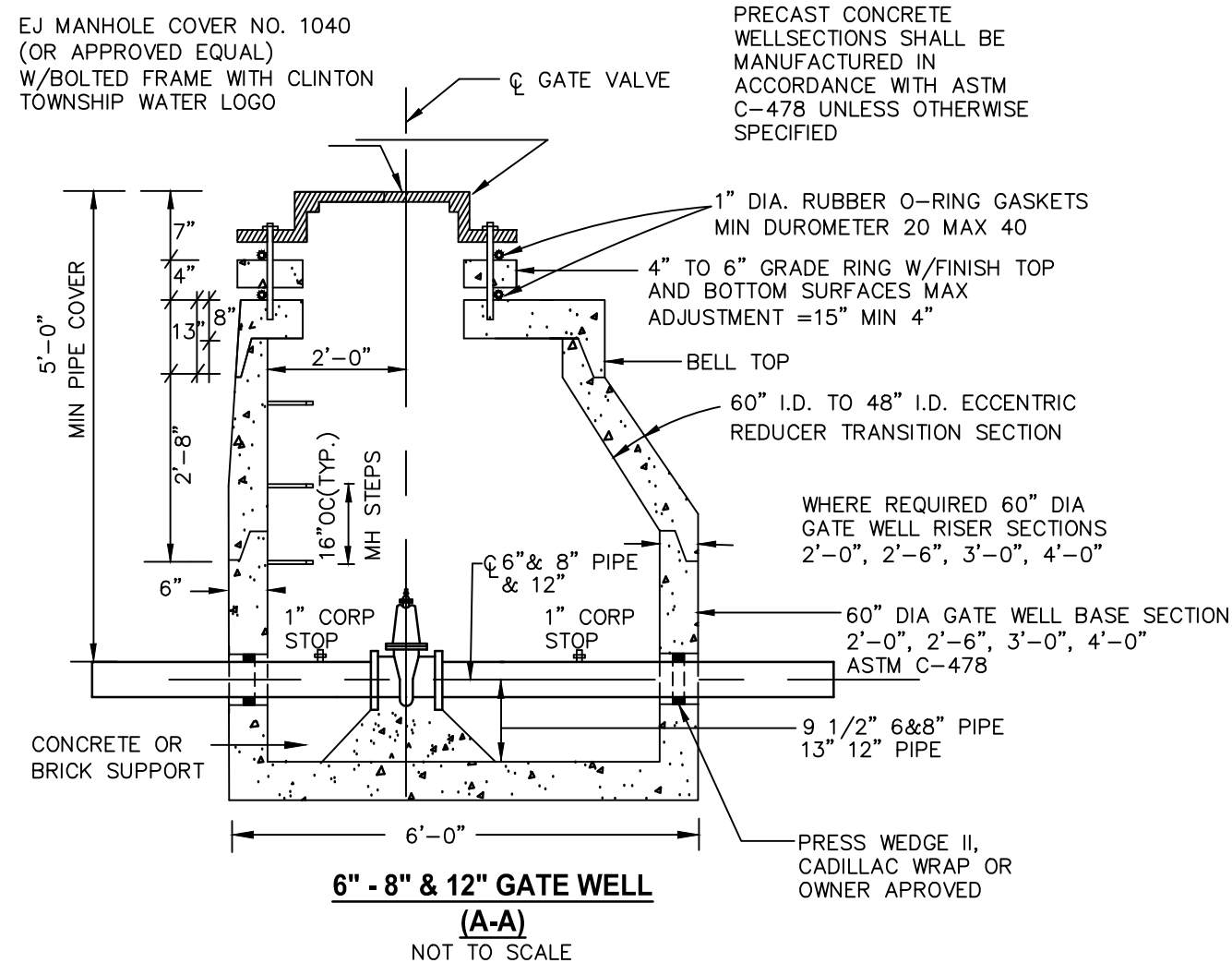
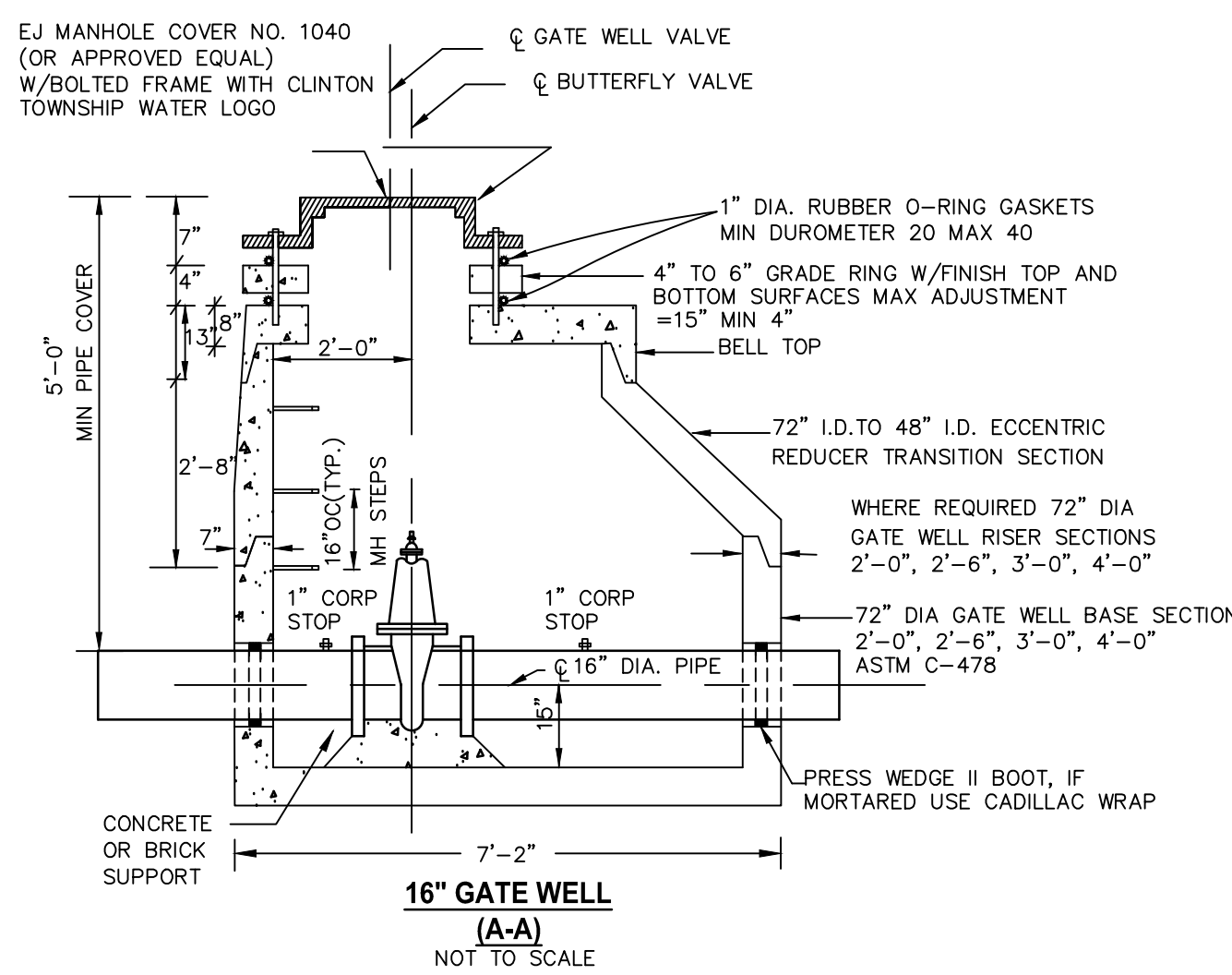


TYPICAL GATE WELL PLAN
NOT TO SCALE

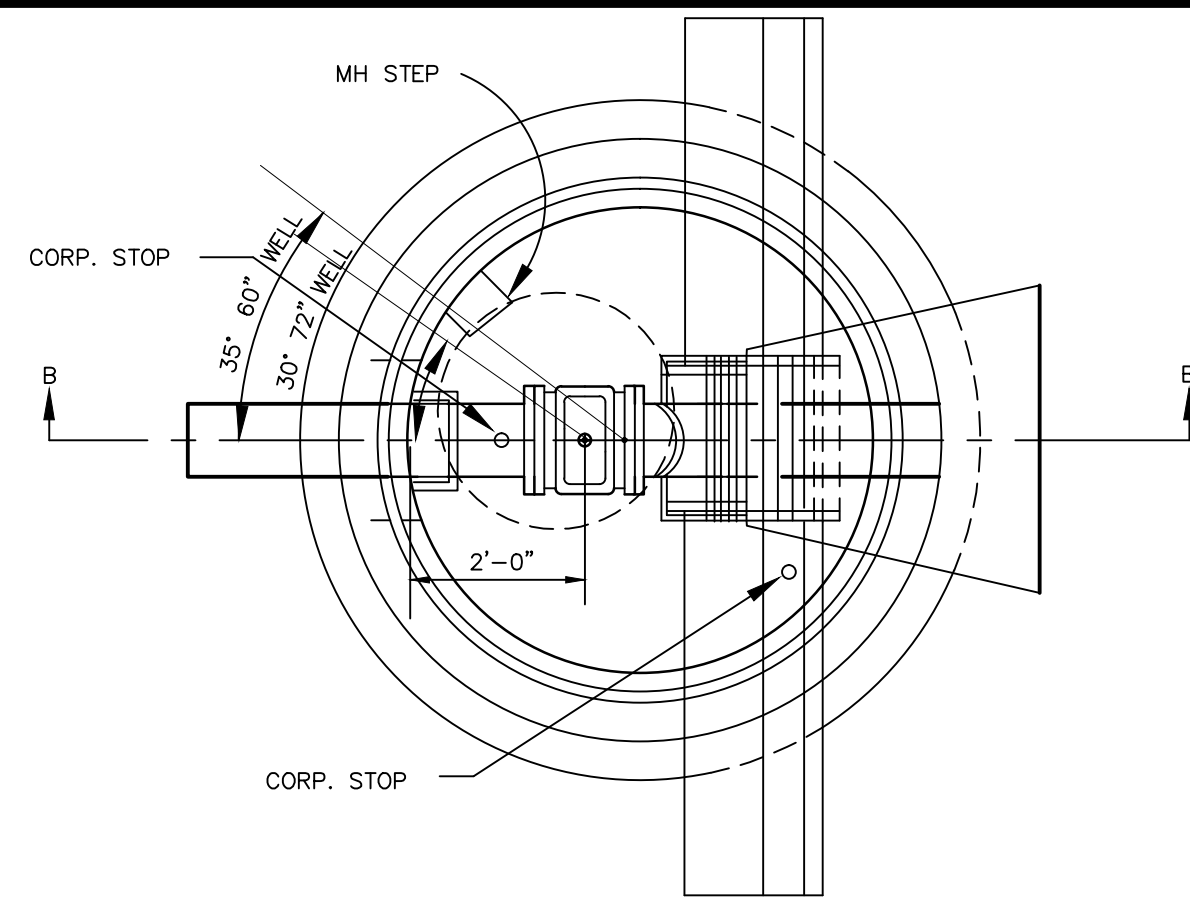


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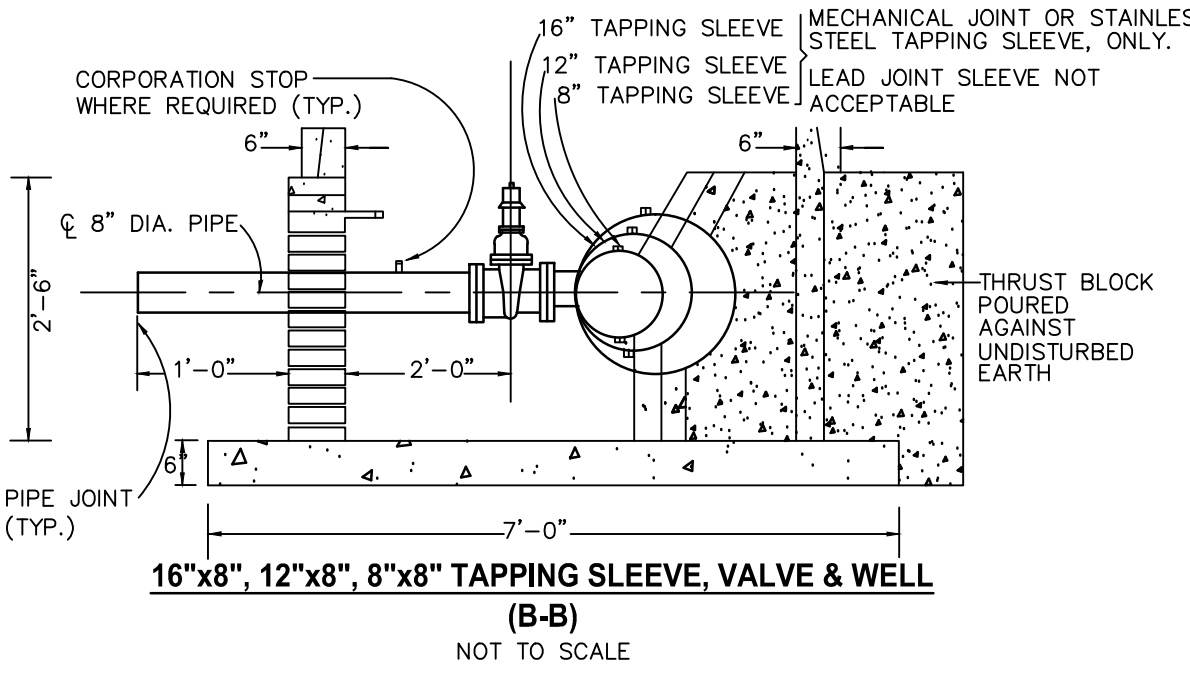


16\"/>

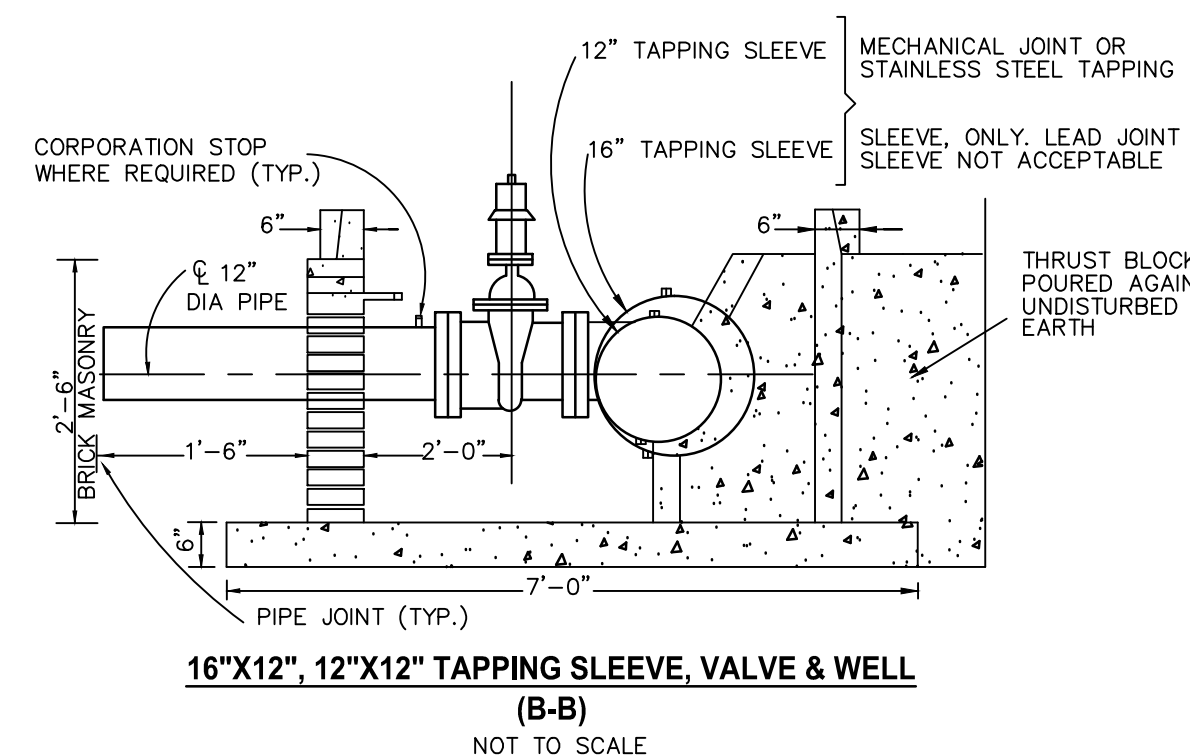
- NOTES:**
1. ALL VALVES (6\"/>



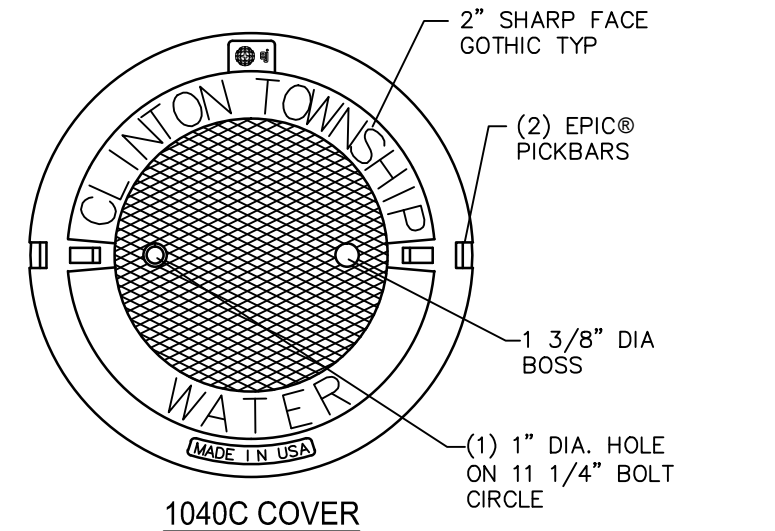
TYPICAL TAPPING SLEEVE VALVE & WELL PLAN
NOT TO SCALE



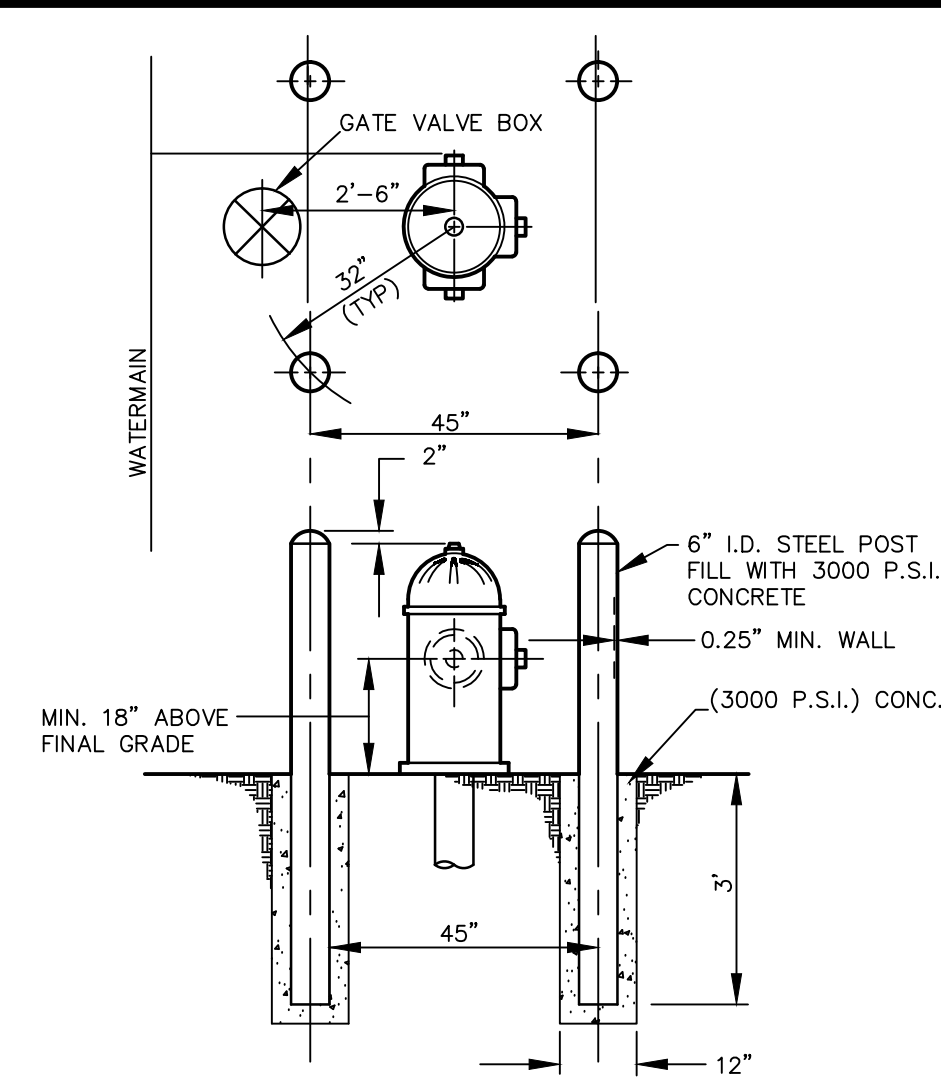
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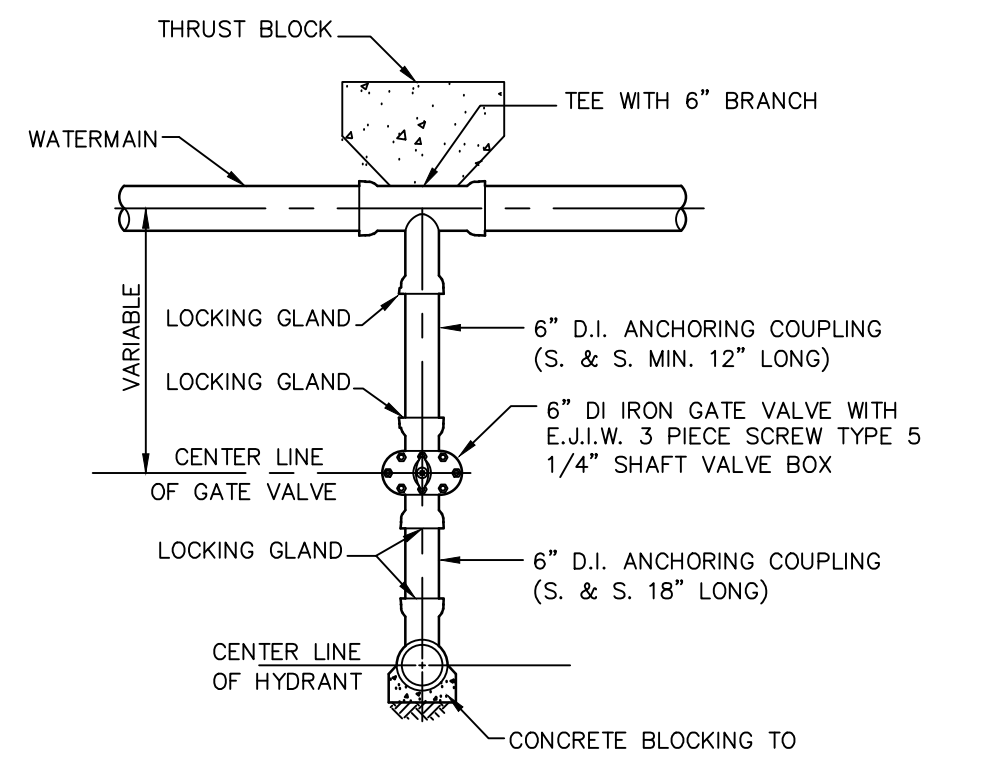
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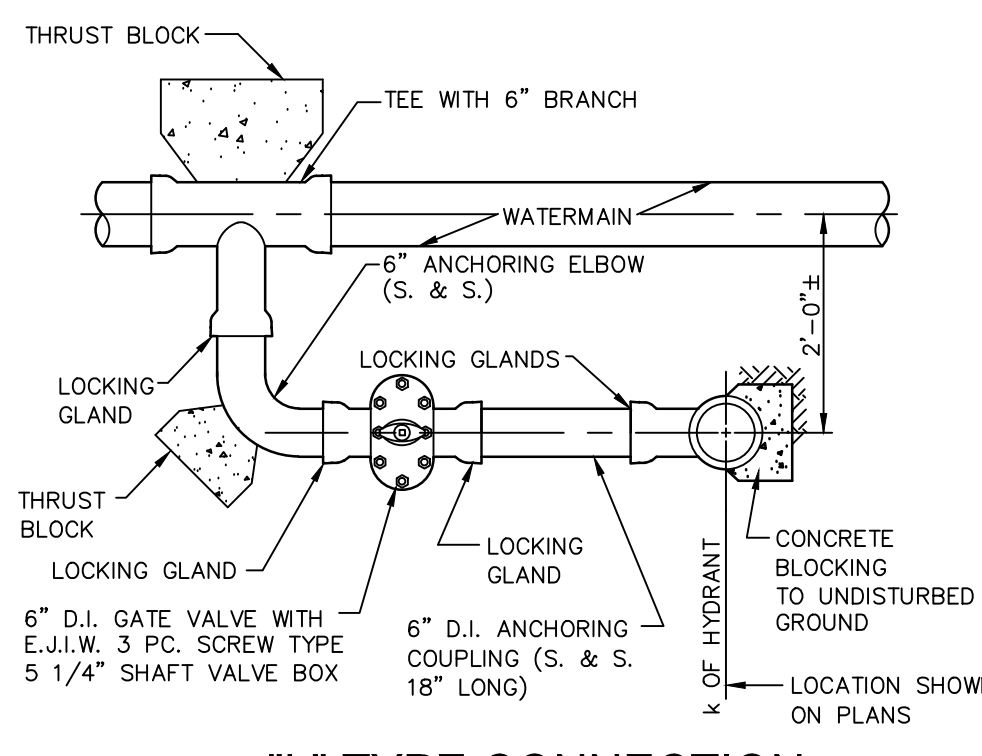
CASTING DETAIL
NOT TO SCALE



FIRE HYDRANT GUARD POSTS
(AS CALLED FOR ON THE PLANS)
NOT TO SCALE



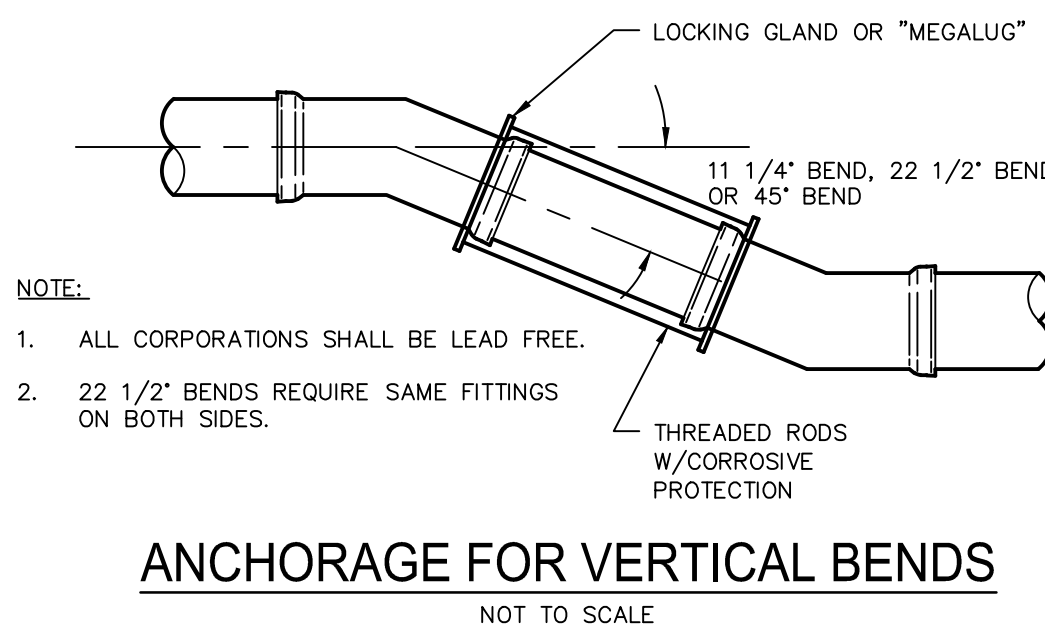
"T" TYPE CONNECTION
NOT TO SCALE



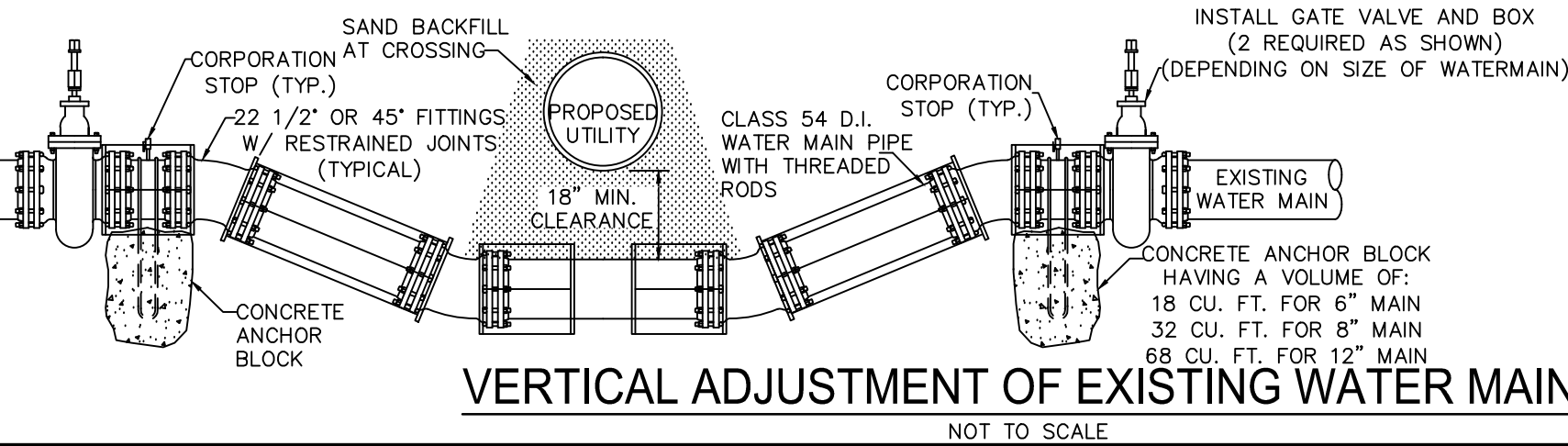
"L" TYPE CONNECTION
NOT TO SCALE

SPECIAL HYDRANT NOTES:

1. IF A HYDRANT IS INSTALLED IN, OR IN BACK OF, A ROAD DITCH THE CONTRACTOR SHALL INSTALL A 16 FT. LONG, 16 GAUGE C.M.P. CULVERT WITH END SECTIONS OF A DIAMETER AS DIRECTED BY THE ROAD COMMISSION, IN THE DITCH IN FRONT OF THE HYDRANT AND SHALL BACKFILL WITH 22A AGGREGATE.
2. ALL HYDRANTS SHALL HAVE ONE (1) STEAMER (PUMPER) CONNECTION AND TWO (2) 2-1/2" INCH HOSE CONNECTIONS. ALL THREADS SHALL BE NATIONAL STANDARD THREAD. THE OPERATING NUT SHALL BE 1-1/2" PENTAGON TURN LEFT TO OPEN.
3. ALL HYDRANTS SHALL BE PAINTED WITH TWO (2) COATS OF SAFETY YELLOW PAINT AND COLOR CODED TO MEET TOWNSHIP STANDARDS.
4. ALL HYDRANTS REQUIRE STORZ PUMPER NOZZLES WHICH SHALL BE COMPATIBLE WITH STORZ COUPLED 4" DIAMETER FIRE HOSE. NOZZLES SHALL BE MADE OF LEAD FREE BRONZE OR ALUMINUM ALLOY. NOZZLE SHALL BE AN INTEGRAL PART OF THE FIRE HYDRANT, RESISTANT TO TAMPER AND REMOVAL. ADD ON STORZ ADAPTORS SHALL NOT BE ACCEPTED. NOZZLE AND CAP SHALL PASS PERFORMANCE REQUIREMENTS OF ANSI/AWWA C502 AND UL 246. CAPS TO BE REMOVABLE WITH A SPANNER WRENCH OR WITH HYDRANT OPERATING WRENCH.
5. HYDRANT SHALL BE EJ 58R.

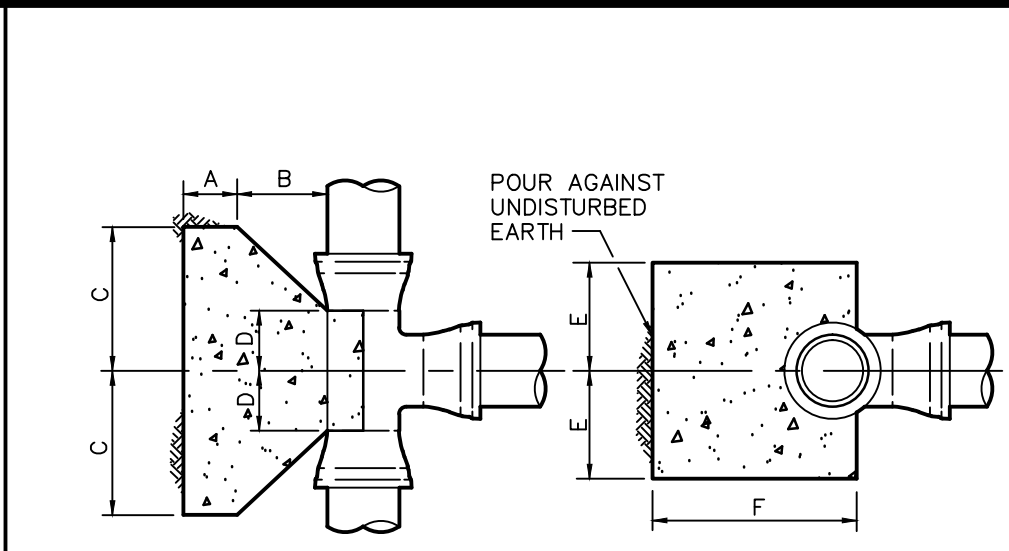


ANCHORAGE FOR VERTICAL BENDS
NOT TO SCALE



VERTICAL ADJUSTMENT OF EXISTING WATER MAIN
NOT TO SCALE

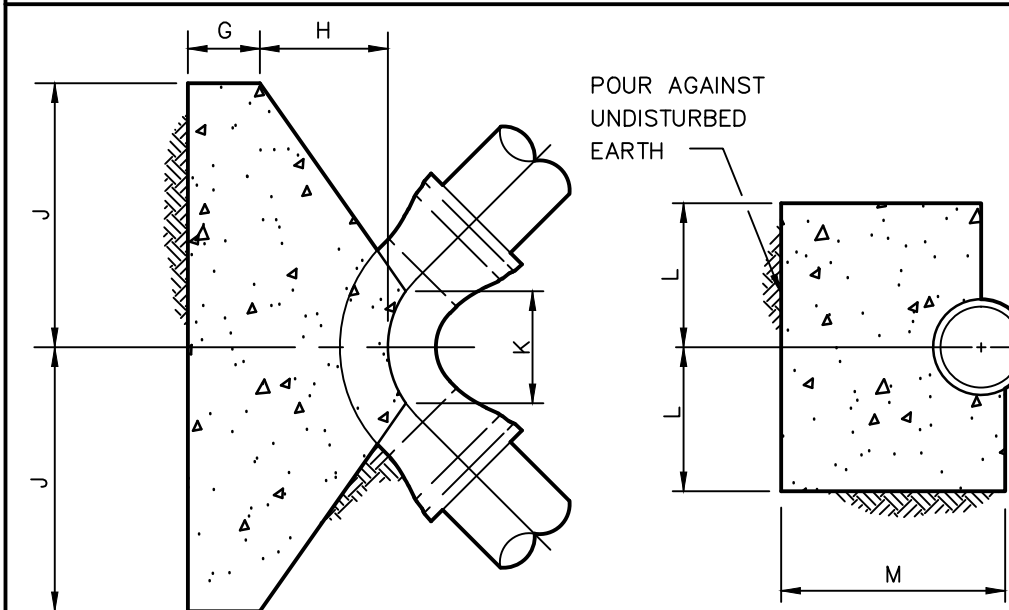
- NOTES:**
1. USE STANDARD BEDDING, PER BEDDING DETAIL THIS SHEET.
 2. SUBGRADE ELEVATION GIVEN ON PLANS.
 3. THE CONTRACTOR SHALL CHLORINATE AND PRESSURE TEST THE SECTION OF ADJUSTED WATER MAIN AT 150 P.S.I. PRIOR TO PLACING IN SERVICE.
 4. VERTICAL ADJUSTMENT OF EXISTING WATER MAIN, INCLUDING GATE VALVES SHALL BE INCIDENTAL TO THE PROJECT.
 5. ANY VERTICAL DROPS HAVE TO BE REINFORCED WITH THREADED RODS.



* IN SOFT CLAY DOUBLE THE TABULAR "C" DIMENSION

CONCRETE THRUST BLOCK SCHEDULE FOR TEES							
RUN	BRANCH	A	B	C*	D	E	F
8"	8"	0'-9"	0'-9"	1'-4"	0'-7"	1'-0"	2'-2"
12"	8"	0'-9"	0'-9"	1'-4"	0'-8"	1'-0"	2'-6"
	12"	0'-9"	1'-3"	2'-0"	0'-10"	1'-6"	2'-10"
16"	8"	0'-9"	0'-9"	1'-4"	0'-8"	1'-0"	2'-10"
	12"	0'-9"	1'-3"	2'-0"	0'-10"	1'-6"	3'-4"
	16"	1'-0"	1'-4"	2'-4"	1'-0"	2'-4"	3'-6"
20"	8"	0'-9"	0'-9"	1'-4"	0'-8"	1'-0"	3'-2"
	12"	0'-9"	1'-3"	2'-0"	0'-10"	1'-6"	3'-8"
	16"	1'-0"	1'-4"	2'-4"	1'-0"	2'-4"	3'-10"
	20"	1'-0"	1'-5"	2'-8"	1'-2"	2'-8"	4'-0"
24"	8"	0'-9"	0'-9"	1'-4"	0'-8"	1'-0"	3'-6"
	12"	0'-9"	1'-3"	2'-0"	0'-10"	1'-6"	4'-0"
	20"	1'-0"	1'-5"	2'-6"	1'-6"	2'-6"	5'-0"
24"	1'-0"	1'-6"	3'-2"	1'-8"	3'-2"	5'-0"	

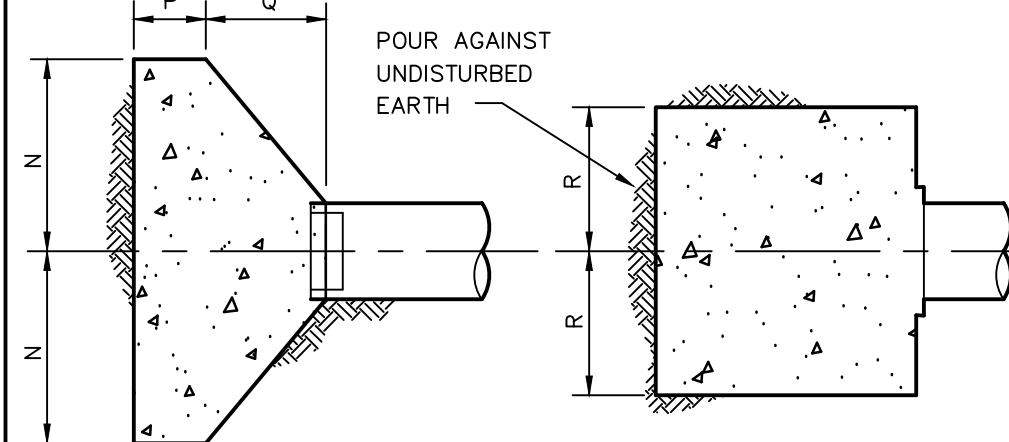
CONCRETE THRUST BLOCK FOR TEES
NOT TO SCALE



* IN SOFT CLAY DOUBLE THE TABULAR "J" DIMENSION

CONCRETE THRUST BLOCK SCHEDULE FOR HORIZONTAL BENDS							
SIZE	ANGLE	G-MIN.	H	J*	K	L	M-MIN.
6"	45°	0'-9"	0'-9"	0'-9"	0'-6"	0'-9"	1'-8"
	90°	0'-9"	0'-9"	1'-0"	0'-8"	1'-0"	1'-8"
8"	22 1/2°	0'-9"	1'-0"	0'-9"	0'-10"	0'-7"	1'-11"
	45°	0'-9"	1'-0"	1'-2"	0'-6"	1'-0"	1'-11"
12"	22 1/2°	0'-9"	1'-0"	1'-3"	0'-10"	1'-0"	2'-0"
	45°	0'-9"	1'-4"	1'-9"	0'-10"	1'-3"	2'-4"
16"	22 1/2°	0'-9"	1'-0"	1'-3"	0'-10"	1'-0"	2'-4"
	45°	1'-0"	1'-8"	2'-8"	0'-10"	1'-6"	3'-0"
20"	22 1/2°	1'-0"	2'-6"	2'-0"	1'-2"	1'-3"	3'-6"
	45°	1'-0"	2'-6"	3'-0"	1'-0"	1'-9"	3'-6"
24"	22 1/2°	1'-0"	2'-6"	4'-0"	1'-10"	2'-6"	4'-0"
	45°	1'-0"	3'-7"	3'-0"	1'-3"	1'-6"	4'-0"
24"	90°	1'-0"	3'-7"	5'-0"	2'-2"	3'-6"	5'-4"

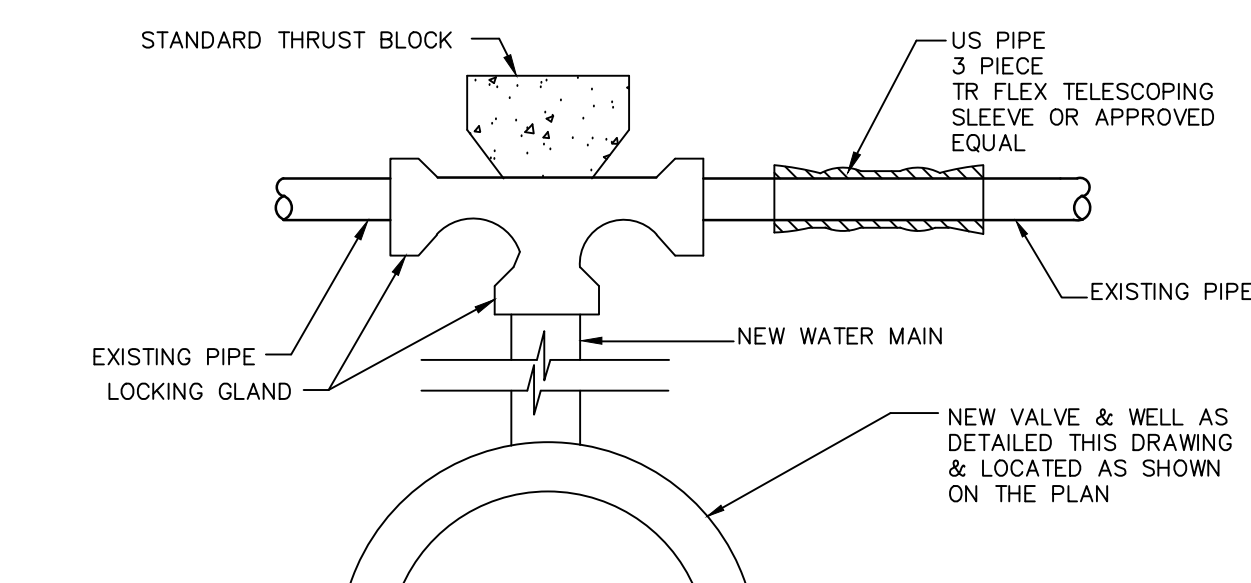
CONCRETE THRUST BLOCK FOR BENDS
NOT TO SCALE



* IN SOFT CLAY DOUBLE THE TABULAR "N" DIMENSION

CONCRETE THRUST BLOCK SCHEDULE FOR PLUGS & CAPS				
SIZE	N*	P-MIN.	Q	R
8"	1'-4"	0'-9"	0'-9"	1'-0"
12"	2'-0"	0'-9"	1'-3"	1'-6"
16"	2'-4"	1'-0"	1'-4"	2'-4"
20"	2'-8"	1'-0"	1'-5"	2'-8"
24"	3'-2"	1'-0"	1'-6"	3'-2"

CONCRETE THRUST BLOCKS FOR PLUGS & CAPS
NOT TO SCALE

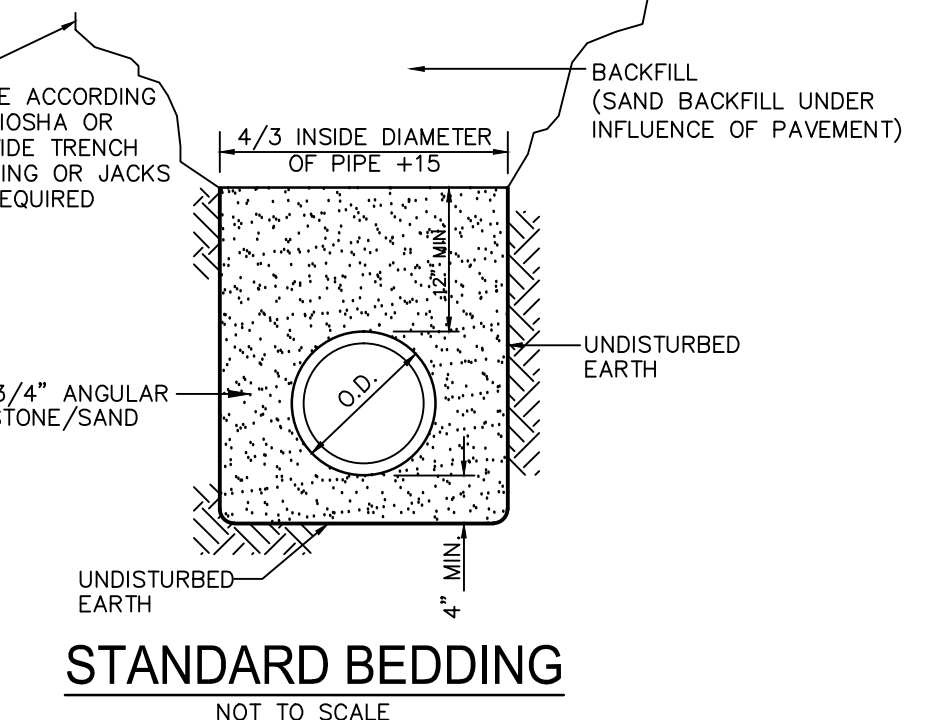


NEW TEE ON EXISTING MAIN
NOT TO SCALE

- NOTES:**
1. THE CONTRACTOR SHALL LIMIT THE SHUTDOWN PERIOD OF THE EXISTING MAIN TO THE SHORTEST TIME POSSIBLE BY COMPLETING THE NEW WELL AND DOWNSTREAM PIPING PRIOR TO CUTTING THE NEW TEE. THE CONTRACTOR SHALL WORK WITH THE TOWNSHIP PRIOR TO SHUTTING DOWN THE EXISTING WATER MAIN.
 2. THE CONTRACTOR SHALL HAVE ALL EQUIPMENT AND MATERIALS ON SITE PRIOR TO STARTING WORK ON THE TEE AND SHALL FIELD VERIFY EXISTING PIPE SIZE AND LOCATION OF JOINTS PRIOR TO SHUTTING DOWN THE MAIN.
 3. THE CONTRACTOR WITH THE ASSISTANCE OF THE TOWNSHIP SHALL NOTIFY ALL RESIDENTIAL AND COMMERCIAL CUSTOMERS WITHIN THE SHUT DOWN AREA OF THE ANTICIPATED SHUT DOWN AND THE APPROXIMATE LENGTH OF TIME.
 4. ALL VALVES LOCATED BY CONTRACTOR AND TAP SHALL ONLY BE OPERATED BY THE TOWNSHIP.

GENERAL WATERMAIN NOTES

1. THE CONTRACTOR SHALL NOTIFY THE MUNICIPAL WATER DEPARTMENT AT (586)791-1766 AND THE DETROIT WATER AND SEWER DEPARTMENT AT (313)267-8000 THREE WORKING DAYS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL ATTEND A PRE-CONSTRUCTION MEETING, AT A TIME AND PLACE AS ARRANGED BY THE TOWNSHIP, IN WHICH VARIOUS UTILITY COMPANIES AND GOVERNMENTAL AGENCY REPRESENTATIVES WILL BE PRESENT.
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST HAVE IN HIS POSSESSION A COPY OF A PERMIT TO CONSTRUCT A CONNECTION TO, OR AN EXTENSION OF, THE WATER SUPPLY SYSTEM.
4. PRIOR TO ANY CONSTRUCTION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (800-482-7171) OR DIAL 811 72 HOURS OR 3 WORKING DAYS BEFORE DIGGING, FOR THE LOCATION OF UNDERGROUND FACILITIES, AND SHALL ALSO NOTIFY REPRESENTATIVES OF ANY OTHER FACILITIES, LOCATED IN THE VICINITY OF THE WORK, WHICH MAY NOT BE HANDLED BY MISS DIG.
5. UNLESS OTHERWISE NOTED, HYDRANTS SHALL BE "L" TYPE AND SHALL BE SET TO THE ELEVATION OF THE EXISTING GROUND. WHEN THE EXISTING GROUND IS HIGHER THAN 0.5 FEET ABOVE THE ROAD CENTERLINE, THE HYDRANT SHALL BE EXTENDED UPWARD (FROM 0.5 FEET ABOVE THE ROAD CENTERLINE) BY PLACING HYDRANT EXTENSION BETWEEN THE TRAFFIC STANDPIPE UPPER AND STANDPIPE LOWER SECTIONS OF THE HYDRANT.
6. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL WATERMAIN PIPE SHALL BE CLASS 54 DUCTILE IRON IN ACCORDANCE WITH ANSI/AWWA SPECIFICATION C 151/A 21.51 WITH DOUBLE THICKNESS CEMENT LINING OR C-900/905 PVC WITH TRACER WIRE.
7. UNLESS OTHERWISE INDICATED IN A WATERMAIN PROFILE, WATERMAIN SHALL BE INSTALLED WITH A MINIMUM COVER OF FIVE (5) FEET AS MEASURED FROM THE PERMANENT PAVEMENT CENTERLINE (OR EXISTING ROAD ELEVATION IF THE PERMANENT PAVEMENT ELEVATION IS NOT KNOWN) ELEVATION OR EXISTING GROUND AT THE WATERMAIN, WHICHEVER RESULTS IN A LOWER ELEVATION. WHERE THE WATERMAIN CROSSES UNDER OTHER UTILITIES OR DITCHES, A MINIMUM CLEARANCE OF 18" SHALL BE MAINTAINED AND FIVE (5) FEET UNDER DITCHES. WHERE WATERMAIN MUST DIP UNDER OTHER UTILITIES OR DITCHES, PLACE 22 1/2" AND 45" VERTICAL BENDS AND ANCHORAGES ACCORDING TO STANDARD DETAILS.
8. PLACE MIXED CONCRETE THRUST BLOCKS FOR ALL BENDS, CAPS, PLUGS OR TEES ACCORDING TO THE STANDARD DETAILS. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. LOCKING GLANDS OR MEGALUGS SHALL BE PLACED ON ALL BENDS.
9. UNLESS OTHERWISE SHOWN ON THE PLANS, ALL WATERMAIN BEDDING SHALL BE INSTALLED AS SHOWN ON THE STANDARD BEDDING DETAIL.
10. ALL END OF LINE GATE WELLS SHALL HAVE STUBS EXTENDING A MINIMUM THREE (3) FEET FROM THE OUTSIDE WALL OF THE WELL AND ENDING WITH A CAP AND ADEQUATE BLOCKING.
11. UNLESS OTHERWISE INDICATED ON THE PLANS, ALL GATE WELL FRAME & COVERS SHALL BE SET TO THE ELEVATION OF THE EXISTING GROUND OR 0.5 FEET ABOVE THE EXISTING ROAD CENTERLINE, WHICHEVER IS HIGHER. COVERS SHALL BE MARKED WITH THE COMMUNITY'S STANDARD MARKINGS.
12. AFTER THE WATERMAIN HAS BEEN LAID AND BACKFILLED, EACH SECTION OF THE MAIN, BETWEEN GATE VALVES OR TEST VALVES/CAPS, SHALL BE HYDROSTATICALLY TESTED FOR LEAKAGE AT A PRESSURE OF 150 PSI. THE FULL PRESSURE SHALL BE MAINTAINED BY PUMPING WATER INTO THE PIPE AND HOLDING PRESSURE FOR A PERIOD OF AT LEAST 2 HOURS. THE MAXIMUM PERMISSIBLE LEAKAGE UNDER HYDROSTATIC TEST PRESSURE SHALL NOT EXCEED AWWA C600-10 AND C605-13 STANDARDS, DEPENDING ON MATERIAL.
13. ALL GATE VALVES SHALL BE STANDARD TURN LEFT TO OPEN.
14. GATE VALVE SPACING SHALL NOT EXCEED 800 FEET.
15. NORMAL INSPECTION WILL BE DONE BY THE MUNICIPAL WATER DEPARTMENT AT THE OWNER'S EXPENSE. HOWEVER, OVERTIME (OVER 8 HOURS DAY OR SATURDAY), INSPECTION COST (COMPUTED AT 2 1/4 TIMES THE INSPECTOR'S PAYROLL), OR HOLIDAY & SUNDAY INSPECTION COST (COMPUTED AT 3 TIMES THE INSPECTOR'S PAYROLL) INCURRED BY REASON OF OVERTIME WORK SHALL BE PAID BY THE CONTRACTOR.
16. STRUCTURE STEPS SHALL BE M.A. IND. POLYPROPYLENE PLASTIC W/ #3 DEFORMED BAR SPACED 16" O.C. FROM 24" ABOVE FLOOR TO 16" BELOW TOP OF STRUCTURE.
17. LOCKING GLANDS-BENDS (MEGALUG) (IN ADDITION TO THRUST BLOCKS ON HORIZONTAL BENDS) SHALL BE PLACED ON ALL BENDS.
18. PVC C-900 INSTALLATION MUST FOLLOW AWWA C605. MUST MEET ANSI/NSF STANDARD 14. PIPE MUST BE CERTIFIED AND STAMPED WITH NSF-PW OR ANSI/NSF 14 & 61, WITH TRACER WIRE.
19. ALL WATERMAIN DISINFECTANT AND BACTERIAL ANALYSIS MUST BE DONE IN ACCORDANCE WITH AWWA STANDARD C651, MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY (MDEQ) REQUIREMENTS, HANDLED THROUGH CLINTON TOWNSHIP WATER AND SEWER DEPARTMENT EMPLOYEE.
20. POLYVINYLCHLORIDE (PVC) PIPE SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT AWWA SPECIFICATION C900, CLASS 200 STANDARD FOR POLYVINYLCHLORIDE (PVC) PRESSURE PIPE 4 INCHES THROUGH 12 INCHES OR AWWA SPECIFICATION C905, CLASS 150 STANDARD FOR POLYVINYLCHLORIDE (PVC) PRESSURE PIPE 14 INCHES THROUGH 48 INCHES.
21. PVC PRESSURE PIPE MAY ONLY BE USED WHERE APPROVED BY THE SUPERINTENDENT, OR HIS DESIGNEE, FOR USE IN CORROSIVE SOILS ENVIRONMENT.
22. ALL FUSIBLE PVC MATERIALS MUST BE LISTED AND APPROVED FOR USE WITH POTABLE WATER UNDER ANSI/NSF STANDARD 14 & 61, AND BEAR THE NSF-PW IDENTIFICATION. ALL THERMO PLASTIC PIPE TO BE INSTALLED WITHIN A PUBLIC DISTRIBUTION SYSTEM MUST MEET STANDARD 14 REGARDLESS OF THE METHOD OF INSTALLATION.
23. THE PIPE SHALL ALSO BE STAMPED EITHER NSF-PW OR OTHERWISE MARKED TO STATE THAT THE PIPE HAS BEEN CERTIFIED TO STANDARD 14 REQUIREMENTS BY A CERTIFIED 3RD PARTY.
24. JOINTS FOR NON-FUSIBLE PVC PIPE SHALL BE PUSH-ON-TYPE JOINT COUPLINGS DESIGNED TO INCORPORATE GROOVES FOR RUBBER GASKETS. THE COUPLING AND GASKETS SHALL CONFORM TO AWWA SPECIFICATIONS C900/C905.
25. PVC PIPE SHALL HAVE A DIMENSION RATIO OF 21 OR LESS AND A MINIMUM WORKING PRESSURE OF 150 PSI.
26. FOR ALL BEND AND CONNECTIONS TO DUCTILE IRON, USE "MEGALUG" JOINT RESTRAINTS, OR APPROVED EQUAL.
27. WATER MAIN AND FITTINGS MUST BE "MADE IN USA".
28. NORMAL INSPECTION WILL BE DONE BY THE MUNICIPAL WATER DEPARTMENT AT THE OWNER'S EXPENSE. HOWEVER, OVERTIME (OVER 8 HOURS A DAY) OR SATURDAY INSPECTION COST (COMPUTED AT 2.25 TIMES THE INSPECTOR'S PAYROLL), OR HOLIDAY & SUNDAY INSPECTION COST (COMPUTED AT 3 TIMES THE INSPECTOR'S PAYROLL) INCURRED BY REASON OF OVERTIME WORK SHALL BE PAID BY THE CONTRACTOR.



STANDARD BEDDING
NOT TO SCALE

Charter Township of Clinton

T-20-N-13-E



DATE:	ISSUE:

Developed For:
CHARTER TOWNSHIP OF CLINTON
40700 ROMEO PLANK ROAD
CLINTON TOWNSHIP, MI 48038

(586) 286-8000

CHARTER TOWNSHIP OF CLINTON

WATER MAIN STANDARD DETAILS

CHARTER TOWNSHIP OF CLINTON
MACOMB COUNTY
MICHIGAN

Date: 07.24.2015
Scale: N.T.S.
Sheet: W-1
Project: