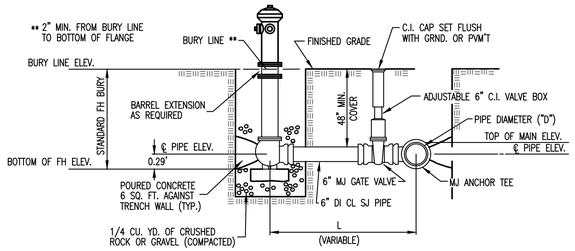


MATERIALS

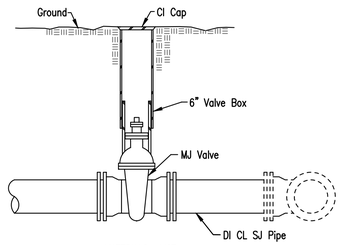
1 – MJ Anchor Tee ("D"x 6")
1 – 6" MJ Gate Valve
1 – 6" Valve Box
– 6" DI CL SJ Pipe
1 – Fire Hydrant
Concrete Blocking (As required)

FIRE HYDRANTS REQUIRED				
LINE NO.	STATION	BURY LINE ELEVATION	TOP OF PIPE ELEVATION	FIRE HYDRANT BURY REQUIRED

* THE CONTRACTOR SHALL USE STANDARD 4.5' OR 5' FIRE HYDRANT WITH HYDRANT BARREL EXTENSIONS AS REQUIRED.

FIRE HYDRANT ASSEMBLY

NOTE: ALL BLOCKING TO BE POURED CONCRETE CLASS II

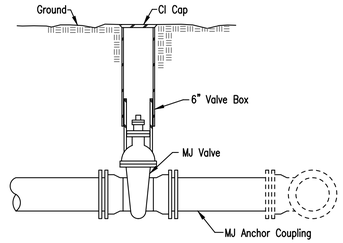


MATERIALS LIST

1 – MJ Gate Valve*
2 LF – DI CL SJ Pipe
1 – 6" Valve Box

VALVE ASSEMBLY

*See plans for size of valve to be used.



MATERIALS LIST

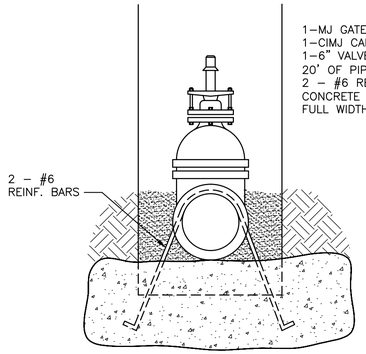
1 – MJ Gate Valve*
1 – MJ Anchor Coupling
1 – 6" Valve Box

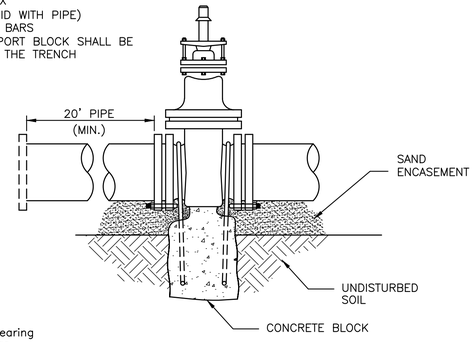
ANCHORED VALVE ASSEMBLY

*See plans for size of valve to be used.
(to be used with 12" and smaller pipe)

MATERIALS LIST

1–MJ GATE OR BUTTERFLY VALVE (AS PER PLAN)
1–CIMJ CAP WHEN NECESSARY
1–6" VALVE BOX
20' OF PIPE (BID WITH PIPE)
2 – #6 REINF. BARS
CONCRETE SUPPORT BLOCK SHALL BE FULL WIDTH OF THE TRENCH





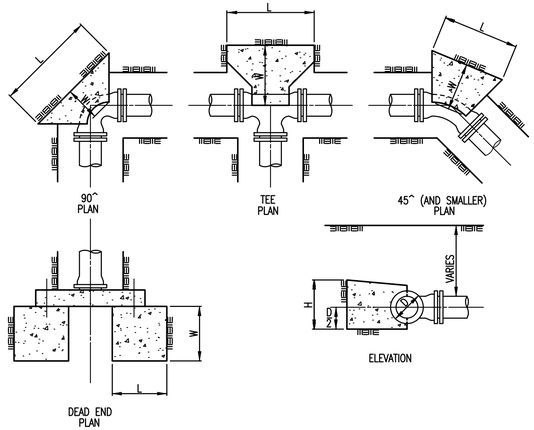
Notes:
1. Concrete Block at Valve to have sufficient bearing in undisturbed soil to prevent thrust movement as shown in table at right. Field Engineer to determine thrust loading of undisturbed soil and final size of thrust block.

2. The thrust block shall be constructed such that bolts, nuts, and other MJ accessories are kept clear of concrete.

3. All valves at dead ends and at other locations as called out on the plans shall be blocked as shown here.

THRUST AT VALVES	
VALVE	THRUST AT 150 #/in²
4"	1809 lbs.
6"	4245 lbs.
8"	7540 lbs.
12"	16965 lbs.

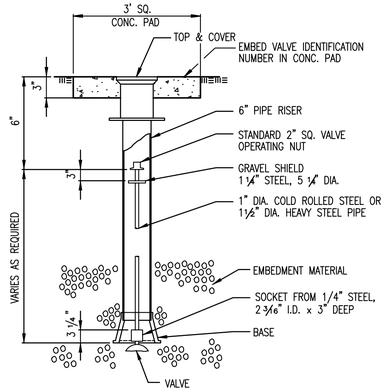
ANCHORED VALVE ASSEMBLY, SPECIAL



THRUST BLOCK SCHEDULE						THRUST BLOCK SCHEDULE					
LINE SIZE	FITTINGS & ANGLE	DIM. H	DIM. W	DIM. L		LINE SIZE	FITTINGS & ANGLE	DIM. H	DIM. W	DIM. L	
8"	11.25°	1.0	1.0	1.0	HORIZONTAL	12"	11.25°	1.0	1.0	2.0	HORIZONTAL
8"	22.5°	1.0	1.0	1.5		12"	22.5°	1.5	1.0	2.5	
8"	45°	1.5	1.0	2.0		12"	45°	2.0	1.5	3.5	
8"	90°	2.0	1.5	3.0		12"	90°	3.0	2.5	4.0	
8"	TEE	2.0	1.5	2.0		12"	TEE	2.5	2.0	3.5	
8"	DEAD END	2.0	1.5	2.0		12"	DEAD END	2.5	2.0	3.5	
8"	11.25°	2.0	2.0	2.5	VERTICAL	12"	11.25°	3.0	3.0	2.5	VERTICAL
8"	22.5°	2.0	3.0	3.5		12"	22.5°	3.0	4.0	4.0	
8"	45°	3.0	3.0	4.0		12"	45°	4.0	4.0	5.0	
8"	90°	3.0	4.0	4.5		12"	90°	4.0	5.0	6.0	

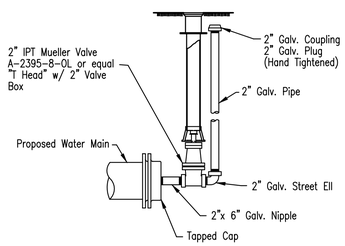
THRUST BLOCK DETAILS

NOTE: THE THRUST BLOCK STANDARDS SCHEDULE WITH CALCULATIONS CAN BE OBTAINED FROM THE CITY OF NEWTON.

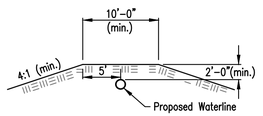


VALVE BOX DETAIL

NOTE: ONE VALVE STEM REQUIRED FOR EACH BURIED VALVE

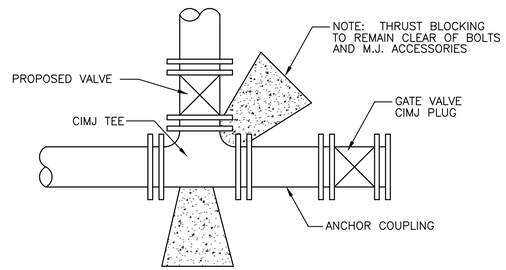


BLOW–OFF ASSEMBLY



PROTECTIVE FILL DETAIL

Minimum protective fill shall be provided in all instances where cover over the proposed waterline is less than two (2) Feet. (Cost subsidiary to pipe installation).



KEY BLOCK DETAIL

MICHAEL D. KELSEY LICENSED 13944 05/19/2022 KANSAS PROFESSIONAL ENGINEER

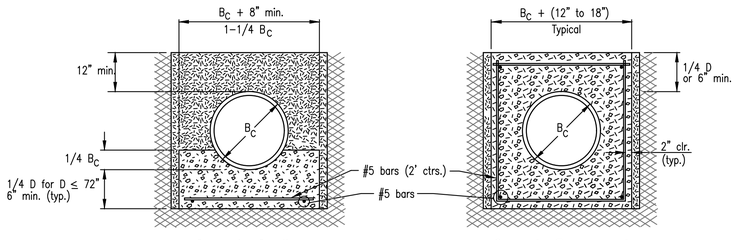
No.	Revision	By	Date

CITY OF NEWTON
HARVEY COUNTY, KANSAS

WATERLINE DETAILS

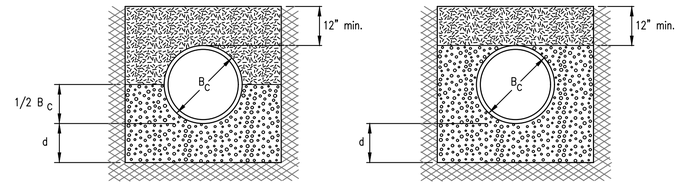
Professional Engineering Consultants, P.A.
303 S. TOPEKA • WICHITA, KANSAS 67202
316-262-2691 • FAX 316-262-3003

Designed by	MDK	Job No.	35–99129–158	FIGURE V–1
Drawn by	RFJ	Date	April 2005	



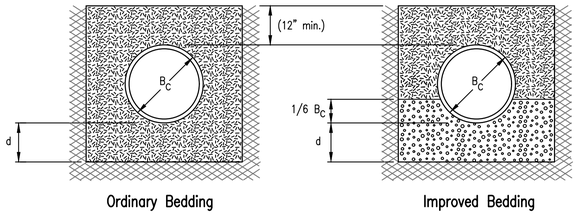
Concrete Cradle — Concrete Encasement

CLASS A



Normal Bedding — Improved Bedding

CLASS B



Ordinary Bedding — Improved Bedding

CLASS C

PIPE ZONE BACKFILLING

B_C = Outside Pipe Diameter

H = Backfill from Top of Pipe to Existing Ground

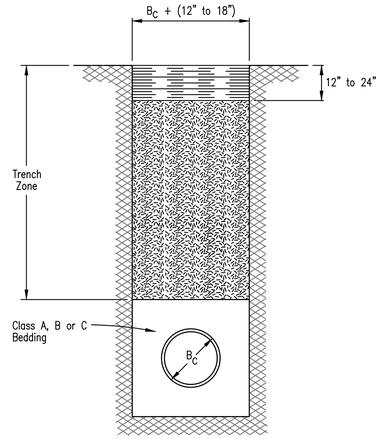
D = Inside Pipe Diameter

d = Depth of Bedding Material Below Pipe

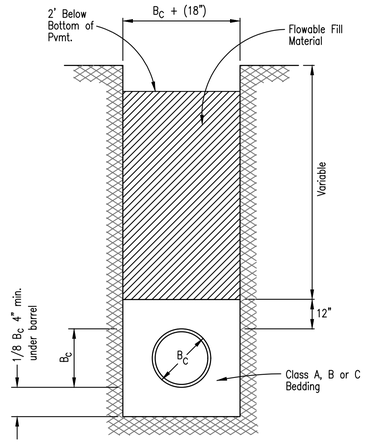
= Granular Bedding Material or Sand–Gravel Bedding

= Compacted Embedment

= Concrete



BACKFILL TYPE I



BACKFILL – FLOWABLE FILL

Depth of Bedding Material Below Pipe		
D	d(min) Soil	d(min) Rock
27" & smaller	4"	6"
30" to 60"	5"	9"
66" & larger	6"	12"

Granular Bedding Material shall be an approved material consisting of durable crushed rock conforming with the requirements of the latest revision of ASTM C–33 Size No. 67 (3/4" to No. 4); to be placed in not more than 6" layers and compacted by slicing with a shovel or vibrating. Soundness, abrasion, and absorption limits shall be as required for coarse aggregates in Section 03010–Concrete Work in the specifications.

Sand–Gravel Bedding Material – sand–gravel mix meeting Type UD–1 of the 1990 Kansas Standard Specifications for State Road and Bridge Construction.

Compacted Embedment shall be an approved sand material free from debris, organic material, and stones with 100% passing the 3/4" sieve to be placed in uniform layers not more than 6" thick and compacted to 95 percent maximum density as determined by ASTM D698. Granular Bedding Material may be substituted for all or part of Compacted Embedment Materials.

Class A "Concrete Cradle" and/or Class A "Concrete Encasement" is not required unless specified on the plans. However, where unexpected trench conditions exist or improper trenching is performed Class A Bedding may be required as determined by the Engineer.

Class B Bedding shall be used for all flexible pipe.

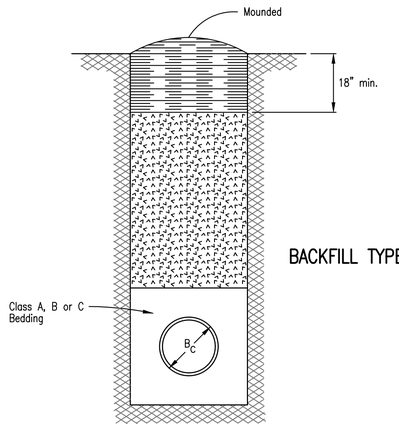
a. Class B Normal Bedding shall be used for PVC Pipe unless wet conditions are encountered.

b. Class B Improved Bedding shall be used for other flexible pipe, and for PVC pipe in wet conditions.

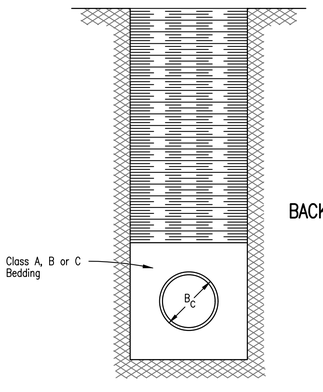
Class C Bedding shall be used for all rigid pipe.

a. Class C Ordinary Bedding shall be used for all rigid pipe unless wet conditions are encountered.

b. Class C Improved Bedding shall be used for wet conditions existing in the trench, as directed by the Engineer, at no additional cost to the Owner. The dimensions shall be equal to that required for "rock" excavation (see specifications).



BACKFILL TYPE II



BACKFILL TYPE III

TRENCH ZONE BACKFILLING

Compacted Granular Backfill material shall be an approved sand material free from debris, organic material and stones with 100% passing the 3/4" sieve and not more than 15% passing a No. 200 sieve; to be jetted and mechanically vibrated into place and compacted to 95% density as determined by ASTM D698.

Uncompacted Earth Backfill material may be natural soil free from large clods or stones, brush, roots more than 2 inches in diameter, debris, and junk. Flooding with water shall be provided as directed by the Engineer.

Compacted Earth Backfill shall consist of material existing prior to trenching or selected material as directed by the Engineer, and shall be compacted to 90% density as determined by ASTM D698.

Flowable Fill Backfill: Reference from Section 02221–1–2 of the Technical Specifications.

Backfill: Backfill material and compaction requirements shall conform to either Type I, Type II or Type III as specified in the plans. One years maintenance will be required on all backfill.

Backfilling Through Rock: Backfilling through rock shall be performed as specified in the paragraph Backfill above, except that the Pipe Zone is increased to provide eighteen (18) inches of cover over the pipe. When approved by the Engineer the remainder of the backfill may be excavated rock provided the excavated rock has been broken up so that earth and rock will thoroughly mix and not result in voids around the larger pieces of rock. Any excess rock remaining after the trench has been backfilled shall be removed or wasted as directed by the Engineer.

Backfilling Under Pavement: Backfilling under existing or proposed pavement shall be performed as Backfill Type I to a level of two (2) feet from the bottom of the pavement. The remainder of the trench shall be backfilled with selected material, sufficiently damp to be properly compacted in layers not exceeding six (6) inches in depth, compaction shall be performed with mechanical tampers and continued until a relative density of 100 percent of standard density, in conformance with ASTM D698 is attained.

Backfilling Under Gravel Streets: Where the trench crosses or is in existing gravel surfaced streets, the backfill shall be compacted as provided in the paragraph "Backfilling Under Pavement".

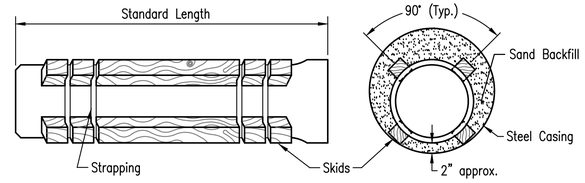
B_C = Outside Pipe Diameter

= Compacted Granular Backfill

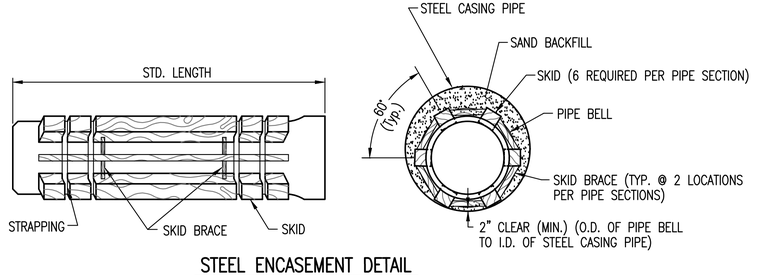
= Uncompacted Earth Backfill

= Compacted Earth Backfill

= Flowable Fill Backfill



STEEL ENCASEMENT DETAIL
WATER MAIN 12" AND UNDER



STEEL ENCASEMENT DETAIL
WATER MAIN OVER 12"

MICHAEL D. KEISER LICENSED 13944 05/19/2022 KANSAS PROFESSIONAL ENGINEER

No.	Revision	By	Date

CITY OF NEWTON
HARVEY COUNTY, KANSAS

BEDDING AND BACKFILL DETAILS

Professional Engineering Consultants, P.A.
303 S. TOPEKA • WICHITA, KANSAS 67202
316-262-2691 • FAX 316-262-3003

Designed by	MDK	Job No.	35–99129–158
Drawn by	RFJ	Date	April 2005

FIGURE V–2

DSNR: PEC OPER: KGH SCALE: 1=1.00
Q:\1999\99129\Newton Standards\Water\V-02 10-11-2005 09:02:37 am