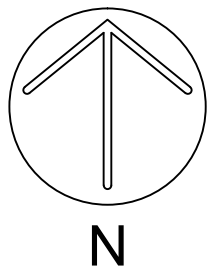


BLUE HAVEN WATER MAIN REPLACEMENT 2024 CONSTRUCTION PLANS for MERIDIAN TOWNSHIP INGHAM COUNTY, MICHIGAN



Call 811 before you dig.

PUBLIC UTILITIES

AT&T
337 N. ABBOTT, RM. 201
EAST LANSING, MI 48823
517.337.3660

TELEPHONE

CONSUMERS ENERGY
530 W. WILLOW ST.
P.O. BOX 30162
LANSING, MI 48909
517.373.6100

GAS ELECTRIC

COMCAST
1070 TROWBRIDGE ROAD
EAST LANSING, MI 48823
517.332.1012

CABLE TV

MERIDIAN TOWNSHIP
5151 MARSH RD.
OKEMOS, MI 48864
517.853.4440

**WATER MAINS
SANITARY SEWER
PATHWAYS**

WOLVERINE PIPE LINE
8105 VALLEYWOOD LANE
PORTAGE, MI 49024-5251
231.323.2491

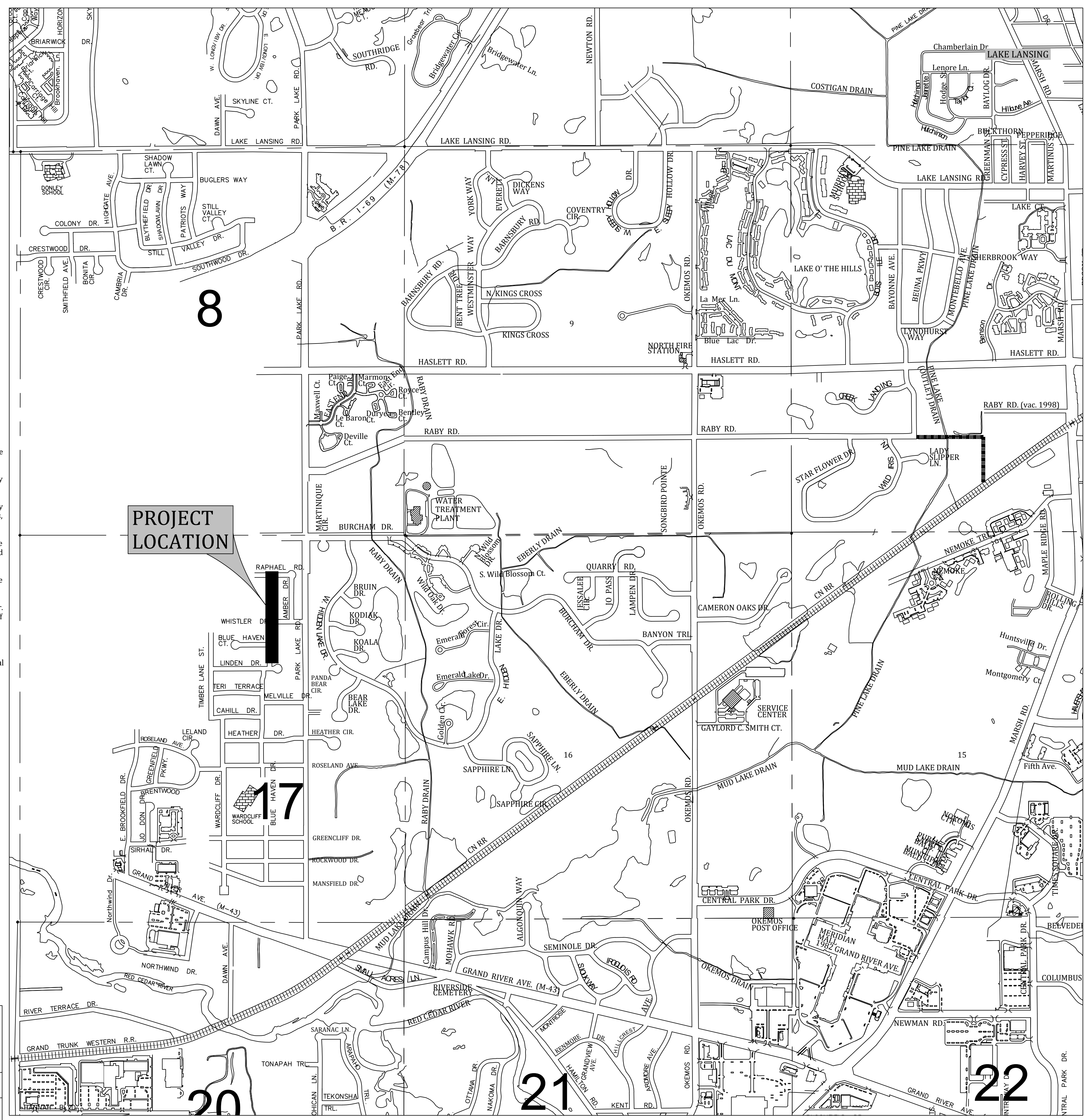
PETROLEUM PIPELINE

**INGHAM COUNTY DRAIN
COMMISSIONER**
707 BUHL ST.
MASON, MI 48854
517.676.8395

**DRAINS
STORM SEWER**

INGHAM COUNTY ROAD DEPT
301 BUSH ST.
MASON, MI 48854
517.676.9722

**PUBLIC ROADS AND
RIGHTS OF WAY**



- STANDARD CONSTRUCTION NOTES**
- The Contractor shall notify the Charter Township of Meridian, Department of Public Works, Office of Engineering 517-853-4440 a minimum of 72 hours prior to the start of construction of public utilities or of construction within the public right-of-way.
 - All construction shall conform to the current standards and specifications of the Charter Township of Meridian which are included as part of these plans in effect at the time of construction.
 - After the completion of construction of public utilities or construction within public right-of-way, the contractor must request a final inspection. Any punchlist items resulting from the final inspection must be resolved prior to final release and acceptance.
 - The existing utilities indicated on the plans are in accordance with available information. It shall be the contractor's obligation to verify the exact location of all existing utilities, which might affect this job.
 - The contractor shall notify "MISS DIG" 1-800-482-7171 at least 72 hours prior to the start of construction.
 - The contractor shall at all times be aware of inconvenience caused to the abutting property owners and the general public. Where the contractor does not remedy undue inconveniences, the Charter Township of Meridian, upon four hours notice, reserves the right to perform the work and deduct the cost therefore from the money due the contractor.
 - A Registered Land Surveyor provided by the contractor at the contractor's expense shall replace all property irons and monuments disturbed or destroyed by the contractor's operations.
 - Contractor shall provide Owner and Township Engineer a copy of written permission to use private property for storage of equipment and materials or for his construction operations.
 - Trench backfill under existing or proposed roadways, driveways, and parking areas, shall be sand or gravel, placed in 12" layers (maximum) and consolidated to 95% of maximum density as measured by modified proctor unless otherwise noted.
 - Trees and shrubs are to be protected during construction and bored where necessary.
 - Existing fences shall be removed and restored to their original condition or better where in conflict with construction.
 - Driveways, culverts, ditches, drain tile, tile fields, drainage structures, etc., that are disturbed by the contractor's operations shall be immediately restored.
 - All established lawn areas disturbed by the contractor's operations shall be resodded with matching sod. All other areas shall be seeded and mulched. Seeding and mulching shall be done in accordance with the General Specifications.
 - All ditch slopes shall have established vegetation and be protected from erosion.
 - All utility poles in close proximity to construction shall be supported in a manner satisfactory to the utility owner.
 - Onsite parking and sanitary facilities shall be provided for construction workers. The facilities shall be constructed and operated (with minimal impact to the surrounding area) to the satisfaction of the Township.

- SOIL EROSION & SEDIMENTATION CONTROL NOTES**
- All soil erosion and sediment control (SESC) work shall conform to the standards and specifications of the Ingham County Drain Commissioner's Office and Meridian Township.
 - Daily inspections shall be made by the contractor for effectiveness of SESC measures. Any necessary repairs shall be performed without delay.
 - Erosion of any sediment from work on the site shall be contained on-site and not allowed to collect on any off-site areas or in waterways. Waterways include both natural and man-made open ditches, streams, storm drains, lakes, ponds, and wetlands.
 - The Contractor shall apply temporary SESC measures when required and as directed on these plans. The Contractor shall remove temporary measures as soon as permanent stabilization of slopes, ditches, and other changes have been established.
 - Staging the work shall be done by the Contractor as directed in these plans and as required to ensure progressive stabilization of disturbed earth.
 - Soil erosion control practice shall be established in the early stages of construction by the Contractor. Sedimentation control practices shall be applied as a perimeter defense against any transporting of soil off the site.
 - The Contractor shall preserve natural vegetation as much as possible.
 - Vegetative stabilization of all disturbed areas shall be established within 15 days of completion of the final grading.

- WATER MAIN NOTES**
- Hydrant elevations and gate well tap elevations shall be set to existing ground elevations unless otherwise directed by the Township Engineer.
 - All water mains shall be constructed with 5 feet of cover below finish grade, unless otherwise indicated on the plans.
 - Connection to the existing water main shall not be made until after the successful completion of pressure and bacteriological tests. Pressure testing shall be performed in accordance with AWWA C600. Additionally, all corporation stops for proposed house services shall be installed prior to pressure testing. Disinfection and bacteriological testing shall be in accordance with the AWWA C651. Before the mains are chlorinated, they shall be thoroughly flushed. All mains shall be chlorinated for a period of at least twenty-four (24) hours. Chlorine shall be added in sufficient quantity to give a 50-ppm residual of free chlorine after a twenty-four (24) hour period. After completion of the chlorine procedure, the main shall be flushed. Then water samples shall be taken from the main for bacteriological tests. If the tests should result in unsafe conditions, the chlorinating shall be repeated by the Contractor. Two consecutive passing samples at least 24 hours apart must be obtained before the main can be connected to the existing water system.
 - All valves shall be counter-clock wise open.
 - All fire hydrants shall be EJIW 5BR (54915) Traffic Type with breakaway flange or approved equal.
 - Hydrants shall be painted OSHA red.
 - Two brass wedges shall be installed at each joint on ductile iron pipe.
 - Polyethylene encasement of pipes will be required in all areas. The encasement shall be V-Bio® Enhanced Polyethylene Encasement, in accordance with ANSI/AWWA C105/A21.5, installed per the manufacturer's instructions.
 - For existing lines: service taps, shut off valves, and service line extensions to the property shall be made by Township Department of Public Works personnel for connections 2" and smaller.
 - Where water mains must dip to pass under a storm sewer or sanitary sewer, the sections which are deeper than normal shall be kept to a minimum length by the use of 45, 22½ or 11½ degree bends properly restrained.
 - All manhole covers shall bear the legend "Meridian Water" with tree logo, where available.
 - Lead content requirements for all pipes, piping fittings, plumbing fittings, and fixtures that are used for potable water shall comply with NSF/ANSI 372 Standard.
 - All mechanical joints and fittings shall be restrained using MEGALUG® style restraints, or approved equal. All exposed metal components of the restrained-joint system shall be treated with a corrosion resistant coating, including: the collar, breakaway bolts, wedges, and connecting nuts and bolts.

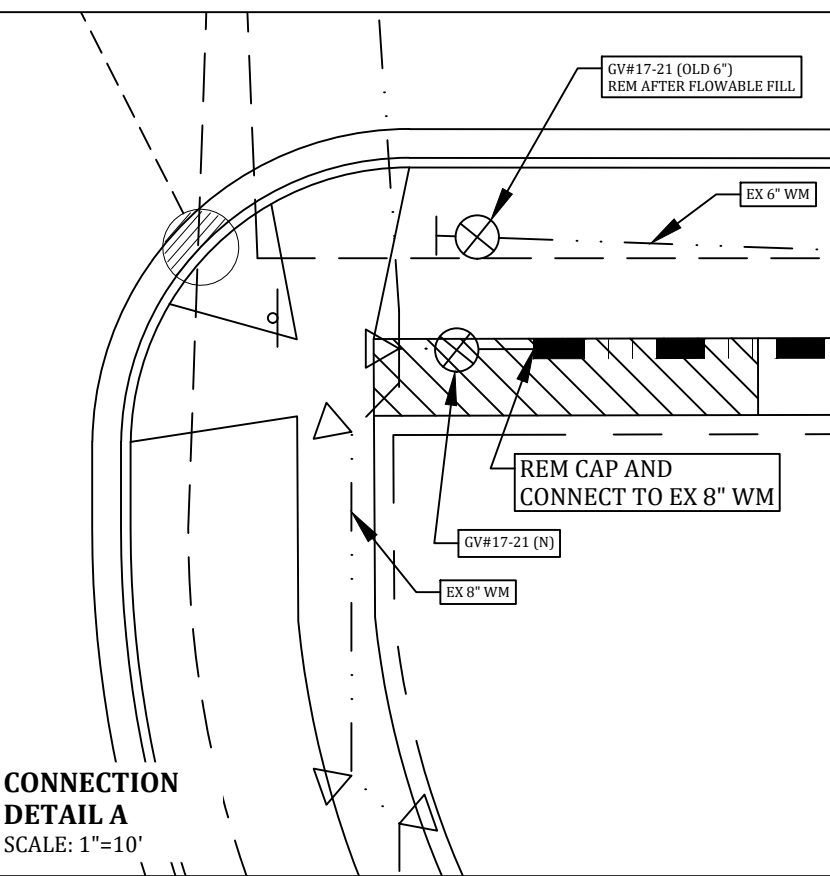
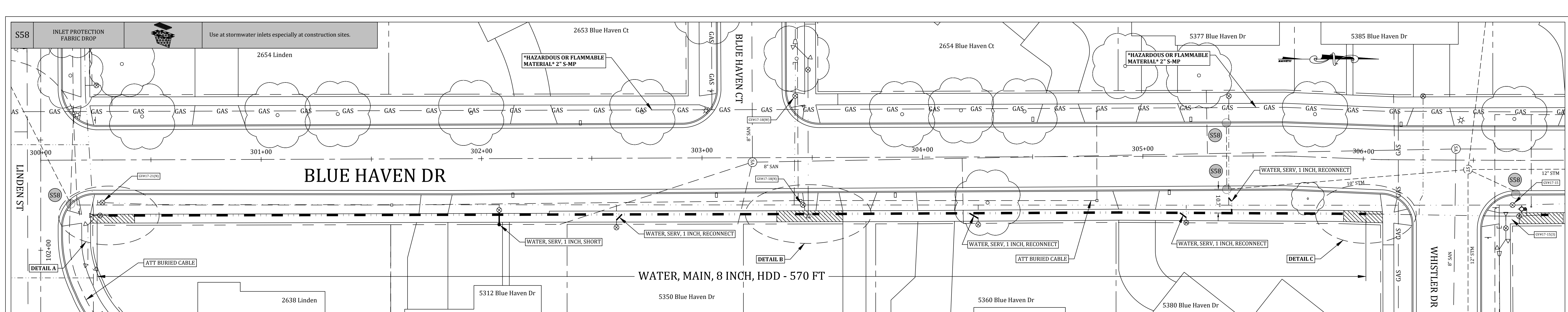
SHEET INDEX

SHEET #	TITLE
1	COVER SHEET
2	BLUE HAVEN DR (SOUTH)
3	BLUE HAVEN DR (NORTH)
4	WATER DETAIL SHEET

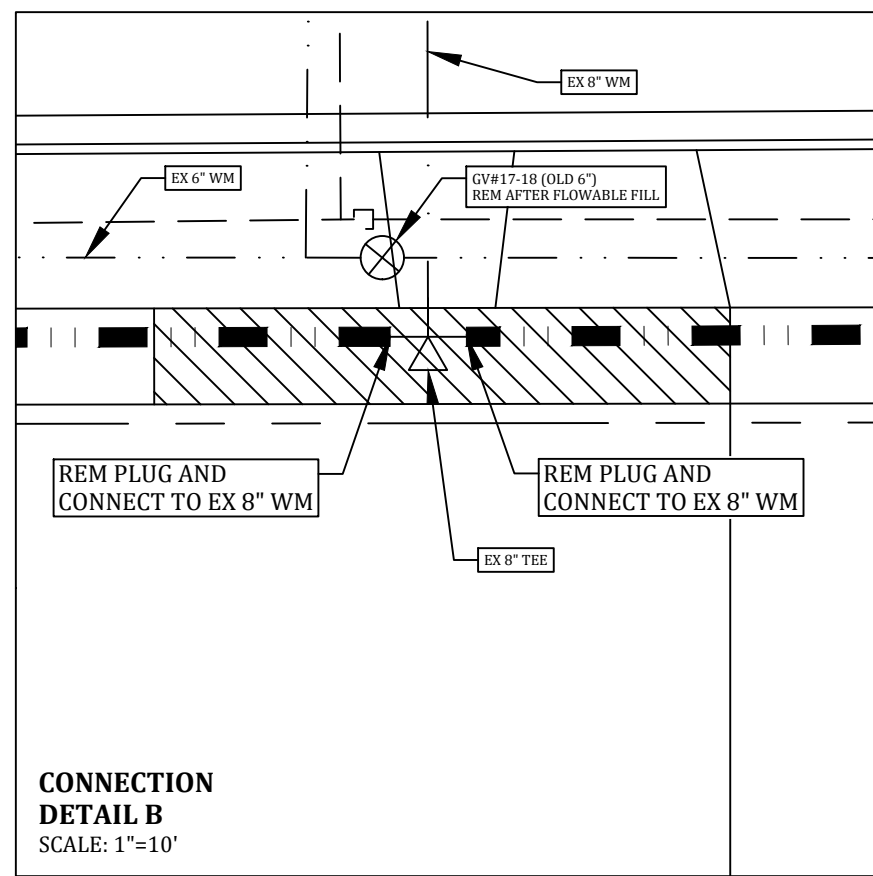
SOILS:

UpA - URBAN LAND-CAPAC-COLWOOD COMPLEX (0-4% SLOPES)
UtB - URBAN LAND-MARLETTE COMPLEX (2-12% SLOPES)

RECOMMENDED CONSTRUCTION SCHEDULING & SEQUENCING	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
INSTALL SESC MEASURES												
INSTALL MAIN												
PAVEMENT & LAWN RESTORATION												
REMOVE SESC MEASURES												

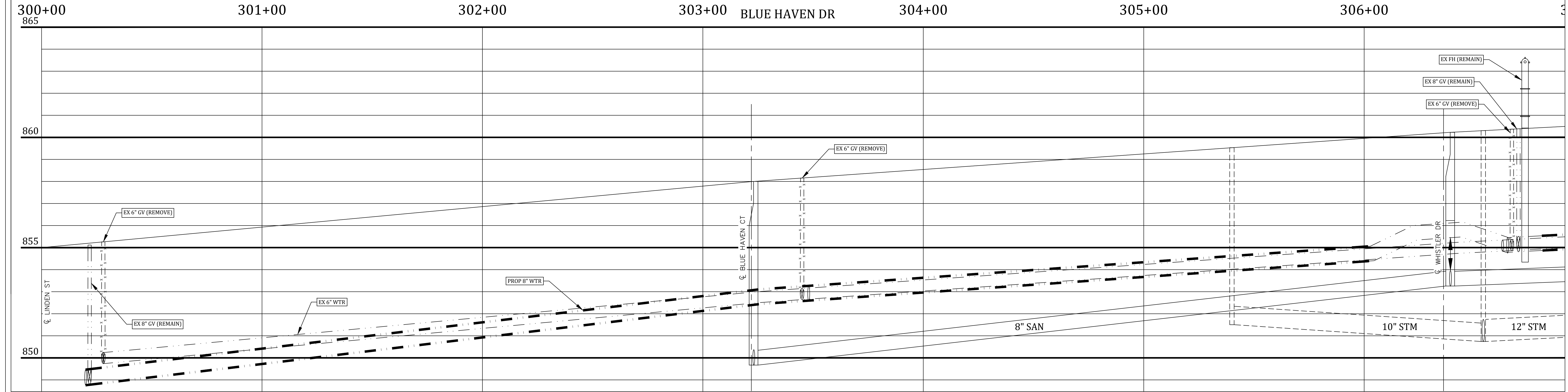
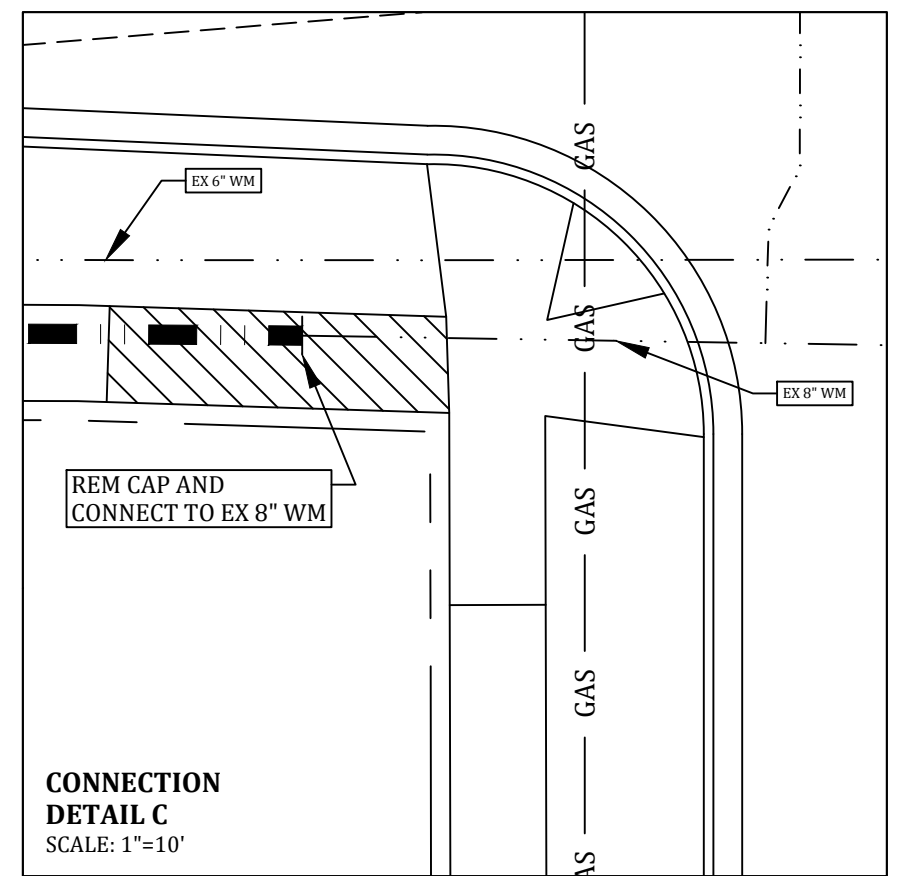


- SUGGESTED PROCEDURE:**
1. Close 17-21(N).
 2. Install new main from Linden to Whistler.
 3. Remove cap GV 17-21(N) and connect to existing main.
 4. Pressure and bacteria test new main.
 5. Bring new main live.
 6. Connect services to new main.
 7. Close GV 17-15(N & E). Connect at north end @306+00.
 8. Open GV 17-15(N & E).
 9. Abandon old main after all work on Blue Haven Drive is complete.



PAY ITEMS & QTS (THIS SHEET):

2b. Pavement Restoration, Blue Haven	- 1	LS
6a. Water, Main, 6 inch, Abandon, Blue Haven	- 1	LS
30a. Water, Main, 8 inch, Open Cut	- 575	Ft
or		
30b. Water, Main, 8 inch, HDD	- 575	Ft
31e. Water, Union, 8 inch	- 4	Ea
35c. Water, Serv, 1 inch, Reconnect	- 5	Ea



<p>PINE </p> <p>DECID. </p> <p>BUSH </p> <p>STUMP </p> <p>SAN. MH </p> <p>F.H. </p>	<p>CATV BOX </p> <p>U.P. (W/GUY) </p> <p>TELE. MH </p> <p>STREET SIGN </p> <p>SIGN </p> <p>SAN. MH </p> <p>STM. MH </p> <p>TELE. BOX </p> <p>WTR. MH </p>	<p>CATV MH </p> <p>LIGHT </p> <p>MAILBOX </p> <p>SITE BORING </p> <p>P.I. </p> <p>C.M.P. </p> <p>C.B. </p> <p>G.V. </p> <p>F.H. </p>	<p>CATV (COMCAST) </p> <p>C/L OF ROADS </p> <p>ELEC (CONSUMERS) </p> <p>GAS (CONSUMERS) </p> <p>TELE. (SBC) </p> <p>PROPERTY LINE </p> <p>ROW (ICRD, MDOT) </p>	<p>EX SAN MAIN </p> <p>EX STM (ICDC) </p> <p>EX WTR MAIN </p> <p>PROPOSED SAN </p> <p>PROPOSED STM </p> <p>PROPOSED WTR </p>	<p>LESS BOLD</p> <p>LESS BOLD</p> <p>LESS BOLD</p> <p>BOLD</p> <p>BOLD</p> <p>BOLD</p>
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0' 20' 40' 80'

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

Meridian Charter Township
Ingham County, Michigan
Water Main System

BLUE HAVEN DRIVE
LINDEN ST TO WHISTLER DR

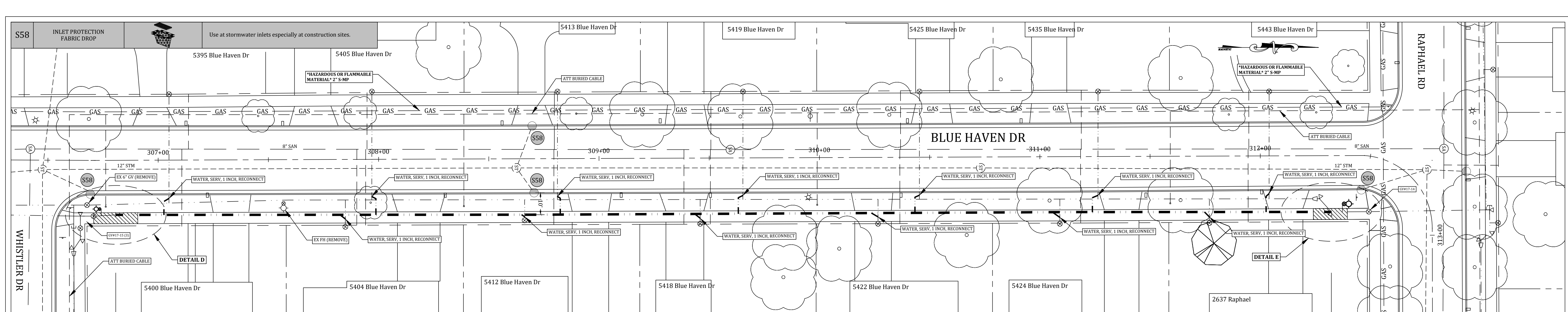
REVISIONS:	DATE:	BY:	COMMENTS:
	7/3/23	NN	Contract Plans
	8/4/23	NN	EGL E Revision
	1/22/24	NN	2024 Contract Plans

SCALE: 1" = 20' HOR
1" = 2' VERT

PAGE: 2 OF 4

FILE:

DRAWN BY: NN 1/18/24 | CHECKED BY: YI 1/22/24

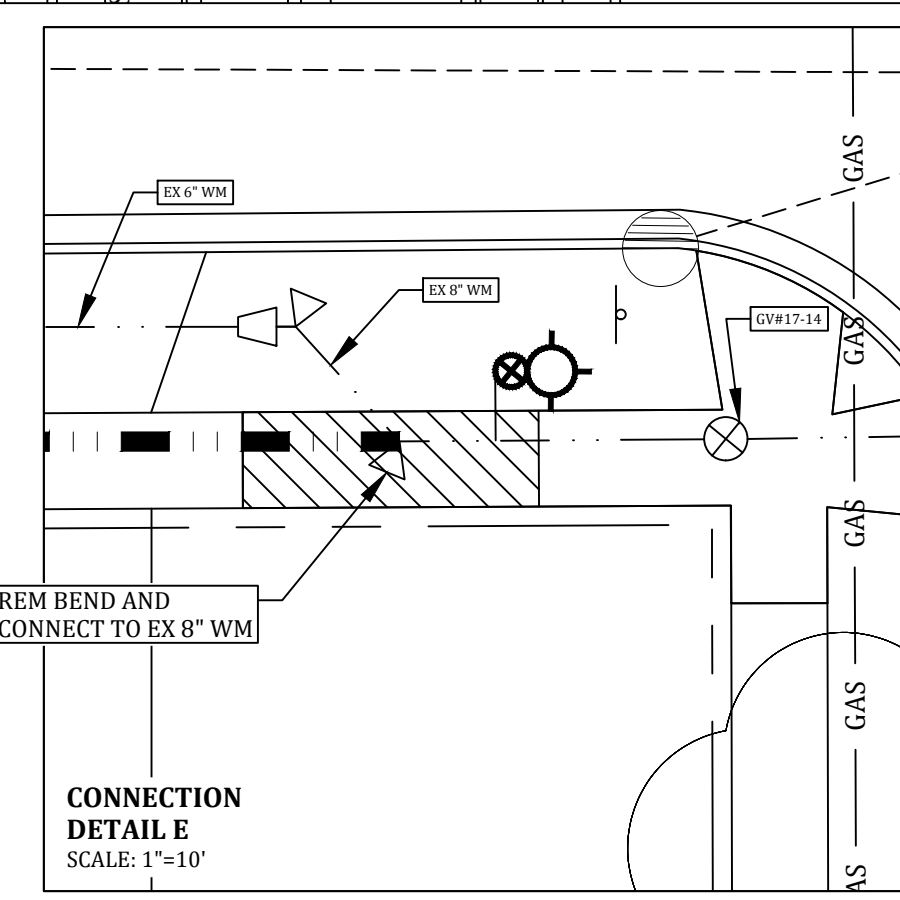
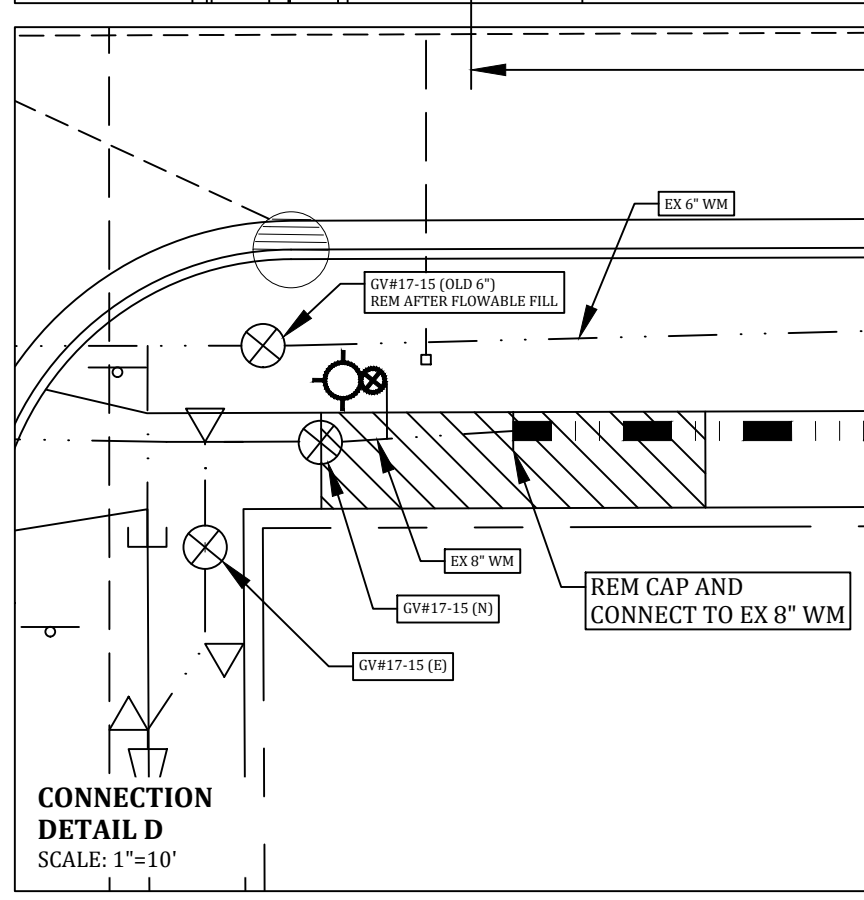


WATER, MAIN, 8 INCH, HDD - 570 FT

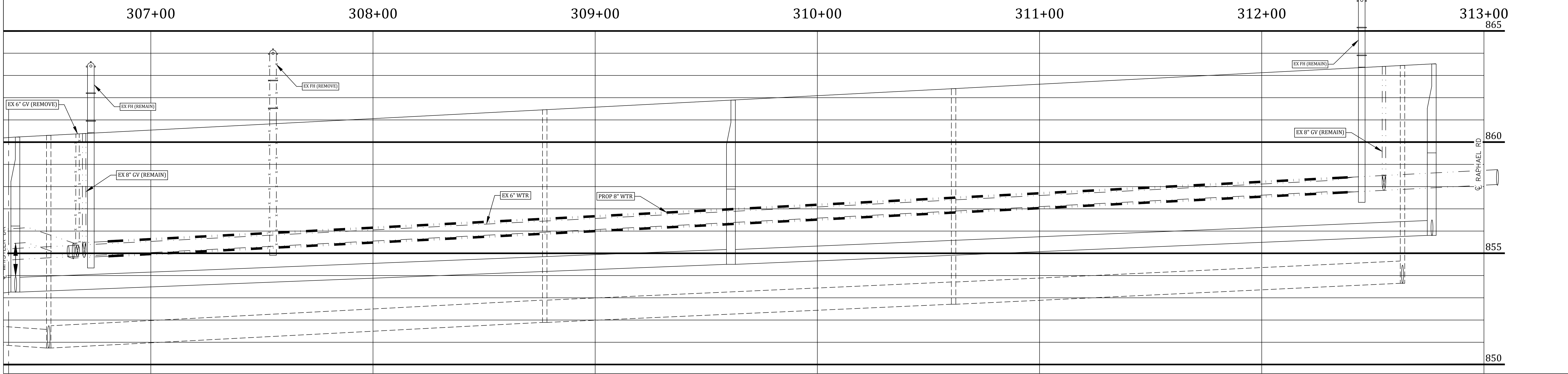
- SUGGESTED PROCEDURE:**
1. Close 17-15(N).
 2. Install new main from Whistler to Raphael.
 3. Remove cap @306+80 and connect to existing main.
 4. Pressure and bacteria test new main.
 5. Bring new main live.
 6. Connect services to new main.
 7. Connect at north end @312+30.
 8. Abandon old main after all work on Blue Haven Drive is complete.

PAY ITEMS & QTS (THIS SHEET):

2b. Pavement Restoration, Blue Haven	- 1	LS
6a. Water, Main, 6 inch, Abandon, Blue Haven	- 1	LS
30a. Water, Main, 8 inch, Open Cut	- 560	Ft
or		
30b. Water, Main, 8 inch, HDD	- 560	Ft
31e. Water, Union, 8 inch	- 2	Ea
35c. Water, Serv, 1 inch, Reconnect	- 13	Ea



BLUE HAVEN DR



PINE	CATV BOX	CATV MH	CATV (COMCAST)	EX SAN MAIN	LESS BOLD
DECID.	U.P. (W/GUY)	LIGHT	C/L OF ROADS	EX STM (ICDC)	LESS BOLD
BUSH	TELE. MH	MAILBOX	ELEC (CONSUMERS)	EX WTR MAIN	LESS BOLD
STUMP	STREET SIGN	SITE BORING	GAS (CONSUMERS)	PROPOSED SAN	BOLD
	SIGN	P.I.	TELE. (SBC)	PROPOSED STM	BOLD
	SAN. MH	C.M.P.	PROPERTY LINE	PROPOSED WTR	BOLD
	STM. MH	C.B.	ROW (ICRD, MDOT)		
	TELE. BOX	G.V.			
	WTR. MH	F.H.			

EXISTING 5' / 7' SIDEWALK / PATHWAY	PROPOSED 5' / 7' SIDEWALK / PATHWAY
-------------------------------------	-------------------------------------

0' 20' 40' 80'

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

Meridian Charter Township
Ingham County, Michigan
Water Main System

BLUE HAVEN DRIVE
WHISTLER DR TO RAPHAEL RD

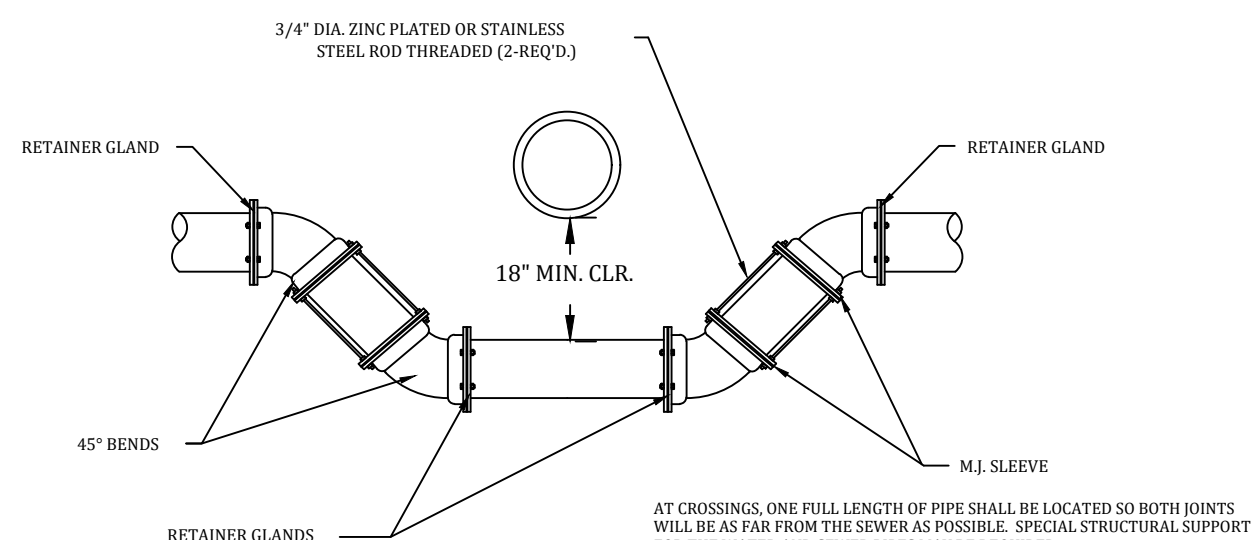
REVISIONS:	DATE:	BY:	COMMENTS:
	7/3/23	NN	Contract Plans
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SCALE: 1" = 20' HOR
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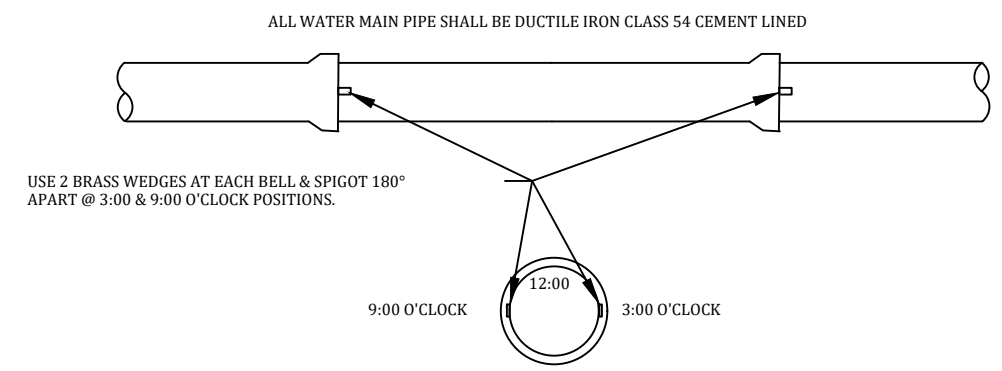
PAGE: 3 OF 4

FILE:

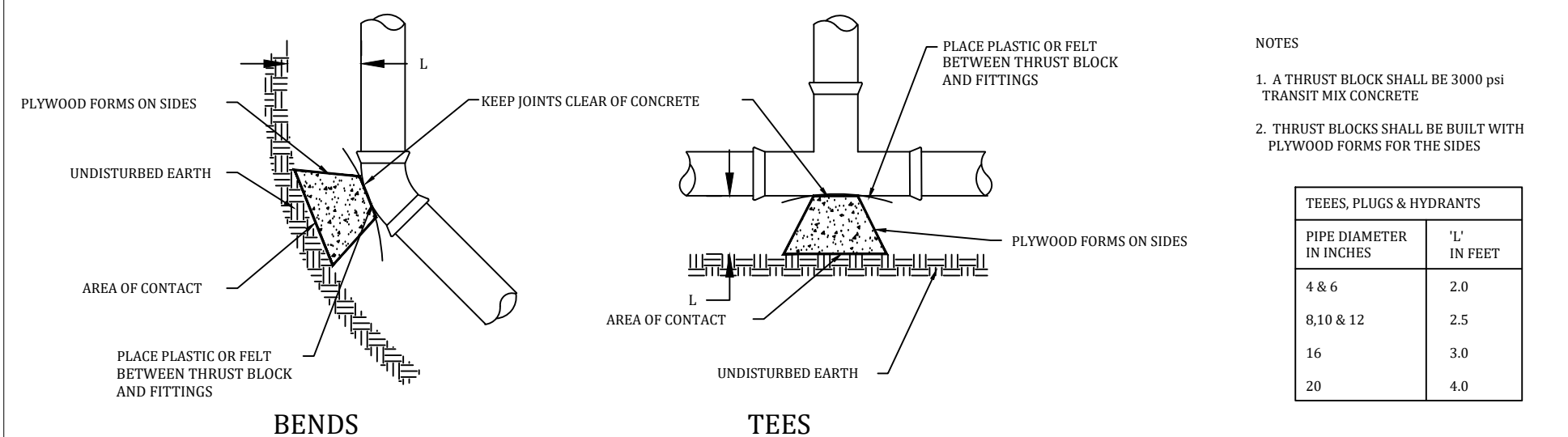
DRAWN BY: NN 1/18/24 | CHECKED BY: YI 1/22/24



LOWERING WATER MAIN CROSS SECTION
ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED



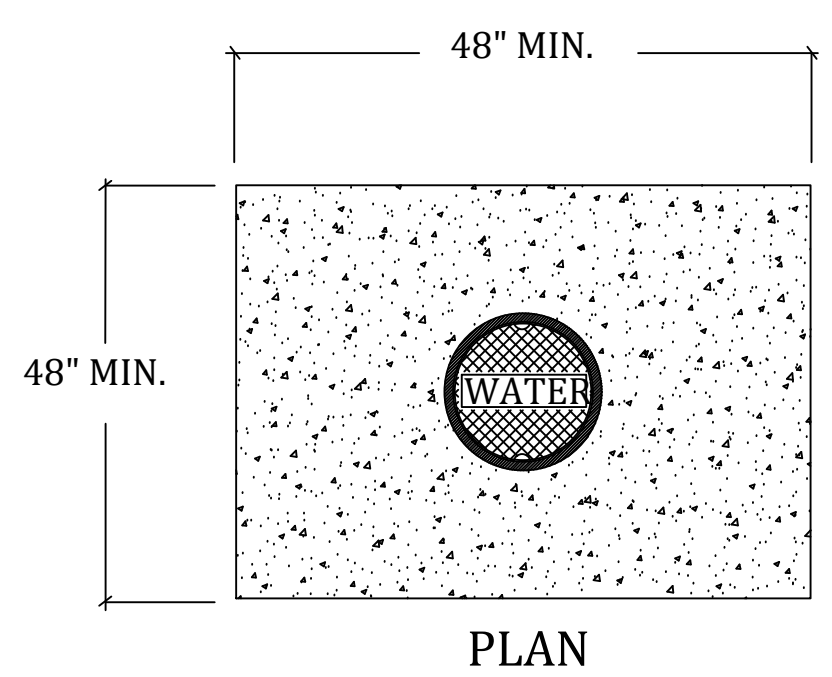
WATER MAIN JOINT DETAILS



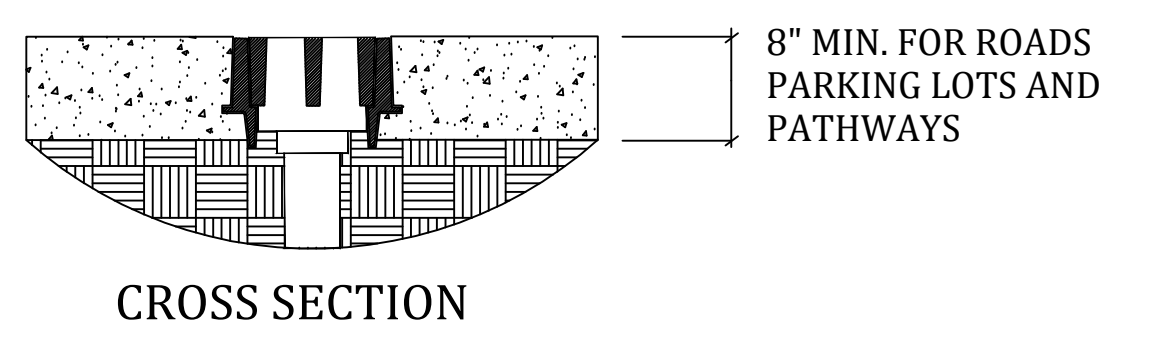
THRUST BLOCK PLAN VIEWS

EXAMP. TYPICAL REQUIRED CALCULATION FOR A THRUST BLOCK (90° BEND IN SAND)
AREA OF CONTACT = THRUST FORCE (LBS) / SAFE BEARING LOADS = 6,000 LBS / 2,000 LBS/SQ. FT. = 3 SQ. FT.

SOIL	SAFE BEARING LOAD (LBS/SQ. FT.)
MUCK, PEAT & ETC.	0
SOFT CLAY	1,000
SAND	2,000
SAND AND GRAVEL	3,000
SAND AND GRAVEL CEMENTED W/CLAY	4,000
HARD COMPACTED CLAY	5,000



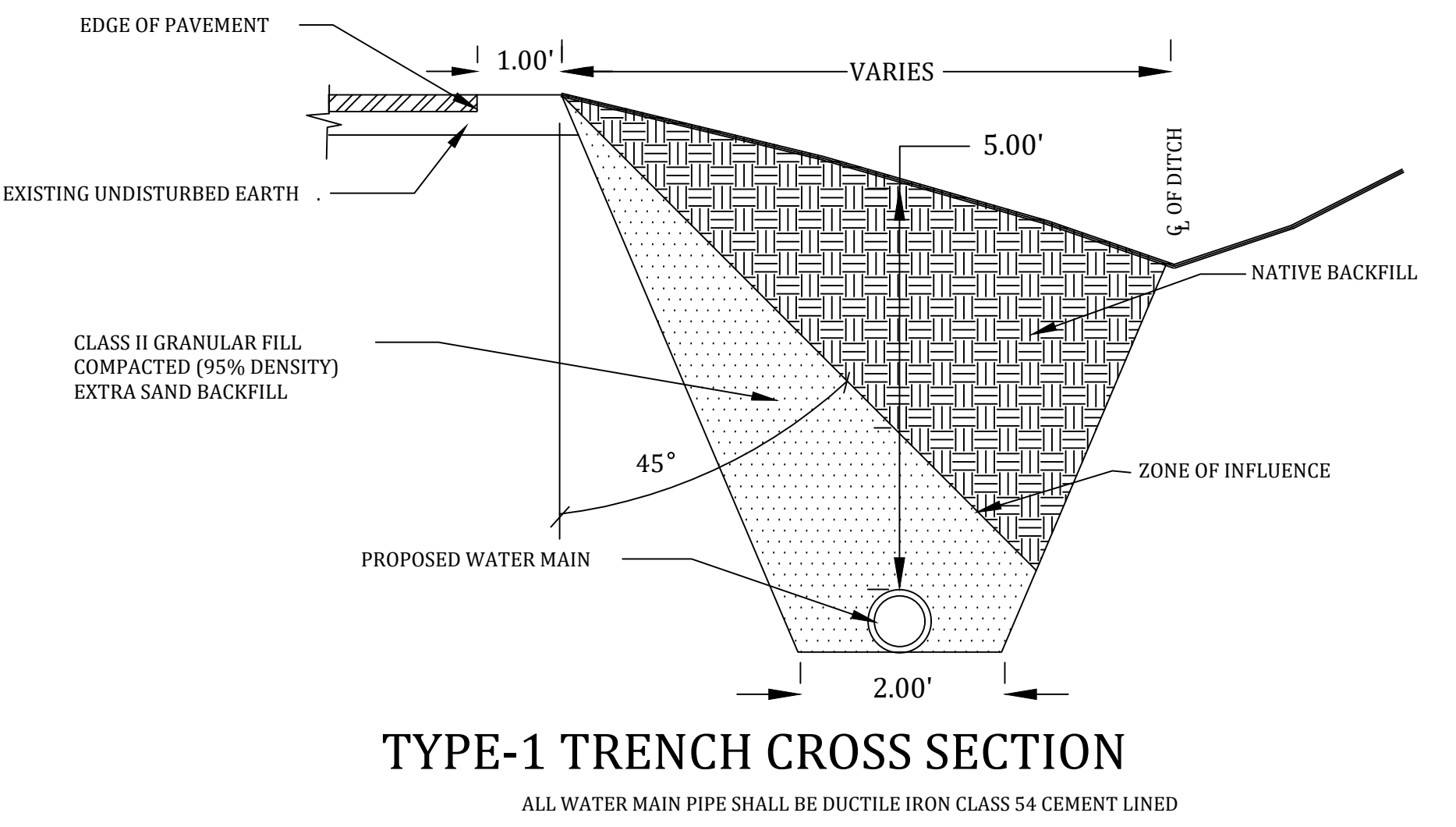
PLAN



CROSS SECTION

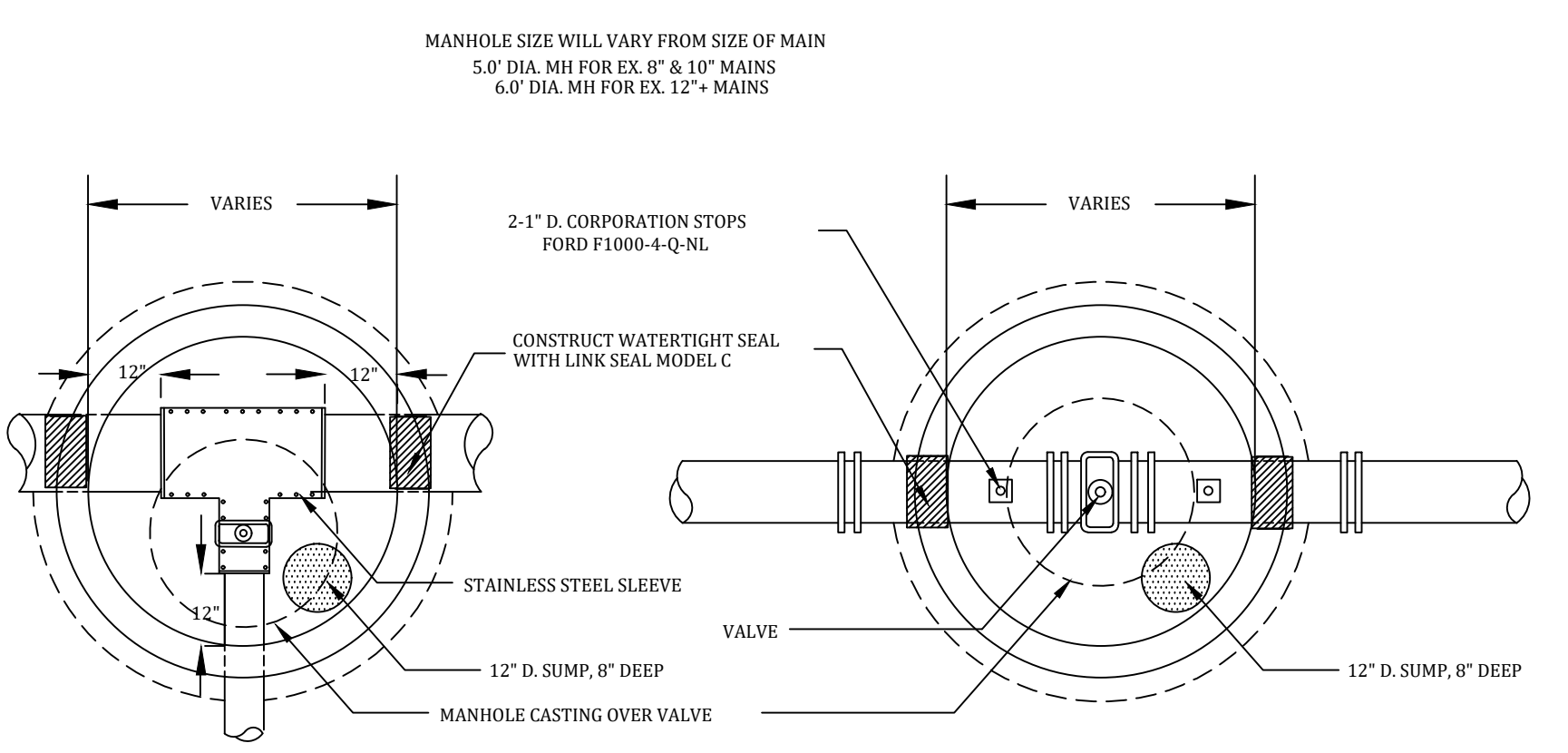
VALVE BOX RISER
850080XX
E.J.I.W.

VALVES & CURB STOP BOXES IN CONCRETE



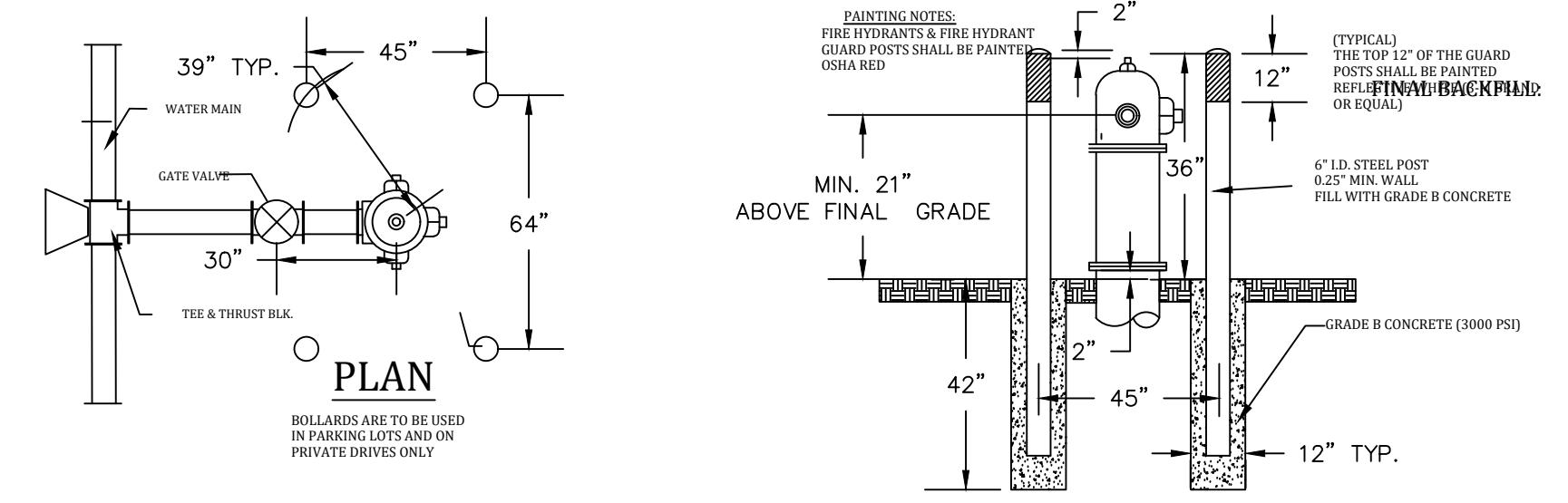
TYPE-1 TRENCH CROSS SECTION

ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED

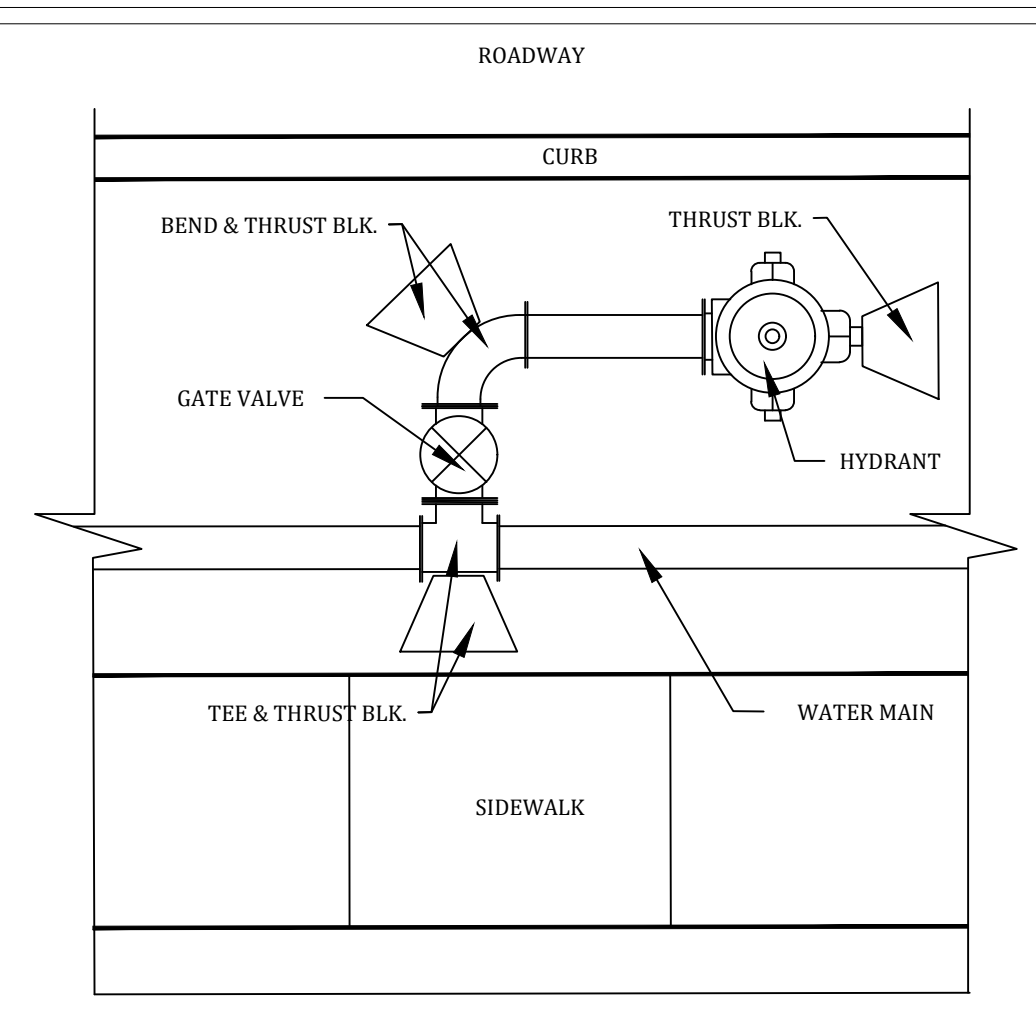


TAPPING VALVE PLAN VIEW

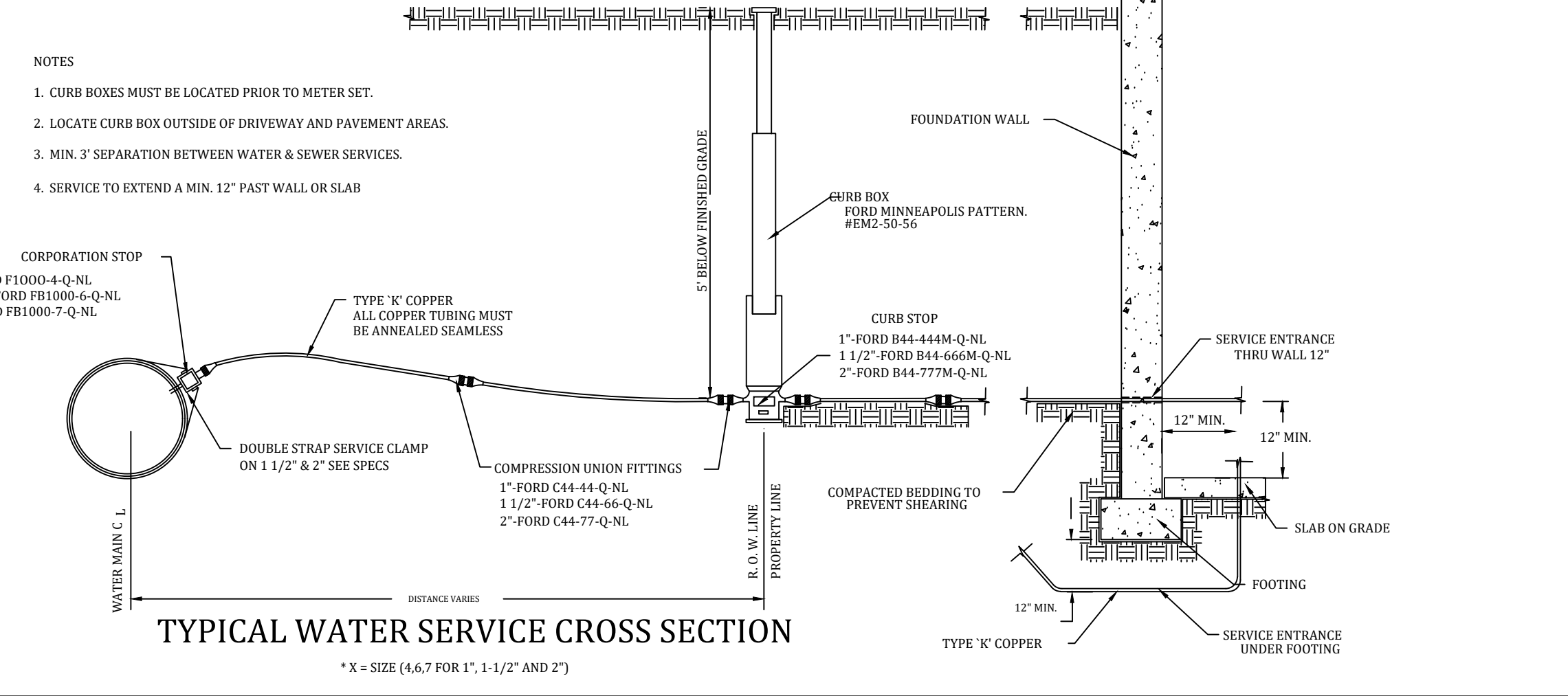
TYPICAL IN-LINE VALVE PLAN VIEW



BOLLARDS AROUND FIRE HYDRANT



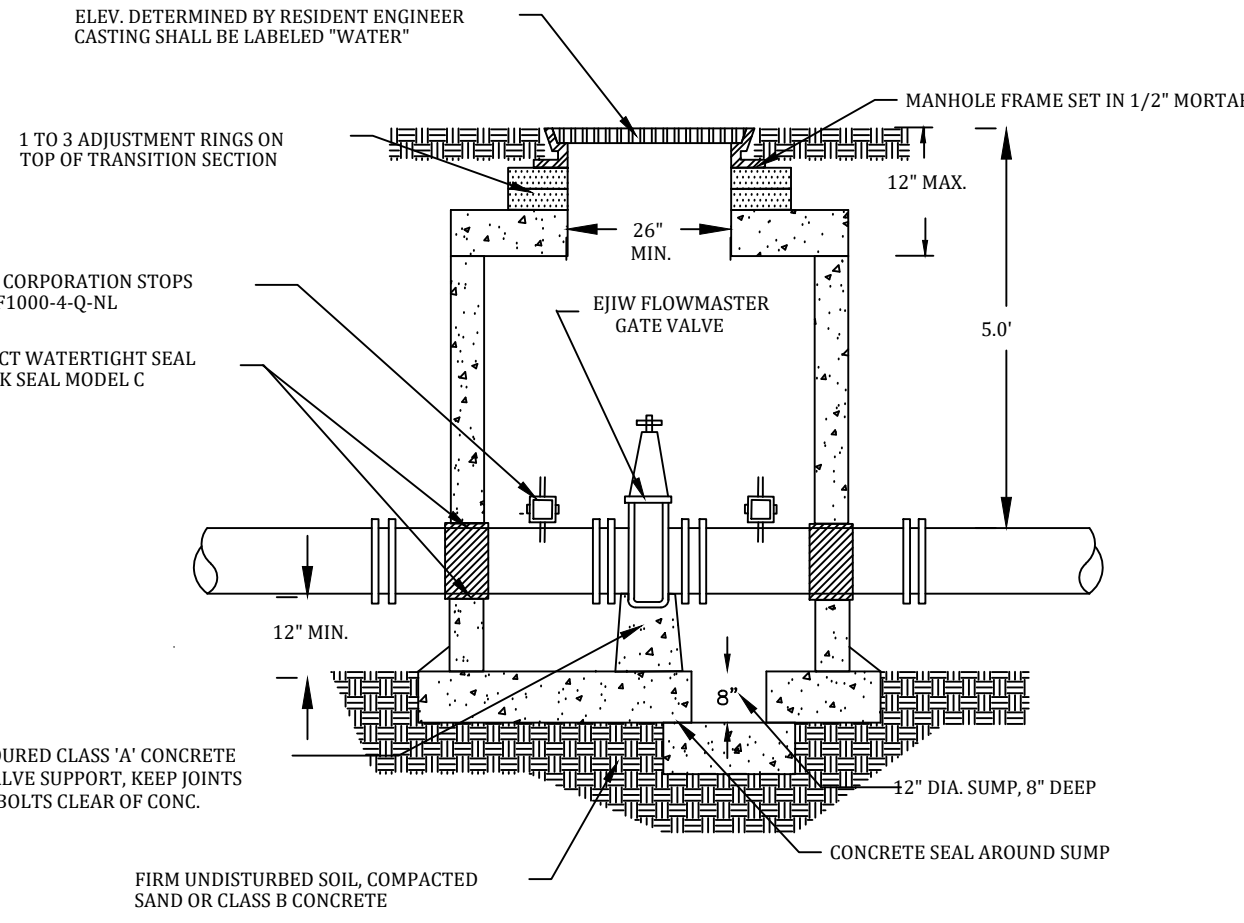
ALTERNATE LAYOUT FOR CONFINED AREAS



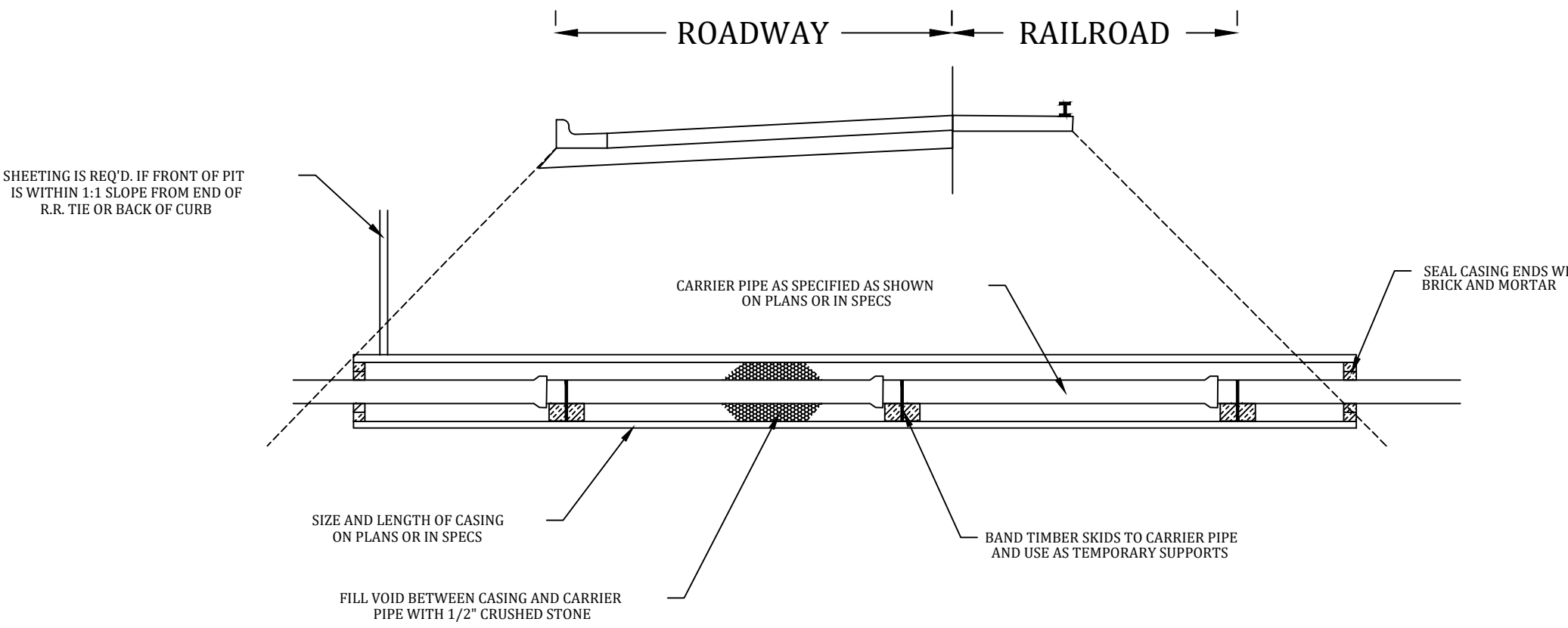
TYPICAL WATER SERVICE CROSS SECTION

* X = SIZE (4.6, 7 FOR 1", 1-1/2" AND 2")

* ALL GATE VALVES SHALL BE EJIW FLOWMASTER



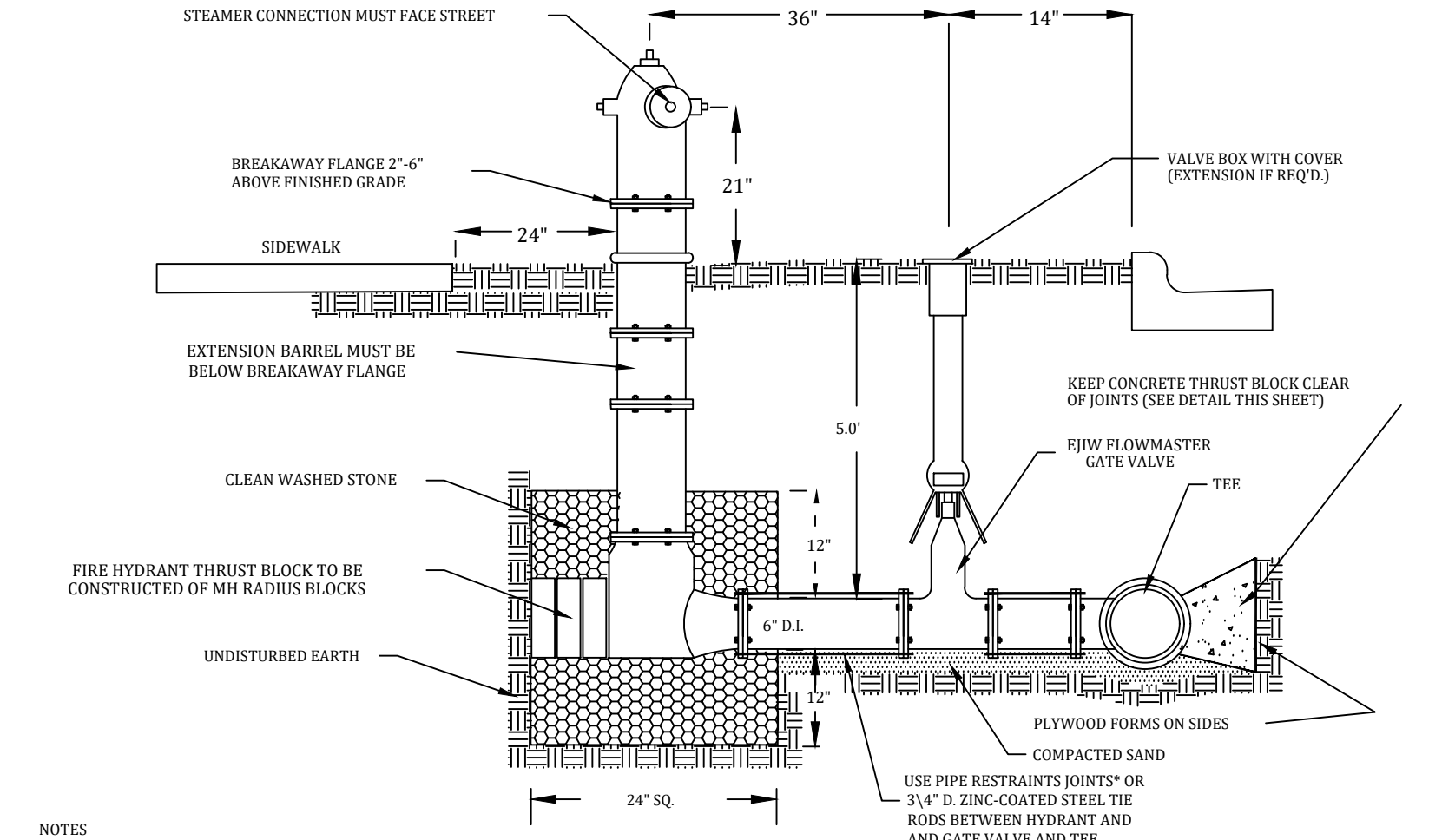
TYPICAL IN-LINE VALVE MANHOLE CROSS SECTION



CASING INSTALLATION DETAIL FOR ROADS & RAILROADS

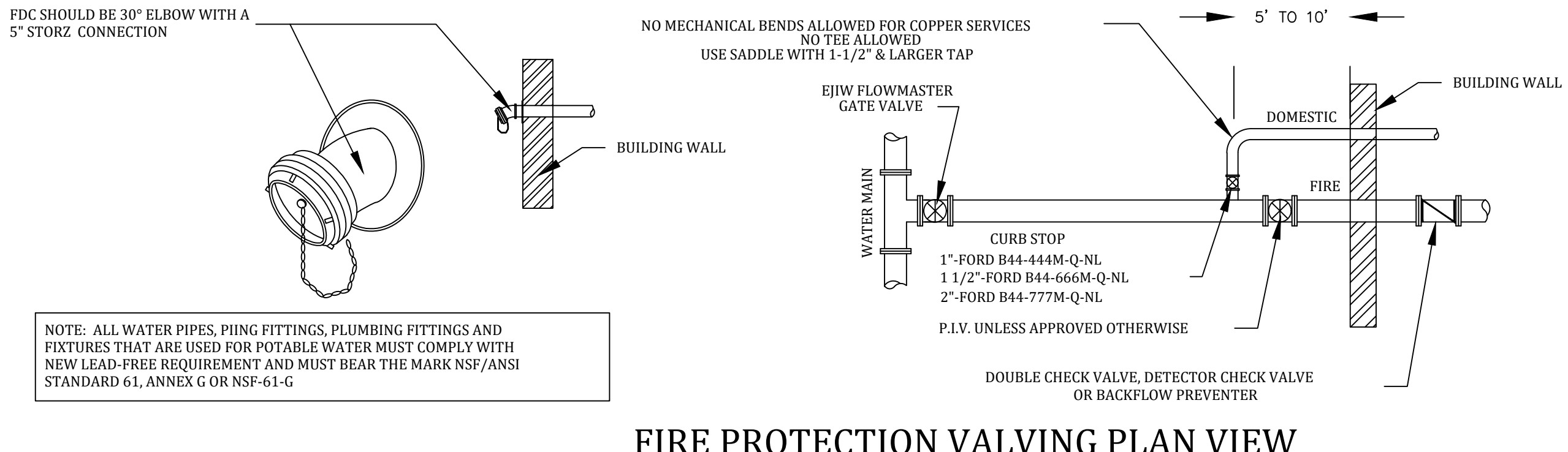
NOTES
1. WORK IN ROADS AND IN RAILROAD RIGHT-OF-WAYS SHALL BE IN ACCORDANCE WITH THE APPROPRIATE REGULATORY AGENCY'S REQUIREMENTS.
2. CASING PIPE SHALL BE ASTM 139, GRADE B OR ASTM A-53, GRADE B OR API 5-L, GRADE B OR API GRADE B WITH 0.375" MINIMUM WALL THICKNESS.

CASING AND CARRIER PIPE TO BE INSTALLED BY METHOD OTHER THAN OPEN CUT
ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED



TYPICAL HYDRANT ASSEMBLY DETAIL

NOTES
1. HYDRANT TO BE EJIW 58R250 (CODE 54915) WITH "HARRINGTON INTEGRAL HYDRANT STORZ" NOZZLE
2. HYDRANT DRAIN SHALL BE PLUGGED
3. STONE SHALL NOT BE PLACED AROUND THE HYDRANT VALVE
4. GATE VALVES SHALL BE EJIW FLOWMASTER
ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED



FIRE PROTECTION VALVING PLAN VIEW

Meridian Charter Township
Ingham County, Michigan
PUBLIC WORKS DEPARTMENT

STANDARD DETAILS FOR WATER SYSTEM

REVISIONS:	BY:	COMMENTS:
3/31/09	JG	CLARIFY CURB STOP MODELS
1/12/10	JG	P.I.V. CLARIFICATION
10/22/12	JG	WATER SERVICE SIZE & MAKE CLARIFICATIONS
6/13/14	JG	CURB BOX MANUFACTURER AND MODEL TYPE
10/13/17	JG	WATER CROSSING NOTE - FULL LENGTH PIPE
4/2/21	JG	ADD 30° ELBOW AND STORZ TO FDC
6/11/21	JG	ALL GATE VALVES SHALL BE EJIW FLOWMASTER NOTE

DRAWN BY:

CHECKED BY:

ALL WATER MAIN PIPE SHALL BE DUCTILE IRON CLASS 54 CEMENT LINED

SCALE: 1" = 40' HOR.

SHEET 4 of 4