	12"	14"	18"	22"	25"	28"	32"

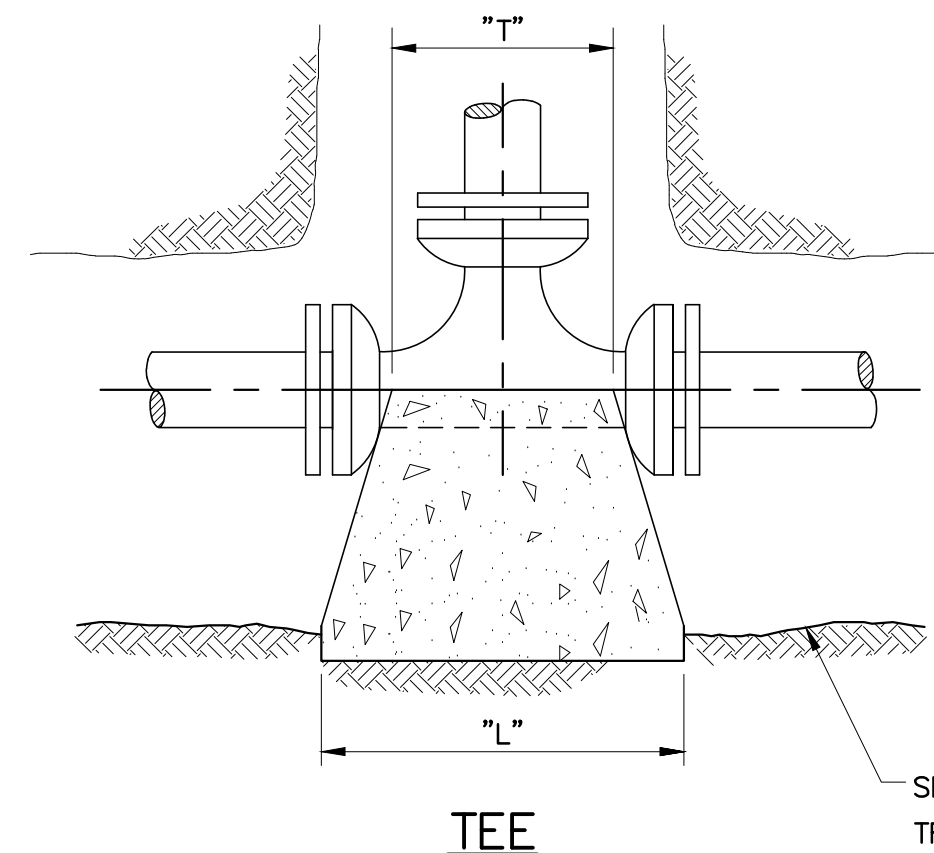
90° BENDS								
SIZE	4"	6"	8"	12"	16"	18"	20"	24"
D	8"	8"	10"	12"	12"	16"	20"	20"
L	20"	24"	27"	34"	48"	51"	54"	70"
T	10"	16"	18"	22"	36"	40"	44"	50"
W	12"	12"	16"	24"	28"	34"	40"	44"

TEES								
SIZE	4"	6"	8"	12"	16"	18"	20"	24"
D	8"	8"	12"	12"	12"	16"	38"	38"
L	10"	18"	24"	27"	28"	30"	48"	48"
W	16"	12"	18"	24"	28"	34"	48"	48"
T	12"	12"	15"	18"	20"	22"	24"	24"

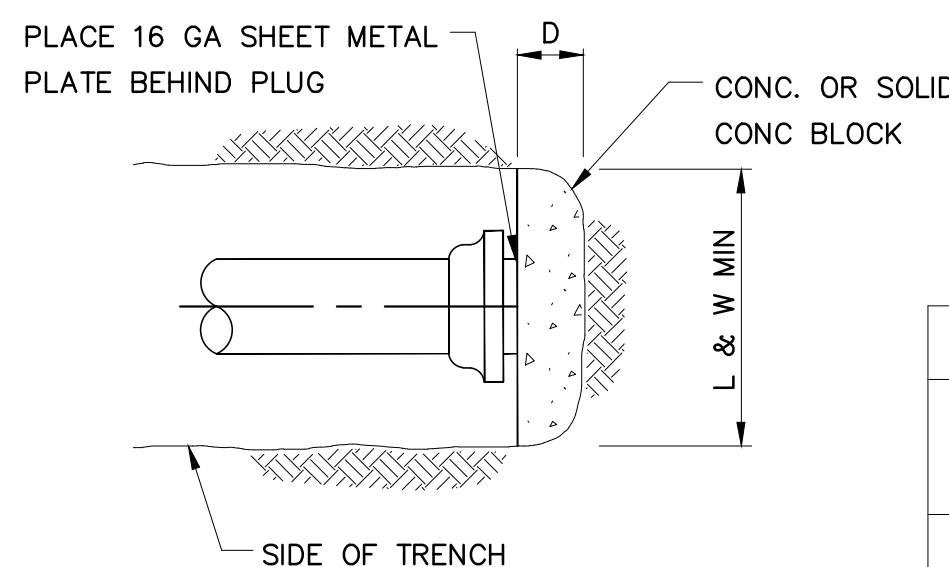
VERTICAL BEND & STRAIGHT PIPE								
SIZE	4"	6"	8"	12"	16"	18"	20"	24"
D	12"	15"	15"	18"	21"	21"	24"	24"
L	18"	24"	24"	30"	36"	36"	36"	42"

NOTES:

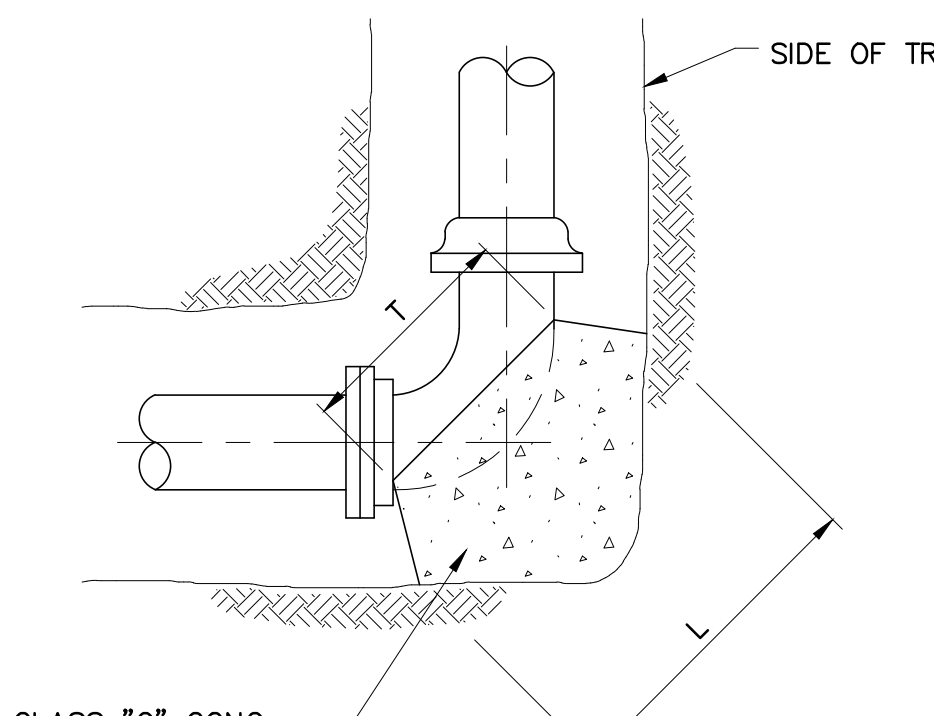
1. DEPTH "D" MAY BE GREATER THAN SPECIFIED TO ALLOW WORKING SPACE. BLOCKING MUST BE PLACED AGAINST UNDISTURBED EARTH.



TEE



PLUGS



TYPICAL BLOCKING SECTION

CLASS "C" CONC
11 1/4° THRU 90° BENDS

CONCRETE THRUST BLOCKS
NTS

RESTRAINED JOINT CALCULATIONS

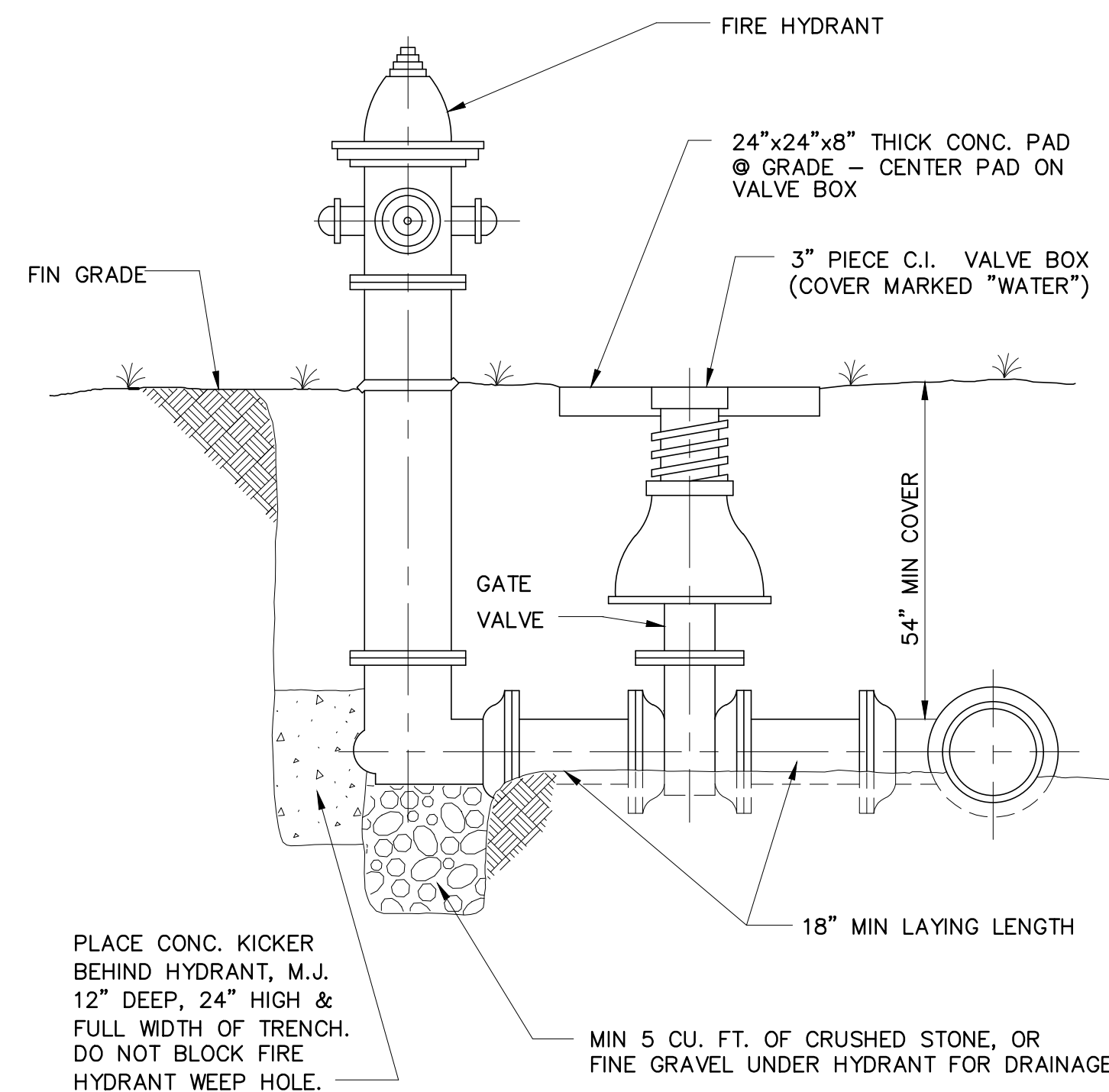
LENGTH IN FEET TO BE RESTRAINED ON EACH SIDE OF FITTINGS FOR 8" PVC PIPE						
TYPE OF BEND	TEE W/ 4" BRANCH	TEE W/ 6" BRANCH	90° BEND	45° BEND	22.5° BEND	11.25° BEND
HORIZ. BEND	15	35	32	13	10	10
VERT. BEND	-----	-----	N/A	38-UPPER 31-LOWER	18-UPPER 15-LOWER	10-UPPER 10-LOWER

LENGTH IN FEET TO BE RESTRAINED ON EACH SIDE OF FITTINGS FOR 6" PVC PIPE						
TYPE OF BEND	TEE W/ 4" BRANCH	TEE W/ 6" BRANCH	90° BEND	45° BEND	22.5° BEND	11.25° BEND
HORIZ. BEND	10	23	25	10	10	10
VERT. BEND	-----	-----	N/A	28-UPPER 13-LOWER	14-UPPER 10-LOWER	10-UPPER 10-LOWER

LENGTH IN FEET TO BE RESTRAINED ON EACH SIDE OF FITTINGS FOR 4" PVC PIPE						
TYPE OF BEND	TEE W/ 4" BRANCH	TEE W/ 6" BRANCH	90° BEND	45° BEND	22.5° BEND	11.25° BEND
HORIZ. BEND	10	N/A	17	10	10	10
VERT. BEND	-----	N/A	N/A	20-UPPER 10-LOWER	10-UPPER 10-LOWER	10-UPPER 10-LOWER

RESTRAINED JOINT NOTES

1. CONTRACTOR SHALL INSTALL RJDI FITTINGS FOR ALL HORIZ. & VERT. BENDS. FOR HORIZ. BENDS THE CONTRACTOR MAY USE CONCRETE THRUST BLOCKING IN LIEU OF RJDI FITTINGS WITH APPROVAL OF THE ENGINEER.
2. RESTRAINED LENGTHS WERE CALCULATED ASSUMING A 2.0 FACTOR OF SAFETY, TYPE 3 TRENCH CONDITIONS, "CL" SOIL CLASSIFICATION, AND 150 PSI HYDROSTATIC TEST PRESSURES.
3. ALL WATER MAIN APPURTENANCES WITHIN RJDI LIMITS MUST BE RESTRAINED AT EACH JOINT.
4. RESTRAINED LENGTH FOR 6"x4" REDUCER SHALL BE 25 FEET EACH SIDE OF FITTING.



FIRE HYDRANT SETTING

SCALE: NONE

RECORD DRAWING

This drawing has been revised from the original contract drawings to show minor / major changes made during construction. This drawing is not warranted to be complete and accurate in all respects.

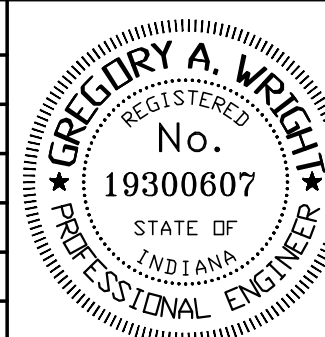
GRW Engineers, Inc.

Date: 8-2-99 By: BD

HOOSIER HILLS
REGIONAL WATER DISTRICT
MILAN & VINICITY
WATER MAIN IMPROVEMENTS
STANDARD DETAILS

GRW PROJECT NO. 2543

NO.	DESCRIPTION	DATE	BY
1	RENUMBERED	6-03	OCR
REVISIONS			



GRW Engineers, Inc.
Engineers, Architects, Planners
INDIANAPOLIS, INDIANA
LOUISVILLE & LEONINGTON, KENTUCKY
CINCINNATI, OHIO
NASHVILLE, TENNESSEE

DRAWN: KAY	DATE: 3/17/98
FILE NAME: SHT624.DWG	SCALE: N.T.S.
CHECKED:	SHEET NO.
APPROVED:	624