

**APPENDIX A – GENERAL STANDARD DETAIL DRAWINGS**

<b><u>DRAWING NUMBER</u></b>	<b><u>TITLE</u></b>
G-01	Air Release Valve
G-02	Bedding Detail – Pressure Pipe
G-03	Bore and Jack Detail
G-04	Bridge Attachment – Typical
G-05	Bridge Attachment – Detail
G-06	Piling Pipeline Support
G-07	Curb Marking Detail
G-08	Restraint - Mechanical
G-09	Restraint – Thrust Blocking
G-10	Typical Service Tie-in
G-11	Submerged Crossings
G-12	Standard Valve Detail
G-13	Tapping Sleeve & Valve Detail
G-14	2” Connection
G-15	Tee and Valves



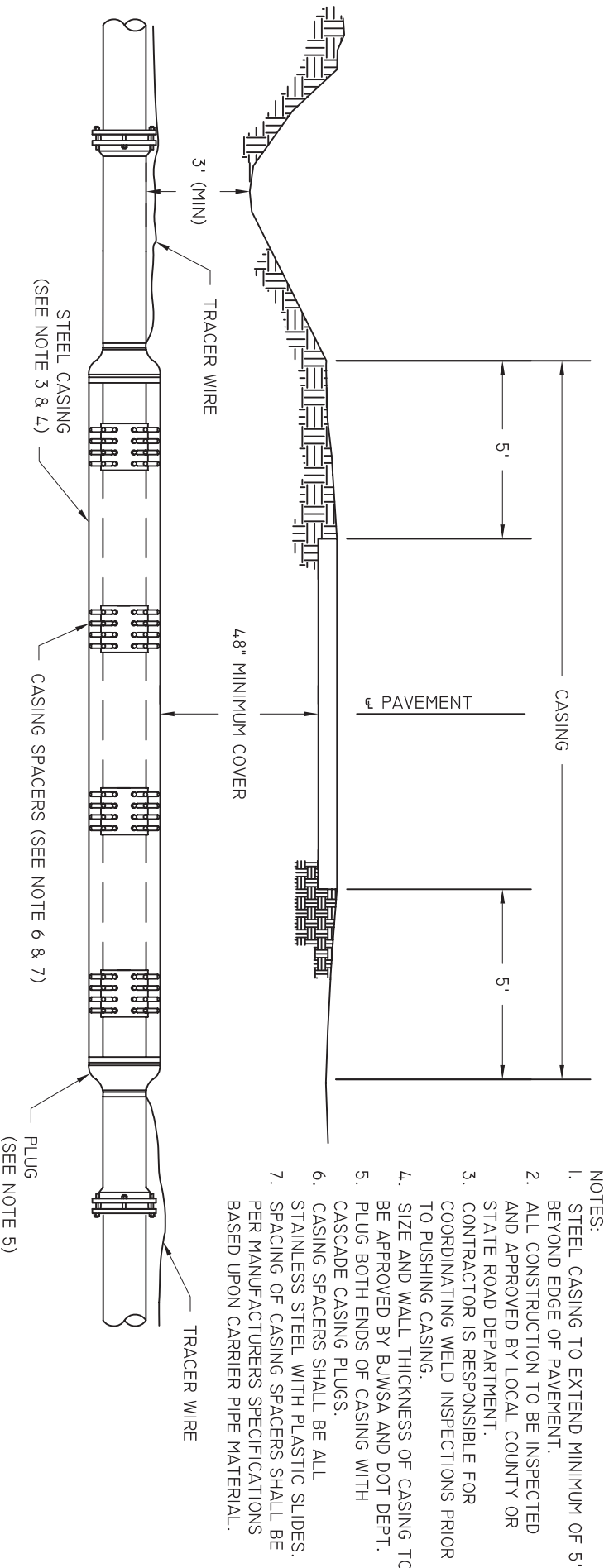
## PLAN



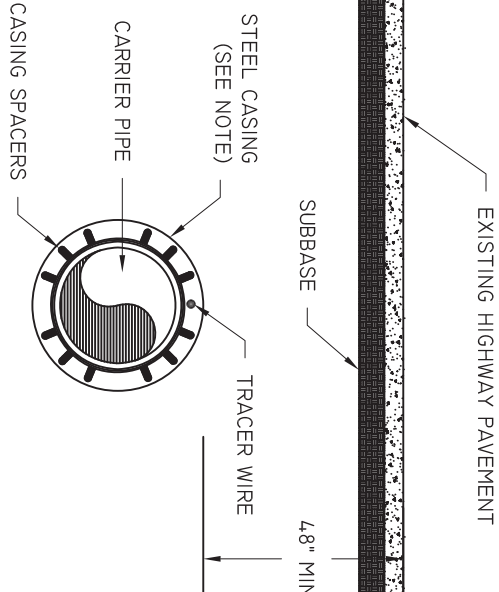
NOT TO SCALE

BEAUFORT - JASPER WATER & SEWER AUTHORITY		
AIR RELEASE VALVE		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-01
SCALE N.T.S.	APPROVED BY ERS	



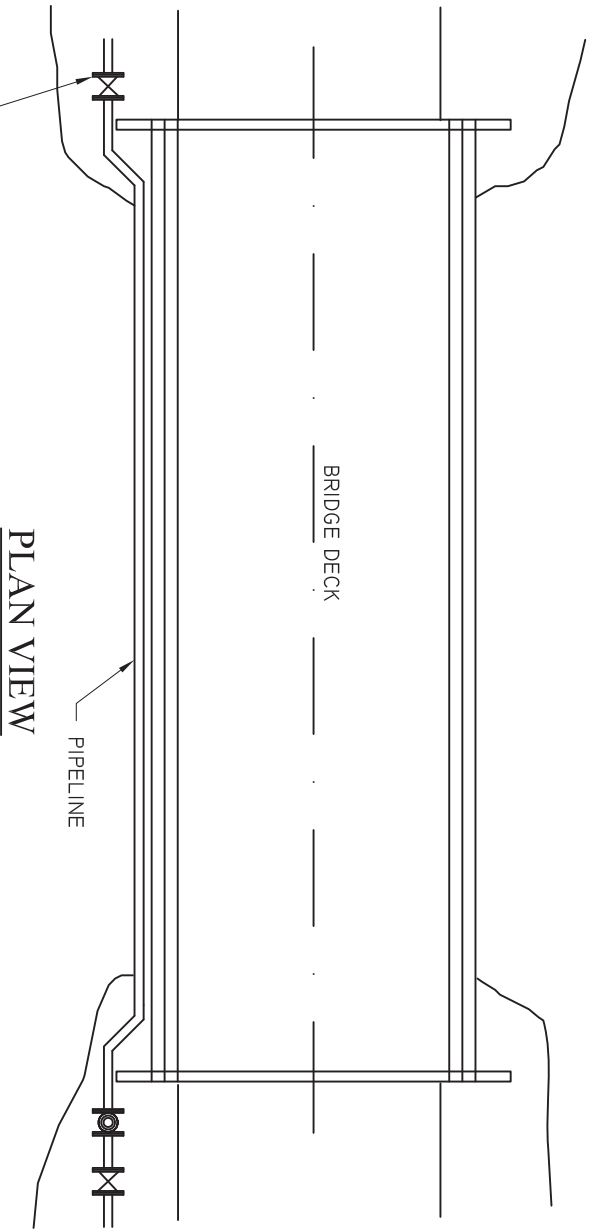


- NOTES:
1. STEEL CASING TO EXTEND MINIMUM OF 5' BEYOND EDGE OF PAVEMENT.
  2. ALL CONSTRUCTION TO BE INSPECTED AND APPROVED BY LOCAL COUNTY OR STATE ROAD DEPARTMENT.
  3. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WELD INSPECTIONS PRIOR TO PUSHING CASING.
  4. SIZE AND WALL THICKNESS OF CASING TO BE APPROVED BY BJWSA AND DOT DEPT.
  5. PLUG BOTH ENDS OF CASING WITH CASCADE CASING PLUGS.
  6. CASING SPACERS SHALL BE ALL STAINLESS STEEL WITH PLASTIC SLIDES.
  7. SPACING OF CASING SPACERS SHALL BE PER MANUFACTURERS SPECIFICATIONS BASED UPON CARRIER PIPE MATERIAL.

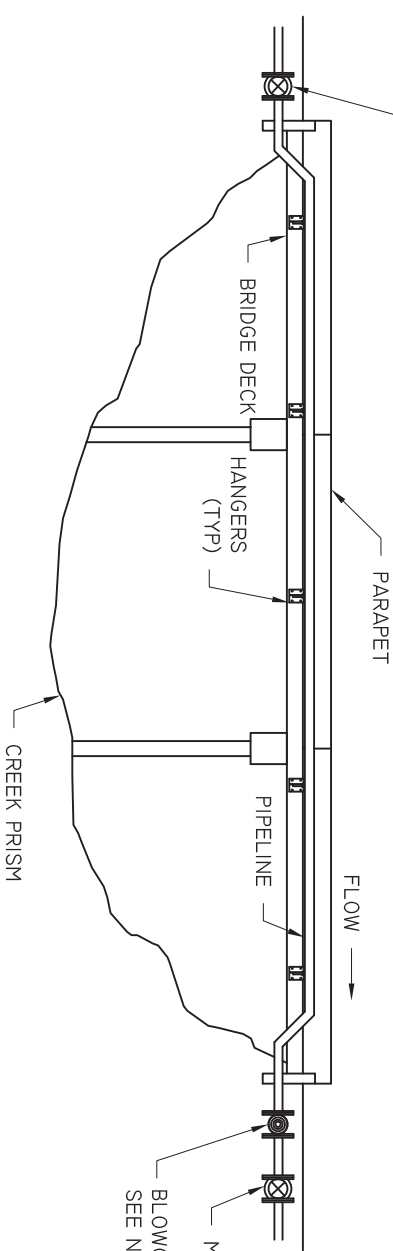


BEAUFORT - JASPER		
WATER & SEWER AUTHORITY		
BORE AND JACK DETAIL		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-03
SCALE N.T.S.	APPROVED BY ERS	

- NOTES:
1. BRIDGE HANGERS SHALL BE CONSTRUCTED PER BJWSA STANDARD DRAWING G-05 AND SCDOT REQUIREMENTS.
  2. PIPELINES ATTACHED TO BRIDGE STRUCTURES SHALL BE RESTAINED DIP.
  3. ALL FITTINGS NECESSARY TO CLEAR WING WALLS AND TRANSITION INTO UNDERGROUND PIPING SHALL BE MECHANICALLY RESTRAINED.
  4. TNE MEC EPOXY PAINT (SEE LATEST APPROVED SYSTEM) SHALL BE APPLIED BEFORE INSTALLATION TO ALL EXPOSED PIPING. COATING SHALL EXTEND UNTIL COVER OVER PIPE IS AT LEAST 2'.
  5. VALVES AND BLOWOFF SHALL BE INSTALLED BEYOND THE LIMIT OF GUARD RAIL.
  6. BLOWOFF SHALL BE SIZED TO PROVIDE 2.5 FPS FLUSHING VELOCITY, AND SHALL BE STANDARD HYDRANT UNLESS HYDRANT DOES NOT ALLOW FLUSHING VELOCITY.

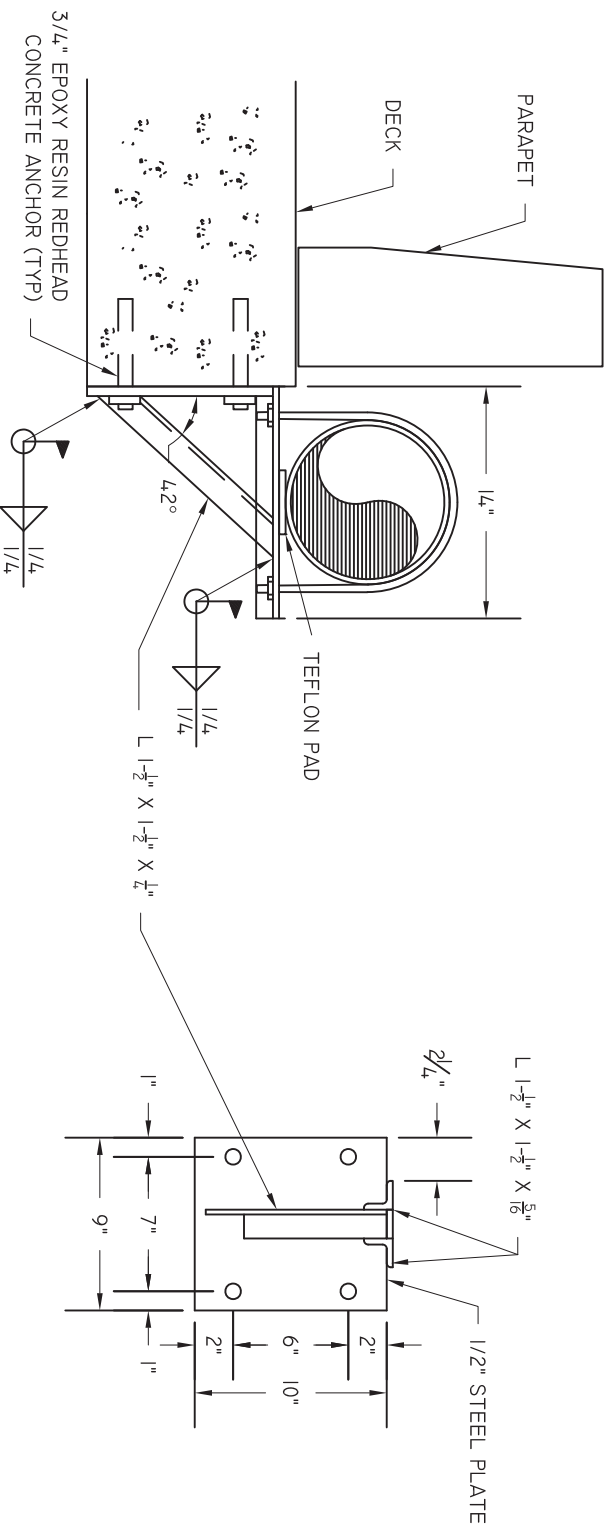


PLAN VIEW



PROFILE VIEW

BEAUFORT - JASPER		
WATER & SEWER AUTHORITY		
TYPICAL BRIDGE ATTACHMENT		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-04
SCALE N.T.S.	APPROVED BY ERS	

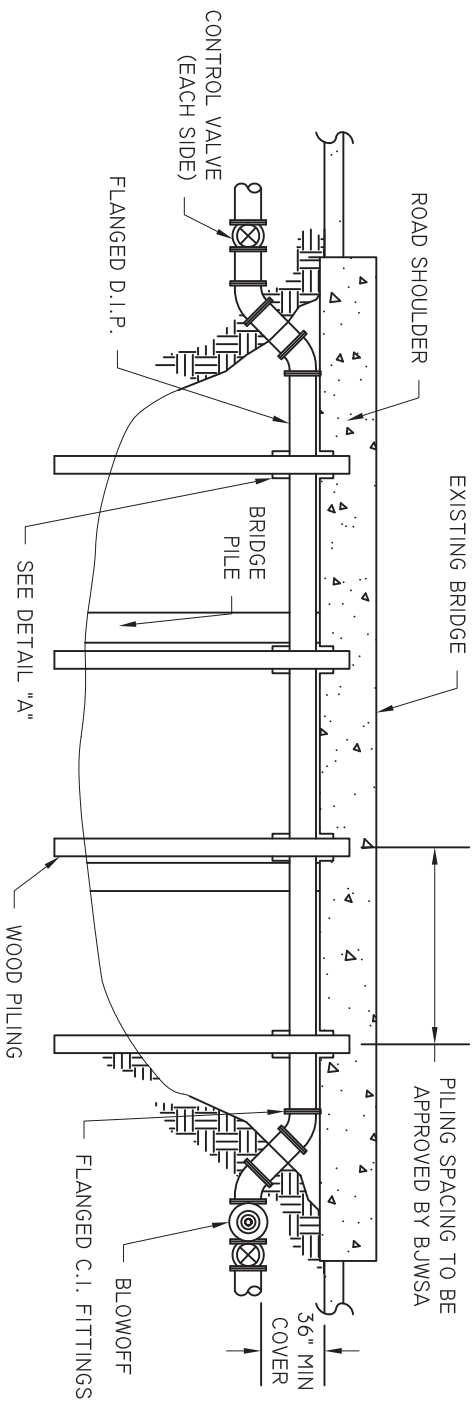


SIDE VIEW

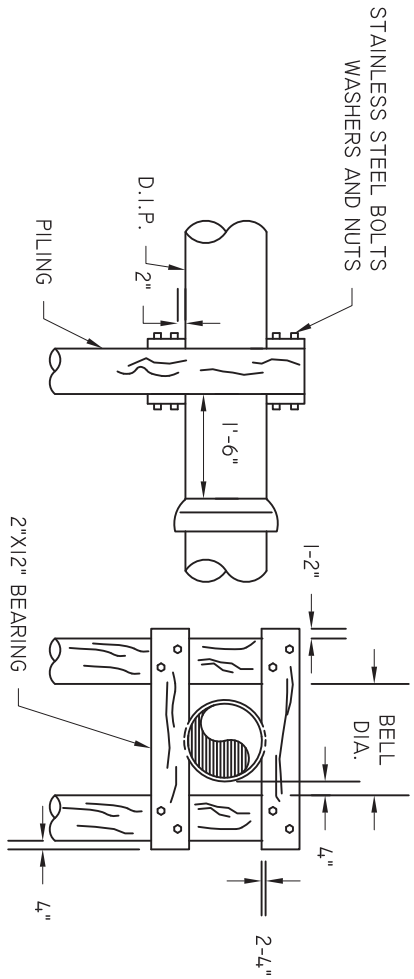
FRONT VIEW

- NOTES:
1. PIPE STRAPPING AND BRACKET MATERIAL SHALL BE 316 STAINLESS STEEL.
  2. EPOXY ANCHORS SHALL BE 316 STAINLESS STEEL
  3. PIPE STRAP SHALL BE SIZED TO FIT CL 250 D.I.P. OF SIZE SPECIFIED.
  4. ALL PIPING TO HAVE FINAL PAINT COAT PRIOR TO INSTALLATION.

BEAUFORT - JASPER		
WATER & SEWER AUTHORITY		
BRIDGE ATTACHMENT DETAIL		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-05
SCALE N.T.S.	APPROVED BY ERS	



ABOVE CHANNEL DETAIL AT BRIDGE

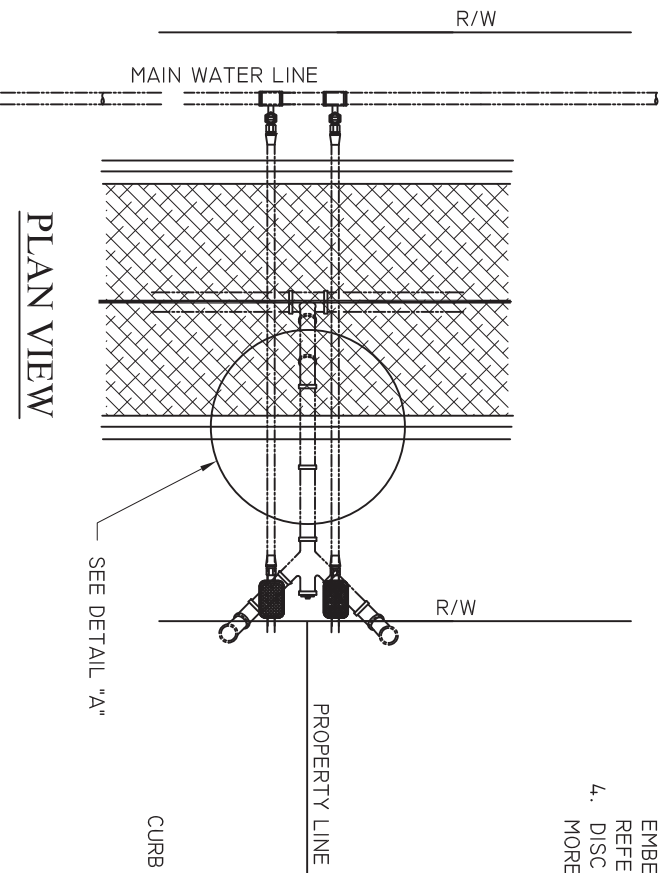


DETAIL 'A' - SUPPORT PILING

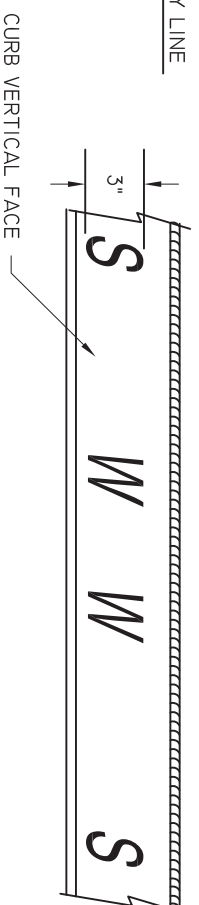
- NOTES:
1. ALL PIPELINE PROJECTS REQUIRING SUPPORT PILING MUST BE APPROVED ON A CASE BY CASE BASIS BY BJWSA BASED UPON ACCEPTED ENGINEERING PRACTICES. THIS DETAIL IS PROVIDED AS A GUIDELINE ONLY.
  2. ALL PILING SHALL HAVE A MINIMUM TIP DIAMETER OF 8" BE DROVE TO A MINIMUM BEARING CAPACITY OF 10 TONS.
  3. ALL PILING AND SUPPORTS SHALL BE RATED FOR CONTINUOUS SALT WATER SUBMERGENCE.
  4. APPROPRIATELY SIZED BLOWOFF SHALL BE INSTALLED DOWNSTREAM TO PROVIDE FLUSHING CAPABILITIES.
  5. ALL EXPOSED PIPING SHALL BE RESTRAINED JOINT DUCTILE AND SHALL BE PAINTED PRIOR TO INSTALLATION. PAINTED PIPE SHALL EXTEND A MINIMUM OF 2' BELOW FINAL GRADE.
  6. VALVES AND BLOWOFF SHALL BE INSTALLED BEYOND THE LIMIT OF GUARD RAIL.
  7. BLOW OFF SHALL BE SIZED TO PROVIDE 2.5 FPS FLUSHING VELOCITY, AND SHALL BE STANDARD HYDRANT UNLESS HYDRANT DOES NOT ALLOW FLUSHING VELOCITY.

BEAUFORT - JASPER		
WATER & SEWER AUTHORITY		
PILING PIPELINE SUPPORT		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-06
SCALE N.T.S.	APPROVED BY ERS	

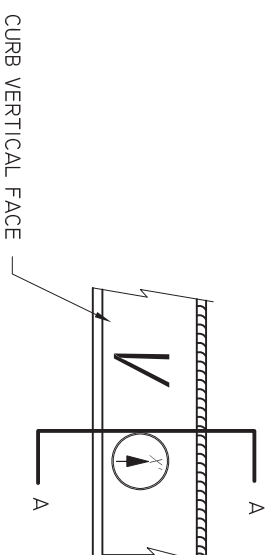
- NOTES:
1. CURB MARKING SHALL BE PERPENDICULAR WITH SERVICE LOCATION.
  2. CURB MARKING SHALL BE EMBOSSED INTO CURB FACE.
    - A. WATER SERVICES SHALL BE DENOTED WITH A "W".
    - B. SEWER SERVICES SHALL BE DENOTED WITH A "S".
    - C. VALVES SHALL BE DENOTED BY A "V".
    - D. BENDS SHALL BE DENOTED WITH A "B".
  3. VALVE AND PIPELINE MARKERS ARE NOT REQUIRED IF A SURVEYORS 2"Ø BRASS DISK IS EMBEDDED ADJACENT TO EMBOSSED LETTER AND MARKED TO INDICATE LOCATION OF REFERENCED ITEM.
  4. DISC MUST BE EMBEDDED, MAY NOT PROTRUDE PASS CONCRETE SURFACE OR EMBEDDED MORE THAN 3/8".



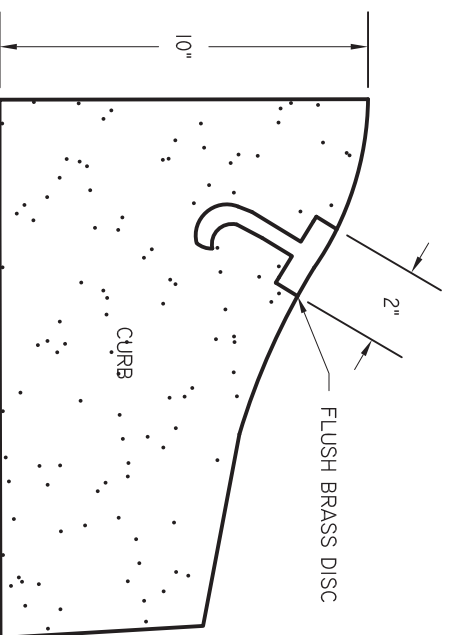
## PLAN VIEW



### DETAIL "A"



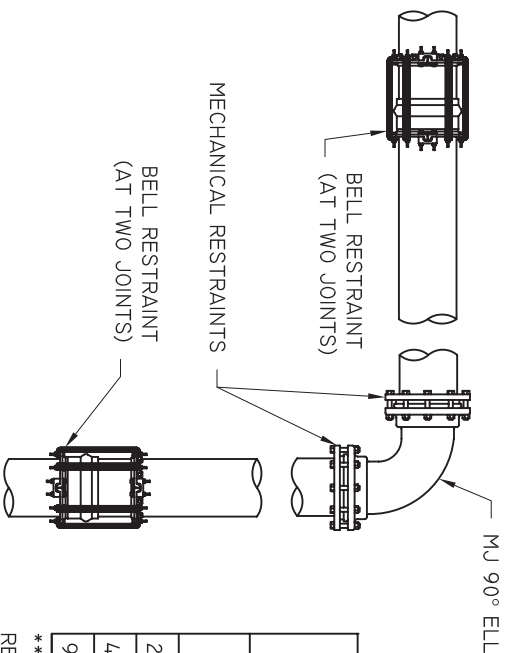
### DETAIL "B"



## SECTION A-A

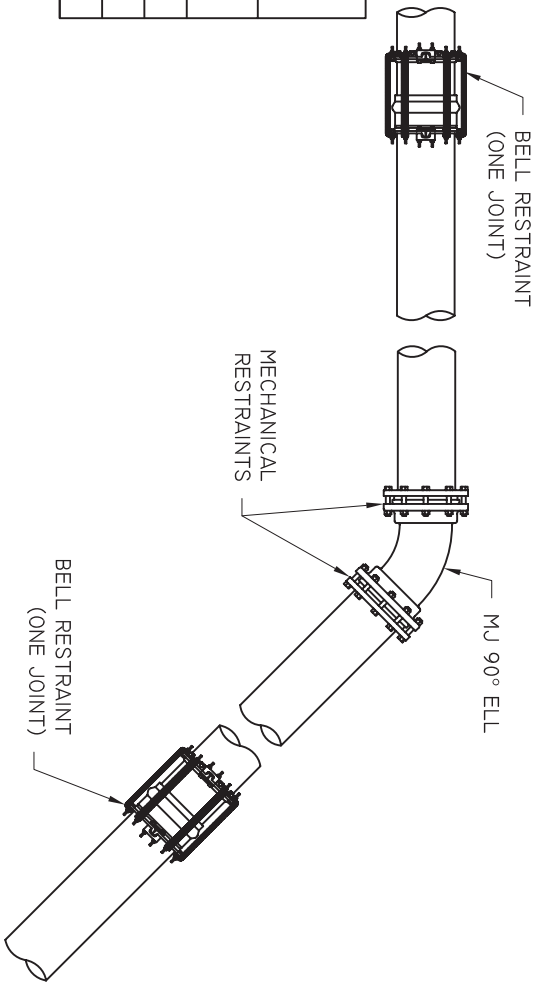
BEAUFORT - JASPER WATER & SEWER AUTHORITY		
CURB MARKING DETAIL		
DATE 07/10/09	DRAWN BY BMC	DRAWING # G-07
SCALE N.T.S.	APPROVED BY ERS	





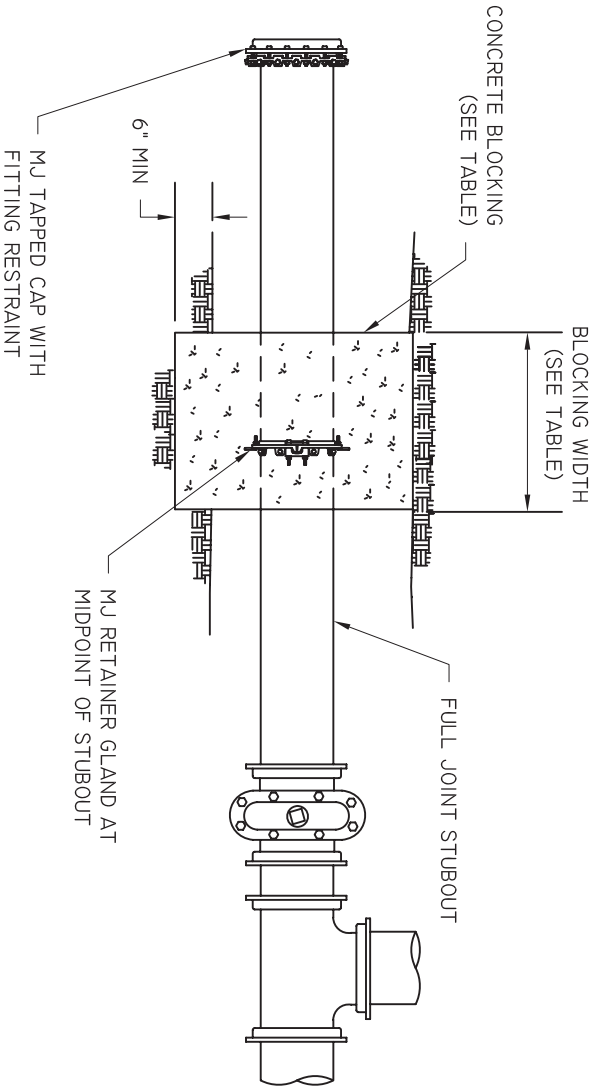
MINIMUM RESTRAINT DISTANCE FOR MAINS 10" AND SMALLER	
FITTING	**RESTRAINED JOINTS
22.5° ELL	1
45° ELL	1
90° ELL	2

\*\*USE ENGINEER'S  
RECOMMENDATIONS FOR  
SIZES GREATER THAN 10"



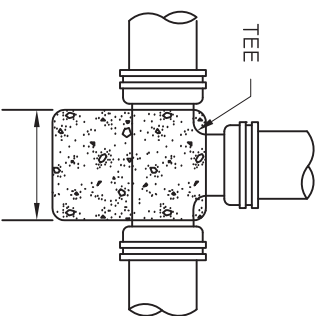
MINIMUM BLOCKING DIMENSIONS		
PIPE SIZE (IN)	BLOCKING BEARING AREA (FT <sup>2</sup> )	BLOCKING WIDTH (IN)
4	2	24
6	4	24
8	7	36
10	11	36
12	15	36
OVER 12" BY THE DESIGN ENGINEER		

- NOTE:
1. THE MINIMUM DIMENSIONS TABLE IS BASED ON AN ASSUMED SOIL BEARING OF 2000 LBS PER SQ. FT. IF BEARING VALUE FOR SOIL IS LESS THAN AREA SHOWN HEREIN SHOULD BE INCREASED ACCORDINGLY.
  2. JOINT IS DEFINED TO BE A MINIMUM OF 18" IN LENGTH.

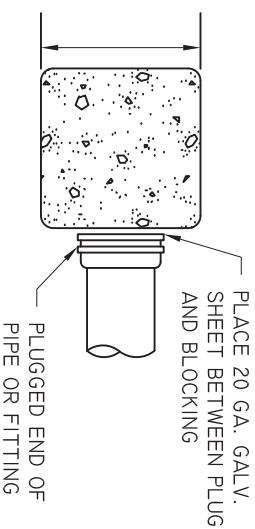


## TYPICAL FUTURE STUBOUT

BEAUFORT - JASPER WATER & SEWER AUTHORITY		
MECHANICAL RESTRAINT		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-08
SCALE N.T.S.	APPROVED BY ERS	

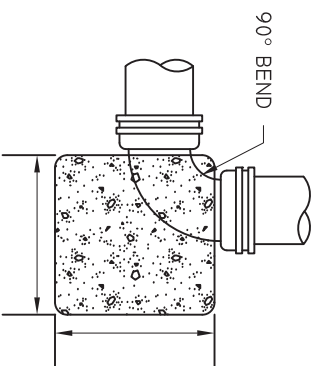


PIPE	AREA AGAINST UNDISTURBED SOIL
4"	1'-2" X 1'-2"
6"	1'-6" X 1'-6"
8"	1'-9" X 1'-9"
10"	2'-2" X 2'-2"
12"	2'-8" X 2'-8"

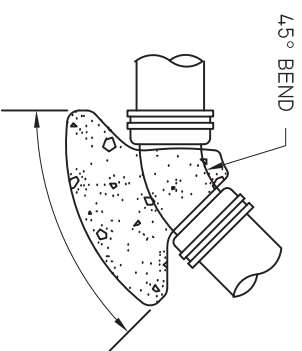


PIPE	AREA AGAINST UNDISTURBED SOIL
4"	1'-2" X 1'-2"
6"	1'-6" X 1'-6"
8"	1'-9" X 1'-9"
10"	2'-2" X 2'-2"
12"	2'-8" X 2'-8"

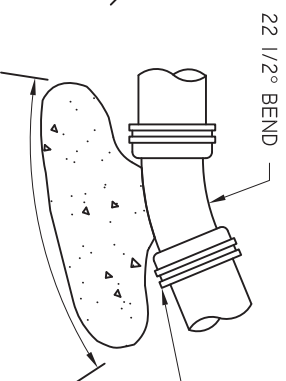
NOTE:  
1. CONCRETE THRUST BLOCKING SHALL ONLY BE USED WHERE MECHANICAL RESTRAINTS ARE NOT FEASIBLE. PRIOR APPROVAL MUST BE OBTAINED FROM BUWSA PRIOR TO USING THRUST BLOCKING.



PIPE	AREA AGAINST UNDISTURBED SOIL
4"	1'-0" X 1'-0"
6"	1'-3" X 1'-3"
8"	2'-0" X 2'-0"
10"	2'-6" X 2'-6"
12"	3'-0" X 3'-0"



PIPE	AREA AGAINST UNDISTURBED SOIL
4"	1'-0" X 1'-0"
6"	1'-3" X 1'-3"
8"	1'-6" X 1'-6"
10"	2'-0" X 2'-0"
12"	2'-3" X 2'-3"



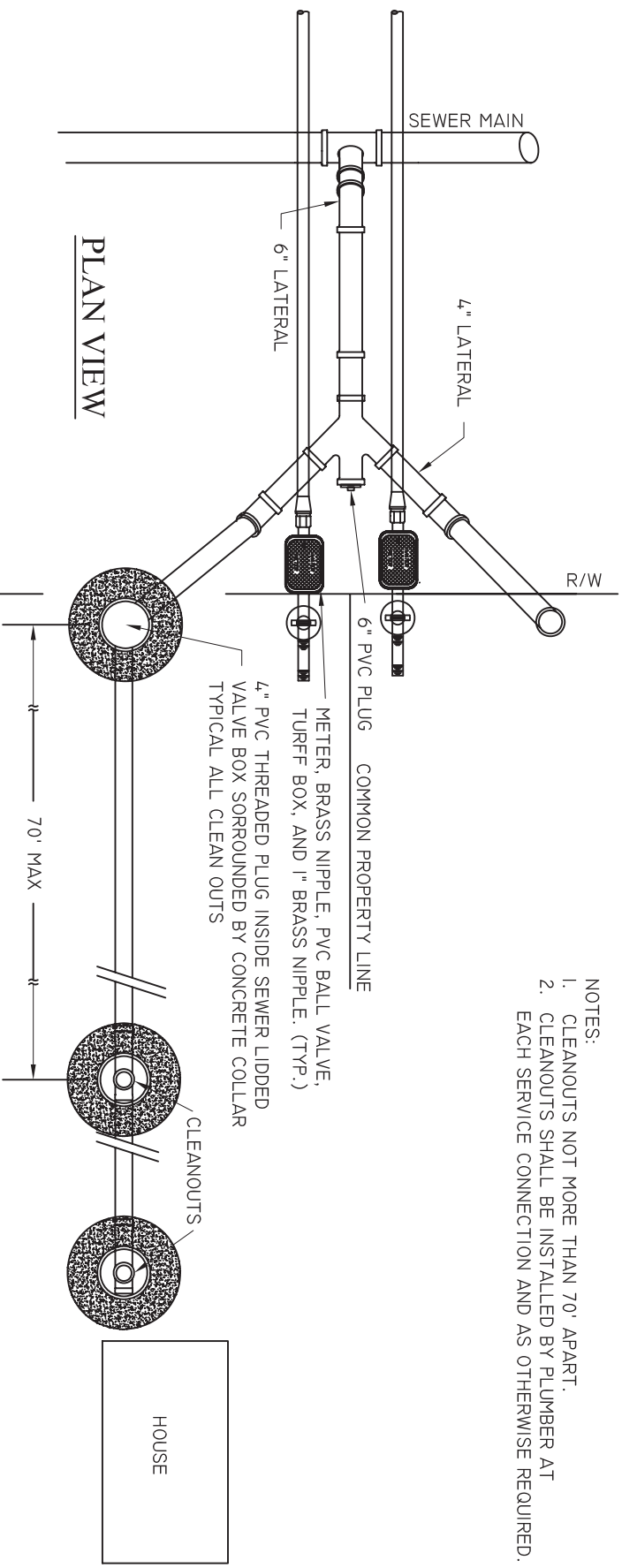
PIPE	AREA AGAINST UNDISTURBED SOIL
4"	1'-0" X 1'-0"
6"	1'-0" X 1'-0"
8"	1'-2" X 1'-2"
10"	1'-6" X 1'-6"
12"	1'-8" X 1'-8"

NO CONCRETE ON MECHANICAL JOINT BOLTS

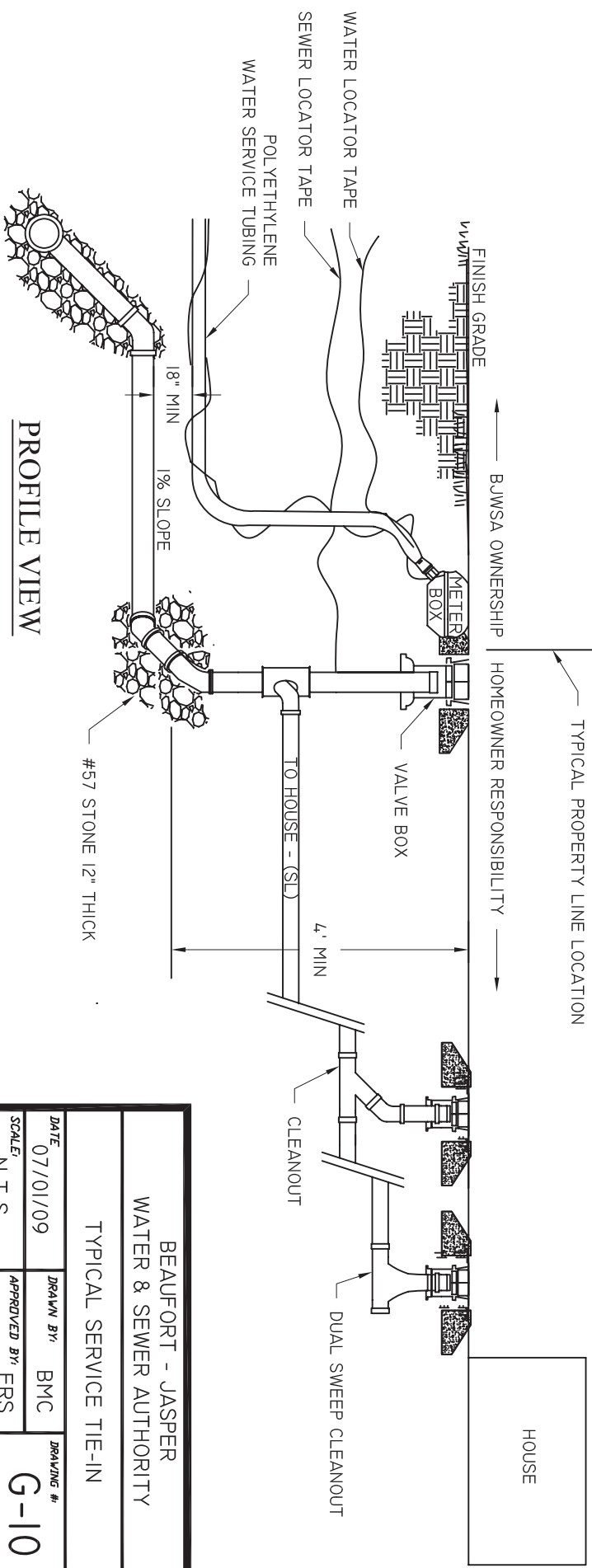
BEAUFORT - JASPER  
WATER & SEWER AUTHORITY

RESTRAINT, THRUST BLOCKING

DATE 07/01/09	DRAWN BY BMC	DRAWING # G-09
SCALE N.T.S.	APPROVED BY ERS	

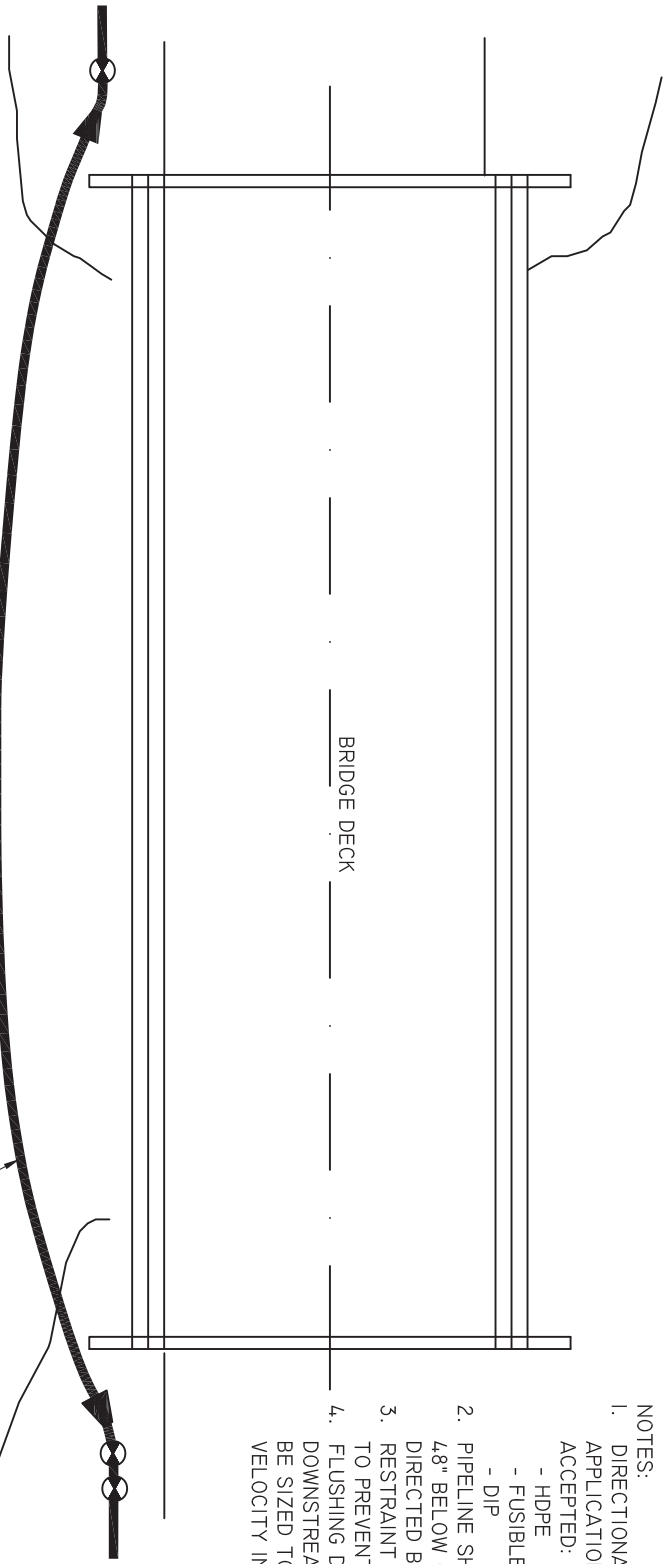


- NOTES:
1. CLEANOUTS NOT MORE THAN 70' APART.
  2. CLEANOUTS SHALL BE INSTALLED BY PLUMBER AT EACH SERVICE CONNECTION AND AS OTHERWISE REQUIRED.

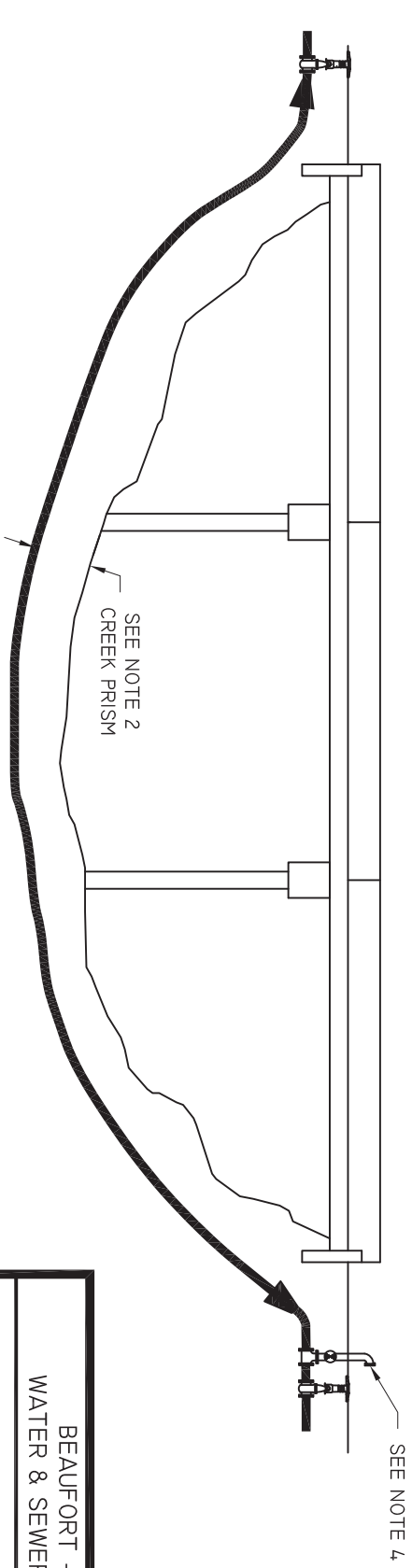


BEAUFORT - JASPER		
WATER & SEWER AUTHORITY		
TYPICAL SERVICE TIE-IN		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-10
SCALE N.T.S.	APPROVED BY ERS	

- NOTES:
- 1. DIRECTIONAL BORE MATERIAL WILL DEPEND ON APPLICATION. THE FOLLOWING ARE GENERALLY ACCEPTED:
    - HDPE
    - FUSIBLE PVC
    - DIP
  - 2. PIPELINE SHALL BE INSTALLED A MINIMUM OF 4.8' BELOW CREEK PRISM, OR DEEPER IF DIRECTED BY THE PERMITTING AUTHORITY.
  - 3. RESTRAINT BEYOND BORE IS TO BE DESIGNED TO PREVENT MOVEMENT.
  - 4. FLUSHING DEVICE SHALL BE PROVIDED ON DOWNSTREAM SIDE OF CROSSING AND SHALL BE SIZED TO PROVIDE 2.5 FPS FLUSHING VELOCITY IN PIPELINE.

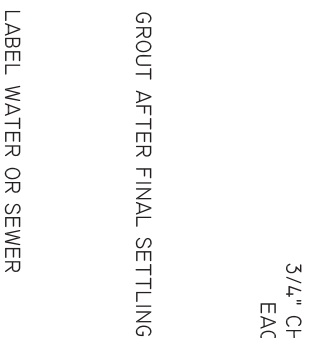


PLAN VIEW



PROFILE VIEW

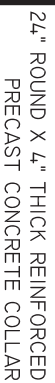
BEAUFORT - JASPER		
WATER & SEWER AUTHORITY		
SUBMERGED CROSSING		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-11
SCALE N.T.S.	APPROVED BY ERS	



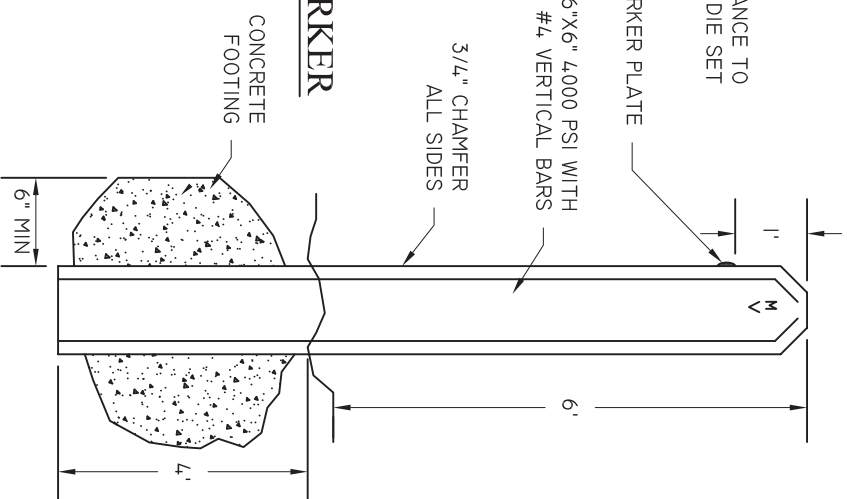
2" ROUND CAST BRASS SURVEY MARKER PLATE W/ ANCHOR

ANCHOR AT CORNER

STAMP DIRECTIONAL ARROW & DISTANCE TO NEAREST FOOT IN PLATE. USE 1/4" DIE SET



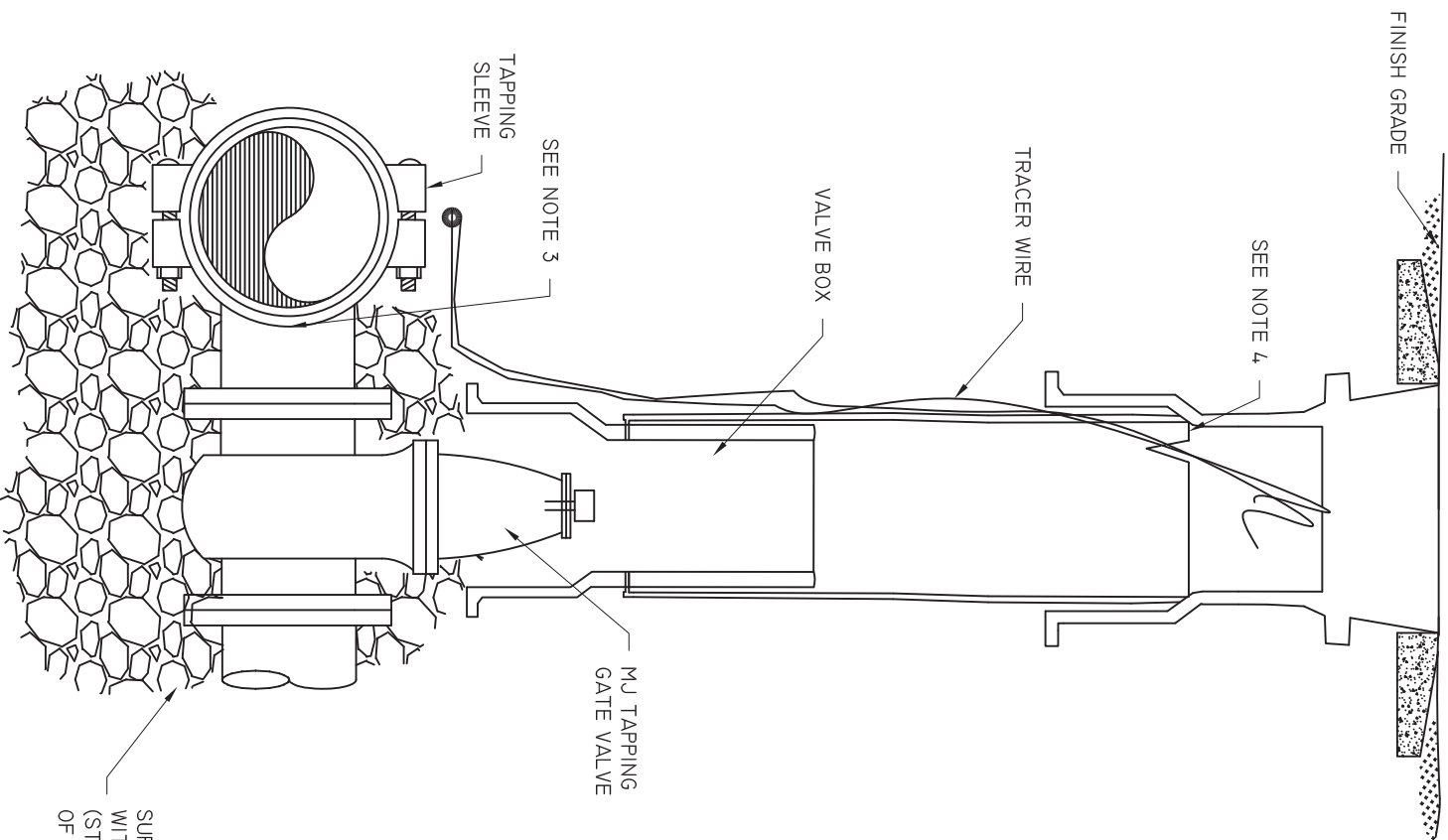
# URBAN CONCRETE MARKER



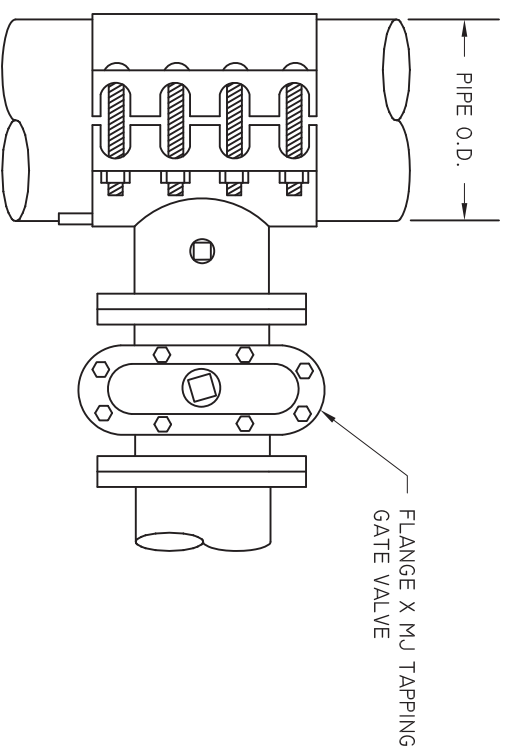
- A. VALVE MARKERS ARE REQUIRED FOR EACH VALVE (EXCEPT HYDRANT VALVES). PIPE LINE MARKERS ARE REQUIRED AT FITTINGS AND EACH 700' WHERE LINES RUN THROUGH AN UNDEVELOPED AREA. AR MANHOLE REQUIRES MANHOLE.
- B. MARKER PAINTING
  - WATER - PAINTING NOT REQUIRED
  - SEWER INFLUENT - TOP 4" GREEN
  - SEWER EFFLUENT - TOP 4" PURPLE
- C. MARK MARKERS AS FOLLOWS
  - MV - MAIN VALVE
  - AV - AIR RELEASE VALVE
  - PIPELINE - PIPELINE MARKER
- D. VALVE AND PIPELINE MARKERS IN MOWED AREAS TO BE SET TO AN EXPOSURE OF NOT MORE THAN 18" OR LESS THAN 6" ABOVE FINAL GRADE.
- E. IF SOILS ARE NOT STABLE ENOUGH TO MAINTAIN THE URBAN MARKERS VERTICAL, CONCRETE FOOTINGS ARE TO BE INSTALLED.
- 2. VALVE BOX LID SHALL BE WITHIN  $\frac{1}{2}$ " OF COLLAR TOP. COLLAR TOP IS TO BE NO MORE THAN 1" ABOVE FINAL GRADE AND NO LOWER THAN 1" BELOW FINAL GRADE.
- 3. CONCRETE COLLAR NOT REQUIRED IN PAVEMENT. VALVE BOX TOP IS TO BE TRAFFIC RATED.

# VALVE AND VALVE BOX

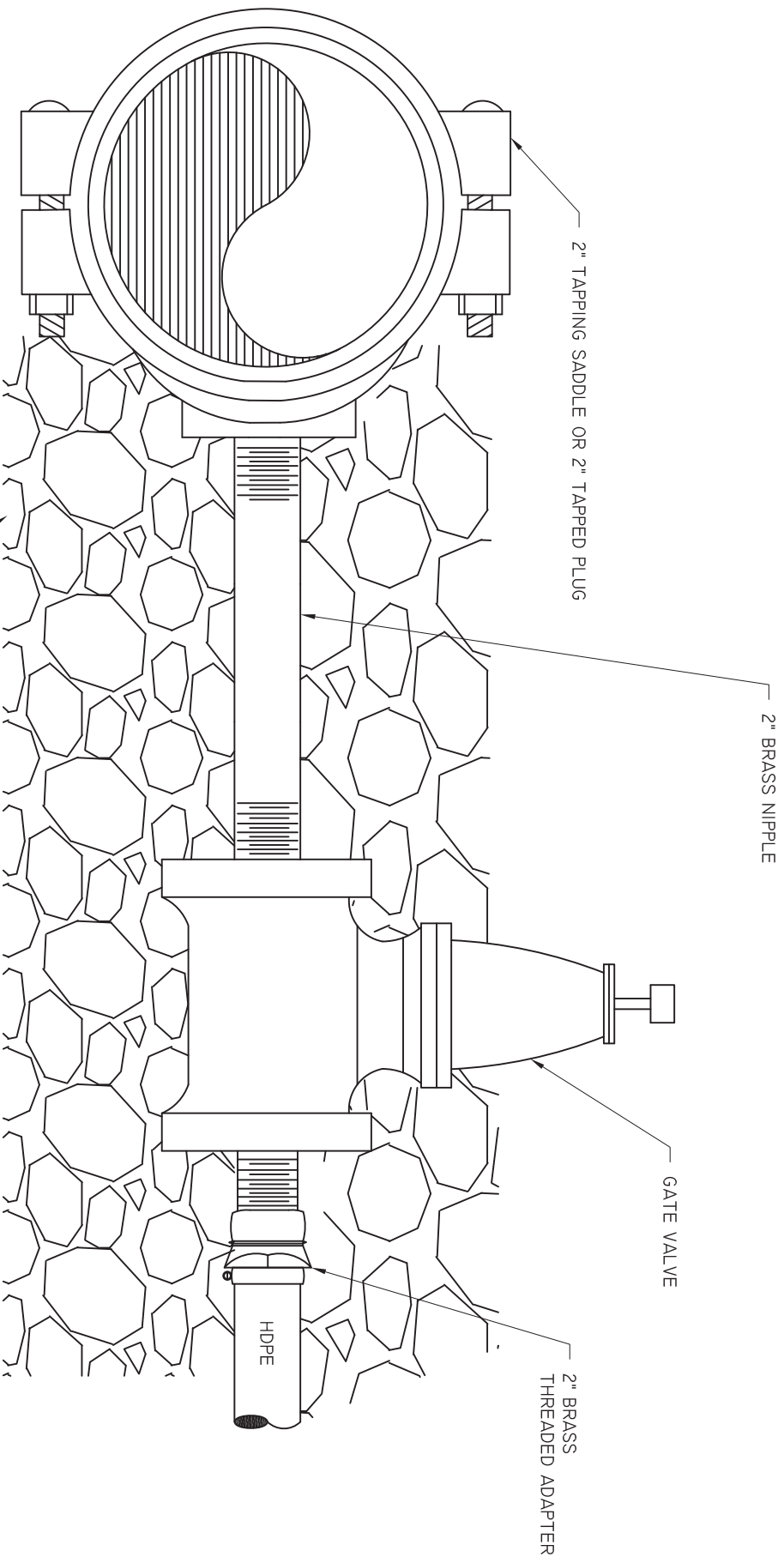
BEAUFORT - JASPER WATER & SEWER AUTHORITY		
STANDARD VALVE DETAIL		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-12
SCALE N.T.S.	APPROVED BY ERS	



- NOTES:
1. ALL TAPPING SLEEVES GREATER THAN 2' SHALL BE HYDROSTATICALLY PRESSURE TESTED TO 150 PSI FOR 20 MINUTES.
  2. ALL WET TAPS 12" AND UNDER SHALL BE PERFORMED BY BJWSA.
  3. TAP DIAMETER SHALL BE WITHIN  $\frac{1}{8}$ " OF LINE DIAMETER.
  4. NOTCH TOP OF PVC PIPE TO AVOID PINCHING TRACER WIRE.



BEAUFORT - JASPER		
WATER & SEWER AUTHORITY		
TAPPING SLEEVE & VALVE DETAIL		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-13
SCALE N.T.S.	APPROVED BY ERS	



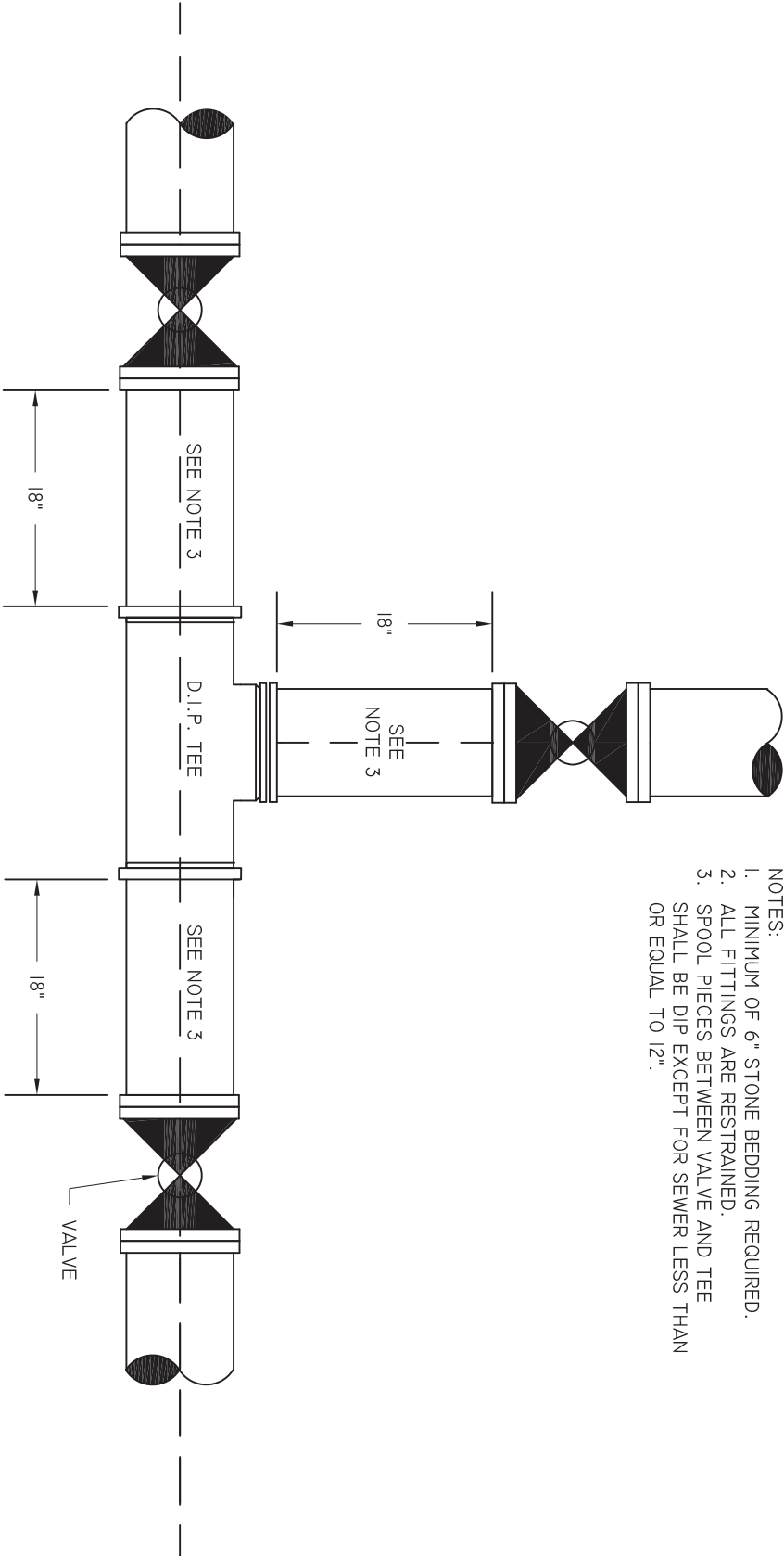
SUPPORT VALVE ASSEMBLY WITH #57 STONE.  
(STONE TO EXTEND A MINIMUM OF 6" UNDER MAIN)

BEAUFORT - JASPER  
WATER & SEWER AUTHORITY

2" CONNECTION

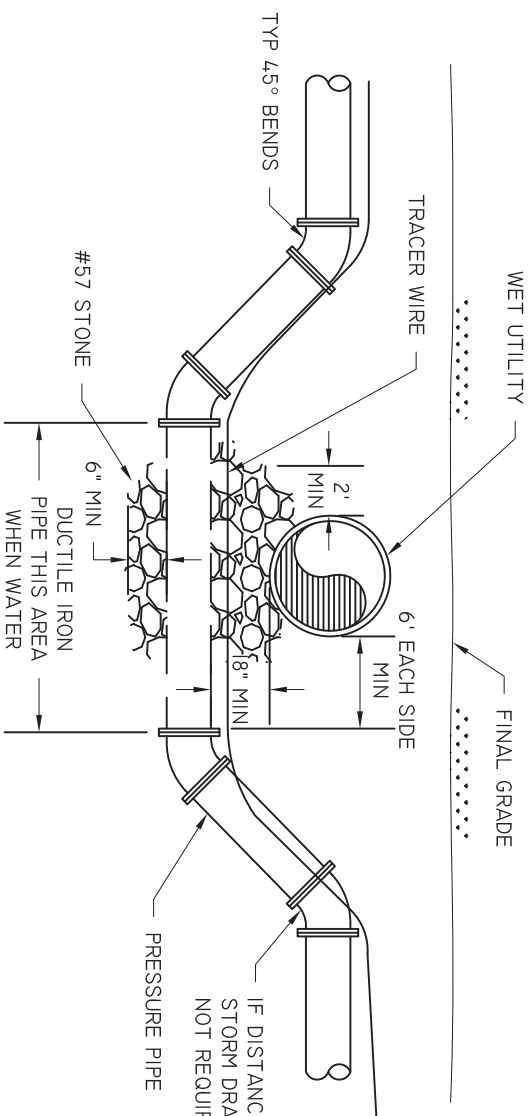
DATE	DRAWN BY	DRAWING #
07/01/09	BMC	G-14
SCALE	APPROVED BY	
N.T.S.	ERS	

- NOTES:
1. MINIMUM OF 6" STONE BEDDING REQUIRED.
  2. ALL FITTINGS ARE RESTRAINED.
  3. SPOOL PIECES BETWEEN VALVE AND TEE SHALL BE DIP EXCEPT FOR SEWER LESS THAN OR EQUAL TO 12".



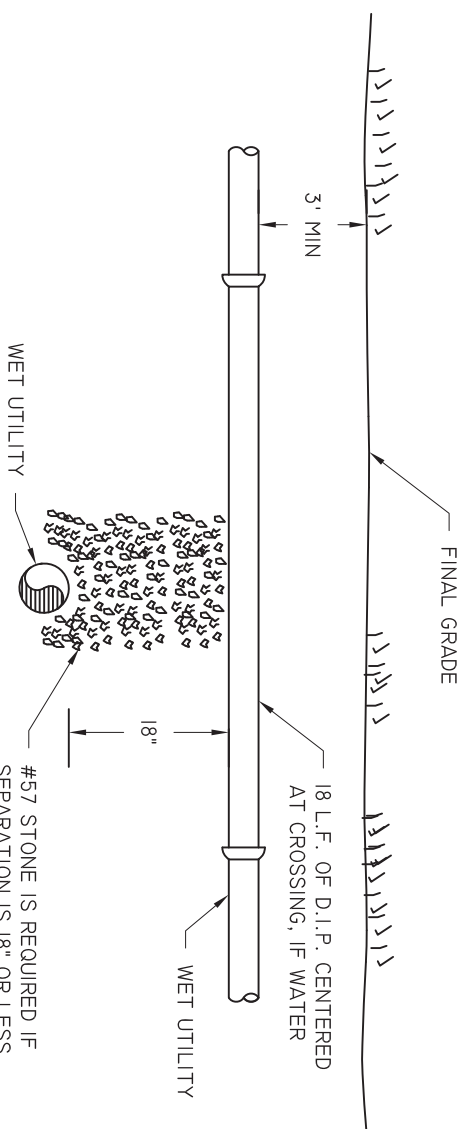
BEAUFORT - JASPER WATER & SEWER AUTHORITY		
TEE AND VALVES		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-15
SCALE N.T.S.	APPROVED BY ERS	





- NOTES:
1. WRITTEN AUTHORIZATION FROM BUWSA IS REQUIRED FOR LESS THAN 18" SEPARATION.
  2. NORMAL JOINT RESTRAINT IS REQUIRED.

## **PRESSURE PIPE UNDER WET UTILITY FOR FINAL DEPTH 5' OR GREATER**



## **WET UTILITY CROSSING**

BEAUFORT - JASPER WATER & SEWER AUTHORITY		
WET UTILITY CROSSING		
DATE 07/01/09	DRAWN BY BMC	DRAWING # G-16
SCALE N.T.S.	APPROVED BY ERS	