

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

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 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.

SOILS:

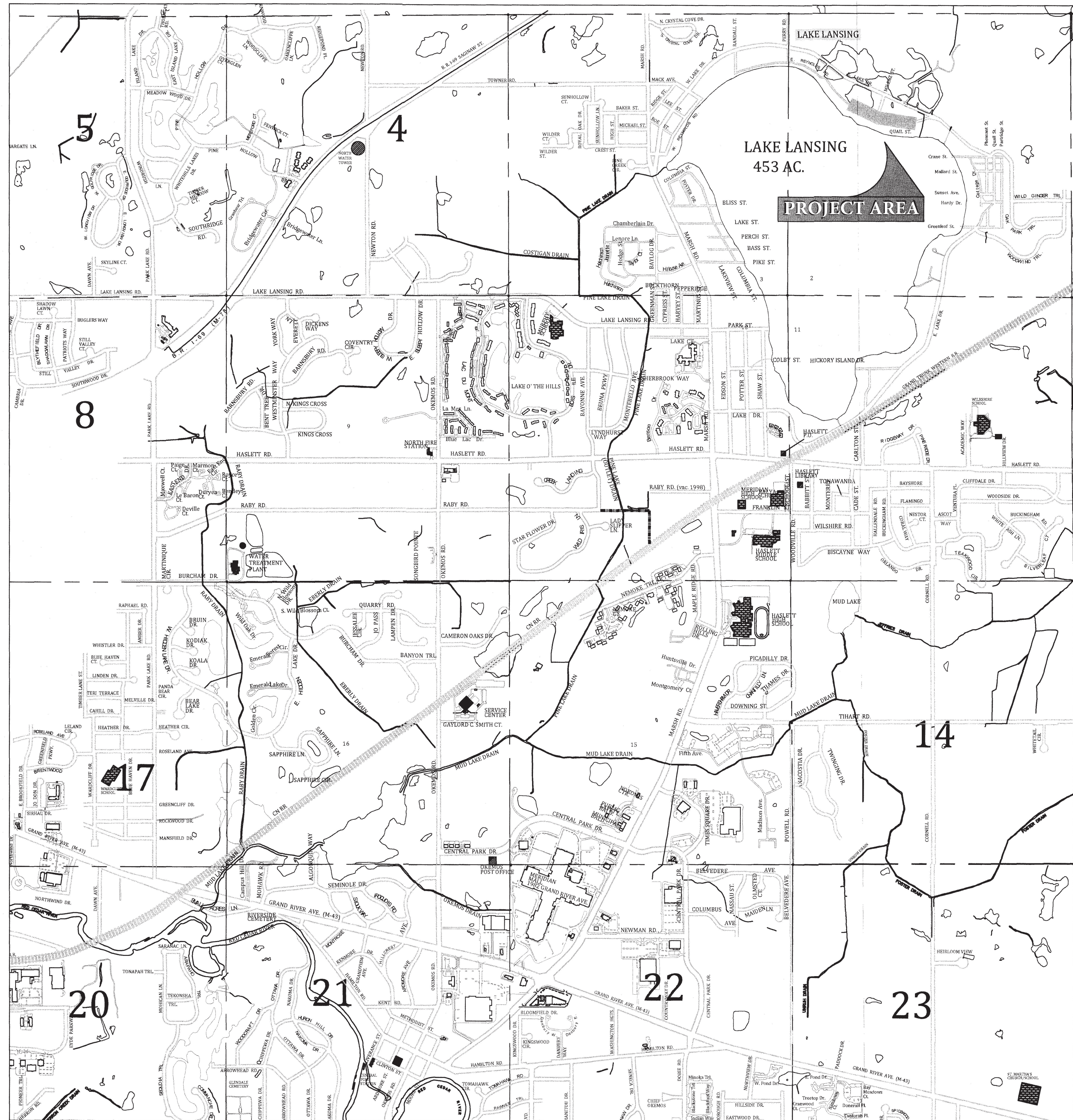
QUAIL ST
Sand, Poorly Graded Sand, Silty Sand, Sandy Silt

E REYNOLDS RD
Sandy Silt, Fibrous Peat, Organic Silt, Poorly Graded Sand

RECOMMENDED CONSTRUCTION SCHEDULING & SEQUENCING	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
DEWATER AND INSTALL SESC MEASURES												
PREPARE BYPASS PUMPING												
INSTALL GRAVITY SEWER AND FORCEMAIN												
CONNECT SERVICE STUBS												
RESTORATION OF PAVEMENT AND SOIL												
REMOVE SESC MEASURES												

COUNTY PARK WEST SEWER REPLACEMENT 2023

CONSTRUCTION PLANS
for
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN



STANDARD CONSTRUCTION NOTES

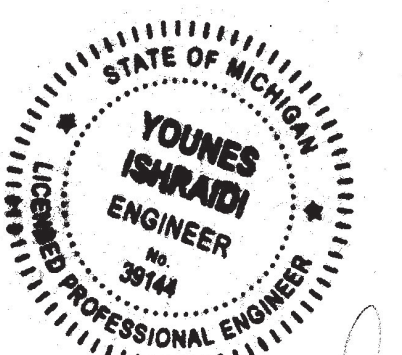
- The Contractor shall notify the Charter Township of Meridian, Department of Public Works, Office of Engineering 517-853-4440 a minimum of 72 hours prior to the start of construction of public utilities or of construction within the public right-of-way.
- All construction shall conform to the current 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" 811 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 therefrom 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.

SANITARY SEWER NOTES

- All sewers to be placed in class "B" bedding or better.
- Wyes, risers, and house leads are to be placed at locations shown on the plans or as directed by the Township Engineer. All wyes are incidental.
- Each wye or house lead shall have a plug of the same type of joint as the house lead.
- House leads shall have a minimum of 9 ft. deep at the property line. Individual site topography may require a deviation of this minimum.
- Down spouts or other conduits carrying storm or ground water shall not be connected to the sanitary sewer.
- Whenever existing manholes or sewer pipe are to be tapped holes are to be drilled at 4-inch center to center spacing around the periphery of the proposed opening to create a plane of weakness joint (or core saw the diameter) - a 12 inch thick collar is to encase the new pipe and opening.
- All sanitary sewer manholes shall be provided with watertight covers.
- All manhole covers shall bear the legend "MERIDIAN SANITARY SEWER" with tree logo.
- All public sanitary sewer main lines shall be SDR-26, or ABS truss pipe. Clay pipe may be installed in locations approved by the Township Engineer.
- The PVC (SDR-26) pipe material shall conform to ASTM D 2241, with bell and spigot joints in accordance with ASTM F 477.
- Pipe installation shall be in accordance with ASTM D 2321. All pipe shall be marked to provide ASTM designation, SDR number, manufacturer's name and pipe diameter.
- The contractor shall test the flexible pipe main for deflection by pulling a mandrel through the sewer after all backfill has been placed and compacted over the pipe. The outside diameter of the test mandrel shall be equal to the inside diameter. The outside diameter of the test mandrel shall be equal to the inside diameter of the pipe installation. A second test shall be performed after ten months of pipe installation or just before line's intended use.
- Inspection and testing of the sanitary system shall also include video inspection by CCTV method of sanitary main, air testing of sanitary main, and vacuum testing of sanitary manholes. All inspections and testing shall be performed in the presence of Township inspectors.

SHEET INDEX

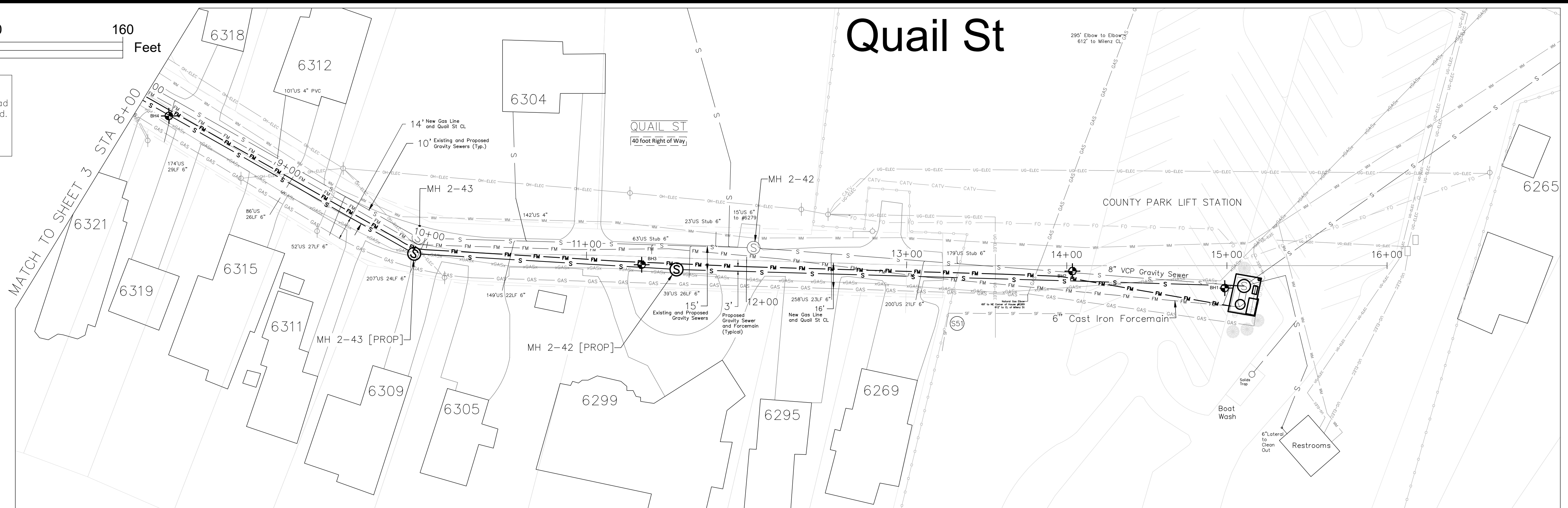
SHT #	TITLE
1	COVER SHEET
2	QUAIL ST - PLAN & PROFILE
3	E REYNOLDS RD - PLAN & PROFILE
4	SECTIONALS AND ZOOMS
5	STANDARD SANITARY DETAILS
6	ADDITIONAL DETAILS AND SOIL BORINGS



PROJECT QUANTITIES

ITEM	DESCRIPTION	QTY	UNIT
1a.	Traffic Control, Quail St and E Reynolds Rd	1	LSum
1b.	Traffic Control, County Park Boat Launch	1	LSum
2a.	Pavt. Restoration, Quail St and E Reynolds Rd	1	LSum
2b.	Pavt. Restoration, County Park Boat Launch	1	LSum
4.	Extra Stone Bedding	250	CY
6.	Deep Foundation Sets	3	Ea
7.	Dewatering	1	LSum
10a.	Mobilization	1	LSum
10b.	Bypass Pumping, Force Main, 250 gpm	1	LSum
10c.	Bypass Pumping, Gravity Main, 8 gpm	1	LSum
10d.	Geotextile, Stabilization, Non-woven	1,010	SY
20a.	Sanitary Sewer, PVC, 8 inch, Gravity, Typical Trench Detail	610	Ft
20b.	Sanitary Sewer, PVC, 8 inch, Gravity, Special Trench Detail	695	Ft
20c.	Sanitary Sewer, 6 inch, Force Main	1,450	Ft
20d.	Sanitary Sewer, PVC, 8 inch, Connect to Lift Station Wetwell	1	Ea
20e.	Sanitary Sewer, Force Main, Connect to Lift Station Effluent	1	Ea
20f.	Sanitary Sewer, VCP, 8 inch, Abandon (Existing Gravity)	1,295	Ft
20g.	Sanitary Sewer, CI, 6 inch, Abandon (Existing Force Main)	1,450	Ft
21a.	Sanitary Structure, 48 inch dia	5	Ea
21b.	Sanitary Structure, Drop Manhole, 48 inch dia	1	Ea
21d.	Sanitary Structure, 48 inch dia, Remove	6	Ea
22a.	Sanitary Sewer, Service Stub, PVC, 6 inch	22	Ea
51.	Landscaping, Fence, Moving	15	Ft
53a.	Soil Erosion and Sediment Control	1	LSum
54.	Site Restoration	1	LSum

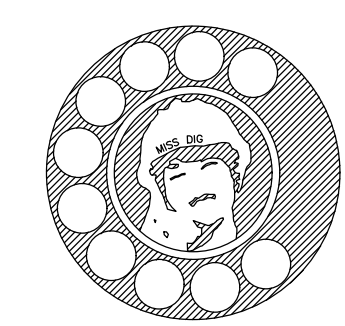
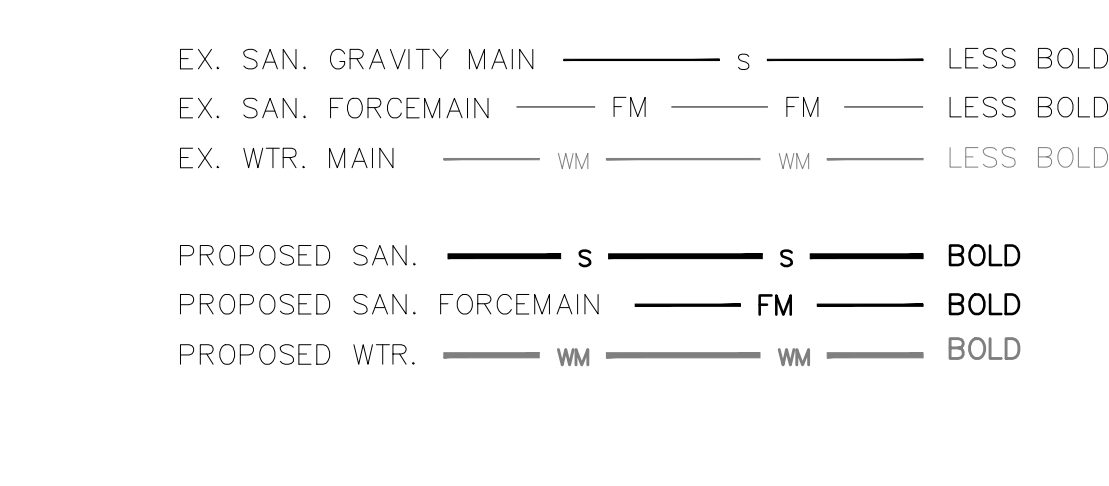
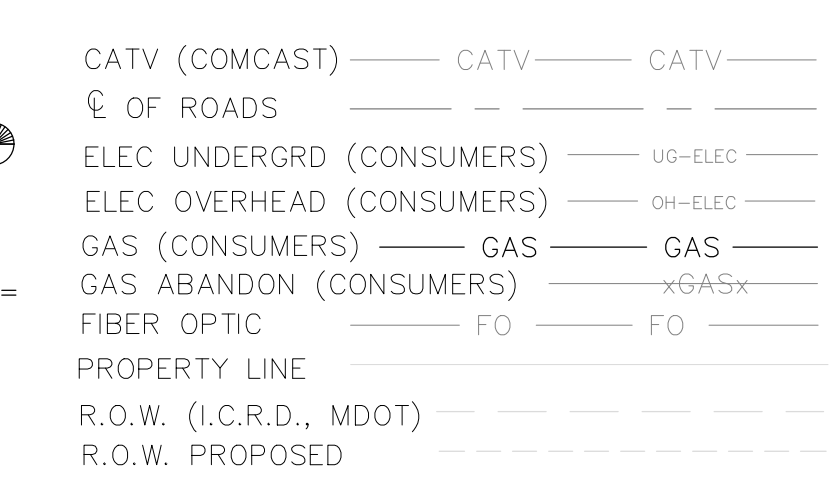
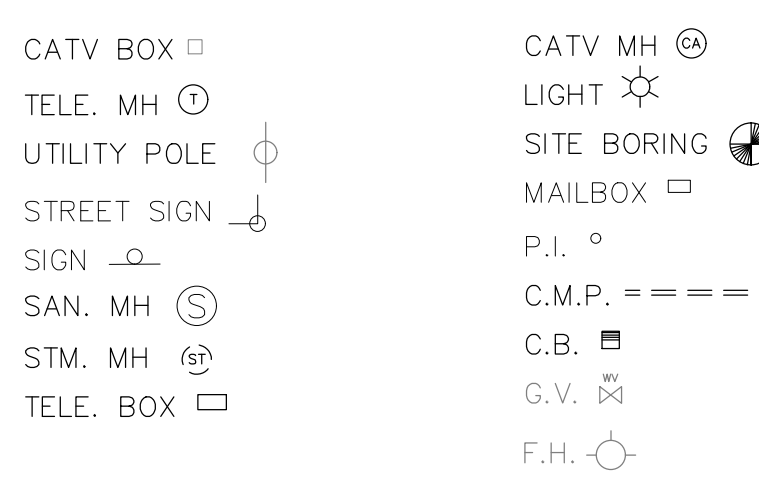
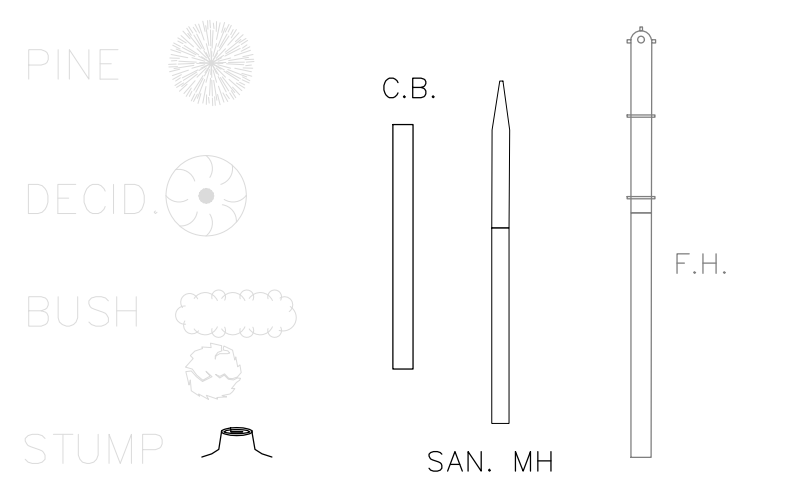
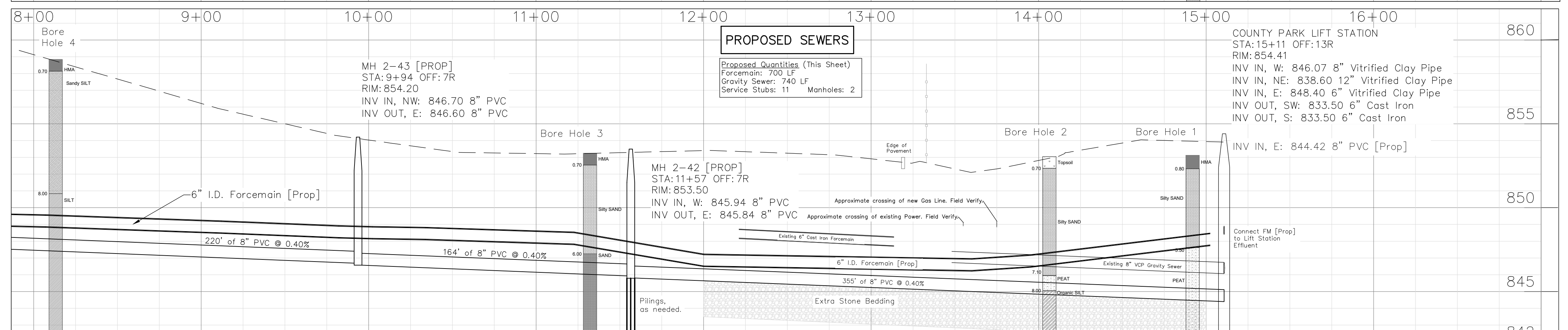
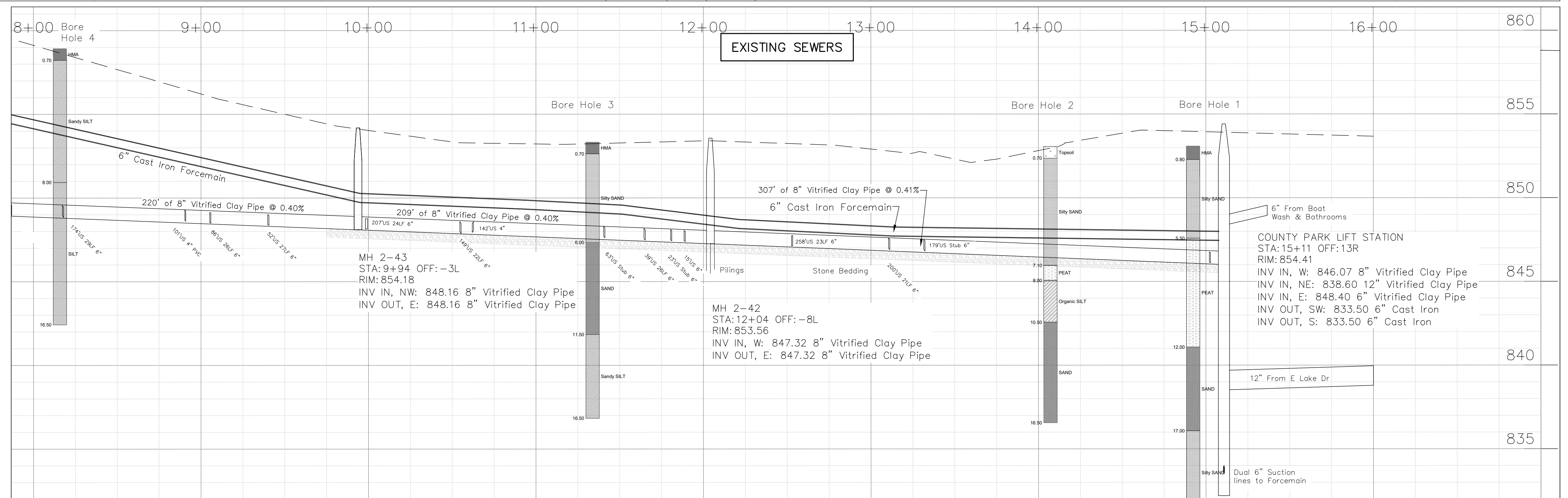
BENCHMARK
Bolt in South side of
Utility Pole across the road
from #6373 E Reynolds Rd.
Elevation: 861.03
Northing: 461311.02
Easting: 13114479.47



PROPOSED SEWER MATERIALS
Gravity: 8" PVC SDR 21 with Restrained Joints, not Fused. Example: Certo-Lok Yelomine.
Forcemain: 8" HDPE DR 11 or 6" PVC SDR 21 with Restrained Joints. Include Tracer Wire.

SUGGESTED SANITARY SEWER CONSTRUCTION - GRAVITY & FORCEMAIN

- Dewater along construction route. See Dewatering Objectives on next sheet for details.
- Expose the Lift Station Wetwell from the west to a depth of 10 feet. Support the exposed existing sewer connection.
- Bypass the Existing Gravity Sewer from the first upstream manhole (2-42) to the Lift Station Wetwell.
- 3.A. Secure the bypass hose inside the Wetwell below the working area for Step 4 with weights or straps.
- 3.B. Temporarily plug the existing 8" sewer connection into the Wetwell to capture and contain flows from 2 house service leads.
- 3.C. Resume normal gravity sewer operations at the end of each work day.
- Core into the Wetwell to install the new Gravity Sewer 1 1/2 feet lower than the existing.
- Dig a trench to the west to install the new Gravity Sewer.
- Begin placing new Gravity Sewer from the cored Wetwell connection.
- After the first pipe segments are placed, backfill and cease bypassing the existing gravity sewer.
- Begin laying Forcemain at STA 14+00, outside of the Boat Launch pavement. Mark the location and leave stubbed for now.
- Continue installing the new sewers westwards and upstream.
- 9.A. The Gravity sewer will typically be installed 10' south and 1.5' deeper than the existing gravity sewer. Leave the existing gravity sewer intact and in service during installation.
- 9.B. The Forcemain will typically be installed in parallel 3' north of the new Gravity sewer within the same trench. Lay this after firmly bedding the gravity sewer. Leave the existing Forcemain intact and in service until the new one is ready for connection. The existing forcemain will need to be properly supported when crossed, as it is old Cast Iron.
- On the new gravity sewer, place new wyes and service leads, leaving them stubbed out of the roadway.
- 10.A. Mark their locations for future attachment.
- 10.B. If the Service Connection takes place under a driveway; leave the stub within the roadway so it can be attached later without disturbing a resident's driveway.
- When installing the new Gravity sewer at the Milenz St intersection, place a stubbed external drop connection on the new Manhole 2-45 [Prop] to later connect with the northern existing 8" VCP sewer.
- Finish the Gravity main at Manhole 2-47 [Prop].
- Clean, televise and test the new Gravity Sewer.
- Continue installing Forcemain to the west towards Manhole 2-49 [Prop].
- Bypass the entire Forcemain, from the Lift Station bypass valve to Manhole 2-49 (West of 2-48), est 1670 ft.
- 15.A. Run the bypass hose along the North edge of the road, with ramps to protect it at driveways, the boat launch turn-around and the intersection with Milenz St.
- 15.B. If Snow Plowing needs to occur during construction, these crossings will need to be buried.
- Replace Manhole 2-48 with Manhole 2-48 [Prop]. Reconnect to existing 12" Gravity Sewer, also placing a wye for the connection to House #6361. Attach the new Forcemain to this Manhole and backfill.
- Test the new Forcemain currently installed.
- At STA 14+00, re-expose the stubbed Forcemain.
- At the Lift Station, expose the effluent Forcemain connection from the west at a depth of 6 feet.
- Dig a trench to lay pipe that will attach the stubbed Forcemain to the Lift Station effluent connection, replacing the existing.
- Test this section of new Forcemain.
- Stop bypassing the existing Forcemain and put the new complete Forcemain into service.
- Re-expose and connect the sanitary service stubs to the house leads, placing the new Gravity Sewer into service.
- Re-expose Manhole 2-45 [Prop] at the Milenz St intersection down to the stubbed external drop connection.
- Expose Manhole 2-45 from the South to a depth of 8 feet.
- From the stubbed external drop connection on Manhole 2-45 [Prop], lay pipe towards the existing 8" Milenz St gravity sewer, removing the existing Manhole 2-45 as needed.
- When ready to connect the new 8" sewer from MH 2-45 [Prop] to the existing Milenz St sewer, temporarily plug or bypass its flow. Make the connection then resume gravity flow into the new sewer system.
- Abandon the existing Gravity sewer and Forcemain in place. Excavate and Remove Manholes 2-47, 2-46, 2-43 and 2-42.



WOLVERINE PIPE LINE COMPANY 219-844-9510

72 HOURS
(3 WORKING DAYS)
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
(TOLL FREE)

Meridian Charter Township
Ingham County, Michigan

SANITARY SEWER SYSTEM

County Park West Sewer Replacement 2023

DRAWN BY: JH 6/2/23 CHECKED BY: YI 6/2/23

REVISIONS:		
DATE	BY:	COMMENTS:
6/2/23	JH	Preliminary for Permitting
6/9/23	JH	For Construction
11/2/23	JH	Re-bid alongside Lift Station.

SCALE:
1" = 40' Horizontal
1" = 4' Vertical

SHEET 2/6

EXISTING UTILITY ARRANGEMENT

An 8" Vitrified Clay Gravity Main collects from Reynolds, Quail and Milenz. It flows east to the County Park Lift Station which pumps west through a 6" Cast Iron Forcemain. Both sewers were constructed in parallel sharing a trench to presumably benefit from a stone bedding supportive layer. They start at the lift station 11' feet apart, then narrow to 3' apart along the tight route west. The Forcemain starts above and to the south of the Gravity main then twists to below and to the north around STA 6+00.

A Watermain was later installed 10' north of the Gravity main, although the spacing decreases as the western roadway curves and narrows. A Consumers Natural Gas line runs along the south edge of the road which has been abandoned after a new pipeline was directionally bored along the southern right of way.

DEWATERING OBJECTIVES

- A geotechnical firm has recommended lowering the standing water table to two feet below the lowest excavation. The water table was measured at a springtime high of 851' and the deepest existing Manhole resides at 846'.
- Wellpoints along the sewer installation path are the recommended option for this challenge. The marsh area near STA 4+00 is particularly saturated and may require a more extensive approach.
- To protect the nearby lake, discharge must be filtered of fine soil particles before being released to the environment. This can be accomplished with suitable SESC measures such as a geotextile filtration bag or temporary sedimentation basin dosed with coagulants. See the Dewatering Specification Sheets for details.
- A suggested discharge point is the northern edge of the County Park Boat Launch property, pending consultation with a specialized Dewatering Contractor. If this approach is not feasible without adversely affecting the nearby wetland and lake, discharge shall be into the Gravity Sanitary Sewer at manhole 2-49.

SUPPORTING THE NEW SEWERS

- Segments in suitable inorganic soils (STA 6+00 → 12+00) will be supported with a standard bedding layer as described by the 'Typical Trench Detail' on the Sanitary Detail Sheet.
- Segments in unsuitable organic soils (STA 2+25 → 6+00 and 12+00 → 15+20) will be over-excavated and supported by a 2'-3" deep stone bedding layer enclosed within a non-woven geotextile stabilization fabric meeting MDOT Section 910 standards. The fabric will span the width of the trench and overlap atop the stones by at least two feet. If the water table cannot be adequately lowered to provide a dry trench, the geotextile fabric may be substituted with a geogrid meeting MDOT Section 910 requirements.
- Due to a high seasonal water table, the sewers will be bedded with crushed stone. See the 'Special Trench Detail' with the Specification Sheets.
- Manhole 2-46 [Prop] will require deep foundations reaching beyond the Peat and Organic Silt strata into a stable layer of Sand. Manhole 2-47 [Prop] and 2-42 [Prop] may also need similar supports. These can be of either Helical or Wooden design, see Specification Sheets for details.

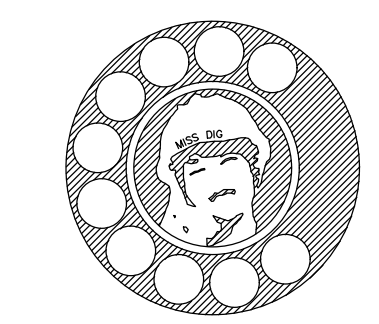
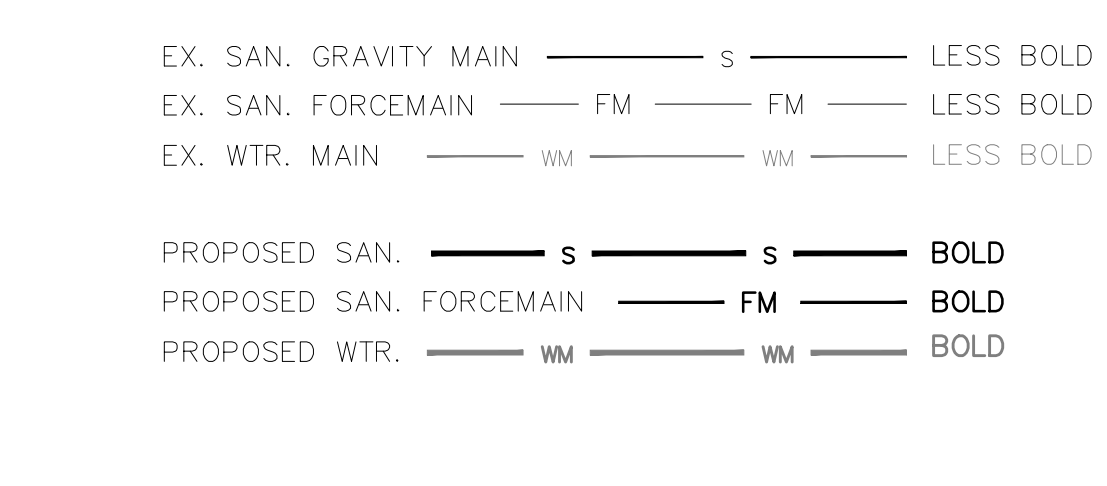
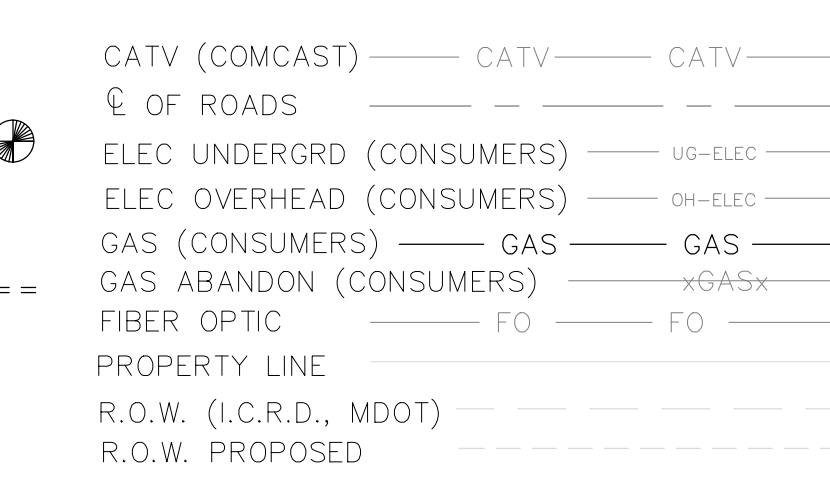
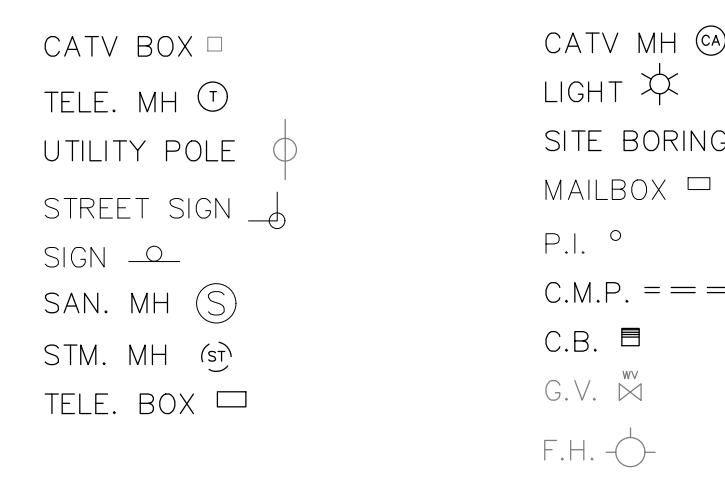
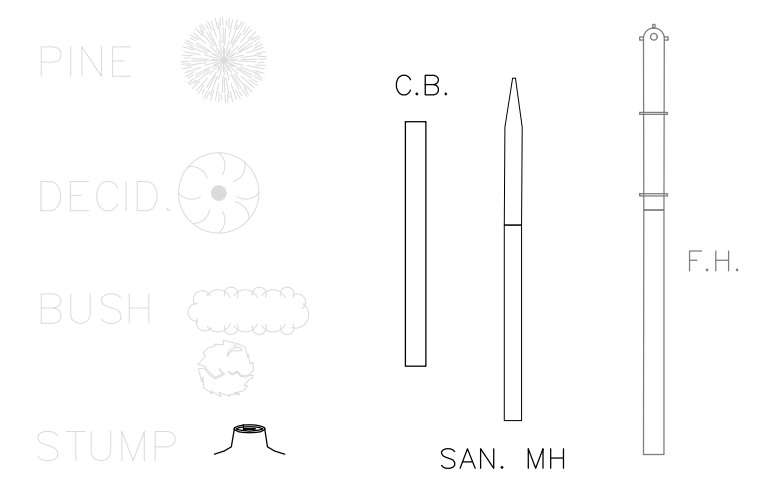
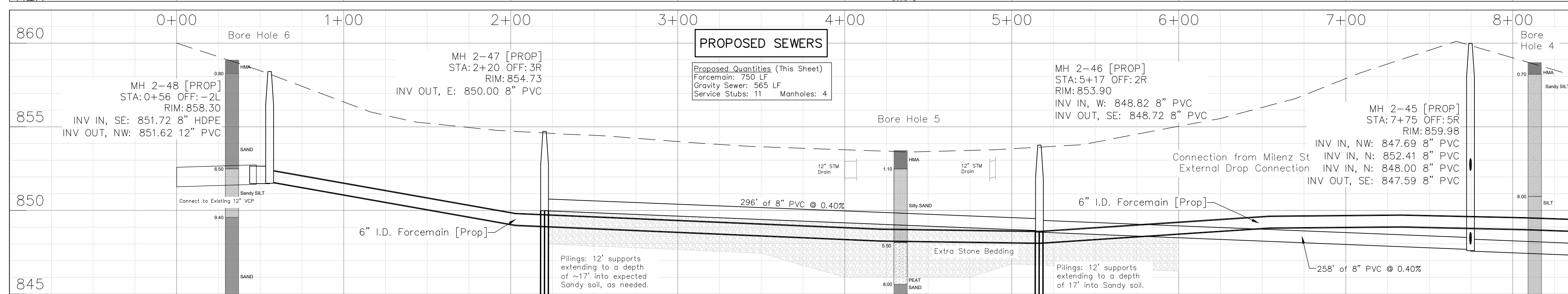
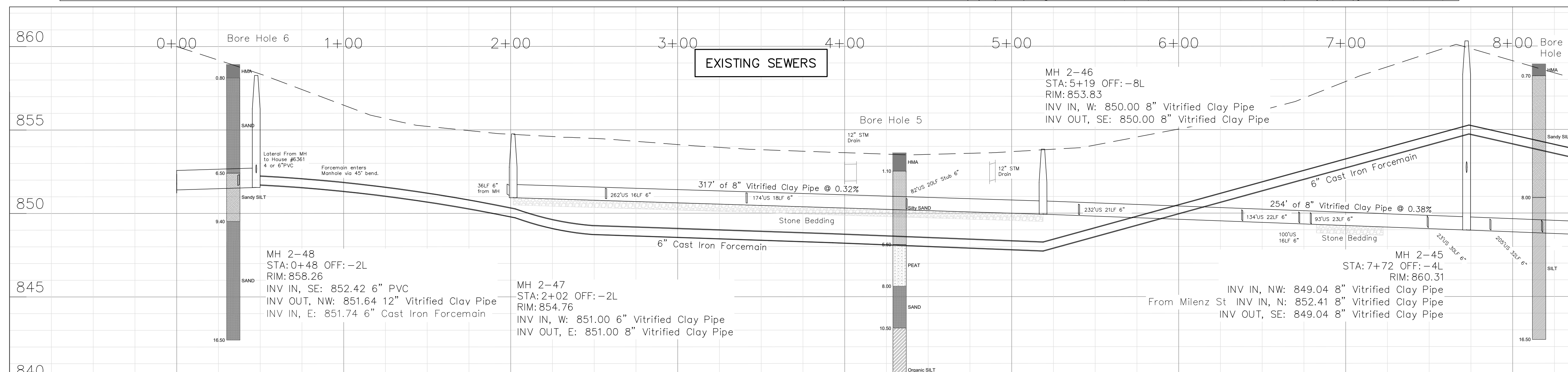
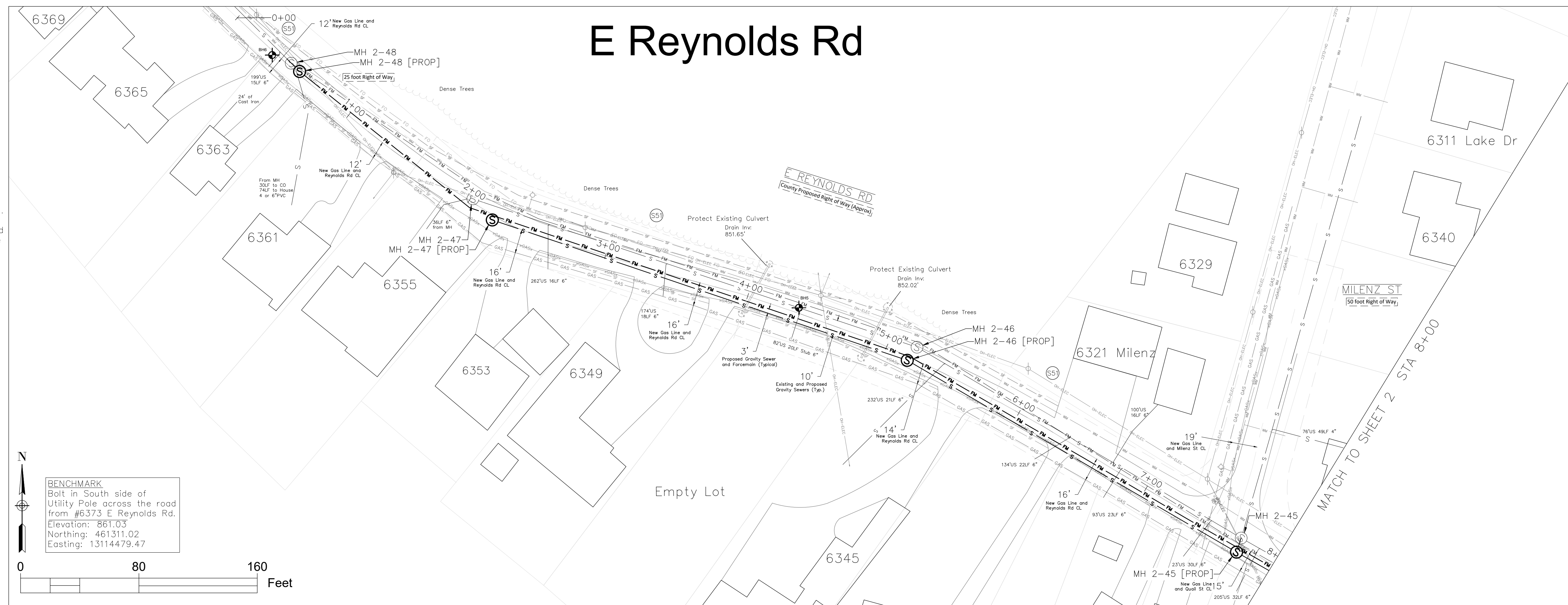
PAVEMENT NOTES

- County Park Boat Launch Parking Lot:
 - Replace pavement as defined in contract.
- Quail St and E Reynolds Rd:
 - Do not replace pavement, roads will be paved under a separate contract.
 - Instead place 12" 21AA aggregate road base to a height of 2" above the existing pavement on Milenz St and W Reynolds Rd.

MANHOLE NOTES

- Manholes are to be installed without castings or chimneys.
- Construct manholes with a temporary road plate on top of the cone section at 15" below the road grade.
- Manholes shall be located, triangulated and staked before burial beneath the Road Surface described above.

E Reynolds Rd



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Meridian Charter Township
Ingham County, Michigan

SANITARY SEWER SYSTEM

County Park West Sewer Replacement 2023

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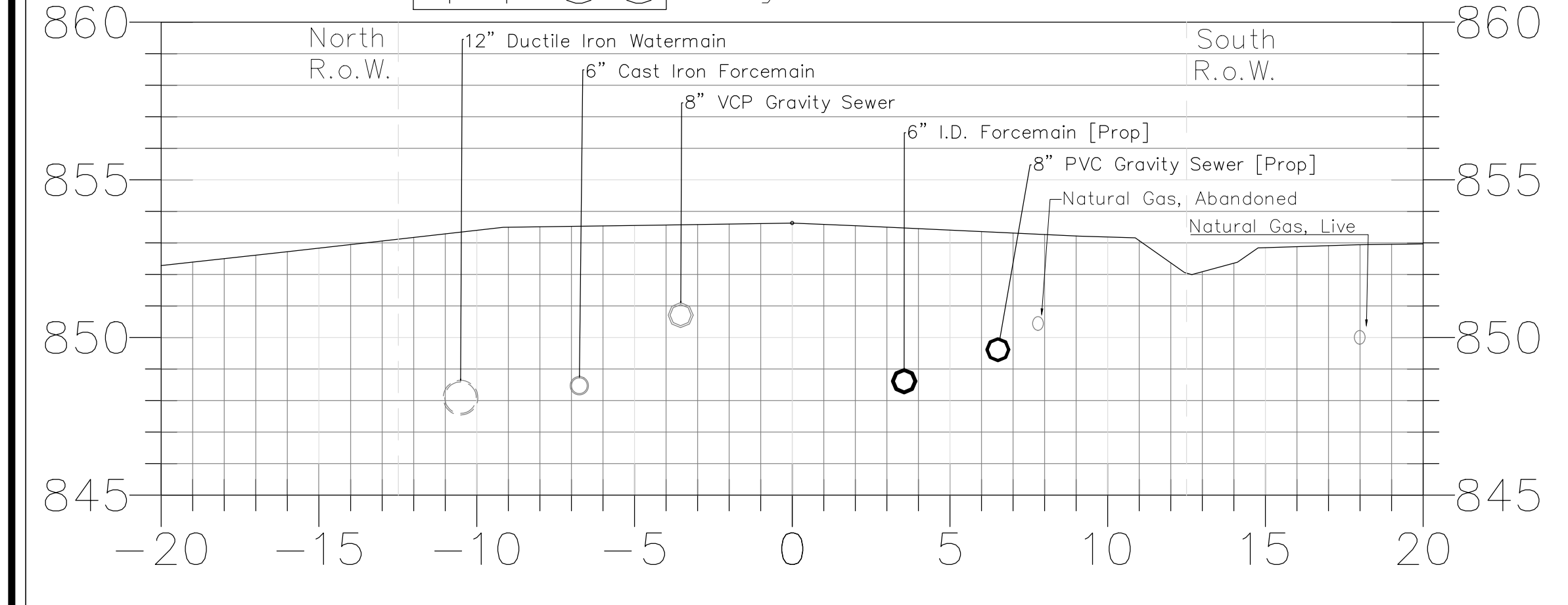
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SCALE:
1" = 40' Horizontal
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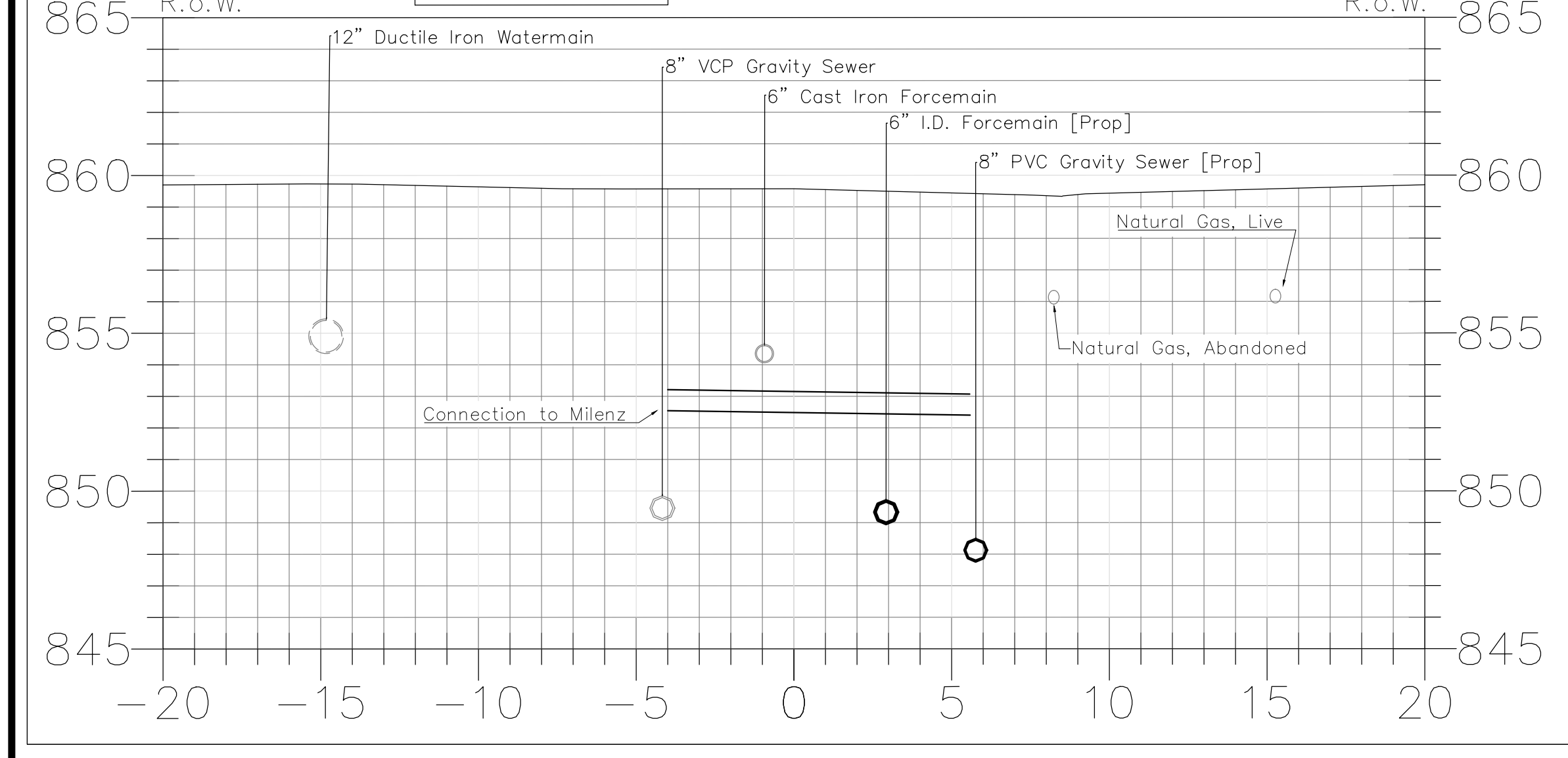
SHEET 3/6

Sectionals & Zooms

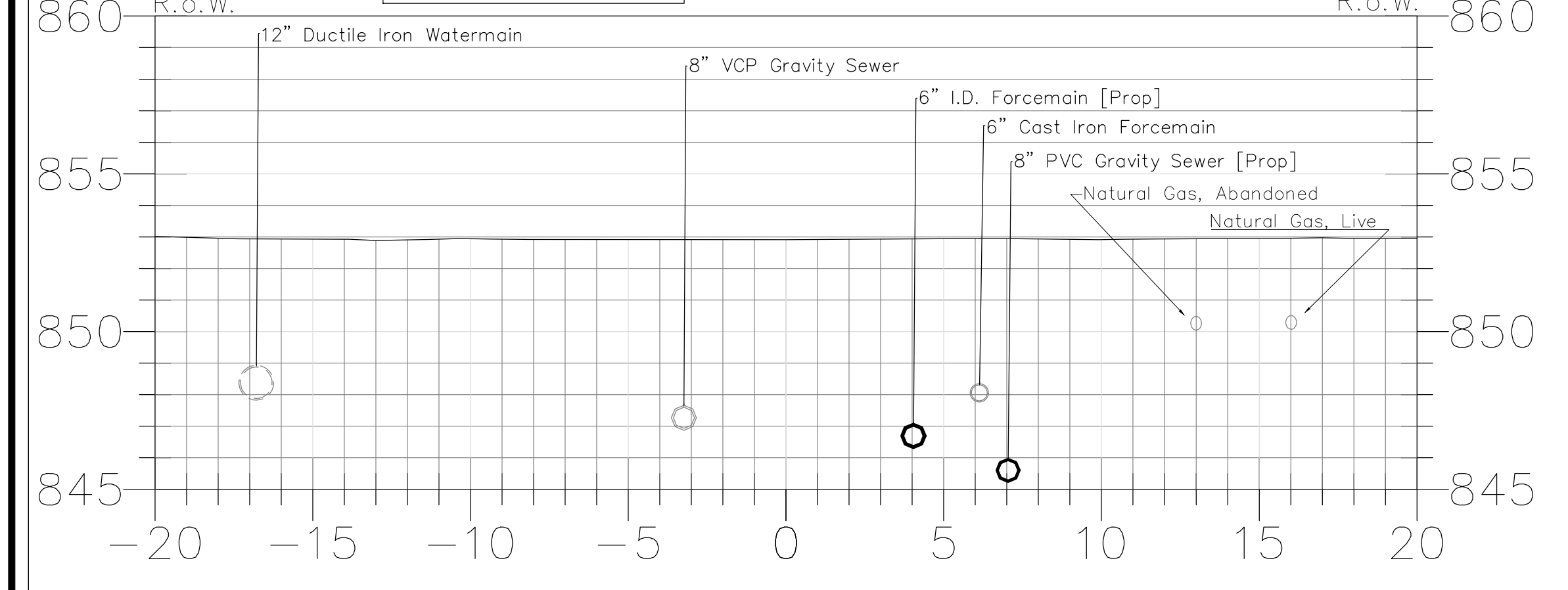
4+00 Reynolds Rd



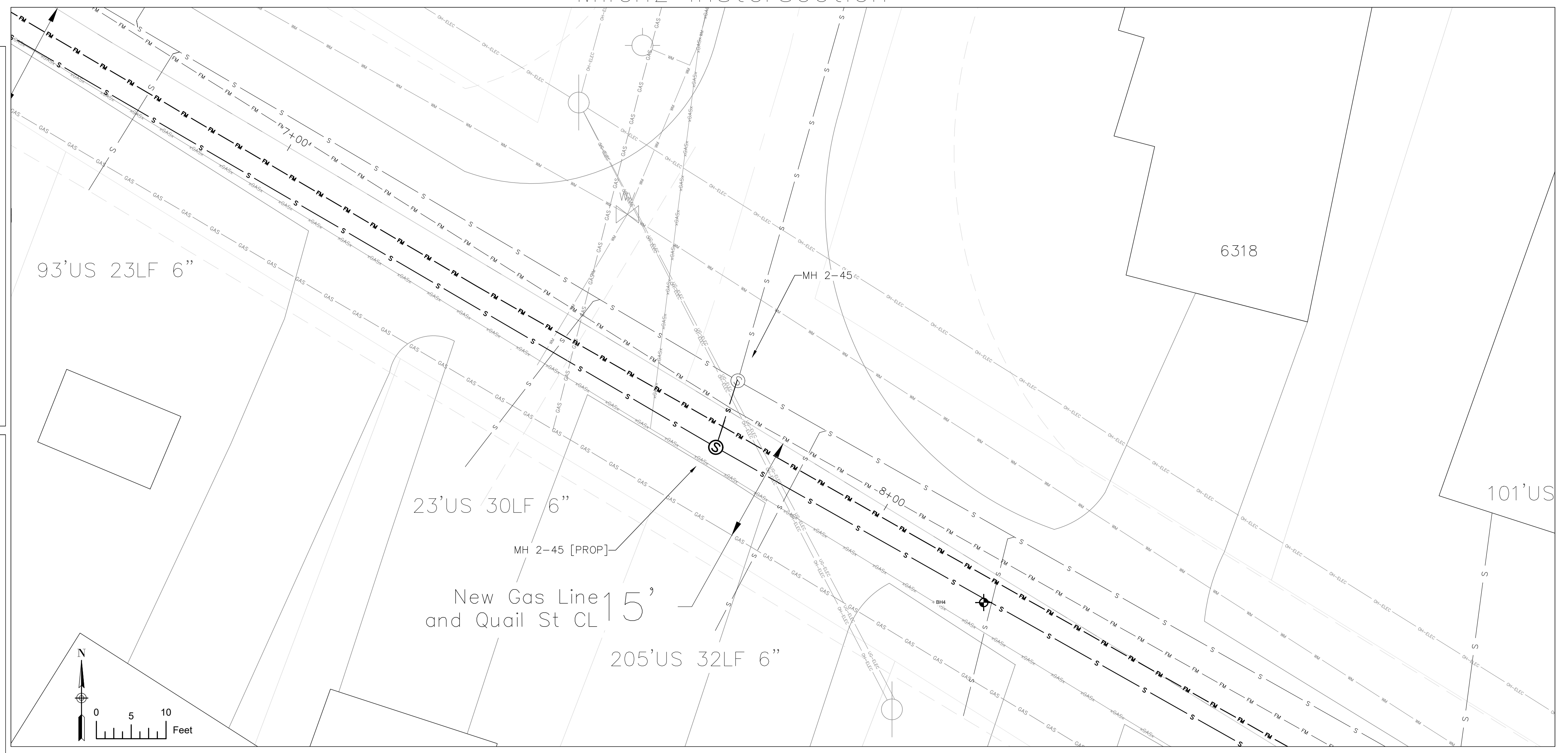
7+50 Milenz Instersection



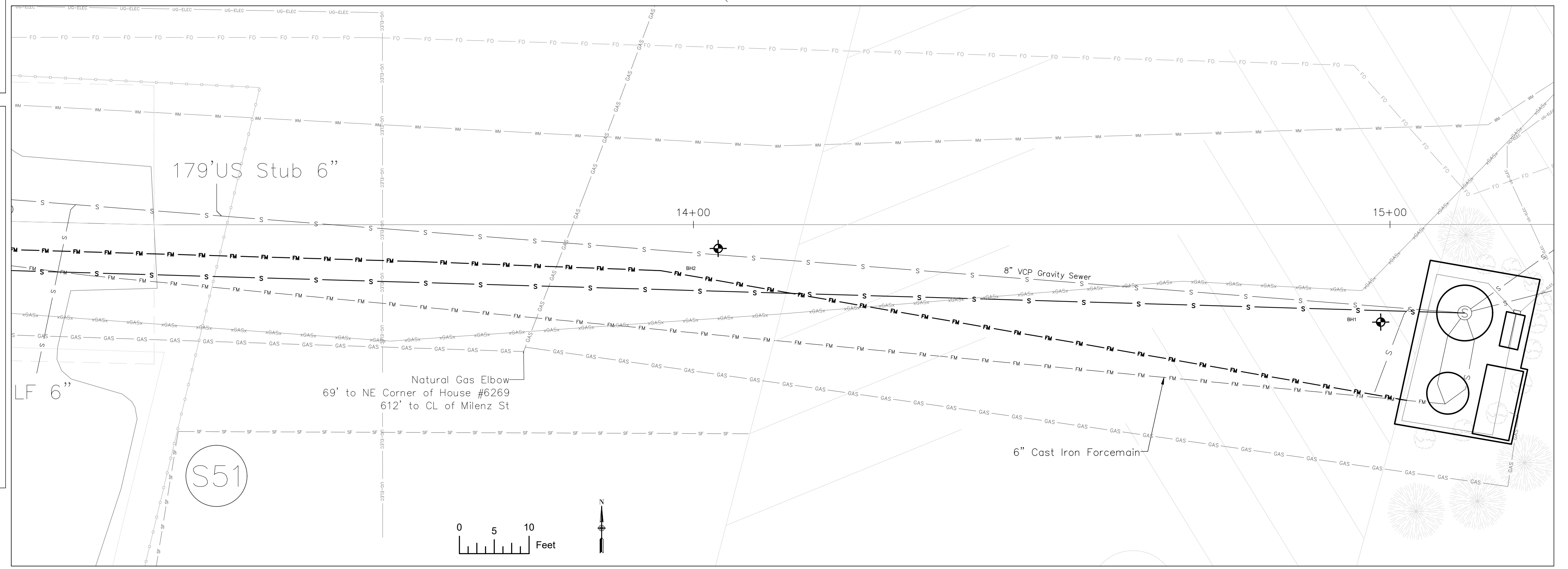
13+00 Quail St



Milenz Instersection



East of Quail St



PINE	C.B.	CATV BOX	CATV MH	CATV (COMCAST)	CATV
DECID	↑	TELE. MH	LIGHT	☒ OF ROADS	---
BUSH	↑	UTILITY POLE	SITE BORING	ELEC UNDERGRD (CONSUMERS)	UG-ELEC
STUMP	↑	STREET SIGN	MAILBOX	ELEC OVERHEAD (CONSUMERS)	OH-ELEC
	↑	SIGN	P.I.	GAS (CONSUMERS)	GAS
	↑	SAN. MH	C.M.P.	GAS ABANDON (CONSUMERS)	XGASx
	↑	STM. MH	G.V.	FIBER OPTIC	FO
	↑	TELE. BOX	F.H.	PROPERTY LINE	---
	↑			R.O.W. (I.C.R.D., MDOT)	---
	↑			R.O.W. PROPOSED	---

EX. SAN. GRAVITY MAIN	---	LESS BOLD
EX. SAN. FORCEMAIN	---	LESS BOLD
EX. WTR. MAIN	---	LESS BOLD
PROPOSED SAN.	---	BOLD
PROPOSED SAN. FORCEMAIN	---	BOLD
PROPOSED WTR.	---	BOLD

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SANITARY SEWER SYSTEM

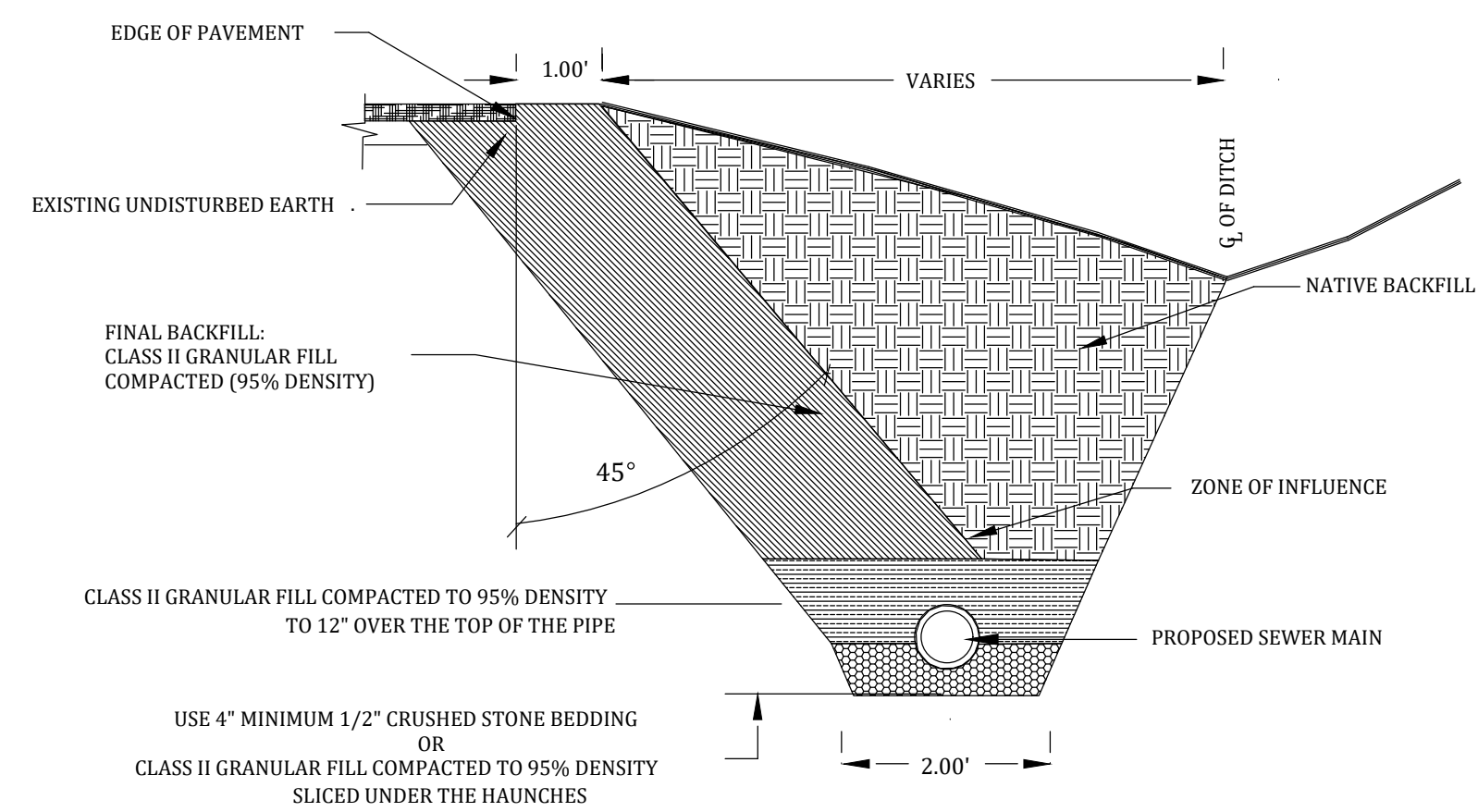
County Park West Sewer Replacement 2023

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SCALE:
1" = 10' Horizontal
1" = 1'

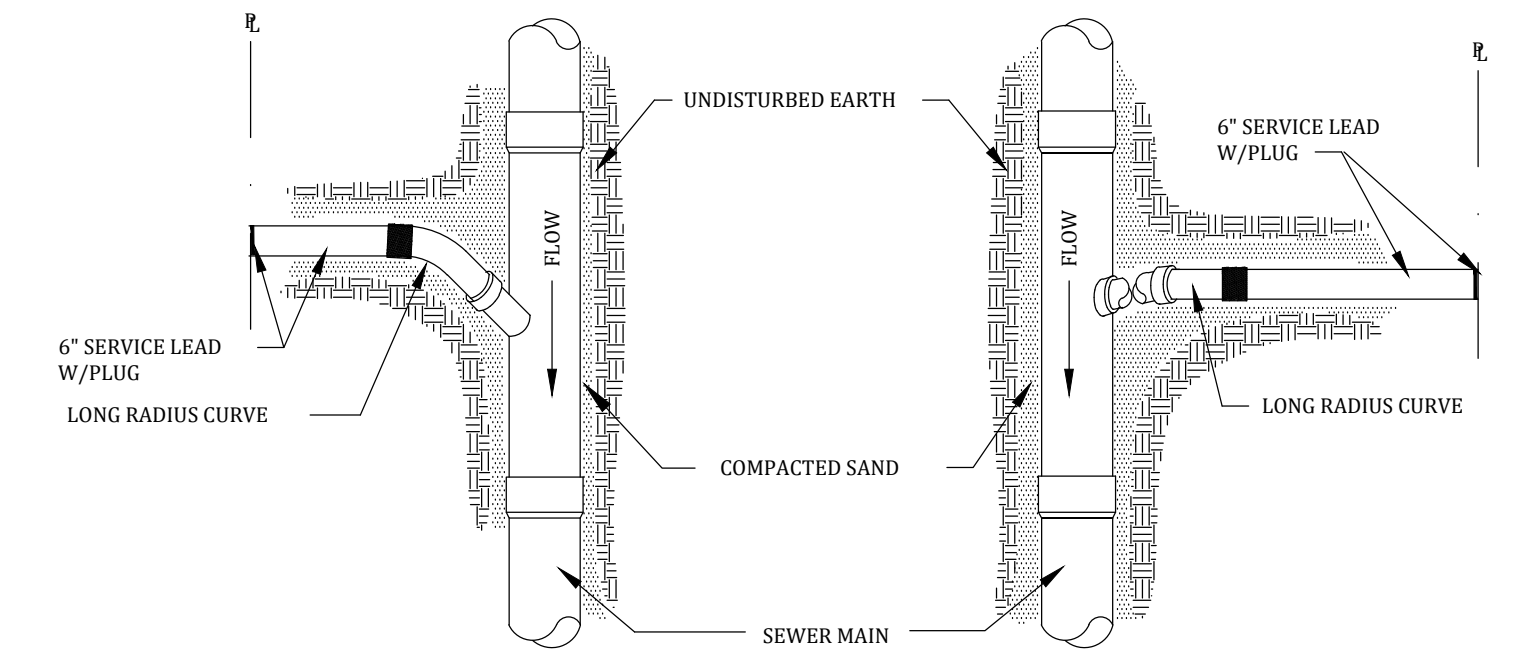
DRAWN BY: JH 6/2/23 CHECKED BY: YI 6/2/23

SHEET 4/6



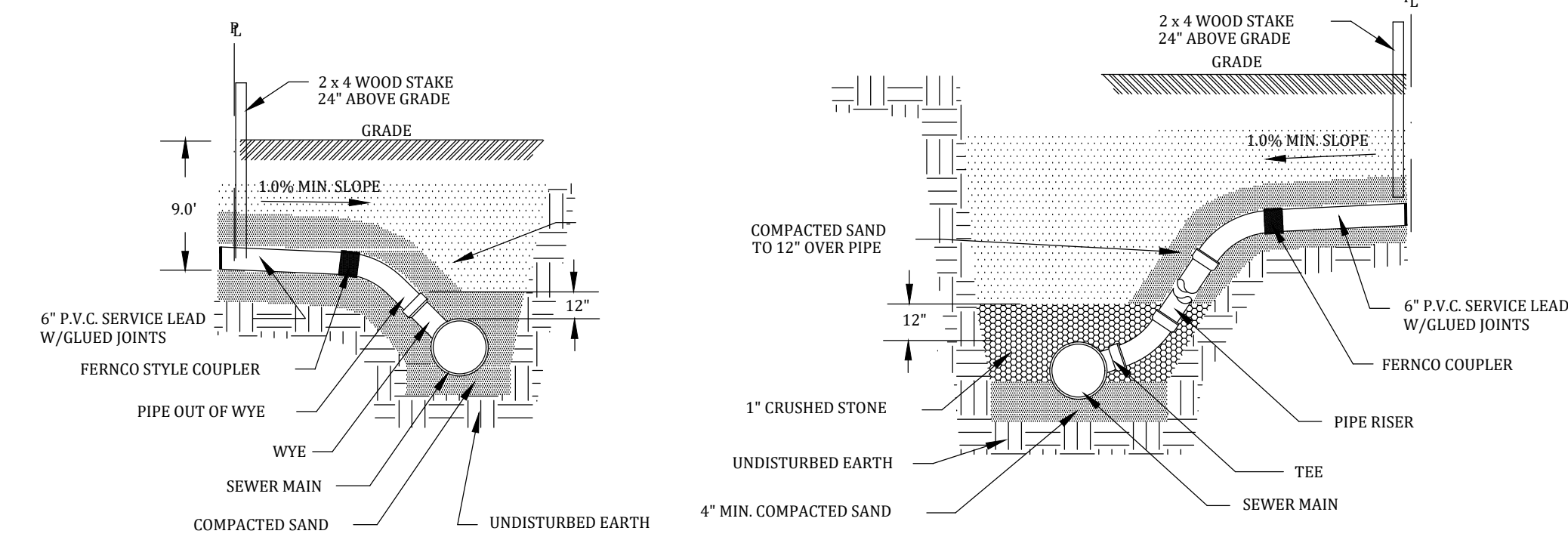
CLASS-B TRENCH DETAIL

- NOTES:
- LEADS AND RISERS SHALL BE CONSTRUCTED OF MATERIALS AS SPECIFIED AND OF SIZES AS SHOWN ON THE PLANS.
 - DEPTH AT PROPERTY LINE SHALL BE 9' UNLESS OTHERWISE SHOWN ON THE PLANS.
 - IF CONCRETE PIPE IS USED, AN ASBESTOS CEMENT BELLS TO BE CAST IN THE WALL OF THE PIPE FOR USE AS A TEE BRANCH.
 - FERRO-STYLE FLEXIBLE COUPLINGS SHALL BE USED WHEN CONNECTING THE HOUSE TO THE STUB.
 - MIN. 3" SEPARATION BETWEEN WATER & SEWER SERVICES.
 - ALL REFERENCES TO STONE BEDDING SHALL MEAN CRUSHED STONE.



PLAN WITHOUT RISER

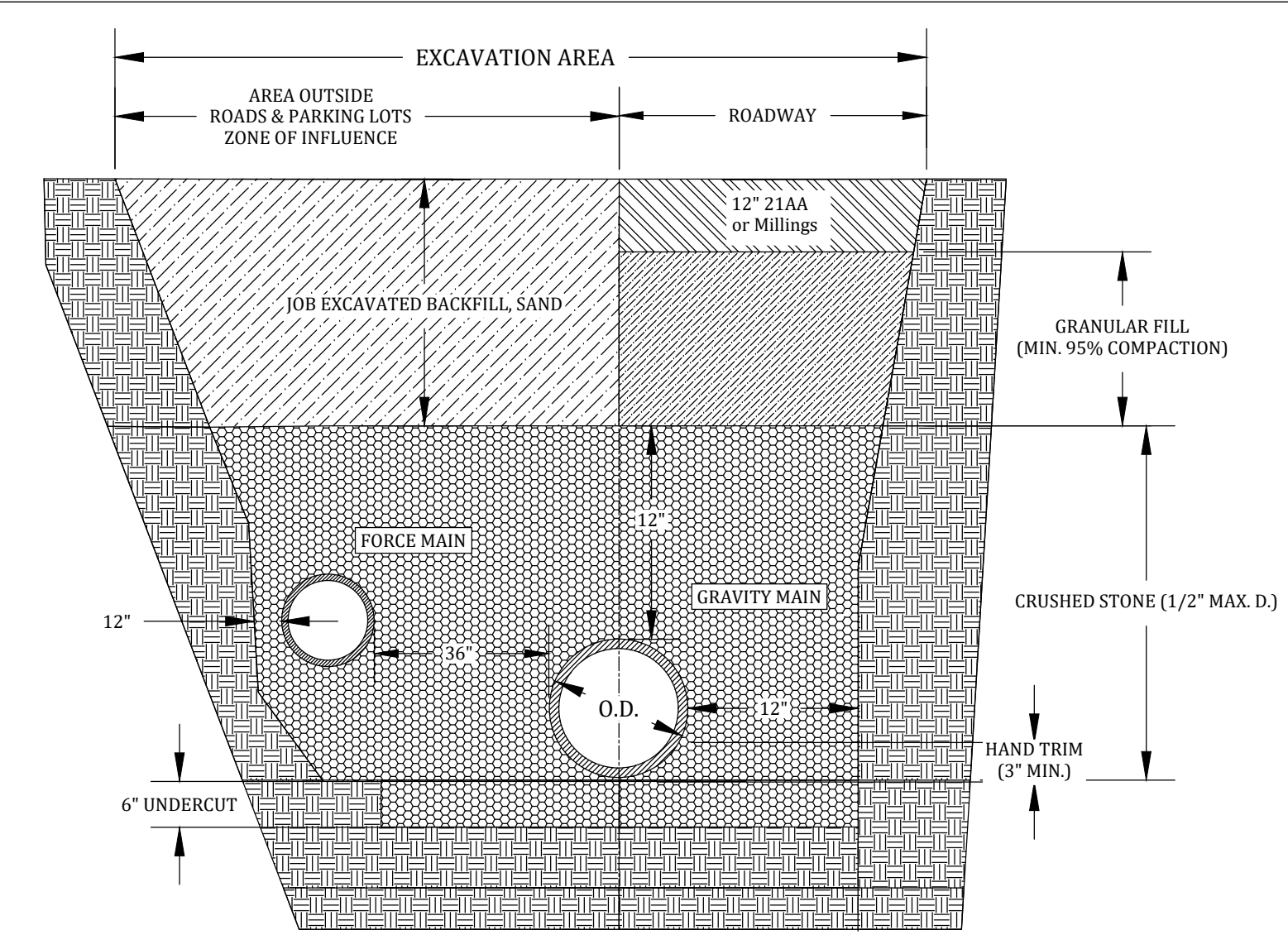
PLAN WITH RISER



SECTION WITHOUT RISER

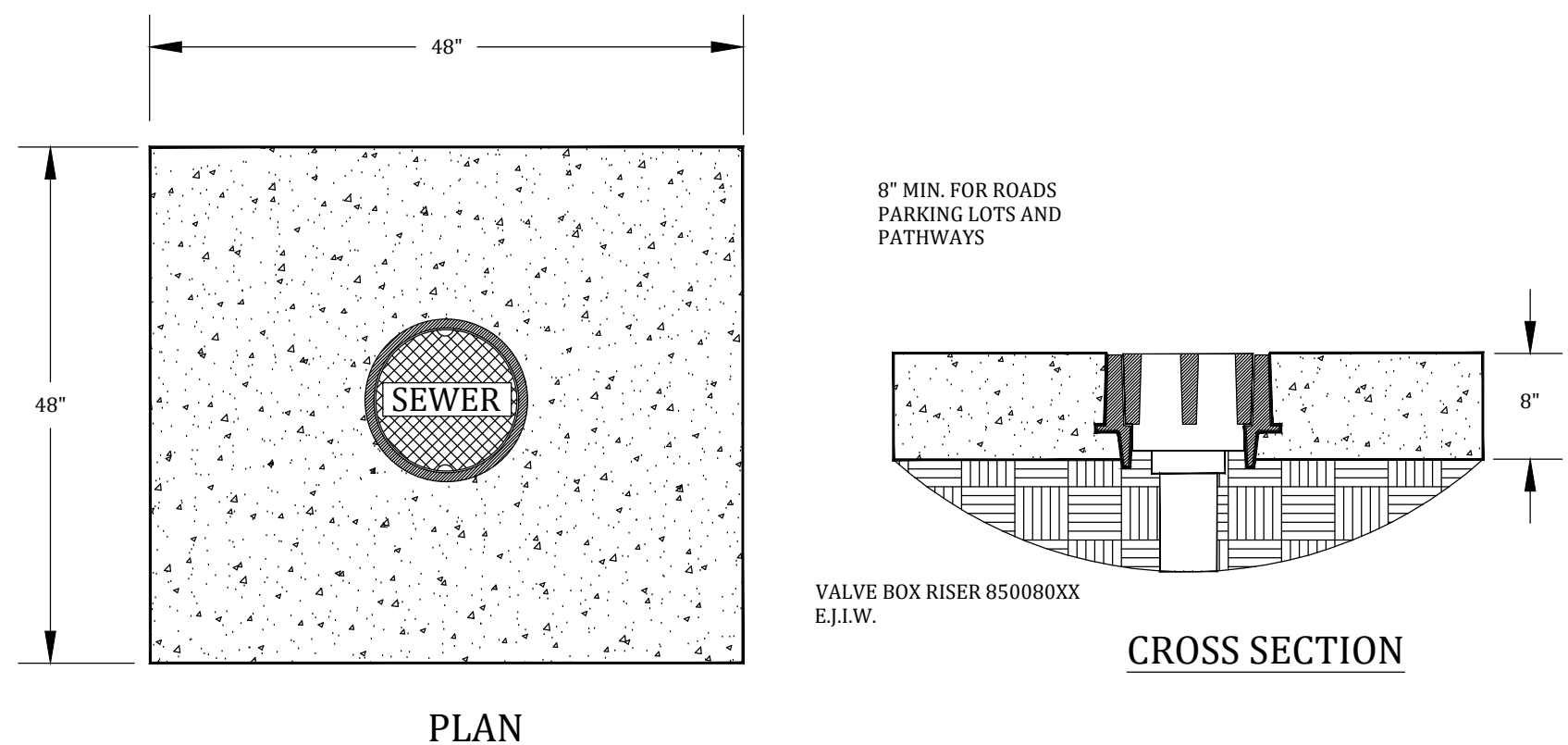
SECTION WITH RISER

SERVICE/CONNECTION DETAIL

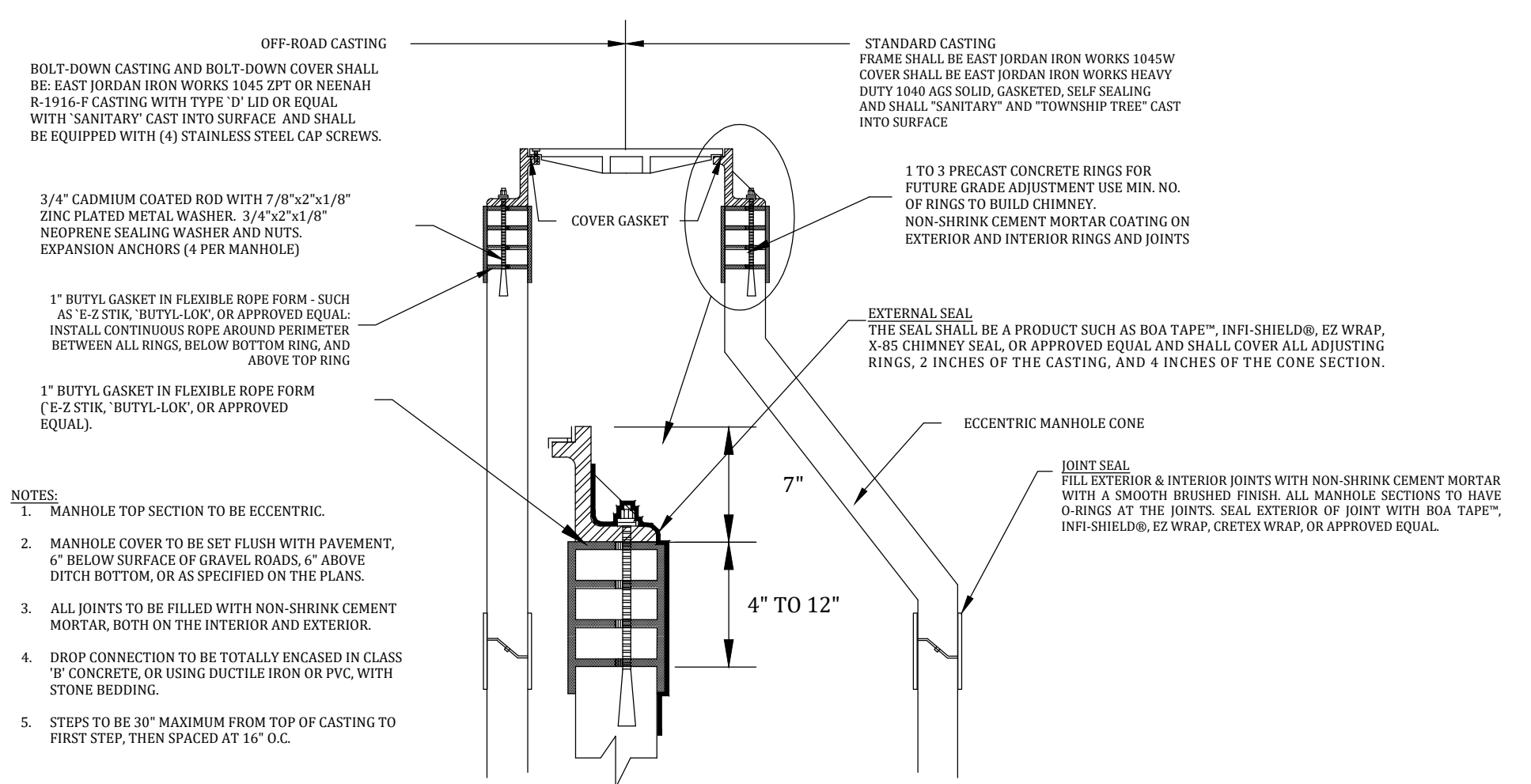


TYPICAL TRENCH DETAIL

THE PVC PIPE MATERIAL SHALL CONFIRM TO ASTM D 2241, WITH BELL AND SPIGOT JOINTS IN ACCORDANCE WITH ASTM F 47.
 PIPE INSTALLATION SHALL BE IN ACCORDANCE WITH ASTM D 2321. ALL PIPE SHALL BE MARKED TO PROVIDE ASTM DESIGNATIONS, SDR NUMBER, MANUFACTURERS NAME AND PIPE DIAMETER.
 THE CONTRACTOR SHALL TEST THE MAIN FOR DEFLECTION BY PULLING A MANDREL THROUGH THE SEWER AFTER ALL BACKFILL HAS BEEN PLACED AND COMPACTED OVER THE PIPE. THE MAXIMUM ALLOWABLE DEFLECTION SHALL NOT EXCEED 5% OF THE PIPE'S INSIDE DIAMETER. THE OUTSIDE DIAMETER OF THE TEST MANDREL SHALL BE EQUAL TO THE TO THE INSIDE DIAMETER OF THE PIPE LESS 5%. THE INITIAL TEST SHALL BE PERFORMED AT LEAST 30 DAYS AFTER PIPE INSTALLATION. A SECOND TEST SHALL BE PERFORMED AFTER 10 MONTHS OF PIPE INSTALLATION.

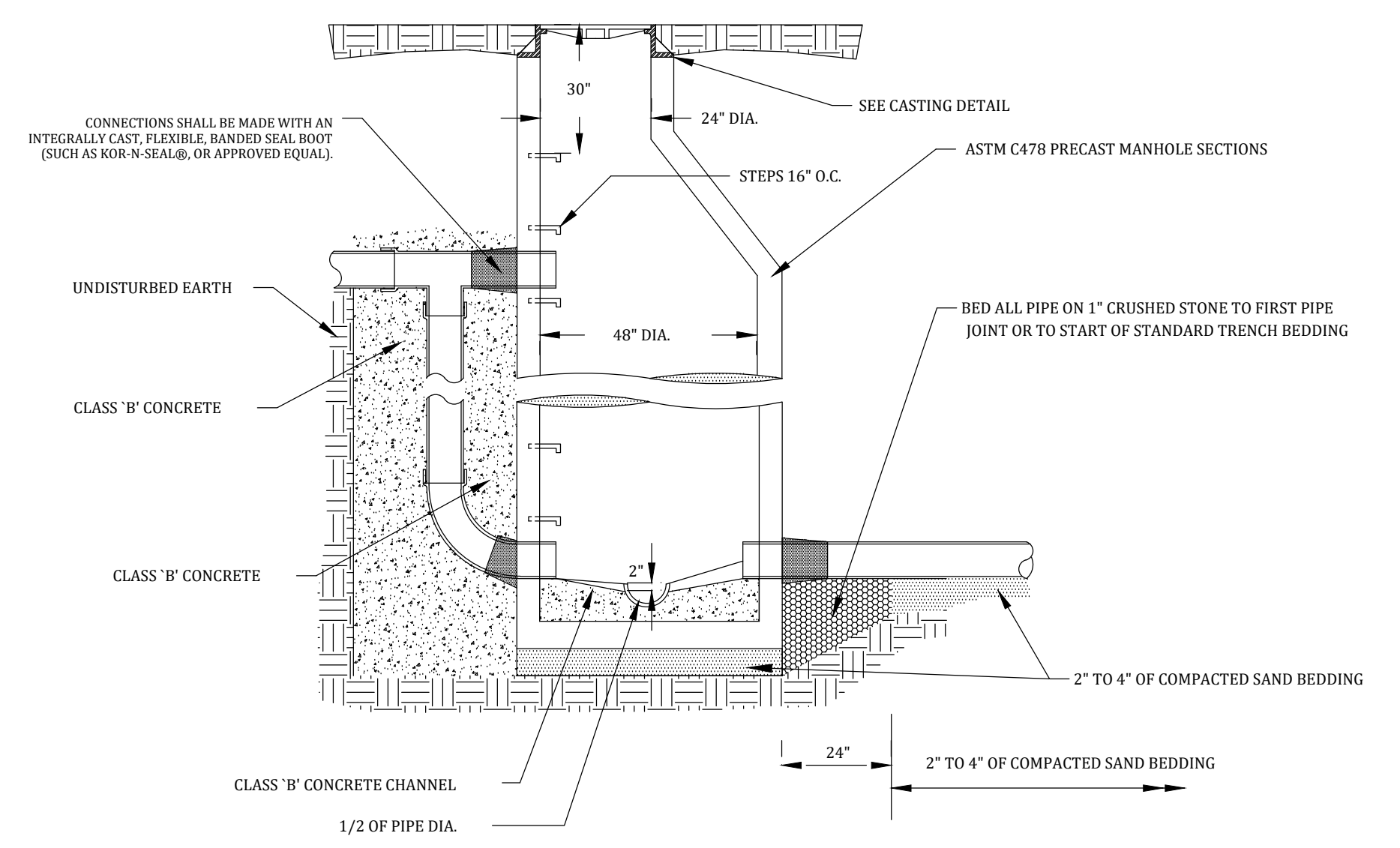


CLEANOUT BOXES IN CONCRETE

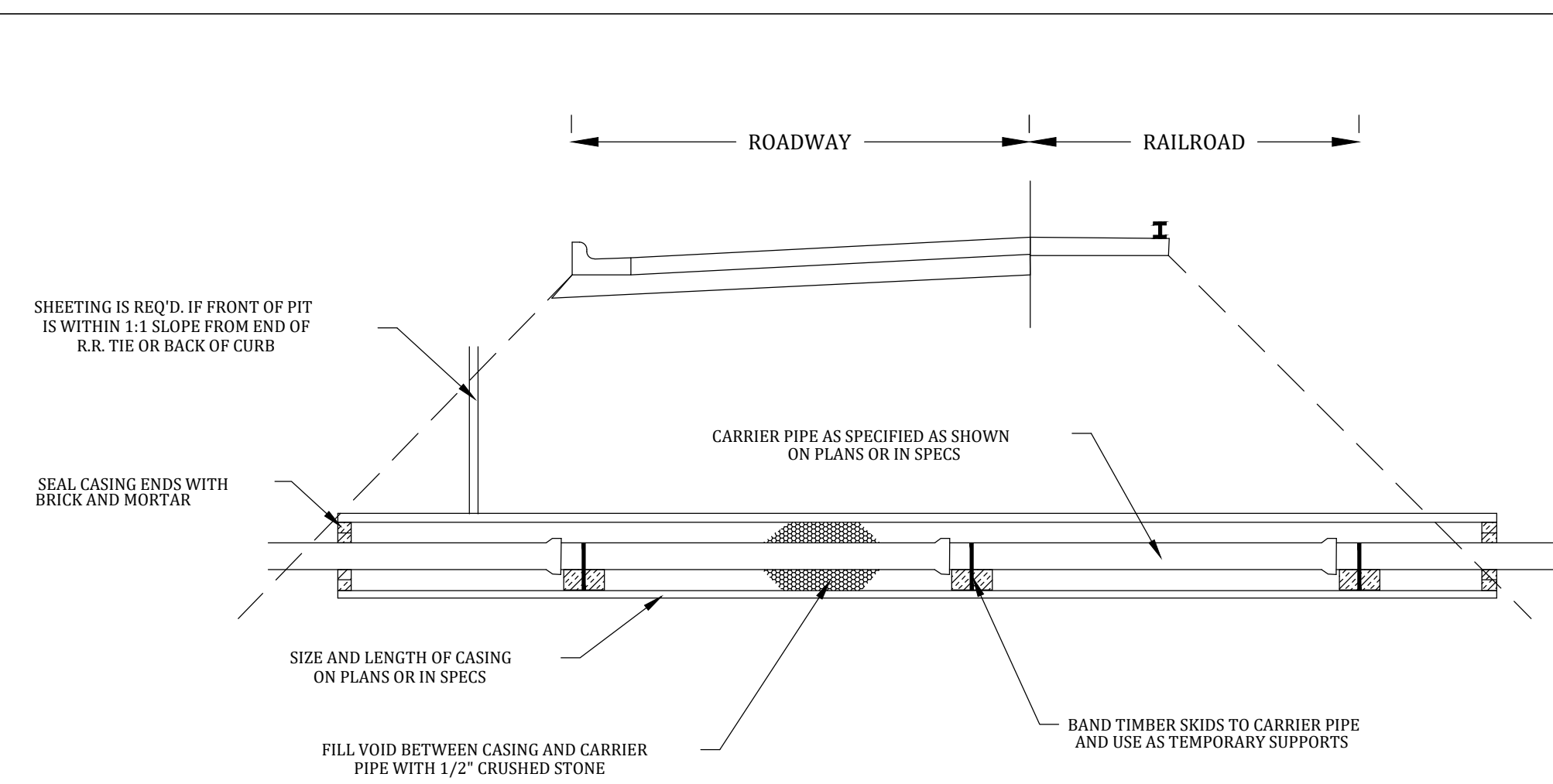


MANHOLE CASTING DETAIL

- NOTES:
- MANHOLE TOP SECTION TO BE ECCENTRIC.
 - MANHOLE COVER TO BE SET FLUSH WITH PAVEMENT, 6\"/>

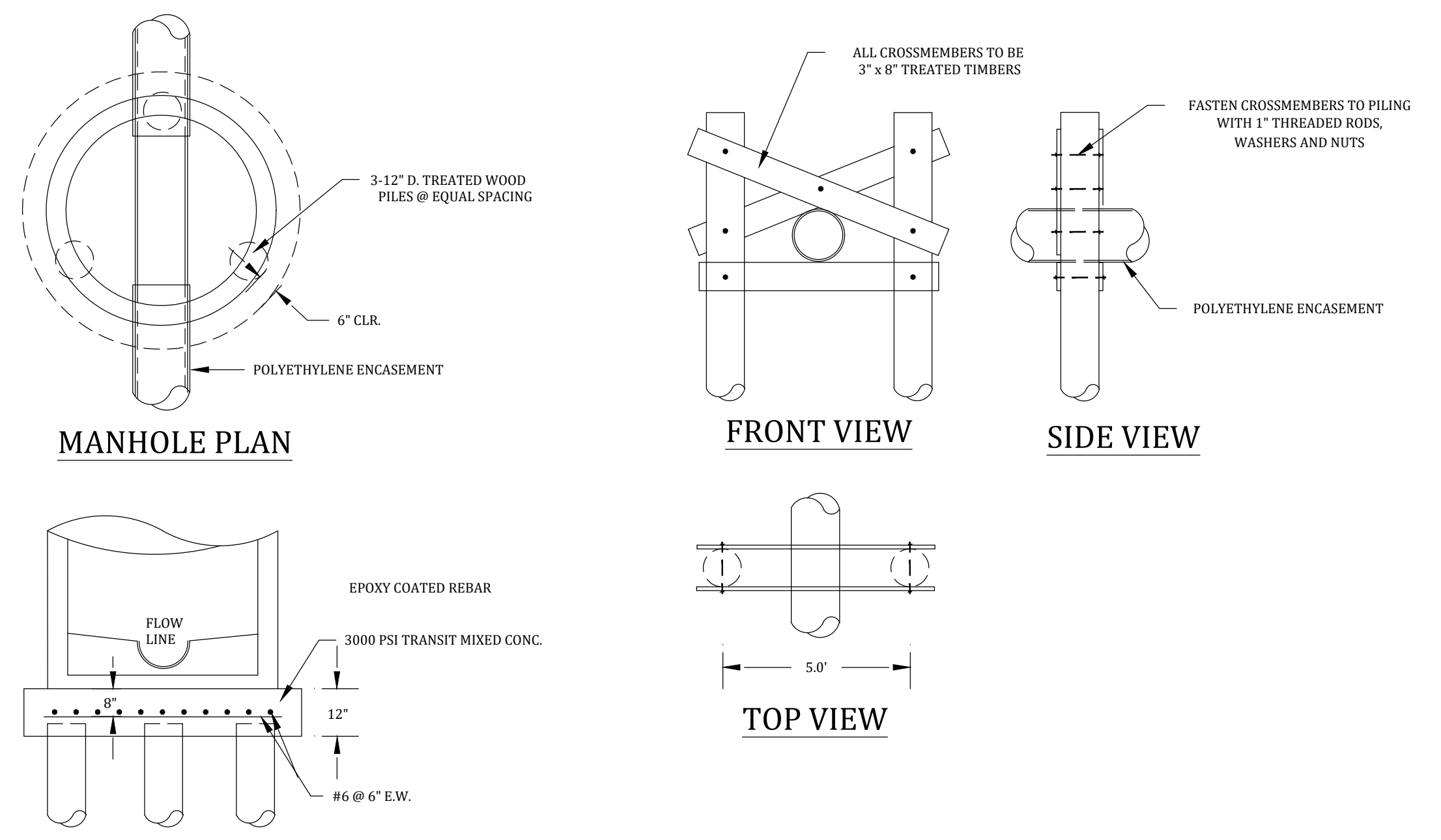


MANHOLE-SECTION DETAIL



CASING INSTALLATION DETAIL FOR ROADS & RAILROADS

- NOTES:
- WORK IN ROAD OR RAILROAD RIGHTS-OF-WAY SHALL BE IN ACCORDANCE WITH THE APPROPRIATE REGULATORY AGENCY'S REQUIREMENTS.
 - CASING PIPE SHALL BE MEET THE GRADE B REQUIREMENTS OF ASTM 139, ASTM A-53, OR API 5-L, WITH 0.375\"/>



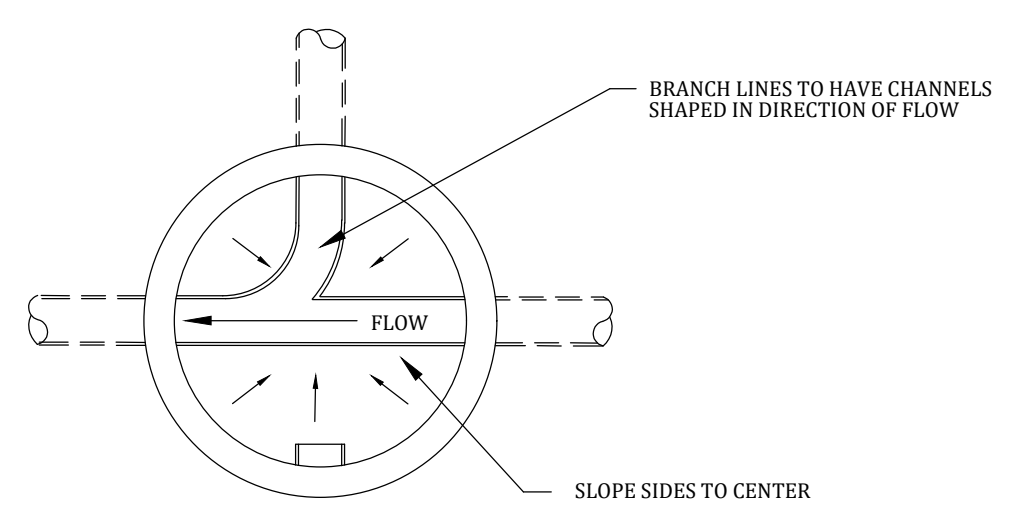
MANHOLE PLAN

FRONT VIEW

SIDE VIEW

TOP VIEW

PILING DETAILS



MANHOLE FLOWLINE PLAN

NOTE: USE A HALF PIPE AS A FORM FOR A CONCRETE FLOW CHANNEL.

Meridian Charter Township Ingham County, Michigan Public Works Department		REVISIONS:	
		DATE: 07/02/99 01/13/00 05/12/08 07/31/12 05/15/15 03/09/21 03/23/21 06/12/23 11/16/23 NTS	BY: JG JG JG JG JG NN NN JH JH
DETAILS FOR COUNTY PARK WEST SEWER REPLACEMENT		DRAWN BY: MK 03/1983	DATE: 03/1983

