NOTES

1. PLACE AGGREGATE MATERIAL ON THE COMPACTED SAND BACKFILL (A5) FOR ALL DRIVES, ROAD SHOULDERS, PARKING LOTS OR OTHER HARD SURFACED AREAS PER THE APPROVED PLANS.

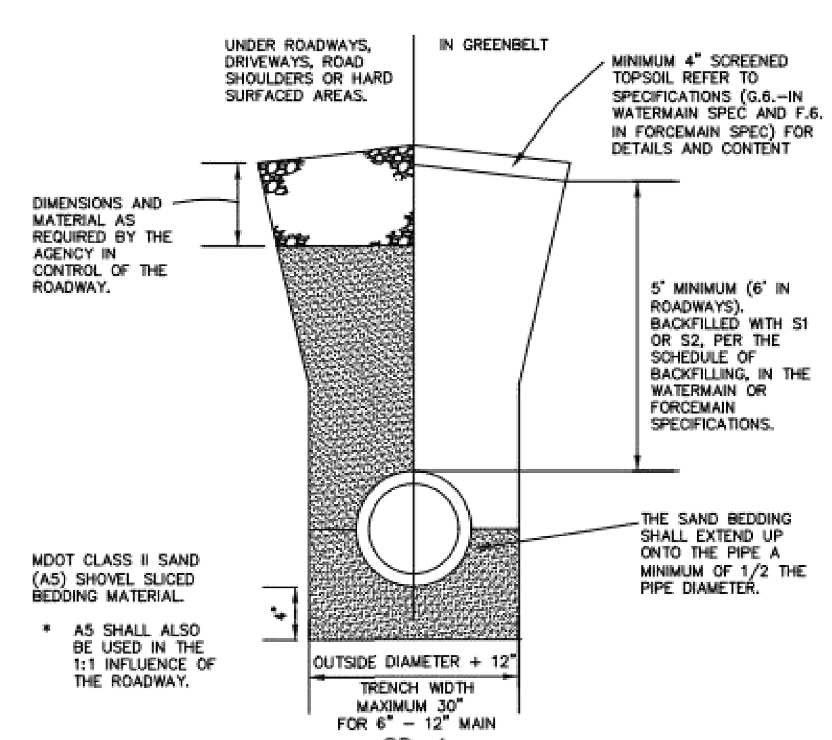
2. THE CONTRACTOR SHALL COMPACT THE SAND BACKFILL (A5) TO 95% OF THE MATERIAL UNIT WEIGHT BY MODIFIED PROCTOR ACROSS ALL ROADWAYS AND DRIVES PER THE SCHEDULE OF BACKFILLING IN THE WATERMAIN OR FORCEMAIN SPECIFICATIONS. THIS INCLUDES SERVICE LEADS UNLESS BORED. THE CONTRACTOR SHALL DO THE TESTING WITH THE RESULTS SUBMITTED TO GCDC-WWS PRIOR TO FINAL TESTING.

3. WHERE THE GROUND ELEVATION AT THE TRENCH LINE IS ABOVE THE ELEVATION OF THE CENTERLINE OF THE ROAD, THE CONTRACTOR SHALL INSTALL THE PRESSURE PIPE 6' BELOW THE ELEVATION OF THE ROAD. THE EXTRA DEPTH SHALL BE NOTED ON THE AS-BUILT DRAWINGS.

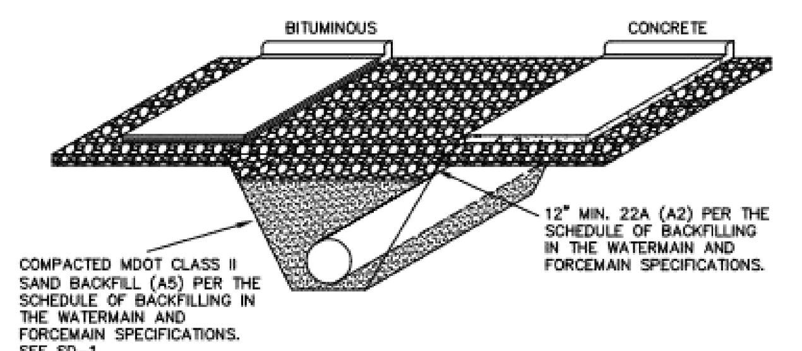
4. FOR ADDITIONAL CONSIDERATION OF PIPE ZONE EMBEDMENT CONDITIONS, SEE THE MOST CURRENT VERSION OF AWWA C600 STANDARD.

5. THE ENGINEER SHALL REVIEW AND ADJUST PIPE THICKNESS DESIGN RECOMMENDATIONS IN THE MOST CURRENT VERSION OF AWWA C151/A21.51 STANDARD FOR ADDITIONAL DEPTHS OF COVER.

6. STONE BEDDING (A1) IS REQUIRED IN ALL AREAS OF DEWATERING.



SD-1
PRESSURE PIPE BEDDING AND BACKFILL
2020 PRESSURE PIPE



SPECIAL REQUIREMENTS FOR OPEN CUTTING HARD SURFACE AND/OR GRAVEL ROADS

1. THE CONTRACTOR SHALL ACQUIRE A SPECIAL OPEN CUT APPROVAL FROM THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.

2. THE CONTRACTOR SHALL SUPPLY CONTINGENT LIABILITY INSURANCE FOR THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.

3. THE PROTECTION OF THE WORK SHALL BE IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 6. BARRICADES, WARNING AND LIGHTING NECESSARY FOR PUBLIC SAFETY TO BE APPROVED BY THE ENGINEER AND THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS PRIOR TO STARTING CONSTRUCTION.

4. THE CONTRACTOR SHALL EXCAVATE ALL MATERIAL TO PROPOSED GRADE.

5. THE WATERMAIN SHALL BE PLACED ON MDOT CLASS II SAND (A5) BEDDING.

6. ALL BACKFILL SHALL BE MDOT CLASS II SAND (A5), PLACED PER THE SCHEDULE OF BACKFILLING.

7. THE SAND BACKFILL SHALL EXTEND FROM THE OUTSIDE EDGE OF SHOULDER TO OUTSIDE EDGE OF SHOULDER, INCLUDING THE ONE ON ONE INFLUENCE OF THE ROADWAY OR THE SAND BACKFILL SHALL EXTEND FROM THE BACK OF CURB TO BACK OF CURB, INCLUDING THE ONE ON ONE INFLUENCE OF THE ROADWAY.

8. THE FINAL 12" OF ALL BACKFILL SHALL BE MDOT 22A LIMESTONE (A2) SUBBASE MODIFIED PER GCRC SPECIFICATIONS. ALL SHOULDERS SHALL BE REPAIRED PER THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.

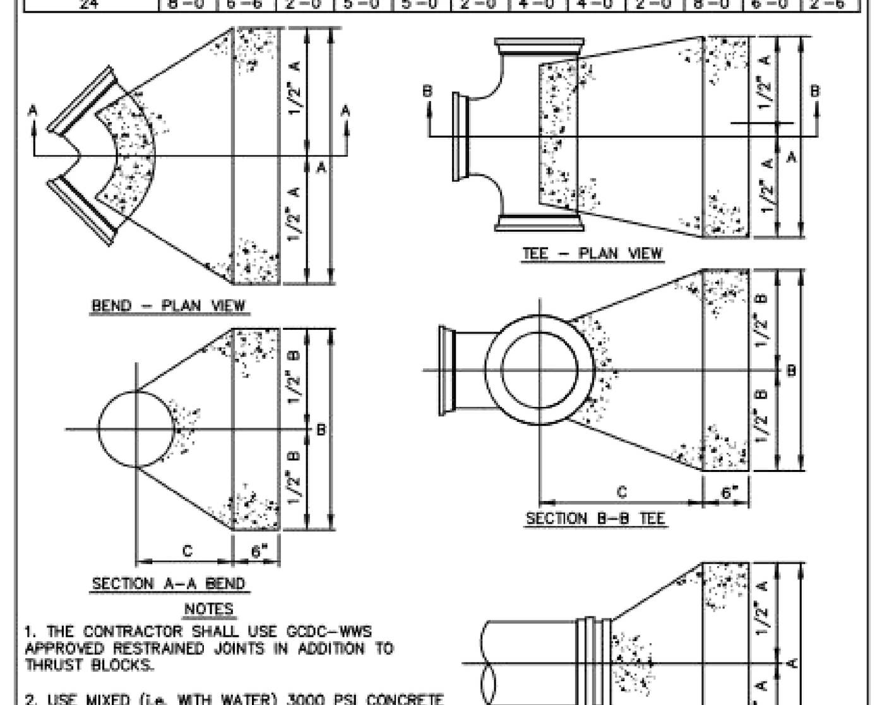
9. THE CONTRACTOR SHALL REPLACE THE ROAD SURFACE WITH THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS APPROVED MATERIAL.

10. THE CONTRACTOR SHALL MAINTAIN TEMPORARY ACCESS TO ALL AREAS DURING CONSTRUCTION. A PUBLIC ROAD MAY BE CLOSED FOR 1/2 WIDTH CONSTRUCTION WITH THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS APPROVAL, BUT THE CLOSING TIME CANNOT EXCEED 8 HOURS. THE CONTRACTOR MAY USE SHOULDERS AND TEMPORARY PATCHES TO KEEP A ROAD OPEN.

SD-2
OPEN CUTTING ROAD
2020 PRESSURE PIPE

TABLE INDICATES MINIMUM BEARING

DIA. OF PIPE OR BRANCH OF TEE	90° BEND OR SMALLER			45° BEND			22 1/2° BEND			PLUGS, HYDRANTS AND TEES		
	A	B	C	A	B	C	A	B	C	A	B	C
6"	2'-0"	2'-0"	0'-9"	2'-0"	1'-0"	0'-9"	2'-0"	1'-0"	0'-9"	2'-0"	2'-0"	1'-0"
8"	3'-0"	2'-0"	1'-0"	2'-0"	2'-0"	1'-3"	2'-0"	1'-0"	1'-0"	3'-0"	2'-0"	1'-9"
12"	4'-0"	3'-0"	1'-6"	3'-0"	3'-0"	1'-6"	2'-0"	2'-0"	1'-6"	4'-0"	3'-0"	2'-0"
16"	6'-0"	4'-0"	1'-6"	4'-0"	4'-0"	1'-6"	3'-0"	3'-0"	1'-6"	5'-0"	4'-0"	2'-0"
24"	8'-0"	6'-6"	2'-0"	5'-0"	5'-0"	2'-0"	4'-0"	4'-0"	2'-0"	8'-0"	6'-0"	2'-6"



NOTES

1. THE CONTRACTOR SHALL USE GCDC-WWS APPROVED RESTRAINED JOINTS IN ADDITION TO THRUST BLOCKS.

2. USE MIXED (i.e. WITH WATER) 3000 PSI CONCRETE FOR ALL THRUST BLOCKS.

3. POUR AGAINST UNDISTURBED SOIL.

4. KEEP BOLTS, FITTINGS AND JOINTS CLEAR OF CONCRETE.

5. BEARING AREA IS FIGURED ON 2000-PSI SOIL CAPACITY.

6. THE DESIGN ENGINEER SHALL PROVIDE DIMENSIONS OF THRUST BLOCKS FOR PIPE LARGER THAN 24" FOR REVIEW AND APPROVAL.

SD-3
THRUST BLOCK DETAILS
2020 PRESSURE PIPE

MINIMUM PIPE RESTRAINT SCHEDULE FOR GROUND BURIED PRESSURE PIPES[1]

BEND TYPE	22 ½°	33 3/4°	45°	56 ¼°	67 ½°	78 3/4°	90° OR/ DEAD END
	LENGTH (FT) OF RESTRAINT REQUIRED[2]						
PIPE SIZE							
6"	3	6	11	16	23	29	37
8"	4	8	15	22	31	41	50
10"	5	11	18	28	38	49	61
12"	6	13	22	33	45	59	73
14"	7	14	25	37	52	68	84
16"	8	16	28	42	59	77	95
18"	8	18	31	47	66	86	107
20"	9	20	35	53	73	95	118
24"	11	23	40	61	85	111	138
30"	13	29	50	75	105	136	170
36"	15	34	59	88	123	160	199
42"	17	39	67	101	141	184	228
48"	19	43	75	113	157	206	255

NOTES

1. THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE PLUS WATER HAMMER). FOR OTHER TEST PROCEDURES, ALL VALUES ARE TO BE INCREASED OR DECREASED PROPORTIONALLY.

2. IF TIE RODS ARE APPROVED BY GCDC-WWS, THEY MUST BE STAINLESS STEEL GRADE 316 RODS & NUTS. PLACE (2) RODS 5/8 INCH DIAMETER MINIMUM FOR WATERMAIN 6 INCH TO 10 INCH, AND (4) RODS 5/8 INCH DIAMETER MINIMUM FOR 12 INCH AND LARGER.

3. THE CONTRACTOR SHALL USE GCDC-WWS APPROVED RESTRAINED JOINTS.

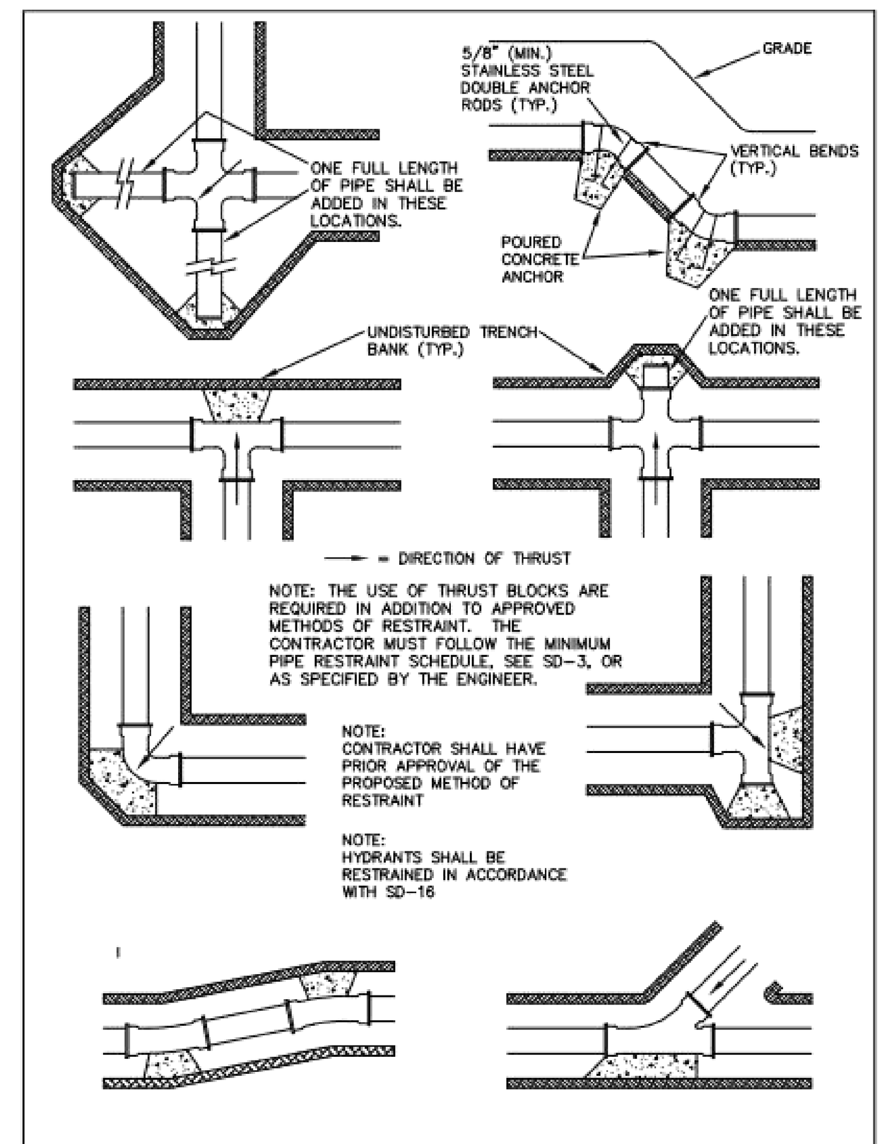
4. IN-LINE VALVES SHALL BE CONSIDERED DEAD ENDS IN BOTH DIRECTIONS.

5. THIS TABLE IS A MINIMUM REQUIREMENT FOR THRUST RESTRAINT OF GROUND BURIED PRESSURE PIPES AND DOES NOT ALLEVIATE THE ENGINEER OF THE RESPONSIBILITY TO DESIGN PROPER THRUST RESTRAINT SPECIFIC TO THE PROJECT. IN THE CASE OF DUCTILE IRON PIPE, THE ENGINEER SHALL FOLLOW THE APPLICABLE STANDARD AS SET FORTH IN THE LATEST EDITION FOR THRUST RESTRAINT DESIGN FROM THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA).

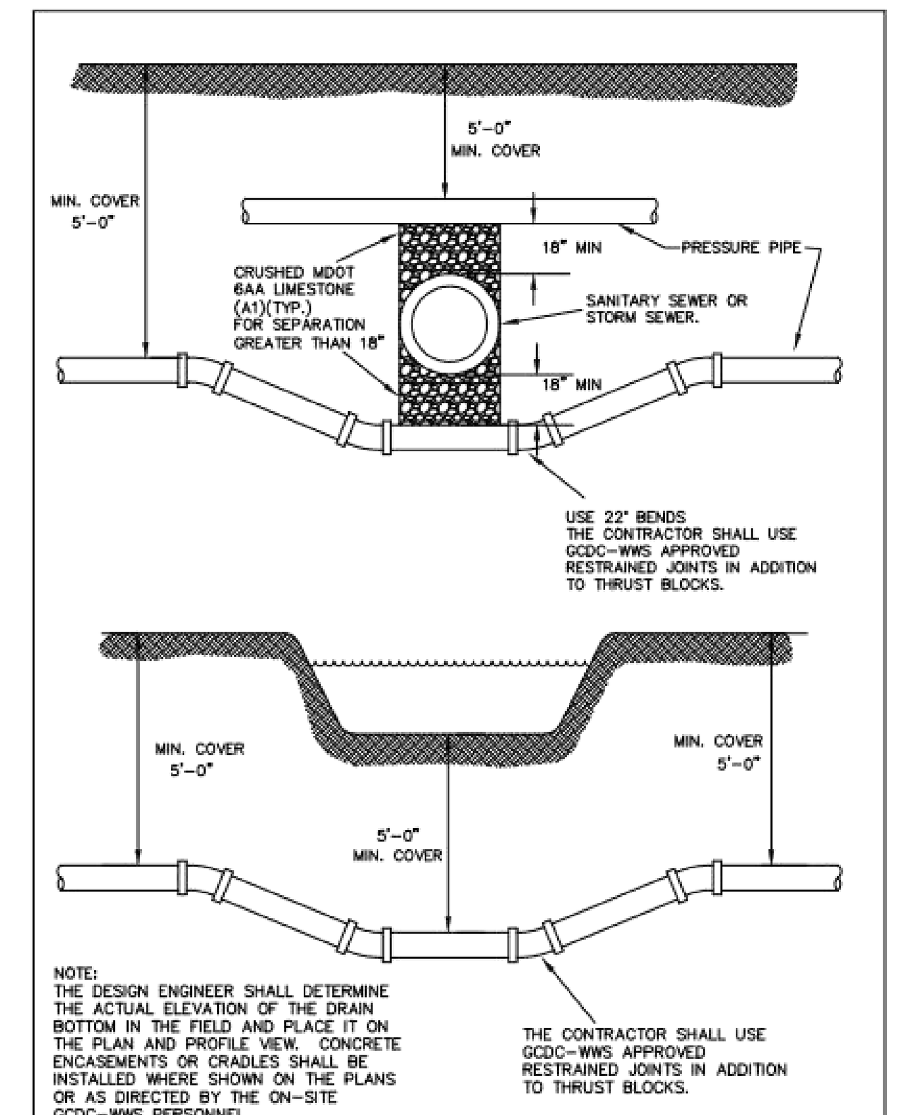
6. REFER TO DIPRA FOR TEES, FITTINGS, ETC. USE DIPRA AT 150% WRAP.

7. THRUST BLOCKS SHALL BE USED IN CONJUNCTION WITH THE RESTRAINT SCHEDULE.

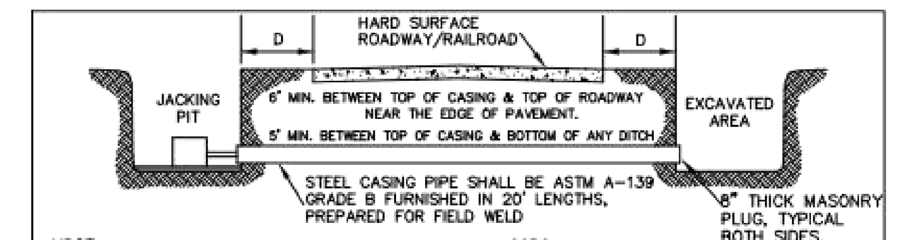
SD-4
MINIMUM PIPE RESTRAINT SCHEDULE
2020 PRESSURE PIPE



SD-5
LOCATION OF THRUST BLOCK RESTRAINT
2020 PRESSURE PIPE



SD-6
WATERMAIN BURY AT COUNTY DRAIN, DITCH, OR STREAM
2020 PRESSURE PIPE

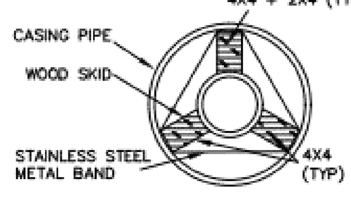


MDOT
D=30' FOR TRAFFIC OVER 45 MPH
D=20' FOR TRAFFIC UNDER 45 MPH

GCRC
D=10' FOR ROADS WITH SHOULDER/DITCH
D=5' FOR ROADS WITH CURB AND GUTTER

SIZE AND MATERIAL	MIN. CASING DIA. O.D. INCHES *	MIN. WALL THICKNESS INCHES
6" D.I. PRESSURE PIPE**	12.75	0.375
8" D.I. PRESSURE PIPE	20.00	0.375
10"-12" D.I. PRESSURE	20.00	0.375
16" D.I. PRESSURE PIPE	24.00	0.375

**ALLOWED ONLY UNDER ROADS NOT RAILROADS.



1. ALL BORE AND JACK OPERATIONS WITHIN THE ROADWAYS/RAILROADS WILL REQUIRE A PERMIT FROM THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS.

2. THE CONTRACTOR SHALL ABIDE BY ALL SAFETY PRECAUTIONS INCLUDING THE LATEST EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 6 AS REQUIRED BY THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS.

3. THE CONTRACTOR SHALL PROTECT AND RESTORE ALL PROPERTY.

4. THE CONTRACTOR SHALL NAME THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS AS AN ADDITIONAL NAMED INSURED FOR CONTINGENT LIABILITY FOR THE PROPOSED CONSTRUCTION.

5. THE CONTRACTOR SHALL ABIDE BY ALL CONDITIONS STATED IN THE GCRC MEMO OF 9-1-75 LABELED SANITARY SEWER AND WATERMAIN INSTALLATION WITHIN THE LIMITS OF COUNTY HIGHWAYS OR THE REQUIREMENTS OF THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS.

6. THE SHEETING OF THE FRONT FACE OF THE BORE PIT WILL BE REQUIRED IF UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED.

7. THE AUGER MUST ALWAYS PROCEED THE CASING PIPE HEAD.

8. THE CONTRACTOR SHALL NOTIFY THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS A MINIMUM OF 72 HOURS PRIOR TO BEGINNING CONSTRUCTION.

9. TREATED WOOD SKIDS AND STAINLESS STEEL METAL BANDS MIN. 5/8" WIDE MUST BE INSTALLED EVERY FOUR FEET ALONG THE ENTIRE LENGTH FOR ALL BORES TO KEEP THE CARRIER PIPE ON LINE AND GRADE. THE WOODEN SKIDS SHALL BE EXTENDED THE WHOLE LENGTH OF THE CASING. THE MAXIMUM DISTANCE FROM THE INSIDE DIAMETER OF THE CASING PIPE TO THE OUTSIDE EDGE OF THE SKID SHALL BE 1".

10. THE ENDS OF THE CASING PIPE SHALL BE BULKHEADED WITH AN 8" WATER TIGHT MASONRY BULKHEAD.

11. CASING SIZES MIGHT NEED TO BE INCREASED IN LOCATIONS USING RESTRAINED JOINTS.

12. ANY ADDITIONAL REQUIREMENTS THAT MAY COME FROM THE AGENCY HAVING AUTHORITY OVER THE ROADWAY/RAILROAD.

13. FLOWABLE CONCRETE FILL SHALL BE PUMPED BETWEEN THE PIPE AND THE CASING IPE THE ENTIRE LENGTH OF THE BORE.

* WITH DUCTILE IRON BOLTLESS RESTRAINT, CONTRACTOR MUST VERIFY CASING SIZE CAN CARRY PIPE.

SD-7
BORE & JACK CONSTRUCTION ON ALL ROADWAYS/RAILROADS
2020 PRESSURE PIPE

NOTES

1. ALL PRESSURE TAPS MUST BE INSTALLED IN A CONCRETE VALVE MANHOLE.

2. ALL TAPPING SLEEVES SHALL BE MECHANICAL JOINT BY FLANGED OUTLET, ALL STAINLESS STEEL OR CAST IRON, BUILT IN TWO SECTIONS.

3. APPROVED MECHANICAL JOINT SLEEVE; ROMAC 452 ALL 304 STAINLESS STEEL, CLOW F5205, MUELLER H-615, AMERICAN DARLING H-1004, OR GCDC-WWS APPROVED ALTERNATE.

4. THE OUTLET FLANGE IS CLASS 125 ANS/B16.1.

5. THE TAPPING TEE SHALL HAVE A BUILT-IN TEST PLUG.

6. THE GASKET FOR THE MAINLINE SHALL BE MADE FOR THE PIPE MATERIAL IN PLACE, DUCTILE IRON CLASS 52-54.

7. THE VALVE SHALL BE FLANGED BY RESTRAINED JOINT.

8. THE VALVE SHALL HAVE OVERSIZED SEAT RINGS TO PERMIT ENTRY OF THE TAPPING MACHINE CUTTERS.

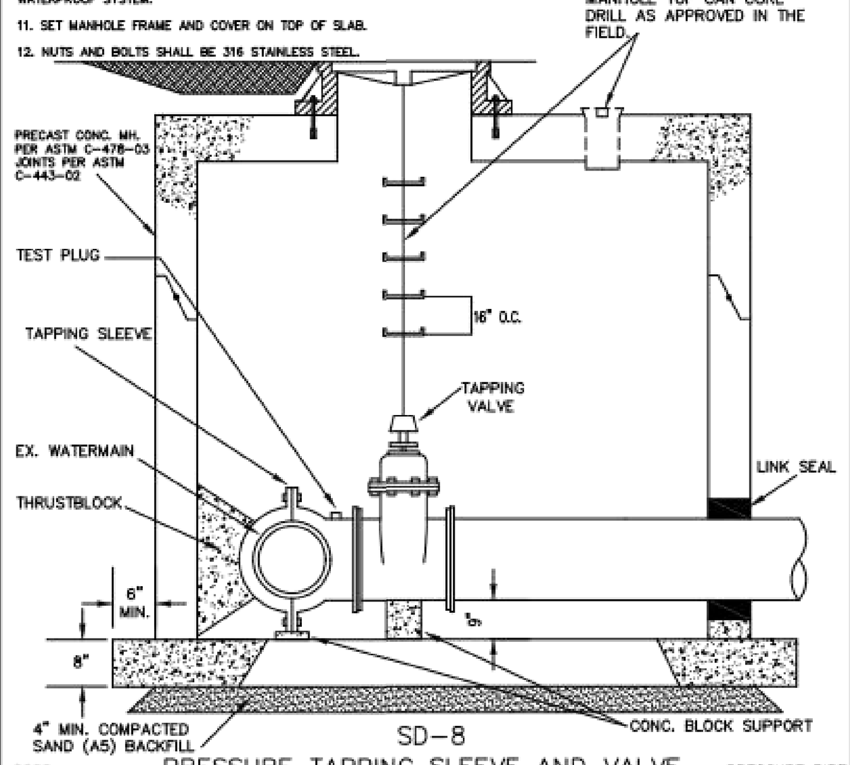
9. THE VALVE SHALL MEET ALL REQUIREMENTS OF THE MOST CURRENT VERSION OF AWWA C515 STANDARD.

10. THE TOP OPENING SHALL BE CENTERED ON THE VALVE OPERATING NUT. IF THE TOP CANNOT BE CENTERED OVER THE VALVE, THE TOP OF THE MANHOLE CAN BE CORE DRILLED AND A VALVE BOX CAN BE INSTALLED (MIN. 1 SECTION). THE INSTALLATION SHALL BE WATERTIGHT WITH BUTYL INSTALLED AS NEEDED FOR A WATERPROOF SYSTEM.

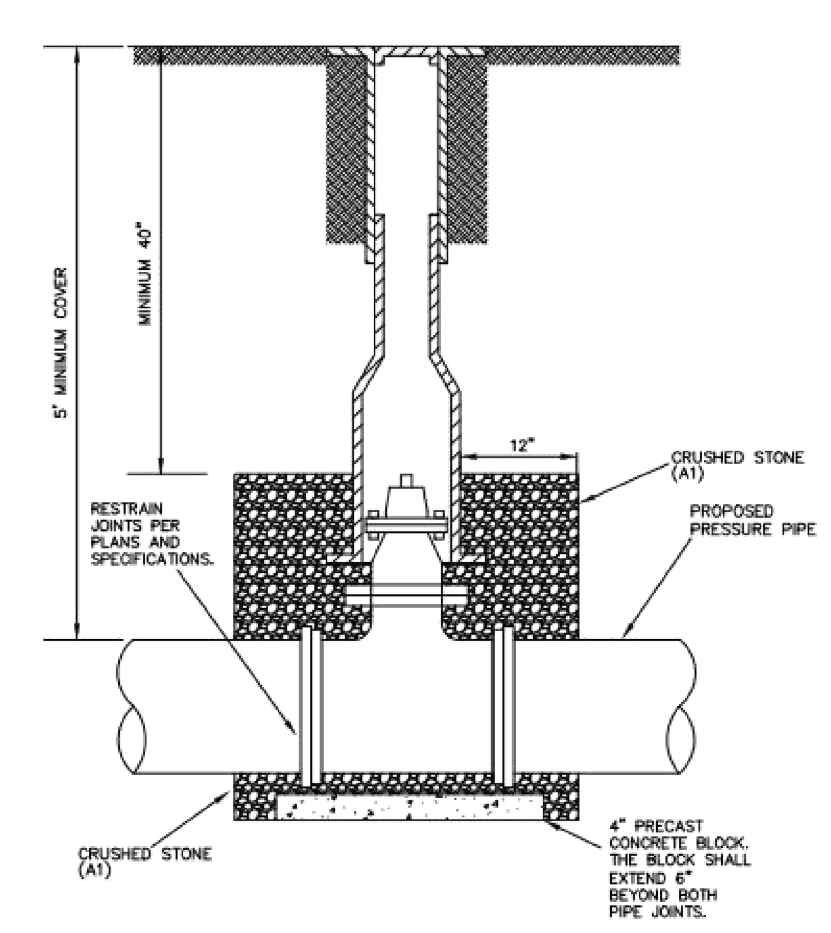
11. SET MANHOLE FRAME AND COVER ON TOP OF SLAB.

12. NUTS AND BOLTS SHALL BE 316 STAINLESS STEEL.

PRESSURE TAPPING & CUT-IN SLEEVES AND VALVES	
SLEEVE SIZE	MIN. BASIN SIZE
12" & SMALLER	5' DIA. MH.
16"	6' DIA. MH.
20"- 24"	8' DIA. MH.
LARGER	CONSULT GCDC-WWS

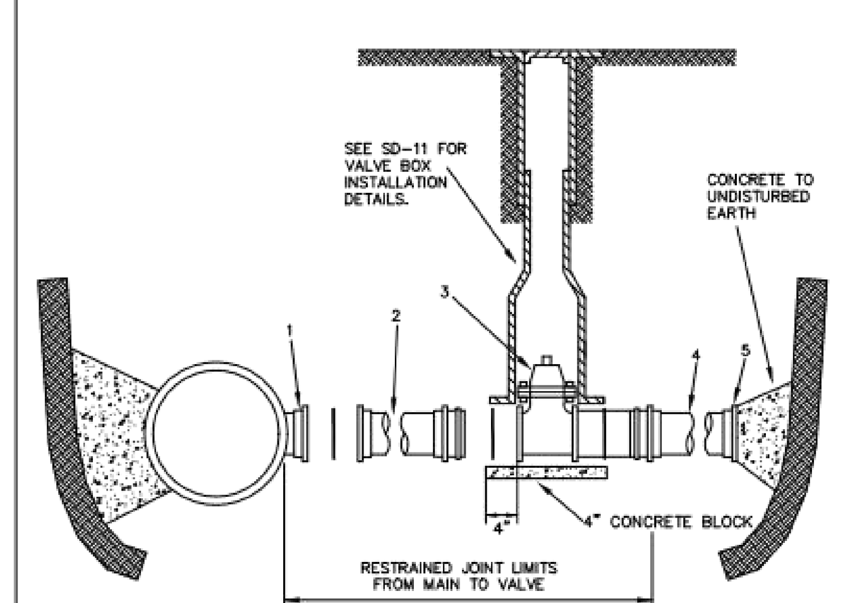


SD-8
PRESSURE TAPPING SLEEVE AND VALVE
2020 PRESSURE PIPE



1. ALL IN-LINE VALVES SHALL UTILIZE VALVE BOXES. SEE SD-11.

SD-9
IN-LINE GATE VALVES
2020 PRESSURE PIPE



1. RESTRAINED JOINT MAINLINE TEE WITH RESTRAINED JOINT OUTLET.

2. ANCHORING COUPLING.

3. RESILIENT SEATED GATE VALVE.

4. EXTEND A MINIMUM OF ONE FULL PIPE LENGTH AFTER THE VALVE.

5. RESTRAIN AND PLUG. PLACE A CONCRETE BRACE TO UNDISTURBED EARTH. CONCRETE SHALL NOT COVER PLUGS, BOLTS, ETC. A MECHANICAL JOINT MAY BE APPROVED FOR PLUG.

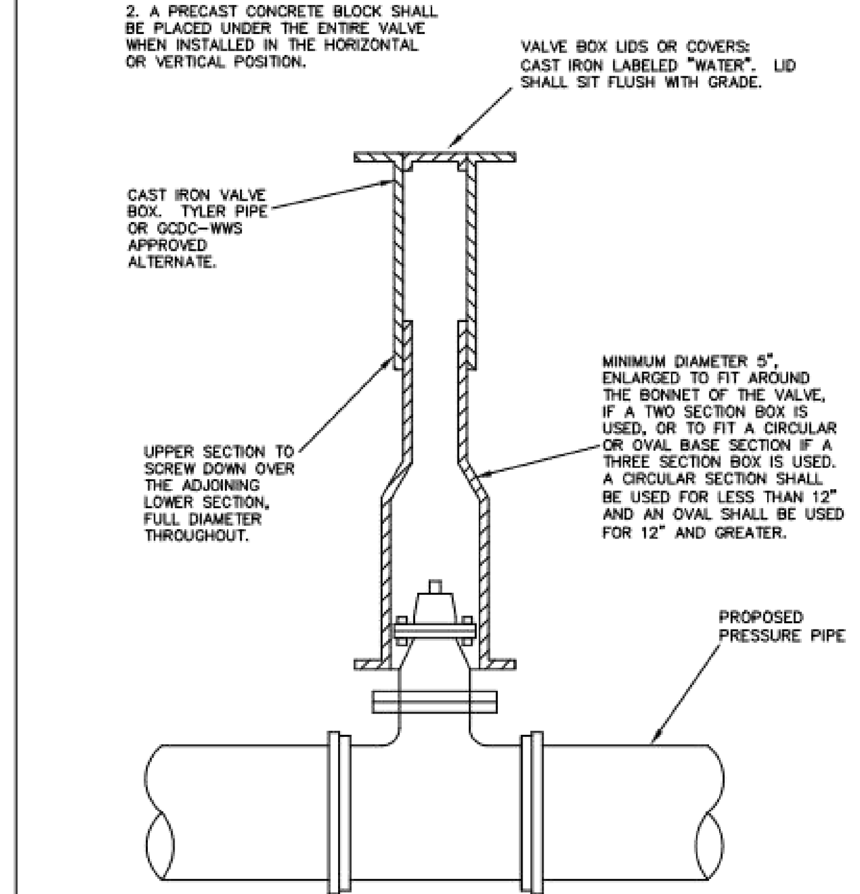
6. ALL FITTINGS SHALL HAVE AN APPROVED METHOD OF RESTRAINT.

7. ALL BURIED VALVES SHALL BE POLYETHYLENE ENCASED ALONG WITH THE MAINLINE AND STUB.

SD-10
FUTURE VALVE
2020 PRESSURE PIPE

1. ALL BURIED VALVES NOT ENCLOSED IN A VALVE VAULT SHALL BE POLYETHYLENE ENCASED. SEE SD-12.

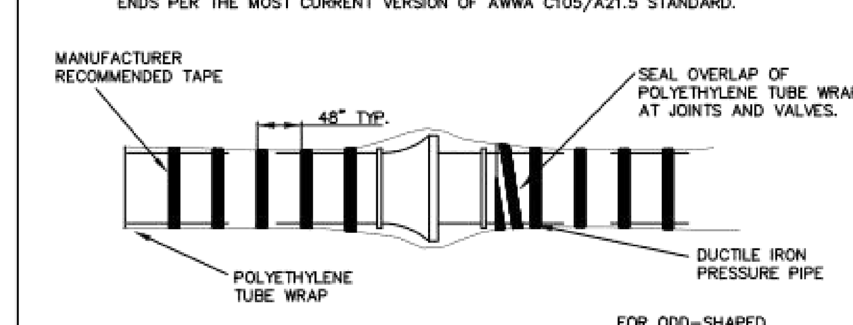
2. A PRECAST CONCRETE BLOCK SHALL BE PLACED UNDER THE ENTIRE VALVE WHEN INSTALLED IN THE HORIZONTAL OR VERTICAL POSITION.



SD-11
VALVE BOX
2020 PRESSURE PIPE

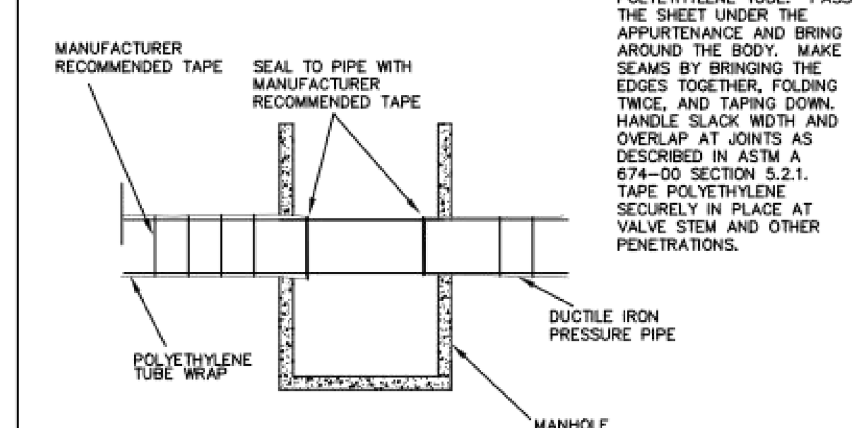
1. ALL DUCTILE IRON PIPE SHALL BE WRAPPED, EXCEPT IN MANHOLES.

2. CIRCUMFERENTIAL WRAPS OF MANUFACTURER RECOMMENDED TAPE SHALL BE PLACED AT NO GREATER THAN FOUR FOOT INTERVALS ALONG THE BARREL OF THE PIPE WITH THE EXCESS FOLDED OVER THE TOP TO TAKE OUT EXCESS SLACK HELPING TO MINIMIZE THE SPACE BETWEEN THE POLYETHYLENE AND THE PIPE. COMPLETE THE INSTALLATION BY OVERLAPPING THE POLYETHYLENE TUBE WRAP AT EACH END AND SEAL ENDS PER THE MOST CURRENT VERSION OF AWWA C105/A21.5 STANDARD.

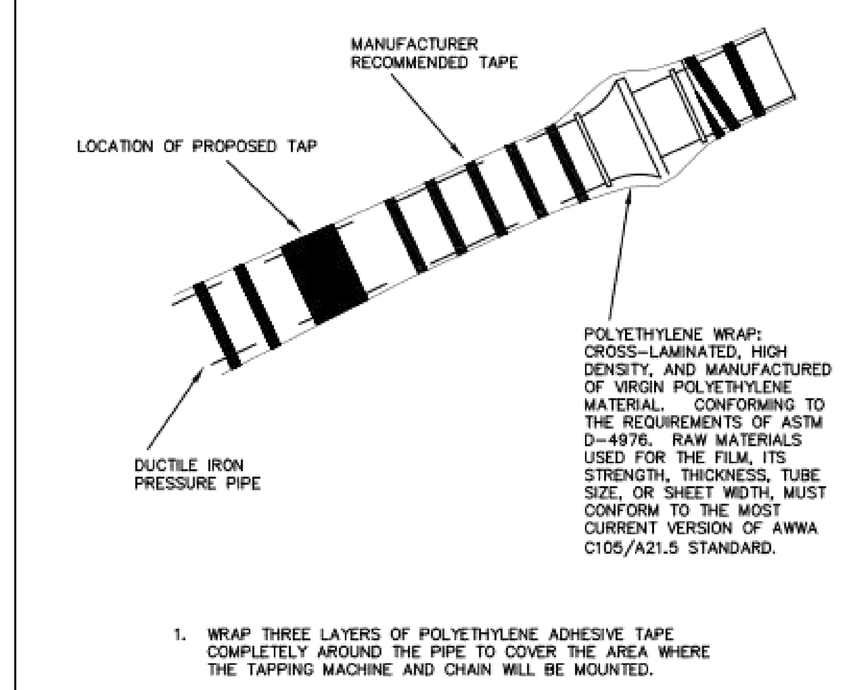


POLYETHYLENE WRAP: CROSS-LAMINATED, HIGH DENSITY, AND MANUFACTURED OF VIRGIN POLYETHYLENE MATERIAL. CONFORMING TO THE REQUIREMENTS OF ASTM D-4976. RAW MATERIALS USED FOR THE FILM, ITS STRENGTH, THICKNESS, TUBE SIZE, OR SHEET WIDTH, MUST CONFORM TO THE MOST CURRENT VERSION OF AWWA C105/A21.5 STANDARD.

FOR ODD-SHAPED APPURTENANCES: WRAP VALVES, TEES, CROSSES, AND OTHER ODD-SHAPED PIECES WHICH CANNOT BE PRACTICALLY WRAPPED IN A TUBE, WITH A FLAT SHEET OR SPLIT LENGTH OF POLYETHYLENE TUBE. PASS THE SHEET UNDER THE APPURTENANCE AND BRING AROUND THE BODY. MAKE SEAMS BY BRINGING THE EDGES TOGETHER, FOLDING TWICE, AND TAPING DOWN. HANDLE SLACK WIDTH AND OVERLAP AT JOINTS AS DESCRIBED IN ASTM A 674-00 SECTION 5.2.1. TAPE POLYETHYLENE SECURELY IN PLACE AT VALVE STEM AND OTHER PENETRATIONS.



SD-12
POLYETHYLENE TUBE WRAP FOR DUCTILE IRON PIPE
2020 PRESSURE PIPE

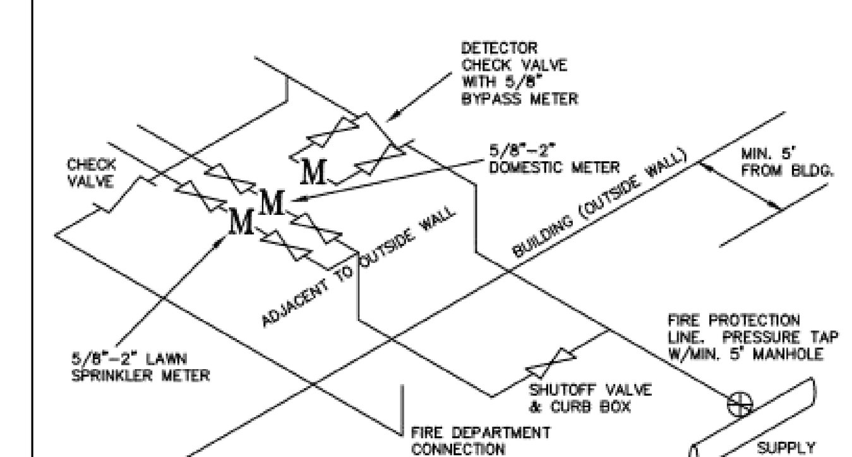


1. WRAP THREE LAYERS OF POLYETHYLENE ADHESIVE TAPE COMPLETELY AROUND THE PIPE TO COVER THE AREA WHERE THE TAPPING MACHINE AND CHAIN WILL BE MOUNTED.

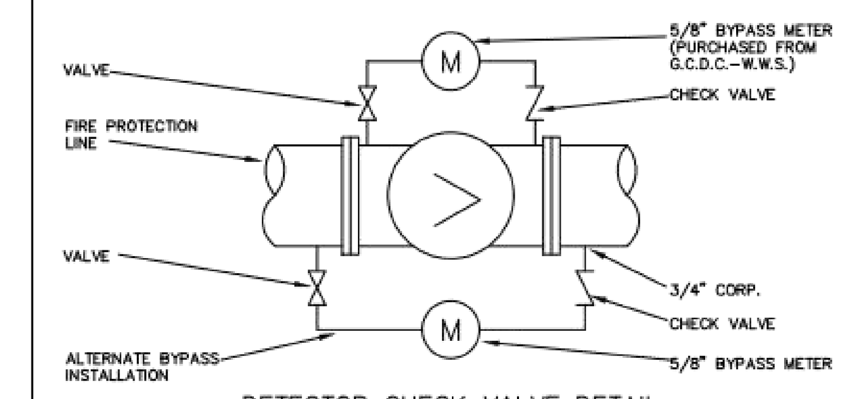
2. MOUNT THE TAPPING MACHINE ON THE PIPE AREA COVERED BY THE POLYETHYLENE TAPE. THEN MAKE THE TAP AND INSTALL THE CORPORATION STOP DIRECTLY THROUGH THE TAPE AND POLYETHYLENE.

3. AFTER MAKING THE DIRECT SERVICE CONNECTION, INSPECT THE ENTIRE CIRCUMFERENTIAL AREA FOR DAMAGE AND MAKE ANY NECESSARY REPAIRS.

SD-13
SERVICE CONNECTIONS ON POLYETHYLENE WRAPPED PIPE
2020 (WATERMAIN ONLY) PRESSURE PIPE



FIRE PROTECTION LINE VALVE & METER INSTALLATION



DETECTOR CHECK VALVE DETAIL

NOTE
DETECTOR CHECK VALVE SHALL BE TAPPED AT FACTORY FOR BYPASS METER.

SD-14
FIRE SUPPRESSION LINE VALVE & METER INSTALLATION
2020 (WATERMAIN ONLY) PRESSURE PIPE

NOTES

1. WATER SERVICE LEADS SHALL BE TUNNELED UNDER EXISTING PAVEMENTS.

2. THE LOCATION OF ALL SERVICE CURB BOXES SHALL BE MARKED WITH A 3/8" X 12" STEEL ROD PLACED 1' BELOW THE GROUND SURFACE ALONG WITH WITNESS POINTS SUPPLIED BY GCDC-WWS. THE 2" X 4" X 10' MARKER SHALL BE EXTENDED FROM THE INVERT OF THE SERVICE CONNECTION TO A MINIMUM OF 4' ABOVE THE PROPOSED GRADE.

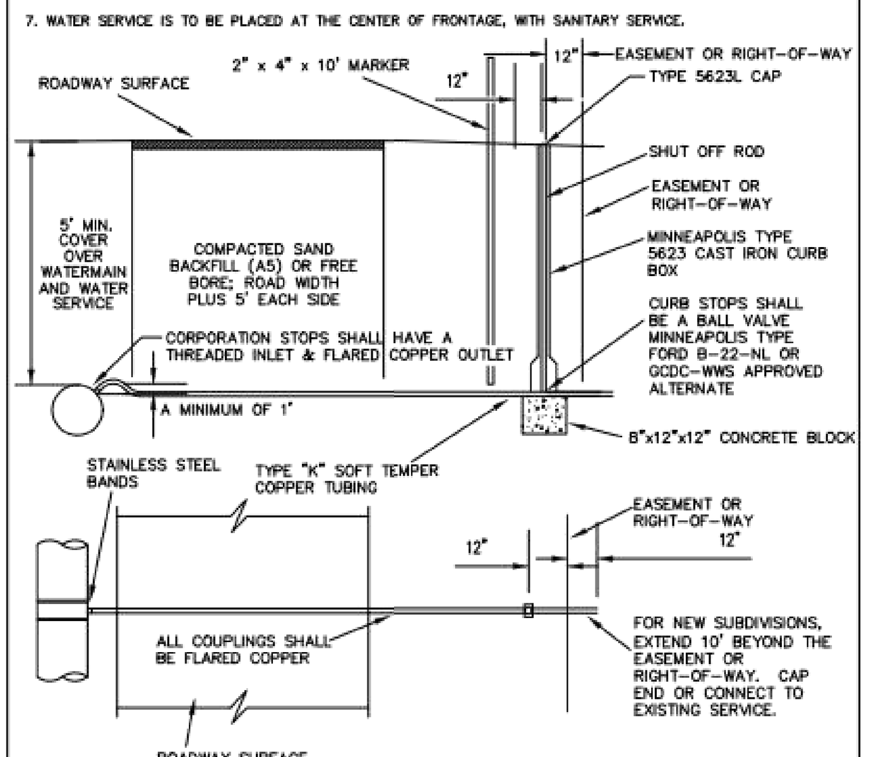
3. THE VALVE BOX SHALL BE EITHER DUCTILE IRON OR CAST IRON AND A MINIMUM OF 6' IN LENGTH. NO PLASTIC CURB BOXES SHALL BE ALLOWED.

4. CURB STOPS SHALL BE BALL VALVES FOR 3/4", 1", 1-1/2", AND 2" DIAMETERS WITH COPPER TO COPPER CONNECTIONS AND LEAD FREE ACCORDING TO NSF/ANSI STANDARD 372.

5. THE CORPORATION SHALL BE FORD FB700-NL OR GCDC-WWS APPROVED ALTERNATE. USE BRASS DOUBLE SADDLES WITH STAINLESS STEEL BANDS FOR 1-1/2" AND 2" TAPS. SADDLES SHALL BE FORD 202B OR GCDC-WWS APPROVED ALTERNATE. ALL APPURTENANCES THAT COME IN CONTACT WITH POTABLE WATER SHALL BE LEAD FREE ACCORDING TO NSF/ANSI STANDARD 372.

6. IF THE PUBLIC WATERMAIN IS ON AN EASEMENT, THE CURB STOP SHALL BE PLACED AT THE EDGE OF THE EASEMENT CLOSEST TO THE BUILDING TO BE SERVED.

7. WATER SERVICE IS TO BE PLACED AT THE CENTER OF FRONTAGE, WITH SANITARY SERVICE.



SD-15
3/4" TO 2" WATER SERVICE CONNECTIONS
2020 (WATERMAIN ONLY) PRESSURE PIPE

NOTES

1. THE PUMPER NOZZLE SHALL FACE THE STREET AND PROVIDE A MINIMUM OF 7.5 FEET, MEASURED FROM THE NOZZLE, CLEAR OF ANY OBSTRUCTIONS.

2. SET THE HYDRANT GRADE LINE AT PROPOSED GRADE OR AS FIELD DIRECTED.

3. SET THE VALVE BOX COVER FLUSH WITH THE EXISTING/PROPOSED GRADE LEVEL.

4. ALL WORK FROM THE CENTERLINE OF THE MAIN, TO AND INCLUDING THE HYDRANT, SHALL BE PAID FOR BY THE UNIT PRICE BID ITEM FOR HYDRANTS.

5. ALL JOINTS SHALL BE RESTRAINED BY GCDC-WWS APPROVED RESTRAINED JOINTS IN ADDITION TO THRUST BLOCKS.

6. HYDRANT BARRELS ARE TO BE PAINTED YELLOW. CAPS WILL BE COLOR CODED TO MAIN SIZE: 6"-FIRE ENGINE RED, 8"-ALLAS CHALMERS ORANGE, 10" AND 12"-JOHN DEERE GREEN, 16" AND 20" -UPS BROWN, 24" AND GREATER-ROYAL BLUE. THE PAINT SHALL BE BRUSHED, NOT SPRAYED.

7. 90 DEGREE HYDRANT TEES ARE APPROVED WHERE SPACE REQUIREMENTS ARE LIMITED.

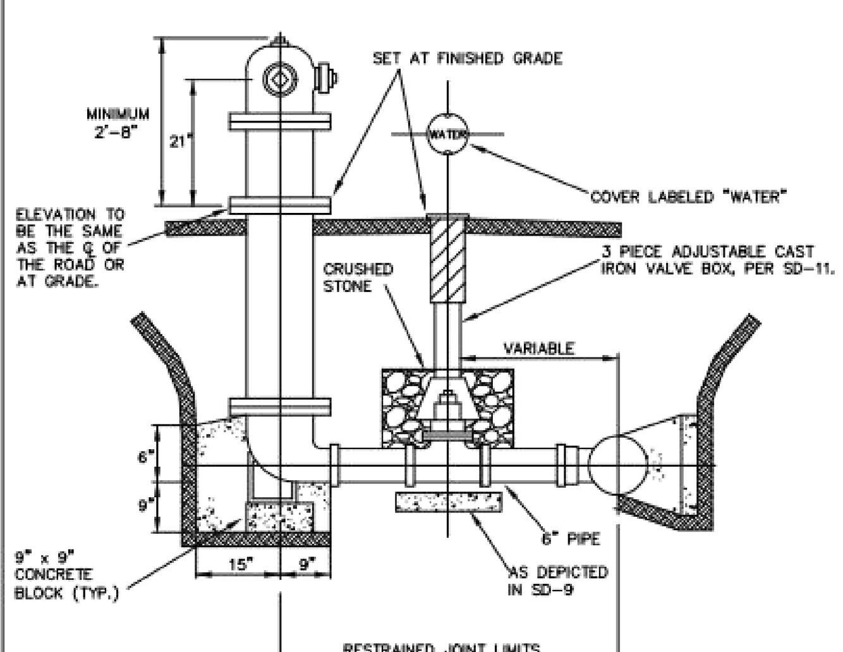
8. HYDRANT DRAIN SHALL BE PERMANENTLY SEALED AT THE FACTORY WITH A BRONZE PLUG.

9. HYDRANTS SHOULD BE PLACED AT PROPERTY CORNERS AND WITHIN THE R.O.W. WHEN POSSIBLE.

10. LOCAL MUNICIPALITIES MAY REQUIRE STORZ FITTINGS. REFER TO PROJECT PLANS AND SPECIFICATIONS FOR SIZE AND TYPE.

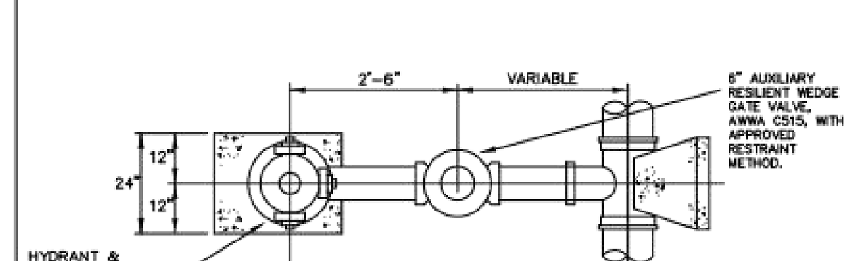
11. ALL JOINTS SHALL BE RESTRAINED.

12. THE HEIGHT ADJUSTMENTS SHALL NOT EXCEED ONE FOOT.

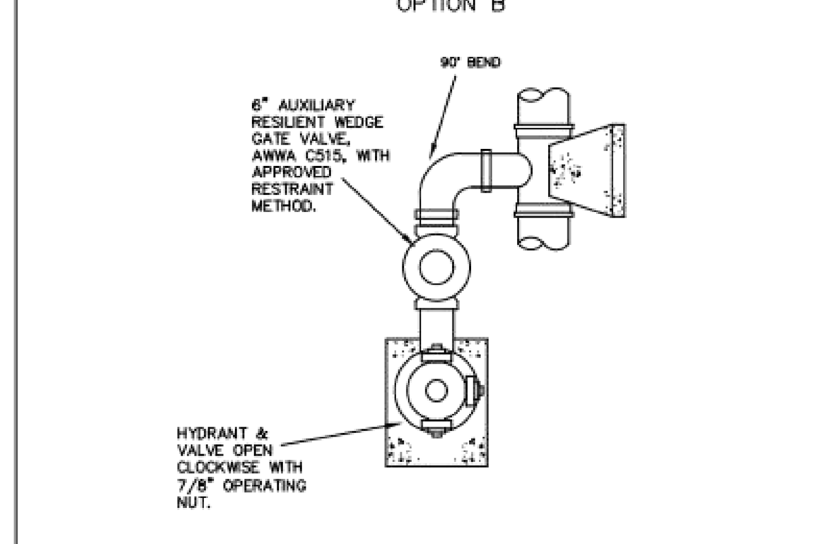


SD-16
FIRE HYDRANT DETAIL
2020 (WATERMAIN ONLY) PRESSURE PIPE

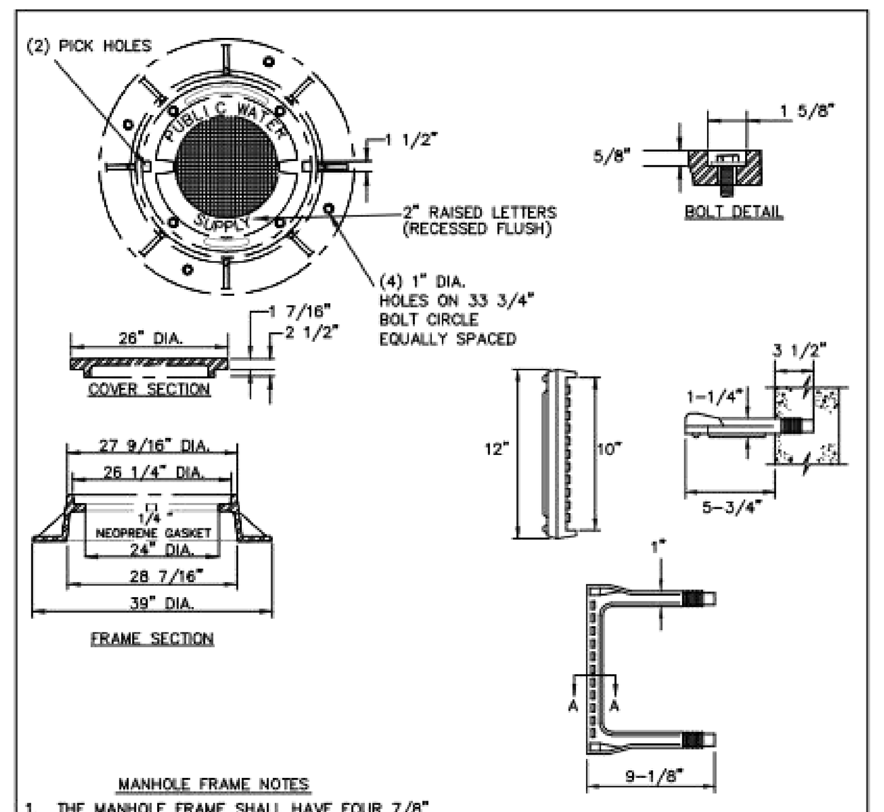
OPTION A



OPTION B



SD-17
HYDRANT INSTALLATION LAYOUT
2020 (WATERMAIN ONLY) PRESSURE PIPE



MANHOLE FRAME NOTES

1. THE MANHOLE FRAME SHALL HAVE FOUR 7/8" ANCHOR BASE FLANGE HOLES WITH BOLT CIRCLE TO MATCH MANHOLE CONE.

2. ALL BEARING SURFACES SHALL BE MACHINED.

3. MANHOLE FRAMES AND COVERS SHALL BE BOLT DOWN WATER TIGHT: EAST JORDAN IRON WORKS, INC. #1040 TYPE A SOLID, NEENAH FOUNDRY CO. #R-1916-F, OR GCDC-WWS APPROVED ALTERNATE.

4. THE WORD "PUBLIC WATER SUPPLY" SHALL BE CAST IN THE CENTER OF THE COVER.

5. MANHOLE COVERS SHALL BE BOLTED TO THE FRAME WITH FOUR 1/2"-13 NC HEX HEAD STAINLESS STEEL BOLTS AND WASHERS WITH RUBBER GASKETS

MANHOLE STEP NOTES

1. MANHOLE STEPS SHALL BE CAST INTEGRALLY WITH PRECAST MANHOLE.

2. MANHOLE STEPS SHALL BE COPOLYMER POLYPROPYLENE PLASTIC WITH 1/2" STEEL REINFORCEMENT.

3. MANHOLE STEPS SHALL BE M.A. INDUSTRIES PS-1-PF, AMERICAN STEP CO. ML-10, OR GCDC-WWS APPROVED ALTERNATE.

SD-18
MANHOLE FRAME, COVER & STEP
2020 PRESSURE PIPE

SEE THE GRAND BLANC TOWNSHIP PRESSURE PIPE CONSTRUCTION STANDARD DETAILS FOR REVISIONS TO THESE DETAILS.

NO.	DATE	DESCRIPTION
1	2020	EIGHTH EDITION

DIVISION OF WATER & WASTE SERVICES

PRESSURE PIPE CONSTRUCTION

STANDARD DETAILS

For the Construction of Sanitary Sewers & Watermain in Genesee County

GENESEE COUNTY WWS DRAIN COMMISSIONER

PLOTTED: 1/6/2023 10:09 AM R:\Projects\08C0002\dwg\Miscellaneous\Grand Blanc Township Standard Detail Sheets\2022 Updated Sheets\GBT Revised Pressure Pipe 2022-Interim.dwg

SD-1 PRESSURE PIPE BEDDING AND BACKFILL

NOTES

1. PLACE AGGREGATE MATERIAL ON THE COMPACTED SAND BACKFILL (A5) FOR ALL DRIVES, ROAD SHOULDERS, PARKING LOTS OR OTHER HARD SURFACED AREAS PER THE APPROVED PLANS.

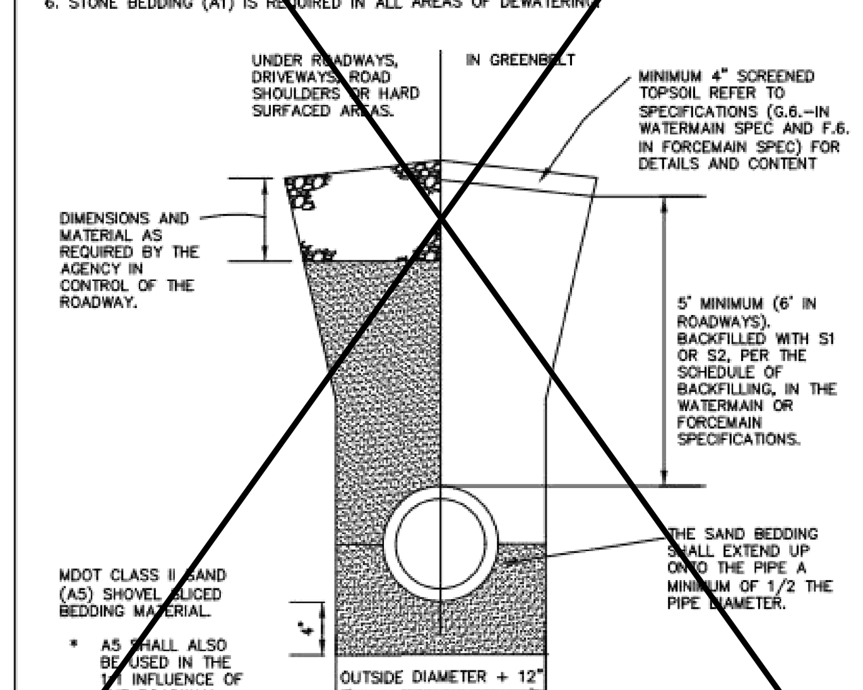
2. THE CONTRACTOR SHALL COMPACT THE SAND BACKFILL (A5) TO 95% OF THE MATERIAL UNIT WEIGHT BY MODIFIED PROCTOR ACROSS ALL ROADWAYS AND DRIVES PER THE SCHEDULE OF BACKFILLING IN THE WATERMAIN OR FORCEMAIN SPECIFICATIONS. THIS INCLUDES SERVICE LEADS UNLESS BORED. THE CONTRACTOR SHALL DO THE TESTING WITH THE RESULTS SUBMITTED TO GCDC-WWS PRIOR TO FINAL TESTING.

3. WHERE THE GROUND ELEVATION AT THE TRENCH LINE IS ABOVE THE ELEVATION OF THE CENTERLINE OF THE ROAD, THE CONTRACTOR SHALL INSTALL THE PRESSURE PIPE 6' BELOW THE ELEVATION OF THE ROAD. THE EXTRA DEPTH SHALL BE NOTED ON THE AS-BUILT DRAWINGS.

4. FOR ADDITIONAL CONSIDERATION OF PIPE ZONE EMBEDMENT CONDITIONS, SEE THE MOST CURRENT VERSION OF AWWA C600 STANDARD.

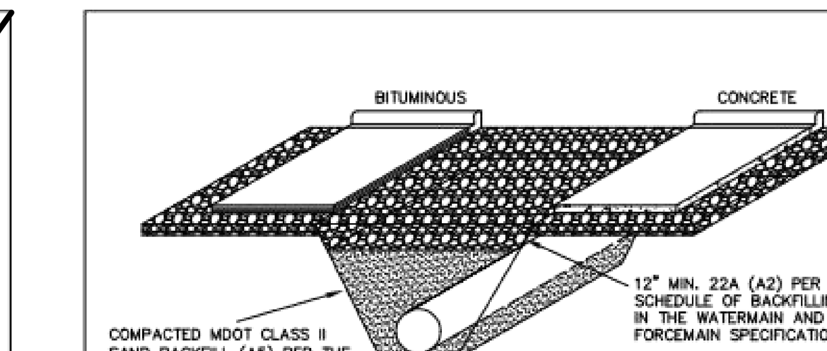
5. THE ENGINEER SHALL REVIEW AND ADJUST PIPE THICKNESS DESIGN RECOMMENDATIONS IN THE MOST CURRENT VERSION OF AWWA C151/A21.51 STANDARD FOR ADDITIONAL DEPTHS OF COVER.

6. STONE BEDDING (A1) IS REQUIRED IN ALL AREAS OF DEWATERING.



SD-1
PRESSURE PIPE BEDDING AND BACKFILL
2020 PRESSURE PIPE

SD-2 OPEN CUTTING ROAD



SPECIAL REQUIREMENTS FOR OPEN CUTTING HARD SURFACE AND/OR GRAVEL ROADS

1. THE CONTRACTOR SHALL ACQUIRE A SPECIAL OPEN CUT APPROVAL FROM THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.

2. THE CONTRACTOR SHALL SUPPLY CONTINGENT LIABILITY INSURANCE FOR THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.

3. THE PROTECTION OF THE WORK SHALL BE IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 6. BARRICADES, WARNING AND LIGHTING NECESSARY FOR PUBLIC SAFETY TO BE APPROVED BY THE ENGINEER AND THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS PRIOR TO STARTING CONSTRUCTION.

4. THE CONTRACTOR SHALL EXCAVATE ALL MATERIAL TO PROPOSED GRADE.

5. THE WATERMAIN SHALL BE PLACED ON MDOT CLASS II SAND (A5) BEDDING.

6. ALL BACKFILL SHALL BE MDOT CLASS II SAND (A5), PLACED PER THE SCHEDULE OF BACKFILLING.

7. THE SAND BACKFILL SHALL EXTEND FROM THE OUTSIDE EDGE OF SHOULDER TO OUTSIDE EDGE OF SHOULDER, INCLUDING THE ONE ON ONE INFLUENCE OF THE ROADWAY OR THE SAND BACKFILL SHALL EXTEND FROM THE BACK OF CURB TO BACK OF CURB, INCLUDING THE ONE ON ONE INFLUENCE OF THE ROADWAY.

8. THE FINAL 12" OF ALL BACKFILL SHALL BE MDOT 22A LIMESTONE (A2) SUBBASE MODIFIED PER GCRC SPECIFICATIONS. ALL SHOULDERS SHALL BE REPAIRED PER THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.

9. THE CONTRACTOR SHALL REPLACE THE ROAD SURFACE WITH THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS APPROVED MATERIAL.

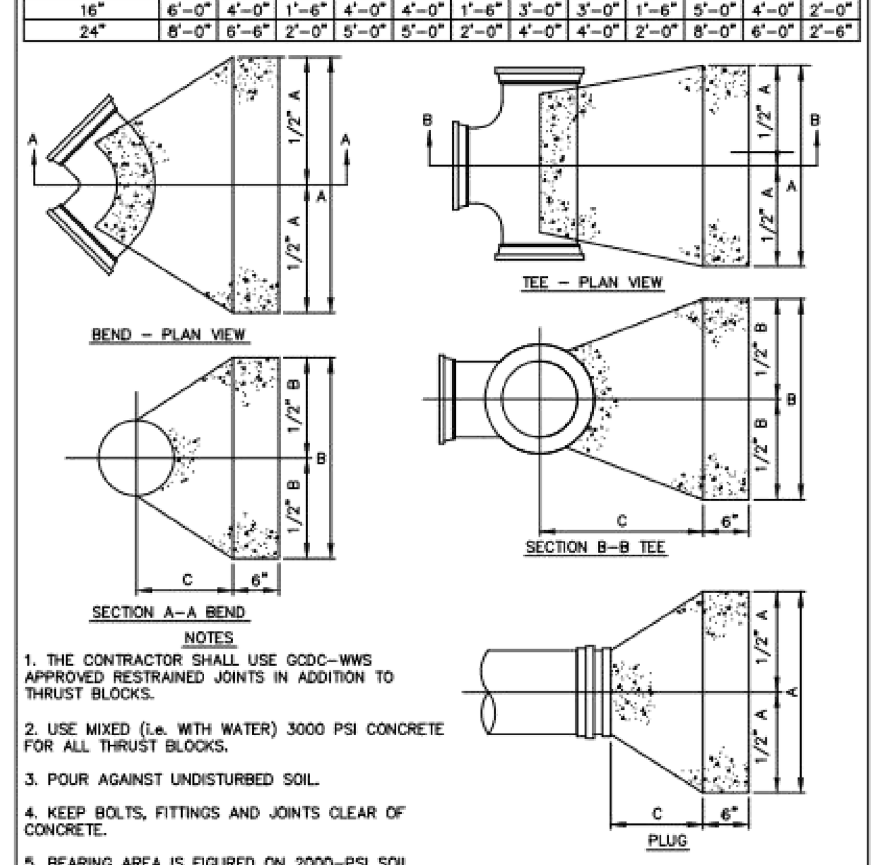
10. THE CONTRACTOR SHALL MAINTAIN TEMPORARY ACCESS TO ALL AREAS DURING CONSTRUCTION. A PUBLIC ROAD MAY BE CLOSED FOR 1/2 WIDTH CONSTRUCTION WITH THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS APPROVAL, BUT THE CLOSING TIME CANNOT EXCEED 8 HOURS. THE CONTRACTOR MAY USE SHOULDERS AND TEMPORARY PATCHES TO KEEP A ROAD OPEN.

SD-2
OPEN CUTTING ROAD
2020 PRESSURE PIPE

SD-3 THRUST BLOCK DETAILS

TABLE INDICATES MINIMUM BEARING

DIA. OF PIPE OR BRANCH OF TEE	90° BEND OR SMALLER			45° BEND			22 1/2° BEND			PLUGS, HYDRANTS AND TEES		
	A	B	C	A	B	C	A	B	C	A	B	C
6"	2'-0"	2'-0"	0'-9"	2'-0"	1'-0"	0'-9"	2'-0"	1'-0"	0'-9"	2'-0"	2'-0"	1'-0"
8"	3'-0"	2'-0"	1'-0"	2'-0"	2'-0"	1'-3"	2'-0"	1'-0"	1'-0"	3'-0"	2'-0"	1'-9"
12"	4'-0"	3'-0"	1'-6"	3'-0"	3'-0"	1'-6"	2'-0"	2'-0"	1'-6"	4'-0"	3'-0"	2'-0"
16"	6'-0"	4'-0"	1'-6"	4'-0"	4'-0"	1'-6"	3'-0"	3'-0"	1'-6"	5'-0"	4'-0"	2'-0"
24"	8'-0"	6'-6"	2'-0"	5'-0"	5'-0"	2'-0"	4'-0"	4'-0"	2'-0"	8'-0"	6'-0"	2'-6"



NOTES

1. THE CONTRACTOR SHALL USE GCDC-WWS APPROVED RESTRAINED JOINTS IN ADDITION TO THRUST BLOCKS.

2. USE MIXED (i.e. WITH WATER) 3000 PSI CONCRETE FOR ALL THRUST BLOCKS.

3. POUR AGAINST UNDISTURBED SOIL.

4. KEEP BOLTS, FITTINGS AND JOINTS CLEAR OF CONCRETE.

5. BEARING AREA IS FIGURED ON 2000-PSI SOIL CAPACITY.

6. THE DESIGN ENGINEER SHALL PROVIDE DIMENSIONS OF THRUST BLOCKS FOR PIPE LARGER THAN 24" FOR REVIEW AND APPROVAL.

SD-3
THRUST BLOCK DETAILS
2020 PRESSURE PIPE

SD-4 MINIMUM PIPE RESTRAINT SCHEDULE

MINIMUM PIPE RESTRAINT SCHEDULE FOR GROUND BURIED PRESSURE PIPES[1]

BEND TYPE	22 ½°	33 3/4°	45°	56 ¼°	67 ½°	78 3/4°	90° OR/ DEAD END
	LENGTH (FT) OF RESTRAINT REQUIRED[2]						
PIPE SIZE							
6"	3	6	11	16	23	29	37
8"	4	8	15	22	31	41	50
10"	5	11	18	28	38	49	61
12"	6	13	22	33	45	59	73
14"	7	14	25	37	52	68	84
16"	8	16	28	42	59	77	95
18"	8	18	31	47	66	86	107
20"	9	20	35	53	73	95	118
24"	11	23	40	61	85	111	138
30"	13	29	50	75	105	136	170
36"	15	34	59	88	123	160	199
42"	17	39	67	101	141	184	228
48"	19	43	75	113	157	206	255

NOTES

1. THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE PLUS WATER HAMMER). FOR OTHER TEST PROCEDURES, ALL VALUES ARE TO BE INCREASED OR DECREASED PROPORTIONALLY.

2. IF TIE RODS ARE APPROVED BY GCDC-WWS, THEY MUST BE STAINLESS STEEL GRADE 316 RODS & NUTS. PLACE (2) RODS 5/8 INCH DIAMETER MINIMUM FOR WATERMAIN 6 INCH TO 10 INCH, AND (4) RODS 5/8 INCH DIAMETER MINIMUM FOR 12 INCH AND LARGER.

3. THE CONTRACTOR SHALL USE GCDC-WWS APPROVED RESTRAINED JOINTS.

4. IN-LINE VALVES SHALL BE CONSIDERED DEAD ENDS IN BOTH DIRECTIONS.

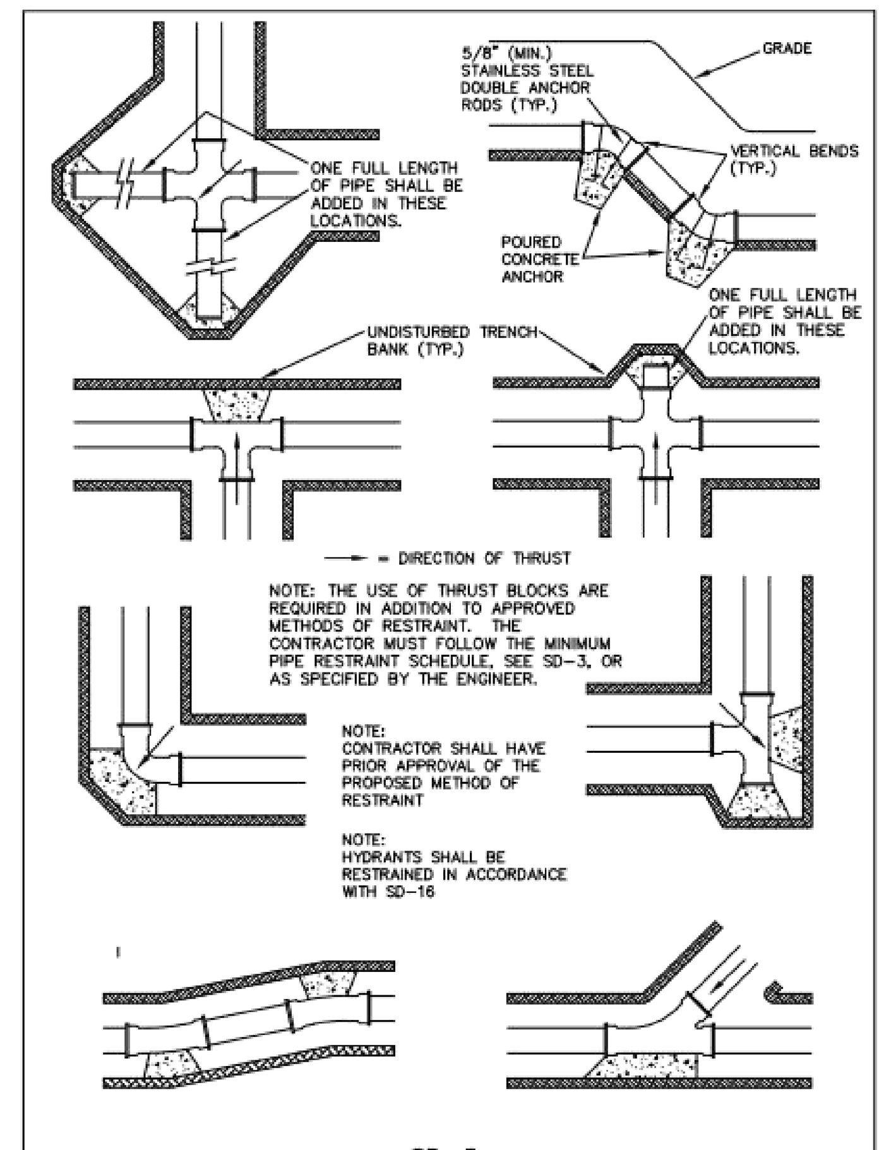
5. THIS TABLE IS A MINIMUM REQUIREMENT FOR THRUST RESTRAINT OF GROUND BURIED PRESSURE PIPES AND DOES NOT ALLEVIATE THE ENGINEER OF THE RESPONSIBILITY TO DESIGN PROPER THRUST RESTRAINT SPECIFIC TO THE PROJECT. IN THE CASE OF DUCTILE IRON PIPE, THE ENGINEER SHALL FOLLOW THE APPLICABLE STANDARD AS SET FORTH IN THE LATEST EDITION FOR THRUST RESTRAINT DESIGN FROM THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA).

6. REFER TO DIPRA FOR TEES, FITTINGS, ETC. USE DIPRA AT 150% WRAP.

7. THRUST BLOCKS SHALL BE USED IN CONJUNCTION WITH THE RESTRAINT SCHEDULE.

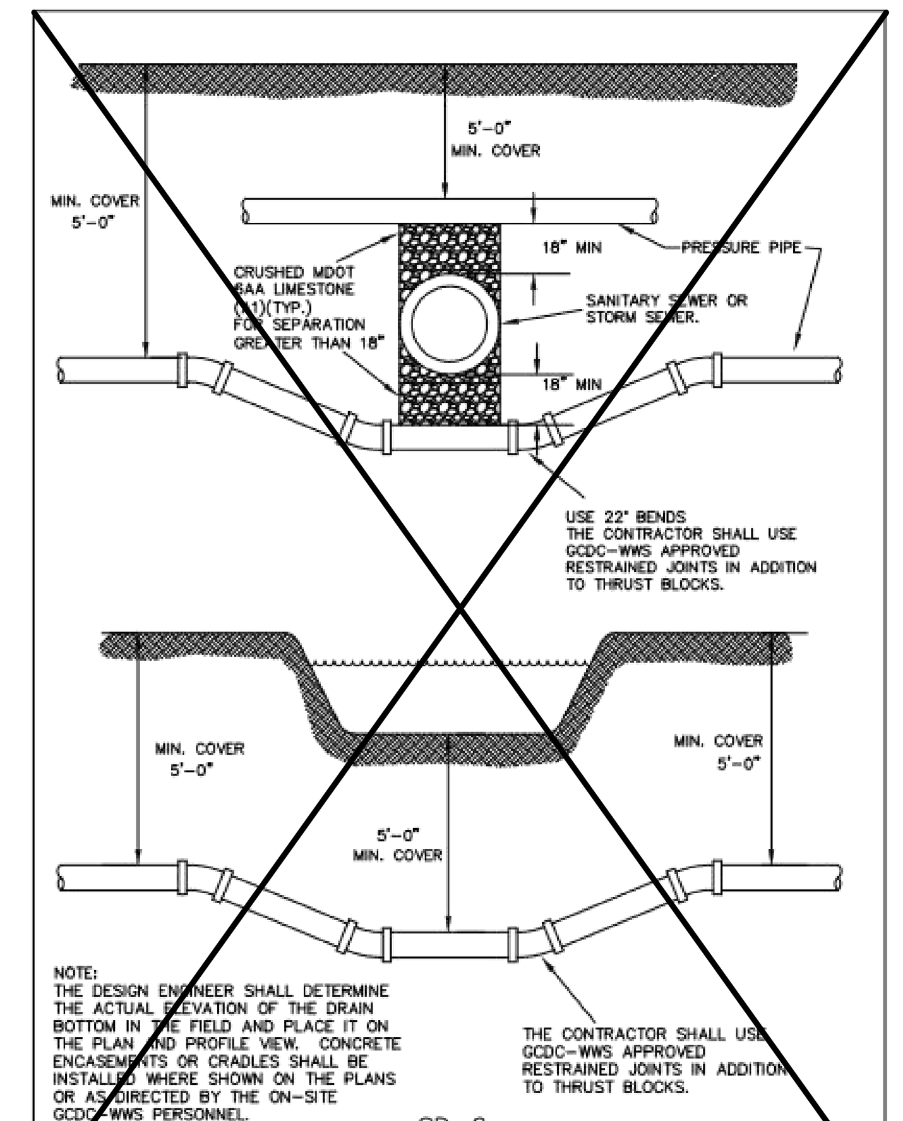
SD-4
MINIMUM PIPE RESTRAINT SCHEDULE
2020 PRESSURE PIPE

SD-5 LOCATION OF THRUST BLOCK RESTRAINT



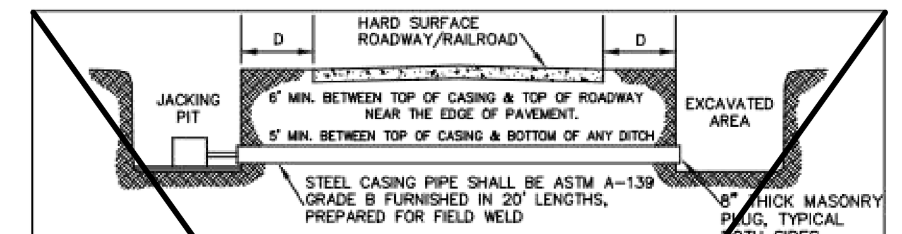
SD-5
LOCATION OF THRUST BLOCK RESTRAINT
2020 PRESSURE PIPE

SD-6 WATERMAIN BURY AT COUNTY DRAIN, DITCH, OR STREAM



SD-6
WATERMAIN BURY AT COUNTY DRAIN, DITCH, OR STREAM
2020 PRESSURE PIPE

SD-7 BORE & JACK CONSTRUCTION ON ALL ROADWAYS/RAILROADS

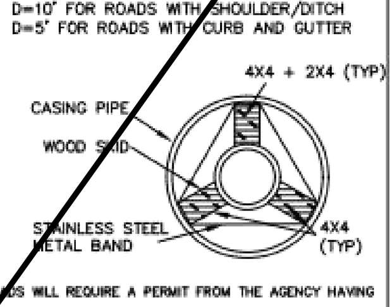


MDOT
D=30' FOR TRAFFIC OVER 45 MPH
D=20' FOR TRAFFIC UNDER 45 MPH

GCRC
D=10' FOR ROADS WITH SHOULDER/DITCH
D=5' FOR ROADS WITH CURB AND GUTTER

SIZE AND MATERIAL	MIN. CASING DIA. O.D. INCHES *	MIN. WALL THICKNESS INCHES
6" D.I. PRESSURE PIPE**	12.75	0.375
8" D.I. PRESSURE PIPE	20.00	0.375
10"-12" D.I. PRESSURE	20.00	0.375
16" D.I. PRESSURE PIPE	24.00	0.375

**ALLOWED ONLY UNDER ROADS NOT RAILROADS.



1. ALL BORE AND JACK OPERATIONS WITHIN THE ROADWAYS/RAILROADS WILL REQUIRE A PERMIT FROM THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS.

2. THE CONTRACTOR SHALL ABIDE BY ALL SAFETY PRECAUTIONS INCLUDING THE LATEST EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 6 AS REQUIRED BY THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS.

3. THE CONTRACTOR SHALL PROTECT AND RESTORE ALL PROPERTY.

4. THE CONTRACTOR SHALL NAME THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS AS AN ADDITIONAL NAMED INSURED FOR CONTINGENT LIABILITY FOR THE PROPOSED CONSTRUCTION.

5. THE CONTRACTOR SHALL ABIDE BY ALL CONDITIONS STATED IN THE GCRC MEMO OF 9-1-75 LABELED SANITARY SEWER AND WATERMAIN INSTALLATION WITHIN THE LIMITS OF COUNTY HIGHWAYS OR THE REQUIREMENTS OF THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS.

6. THE SHEETING OF THE FRONT FACE OF THE BORE PIT WILL BE REQUIRED IF UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED.

7. THE AUGER MUST ALWAYS PROCEED THE CASING PIPE HEAD.

8. THE CONTRACTOR SHALL NOTIFY THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS A MINIMUM OF 72 HOURS PRIOR TO BEGINNING CONSTRUCTION.

9. TREATED WOOD SKIDS AND STAINLESS STEEL METAL BANDS MIN. 5/8" WIDE MUST BE INSTALLED EVERY FOUR FEET ALONG THE ENTIRE LENGTH FOR ALL BORES TO KEEP THE CARRIER PIPE ON LINE AND GRADE. THE WOODEN SKIDS SHALL BE EXTENDED THE WHOLE LENGTH OF THE CASING. THE MAXIMUM DISTANCE FROM THE INSIDE DIAMETER OF THE CASING PIPE TO THE OUTSIDE EDGE OF THE SKID SHALL BE 1".

10. THE ENDS OF THE CASING PIPE SHALL BE BULKHEADED WITH AN 8" WATER TIGHT MASONRY BULKHEAD.

11. CASING SIZES MIGHT NEED TO BE INCREASED IN LOCATIONS USING RESTRAINED JOINTS.

12. ANY ADDITIONAL REQUIREMENTS THAT MAY COME FROM THE AGENCY HAVING AUTHORITY OVER THE ROADWAY/RAILROAD.

13. FLOWABLE CONCRETE FILL SHALL BE PUMPED BETWEEN THE PIPE AND THE CASING IPE THE ENTIRE LENGTH OF THE BORE.

* WITH DUCTILE IRON BOLTLESS RESTRAINT, CONTRACTOR MUST VERIFY CASING SIZE CAN CARRY PIPE.

SD-7
BORE & JACK CONSTRUCTION ON ALL ROADWAYS/RAILROADS
2020 PRESSURE PIPE

SD-8 PRESSURE TAPPING SLEEVE AND VALVE

NOTES

1. ALL PRESSURE TAPS MUST BE INSTALLED IN A CONCRETE VALVE MANHOLE.

2. ALL TAPPING SLEEVES SHALL BE MECHANICAL JOINT BY FLANGED OUTLET, ALL STAINLESS STEEL OR CAST IRON, BUILT IN TWO SECTIONS.

3. APPROVED MECHANICAL JOINT SLEEVE; ROMAC 452 ALL 304 STAINLESS STEEL, CLOW F5205, MUELLER H-615, AMERICAN DARLING H-1004, OR GCDC-WWS APPROVED ALTERNATE.

4. THE OUTLET FLANGE IS CLASS 125 ANS/B16.1.

5. THE TAPPING TEE SHALL HAVE A BUILT-IN TEST PLUG.

6. THE GASKET FOR THE MAINLINE SHALL BE MADE FOR THE PIPE MATERIAL IN PLACE, DUCTILE IRON CLASS 52-54.

7. THE VALVE SHALL BE FLANGED BY RESTRAINED JOINT.

8. THE VALVE SHALL HAVE OVERSIZED SEAT RINGS TO PERMIT ENTRY OF THE TAPPING MACHINE CUTTERS.

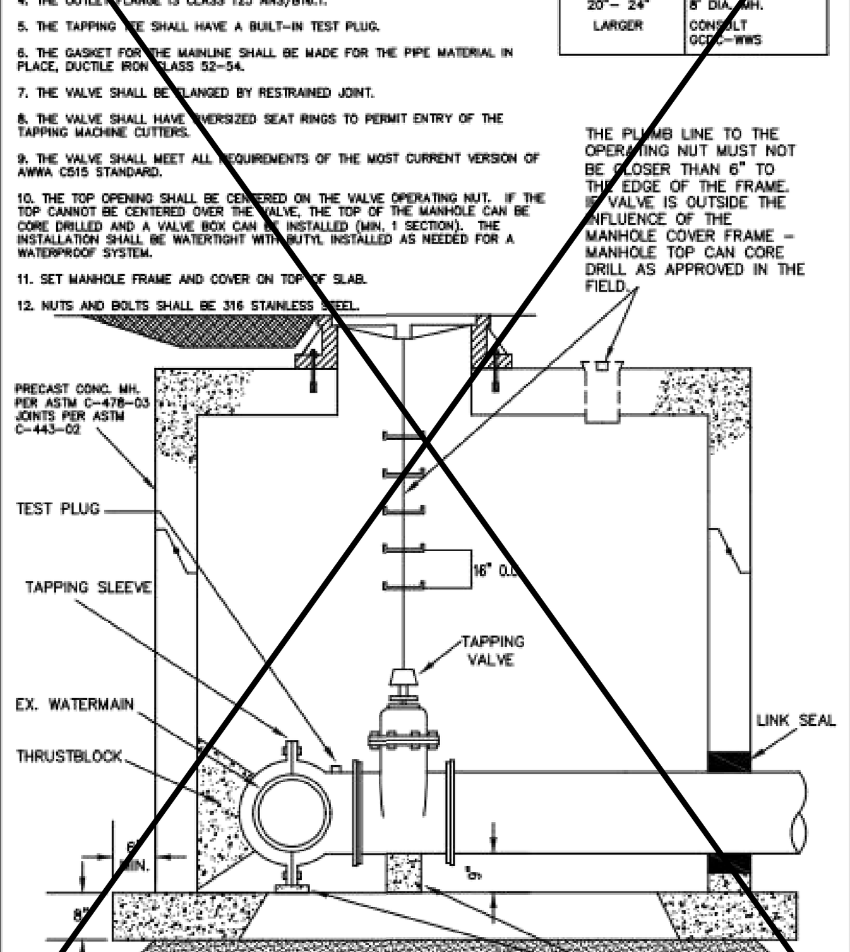
9. THE VALVE SHALL MEET ALL REQUIREMENTS OF THE MOST CURRENT VERSION OF AWWA C515 STANDARD.

10. THE TOP OPENING SHALL BE CENTERED ON THE VALVE OPERATING NUT. IF THE TOP CANNOT BE CENTERED OVER THE VALVE, THE TOP OF THE MANHOLE CAN BE CORE DRILLED AND A VALVE BOX CAN BE INSTALLED (MIN. 1 SECTION). THE INSTALLATION SHALL BE WATERTIGHT WITH BUTYL INSTALLED AS NEEDED FOR A WATERPROOF SYSTEM.

11. SET MANHOLE FRAME AND COVER ON TOP OF SLAB.

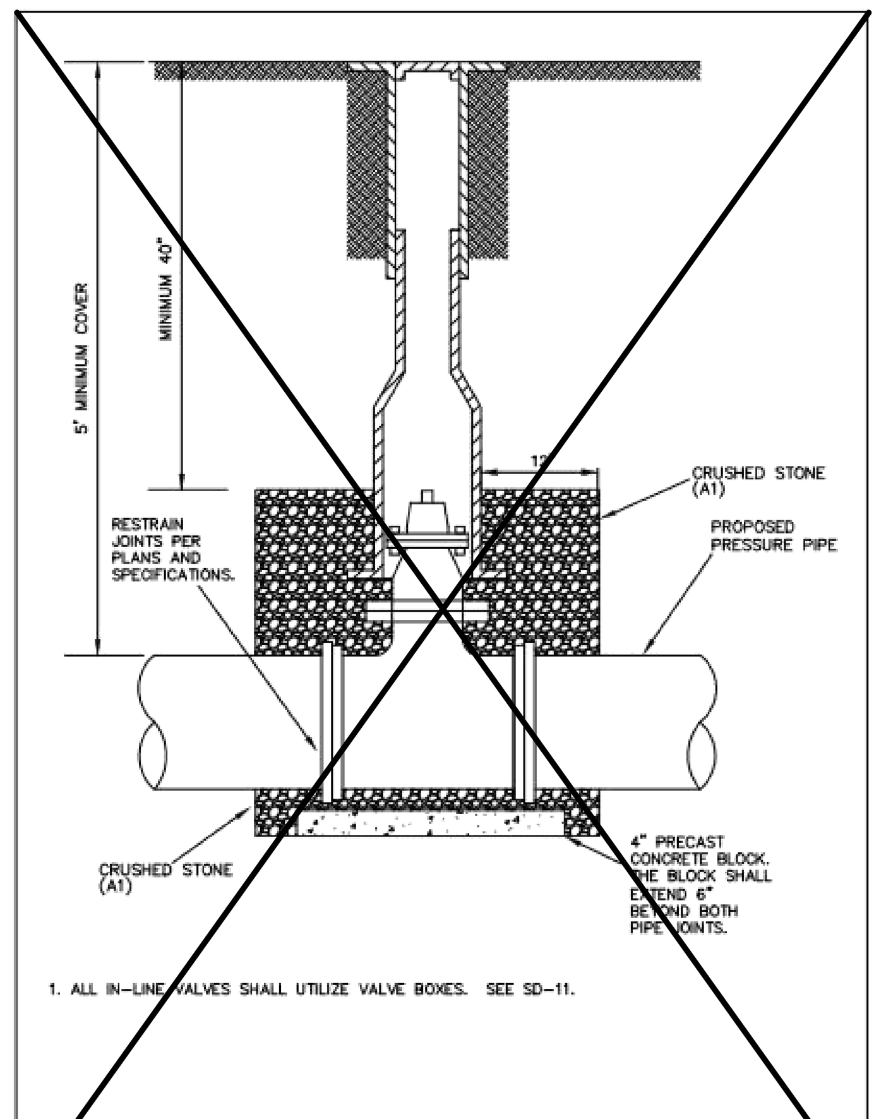
12. NUTS AND BOLTS SHALL BE 316 STAINLESS STEEL.

PRESSURE TAPPING & CUT-IN SLEEVES AND VALVES	
SLEEVE SIZE	MIN. BASIN SIZE
12" & SMALLER	5' DIA. MH.
16"	6' DIA. MH.
20"- 24"	8' DIA. MH.
LARGER	CONSULT GCDC-WWS



SD-8
PRESSURE TAPPING SLEEVE AND VALVE
2020 PRESSURE PIPE

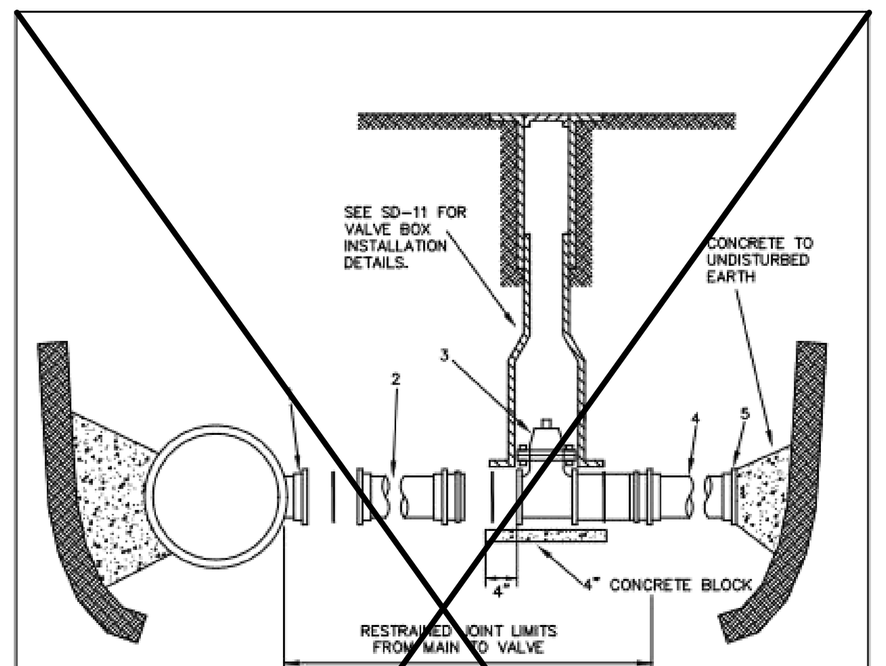
SD-9 IN-LINE GATE VALVES



1. ALL IN-LINE VALVES SHALL UTILIZE VALVE BOXES. SEE SD-11.

SD-9
IN-LINE GATE VALVES
2020 PRESSURE PIPE

SD-10 FUTURE VALVE



1. RESTRAINED JOINT MAINLINE TEE WITH RESTRAINED JOINT OUTLET.

2. ANCHORING COUPLING.

3. RESILIENT SEATED GATE VALVE.

4. EXTEND A MINIMUM OF ONE FULL PIPE LENGTH AFTER THE VALVE.

5. RESTRAIN AND PLUG. PLACE A CONCRETE BRACE TO UNDISTURBED EARTH. CONCRETE SHALL NOT COVER PLUGS, BOLTS, ETC. A MECHANICAL JOINT MAY BE APPROVED FOR PLUG.

6. ALL FITTINGS SHALL HAVE AN APPROVED METHOD OF RESTRAINT.

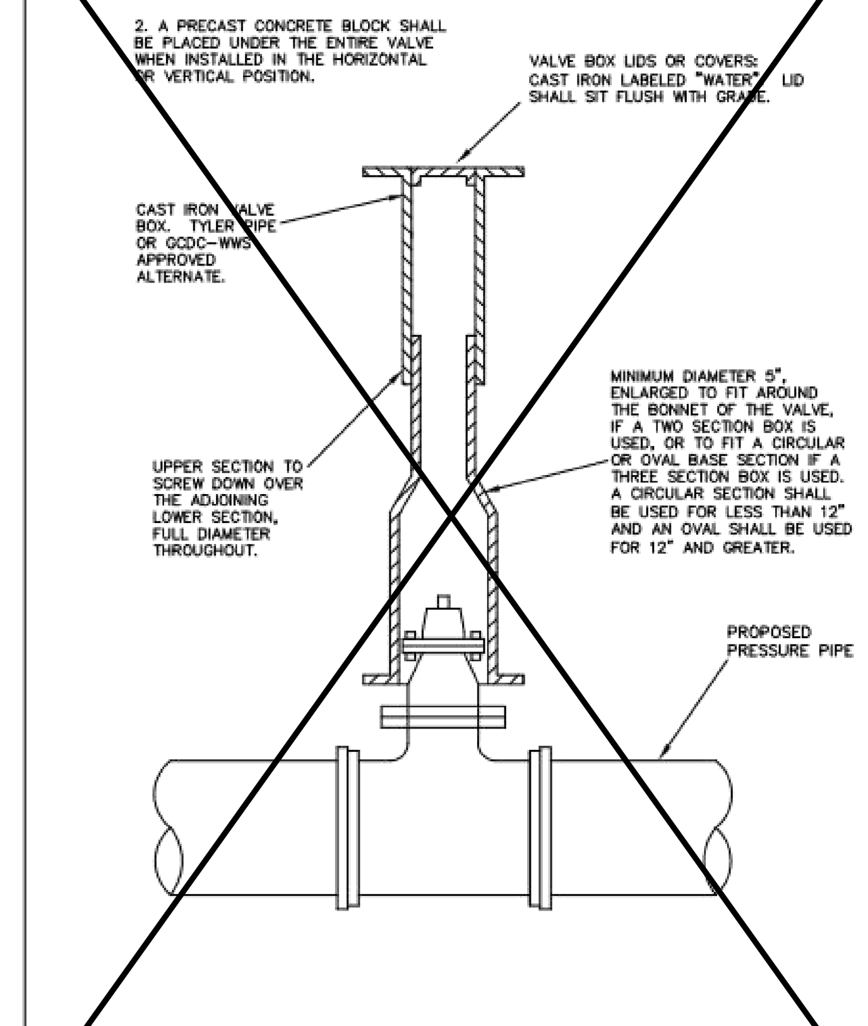
7. ALL BURIED VALVES SHALL BE POLYETHYLENE ENCASED ALONG WITH THE MAINLINE AND STUB.

SD-10
FUTURE VALVE
2020 PRESSURE PIPE

SD-11 VALVE BOX

1. ALL BURIED VALVES NOT ENCLOSED IN A VALVE VAULT SHALL BE POLYETHYLENE ENCASED. SEE SD-12.

2. A PRECAST CONCRETE BLOCK SHALL BE PLACED UNDER THE ENTIRE VALVE WHEN INSTALLED IN THE HORIZONTAL OR VERTICAL POSITION.

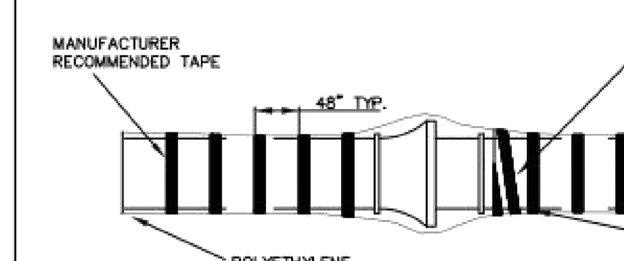


SD-11
VALVE BOX
2020 PRESSURE PIPE

SD-12 POLYETHYLENE TUBE WRAP FOR DUCTILE IRON PIPE

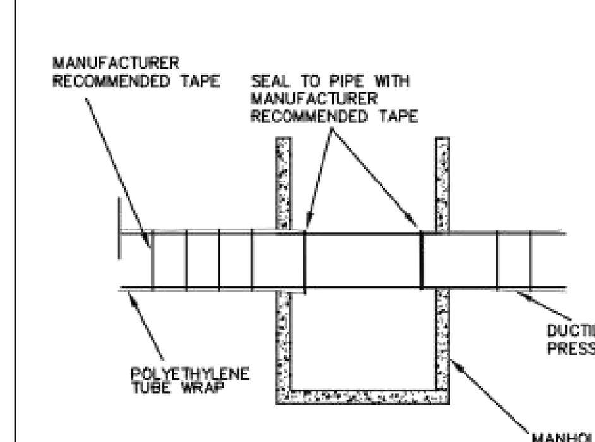
1. ALL DUCTILE IRON PIPE SHALL BE WRAPPED, EXCEPT IN MANHOLES.

2. CIRCUMFERENTIAL WRAPS OF MANUFACTURER RECOMMENDED TAPE SHALL BE PLACED AT NO GREATER THAN FOUR FOOT INTERVALS ALONG THE BARREL OF THE PIPE WITH THE EXCESS FOLDED OVER THE TOP TO TAKE OUT EXCESS SLACK HELPING TO MINIMIZE THE SPACE BETWEEN THE POLYETHYLENE AND THE PIPE. COMPLETE THE INSTALLATION BY OVERLAPPING THE POLYETHYLENE TUBE WRAP AT EACH END AND SEAL ENDS PER THE MOST CURRENT VERSION OF AWWA C105/A21.5 STANDARD.



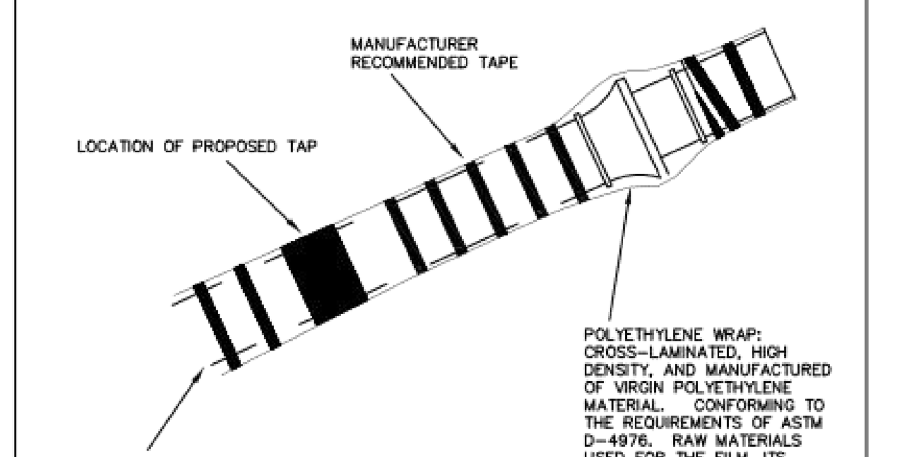
POLYETHYLENE WRAP: CROSS-LAMINATED, HIGH DENSITY, AND MANUFACTURED OF VIRGIN POLYETHYLENE MATERIAL. CONFORMING TO THE REQUIREMENTS OF ASTM D-4976. RAW MATERIALS USED FOR THE FILM, ITS STRENGTH, THICKNESS, TUBE SIZE, OR SHEET WIDTH, MUST CONFORM TO THE MOST CURRENT VERSION OF AWWA C105/A21.5 STANDARD.

FOR ODD-SHAPED APPURTENANCES: WRAP VALVES, TEES, CROSSES, AND OTHER ODD-SHAPED PIECES WHICH CANNOT BE PRACTICALLY WRAPPED IN A TUBE, WITH A FLAT SHEET OR SPLIT LENGTH OF POLYETHYLENE TUBE. PASS THE SHEET UNDER THE APPURTENANCE AND BRING AROUND THE BODY. MAKE SEAMS BY BRINGING THE EDGES TOGETHER, FOLDING TWICE, AND TAPING DOWN. HANDLE SLACK WIDTH AND OVERLAP AT JOINTS AS DESCRIBED IN ASTM A 674-00 SECTION 5.2.1. TAPE POLYETHYLENE SECURELY IN PLACE AT VALVE STEM AND OTHER PENETRATIONS.



SD-12
POLYETHYLENE TUBE WRAP FOR DUCTILE IRON PIPE
2020 PRESSURE PIPE

SD-13 SERVICE CONNECTIONS ON POLYETHYLENE WRAPPED PIPE



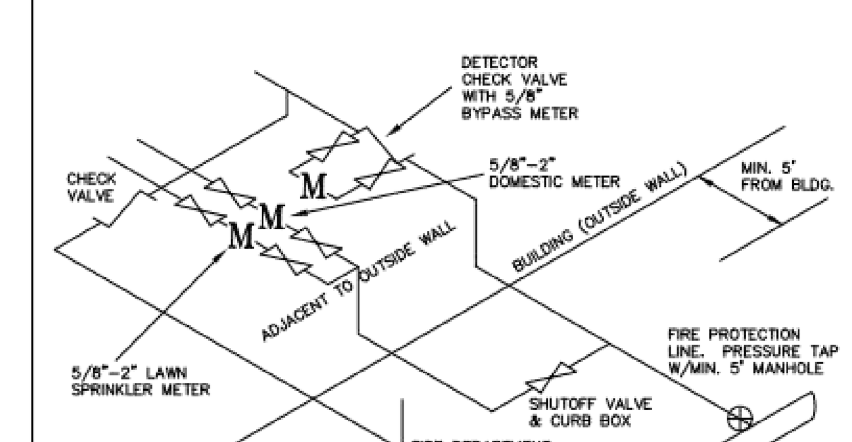
1. WRAP THREE LAYERS OF POLYETHYLENE ADHESIVE TAPE COMPLETELY AROUND THE PIPE TO COVER THE AREA WHERE THE TAPPING MACHINE AND CHAIN WILL BE MOUNTED.

2. MOUNT THE TAPPING MACHINE ON THE PIPE AREA COVERED BY THE POLYETHYLENE TAPE. THEN MAKE THE TAP AND INSTALL THE CORPORATION STOP DIRECTLY THROUGH THE TAPE AND POLYETHYLENE.

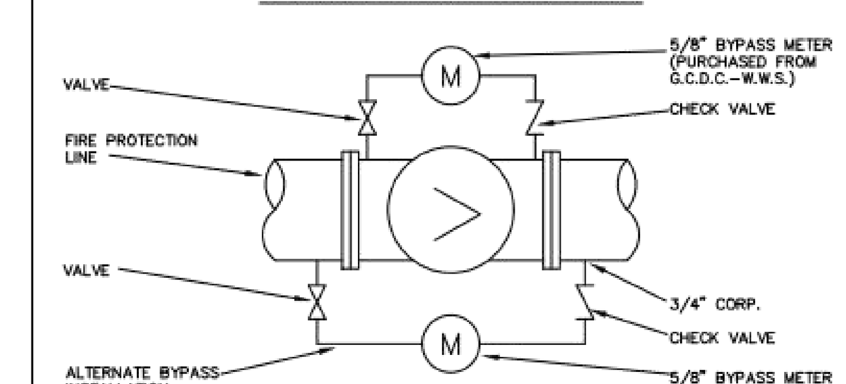
3. AFTER MAKING THE DIRECT SERVICE CONNECTION, INSPECT THE ENTIRE CIRCUMFERENTIAL AREA FOR DAMAGE AND MAKE ANY NECESSARY REPAIRS.

SD-13
SERVICE CONNECTIONS ON POLYETHYLENE WRAPPED PIPE
2020 (WATERMAIN ONLY) PRESSURE PIPE

SD-14 FIRE SUPPRESSION LINE VALVE & METER INSTALLATION



FIRE PROTECTION LINE VALVE & METER INSTALLATION



DETECTOR CHECK VALVE DETAIL

NOTE
DETECTOR CHECK VALVE SHALL BE TAPPED AT FACTORY FOR BYPASS METER.

SD-14
FIRE SUPPRESSION LINE VALVE & METER INSTALLATION
2020 (WATERMAIN ONLY) PRESSURE PIPE

SD-15 3/4" TO 2" WATER SERVICE CONNECTIONS

NOTES

1. WATER SERVICE LEADS SHALL BE TUNNELED UNDER EXISTING PAVEMENTS.

2. THE LOCATION OF ALL SERVICE CURB BOXES SHALL BE MARKED WITH A 3/8" X 12" STEEL ROD PLACED 1' BELOW THE GROUND SURFACE ALONG WITH WITNESS POINTS SUPPLIED BY GCDC-WWS. THE 2" X 4" X 10' MARKER SHALL BE EXTENDED FROM THE INVERT OF THE SERVICE CONNECTION TO A MINIMUM OF 4' ABOVE THE PROPOSED GRADE.

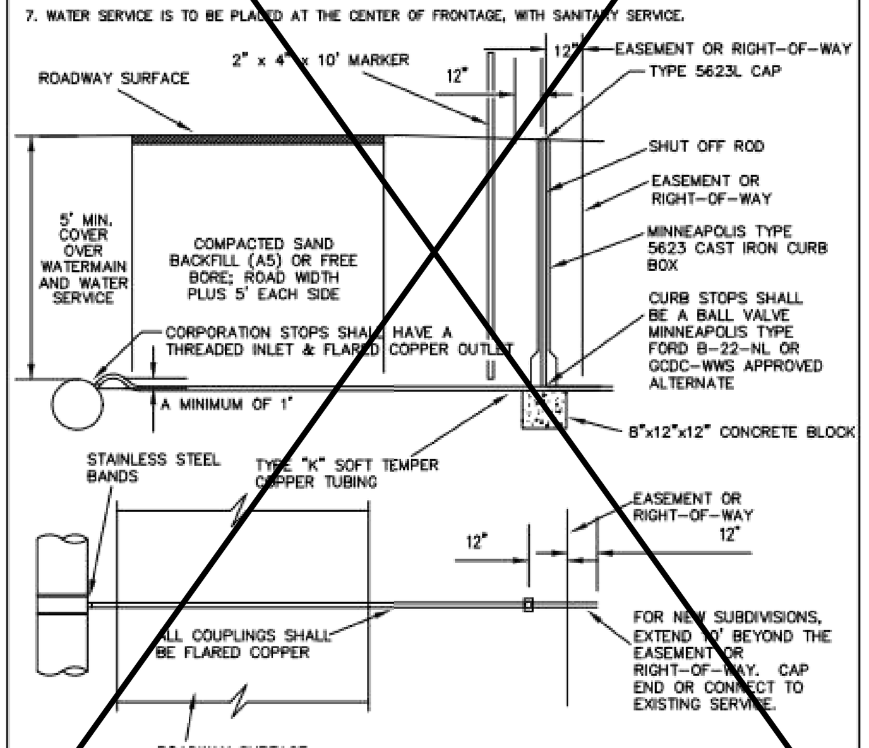
3. THE VALVE BOX SHALL BE EITHER DUCTILE IRON OR CAST IRON AND A MINIMUM OF 6' IN LENGTH. NO PLASTIC CURB BOXES SHALL BE ALLOWED.

4. CURB STOPS SHALL BE BALL VALVES FOR 3/4", 1", 1-1/2", AND 2" DIAMETERS WITH COPPER TO COPPER CONNECTIONS AND LEAD FREE ACCORDING TO NSF/ANSI STANDARD 372.

5. THE CORPORATION SHALL BE FORD FB700-NL OR GCDC-WWS APPROVED ALTERNATE. USE BRASS DOUBLE SADDLES WITH STAINLESS STEEL BANDS FOR 1-1/2" AND 2" TAPS. SADDLES SHALL BE FORD 202B OR GCDC-WWS APPROVED ALTERNATE. ALL APPURTENANCES THAT COME IN CONTACT WITH POTABLE WATER SHALL BE LEAD FREE ACCORDING TO NSF/ANSI STANDARD 372.

6. IF THE PUBLIC WATERMAIN IS ON AN EASEMENT, THE CURB STOP SHALL BE PLACED AT THE EDGE OF THE EASEMENT CLOSEST TO THE BUILDING TO BE SERVED.

7. WATER SERVICE IS TO BE PLACED AT THE CENTER OF FRONTAGE, WITH SANITARY SERVICE.



SD-15
3/4" TO 2" WATER SERVICE CONNECTIONS
2020 (WATERMAIN ONLY) PRESSURE PIPE

SD-16 FIRE HYDRANT DETAIL

NOTES

1. THE PUMPER NOZZLE SHALL FACE THE STREET AND PROVIDE A MINIMUM OF 7.5 FEET, MEASURED FROM THE NOZZLE, CLEAR OF ANY OBSTRUCTIONS.

2. SET THE HYDRANT GRADE LINE AT PROPOSED GRADE OR AS FIELD DIRECTED.

3. SET THE VALVE BOX COVER FLUSH WITH THE EXISTING/PROPOSED GRADE LEVEL.

4. ALL WORK FROM THE CENTERLINE OF THE MAIN, TO AND INCLUDING THE HYDRANT, SHALL BE PAID FOR BY THE UNIT PRICE BID ITEM FOR HYDRANTS.

5. ALL JOINTS SHALL BE RESTRAINED BY GCDC-WWS APPROVED RESTRAINED JOINTS IN ADDITION TO THRUST BLOCKS.

6. HYDRANT BARRELS ARE TO BE PAINTED YELLOW. CAPS WILL BE COLOR CODED TO MAIN SIZE: 6"-FIRE ENGINE RED, 8"-ALLAS CHALMERS ORANGE, 10" AND 12"-JOHN DEERE GREEN, 16" AND 20" -UPS BROWN, 24" AND GREATER-ROYAL BLUE. THE PAINT SHALL BE BRUSHED, NOT SPRAYED.

7. 90 DEGREE HYDRANT TEES ARE APPROVED WHERE SPACE REQUIREMENTS ARE LIMITED.

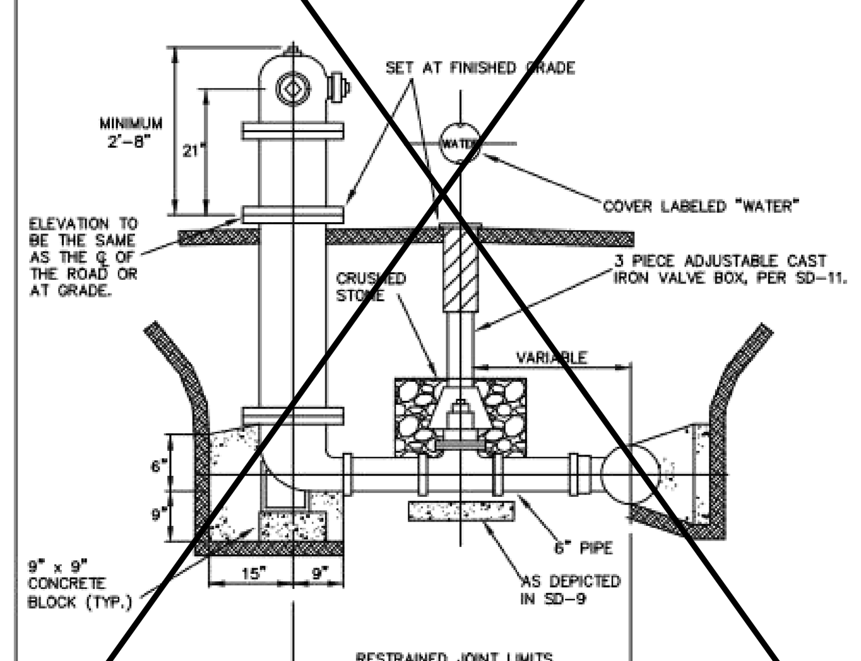
8. HYDRANT DRAIN SHALL BE PERMANENTLY SEALED AT THE FACTORY WITH A BRONZE PLUG.

9. HYDRANTS SHOULD BE PLACED AT PROPERTY CORNERS AND WITHIN THE R.O.W. WHEN POSSIBLE.

10. LOCAL MUNICIPALITIES MAY REQUIRE STORZ FITTINGS. REFER TO PROJECT PLANS AND SPECIFICATIONS FOR SIZE AND TYPE.

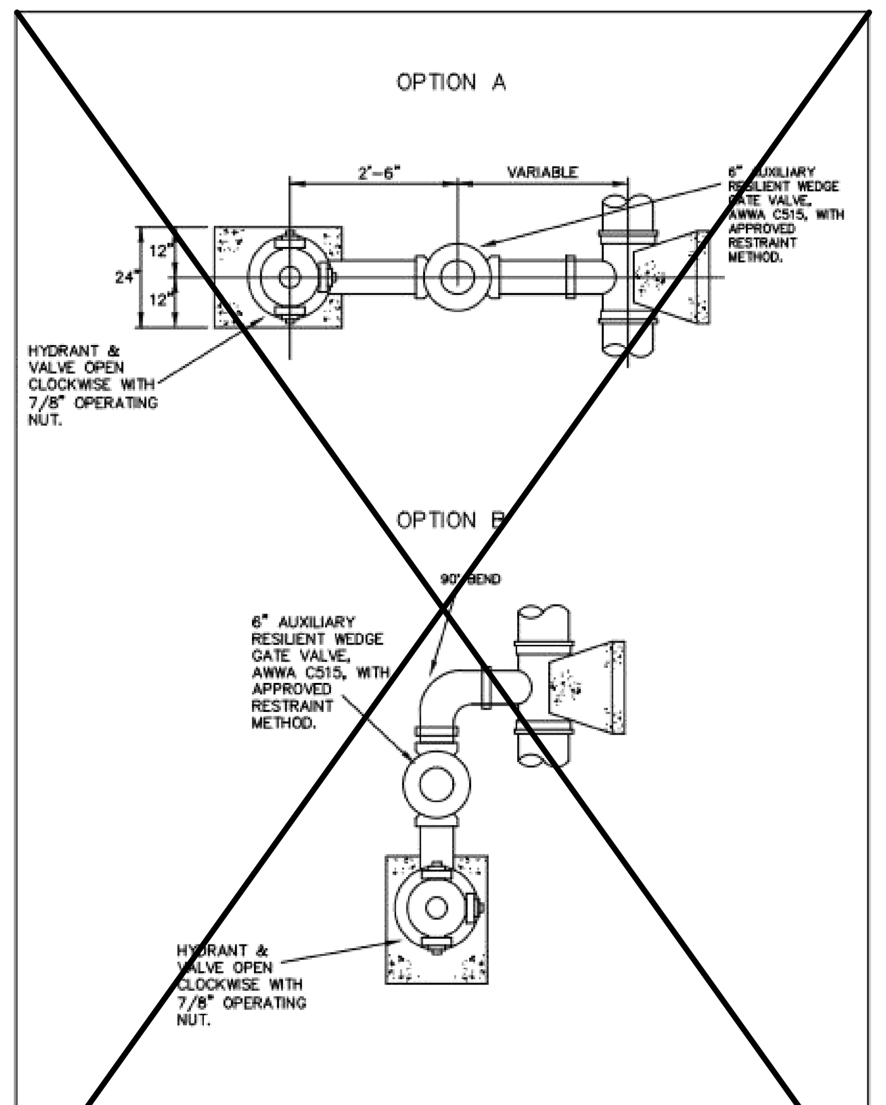
11. ALL JOINTS SHALL BE RESTRAINED.

12. THE HEIGHT ADJUSTMENTS SHALL NOT EXCEED ONE FOOT.



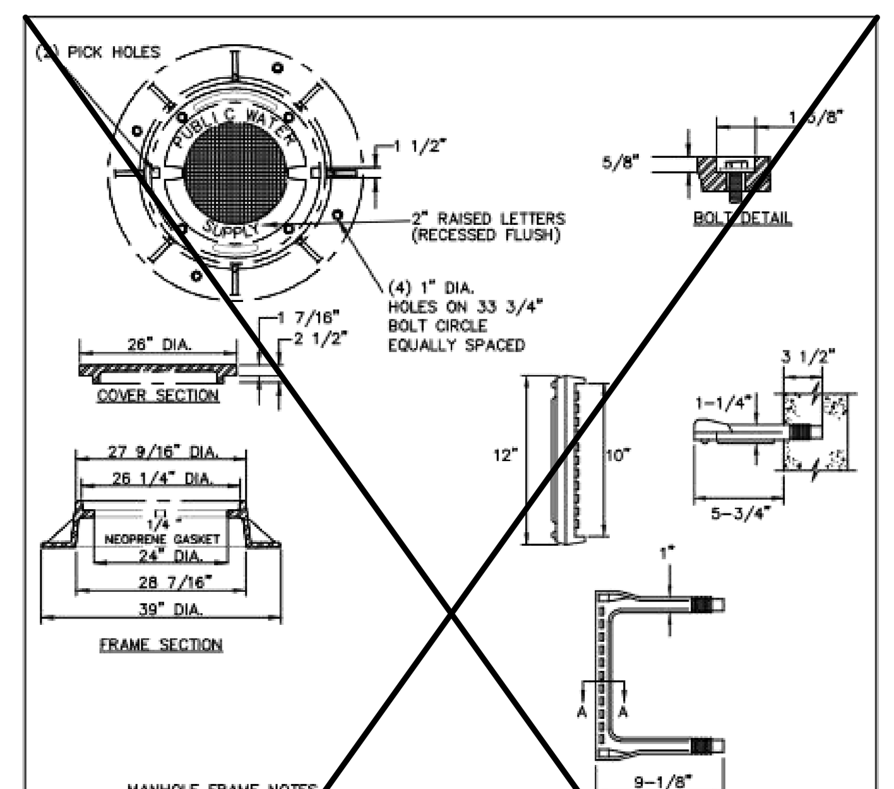
SD-16
FIRE HYDRANT DETAIL
2020 (WATERMAIN ONLY) PRESSURE PIPE

SD-17 HYDRANT INSTALLATION LAYOUT



SD-17
HYDRANT INSTALLATION LAYOUT
2020 (WATERMAIN ONLY) PRESSURE PIPE

SD-18 MANHOLE FRAME, COVER & STEP



MANHOLE FRAME NOTES

1. THE MANHOLE FRAME SHALL HAVE FOUR 7/8" ANCHOR BASE FLANGE HOLES WITH BOLT CIRCLE TO MATCH MANHOLE CONE.

2. ALL BEARING SURFACES SHALL BE MACHINED.

3. MANHOLE FRAMES AND COVERS SHALL BE BOLT DOWN WATER TIGHT: EAST JORDAN IRON WORKS, INC. #1040 TYPE A SOLID, NEENAH FOUNDRY CO. #R-1916-F, OR GCDC-WWS APPROVED ALTERNATE.

4. THE WORD "PUBLIC WATER SUPPLY" SHALL BE CAST IN THE CENTER OF THE COVER.

5. MANHOLE COVERS SHALL BE BOLTED TO THE FRAME WITH FOUR 1/2"-13 NC HEX HEAD STAINLESS STEEL BOLTS AND WASHERS WITH RUBBER GASKETS

MANHOLE STEP NOTES

1. MANHOLE STEPS SHALL BE CAST INTEGRALLY WITH PRECAST MANHOLE.

2. MANHOLE STEPS SHALL BE COPOLYMER POLYPROPYLENE PLASTIC WITH 1/2" STEEL REINFORCEMENT.

3. MANHOLE STEPS SHALL BE M.A. INDUSTRIES PS-1-PF, AMERICAN STEP CO. ML-10, OR GCDC-WWS APPROVED ALTERNATE.

SD-18
MANHOLE FRAME, COVER & STEP
2020 PRESSURE PIPE

SEE THE GRAND BLANC TOWNSHIP PRESSURE PIPE CONSTRUCTION STANDARD DETAILS FOR REVISIONS TO THE VOIDED DETAILS.

NO.	DATE	DESCRIPTION
1	2020	EIGHTH EDITION

DIVISION OF WATER & WASTE SERVICES

PRESSURE PIPE CONSTRUCTION

STANDARD DETAILS

For the Construction of Sanitary Sewers & Watermain in Genesee County

GENESEE COUNTY WWS DRAIN COMMISSIONER

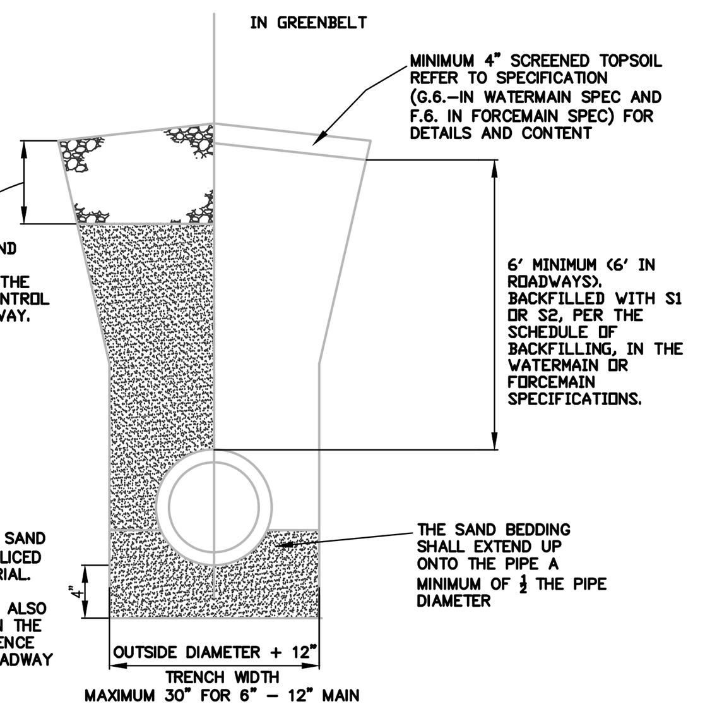
R:\Projects\08C0002\dwg\Miscellaneous\Grand Blanc Township Standard Detail Sheets\2022 Updated Sheets\GBT Revised Pressure Pipe 2022-Interim.dwg
PLOTTED: 1/6/2023 10:09 AM

THESE DETAILS REPLACE DETAILS ON THE GCDC-WWS STANDARD DETAILS.

GBT-1 PRESSURE PIPE BEDDING AND BACKFILL

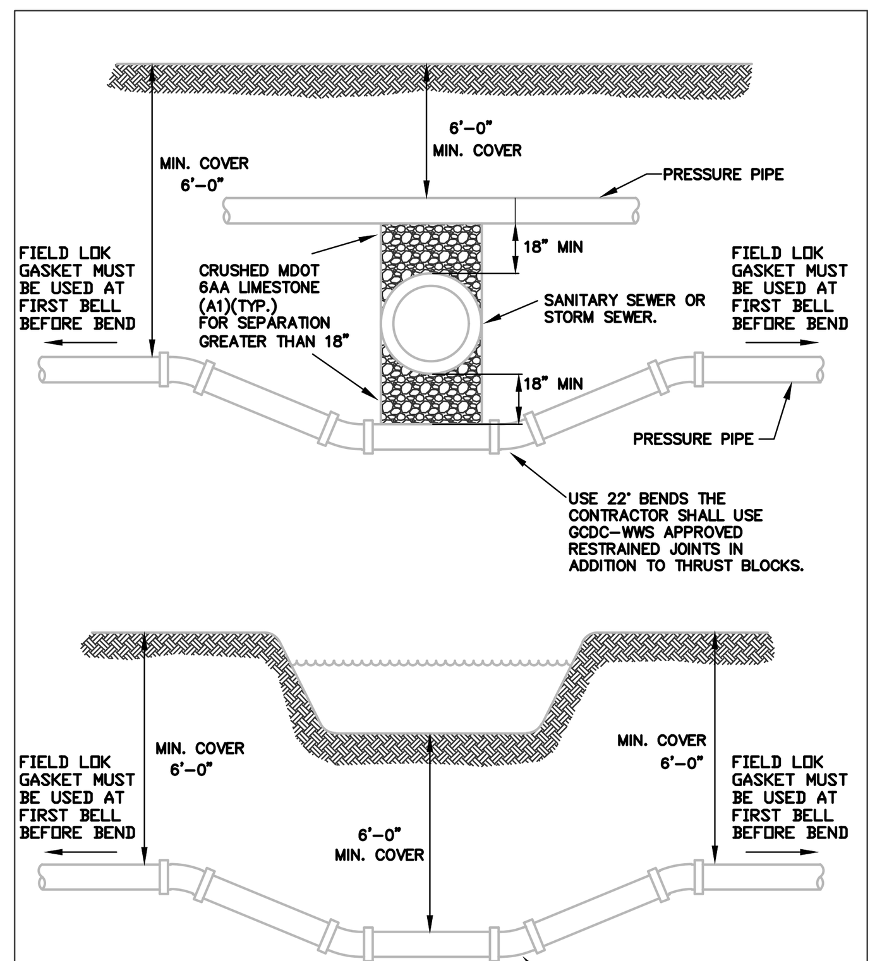
NOTES

1. PLACE AGGREGATE MATERIAL ON THE COMPACTED SAND BACKFILL (A5) FOR ALL DRIVES, ROAD SHOULDERS, PARKING LOTS OR OTHER HARD SURFACED AREAS PER THE APPROVED PLANS.
2. THE CONTRACTOR SHALL COMPACT THE SAND BACKFILL (A5) TO 95% OF THE MATERIAL UNIT WEIGHT BY MODIFIED PROCTOR ACROSS ALL ROADWAYS AND DRIVES PER THE SCHEDULE OF BACKFILLING IN THE SPECIFICATIONS. THIS INCLUDES SERVICE LEADS UNLESS BORED. THE CONTRACTOR SHALL DO THE TESTING WITH THE RESULTS SUBMITTED TO GCDC-WWS PRIOR TO FINAL TESTING.
3. WHERE THE GROUND ELEVATION AT THE TRENCH LINE IS ABOVE THE ELEVATION OF THE CENTERLINE OF THE ROAD, THE CONTRACTOR SHALL INSTALL THE PRESSURE PIPE 6' BELOW THE ELEVATION OF THE ROAD. THE EXTRA DEPTH SHALL BE NOTED ON THE AS-BUILT DRAWINGS.
4. FOR ADDITIONAL CONSIDERATION OF PIPE ZONE EMBEDMENT CONDITIONS, SEE THE MOST CURRENT VERSION OF AWWA C600 STANDARD.
5. THE ENGINEER SHALL REVIEW AND ADJUST PIPE THICKNESS DESIGN RECOMMENDATIONS IN THE MOST CURRENT VERSION OF AWWA C151/A21.51 STANDARD FOR ADDITIONAL DEPTHS OF COVER.
6. STONE BEDDING (A1) IS REQUIRED IN ALL AREAS OF DEWATERING.



GBT-1
PRESSURE PIPE BEDDING AND BACKFILL
2022 PRESSURE PIPE

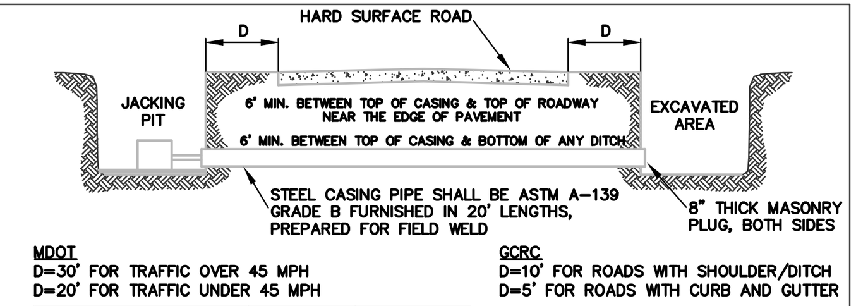
GBT-6 WATERMAIN BURY AT COUNTY DRAIN, DITCH, OR STREAM



NOTE:
THE DESIGN ENGINEER SHALL DETERMINE THE ACTUAL ELEVATION OF THE DRAIN BOTTOM IN THE FIELD AND PLACE IT ON THE PLAN AND PROFILE VIEW. CONCRETE ENCASEMENTS OR CRADLES SHALL BE INSTALLED WHERE SHOWN ON THE PLANS OR AS DIRECTED BY THE ON-SITE GRAND BLANC TOWNSHIP DPW PERSONNEL.

GBT-6
WATERMAIN BURY AT COUNTY DRAIN, DITCH, OR STREAM
2022 PRESSURE PIPE

GBT-7 BORE & JACK CONSTRUCTION ON ALL ROADS

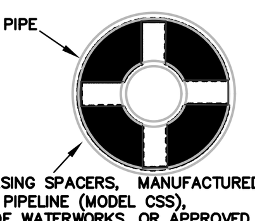


MDOT
D=30' FOR TRAFFIC OVER 45 MPH
D=20' FOR TRAFFIC UNDER 45 MPH

GCRC
D=10' FOR ROADS WITH SHOULDER/DITCH
D=5' FOR ROADS WITH CURB AND GUTTER

SIZE AND MATERIAL	MIN. CASING DIA. O.D. INCHES	MIN. WALL THICKNESS INCHES
8" D.I. PRESSURE PIPE OR SMALLER	20.00	0.375
10"-12" D.I. PRESSURE	20.00	0.375
16" D.I. PRESSURE PIPE	24.00	0.375
18"-24" D.I. PRESSURE	30.00	0.406

***ALLOWED ONLY UNDER ROADS NO RAILROADS



1. ALL BORE AND JACK OPERATIONS WITHIN THE ROAD R.O.W. WILL REQUIRE A PERMIT FROM THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS.
2. THE CONTRACTOR SHALL ABIDE BY ALL SAFETY PRECAUTIONS INCLUDING THE LATEST EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, PART 6 AS REQUIRED BY THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS.
3. THE CONTRACTOR SHALL PROTECT AND RESTORE ALL PROPERTY.
4. THE CONTRACTOR SHALL NAME THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS AS AN ADDITIONAL NAMED INSURED FOR CONTINGENT LIABILITY FOR THE PROPOSED CONSTRUCTION.
5. THE CONTRACTOR SHALL ABIDE BY ALL CONDITIONS STATED IN THE GCRC MEMO OF 9-1-75 LABELED SANITARY SEWER AND WATERMAIN INSTALLATION WITHIN THE LIMITS OF COUNTY HIGHWAYS OR THE REQUIREMENTS OF THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS.
6. THE SHEETING OF THE FRONT FACE OF THE BORE PIT WILL BE REQUIRED IF UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED.
7. THE AUGER MUST ALWAYS PROCEED THE CASING PIPE HEAD.
8. THE CONTRACTOR SHALL NOTIFY THE AGENCY HAVING AUTHORITY OVER THE ROADWAYS/RAILROADS A MINIMUM OF 72 HOURS PRIOR TO BEGINNING CONSTRUCTION.
9. THE ENDS OF THE CASING PIPE SHALL BE BULK HEADED WITH AN 8" WATER TIGHT MASONRY BULKHEAD.
10. CASING SIZES MIGHT NEED TO BE INCREASED IN LOCATIONS USING RESTRAINED JOINTS.
11. PRESSURE PIPE SHALL HAVE RESTRAINED JOINTS THROUGH THE CASING PIPE.

* WITH DUCTILE BOTLESS RESTRAINT, CONTRACTOR MUST VERIFY CASING SIZE CAN CARRY PIPE.

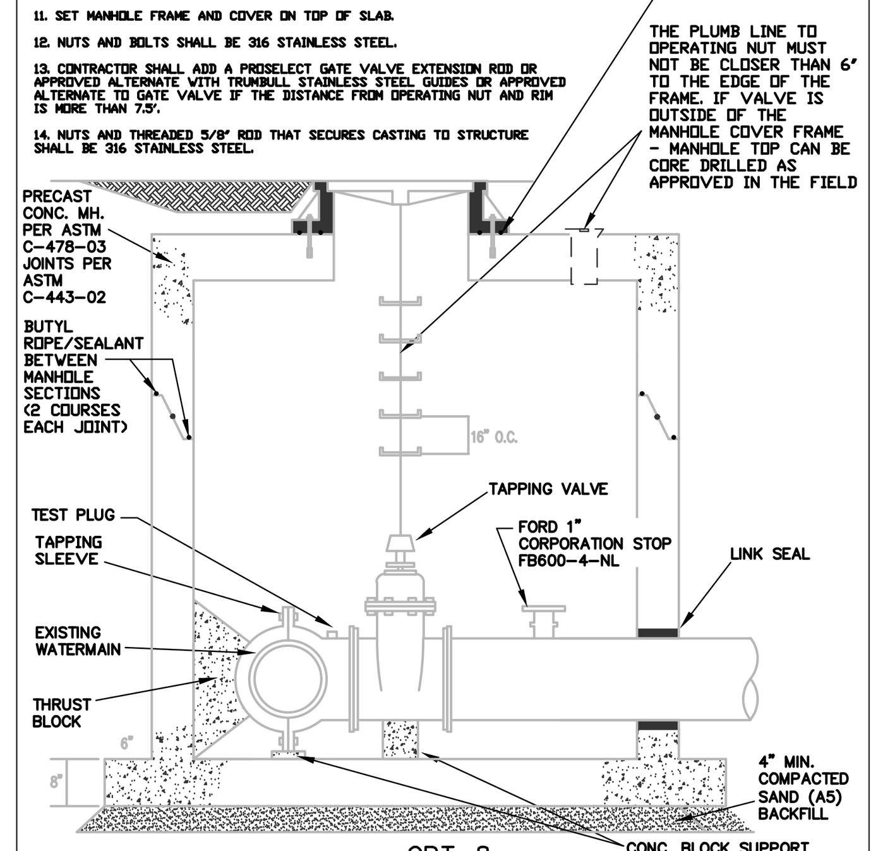
GBT-7
BORE & JACK CONSTRUCTION ON ALL ROADS
2022 PRESSURE PIPE

GBT-8 PRESSURE TAPPING SLEEVE AND VALVE

NOTES

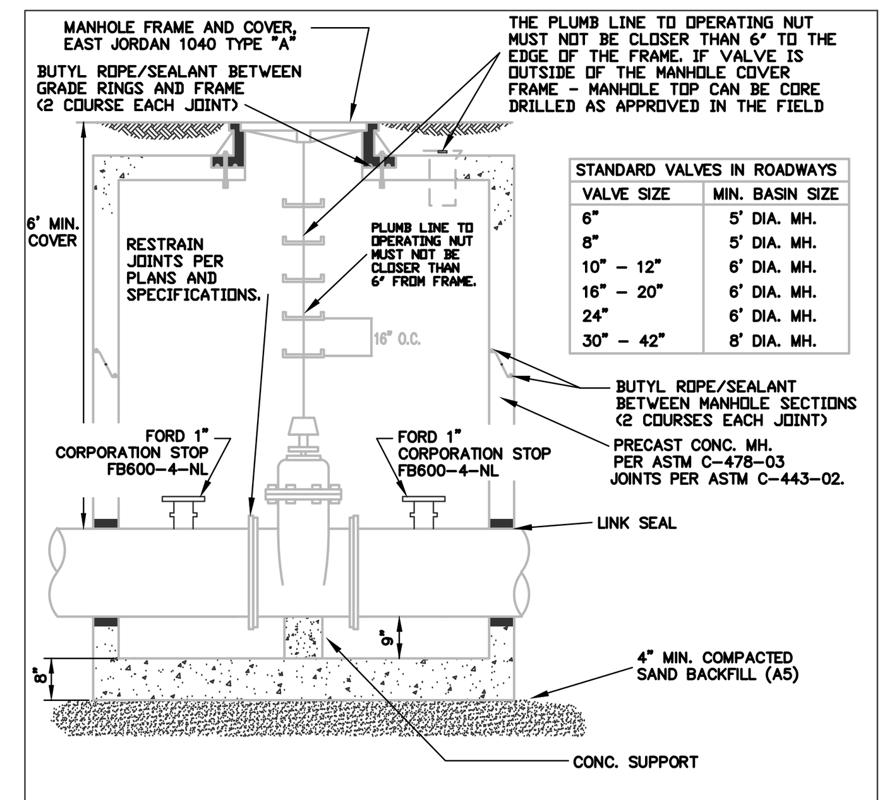
1. ALL PRESSURE TAPS MUST BE INSTALLED IN A CONCRETE VALVE MANHOLE.
2. ALL TAPPING SLEEVES SHALL BE MECHANICAL JOINT BY FLANGED OUTLET, ALL STAINLESS STEEL, BUILT IN TWO SECTIONS.
3. APPROVED ALL STAINLESS STEEL MECHANICAL JOINT SLEEVE; ROMAC SST, FORD FAST-XXX-X-Q-U STYLE, OR APPROVED ALTERNATE.
4. THE OUTLET FLANGE IS CLASS 125 ANS/B16.1.
5. THE TAPPING TEE SHALL HAVE A BUILT-IN TEST PLUG.
6. THE GASKET FOR MAINLINE SHALL BE MADE FOR THE PIPE MATERIAL IN PLACE, DUCTILE IRON CLASS 52-54.
7. THE VALVE SHALL BE FLANGED BY RESTRAINED JOINT.
8. THE VALVE SHALL HAVE OVER SIZED SEAT RINGS TO PERMIT ENTRY OF THE TAPPING MACHINE CUTTERS.
9. THE VALVE SHALL MEET ALL REQUIREMENTS OF THE MOST CURRENT VERSION OF AWWA C515 STANDARD.
10. THE TOP OPENING SHALL BE CENTERED ON THE VALVE OPERATING NUT. IF TECH TOP CANNOT BE CENTERED OVER THE VALVE, THE TOP OF THE MANHOLE CAN BE CORE DRILLED AND A VALVE BOX CAN BE INSTALLED (MIN. 1 SECTION). THE INSTALLATION SHALL BE WATERTIGHT WITH BUTYL INSTALLED AS NEEDED FOR A WATERPROOF SYSTEM.
11. SET MANHOLE FRAME AND COVER ON TOP OF SLAB.
12. NUTS AND BOLTS SHALL BE 316 STAINLESS STEEL.
13. CONTRACTOR SHALL ADD A PROSELECT GATE VALVE EXTENSION ROD OR APPROVED ALTERNATE WITH TRUMBULL STAINLESS STEEL GUIDES OR APPROVED ALTERNATE TO GATE VALVE IF THE DISTANCE FROM OPERATING NUT AND RIM IS MORE THAN 7.5'.
14. NUTS AND THREADED 5/8" ROD THAT SECURES CASTING TO STRUCTURE SHALL BE 316 STAINLESS STEEL.

PRESSURE TAPPING & CUT-IN SLEEVES AND VALVES	
SLEEVE SIZE	MIN. BASIN SIZE
12" & SMALLER	5' DIA. MH.
16"	6' DIA. MH.
20"-24"	8' DIA. MH.
LARGER	CONSULT GCDC-WWS



GBT-8
PRESSURE TAPPING SLEEVE AND VALVE
2022 PRESSURE PIPE

GBT-9 IN-LINE GATE VALVE



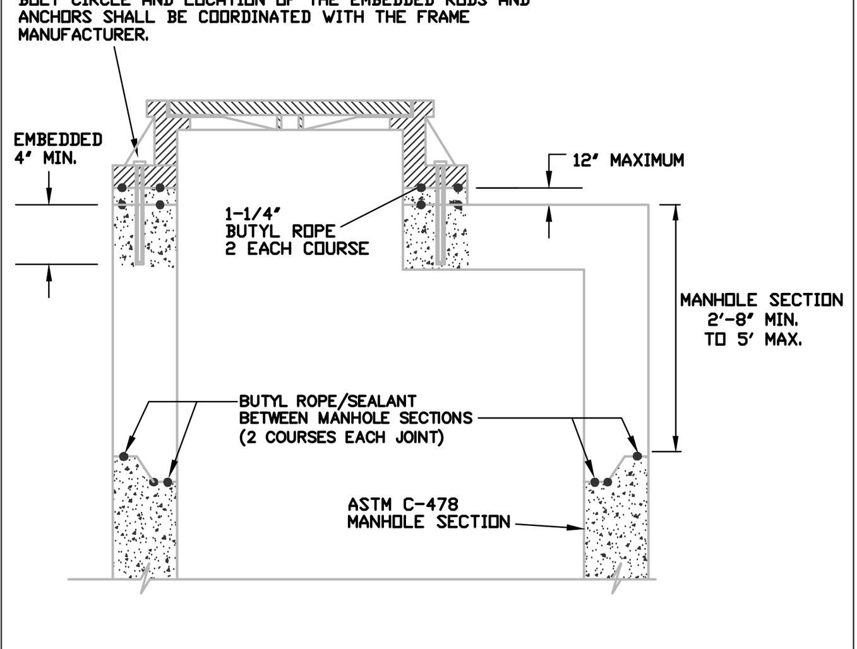
STANDARD VALVES IN ROADWAYS	
VALVE SIZE	MIN. BASIN SIZE
6"	5' DIA. MH.
8"	5' DIA. MH.
10" – 12"	6' DIA. MH.
16" – 20"	6' DIA. MH.
24"	6' DIA. MH.
30" – 42"	8' DIA. MH.

1. ALL GATE VALVES SHALL BE IN A GATE WELL MANHOLE, EXCEPT VALVES THAT ARE 6" AND SMALLER THAT ARE ON DOMESTIC SERVICES FOR A STRUCTURE AND FIRE HYDRANTS.
2. CENTER THE OPERATING NUT IN THE MIDDLE OF THE FRAME AND COVER.
3. RESILIENT SEATED WEDGE GATE VALVES ARE MANDATORY UP TO 20". BUTTERFLY VALVES ARE ACCEPTABLE FOR SIZES 24" AND LARGER. SEE SD-9.
4. TWO CONCRETE ADJUSTING RINGS ARE ALLOWED WITH A TOTAL MAXIMUM ADJUSTMENT OF 9".
5. LINK SEALS ARE REQUIRED FOR ALL PIPE CONNECTIONS TO MANHOLE.
6. CONTRACTOR SHALL ADD A PROSELECT GATE VALVE EXTENSION ROD OR APPROVED ALTERNATE WITH TRUMBULL STAINLESS STEEL STEM GUIDES OR APPROVED ALTERNATE TO GATE VALVE, IF THE DISTANCE FROM OPERATING NUT AND RIM OF CASTING IS MORE THAN 7.5'.
7. NUTS AND THREADED 5/8" ROD THAT SECURES CASTING TO STRUCTURE SHALL BE 316 STAINLESS STEEL.

GBT-9
IN-LINE GATE VALVE
2022 PRESSURE PIPE

GBT-9A GATE WELL MANHOLE FRAME & ADJUSTMENT

4 STAINLESS STEEL ANCHORS SHALL BE EMBEDDED INTO THE MANHOLE SECTION. 4 STAINLESS STEEL, THREADED 5/8" RODS WITH WASHERS SHALL BE PLACED INTO THE ANCHORS. FIELD CUT THE RODS TO THE PROPER LENGTH (1/2" MAX). THE BOLT CIRCLE AND LOCATION OF THE EMBEDDED RODS AND ANCHORS SHALL BE COORDINATED WITH THE FRAME MANUFACTURER.

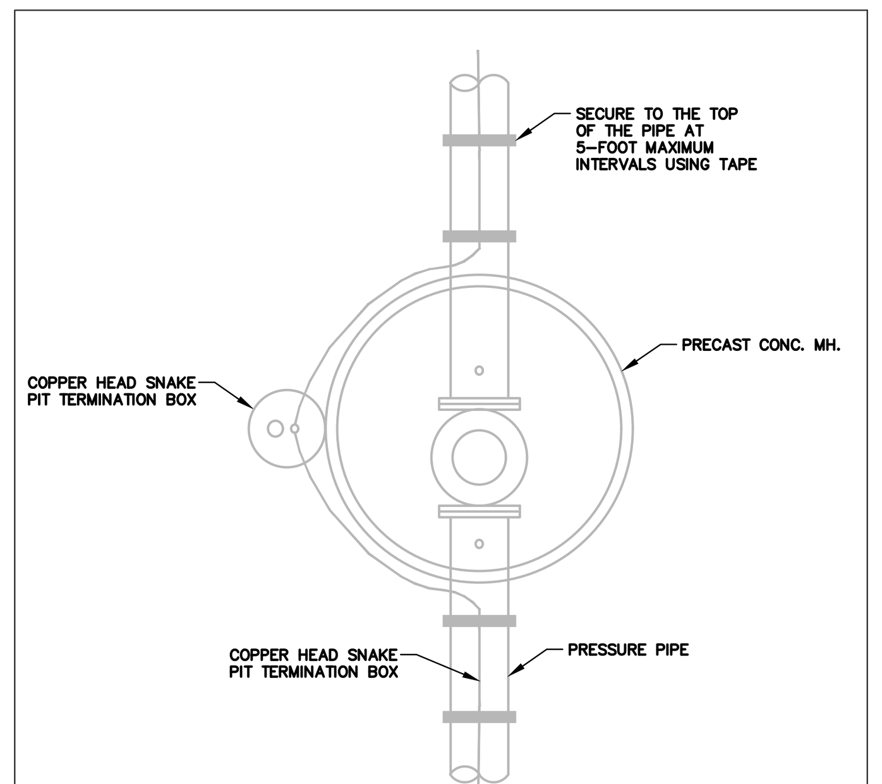


NOTES

1. DURING THE FINAL INSPECTION, FINAL ADJUSTMENT SHALL BE AS DIRECTED BY GRAND BLANC TOWNSHIP DPW. MAXIMUM ADJUSTMENT ALLOWED SHALL BE 9". THE USE OF BLOCK OR BRICK FOR ADJUSTMENT SHALL NOT BE PERMITTED.
2. PERMISSIBLE GRADE RING SIZES FOR MANHOLE ADJUSTMENT SHALL BE 3", 4", OR 6", AS REQUIRED, TO FINISH GRADE. NOTE: A MAXIMUM OF TWO GRADE RINGS WILL BE ALLOWED.
3. THE CONTRACTOR SHALL USE AN APPROVED 1-1/4" PRE-FORMED BUTYL RUBBER JOINT SEALANT BETWEEN GRADE RING, MANHOLE FRAME, & MANHOLE SECTION.

GBT-9A
GATE WELL
MANHOLE FRAME & ADJUSTMENT
2022 PRESSURE PIPE

GBT-9B TRACER WIRE AT GATE WELL



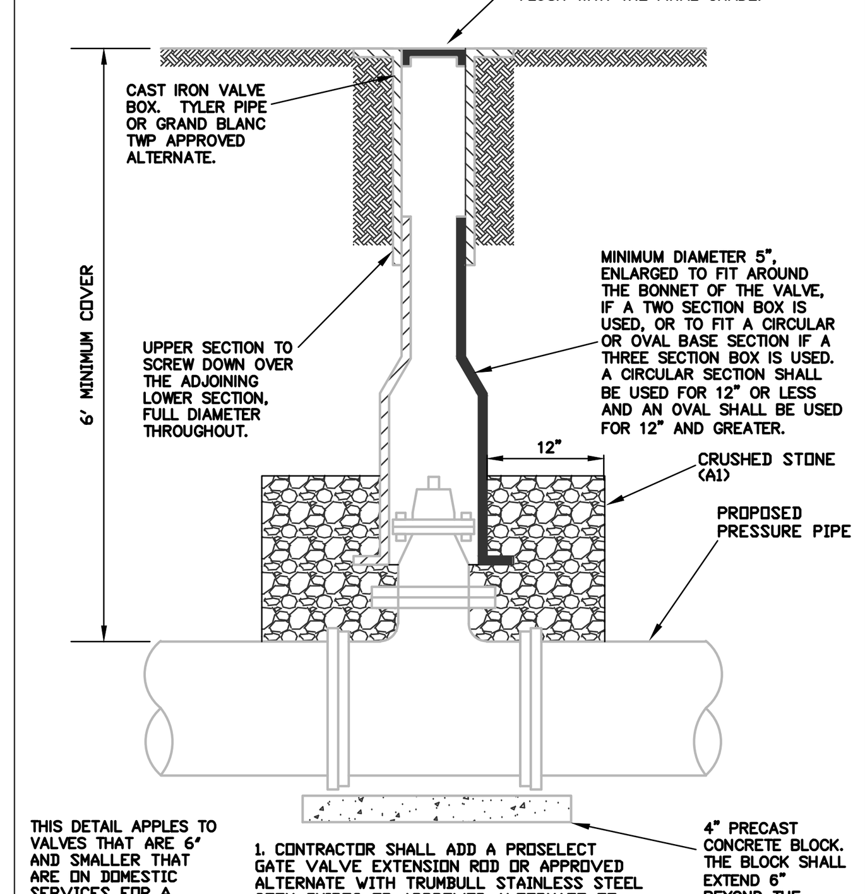
NOTES

1. TERMINATION BOX SHALL BE COPPER HEAD SNAKEPIT ROADWAY WITH SINGLE-TERMINAL CAST IRON LID #RB14*TP.
2. TERMINATION BOX SHALL BE SET ON CRUSHED STONE (A1) BASE FOR PROPER SUPPORT.

GBT-9B
TRACER WIRE AT GATE WELL
2022 PRESSURE PIPE

GBT-11 HYDRANT VALVE DETAIL

1. ALL BURIED VALVES NOT ENCLOSED IN A VALVE VAULT SHALL BE POLYETHYLENE ENCASED. SEE SD-12.
2. A PRECAST CONCRETE BLOCK SHALL BE PLACED UNDER THE ENTIRE VALVE.
3. VALVES SHALL BE EJ 8500 SERIES DOMESTIC, TYLER UNION 6800 SERIES DOMESTIC, OR APPROVED GRAND BLANC TOWNSHIP ALTERNATE.



THIS DETAIL APPLES TO VALVES THAT ARE 6" AND SMALLER THAT ARE ON DOMESTIC SERVICES FOR A STRUCTURE AND FIRE HYDRANTS.

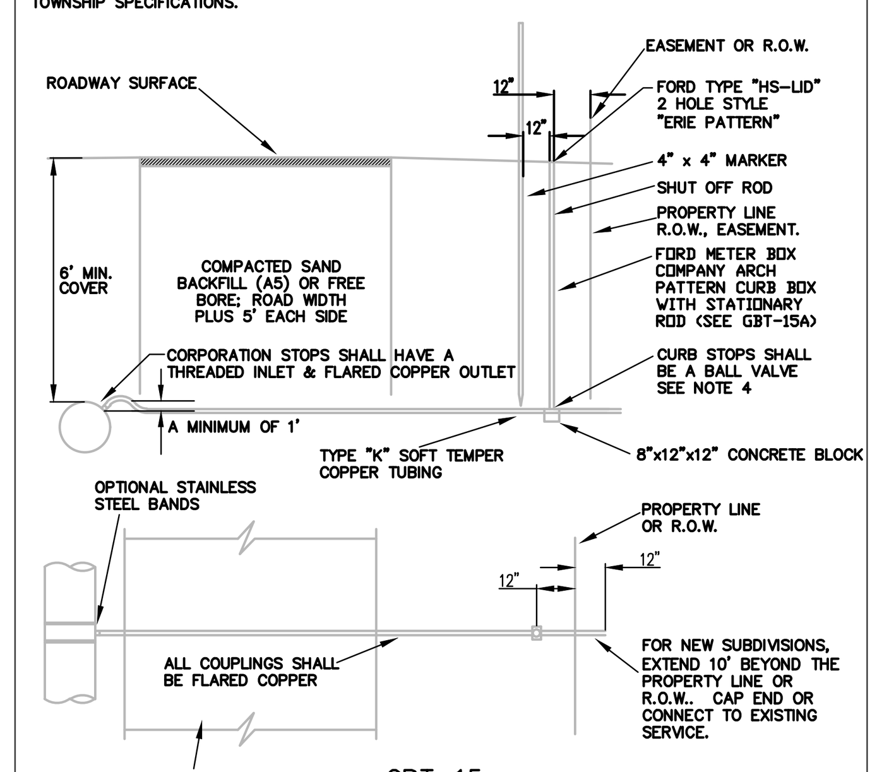
1. CONTRACTOR SHALL ADD A PROSELECT GATE VALVE EXTENSION ROD OR APPROVED ALTERNATE WITH TRUMBULL STAINLESS STEEL STEM GUIDES OR APPROVED ALTERNATE TO GATE VALVE, IF THE DISTANCE FROM OPERATING NUT AND RIM OF CASTING IS MORE THAN 7.5'.

GBT-11
HYDRANT VALVE DETAIL
2022 PRESSURE PIPE

GBT-15 1" TO 2" WATER SERVICE CONNECTIONS

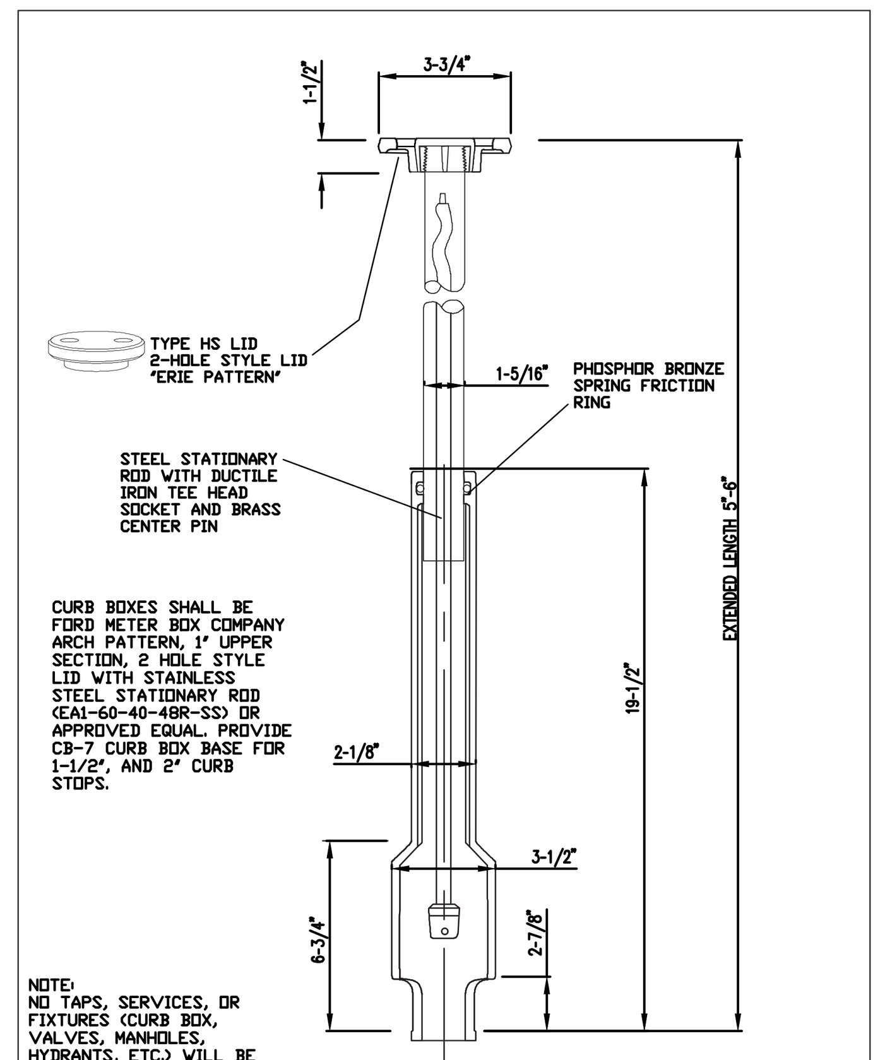
NOTES

1. WATER SERVICE SHALL BE TUNNELED UNDER EXISTING PAVEMENTS.
2. THE LOCATION OF ALL SERVICE CURB BOXES SHALL BE MARKED WITH A 3/8" X 12" STEEL ROD PLACED 1" BELOW THE GROUND SURFACE ALONG WITH WITNESS POINTS SUPPLIED BY GRAND BLANC TOWNSHIP DPW. THE 2" X 4" X 10' MARKER SHALL BE EXTENDED FROM THE INVERT OF THE SERVICE CONNECTION TO A MINIMUM OF 4' ABOVE THE FINISHED GRADE. THE MARKER SHALL BE PAINTED BLUE FOR ALL WATER SERVICES NOT CONNECTED TO THE BUILDING.
3. FOR 1" WATER SERVICE CURB BOX DETAILS SEE GBT-15A. FOR 1-1/2" TO 2" WATER SERVICE CURB BOX DETAILS SEE GBT-15B.
4. CURB STOPS SHALL BE BALL VALVES AND MUST BE FORD METER BOX COMPANY:
   1" - B22-444-NL
   1.5" - B22-666-NL
   2" - B22-777-NL
5. CORPORATION STOPS SHALL BE 1", 1.5" OR 2". CORPORATION STOPS MUST BE FROM THE FORD METER BOX COMPANY.
   1" - FB600-4-NL
   1.5" - FB600-6-NL
   2" - FB600-7-NL ADD FORD METER BOX APPROVED BRASS SADDLES WITH OR WITHOUT STAINLESS BANDS CATALOG NUMBER; 202BS-XXX-XXX STYLE OR 202B-XXX-XXX STYLE.
6. SERVICE FITTING/UNIONS SHALL BE THE FOLLOWING AND MUST BE FROM THE FORD METER BOX COMPANY.
   1" - FORD C22-44-NL
   1.5" - FORD C22-66-NL
   2" - FORD C22-77-NL
   FLARED THREE PART COUPLINGS MUST BE USED WHEN ADDING LENGTH TO TYPE "K" COPPER SERVICE FROM THE MAIN TO THE CURB STOP AND FROM THE CURB STOP TO THE FIRST FITTING INSIDE OF THE STRUCTURE, WHICH ALSO MUST BE FLARED.
7. IF THE PUBLIC WATERMAIN IS ON AN EASEMENT, THE CURB STOP SHALL BE PLACED AT THE EDGE OF THE EASEMENT CLOSEST TO THE BUILDING TO BE SERVED.
8. WATER SERVICE IS TO BE PLACED AT THE CENTER OF FRONTAGE, WITH SANITARY SERVICE.
9. ALL APPURTENANCES THAT COME IN CONTACT WITH POTABLE WATER SHALL BE LEAD FREE ACCORDING TO NSF/ANSI STANDARD 372.
10. NO TAPS, SERVICES, OR FIXTURES (CURB BOX, VALVES, MANHOLES, HYDRANTS, ETC.) WILL BE PERMITTED IN/UNDER A DRIVEWAY OR SIDEWALK AREA.
11. ANY WATER SERVICE THAT IS OVER 100 FEET IN LENGTH (135 FEET FOR LONG-SIDE TAPS), FROM WATER MAIN TO THE OUTSIDE OF THE WALL OF THE STRUCTURE, OR OUTSIDE OF NORMAL OPERATING CONDITIONS, MAY REQUIRE THE INSTALLATION OF A WATER METER PIT LOCATED AT THE ROAD RIGHT-OF-WAY/PROPERTY LINE, AT THE PROPERTY OWNER'S EXPENSE, ACCORDING TO CURRENT TOWNSHIP SPECIFICATIONS.



GBT-15
1" TO 2" WATER SERVICE CONNECTIONS
2022 (WATERMAIN ONLY) PRESSURE PIPE

GBT-15A 1" WATER SERVICE CURB BOX

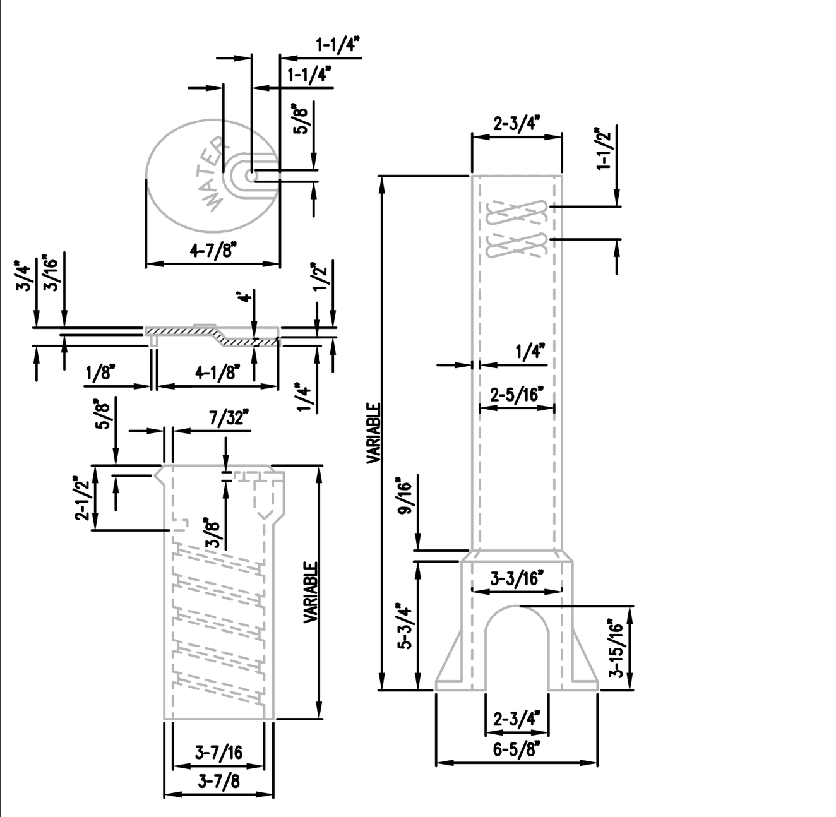


CURB BOXES SHALL BE FORD METER BOX COMPANY ARCH PATTERN, 1" UPPER SECTION, 2 HOLE STYLE LID WITH STAINLESS STEEL STATIONARY ROD (EA1-60-40-48R-SS) OR APPROVED EQUAL. PROVIDE CB-7 CURB BOX BASE FOR 1-1/2", AND 2" CURB STOPS.

NOTE:
NO TAPS, SERVICES, OR FIXTURES (CURB BOX, VALVES, MANHOLES, HYDRANTS, ETC.) WILL BE PERMITTED IN/UNDER A DRIVEWAY OR SIDEWALK AREA.

GBT-15A
1" WATER
SERVICE CURB BOX
2022 PRESSURE PIPE

GBT-15B 1-1/2" TO 2" WATER SERVICE CURB BOX

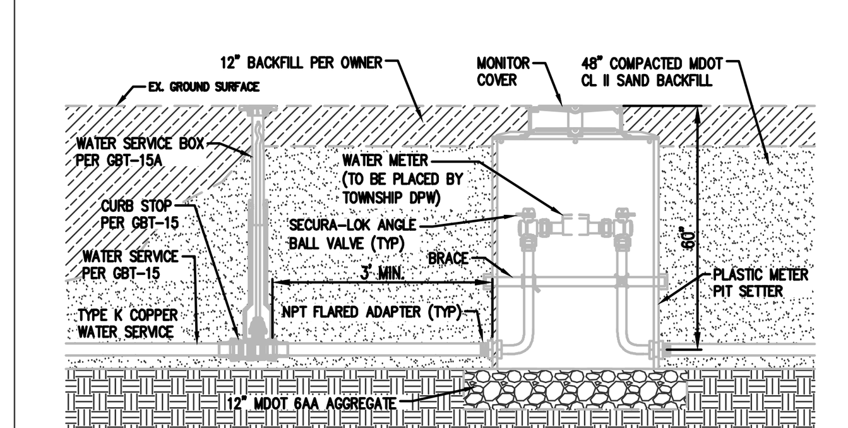


NOTES

1. SERVICE BOX SHALL BE TYLER UNION 6500 SCREW TYPE 1-FF (30T&27B&#154 EXT) UPC 147459.
2. THE ASPHALTIC BITUMINOUS COATING SHALL BE APPLIED TO A MINIMUM THICKNESS OF 1.5 MIL AND THE COATING ONCE DRY SHALL BE NEITHER BRITTLE WHEN COLD OR STICKY WHEN EXPOSED TO THE SUN.

GBT-15B
1-1/2" TO 2" WATER
SERVICE CURB BOX
2022 PRESSURE PIPE

GBT-15C PLASTIC METER PIT SETTER FOR 3/4" AND 1" METERS

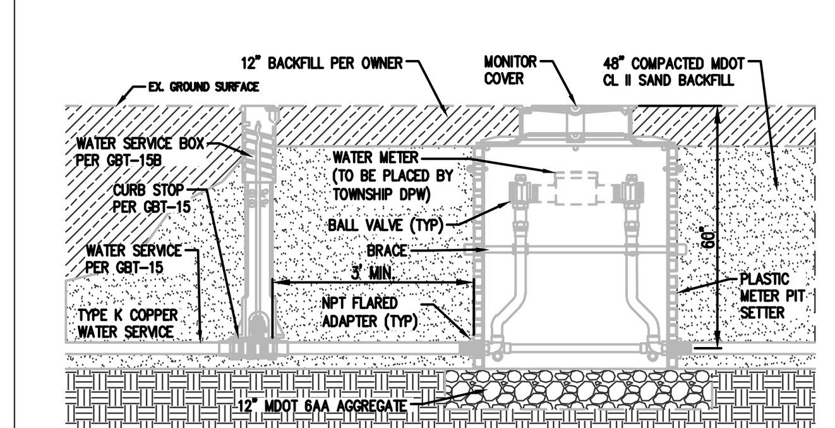


Notes:

1. Meter pits shall be Ford Meter Box Company as follows:
   • 3/4" meters shall be PMBB-222-24C-60-FP-SB2-NL with Monitor Cover with locking electronic meter read lid with plastic inner lid. Provide C2143NL NPT to Flare couplings (2 total).
   • 1" meters shall be PMBB-422-24C-60-FPNASB2NL with Monitor Cover with locking electronic meter read lid with plastic inner lid. Provide C2144NL NPT to Flare couplings (2 total).
2. All meter pits shall be purchased from Grand Blanc Township DPW.
3. Meters pits shall be set in greenbelts and shall not be placed in paved areas.
4. Grand Blanc Township DPW shall observe the complete water service and meter pit installation. The contractor shall provide 24 hours minimum notice prior to completing any work.
5. The customer side of the meter pit must be plumbed to a vacuum breaker or isolation valve before the meter will be installed.
6. The water meter valve lock must be in tact and in good working order before the meter will be installed.
7. When the above work is completed, the owner or contractor shall contact the Grand Blanc Township Department of Public Works, (810) 424-2640 for placement of the water meter.
8. Water Meter is to be installed by Grand Blanc Township Personnel Only.
9. Per Ordinance # 1-1-80, Section II, 7.02, when additional trips are required to be made by township personnel to install a meter to a site where the request is made by, or on behalf of, a licensed contractor, an additional charge of Forty Dollars ($40.00) per trip shall be made.

GBT-15C
PLASTIC METER PIT SETTER
FOR 3/4" AND 1" METERS
2022 PRESSURE PIPE

GBT-15D PLASTIC METER PIT SETTER FOR 1 1/2" AND 2" METERS



Notes:

1. Meter pits shall be Ford Meter Box Company as follows:
   • 1 1/2" meters shall be PMBB-622-C16139-001-NL with Monitor Cover with locking electronic meter read lid with plastic inner lid. Provide C2166NL NPT to Flare couplings (2 total).
   • 2" meters shall be PMBB-722-C16139-002-NL with Monitor Cover with locking electronic meter read lid with plastic inner lid. Provide C2177NL NPT to Flare couplings (2 total).
2. All meter pits shall be purchased from Grand Blanc Township DPW.
3. Meters pits shall be set in greenbelts and shall not be placed in paved areas.
4. Grand Blanc Township DPW shall observe the complete water service and meter pit installation. The contractor shall provide 24 hours minimum notice prior to completing any work.
5. The customer side of the meter pit must be plumbed to a vacuum breaker or isolation valve before the meter will be installed.
6. The water meter valve lock must be in tact and in good working order before the meter will be installed.
7. When the above work is completed, the owner or contractor shall contact the Grand Blanc Township Department of Public Works, (810) 424-2640 for placement of the water meter.
8. Water Meter is to be installed by Grand Blanc Township Personnel Only.
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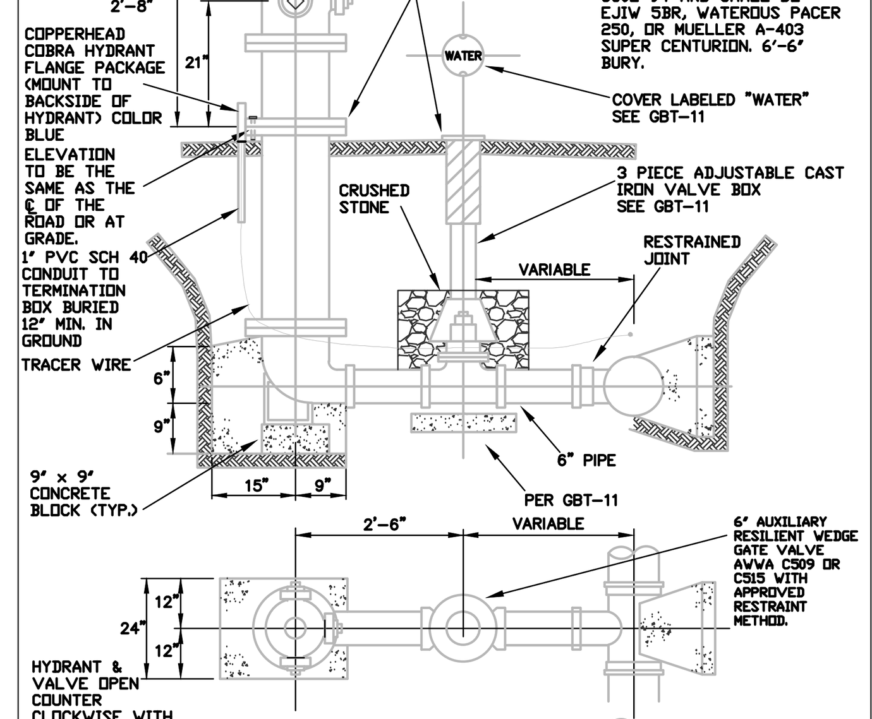
GBT-15D
PLASTIC METER PIT SETTER
FOR 1 1/2" AND 2" METERS
2022 PRESSURE PIPE

GBT-16 FIRE HYDRANT DETAIL

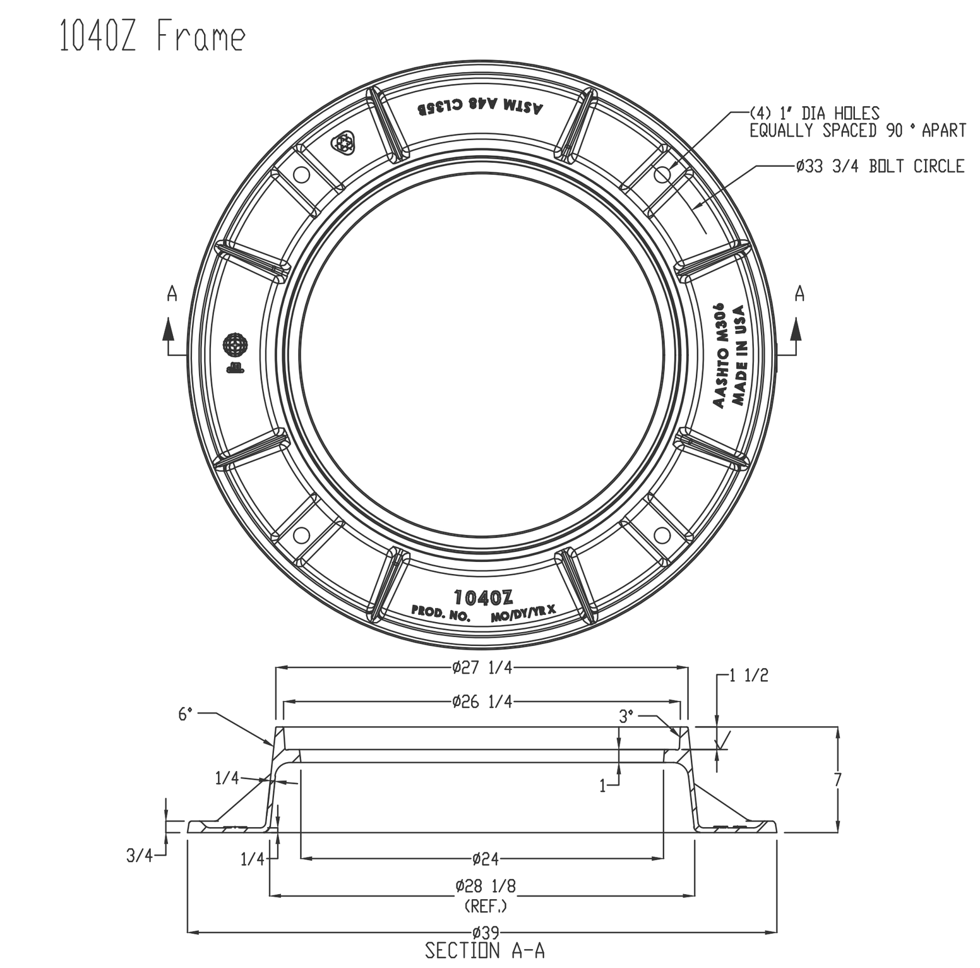
NOTES

1. THE PUMPER NOZZLE SHALL FACE THE STREET. PROVIDE A MINIMUM OF 10 FEET, MEASURED FROM THE NOZZLE, CLEAR OF ANY OBSTRUCTIONS.
2. SET THE HYDRANT GRADE LINE AT PROPOSED GRADE OR AS FIELD DIRECTED.
3. SET THE VALVE BOX COVER FLUSH WITH THE EXISTING GRADE LEVEL.
4. ALL WORK FROM THE CENTERLINE OF THE MAIN, TO AND INCLUDING THE HYDRANT, SHALL BE PAID FOR BY THE UNIT PRICE BID ITEM FOR HYDRANTS.
5. HYDRANT BARRELS ARE TO BE PAINTED RED. CAPS WILL BE COLOR CODED TO MAIN SIZE: 6"-FIRE ENGINE RED, 8"-ALLIS CHALMERS ORANGE, 10" AND 12"-JOHN DEERE GREEN, 16" AND 20" -UPS BROWN, 24" AND GREATER-ROYAL BLUE. THE PAINT SHALL BE BRUSHED AND NOT SPRAYED.
6. 90° HYDRANT TEES ARE APPROVED WHERE SPACE REQUIREMENTS ARE LIMITED.
7. HYDRANT DRAIN SHALL BE PERMANENTLY SEALED AT THE FACTORY WITH A BRONZE PLUG.
8. THE HYDRANT SHOULD BE PLACED AT PROPERTY LINES AND WITHIN THE R.O.W. WHEN POSSIBLE.
9. LOCAL MUNICIPALITIES MAY REQUIRE STORZ FITTINGS. REFER TO PROJECT PLANS AND SPECIFICATIONS FOR SIZE AND TYPE.
10. NO. 12 GAUGE TRACER WIRE TO EXTEND FROM WATERMAIN TO HYDRANT FLANGE TERMINATION BOX. PROVIDE 1" PVC 40 CONDUIT FOR TRACER WIRE PROTECTION FROM TERMINATION BOX, BURIED A MINIMUM 12" INTO THE GROUND.
11. 90 DEGREE SWIVEL X SWIVEL HYDRANT ELL DOMESTIC MANUFACTURED BY TYLER/UNION SHALL BE USED. TEE TO VALVE SHALL BE TYLER/UION 90° SWIVEL X SWIVEL ELL OR 6X24 SWIVEL X SOLID ADAPTER AND VALVE TO HYDRANT SHALL BE TYLER/UION 6X24 SWIVEL X SOLID ADAPTER.



GBT-16
FIRE HYDRANT DETAIL
2022

1040Z Frame



Product Number
00104010
Design Features
-Materials
Gray Iron (CL35B)
-Load Rating
Heavy Duty
-Open Area
n/a
-Coating
Dipped
-√ Designates Machined Surface

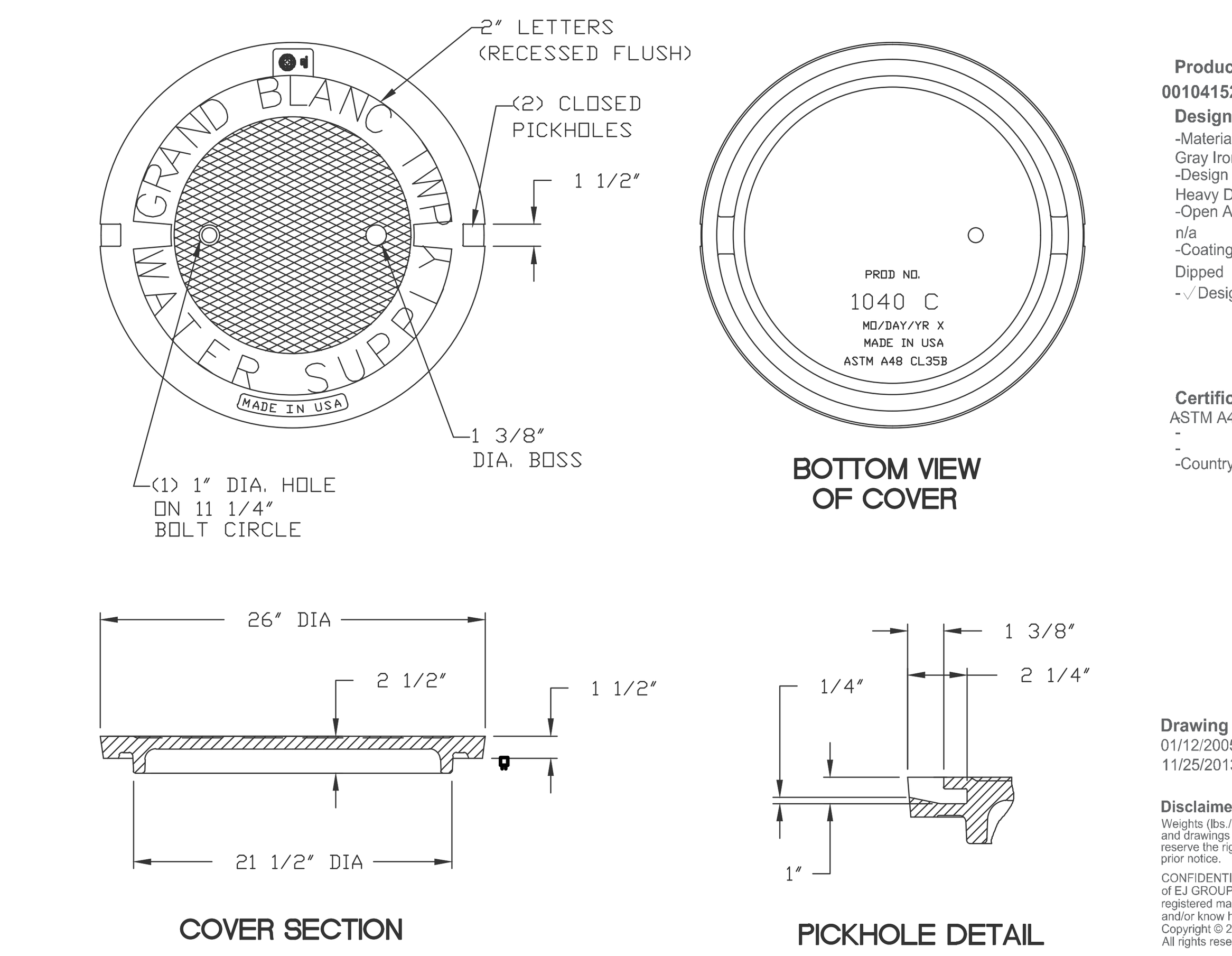
Certification
-ASTM A48
-AASHTO M306
-
-Country of Origin: USA

Drawing Revision
06/05/2008 Designer: JIJ
10/30/2015 Revised By: DEF

Disclaimer
Weights (lbs/kg), dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

Contact
800 626 4653
ejco.com

1040C COVER



Product Number
00104152
Design Features
-Materials
Gray Iron (CL35B)
-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Dipped
-√ Designates Machined Surface

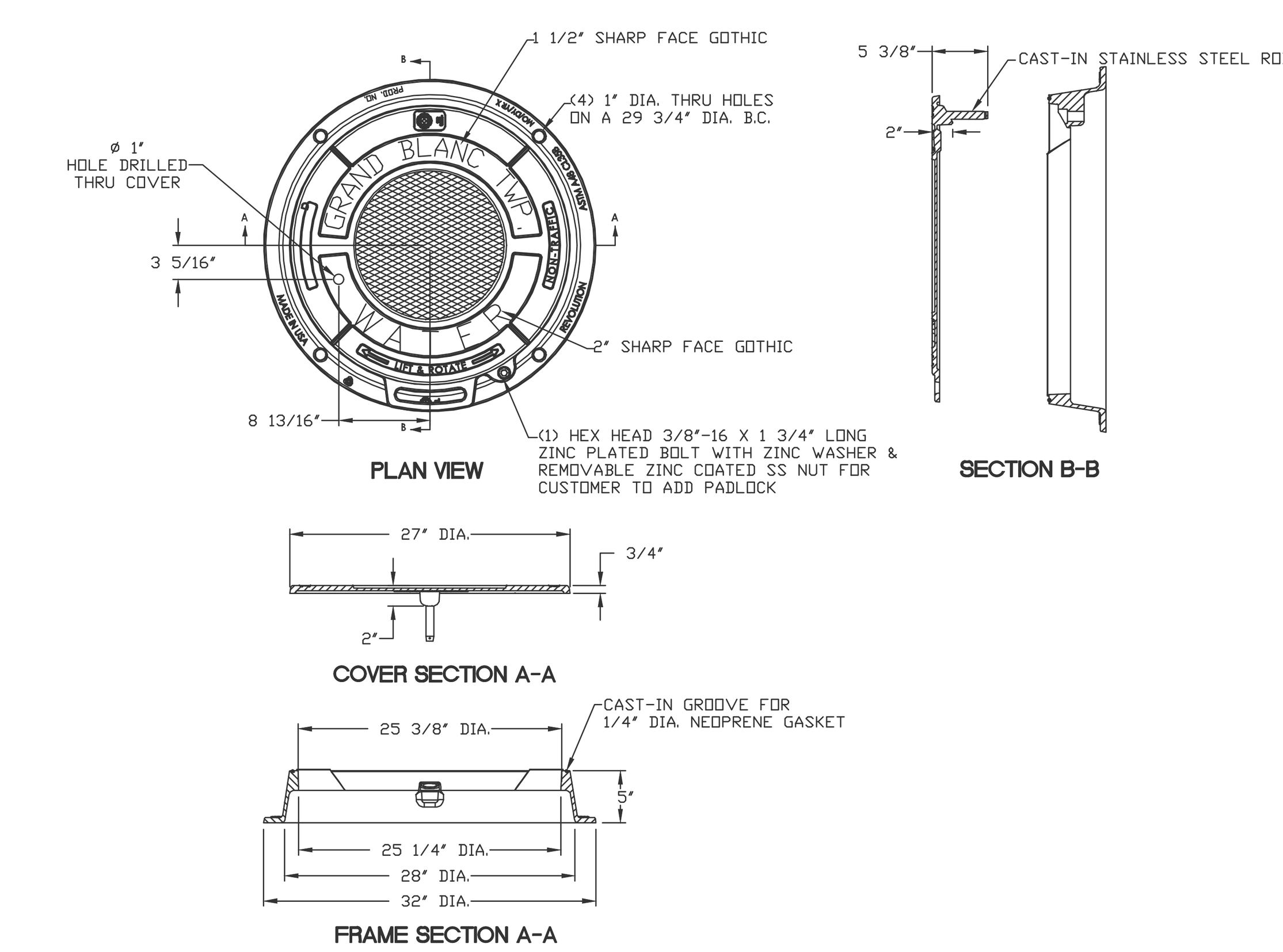
Certification
ASTM A48
-
-
-Country of Origin: USA

Drawing Revision
01/12/2005 Designer: DEW
11/25/2013 Revised By: DVD

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

Contact
800 626 4653
ejco.com

REVOLUTION Assembly



Product Number
00104075R01
Design Features
-Materials
Cover
Gray Iron (CL35B)
Frame
Gray Iron (CL35B)

-Load Rating
Non-Traffic
-Open Area
n/a
-Coating
Dipped
-√ Designates Machined Surface

Certification
- ASTM A48
- ASTM A48
-
-Country of Origin: USA

Major Components
RC00104075
RF240503202

Drawing Revision
11/7/2018 Designer: MAH
11/12/2018 Revised By: MAH

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

Contact
800 626 4653
ejco.com

FRAME AND COVER NOTES:

1. LOCKING BOLT TO PURCHASED FROM GRAND BLANC TOWNSHIP. BOLT SHALL BE MCGARD INTIMIDATOR.
2. REVOLUTION ASSEMBLY FRAME/COVER SHALL BE USED IN NON-TRAFFIC APPLICATIONS WHEN THE ELEVATION DIFFERENCE BETWEEN THE TOP OF THE COVER AND EXISTING GRADE IS GREATER THAN OR EQUAL TO 18 INCHES.

NO.	DATE	DESCRIPTION
	2022	PER GRAND BLANC TOWNSHIP REQUIREMENTS

GRAND BLANC TOWNSHIP
DEPARTMENT OF PUBLIC WORKS

PRESSURE PIPE CONSTRUCTION

STANDARD DETAILS
for the Construction of Sanitary Sewers & Watermain in Grand Blanc Township

GBT A Community in Motion GRAND BLANC TOWNSHIP

R:\Projects\0800002\dwg\Miscellaneous\Grand Blanc Township Standard Detail Sheets\2022 Updated Sheets\GBT Revised Pressure Pipe 2022-Interim.dwg

PLOTTED: 1/6/2023 10:30 AM