

Murray City Corporation
4646 South 500 West
Murray, Utah 84123
Phone 801.270.2440
Fax 801.270.2450



MURRAY

Wastewater Specifications & Requirements

Murray City Wastewater Division

**Ben Ford, Wastewater Superintendent
Brandon Richards, Wastewater Supervisor
Jayson Perkins, Wastewater Inspector**

Phone 801.270.2440

Amended December 2023



MURRAY

Murray City Wastewater Division reserves the right to change these specifications at any time when deemed appropriate. Anything deviating from these specifications must be approved by the Public Works Director or designee.



MURRAY

Table of Contents

Approach.....	2
Pre Construction.....	2
Construction.....	3
Kind of Pipe.....	3
Repair of Pipe.....	3
Bedding and Backfill Requirements.....	4
Connections (Taps) to City Main.....	4
Lateral Placement and Specs.....	4
Cleanout Placement.....	4
Fittings.....	5
Lubrication for Gasket Joints	5
Pipe Testing.....	5
Inside Drop Laterals.....	5
RV Dump Cleanout.....	5
Material Specifications.....	6
Sectional Drawings	
Sanitary Sewer Manhole.....	7
Typical Drop Manhole.....	8
Collar for Sanitary Sewer Manhole.....	9
Abandoning Existing Manhole.....	10
Typical Sewer Lateral.....	11
Poured In Place Manhole	12
Lateral Replacement for New Utility.....	13
Typical Trench Detail.....	14
Grease Trap and Sampling Manhole.....	15
Grease Trap Detail.....	16
Oil/Water Separator.....	17
Pipe Grade Chart.....	18





Approach & Design

1. Plans are needed in electronic and paper format with the following information:
 - a. Existing Property, and structures.
 - b. Proposed building and possible uses.
 - c. Proposed site utility plan with profiles.
2. Separation of Water and Sewer lines.
 - Water lines and sewer lines must have a horizontal separation of at least 10 feet, this distance shall be measured edge to edge.
 - Where local conditions prevent 10 feet of separation, or when water and sewer lines must cross, the bottom of the water line shall be at least 18 inches above the top of the sewer line.
 - If separation requirements cannot be met, please refer to lateral replacement detail for further guidance.
3. Pre submission meetings are recommended as to avoid costly revisions.
4. Submit plans to the Murray City Hall building division office at 10 East 4800 South, 2nd floor. Plans will be taken in and logged into the system for comments from all needed departments. If any department requires change the plan changes are submitted again to the Murray City development and building office.

Pre Construction

Once plans have been signed by all the required departments the contractor must set up a pre-construction meeting through the City Engineering department. They will send out an invitation to all the necessary personnel and departments that would need to be part of this meeting.

Other departments might include:

Murray City Engineering dept., Wastewater, Water, Storm Water, Power dept., Planning & Zoning, Police and Fire.

Things that are needed at the Pre-Construction meeting:

- Have adequate plans available
- Be prepared to explain in detail what your project includes.
- Give a proposed schedule for each phase along with an initial start date.
- Demonstrate that you have met all of the City's bond requirements for working within Murray City rights of way.
- Traffic control plan.
- Obtain all street cut permits through Murray City Engineering and other applicable permits to the work being performed.
- All associated sewer fees including impact fees and tapping fees must be paid prior to the start of construction.

All construction activities must be done in accordance with contractors Health and Safety plan which must comply with all OSHA regulations.



Construction

- Normal city hours are from 7:00 am to 3:30 pm, Monday thru Friday, Contractor may be charged for overtime beyond these hours.
- Murray City will be given 24 hour advance notification of when work is to begin and 48 hours notice for weekend work.
- It is unlawful for any person to open any sewer manhole without permission from Murray City. Murray City code 13.32.170
- Murray City personnel shall inspect all work being performed and nothing shall be buried until approved by an authorized inspector. Murray City code 13.32.270
- Any disruption of service shall be up to the contractor to contact all affected, giving contractors name, and phone number, as well as time frame for completion.
- Contractor must have physical address of the location where inspection is to be performed. Subdivision and lot numbers are not acceptable addresses.
- All as-builts shall be submitted to Murray City when construction is complete.

Kind of Pipe

The contractor will exercise such measures to maintain the quality of material incorporated in the work. Materials not meeting Murray Cities standards will be considered defective and will be removed immediately from the site.

Poly Vinyl Chloride: (PVC) bell and spigot gasket joint, glue joint not allowed, and shall have minimum wall thickness conforming to ASTM, with the minimum classification of SDR 35 pipe, latest edition.

Ductile Iron pipe: Shall conform to the requirements of AWWA C151. Pipe shall have mechanical or push-on joints.

High density polyethylene HDPE: HDPE pipe must meet the requirements of AWWA C906 and must meet the minimum dimension ratio of DR 11. HDPE pipe may be required to be installed if construction is located within Murray City Water well protection zone. All HDPE pipe must be properly beveled and free from any defects up to and including Deburring all interior joints to provide a smooth interior pipe surface.

Repair of Pipe

- All damaged pipe must be removed, to insure all damaged pipe is removed a visual or closed circuit T.V. inspection of existing pipe shall be performed. If different pipe is used than what is existing, transition coupling with stainless steel shear bands (Fernco type or approved equal) are to be used, in order to join different thickness of pipe, while maintaining the same inside pipe diameter. Use of any other shear band coupler must be approved by Murray City.
- All pipe shall be clean and free of debris, when installation occurs.
- Proper bedding and blinding of pipe (see bedding and blinding materials) shall be followed. Before performing the repair, consult Murray Cities Wastewater Division.
- Murray City personnel will inspect all work being performed and nothing shall be buried until approved by an authorized inspector.



MURRAY

Bedding and Backfill Requirements

One Foot of 3/4 inch minus gravel to be used under the pipe, and one foot of 3/4 inch minus gravel to be used over the pipe. Anything that deviates from these requirements must be approved by Murray City personnel. All backfill placed in the trench shall meet specified gradation and compaction requirements. Native material shall be allowed only if meeting the specified gradation and compaction required and approved by the engineer.

Taps (Connections to City Main)

All taps made on sewer mains, whether City owned or private must meet the City standards.

City owned mains: Contractor is responsible to provide a safe excavation so the City can perform the tap.

Privately owned mains: Contractor must notify the City 48 hours in advance before work is to be performed, the City can be reached at 801-270-2440. Work must be completed per City requirements and the City will perform and record all inspections.

The tap fees are:

4" and 6" = \$ 350.00

Lateral Diameter and Slope

Sewer laterals shall be designed and installed with a minimum of 2% slope for 4" pipe and 1% with 6" pipe. Anything larger must be installed per mainline specifications. All laterals test tees, clean-out tees and caps shall be installed and set in accordance to the city's specification.

Lateral Placement

The lateral shall not be placed under a concrete driveway. Placement is recommended close to center of property, to allow most other utilities adequate space. Existing laterals may be used upon approval by the city. It will be the homeowner/contractor's responsibility to CCTV the lateral to determine the condition of the pipe with the city inspector present. Murray City may require the existing lateral to be lined in order to be used. Anything deviating from this must be approved by the Public Works Director or designee.

Lateral Abandoning

Lateral must be cut as close to possible at back of sidewalk or if no sidewalk back of curb. Expandable plug must be used to plug line as well as 1 bag of concrete mixed and placed over the plug. Inspector must visibly see both the expandable plug and the concrete in order to be approved by the inspector.

Lateral Pipe Lining/Bursting

All pipe liners must meet NASSCO specifications or National Liner specifications. HDPE pipe must meet the requirements of AWWA C 906 and must meet minimum dimension ratio of DR 11. Anything deviating from this must be approved by Murray City.



Cleanout Placement and Type

Connecting to existing pipe, or installing new pipe from the main line, a “test T” is required to test the pipe installed, for placement of “test T” consult Murray City Wastewater Division. The wye connection between the lateral and cleanout must be PVC and or cast iron using transition couplings with stainless steel shear bands (Fernco type or approved equal). The preferred installation method is to use a combination wye using a PVC standpipe with a water tight cast iron/plastic cap with a brass screw type lid. Clean-outs can be installed anywhere between the sidewalk and the structure. It is recommended that it be placed closer to the structure. Maximum spacing for cleanouts will be 75 feet. 6” lateral must have a 6” cleanout. 4” lateral must have a 4” cleanout. Cleanout must remain visible and accessible at all times during and after construction. Cleanout that must be placed in concrete/asphalt must have Cast iron triangular box placed over cleanout and must be poured flush with the concrete with a concrete collar. It is recommended that an irrigation style box be placed over any cleanout in a landscaped area.

Fittings

In a new installation there should be no fitting with the exception of the test tee and clean out wye. Each joint or fitting must be water tight and free from defects. Bell to spigot gasket joints only and no glue joints are allowed. If a repair is being made all transition couplings must have stainless steel shear bands or Fernco type approved equal.

Lubrication for Gasket Joints

The lubricant used in joining pipes will be recommended by the pipe manufacture.

Pipe Testing

Laterals: A “test T” shall be installed where you are connecting to a new or existing pipe, when the proper gravel base (bedding), and pipe to grade, fill with water up to top of cleanout. Any other testing methods shall be approved by Murray City Wastewater Division prior to beginning project.

Mainline pipe (6" and larger): requires a licensed pipe tester to pressure test, with City Inspector present. Murray City must receive documented results from the pressure test. Must have trench backfilled, with adequate pressure on the pipe. All pipe must be cleaned by contractor. The City shall perform a closed circuit televising inspection of the inside of the pipe. All pipe must be free of dirt and foreign material by the contractor before the system is accepted.

Drop Manholes

All drops into manholes shall be inside drops as shown in the attached drawings. All drops require the Reliner Bowl or a City approved equivalent, with the bowl and piping restrained to the manhole walls as described on drop manhole detail page of the drawings.

RV Dump/Washout

RV dumps/washouts are only allowed by permit. Permit must be filled out and inspection performed by Murray City before RV dump will be accepted. Murray City will conduct an annual inspection to ensure enforcement of locks on caps. If upon inspection the RV dump is not in compliance Murray City reserves the right to discontinue the use of the RV dump.

Material Specifications



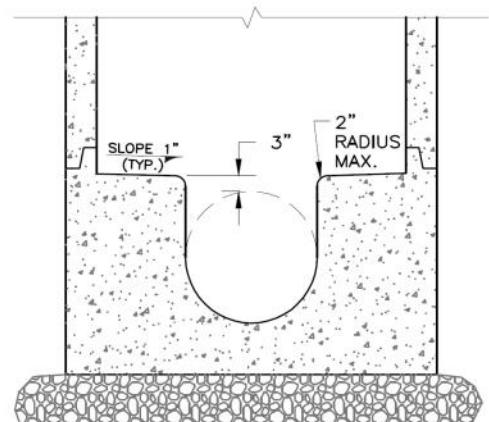
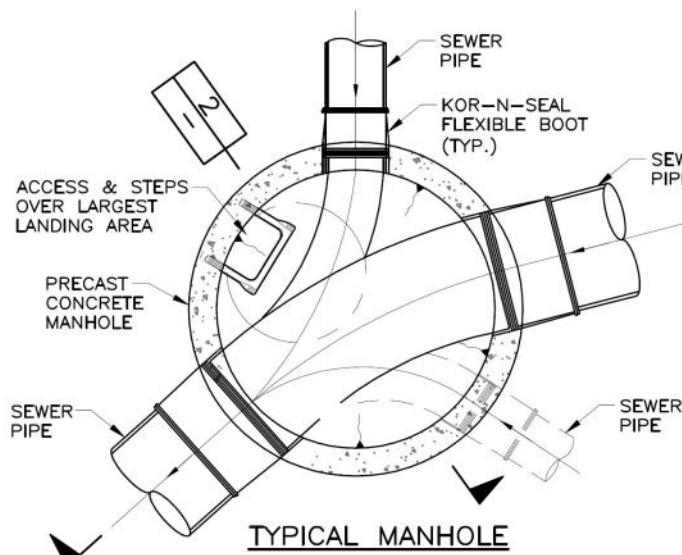
MURRAY

	Pipe Pipe size and material shall be approved by Murray city Wastewater Division.		Clean Out Caps Must be brass twist on cap.
	Shear Band Connectors All connections must be stainless steel shear band (fernco or approved equal by Murray City)		Manhole Ring and Lids Lid Shall be cast with Sewer label.
	Inserta Tee Use for service connection to Existing main		Mechanical Test Plug Use for abandoning existing man-hole.
	Cast Iron Wye Cast iron wye required on all cleanouts with shear band connectors		Pipe Lubricant Must be lubricant recommended by the manufacturer.
	PVC Wye Must be appropriate size for the pipe.		PVC 22' Must be appropriate size for pipe.
	Triangular Clean out Box Must be appropriate size for clean out. Must include concrete collar.		Kor N Seal Flexible Boot Boot for connection to manhole.
	RV Cleanout Caps Must be metal and have a lockable cap.		Kent Seal Use per manufacturer recommendations when connecting manhole sections.

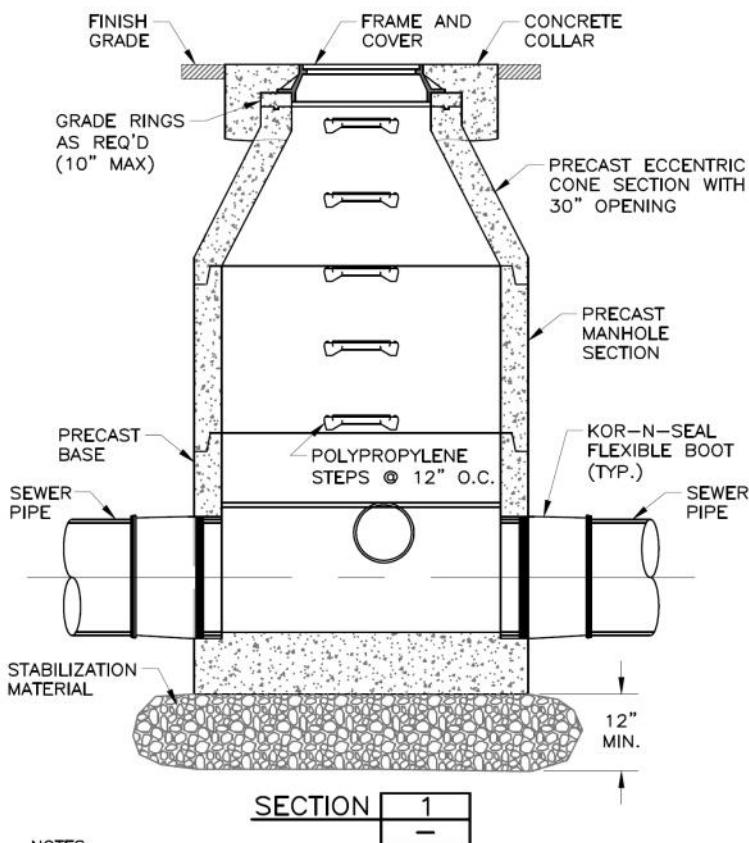
Typical Sanitary Sewer Manhole



MURRAY

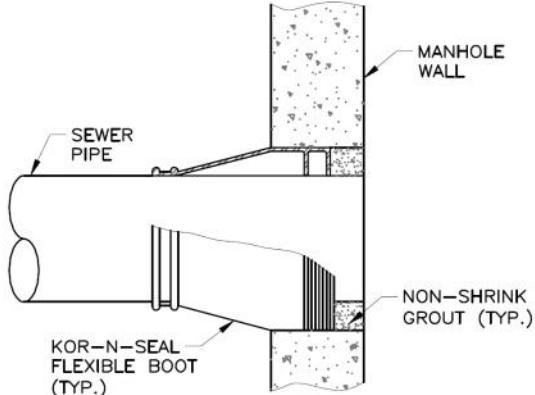


SEWER MANHOLE 2
CHANNEL SECTION (TYP.) -



NOTES:

1. MANHOLE SIZE:
 - A. DIAMETER IS 4 FEET: FOR SEWERS UNDER 12" DIAMETER.
 - B. DIAMETER IS 5 FEET: FOR SEWERS 12" THROUGH 24", OR WHEN 3 OR MORE PIPES INTERSECT THE MANHOLE.
 - C. CONSULT WITH MURRAY CITY FOR SEWERS LARGER THAN 24".
2. PRECAST REINFORCED CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ASTM C 478. JOINTS SHALL BE RUBBER GASKET, OR SEALED WITH APPROVED SEALANT.
3. CONCRETE: CLASS 4000, APWA SECTION 03 30 04.
4. GROUT: 2 PARTS SAND TO 1 PART CEMENT MORTAR, ASTM C 1329.

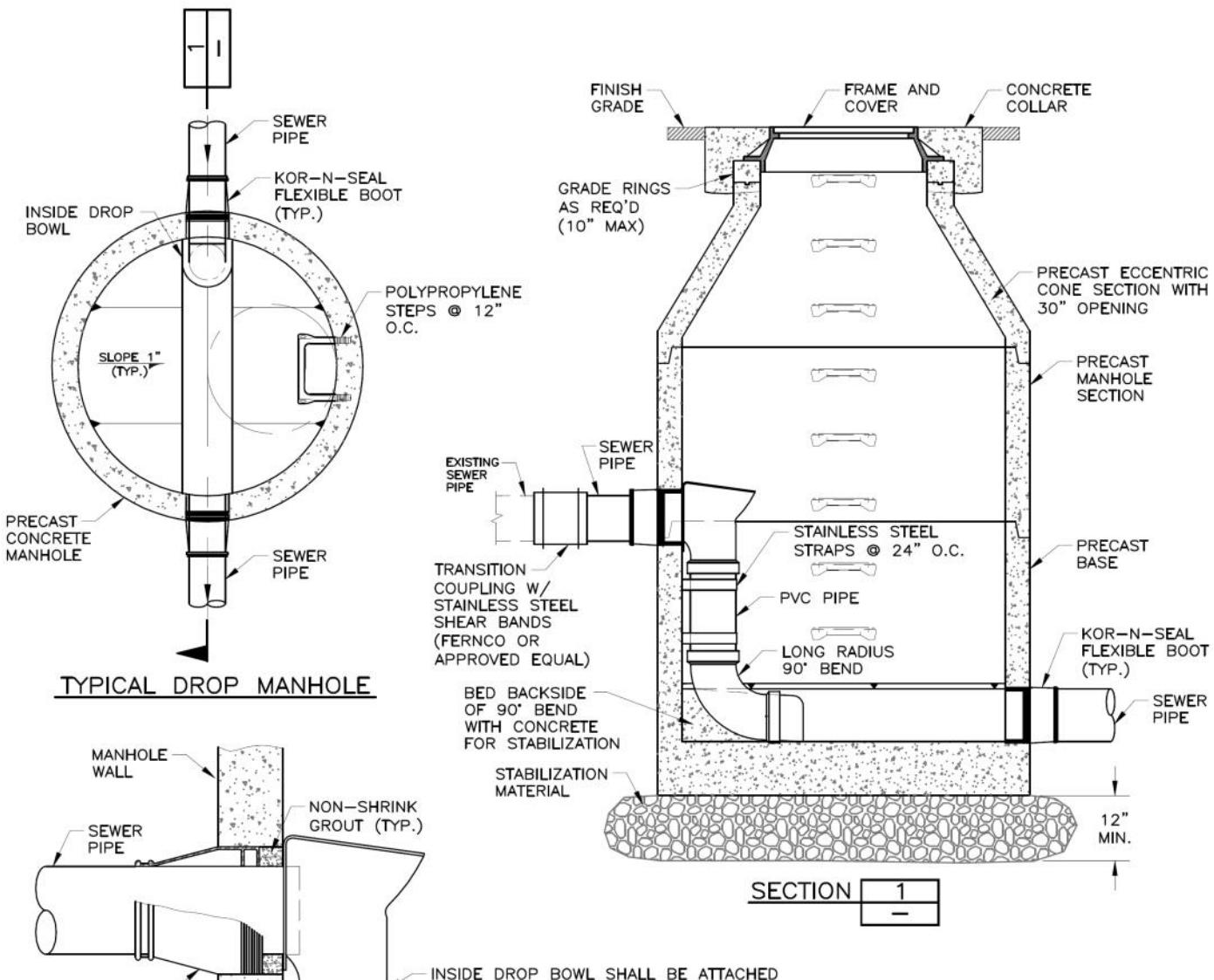


RUBBER BOOT DETAIL

Typical Drop Manhole



MURRAY



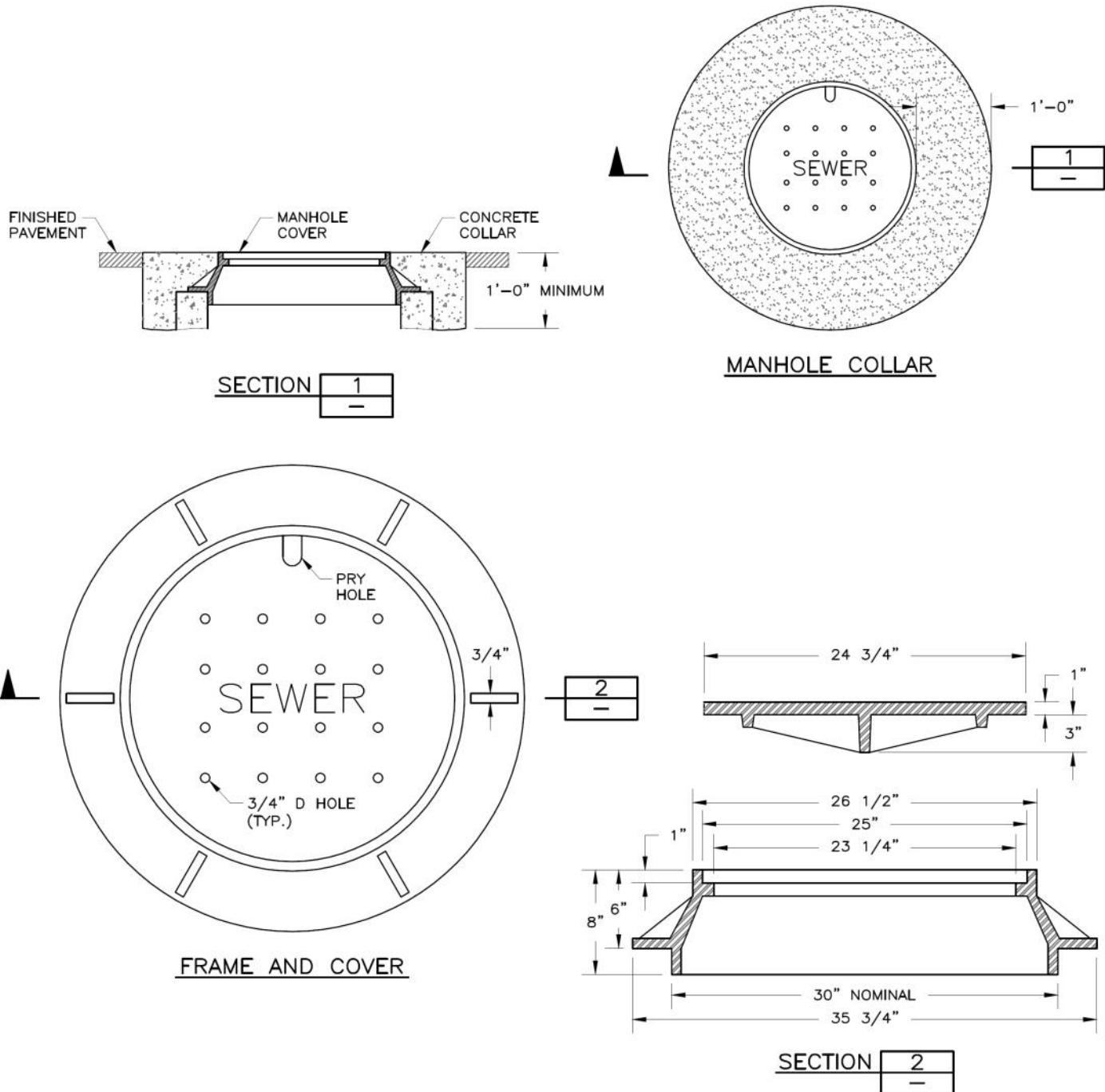
NOTES (CONTINUED):

5. THE INVERT CHANNELS SHALL BE SMOOTH AND SEMICIRCULAR IN SHAPE CONFORMING TO THE INSIDE OF THE ADJACENT SEWER SECTION. CHANGES IN DIRECTION OF FLOW SHALL BE MADE WITH A SMOOTH CURVE AS LARGE A RADIUS AS THE SIZE OF THE MANHOLE WILL PERMIT. CHANGES IN SIZE AND GRADE OF THE CHANNELS SHALL BE MADE GRADUALLY AND EVENLY.
6. THE FLOOR OF THE MANHOLE OUTSIDE THE CHANNELS SHALL BE SMOOTH AND SHALL SLOPE TOWARD THE CHANNELS NOT LESS THAN 1 INCH PER FOOT NOR MORE THAN 2 INCHES PER FOOT. WHERE DROP BOWL AND PIPING CANNOT BE USED, PROVIDE SMOOTH TRANSITION INTO TROUGH AS DIRECTED / APPROVED BY CITY.
7. STEPS AND ECCENTRIC CONE REQUIRED FOR MANHOLES WITH DEPTHS (FROM LID TO FLOW LINE) GREATER THAN 5 FT. STEPS FOR PRECAST MANHOLES AND CAST-IN-PLACE VAULTS SHALL BE POLYPROPYLENE COATED STEEL STEPS WITH 1'-0" MAXIMUM SPACING.
8. PIPE CONNECTIONS TO EXISTING MANHOLES SHALL BE MADE IN SUCH A MANNER THAT THE FINISH WORK WILL CONFORM AS NEARLY AS PRACTICABLE TO THE ESSENTIAL APPLICABLE REQUIREMENTS SPECIFIED FOR NEW MANHOLES, INCLUDING ALL NECESSARY CONCRETE WORK, CUTTING, AND SHAPING.
9. STABILIZATION MATERIAL SHALL BE WRAPPED IN A GEOTEXTILE MEETING THE REQUIREMENTS OF APWA 31 05 19.
10. COORDINATE WITH CITY SO THAT CITY CAN PLACE INVERT COVERS DURING CONSTRUCTION.

Manhole Collar



MURRAY



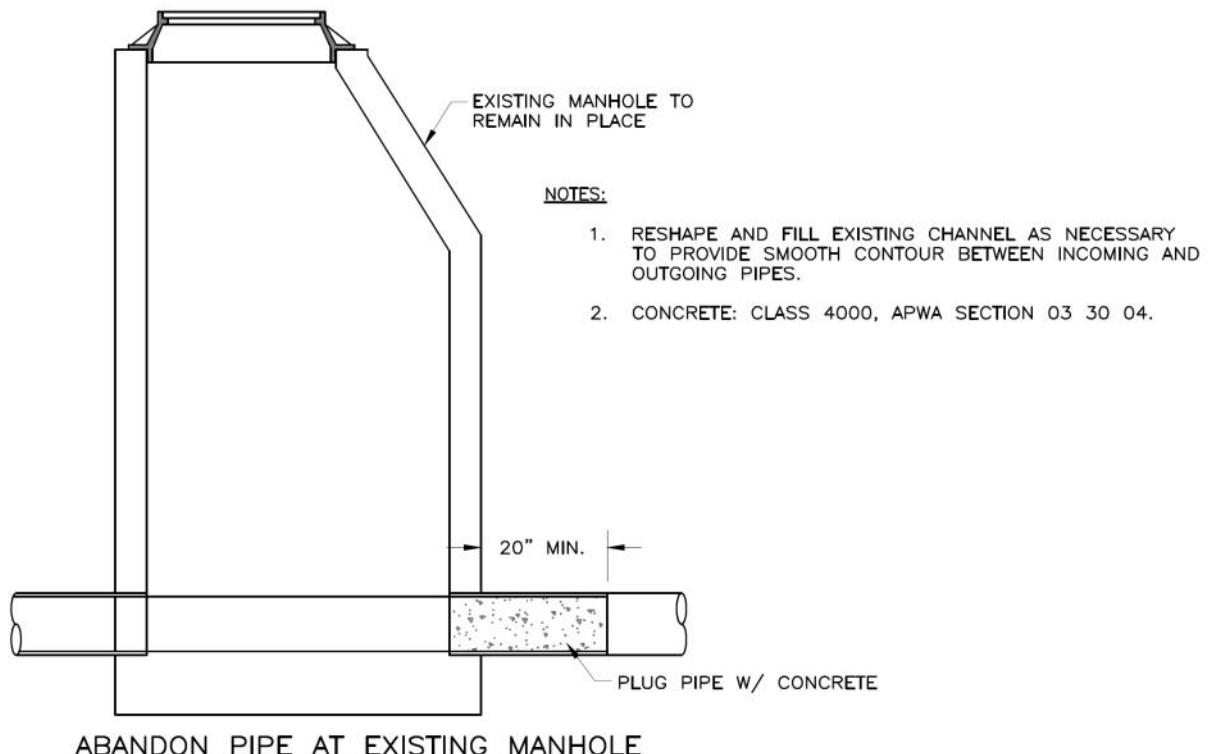
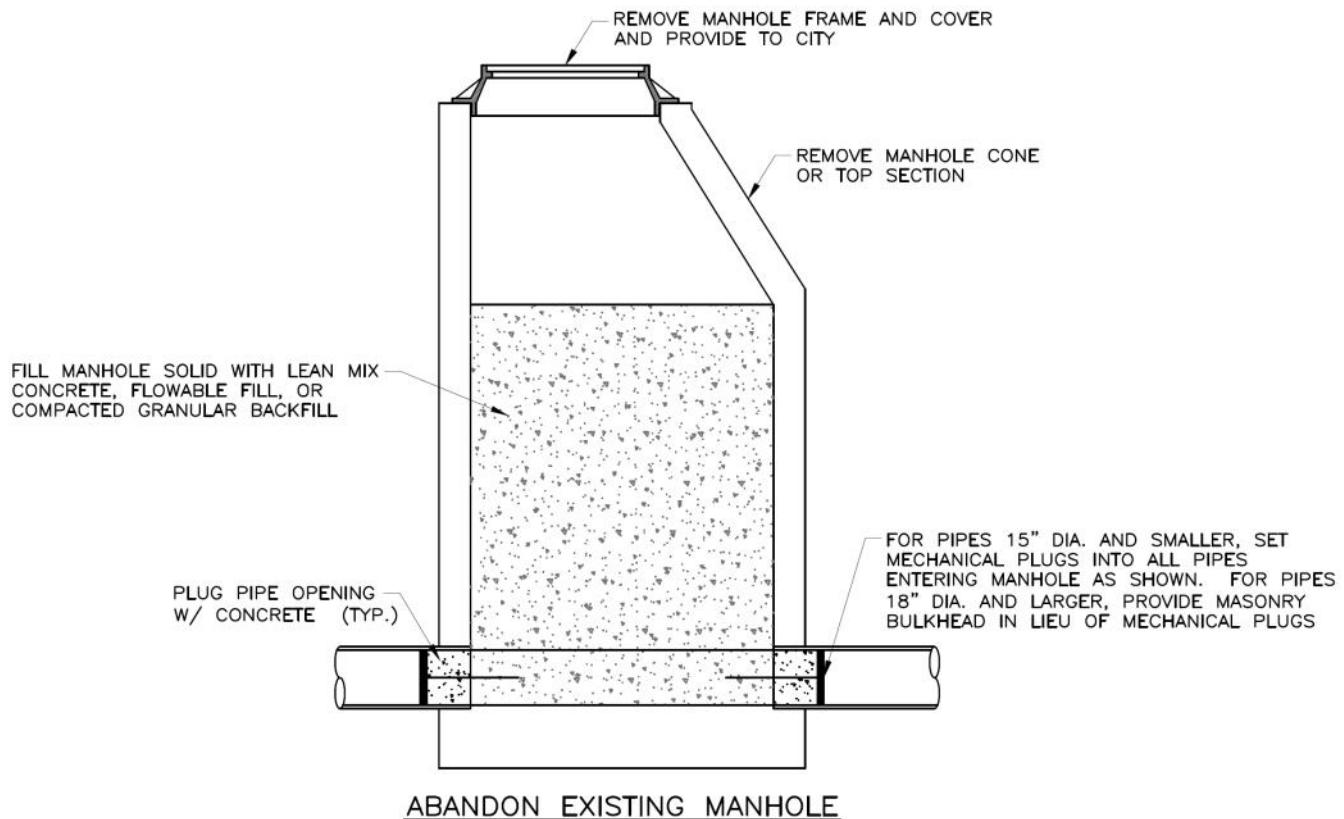
NOTES:

1. CONCRETE SHALL BE CLASS 4000 AS PER APWA SECTION 03 30 04. U-CART OR HAND MIXED CONCRETE WILL NOT BE ACCEPTED.
2. REINFORCEMENT SHALL BE ASTM A 615, GRADE 60, DEFORMED BARS AS PER APWA SECTION 03 20 00.
3. BACKFILL WITH GRADE 1 UNTREATED BASE COURSE AS PER APWA 32 11 23 2.1.
4. GRADE RINGS SHALL BE APWA STANDARD PLAN NO. 361.
5. CONCRETE COLLAR SHALL BE APWA STANDARD PLAN NO. 362.
6. LID SHALL BE CAST WITH "SEWER" LABEL.

Abandon Existing Manhole



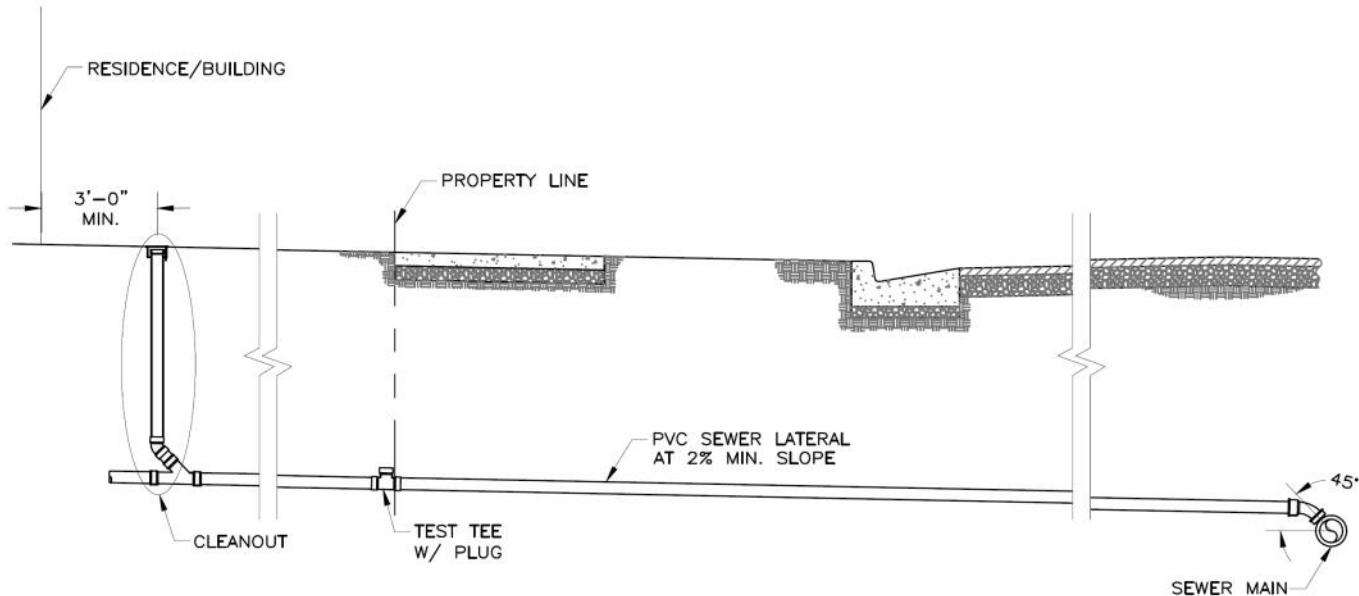
MURRAY



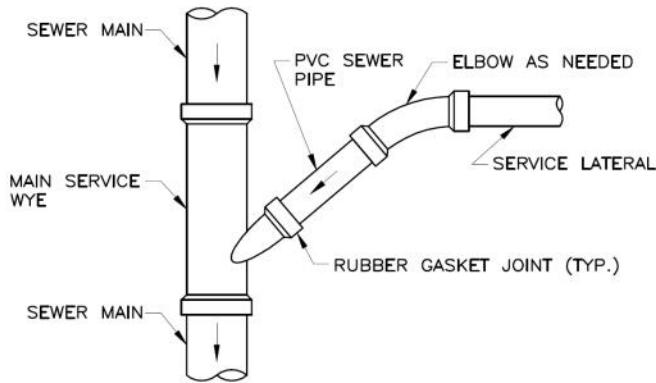
Typical Sewer Lateral and Cleanout



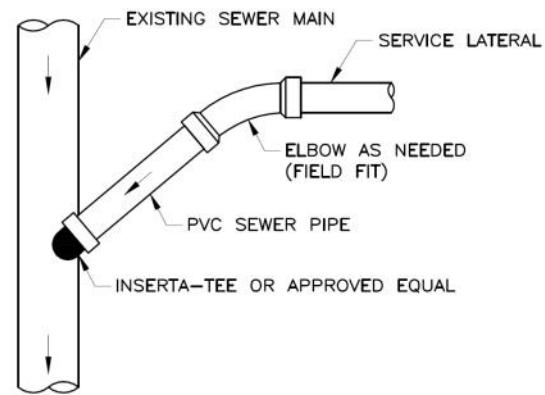
MURRAY



TYPICAL SEWER LATERAL



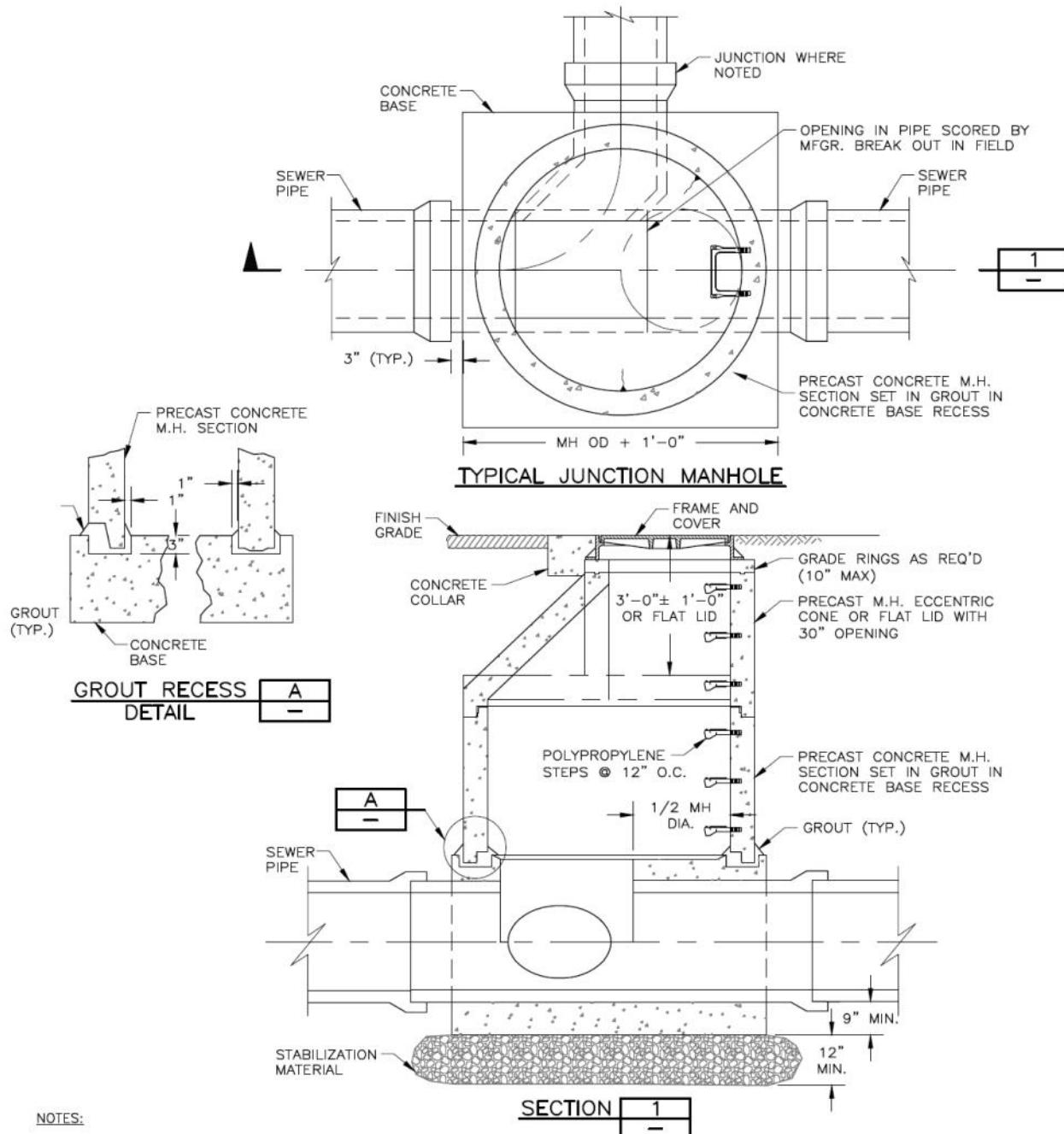
SERVICE CONNECTION
TO NEW MAIN



SERVICE CONNECTION
TO EXISTING MAIN

NOTES:

1. SERVICE LATERAL SHALL BE 4" OR 6" AS SHOWN ON PLANS OR AS DIRECTED BY CITY.
2. SEWER LATERALS SHALL CONNECT TO SEWER MAIN AT 45° ANGLE.



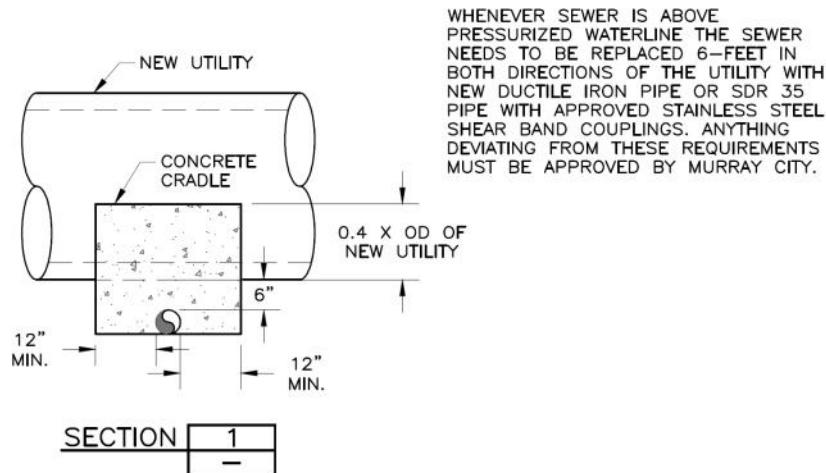
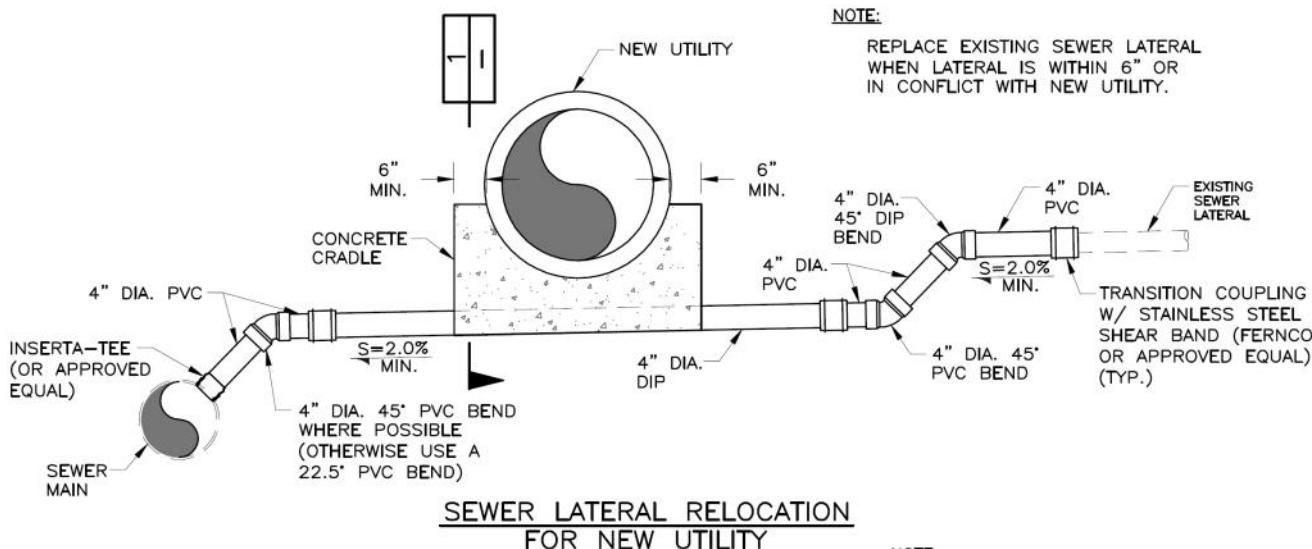
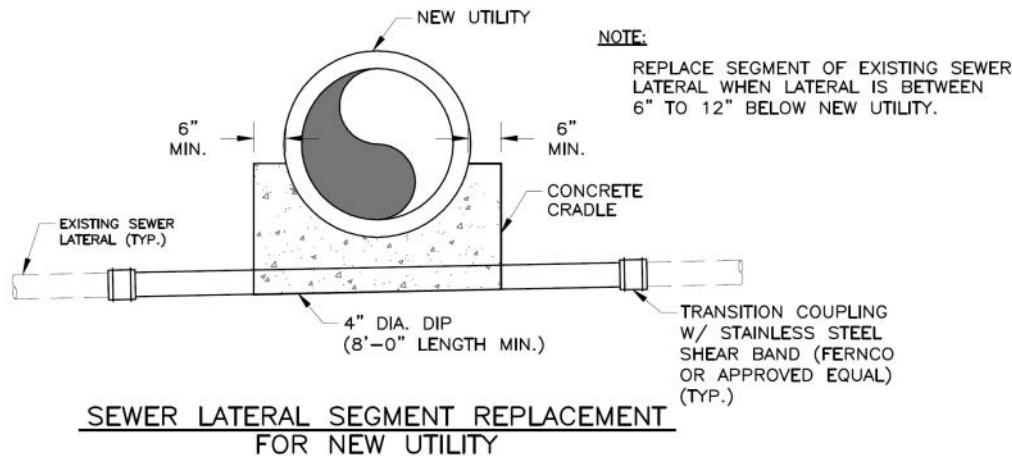
NOTES:

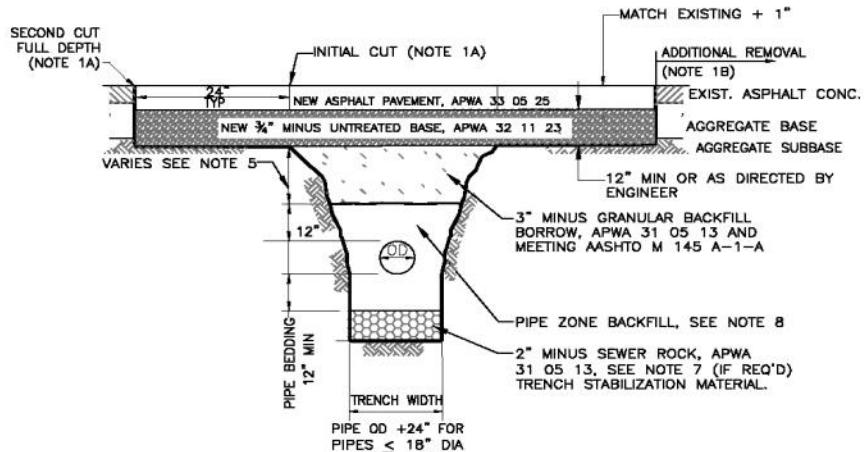
1. MANHOLE SIZE:
 - A. DIAMETER IS 4 FEET: FOR SEWERS UNDER 12" DIAMETER.
 - B. DIAMETER IS 5 FEET: FOR SEWERS 12" THROUGH 24", OR WHEN 3 OR MORE PIPES INTERSECT THE MANHOLE.
 - C. CONSULT WITH MURRAY CITY FOR SEWERS LARGER THAN 24".
2. PRECAST REINFORCED CONCRETE MANHOLE SECTIONS SHALL CONFORM TO ASTM C 478. JOINTS SHALL BE RUBBER GASKET, OR SEALED WITH APPROVED SEALANT.
3. CONCRETE: CLASS 4000, APWA SECTION 03 30 04.
4. GROUT: 2 PARTS SAND TO 1 PART CEMENT MORTAR, ASTM C 1329.

Lateral Replacement For New Utility



MURRAY





TYPICAL TRENCH SECTION

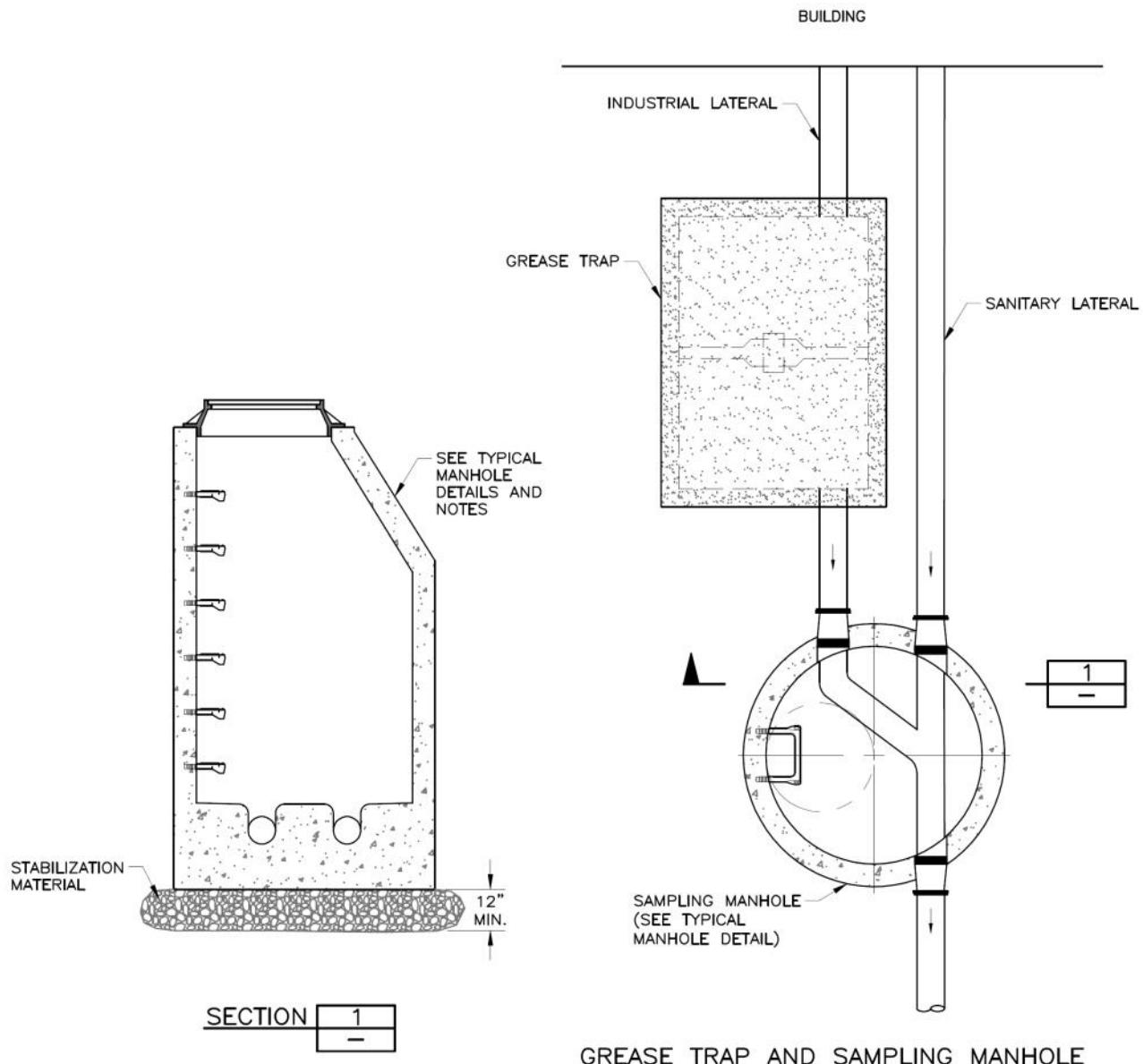
NOTES:

1. ASPHALT PAVEMENT REMOVAL: (REMOVE PAVEMENT AS SPECIFIED IN APWA 02 41 14):
 - A. MILL OR SAW CUT FULL DEPTH OF ASPHALT TO PROVIDE STRAIGHT VERTICAL PAVEMENT EDGE FOR PAVEMENT REPAIR.
 - B. IF A LIP OF GUTTER, A CURB, OR AN EDGE OF THE PAVEMENT IS WITHIN 2-FEET OF THE NEW PATCH, REMOVE EXISTING PAVEMENT TO THE STREET FEATURE. RETAIN AND PROTECT EXISTING CURB AND GUTTER.
2. TACK COAT: PROVIDE FULL TACK COAT COVERAGE ON ALL VERTICAL SURFACES.
3. JOINT REPAIR: WHERE CRACKS OCCUR BETWEEN THE PATCH AND ANY EXISTING PAVEMENT OR ANY STREET FIXTURE, REPAIR THE CRACK PER APWA 32 01 17.
4. TRENCH EXCAVATION IN ACCORDANCE WITH APWA 31 23 16, OSHA, AND UOSH SAFETY STANDARDS.
5. ALL BACKFILL PLACED IN TRENCH SHALL MEET SPECIFIED GRADATION AND COMPACTION REQUIREMENTS. NATIVE MATERIAL SHALL BE ALLOWED ONLY IF MEETING THE SPECIFIED GRADATION AND COMPACTION REQUIREMENT AND APPROVED BY THE ENGINEER.
6. COMPACT BACKFILL MATERIALS IN ACCORDANCE WITH APWA 33 05 20, 31 23 26, AND UDOT 02721 (AS APPLICABLE). TRENCH BACKFILL IN UDOT RIGHT-OF-WAY SHALL BE COMPACTED TO 97% OR GREATER, MODIFIED STANDARD PROCTOR. TRENCH BACKFILL IN ALL OTHER STREETS SHALL BE COMPACTED TO 95% OR GREATER MODIFIED STANDARD PROCTOR (PER ASTM D 1557).
7. ENGINEER MUST APPROVE USE OF TRENCH STABILIZATION MATERIAL. IF TRENCH STABILIZATION MATERIAL IS USED, TRENCH STABILIZATION MATERIAL AND PIPE BEDDING SHALL BE SEPARATED USING GEOTEXTILE MEETING THE REQUIREMENTS OF APWA 310519.
8. PIPE ZONE MATERIAL TO BE A-1-a OR A-1-b ASTM D 3282 3/4" MAXIMUM PARTICLE SIZE. PEA GRAVEL AND "SQUEEGY" IS NOT ALLOWED IN ANY PART OF THE PIPE ZONE. MATERIAL SHALL BE PLACED IN LIFT NOT EXCEEDING 8" AND COMPACTED TO A MODIFIED PROCTOR DENSITY OF 95% OR GREATER (PER ASTM 1557) WITHOUT DAMAGING OR DEFLECTING PIPE.
9. PROVIDE AC-20-DM-1/2 ASPHALT CONCRETE UNLESS OTHERWISE DIRECTED BY ENGINEER.
10. RECYCLED ASPHALT SHALL NOT BE USED FOR BACKFILL IN ANY PART OF THE TRENCH.

Grease Trap And Sampling Manhole



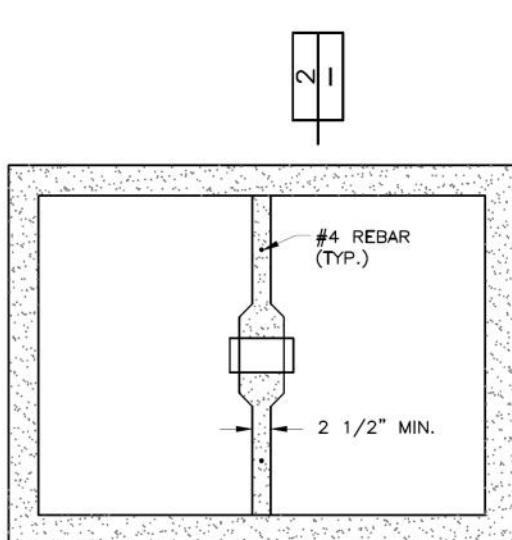
MURRAY



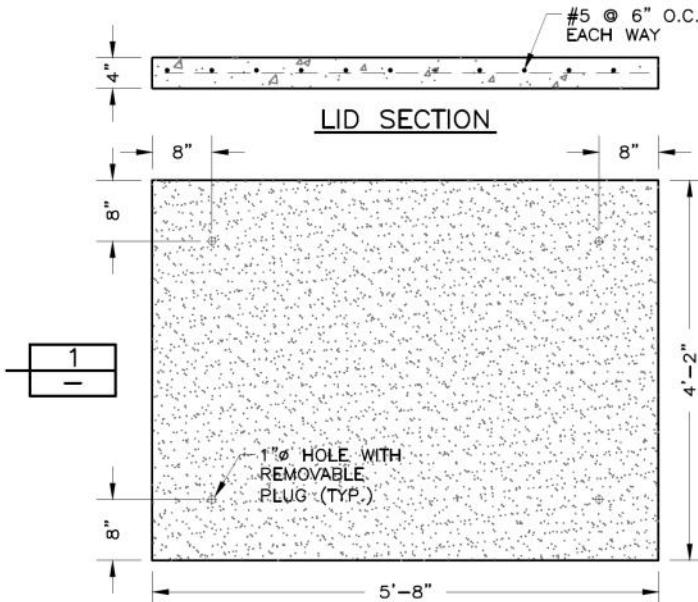
Grease Trap And Sampling Manhole Cont.



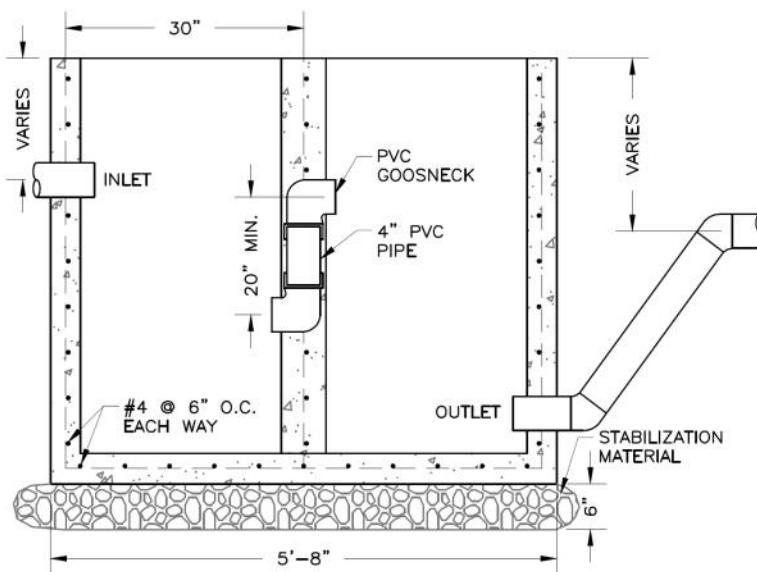
MURRAY



TYPICAL GREASE TRAP



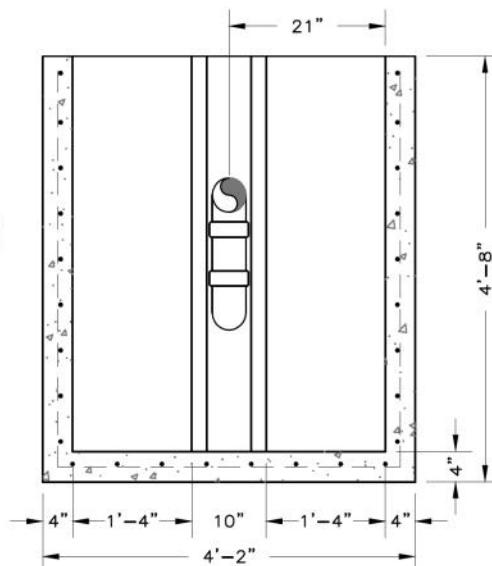
LID PLAN



SECTION 1

NOTES:

1. MINIMUM VOLUME CAPACITY: 1,000 GALLONS.
2. CONCRETE: CLASS 4000, APWA SECTION 03 30 04, PLACEMENT PER APWA SECTION 03 30 10, PROVIDE 1/2-INCH RADIUS EDGES. APPLY A BROOM FINISH. APPLY CURING AGENT.
3. REINFORCEMENT: DEFORMED, 60 KSI YIELD GRADE STEEL, ASTM A 615, PLACEMENT PER APWA SECTION 03 20 00.
4. PVC PIPE: APWA SECTION 33 05 07.
5. SEAL ALL WALL PENETRATIONS.
6. PROVIDE TWO 30" DIAMETER ACCESS OPENINGS WITH FRAME AND COVER (ONE FOR EACH SECTION OF GREASE TRAP).



SECTION 2

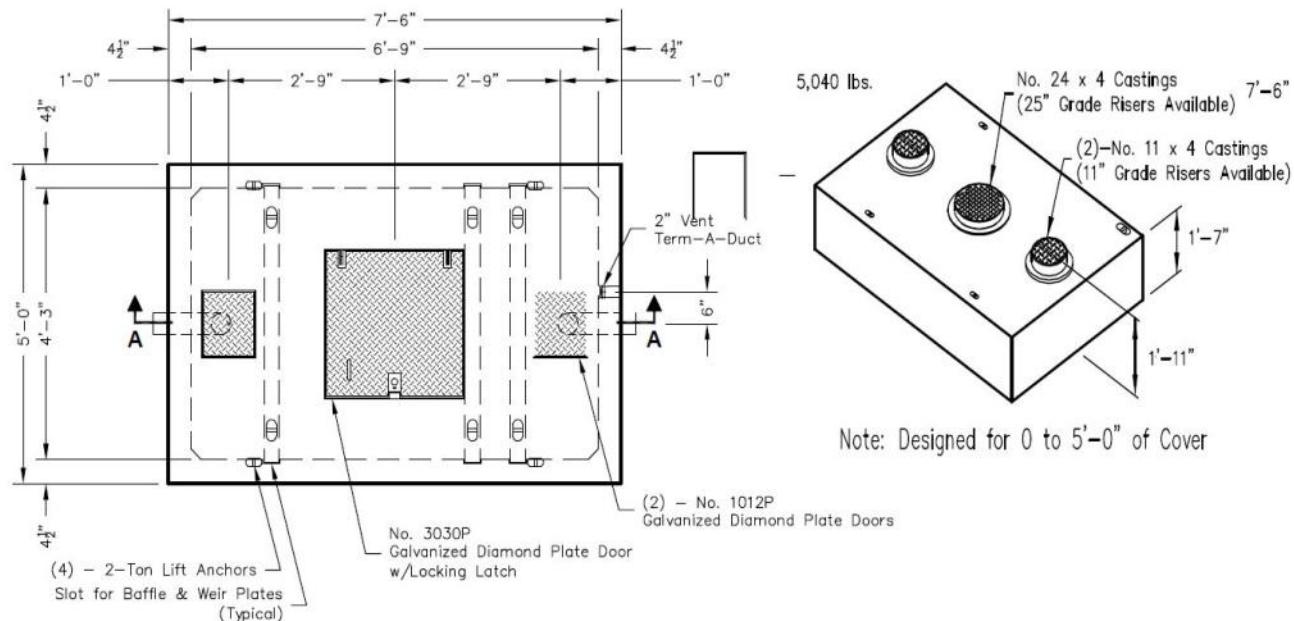
Oil/water Separator Detail



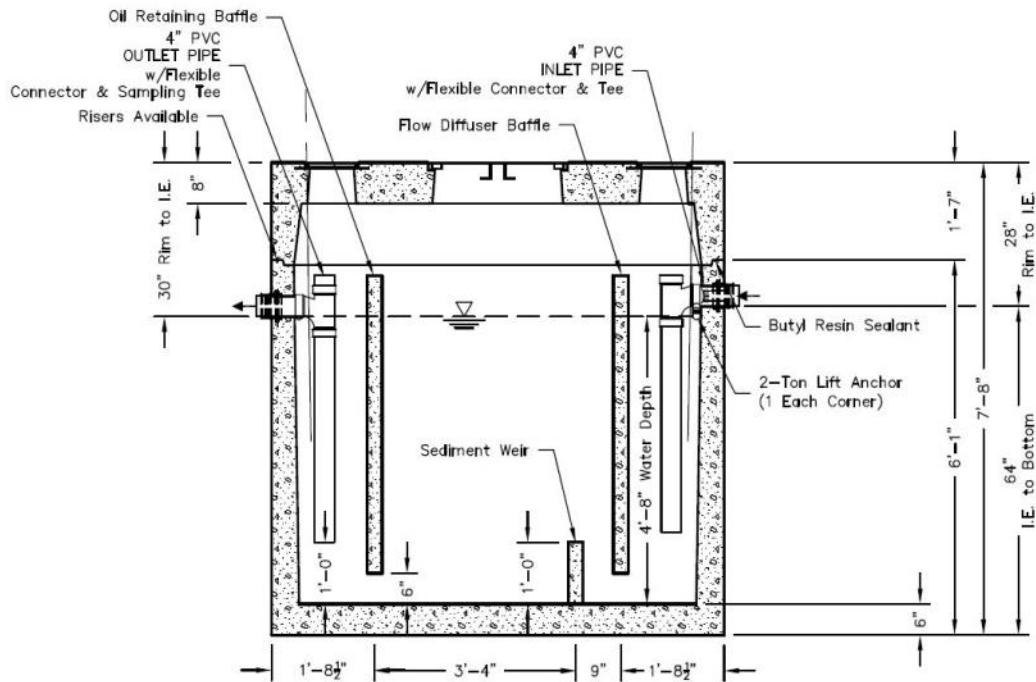
MURRAY

576-SA-1000

TOP - HEAVY TRAFFIC
No. 576-T-SA-HD



PLAN VIEW



SECTION AA

Notes:

- Designed in accordance with ASTM C 890 for AASHTO HS20-44 vehicle loading
- Flow Rate 67 GPM based on 15 min. retention time.
- Manufacturer's recommendations:
 - 1.) Ventilate each end to open atmosphere.
 - 2.) Prior to "Start Up" of System, fill with clean water to bottom of outlet pipe (approx. one foot deep). For best results, fill to flow line.
 - 3.) Follow Regular Inspection, Cleaning, & Maintenance Schedule (See Clean Out & Maintenance).

Size	Minimum Grade	Type of Access
4"	2%	4" Cleanout
6"	1%	6" Cleanout
8"	0.40%	4 FT Manhole
10"	0.28%	4 FT Manhole
12"	0.22%	4 FT Manhole
15"	0.15%	5 FT Manhole
18"	0.12%	5 FT Manhole
21"	0.10%	5 FT Manhole
24"	0.08%	5 FT Manhole

Murray City minimum Main Line size is 8 inch. Anything deviating from these requirements must be approved by Murray City. Murray City reserves the right to require manhole connections for 6" laterals when deemed necessary by Murray City Wastewater Division.

Murray City Wastewater Division reserves the right to change these specifications at any time when deemed appropriate. Anything deviating from these specifications must be approved by the Public Works Director or designee.

Please reference city website for impact fees, sewer rates.
<http://www.murray.utah.gov/227/Sewer>



MURRAY

Murray City Wastewater Division reserves the right to change these specifications at any time when deemed appropriate. Anything deviating from these specifications must be approved by the Public Works Director or designee.



MURRAY

Murray City Wastewater Department