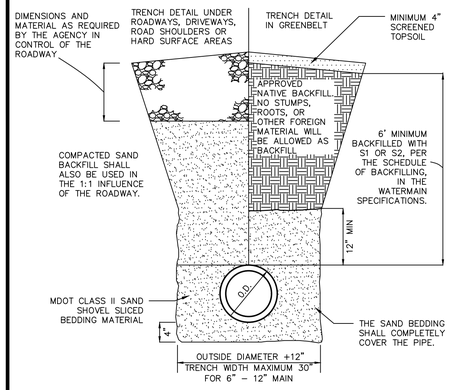
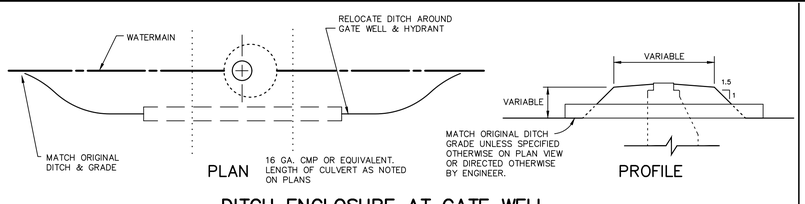
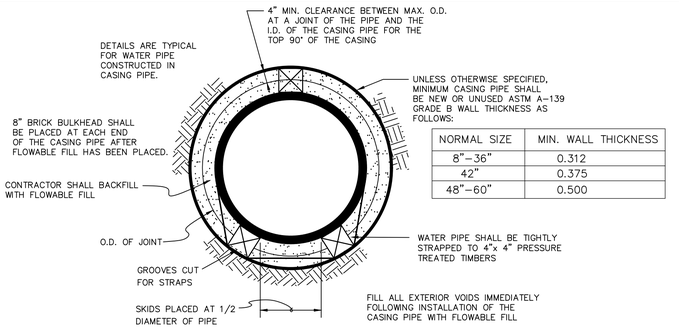


PRESSURE PIPE BEDDING AND BACKFILL

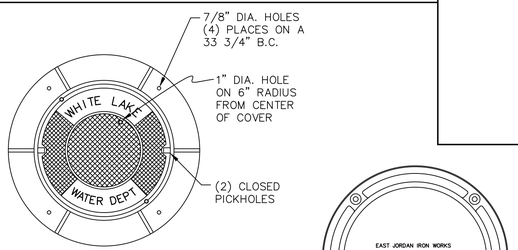


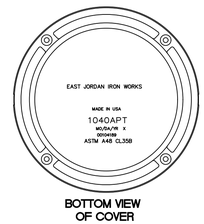
DITCH ENCLOSURE AT GATE WELL



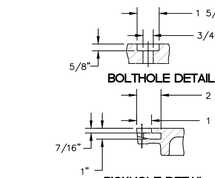
NORMAL SIZE	MIN. WALL THICKNESS
8"–36"	0.312
42"	0.375
48"–60"	0.500

PIPE BARREL SUPPORT FOR WATERMAIN CONSTRUCTED IN CASING

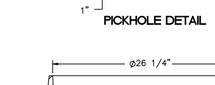




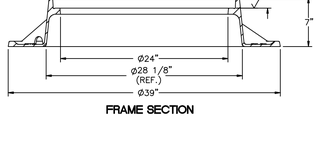
BOTTOM VIEW OF COVER



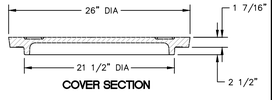
BOLTHOLE DETAIL



PICKHOLE DETAIL

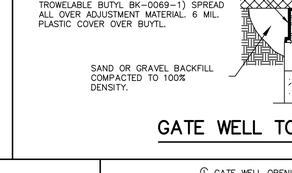


FRAME SECTION

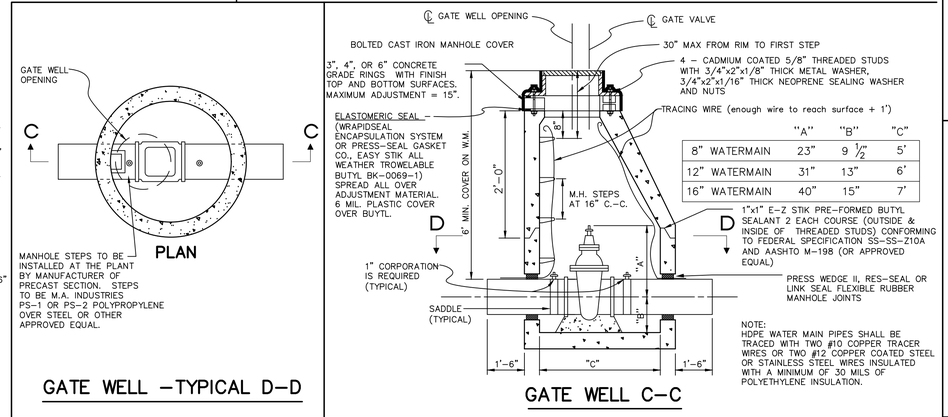


COVER SECTION

GATE WELL COVER & FRAME



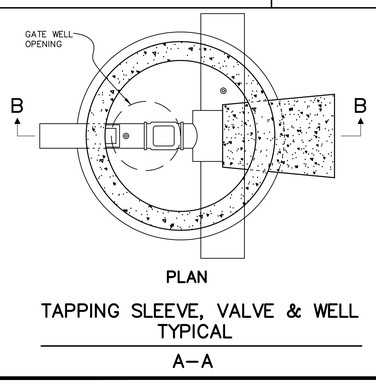
GATE WELL TOPS WITHIN PAVEMENT AREAS



	"A"	"B"	"C"
8" WATERMAIN	23"	9 1/2"	5'
12" WATERMAIN	31"	13"	6'
16" WATERMAIN	40"	15"	7'

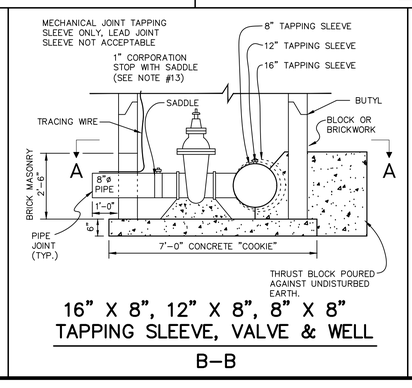
GATE WELL C–C

GATE WELL –TYPICAL D–D



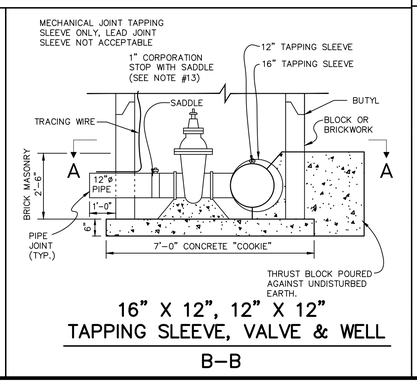
TAPPING SLEEVE, VALVE & WELL TYPICAL

A–A



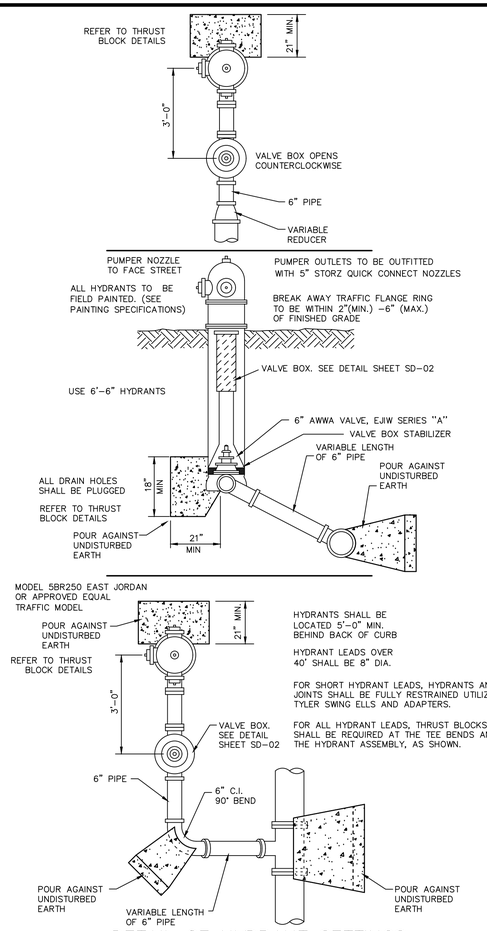
16" X 8", 12" X 8", 8" X 8" TAPPING SLEEVE, VALVE & WELL

B–B



16" X 12", 12" X 12" TAPPING SLEEVE, VALVE & WELL

B–B



DETAIL OF HYDRANT SETTINGS

HYDROPHOBIC ACRYLIC – 2 COAT SYSTEM SPRAY APPLICATION–OVERCOAT

A. Prep: Sand & Scrape to remove loose primer & rust. Clean all visible rust to bare metal using SSPC–SP2 power tool cleaning to bare metal. Feather edges of thick coatings and dull glossy surfaces. Hand wash hydrants with trisodium phosphate (TSP), to remove all dirt, grease and urine. Rinse with clean water. Hydrants must be clean, dry and free of oil, grease and other contaminants prior to priming.
B. Apply a two (2) coat acrylic system to all prepared surfaces.
C. Apply the coating at the following rates:

Coat	Minimum D.F.T	Maximum D.F.T.	Wet Mils Per Coat
Primer (spot)	2.0	4.0	
Intermediate (full)*	2.5	4.0	6.0 10. max.
Topcoat (full)	2.5	4.0	
Total	5.0	8.0	

All over spray to be removed by wiping or power washing

D. The contractor should be advised that the owner or owner's representative will take mil readings on the exterior per SSPC–PA2, which requires gauge adjustment from magnetic plane to peak plane.
E. Paint to be Sherwin Williams "SHER–CRYL HPA" Gloss Safety Red.

HYDRANT PAINTING SPECIFICATIONS

EJ 5BR250 FIRE HYDRANT SPECIFICATIONS

1. Manufacturers shall provide sufficient documentation to assure that their hydrant will successfully meet the latest revisions of AWWA Standard C502. Fire hydrants shall meet all test requirements and be listed by Underwriters Laboratories Inc. and meet the requirements of Factory Mutual.
2. Hydrants shall be of a true compression type, opening against the pressure and closing with pressure. Composition of the main valve shall be a molded rubber having a durometer hardness of 95 +/–5. The main valve shall be (5¼") and not be less than 1" thick.
3. Fire Hydrants shall be two–way in design, having two 4½" pumper outlets with 5" Storz quick connect nozzles. Nozzles shall "thread" clockwise into hydrant barrel utilizing "o" ring pressure seals. A suitable nozzle lock shall be in place to prevent inadvertent nozzle removal. Wedge locks and/or ductile iron retainer rings to secure nozzles shall not be allowed.
4. The lubrication system shall be sealed from the waterway and any external contaminants by use of "o" ring pressure seals. An anti–friction washer shall be in place above the thrust collar to further minimize operating torque. The grease reservoir shall be factory filled with FDA approved non–toxic lubricant.
5. The operating nut shall be a one piece design, manufactured of ASTM b–584 bronze. The operating nut shall be Pentagon in shape, measuring 1¼" point to flat. The operating nut shall be affixed to the bonnet by means of an ASTM b–584 bronze hold down nut. The hold down nut shall be threaded into the bonnet in such a manner as to prevent accidental disengagement during the opening cycle of the hydrant. A resilient weather seal shall be incorporated into the hold down nut, for the purpose of protecting the operating mechanism from the elements.
6. Hydrants shall be Counter Clockwise Open. An arrow shall be cast on top of the hydrant to indicate the opening direction.
7. The hydrant bonnet shall be attached to the upper barrel by no less than six bolts and nuts. All nuts and bolts below grade shall be 304 stainless steel.
8. The hydrant will have min 6'0" of bury, unless otherwise noted.Traffic flange to be set 2" (min.) – 6" (max) above finished grade.
9. Hydrants shall be of the "Traffic Model" design, provided with a safety coupling and flange design that will permit a full 260 degree facing of the nozzles. The safety coupling shall be manufactured of a torque diverting design.
10. Pressure loss through the entire hydrant shall not exceed 2.5 PSI at a flow of 1000 GPM (through a 3 3/4" I.D. pumper nozzle connection) when tested as prescribed in AWWA c–502 latest revision. There shall be no internal obstructions, such as stem supports, between the shoe and the nozzles.
11. The operating stem shall be a two piece design, not less than 1¼" diameter (excluding threaded or machined areas). Screws, pins, bolts, or fasteners used in conjunction with the stem coupling shall also be stainless steel.
12. The inside diameter of the hydrant barrels shall not be less than eight inches (8"), and the hydrant shall be painted to White Lake Township standard painting specifications.
13. The 6" shoe connection shall be 6" MJ., unless stated otherwise, having ample blocking pads for sturdy setting. A minimum of six bolts and nuts is required to fasten the shoe to the lower barrel.

Hydrants shall be EJ5BR250 Water Master.

Failure to comply with any of these above requirements is sufficient cause for rejection of proposed hydrants.

This Township reserves the right to accept only those materials which are in full compliance with these specifications and deemed most advantageous to its interests.

Upon request, supplier shall furnish flow data indicating friction loss in psi at a flow of 1,000 gpm from the pumper nozzle. Such friction loss shall not exceed 2.4 psi.

WATER MAIN NOTES

1. All construction procedures and materials used on this project shall conform to White Lake Township current standards and specifications.

2. All hydrants shall be East Jordan Iron Works 5BR250 traffic model. Self–draining hydrants shall not be used. Valve shall have 1–1/2" pentagon nut and shall open COUNTERCLOCKWISE. Provide two 4.5" pumper outlets with 5" Storz quick connect nozzels (Harrington Integral Hydrant Storz, Model HIHS) as manufactured by Harrington, Inc. of Erie, PA.

3. All hydrants shall be field painted with a heavy coat of bright safety red polyurethane or alkyd gloss enamel, except for the Storz fittings and caps, which shall be left unpainted.

4. All water mains shall be ductile iron pipe Class 54, cement lined with push on joints. Mechanical joints allowed for all fittings, valves, tapping sleeves, hydrants & hydrant valves. Only Cor–Blue bolts shall be used for assembling mechanical joints. All bends, tees, valves and hydrant tees shall have a poured concrete thrust block as detailed on this sheet. Joints which have thrust blocks bearing on soil of questionable stability shall be fully restrained utilizing Tyler swivel fittings and adapters or a system approved by the Township Engineer. HDPE pipe for directional boring, if approved by the Township Engineer, shall meet all of the requirements of EGLE and shall be DR11 (PE4710, 200 psi).

5. All HDPE water main pipes shall be traced with two #10 copper tracer wires or two #12 copper coated steel or stainless steel wires insulated with a minimum of 30 mils of polyethylene insulation.

6. Tapping sleeve shall be mechanical joint or approved equal. Ductile Iron or Stainless steel are allowed.

7. All necessary easements shall be provided in the name of White Lake Township before acceptance of the water distribution system.

8. The design engineer shall furnish White Lake Township with one reproducible sets of "As–Built" water main plans or a PDF file upon completion of the job. Including the coordinates and datum "NAVD 88" of the data.

9. All required cross–connection devices shall be installed as required by the local plumbing inspector and in accordance with the standards of the PA399 Safe Drinking Water Act and Michigan Plumbing Code.

10. Gate well frame and cover shall be as follows: East Jordan heavy manhole cover, base flange type #1040 or Neenah Foundry heavy duty #R–1642 Manhole frame, solid lid cover shall be non–rocking and marked "White Lake Water".

11. Gate Valves shall be ductile iron resilient wedge valves for watermain pipe sixteen inches (16") and smaller in diameter. Resilient seat gate valves shall conform to the most current version of the AWWA C515 standard and contain a two hundred fifty (250) pound working pressure. Gate valve stems shall be high tensile strength, non–rising type with double O–Ring stem seals. The gate valve wedge shall be ductile iron encased in an EPDM rubber covering which shall form the sealing surface and provide sealing in either direction. All gate valves shall open with a COUNTERCLOCKWISE DIRECTION of the two inch (2", LEFT OPEN, BLACK) operating nut. The operating unit shall have a minimum of forty inches (40") of ground cover. Resilient wedge gate valves shall be American Flow Control Series 2500, East Jordan Iron Works Flowmaster Series, Mueller 2360 Series or an approved alternate. All bolts and nuts for the mechanical joints shall be low carbon steel and conform to ASTM A307, Grade B Blue.

12. 1" corporation stops are to placed on the main, at each side of each main line gate valve, at tapping sleeves, and at such other locations as may be required by the engineer.

13. All pipe and fittings shall be subjected to a hydro–static pressure test; Township Engineer must be present. Maximum segment 2000 feet except that longer segments may be tested with allowable leakage based on 2000 feet.

14. Two consecutive safe bacteria samples shall be taken from the water system miniumum 24 hours apart at points established by the Township Engineer. Flush for 24 hours after the chlorination period before taking first sample. Samples shall be taken by the contractor, and delivered to testing facility by the engineer.

15. Filling, flushing and sampling of water main can only be performed with a "Jumper" Line, the jumper shall be equipped with an approved RPZ type of backflow preventer and meter.

16. Adjustments on gate wells shall be limited to 30" maximum from top of rim to first step.

17. All new water service lines shall have a minimum nominal size of 1". Services from 1" to 2" may be type K copper tubing or plastic DR–9 (200 PSI rated) meeting ASTM D2737–03 (Standard Specification for Polyethylene (PE) plastic tubing). ASTM Designation and pressure rating shall be stamped on the pipe by the manufacturer. Plastic pipe shall also meet AWWA C–901 Specifications. All sizes shall relate to the copper tubing outside diameter standard size (CTS). Copper pipe joints shall be flared. Fittings shall adapt to the plastic pipe with compression to iron pipe thread adapter. Plastic pipes shall be either compression style with a steel insert or may be fusion welded in the larger sizes.

Plastic water service pipes shall be traced with two #10 copper tracer wires or two #12 copper coated steel or stainless steel wires insulated with a minimum of 30 mils of polyethylene insulation. The tracer wires shall be terminated to supply line so as to be locatable at the building and the curb box without digging.

Water services sizes greater than 3" shall be Class 54 cement lined ductile iron with push on joints or HDPE DR–9 (200 PSI rated) with fusion welded joints and fittings, DIPS (Ductile Iron Pipe Size).

A stop box shall be installed at the property or easement line and shall be equivalent to an A.Y. McDonald Mfg. 6100 flare regular pattern ball valve. The curb box shall have a 1" riser pipe with an Erie 2–hole pattern cover equivalent to A.Y. McDonald Mfg. 5601L. Stop box shall be protected with a 2"x4" painted blue extending 4 feet above ground.

18. Standard pipe cover shall be 6'–0".

19. Air release manholes shall consist of a standard 5' diameter gate well style structure with a ValMatic Model 25C air release valve mounted on a 1" corporation stop. Air release shall be equipped with the vacuum check option. A 1/2" diameter galvanized pipe air discharge shall be extended to within 12" of the top of the structure. A gooseneck trap shall be installed at the top of the riser to prevent debris & water from entering the valve.

20. PRIOR TO REQUESTING ANY FINAL PRESSURE TESTING AND GATHERING THE REQUIRED BACTERIA SAMPLES (FOR WATERMAIN ONLY), THE CONTRACTOR SHALL PERFORM THE FOLLOWING ITEMS:
A. CONDUCT A PRELIMINARY PRESSURE TEST ON THE SYSTEM.
B. PROVIDE THE RESULTS FROM THE PRELIMINARY TESTS ON THE SYSTEM.

21. PRIOR TO FINAL APPROVAL, THE FOLLOWING ITEMS SHALL BE COMPLETED BY THE CONTRACTOR:
A. FURNISH A COMPLETED TWO–YEAR MAINTENANCE & GUARANTEE BOND.
B. PROVIDE MATERIAL CERTIFICATES.
C. COMPLETE FINAL ADJUSTMENTS OF FIRE HYDRANTS, VALVE BOXES, AND GATE WELLS.
D. PROVIDE RESULTS OF DENSITY CHECKS ON COMPACTED SAND BACKFILL FROM A CERTIFIED TESTING AGENCY.
E. PROVIDE RECORDED COPIES OF ALL EASEMENTS REFLECTING FINAL PROJECT RECORD DOCUMENT LOCATIONS.

22. WATERMAIN SHALL BE TESTED IN ACCORDANCE WITH MOST CURRENT VERSION OF AWWA C600 STANDARD, AND CHLORINATED IN ACCORDANCE WITH THE LATEST AWWA C651 STANDARD SPECIFICATIONS. WATERMAIN SHALL BE TESTED TO 150 PSI AS MEASURED AT THE HIGH POINT IN THE WATER LINE. WATERMAIN CHLORINATION SHALL BE OBSERVED AND MONITORED BY THE LOCAL MUNICIPALITY HAVING JURISDICTION. CHLORINATION AND TESTING SHALL BE AT THE CONTRACTOR'S SOLE EXPENSE. A LETTER OF APPROVAL FROM THE AGENCY HAVING AUTHORITY SHALL BE ISSUED PRIOR TO THE WATER BEING USED FOR HUMAN CONSUMPTION.

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WARNING
UTILITY LOCATIONS ARE NOT CONFIRMED. THOSE SHOWN WERE OBTAINED FROM UTILITY OWNERS OR PLANS. THE CONTRACTOR SHALL NOTIFY UTILITY OWNERS TO VERIFY LOCATIONS AS NECESSARY PRIOR TO BEGINNING WORK AND HE SHALL PROTECT OR HAVE RELOCATED, AS NOTED IN THE SPECIFICATIONS, ALL UTILITIES THAT MIGHT INTERFERE WITH CONSTRUCTION.

White Lake Township
7525 Highland Road (M-59)
White Lake, Michigan 48383
Telephone (248) 698-3300

White Lake Township
STANDARD WATERMAIN DETAILS

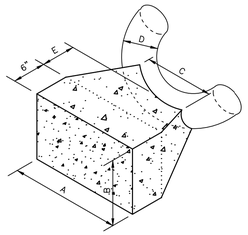
MARK	ISSUED FOR	DATE
	RE-ISSUED	02/2009
	RE-ISSUED	02/2013
	RE-ISSUED	03/2020
	RE-ISSUED	04/2025
	-	-
	-	-
	-	-
	-	-
	-	-
	-	-

DRAWN BY: DLZ
DESIGN BY: -
CHECKED BY: -

DLZ JOB NUMBER: STD DETAILS

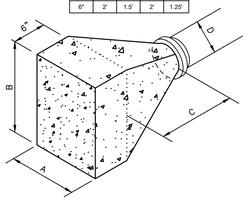
SHEET NO.
SD-01

PLOT DATE: 4/9/2025 9:37:01 AM SAVE DATE: 4/7/2025 9:48:03 AM ROHITH RAPOL C:\Users\rrapol\OneDrive - DLZ\Documents\WLT Water Update 2.21.2025.dwg



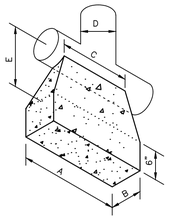
FOR 90° BENDS OR SMALLER

D	A	B	C	E MIN
20"	8'	6.5'	3.5'	2.5'
16"	6'	4'	2.5'	2'
12"	4'	3'	2'	1.75'
10"	3'	3'	2'	1.75'
8"	3'	2'	2'	1.5'
6"	2'	1.5'	2'	1.25'



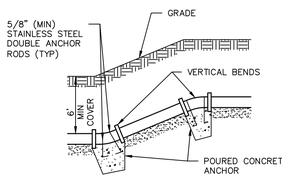
FOR PLUGS

D	A	B	C MIN
20"	7'	5'	2.5'
16"	4.8'	4.8'	2'
12"	4.3'	3'	1.75'
10"	3'	2'	1.5'
8"	2.8'	2.5'	1.5'
6"	1.5'	1.5'	25'



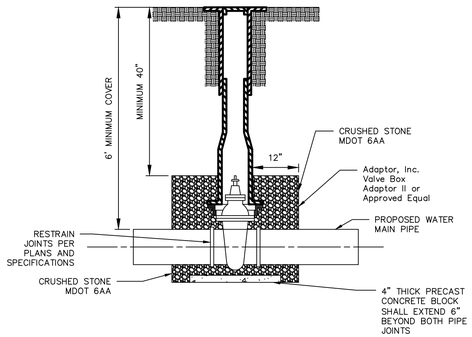
FOR TEES

D	A	B	C	E MIN
20"	6.5'	4.5'	3.5'	3'
16"	4.7'	4.7'	2.5'	2.75'
12"	4'	3'	2.5'	2.5'
10"	3'	2'	2'	2.25'
8"	2.7'	2'	2'	2.25'
6"	2'	2'	2'	2.25'

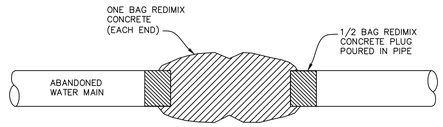


NOTE: 3500 PSI CONCRETE TO BE USED. THRUST BLOCK TO ABUT & REST AGAINST UNDISTURBED SOIL. MANHOLE BLOCK & MORTAR THRUST BLOCKS MAY BE USED ON A CASE BY CASE BASIS WITH APPROVAL OF ENGINEERING DIVISION.

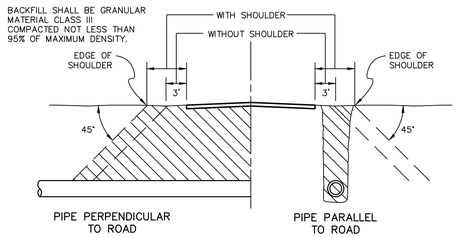
THRUST BLOCK DETAILS



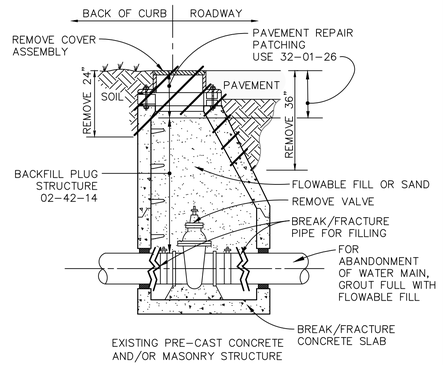
VALVE BOXES FOR HYDRANT VALVES AND IN–LINE GATE VALVES



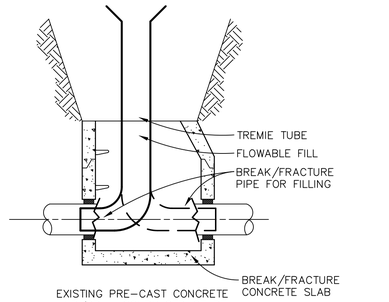
TRENCHING THROUGH ABANDONED UTILITIES



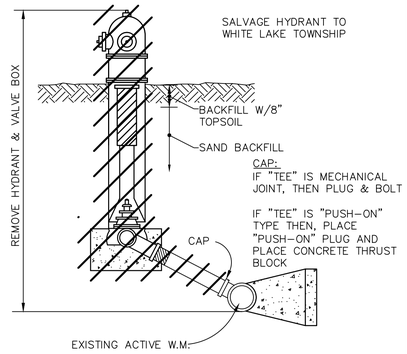
BACKFILL IN THE AREA OF STREETS, ALLEYS, SIDEWALKS, DRIVES & PARKING AREAS



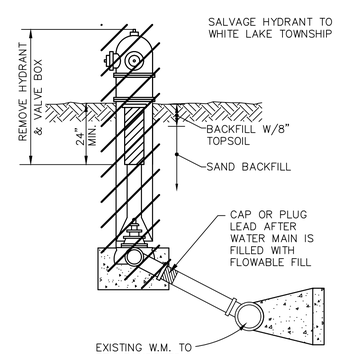
GATE VALVE & WELL ABANDONMENT



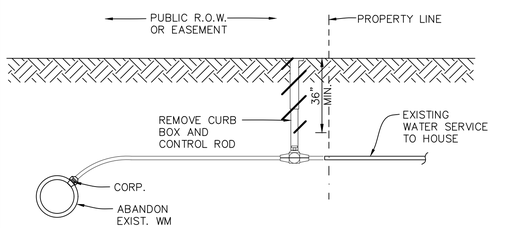
WATERMAIN PIPELINE FILLING



EXISTING HYDRANT ABANDONMENT ON ACTIVE WATERMAIN

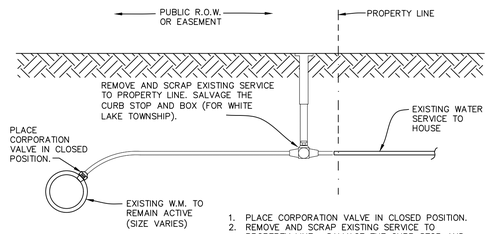


EXISTING HYDRANT ABANDONMENT ON ABANDONED WATER MAIN



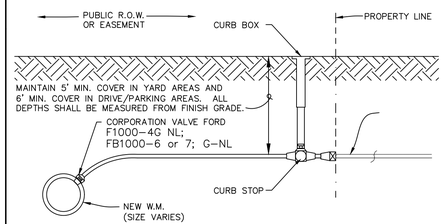
NOTE:
IF WATER SERVICE TO BE ABANDONED AND THE WATER MAIN IS ACTIVE THEN:
1. PLACE CORPORATION VALVE IN CLOSED POSITION.
2. REMOVE TO PROPERTY LINE.
3. ALL EXCAVATED AREAS TO HAVE COMPACTED BACKFILL.

ABANDON EXISTING WATER SERVICE



1. PLACE CORPORATION VALVE IN CLOSED POSITION.
2. REMOVE AND SCRAP EXISTING SERVICE TO PROPERTY LINE. SALVAGE THE CURB STOP AND BOX (FOR WHITE LAKE TOWNSHIP).
3. ALL EXCAVATED AREAS TO HAVE COMPACTED BACKFILL.
4. MAINTAIN A MINIMUM OF 4 FEET SEPARATION FROM OLD WATER SERVICE.

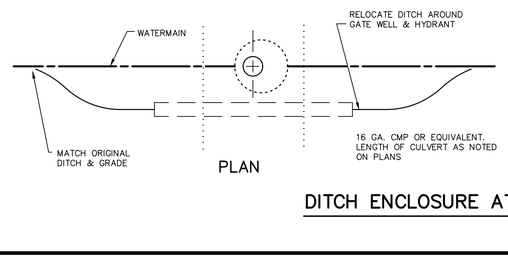
ABANDON EXISTING WATER SERVICE FOR ACTIVE WATERMAINS



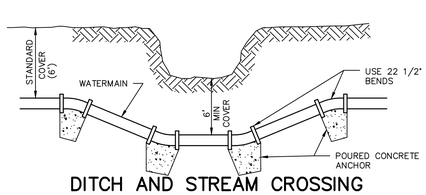
NOTE:
CORPORATION VALVE AND CURB STOP TO BE GEOGRAPHICALLY LOCATED USING GLOBAL POSITIONING SYSTEM (GPS).

NOTE:
CURB BOX TO BE McDONALD W/5601L LID
1" CURB STOP TO BE AY McDONALD MFG 6100 FLARE REGULAR PATTEN BALL VALVE. CHECK WITH WHITE LAKE DPW FOR MODEL NUMBER ON OTHER SIZE CURB STOPS.

NEW WATER SERVICE

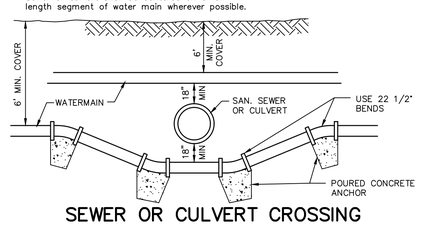


DITCH ENCLOSURE AT GATE WELL



DITCH AND STREAM CROSSING

NOTE:
Sewer or culvert shall be centered on a full length segment of water main wherever possible.



SEWER OR CULVERT CROSSING

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WARNING
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White Lake Township
7525 Highland Road (M-59)
White Lake, Michigan 48383
Telephone (248) 698-3300

White Lake Township
STANDARD WATERMAIN DETAILS

MARK	ISSUED FOR	DATE
	RE-ISSUED	02/2009
	RE-ISSUED	02/2013
	RE-ISSUED	03/2020
	RE-ISSUED	04/2025
	-	-
	-	-
	-	-
	-	-
	-	-
	-	-

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CHECKED BY: -

DLZ JOB NUMBER: STD DETAILS

SHEET NO.
SD-02

Layout = SD–02
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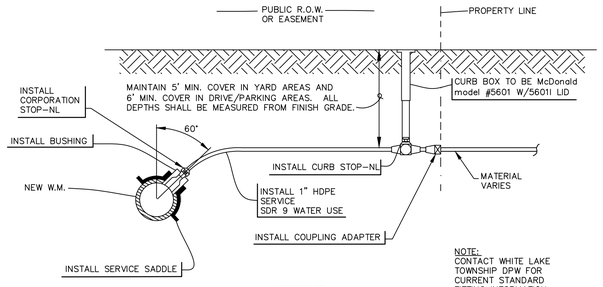
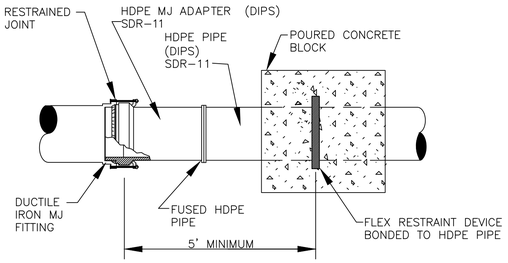
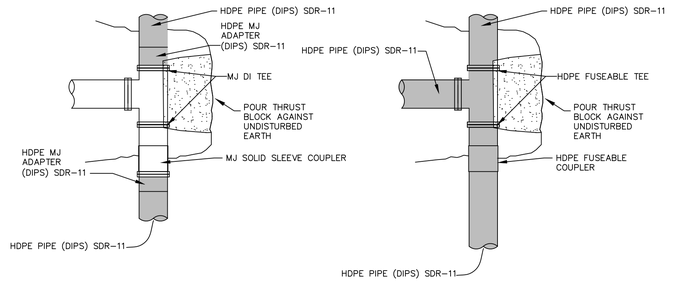


HDPE NEW WATER SERVICE



HDPE MECHANICAL JOINT (MJ) ADAPTER FOR HDPE TO DI CONNECTIONS



DUCTILE IRON HDPE

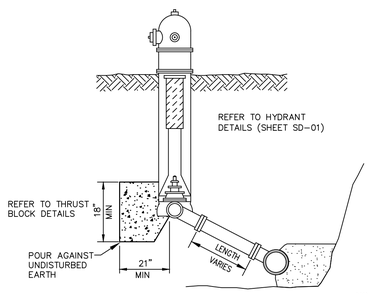
NOTE:
CONNECTION TO MJxMJ DI FITTING CAN BE MADE BY USING FUSED MJ ADAPTERS AS SHOWN, OR BY USING PLAIN END HDPE PIPE WITH INTERNAL PIPE STIFFINER SIMILAR TO JCM INDUSTRIES A 230, AND WITH HDPE PIPE RESTRAINT SIMILAR TO EBBA IRON INC. SERIES 2006PV TO TIE DIRECTLY INTO DI MJ FITTING.

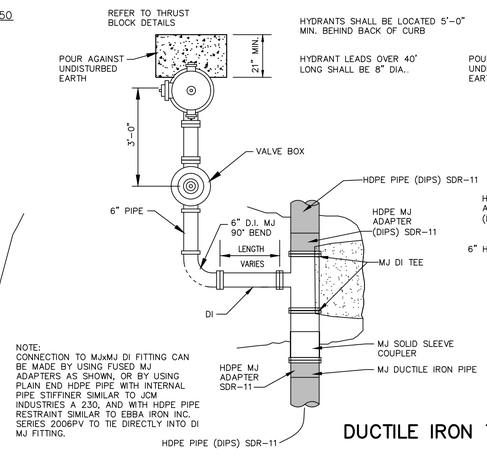
HDPE DIPS PIPE & FITTINGS
CL 54 D.I. PIPE AND FITTINGS

CUT IN TEES FOR HDPE MAINS

NOT TO SCALE

EJ-5BR-250



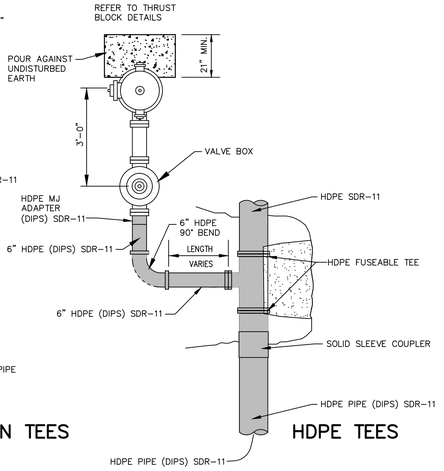


HYDRANTS SHALL BE LOCATED 5'-0" MIN. BEHIND BACK OF CURB

HYDRANT LEADS OVER 40' LONG SHALL BE 8" DIA..

NOTE:
CONNECTION TO MJxMJ DI FITTING CAN BE MADE BY USING FUSED MJ ADAPTERS AS SHOWN, OR BY USING PLAIN END HDPE PIPE WITH INTERNAL PIPE STIFFINER SIMILAR TO JCM INDUSTRIES A 230, AND WITH HDPE PIPE RESTRAINT SIMILAR TO EBBA IRON INC. SERIES 2006PV TO TIE DIRECTLY INTO DI MJ FITTING.

DUCTILE IRON TEES

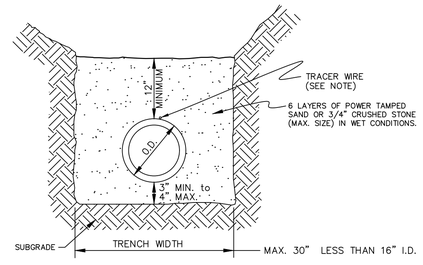


HDPE TEES

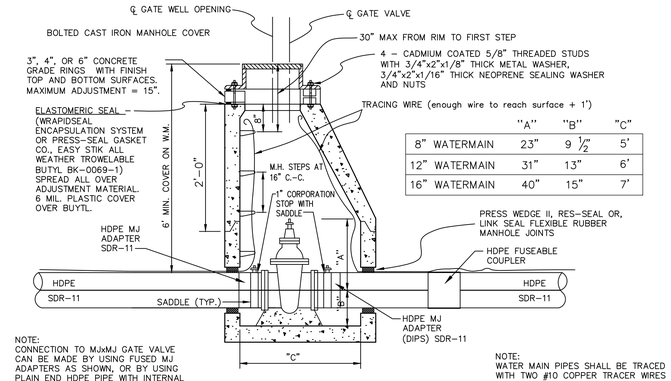
HYDRANT ASSEMBLY FOR HDPE MAINS

NOT TO SCALE

NOTE:
WATER MAIN PIPES SHALL BE TRACED WITH TWO #10 COPPER TRACER WIRES OR TWO #12 COPPER COATED STEEL OR STAINLESS STEEL WIRES INSULATED WITH A MINIMUM OF 30 MILS OF POLYETHYLENE INSULATION.



STANDARD BEDDING – OPEN CUT FOR HDPE WATER PIPE

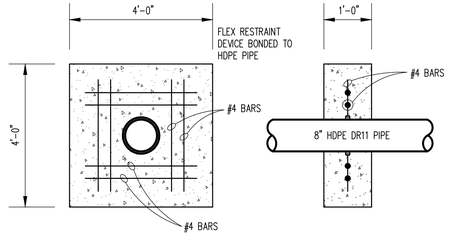


	"A"	"B"	"C"
8" WATERMAIN	23"	9 1/2"	5'
12" WATERMAIN	31"	13"	6'
16" WATERMAIN	40"	15"	7'

NOTE:
CONNECTION TO MJxMJ GATE VALVE CAN BE MADE BY USING FUSED MJ ADAPTERS AS SHOWN, OR BY USING PLAIN END HDPE PIPE WITH INTERNAL PIPE STIFFENER SIMILAR TO JCM INDUSTRIES A 230, AND WITH HDPE PIPE RESTRAINT SIMILAR TO EBAA IRON INC. SERIES 2006PV.

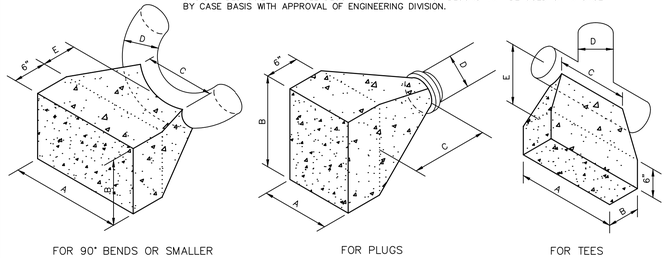
GATE WELL WITH HDPE PIPE

NOTE:
WATER MAIN PIPES SHALL BE TRACED WITH TWO #10 COPPER TRACER WIRES OR TWO #12 COPPER COATED STEEL OR STAINLESS STEEL WIRES INSULATED WITH A MINIMUM OF 30 MILS OF POLYETHYLENE INSULATION.



HDPE RESTRAINING BLOCK

NOTE: 3000 PSI CONCRETE TO BE USED. THRUST BLOCK TO ABUT & REST AGAINST UNDISTURBED SOIL. MANHOLE BLOCK & MORTAR THRUST BLOCKS MAY BE USED ON A CASE BY CASE BASIS WITH APPROVAL OF ENGINEERING DIVISION.



FOR 90° BENDS OR SMALLER

D	A	B	C	E MIN
20"	8'	6.5'	3.5'	2.5'
16"	6'	4'	2.5'	2'
12"	4'	3'	2'	1.75'
10"	3'	3'	2'	1.75'
8"	3'	2'	2'	1.5'
6"	2'	1.5'	2'	1.25'

FOR PLUGS

D	A	B	C MIN
20"	7'	5'	2.5'
16"	4.8'	4.8'	2'
12"	4.3'	3'	1.75'
10"	3'	3'	1.5'
8"	2.8'	2.5'	1.5'
6"	1.5'	1.5'	.25'

FOR TEES

D	A	B	C	E MIN
20"	6.5'	4.5'	3.5'	3'
16"	4.7'	4.7'	2.5'	2.75'
12"	4'	3'	2.5'	2.5'
10"	3'	3'	2'	2.25'
8"	2.7'	2'	2'	2.25'
6"	2'	2'	2'	2.25'

HDPE THRUST BLOCK DETAILS

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White Lake Township
STANDARD HDPE
WATERMAIN DETAILS

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	RE-ISSUED	02/2009
	RE-ISSUED	02/2013
	RE-ISSUED	03/2020
	RE-ISSUED	04/2025
	-	-
	-	-
	-	-
	-	-
	-	-
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SHEET NO.
SD-03

Layout = SD-03
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