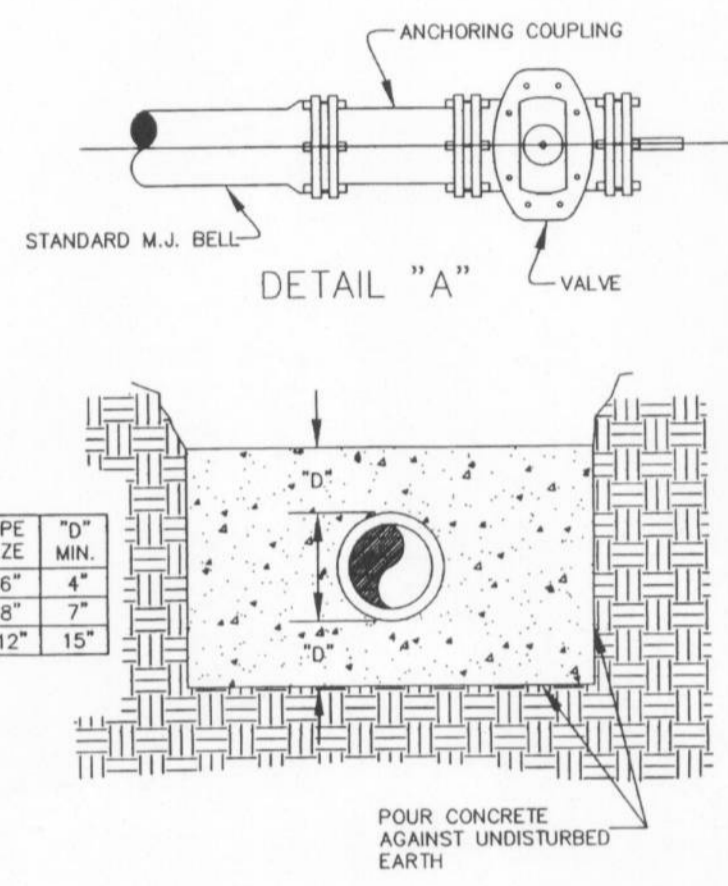
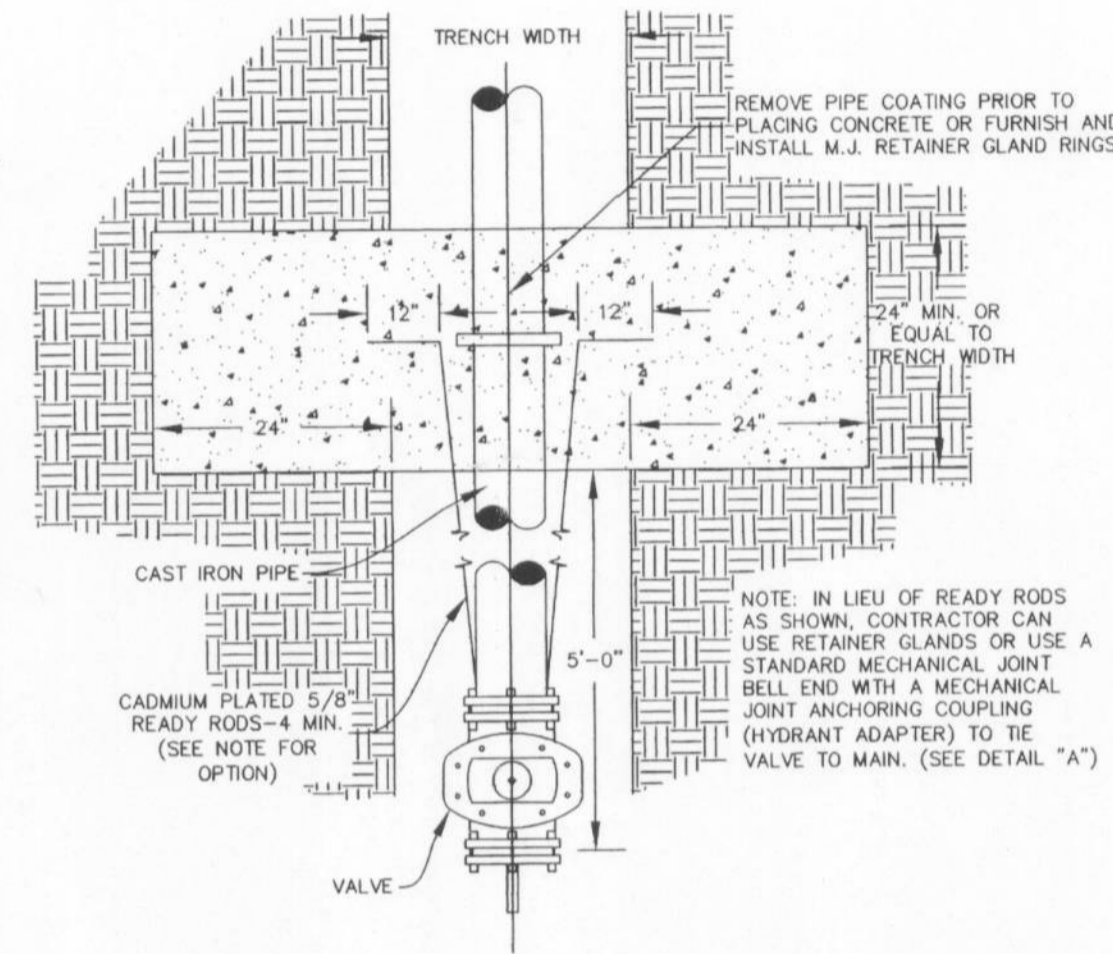


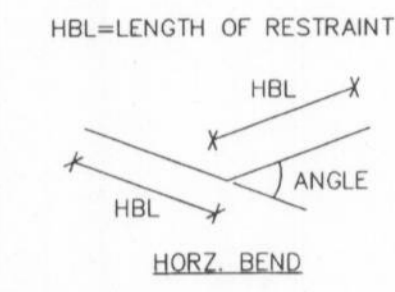
FIRE HYDRANT DETAIL
NOT TO SCALE



STRADDLE BLOCK DETAIL
NOT TO SCALE



TOP VIEW
CONCRETE COLLAR
NOT TO SCALE



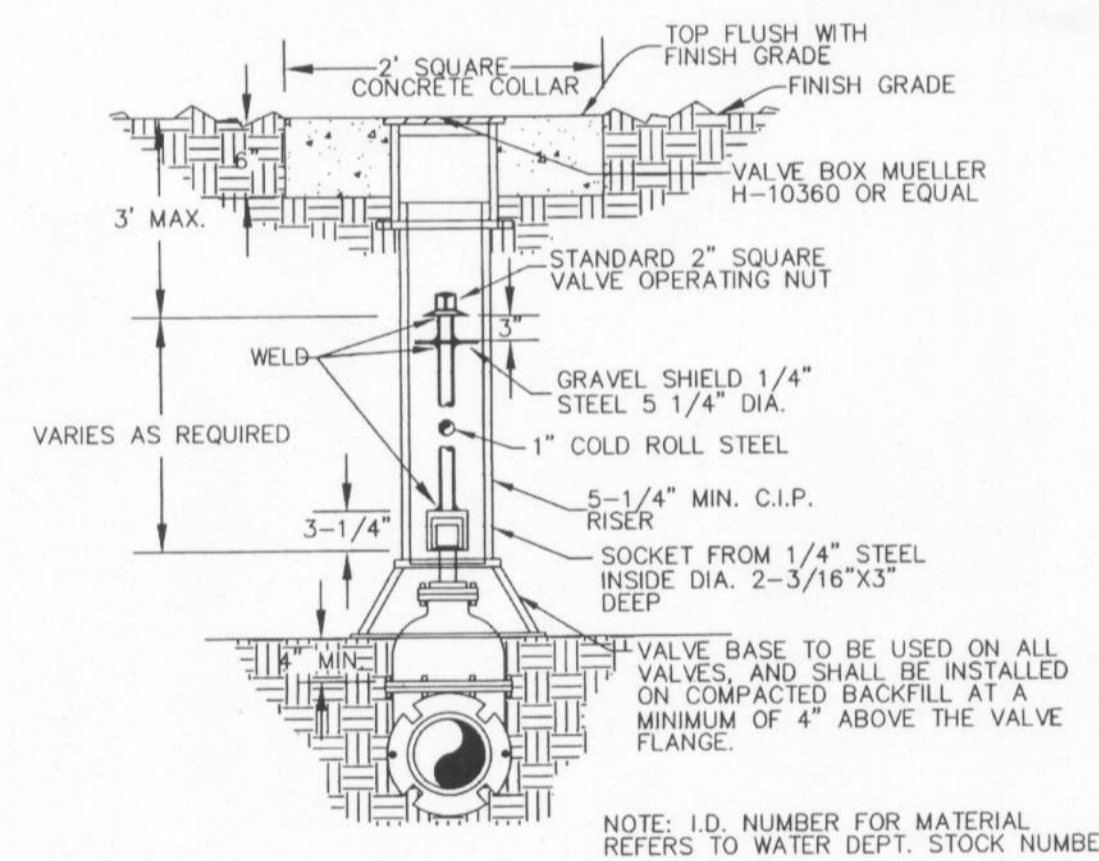
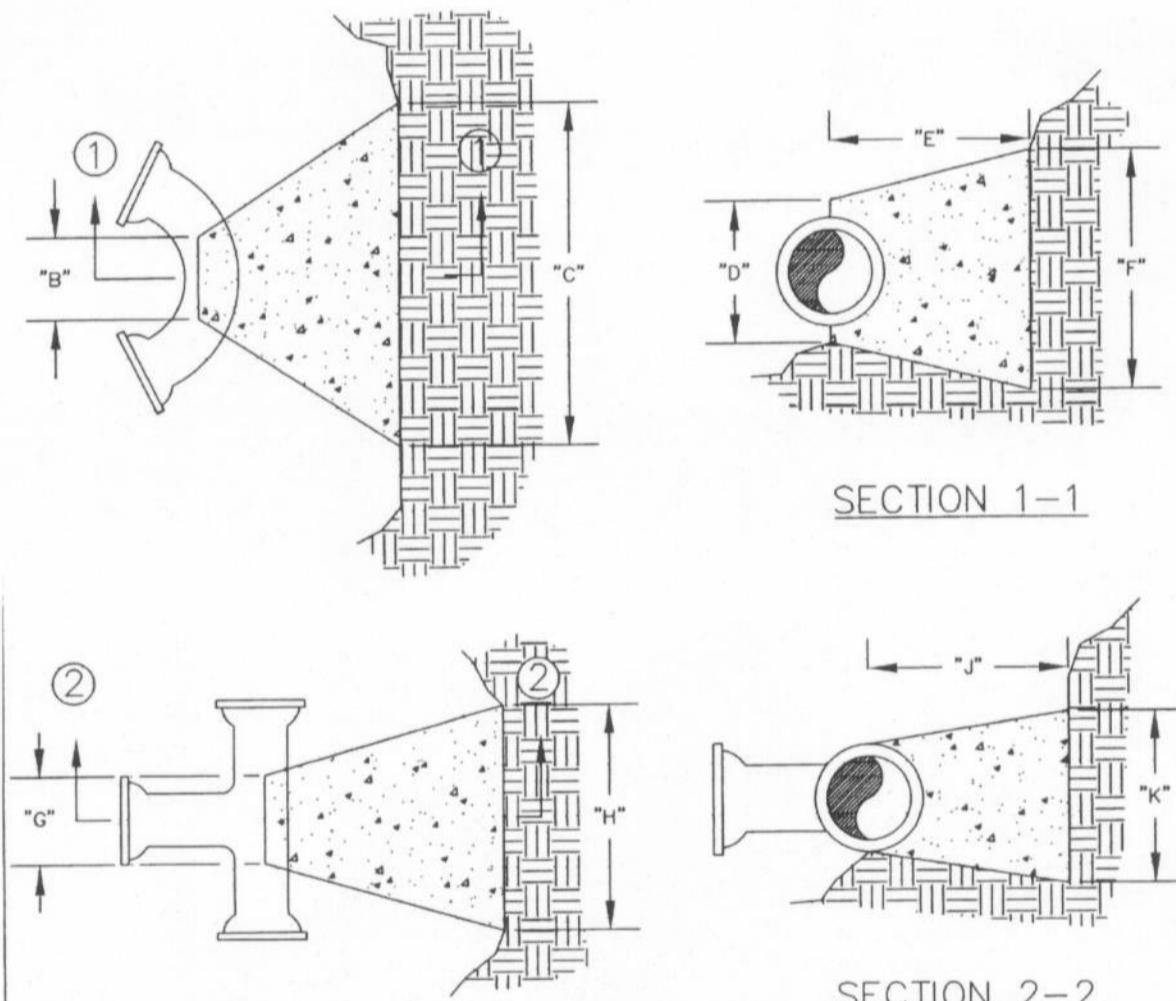
FITTING - PIPE	HBL
11-1/4" - 16"	5'
22-1/2" - 16"	10'
45" - 16"	21'
90" - 16"	50'
45" - 8"	13'

PIPE SIZE		
REDUCER	16"-12"	16"-8"
L	59'	95'

L=LENGTH OF RESTRAINT

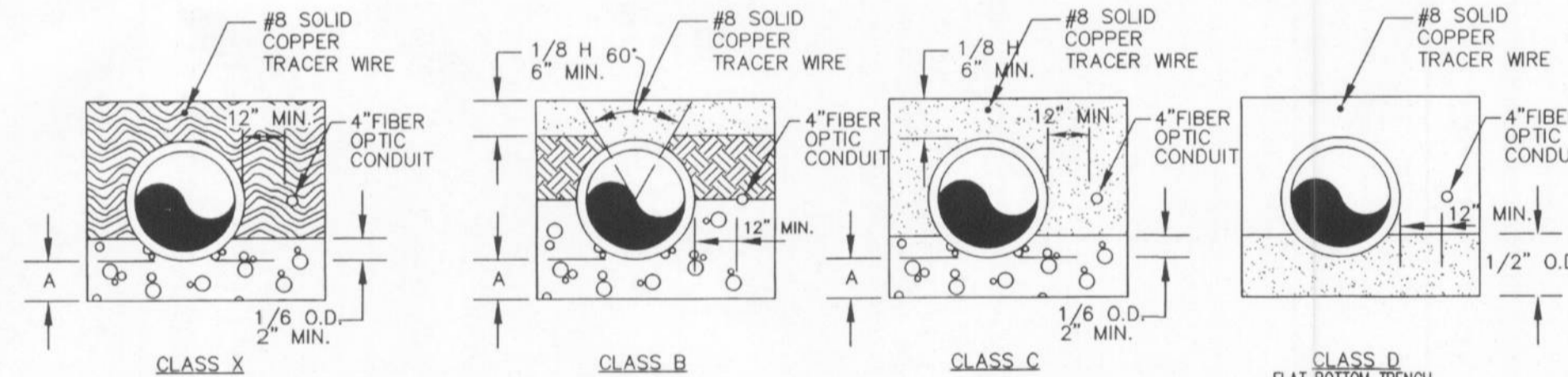
- LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
- MINIMUM 3.5' GROUND COVER REQUIRED.
- BASED ON 110 PSI INTERNAL PRESSURE AND 100 PSI SURGE PRESSURE FOR A TOTAL DESIGN PRESSURE OF 210 PSI.
- LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED TOGETHER.
- LENGTH OF RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
- CROSSES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
- REDUCER SHALL BE RESTRAINED ON THE LARGER PIPE ONLY.

RESTRAINT LENGTH DETAIL - PVC PIPE
NOT TO SCALE



NOTE: EMBEDMENT NOT SHOWN. INSTALL PER GENERAL NOTES OR PLAN SHEETS.

WATER VALVE DETAIL
(12" PIPE OR SMALLER)
NOT TO SCALE



LEGEND

I.D. - NOMINAL PIPE SIZE
O.D. - OUTSIDE DIAMETER OF PIPE
H - COVER ABOVE TOP OF PIPE
A - EMBEDMENT BELOW PIPE (SEE TABLE)

CLASS	BACKFILL	EMBEDMENT DEPTH (MIN.)
CLASS X	TAMPED BACKFILL	1/6 O.D.
CLASS B	COMPACTED BACKFILL	1/6 O.D.
CLASS C	GRANULAR BEDDING	1/6 O.D.
CLASS D	FLOWABLE FILL	1/2" MIN.

GRANULAR BEDDING SHALL BE CRUSHED ROCK OR PEA GRAVEL WITH NOT LESS THAN 95% PASSING 1/2" (95% PASSING 3/4" FOR 30" AND LARGER PIPE) AND NOT LESS THAN 95% RETAINED ON A #4; TO BE PLACED IN NOT MORE THAN 8" LAYERS AND COMPACTED BY MECHANICAL VIBRATING.

COMPACTED BACKFILL JOB EXCAVATED MATERIAL SHALL BE FREE FROM DEBRIS, ORGANIC MATERIAL AND STONES, PLACED IN UNIFORM LAYERS NOT MORE THAN 8" THICK, COMPACTED TO 95% MAXIMUM DENSITY AS DETERMINED BY A.S.T. D698, OR GRADED AGGREGATE. GRANULAR BACKFILL MATERIAL MAY BE SUBSTITUTED FOR ALL OR PART OF COMPACTED BACKFILL, EXCEPT WHERE FLOWABLE FILL IS IDENTIFIED.

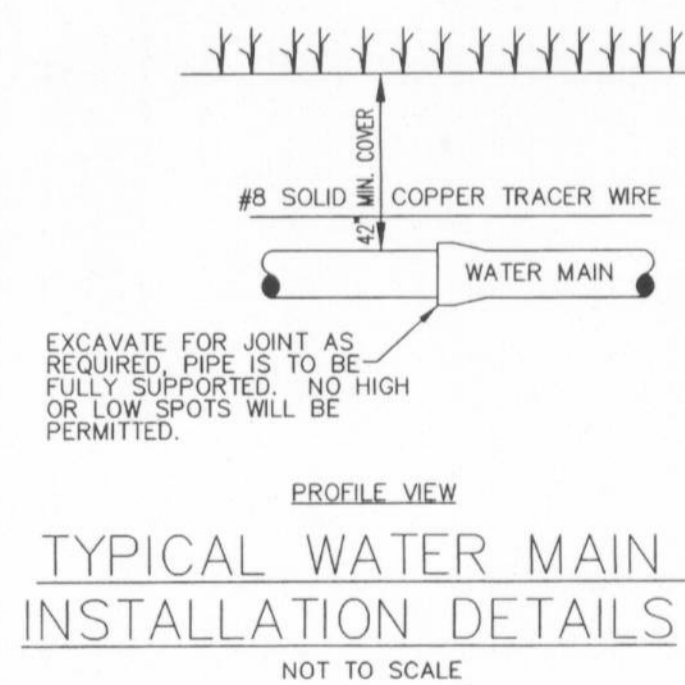
TAMPED BACKFILL JOB EXCAVATED MATERIAL SHALL BE FREE FROM DEBRIS, ORGANIC MATERIAL AND STONES, HAND PLACED IN UNIFORM LAYERS NOT MORE THAN 8" THICK AND TAMPED AROUND CONDUIT PIPE. GRANULAR BACKFILL MATERIAL MAY BE SUBSTITUTED FOR ALL OR PART OF TAMPED BACKFILL.

TRENCH BACKFILL SHALL BE AS REQUIRED IN THE "LAYING AND BACKFILL" SECTION OF THE DETAILED SPECIFICATIONS.

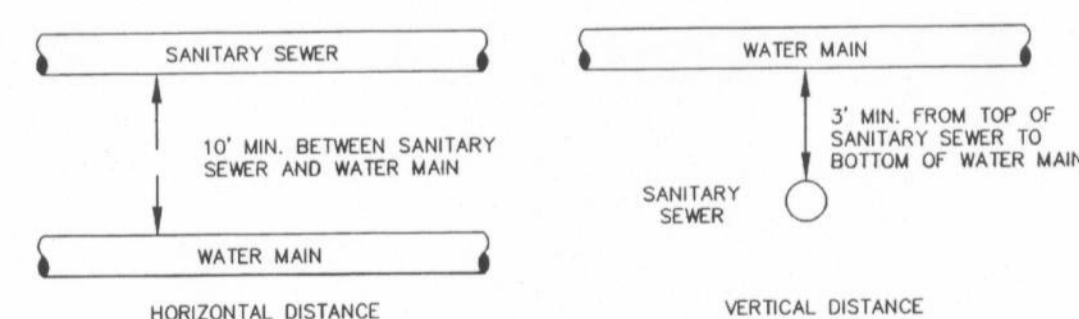
EMBEDMENT THE TYPE OF EMBEDMENT TO BE USED SHALL BE AS SPECIFIED IN THE PLANS AND SPECIFICATIONS.

FLOWABLE FILL THE TYPE OF FLOWABLE FILL TO BE USED SHALL BE AS SPECIFIED IN THE PLANS AND SPECIFICATIONS.

TRACER WIRE REQUIRED ON ALL WATER MAINS



TYPICAL WATER MAIN
INSTALLATION DETAILS
NOT TO SCALE



TYPICAL WATER AND SEWER
SEPERATION
NOT TO SCALE

BENDS	"B"	"C"	"D"	"E"	"F"
6"-11 1/4"	8"	15"	12"	24"	10"
6"-22 1/2"	8"	19"	12"	24"	13"
6"-45"	8"	30"	12"	24"	15"
6"-90"	8"	30"	12"	24"	28"
8"-11 1/4"	8"	20"	12"	24"	10"
8"-22 1/2"	8"	22"	12"	24"	18"
8"-45"	8"	31"	12"	24"	24"
8"-90"	8"	38"	12"	24"	36"
12"-11 1/4"	8"	30"	12"	24"	18"
12"-22 1/2"	8"	30"	12"	24"	25"
12"-45"	8"	40"	12"	24"	40"
12"-90"	8"	60"	12"	24"	52"
16"-11 1/4"	TL	28"	20"	24"	28"
16"-22 1/2"	TL	39"	20"	24"	39"
16"-45"	TL	55"	20"	24"	55"
16"-90"	TL	91"	20"	24"	60"
20"-11 1/4"	TL	34"	24"	26"	28"
20"-22 1/2"	TL	49"	24"	26"	39"
20"-45"	TL	74"	24"	26"	55"
20"-90"	TL	136"	24"	26"	60"
24"-11 1/4"	TL	40"	28"	28"	40"
24"-22 1/2"	TL	56"	28"	28"	56"
24"-45"	TL	101"	28"	28"	60"
24"-90"	TL	186"	28"	28"	60"
30"-11 1/4"	TL	49"	34"	30"	49"
30"-22 1/2"	TL	79"	34"	30"	60"
30"-45"	TL	154"	34"	30"	60"
30"-90"	TL	285"	34"	30"	60"

TEES	"G"	"H"	"J"	"K"
6"x6"x6"	12"	24"	24"	18"
8"x8"x8"	12"	24"	24"	18"
8"x8"x8"	12"	27"	24"	27"
12"x12"x6"	12"	24"	24"	18"
12"x12"x6"	12"	27"	27"	27"
12"x12"x12"	12"	36"	24"	36"
24"x24"x16"	16"	53"	28"	53"

- NOTES:
- 2" & 4" FITTINGS EQUIVALENT TO 6" FITTINGS.
 - TAPPING SLEEVES TO HAVE BACKING BLOCKS SAME SIZE AS REQUIRED FOR TEES.
 - "L" - TOTAL LENGTH OF FITTING MINUS CLEARANCE FOR BELLS.

INTERNAL WATER PRESSURE 6" THRU 12"=200 psi
INTERNAL WATER PRESSURE 16" THRU 30"=210 psi
BEARING PRESSURE OF SOIL=2000 psi

BACKING BLOCKS
NOT TO SCALE

WATER MAIN EMBEDMENT
NOT TO SCALE

WATER MAIN
DETAILS
PLANNING & ZONING FILE NO. 2204.03

ENGINEERS CERTIFICATION:

The following applies to ALL sheets and documents involved in the preparation of the plans and documents for this project. The responsibility for Professional Engineering liability on this project is limited to the set of plans displaying the signature and an original stamped seal of the Engineer on each sheet. ALL responsibility is disclaimed: until ALL review agency approvals are granted; for all other plan sheets issued prior to this issue date; for this set when another set is issued after this date; if the sheets are used individually instead of a set. This applies for ALL sheets and documents involved in this project whether this certification appears on it or not. Copyright. All Rights Reserved.

ZAVRADINOS & ASSOCIATES, INC. DBA
ZAVRADINOS ENGINEERING & SURVEYING

STEVEN W. POLK
REGISTERED PROFESSIONAL ENGINEER
NUMBER E-18668

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