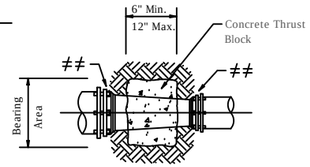
REDUCER THRUST BLOCK

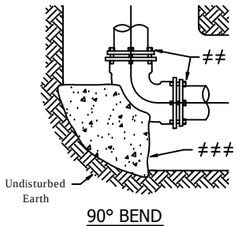
Large End	Small End	Bearing Area
6"	4"	2.7 S.F.
8"	4"	4.9 S.F.
8"	6"	2.2 S.F.
10"	4"	7.7 S.F.
10"	6"	5.0 S.F.
10"	8"	2.8 S.F.
12"	4"	11.2 S.F.
12"	6"	8.5 S.F.
12"	8"	6.3 S.F.
12"	10"	3.5 S.F.
16"	4"	20.0 S.F.
16"	6"	17.3 S.F.
16"	8"	15.1 S.F.
16"	10"	12.3 S.F.
16"	12"	8.8 S.F.



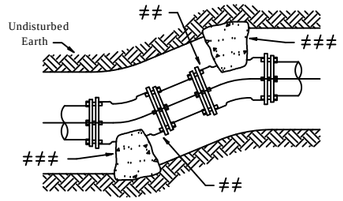
REDUCER

Nuts and bolts are to be protected from concrete and cleaned if necessary.

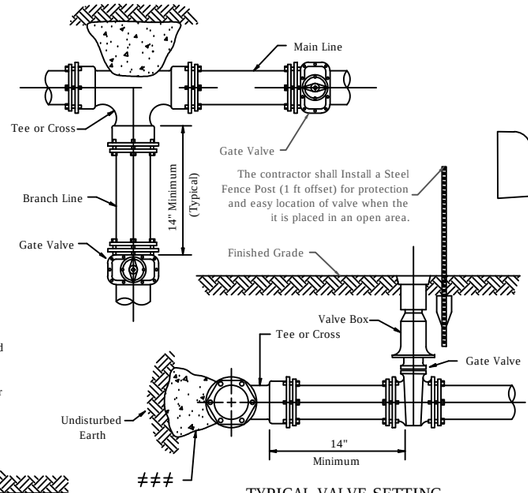
Concrete Thrust Block Retainer Glands or other approved mechanical anchoring couplers (painted with coal tar enamel) may be substituted for the Concrete Thrust Block, except for Fire Hydrant Settings. No additional payment will be made for this substitution.



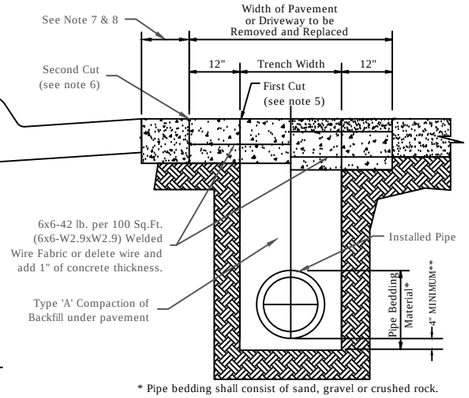
90° BEND



HORIZONTAL CHANGE IN DIRECTION



TYPICAL VALVE SETTING



* Pipe bedding shall consist of sand, gravel or crushed rock.
** If rock/stone, concrete debris are encountered, it shall be removed to a minimum of 6" below the bottom of the pipe.

PAVEMENT PATCH METHODS

Six methods of pavement patches shall be used dependent upon the original roadway surface type and traffic volumes. Schedule to be used unless authorized by City Engineer.

ORIGINAL SURFACE TYPE	PAVEMENT PATCH METHOD	NEW PAVEMENT TYPE
CONCRETE	METHOD 1	8" Class I Concrete, 4,000 p.s.i.
	METHOD 2	6" Class I Concrete, 4,000 p.s.i.
ASPHALTIC CONCRETE	METHOD 3	8" Class I Concrete Base, 4,000 p.s.i. Plus 2" BM-2 Asphaltic Concrete
	METHOD 4	6" Class I Concrete Base, 4,000 p.s.i. Plus 2" BM-2 Asphaltic Concrete
BRICK	METHOD 5	8" Class I Concrete Base, 4,000 p.s.i. Plus One-Course Relaid Brick
	METHOD 6	6" Class I Concrete Base, 4,000 p.s.i. Plus One-Course relaid Brick

Notes:

1. Methods 1,3,and 5 shall use 8 sack concrete and be used on arterial, intersections, and other heavily traveled streets (see Major Street System Map).
2. Method 2,4, and 6 shall be used for residential streets.
3. Method 2 shall be used for driveway, alley and curb and gutter repairs also.
4. All concrete is to be 8 sack mix.
5. First Cut - This cut may be by rock saw or other means and shall be full depth of the existing pavement.
6. Second Cut - All pavement and driveway cuts shall be full depth without damage to adjacent pavement. This cut shall be straight and clean with a smooth edge. A rock saw may be used for second cut on asphalt pavement only, however a straight, semi-smooth edge shall be required.
7. If distance between Second Cut and any joint or edge of pavement is less than 24" pavement shall be removed to the joint or edge of pavement.
8. If 4' or less pavement width is removed from the outside edge of pavement a minimum of 4 feet must be removed & replaced. Subgrade preparation (Type 'A' Compaction min. 18" deep if outside of trench width) for replacement shall extend a minimum of 2' outside the proposed outside edge of pavement.

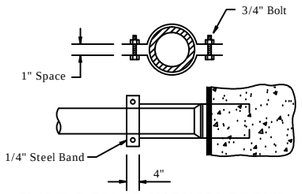
VERTICAL CHANGE ANCHORS

Pipe Size	90° Bend			45° Bend			22 1/2° Bend		
	Concrete		Bar Dia.	Concrete		Bar Dia.	Concrete		Bar Dia.
	C.Y.	*-S.F.		C.Y.	*-S.F.		C.Y.	*-S.F.	
6"	1.5	2.5	1/2"	1.0	1.0	1/2"	0.5	0.2	1/2"
8"	2.0	4.0	5/8"	1.5	1.5	1/2"	1.0	0.3	1/2"
10"	3.0	6.0	7/8"	2.5	2.0	5/8"	1.5	0.5	1/2"
12"	4.5	9.0	1"	3.0	3.0	5/8"	2.0	1.0	1/2"
16"									
20"									
24"									
30"									
36"									

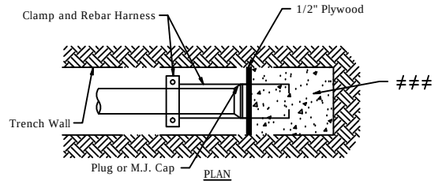
REQUIRED BEARING

Pipe Size	90° Bend	45° Bend	22 1/2° Bend	Tee
4"	2 Sq. Ft.	1 Sq. Ft.	1 Sq. Ft.	1 Sq. Ft.
6"	3 " "	2 " "	1 " "	2 " "
8"	5 " "	3 " "	2 " "	3 " "
10"	7 " "	4 " "	2 " "	5 " "
12"	12 " "	7 " "	4 " "	9 " "
16"	22 " "	12 " "	6 " "	15 " "
20"	34 " "	18 " "	10 " "	24 " "
24"	48 " "	26 " "	14 " "	34 " "
30"	75 " "	41 " "	21 " "	53 " "
36"	108 Sq. Ft.	59 Sq. Ft.	30 Sq. Ft.	77 Sq. Ft.

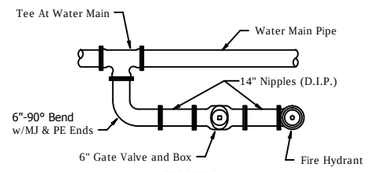
INSTALLATION OF PIPE UNDER EXISTING PAVEMENT



CLAMP & REBAR HARNESS DETAIL

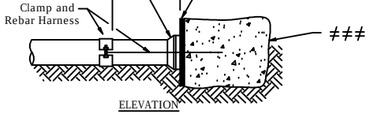


PLAN



TOP VIEW

FIRE HYDRANT. PARALLEL DETAIL

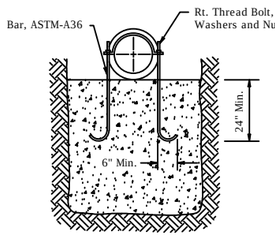


ELEVATION

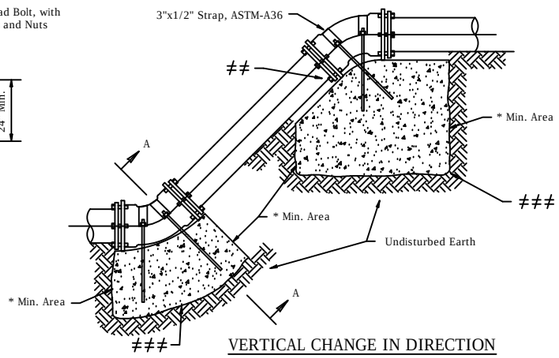
PLUG OR CAP THRUST BLOCK

NOTE: Concrete, reinforcing steel, equipment and labor required to construct the Line Plug or Cap Thrust Block shall not be paid for directly but shall be considered SUBSIDIARY to "Pipe Fittings". Clamp & Rebar harness are to be painted with coal tar enamal.

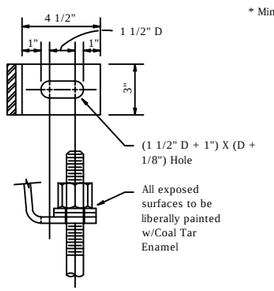
GENERAL NOTE: The concrete and steel required for all fittings not listed shall be the same amount as required for the 22 1/2° Bends. Concrete and steel are SUBSIDIARY to "Pipe Fittings".



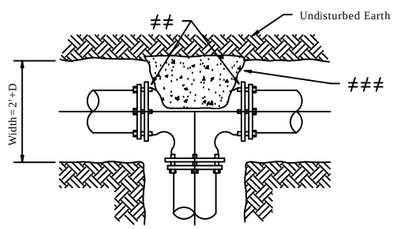
SECTION A-A



VERTICAL CHANGE IN DIRECTION

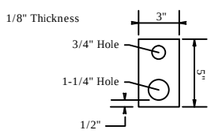


STRAP DETAIL



Blocking of tee is to be placed opposite the branch and the area is based on branch size. All material, labor and equipment required to construct concrete thrust blocks shall be considered SUBSIDIARY to "Pipe Fittings".

STANDARD TEE AND DEAD END TEE



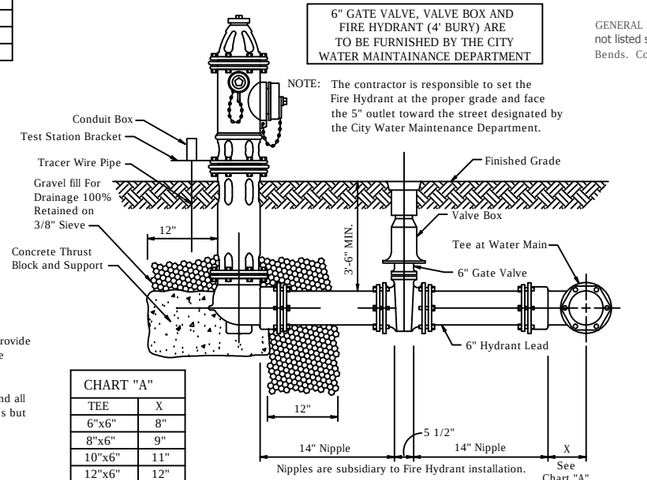
BRACKET DETAILS

NOTE: Hydrant drain must be kept clear when concrete is poured. Provide minimum of 8 cu. ft. of gravel around drain. Nuts and bolts are to be protected from concrete and cleaned if necessary.

NOTE: The concrete support and thrust block and gravel for drain and all necessary excavation to install Fire Hydrant Setting are not pay items but SUBSIDIARY to "2-way or 3-way Fire Hydrants".

6" GATE VALVE, VALVE BOX AND FIRE HYDRANT (4' BURY) ARE TO BE FURNISHED BY THE CITY WATER MAINTAINANCE DEPARTMENT

NOTE: The contractor is responsible to set the Fire Hydrant at the proper grade and face the 5" outlet toward the street designated by the City Water Maintenance Department.



Nipples are subsidiary to Fire Hydrant installation.

FIRE HYDRANT SETTING

CHART "A"	
TEE	X
6"x6"	8"
8"x6"	9"
10"x6"	11"
12"x6"	12"
14"X6"	14"

NO.	DATE	REVISION	BY	APP'D
1	6-12-15	PIPE BEDDING MINIMUM	GTD	JSP

WATERLINE STANDARD DETAILS

CITY OF HUTCHINSON
ENGINEERING DEPARTMENT

DRAWN BY: GTD
APPROVED BY: JSP

Date	Standard Detail	Sheet No.
4/3/2014	03	36 OF 46