North American Pipeline Services
Toms River Contract B Martin and 7th, 20"

Prepared by:

MIDAS FLOW CONTROL

SEWER FLOW CONTROL PLAN

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SECTION 1: GENERAL SUMMARY

The provided bypass plan consist of bypassing all flows necessary to accomplish the rehab of the 20" sewer line as indicated on attached maps.

The 20" system proposed will pump the existing flows from the upstream MH into (1) 12" HDPE line which returns the sewer flow into MH downstream of the work being performed.

This system is capable of 1,500 GPM, 2.14 MGD.

The normal sewage flows will be bypassed such that no main line sewer flow interruption is caused. In order to accomplish this, Midas Flow Control will install, operate and maintain a sufficient bypass pumping system to safely bypass the sewage flows. NAP will provide and install a plugging system sufficient to prevent sewer flows from entering the proposed work area.

This submittal details the equipment, procedures and schedule to be followed during the rehabilitation project.

SECTION 2: SEWER PLUGGING METHOD AND TYPES OF PLUGS

MAIN LINE SEWER PLUGGING

NAP will provide and install plugging of the 20" sewer line. The methodology to be used for plugging the main line sewer will include plugging of main line to permit safe downstream work. Plugs will be floated into place while deflated and then inflated once the appropriate location for each plug has been achieved. Each plug will be safely secured to a suitable above ground object to prevent loss of the plug if deflation should occur. The air pressure within each plug will be monitored via a pressure gauge located on each air supply line. The maximum allowable pressure for the plugs will be as recommended by the manufacturer. Operation of the plugs within a range of maximum allowable pressure –15% +0% will ensure safe operation of the plugs.

LATERAL LINE SEWER PLUGGING

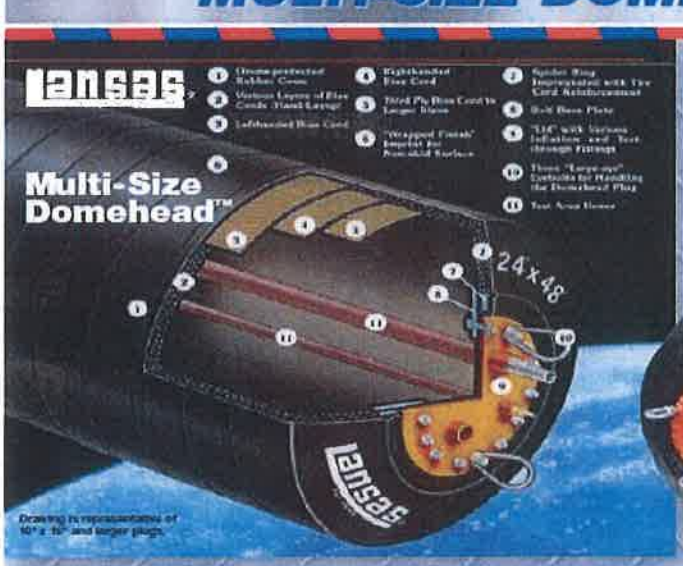
Lateral sewer plugging will be accomplished via the use of flow thru plugs or domehead plugs, sized appropriately for the host pipe size. The flow through type plugs will permit connection of the bypass pump's suction hose to the outlet of the plug. One (1) flow through or domehead type plug will be used for each lateral bypass set-up if necessary. The flow through internal diameter will be 4" – 2" in size.

Plugs will be placed into the sewer pipes to be bypassed via man-entry personnel in their respective deflated condition. Each plug will be safely secured to a suitable above ground object to prevent loss of the plug. The plugs will be inflated after installation into the pipeline. The air pressure within each plug will be monitored via a pressure gauge located on each air supply line. The maximum allowable pressure for the plugs will be as recommended by the manufacture. Inflation of the plugs within a range of maximum allowable pressure –15% +0% will ensure safe operation of the plugs.

Lansas® PRODUCTS

MANUFACTURED BY VANDERLANS AND SONS, INC.

MULTI-SIZE DOMEHEAD™



The Lansas® Domehead™ is the most durable multi-size pipe plug available. The unique design of this plug is covered under two U.S. patents. The first patent relates to the 2-ply of cross biased tire cord reinforcement (more on larger sizes). This design allows for controlled expansion of the plug. As this plug inflates it gets larger in diameter and shorter in length. By changing the shape of the plug the side wall stress is kept to a minimum, and this feature also eliminates the longitudinal tearing (end to end) found in plugs by other manufacturers.

The second patent covers our superior end design. The ends are reinforced with a steel "spider™" ring wrapped in fabric. The fabric extends from the spider into the body of the plug. This advanced design transfers the stress of inflation from the steel base plate to the fabric reinforced spider ring.

These designs, along with the highest quality materials create a line of pipe plugs that are as much as 50% lighter and substantially more flexible than our competitors.

The Lansas® Domeheads™ are manufactured and stocked with our standard ozone protected natural rubber outer layer. They are also available with a nitrile or neoprene layer, as well as stainless steel end plates for use in chemical and petroleum applications.

The 050 Series Domehead™ Back Plugs are designed with lifting eye(s) on both end(s) and a 1/4" inflation port. Larger sizes have an additional 1/2" inflation port. The 051 Series Domehead™ Front is equipped like the back plug, however, it also includes a 1/4" + 3/4" test thru port for air testing and pressure monitoring.

Custom Designs Always™ Available

CAUTION:
Blank plugs to prevent moving
See Safety Instructions on
page 38. Full safety
information sent with each
plug or see www.lansas.com

MULTI-SIZE DOMEHEAD™ – BACK PLUG
FOR STOPPING PIPELINE FLOW

PART #	FOR PIPE SIZE	MINIMUM PIPE DIAMETER	MAXIMUM PIPE DIAMETER	REQUIRED INFLATION PRESSURE	MAXIMUM BACK/TEST PRESSURE	PRODUCT DIMENSIONS LENGTH	DIAMETER	WEIGHT
050-46	4"-6"	3.50"	6.25"	30 PSI	15 PSI	9.0"	3.5"	1.0 LBS.
050-610	6"-10"	5.25"	10.25"	30 PSI	15 PSI	19.0"	5.0"	5.0 LBS.
050-812	8"-12"	7.25"	12.25"	25 PSI	15 PSI	20.0"	7.0"	8.0 LBS.
050-1016	10"-16"	9.50"	16.25"	25 PSI	15 PSI	30.0"	9.3"	26.0 LBS.
050-1218	12"-18"	11.50"	18.25"	25 PSI	15 PSI	30.0"	11.0"	29.0 LBS.
050-1224	12"-24"	11.50"	24.25"	25 PSI	15 PSI	41.0"	11.0"	36.0 LBS.
050-1530	15"-30"	14.00"	30.25"	20 PSI	8 PSI	55.0"	13.0"	49.0 LBS.
050-1530RP	15"-30"	14.00"	30.25"	20 PSI	8 PSI	55.0"	13.0"	49.0 LBS.
050-2036	20"-36"	19.00"	36.25"	20 PSI	8 PSI	64.0"	18.5"	85.0 LBS.
050-2036RP	20"-36"	19.00"	36.25"	20 PSI	8 PSI	64.0"	18.5"	85.0 LBS.
050-2448	24"-48"	22.00"	48.25"	15 PSI	8 PSI	84.0"	21.5"	98.0 LBS.
050-2448RP	24"-48"	22.00"	48.25"	15 PSI	8 PSI	84.0"	21.5"	98.0 LBS.
050-3660	36"-60"	34.50"	60.25"	10 PSI	6 PSI	84.0"	29.5"	150.0 LBS.
050-4278	42"-78"	37.00"	78.25"	10 PSI	6 PSI	101.0"	37.0"	280.0 LBS.
050-4872	48"-72"	46.00"	72.25"	10 PSI	6 PSI	84.0"	43.5"	340.0 LBS.
050-6096	60"-96"	58.00"	96.25"	10 PSI	6 PSI	110.0"	56.0"	720.0 LBS.

NOTE: 10x16 AND LARGER HAVE 2 INFLATION PORTS, (1) ½" and (1) ¼" NPT

MULTI-SIZE DOMEHEAD™ FRONT
FOR AIR TESTING AND PRESSURE MONITORING

PART #	FOR PIPE SIZE	MINIMUM PIPE DIAMETER	MAXIMUM PIPE DIAMETER	REQUIRED INFLATION PRESSURE	MAXIMUM BACK/TEST PRESSURE	BY-PASS	PRODUCT DIMENSIONS LENGTH	DIAMETER	WEIGHT
051-46	4"-6"	3.50"	6.25"	30 PSI	15 PSI	⅛" + ⅛"	9.0"	3.5"	1.5 LBS.
051-610	6"-10"	5.25"	10.25"	30 PSI	15 PSI	⅛" + ⅛"	19.0"	5.0"	7.5 LBS.
051-812	8"-12"	7.25"	12.25"	25 PSI	15 PSI	¾" + ⅛"	20.0"	7.0"	11.0 LBS.
051-1016	10"-16"	9.50"	16.25"	25 PSI	15 PSI	¾" + ¼"	30.0"	9.3"	29.0 LBS.
051-1218	12"-18"	11.50"	18.25"	25 PSI	15 PSI		30.0"	11.0"	30.0 LBS.
051-1224	12"-24"	11.50"	24.25"	25 PSI	15 PSI		41.0"	11.0"	41.0 LBS.
051-1530	15"-30"	14.00"	30.25"	20 PSI	8 PSI	¾" + ¼"	55.0"	13.7"	51.0 LBS.
051-1530RP	15"-30"	14.00"	30.25"	20 PSI	8 PSI		55.0"	13.7"	51.0 LBS.
051-2036	20"-36"	19.00"	36.25"	20 PSI	8 PSI		64.0"	18.5"	89.0 LBS.
051-2036RP	20"-36"	19.00"	36.25"	20 PSI	8 PSI	¾" + ¼"	64.0"	18.5"	89.0 LBS.
051-2448	24"-48"	22.00"	48.25"	15 PSI	8 PSI		84.0"	21.5"	102.0 LBS.
051-2448RP	24"-48"	22.00"	48.25"	15 PSI	8 PSI		84.0"	21.5"	102.0 LBS.
051-3660	36"-60"	34.50"	60.25"	10 PSI	6 PSI	¾" + ¼"	84.0"	29.5"	160.0 LBS.
051-4278	42"-78"	37.00"	78.25"	10 PSI	6 PSI		101.0"	37.0"	290.0 LBS.
051 4872	48"-			10 PSI	6 PSI		84.0"	43.5'	350.0 LBS.
051-6096	60"-96"	58.00"	96.25'	10 PSI	6 PSI		11		

SEE PAGES 31-34 FOR ACCESSORIES.

SECTION 3: NUMBER, SIZE, MATERIAL AND METHOD OF INSTALLATION AND LOCATION OF INSTALLATION OF SUCTION PIPING

The quantity of suction hoses to be utilized for the bypass system set-up is included within the following information.

The suction piping will consist of 12" HDPE Suction Pipe for each 8" pump necessary for the main bypass system.

The location of the suction piping will be shown on suction side of the pumps indicated on the bypass Map.

The method of installation of the suction pipes will be as follows. The pumps will be positioned in accordance to allow direct suction access to the Manhole. Each bypass pump will have an independent suction pipe. The suction hose is assembled with the appropriate fittings necessary for connecting to the pump.

Each suction pipe will be lifted into position using a forklift and placed correctly into the manhole to align the with the pump suction fitting. A 1/8" thick full-faced rubber gasket will be utilized between the flanges of the pump and the fitting and then the flanges will be bolted together. The forklift will maintain its position until suitable supports are installed under the suction pipe. (See illustrations below)

SECTION 4: LOCATION AND INSTALLATION OF DISCHARGE PIPING

The discharge piping for the 20" bypass system will consist of (1) one 12" SDR 26 HDPE pipe. It will return sewer flows into the existing system approximately 500 linear feet into the downstream MH located on Garfield Ave. A drawing of the discharge piping as described above is attached to this document.

Tees, air vents and elbows will be flanged in line as needed.

SECTION 5: BYPASS PUMP SIZES, CAPACITY, NUMBER OF EACH SIZE TO BE ON SITE AND POWER REQUIREMENTS

The bypass pump sizes, capacity, number of each size to be on site and the associated power requirements are provided within the following table

LOCATION	SIZE	QTY.	CAPACITY	POWER
Suction Manhole (see map)	8" Sound Attenuated Diesel Unit (Primary)	1 each	2000 gpm	DIESEL
Suction Manhole (see map)	8" Sound Attenuated Diesel Unit (Standby)	1 each	2000 gpm	DIESEL

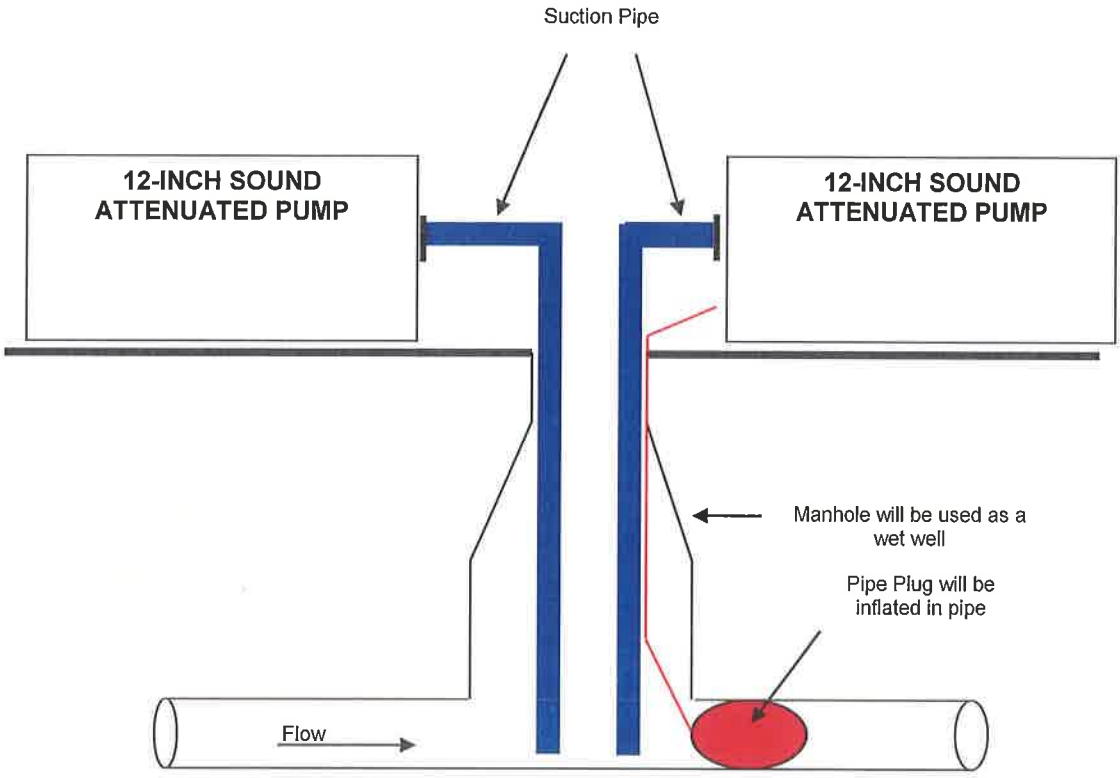
Notes:

1. Each bypass pumping system will have one (1) standby pump equal to the largest primary pump set up in line.
2. The quantity column will include stand-by pumps.

All primary pumps included in the system are diesel engine driven and require no special power supply other than diesel fuel. Fuel levels will be checked every 4 hours to ensure proper operation. Each pump can operate approximately 24 hours with a full tank of fuel. The fuel levels will be filled as needed to ensure proper operation.

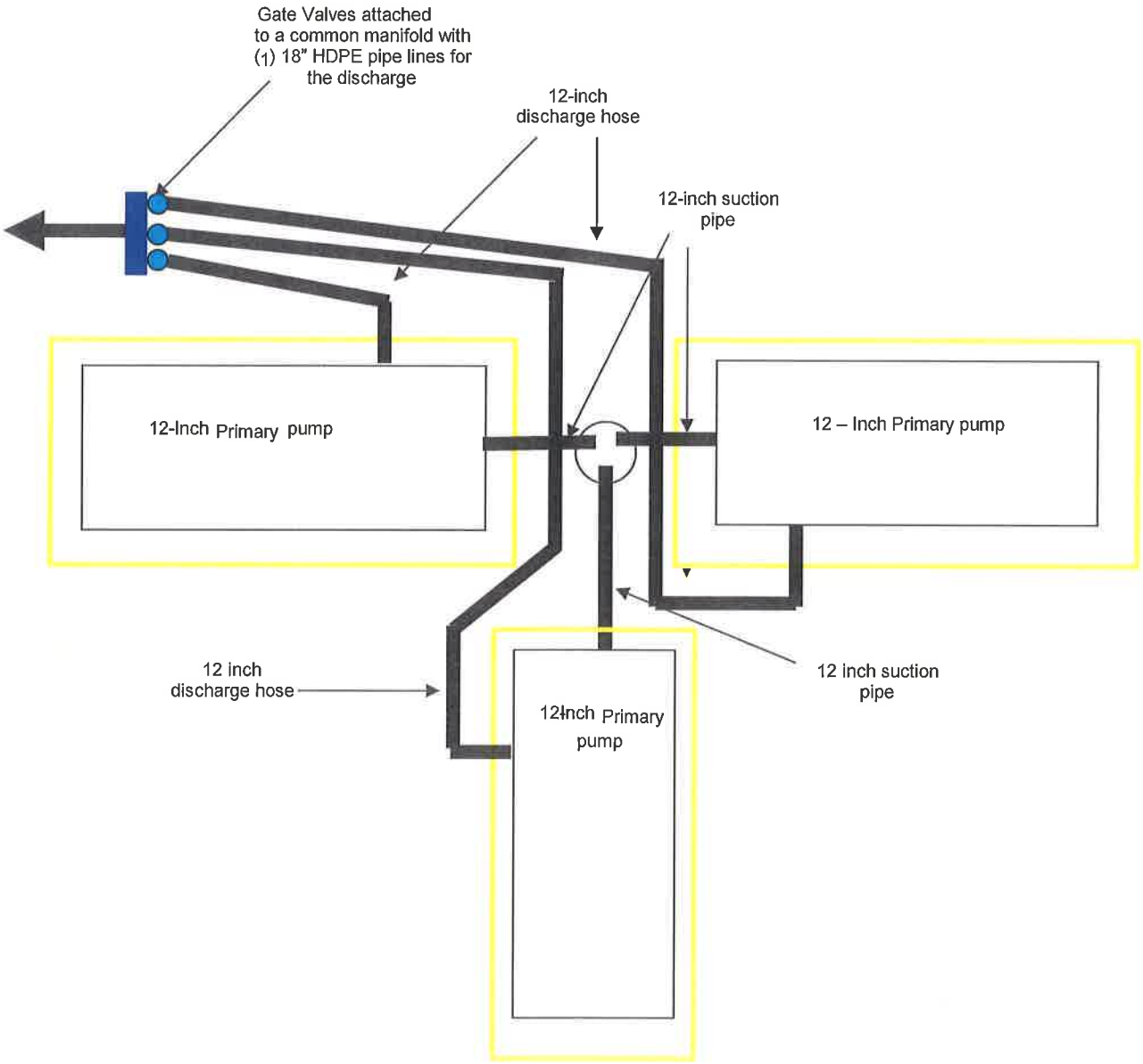
SECTION 6: TYPICAL MAIN BYPASS PUMP STATION (profile view)

The following diagram will illustrate an example of the typical set up of a 12inch bypass pumping system. This is the side view of the pumps and ancillary materials utilized for a flow control system. The system provided for this project will consist of two pumps (2) 12" diesel driven pump which will connect to 12inch discharge hose that will tie into a common manifold. From the manifold (1) 18" HDPE discharge line will be installed and discharge into the MH's indicated on the provided map. The sewer flow will be plugged on the downstream side of side of each line as indicated, allowing the sewer flow into the "wet well" and then pumped through the bypass system.

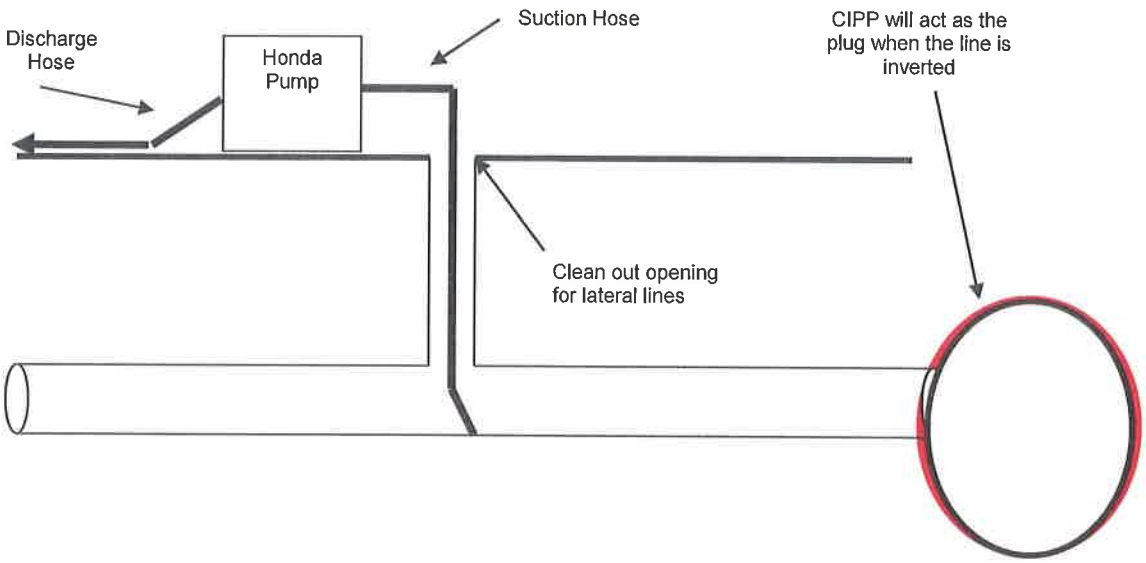


SECTION 6: TYPICAL MAIN BYPASS PUMP STATION (top view)

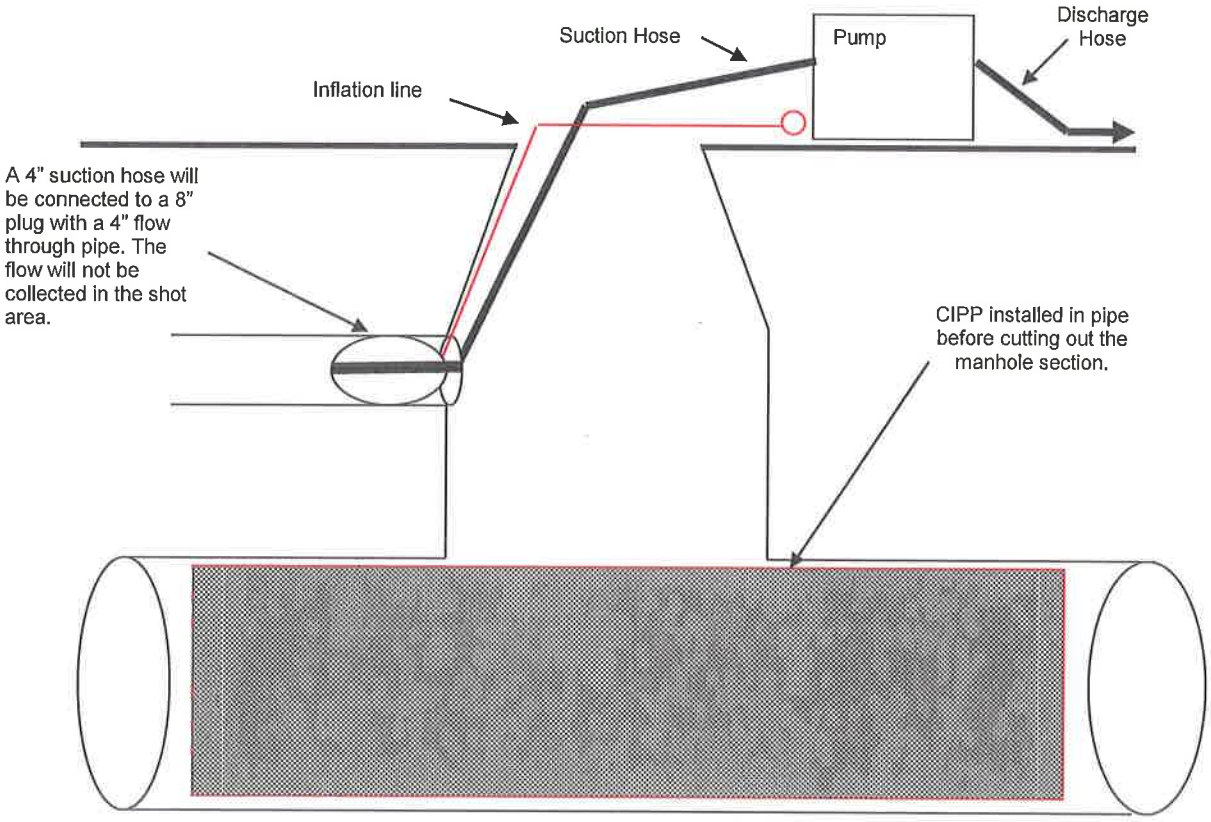
The discharge of the (2) two 12" pumps and (1) one 12" back up pump will manifold together into (1) one 18-inch discharge pipe line. The discharge pipe will be routed to the discharge manhole, as designated on the bypass maps*.



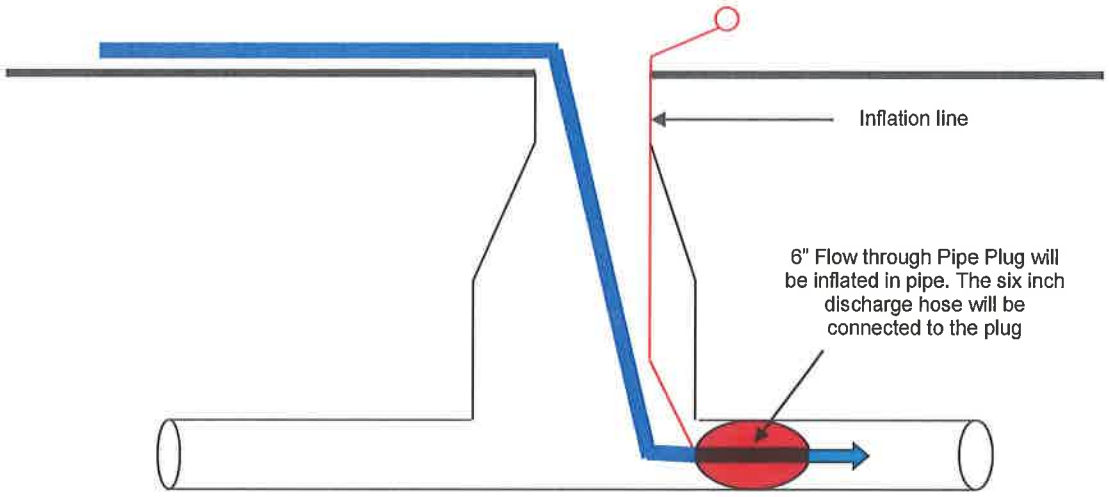
SECTION 7: TYPICAL LATERAL BYPASS PUMP (2", 3" or 4" pump, profile view)



Typical lateral line that taps into trunk line at pipe level (not to scale)



SECTION 7: DISCHARGE MANHOLE FOR THE LATERAL PUMPS WITH A FLOW THROUGH PLUG



Back flow will be prevented from coming into the inversion area while the lateral bypass flow will be pumped downstream of inversion, if necessary.

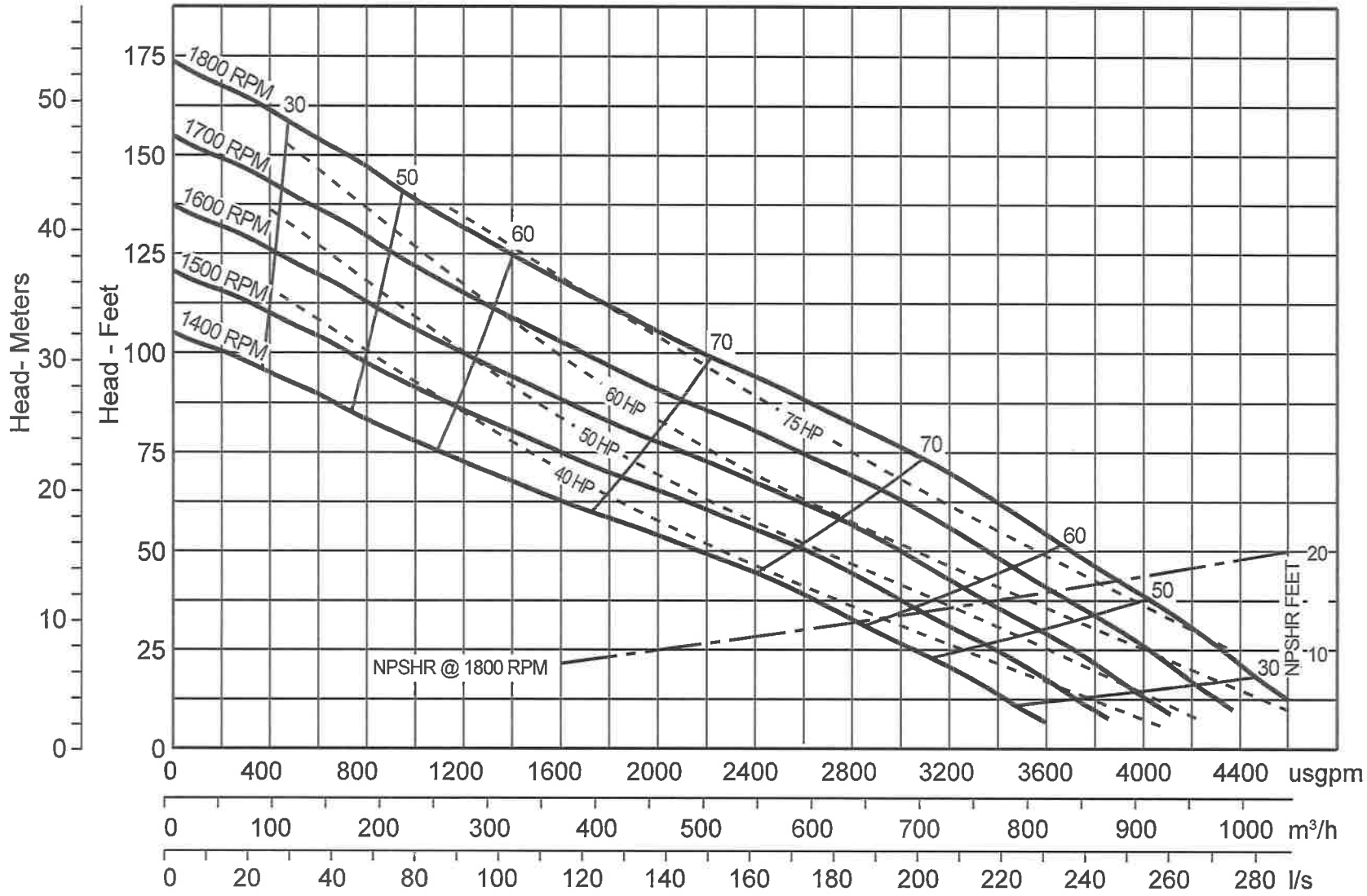
SECTION 8: CALCULATION OF STATIC LIFT, FRICTION LOSSES, AND FLOW VELOCITY. PUMP CURVES SHOWING PUMP OPERATING RANGE

Calculations providing static lift, friction losses and flows are below for the provided bypass pumping system. This data was calculated utilizing Hazen-Williams formulae.

The system hydraulics data has been calculated assuming 12" HDPE pipe on discharge.

The appropriate main bypass system pump curves with operating ranges follow the system hydraulics calculations. The curves provide flow data for the bypass system.

The proposed system is capable of diverting 1,500 GPM, 2.14 MGD. (See attached Map for Details)



Note: Losses from priming system not shown

PIONEER PUMP
PERFORMANCE THROUGH INNOVATION™

Model	PP88S12	
Size	8" x 8"	200 mm x 150 mm
Impeller Diameter	12.25"	311 mm
Solids Handling Size	3.0"	76 mm

DWG No. A4631HQ
Revision 001
Drawn By DAP
Date 23 Jul 2010

SECTION 9: EMERGENCY RESPONSE PLAN FOR CLEANING UP LEAKAGE FROM BYPASS PIPING

If leakage of the bypass piping system is encountered, the emergency response plan as provided will be performed. In addition, the Contractor will be notified immediately and updated on the progress of the clean up.

EMERGENCY RESPONSE PLAN FOR SPILLS, LEAKS OR BREAKS IN BYPASS PUMPING OPERATIONS

THE FOLLOWING PROCEDURES WILL BE ADHERED TO IN THE EVENT OF ANY SPILL, LEAK OR BREAK IN THE PUMP BYPASS OPERATIONS.

1. The first step is to stop the leak or spill as soon as possible.
2. If the break or leak is in the pipeline, call the pump operator to halt all pump operations.
3. THEN PROCEED AS FOLLOWS:

FOR A BREAK IN PIPELINE:

1. Notify the Supervisor of the break.
2. The Supervisor will inform the Project Manager/City of the incident.
3. All operations will cease until cleanup has been completed.
4. Contain the sewage from entering any storm drain or waterway by sand bagging the area.
5. Repair the break in accordance with manufacturer's recommendations.
6. Set up additional pump and hoses to divert the sewage to the nearest tee in the bypass line.
7. Vacuum up all water and sewage that can be vacuumed up by a pump.
8. Spread Sodium Hypochlorite to disinfect the remaining sewage.
9. Shovel all remaining sewage and debris into suitable containers for disposal.
10. The Project Manager/City will inspect the area and will give permission to begin operations once all conditions have been satisfactorily completed.
11. Start up operations and monitor the break for further leakage.

FOR A LEAK IN PIPELINE:

1. Notify the Supervisor of the leak.
2. The Supervisor will inspect the leak and he/she will make the decision to shut down operations and repair the leak.
3. The Supervisor will insure that the leak doesn't impact the environment or public in any way.
4. To repair a leak in the pipeline, utilize a wrap around collar to seal the leak.
5. If the leak is in a fitting then the fitting needs to be tightened or gasket replaced.
6. Once the leak is repaired then cleanup procedures will proceed as outlined above.
7. When bypass operations have been halted, the Project Manager needs to be notified immediately.

SECTION 10: MAINTENANCE OF BYPASS PUMPING LINES

MAINTENANCE OF BYPASS PUMPING LINES

The following is operational procedures that will be followed for the maintenance of the secondary bypass pumping system. The procedures are for the pumps and pipeline utilized during all phases of the main bypass systems.

Start up and operation of the bypass:

1. Before the start up of any equipment, check the area around the pumps for any leaks of sewage and oil.

2. Make sure all systems are secure and free of any obstructions or tripping hazards.

3. Check the fluid levels in all equipment. The fluids to be checked are as follows:
    a. Oil level in pumps
    b. Oil level in seal assembly
    c. Fuel level
    d. Water level (if applicable)
    e. Battery

4. Make sure all valves that are to be utilized are in the open position.

5. Set throttle control on the pump at an idle.

6. Hold Murphy bypass switch in and turn ignition key on.

7. Release Murphy bypass switch when the pump starts.

8. Raise the throttle on the pump until the pumps priming system primes the pump.

9. Watch for any leaks to the seal area and to the suction/discharge connections.

10. Adjust the throttle to the proper RPM that will be required to keep the level of the water in the manhole at the required depth.

11. All of the pumps will be set on a manual system that will start any additional pumps as needed. The operator will start the pumps when the water level rises above the set limits. The additional pumps will also shut down by the operator when the level drops below the set limits.

12. Monitor the manhole to be sure the pumps start up accordingly.

13. Once the bypass system is activated, inspect the pipeline on an hourly basis to check for leakage or breakage of the bypass pipeline.

14. Monitor all gauges on the activated pumps to ensure proper operation of the pump.

SECTION 10: MAINTENANCE OF BYPASS PUMPING LINES (CON'T)

15. Monitor the vacuum gauge and the pressure gauge of any activated pumps to ensure the pump is pumping correctly and there are no blockages of the suction.

16. A blockage of the suction line will be indicated in a rise of the vacuum gauge and a decrease in the pressure gauge.

17. If this incident occurs shut down pump and back flush the suction line.

18. To back flush the suction line, open the valve on the suction end of the pump. This will let air into the system, which will allow the water in the suction line to flow back.

19. The backward action of the water should dislodge any obstructions on the strainer.

20. If this does not work, then hook up a water line to the valve and utilize water pressure to dislodge the obstruction.

21. If this still does not work then the suction line has to be removed to free any obstructions that are on the strainer.

22. Note any unusual circumstances that occur during the shift of operations on the bypass log (see attached log).

23. The bypass pump operator will monitor the bypass piping on an hourly basis for leaks or breaks in the line.

24. Report any leaks or breaks as soon as possible.

25. Both operators will carry radios/mobile phone for communication.

26. Any leaks or breaks in the pipeline will be repaired as soon as possible (see emergency procedures).

27. Report any and all unusual circumstances to the next shift.

28. At the end of shift, make sure all logs are completed and stored in the proper binder.

Start up and operation of lateral bypasses: (If Necessary, Refers to Lines within Rehab Zone)

1. Once the main bypass has begun, start up the lateral pumps one at a time.

2. Begin with the nearest lateral to the main bypass.

3. Make sure the valve on the tee of the main bypass is open.

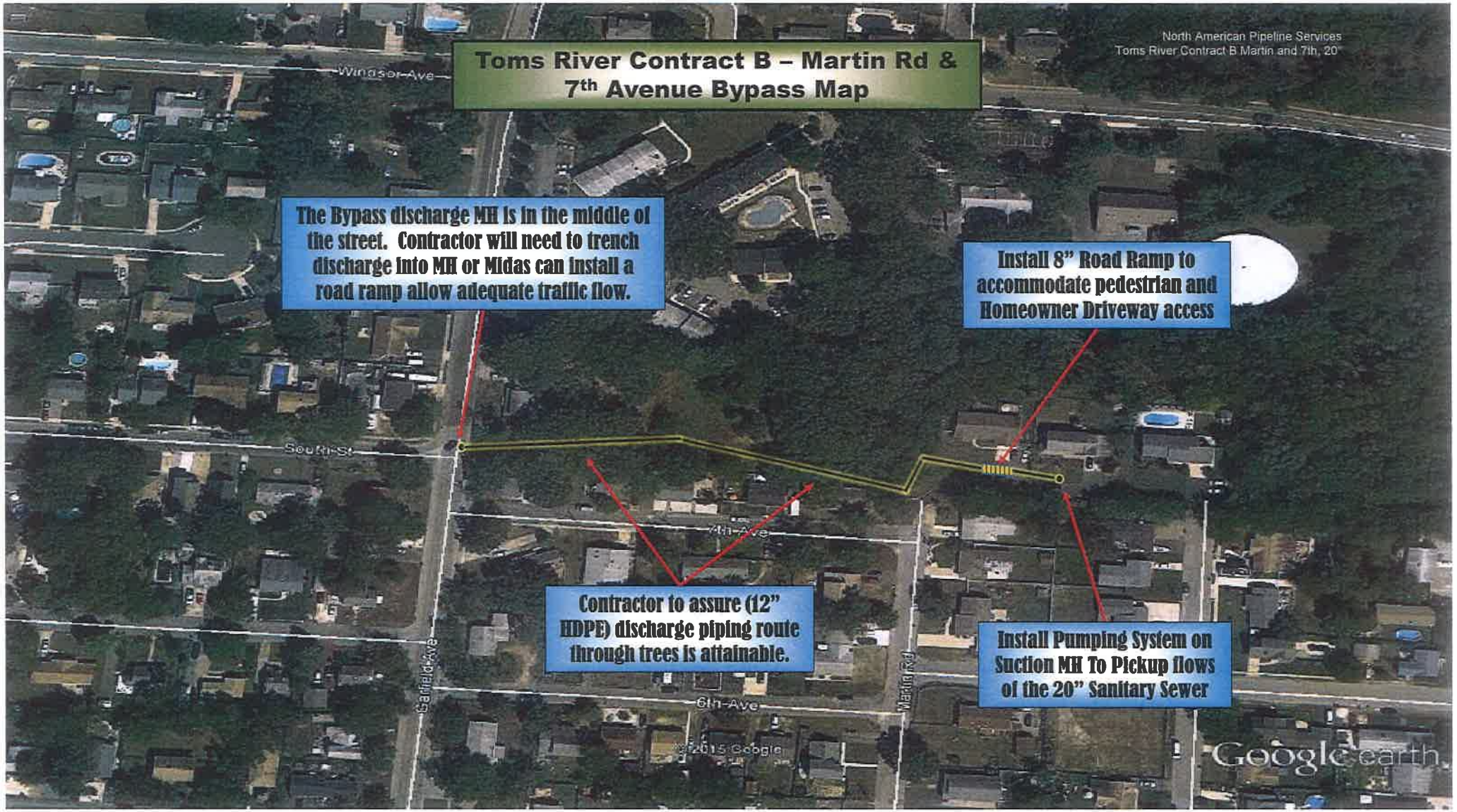
4. Start the pump following the above outlined procedures.

SECTION 10: MAINTENANCE OF BYPASS PUMPING LINES (CON'T)

5. Monitor the level of water in the manhole.
6. Once the level is obtained, check the pipeline for leaks.
7. Continue with this procedure until all lateral pumps are running at the proper levels.
8. Maintain constant monitoring of all pumps and pipelines.
9. Walk the mainline **every hour** to inspect line for leaks and breaks.
10. Report any incidents that might occur to the main bypass operator.

Shut down of pump operations:

1. To shut down pump operations, start by shutting down all of the lateral pumps first.
2. Begin with the last pump in line and work back towards the main bypass set-up.
3. When a lateral pump is shut down, close the valve on the tee of the main bypass line
4. Once all lateral pumps are shut down begin shut down procedures of the main bypass pump.
5. The main bypass pump will be shut down.
6. **If this is the end of the bypass operations for the inversions,** the suction lines will be removed and fresh water will be hooked up to the suction lines of the pumps to flush the lines.
7. The lines are to be flushed out until all lines are free of sewage and debris.
8. When the lines are flushed then the teardown of the pipelines will begin.


Toms River Contract B – Martin Rd &
7th Avenue Bypass Map
North American Pipeline Services
Toms River Contract B Martin and 7th, 20
The Bypass discharge MH is in the middle of the street. Contractor will need to trench discharge into MH or Midas can install a road ramp allow adequate traffic flow.
Install 8" Road Ramp to accommodate pedestrian and Homeowner Driveway access
Contractor to assure (12" HDPE) discharge piping route through trees is attainable.
Install Pumping System on Suction MH To Pickup flows of the 20" Sanitary Sewer
Windsor Ave
South St
4th Ave
6th Ave
Garfield Ave
Martin Rd
© 2015 Google
Google earth

REFERENCE LIST

Project Name	Project Location	Project Details	Owner/Entity	Project Contact	Start Date	End Date
Baton Rouge 72" Sanitary Sewer Bypass	Baton Rouge, Louisiana	Designed a bypass system capable of handling flows of 40,000 gallons per minute (gpm) from a 72" sanitary sewer line. The purpose of the bypass was to divert flows off the 72" line that had collapsed. The Contractor assigned to project was performing an open cut procedure to replace the collapsed portion. In order to perform this task our bypass system consisted of five, 18" trash pumps with one 18" backup pump. These pumps distributed the flows coming off the 72" line into a manifold. From the manifold the flow discharged into (5) 18" HDPE lines running 1,000' each to a discharge pit beyond the scope of work and back into the 72" sanitary sewer line.	City of Baton Rouge, LA	James Witt -SAK -	8/1/2014	9/30/2014
132" Phase I of WACO Tunnel Rehab	Houston, Texas	Designed a bypass system capable of handling flows of 42 million gallons per day (mgd) from a 132" sanitary sewer line. The purpose of the bypass was to divert flows off the 132" line that was being rehabilitated downstream by the contractor. Our bypass system consisted of (7) 12" electric submersible pumps that were approximately 65' down in the earth where the pipe was located. Each pump distributed the water into their own 18" HDPE discharge line that was 700' each (4,900 feet total). These lines discharged into a separate sewer line capable of handling the flows.	Oscar Renda	Oscar Renda - 817-538-1652	9/1/2014	10/31/2014
Lockwood and Lavender 42" and 54" Sanitary Sewer Rehab.	Houston, Texas	Designed a multi-bypass systems to divert flows from sewer lines (42" and 54") that were being rehabilitated by the contractor. The first bypass consisted of (3) 12" pumps that diverted flows off the main sewer line, capable of handling flows of 10,000 gallons per minute (gpm). The flows from the three pumps were diverted into a manifold that consisted of (1) 18" HDPE pipe running 3,100' downstream to another manhole. The second bypass consisted of (2) 8" pumps that diverted flows into a manifold. The manifold distributed the flows into a single 8" HDPE pipe running 2,400' to a discharge manhole. The third bypass designed for this project consisted of (2) 8" pumps. These pumps were bypassing the remaining flows off the 42" and 54" lines. This bypass system required the combination of 12" and 18" HDPE discharge pipe that ran 2,000' to the next manhole. All of these bypasses were developed so the contractor could utilize Cured-In-Place-Pipe (CIPP) in certain portions of the two sewer lines.		IPR - Jorge Martinez - 713-545-2209	11/14/2014	1/31/2014

MillerCoors Brewery Company Processed Waste Water Project (72" Pipe)	Golden, Colorado	Designed a bypass system for MillerCoors Brewery that was unique compared to normal bypass systems. The purpose of the system was to divert flows from a 42" processed waste water line to a treatment plant inside the facility. However, this system was designed with FRAC Tanks. The purpose of the FRAC Tanks was to capture grain particles from the brewery before going into the treatment plant. This system consisted of (4) 12" pumps that bypassed flow from the 42" line into a manifold. The manifold distributed the flow into (4) 18" HDPE lines. These lines each discharged into a separate FRAC Tank that collected the grains. From there, the (4) FRAC Tanks each had a 12" HDPE discharge line that ran to the treatment collection chamber, where the water was further treated.	Miller Coors Brewery - Golden Co.	IPR Industrial - Tom Klink - 281-733-8324	12/15/2014	2/15/2015
South Flores 48" and 58" Sanitary Sewer Rehab.	San Antonio, Texas	Developed a bypass system capable of handling flows of 46 MGD. The purpose of this bypass system was to divert flows off 48" and 58" sewer lines so the contractor could perform rehab on the two sewer lines without disrupting the flows of sewer. This contractor utilized CIPP (Cured-In-Place-Pipe) for the rehabilitation. In order to do this, the bypass system consisted of two bypasses. The main bypass was designed with (5) 12" pumps that diverted flows to a manifold. The manifold distributed the flows into (3) 18" HDPE discharge pipes that each ran 2,100' (6,300' total) downstream to a large discharge pit. The second bypass consisted of (2) eight inch pumps. These pumps diverted flows to a manifold. The Manifold distributed the flows into a single 18" HDPE pipe. The discharge pipe from this bypass ran 1,500' to the same discharge pit beyond the scope of work.	San Antonio Water System - San Antonio, TX.	IPR South Central - Jorge Martinez - 713-545-2209	4/1/2015	6/30/2015
JEA Kings Ave & Montanta Ave 48" Sewer Rehab Project	Kings Ave & Montana Ave Jacksonville, FL 32207	Bypassing of a 48" Truck line with flows of 20 MGD. System consisted of 2 14" Sound Attinuated Pumps along with 1,850' of bypass piping	JEA / 515 N Laura St Jacksonville, FL 32202 / 904-665-8070	Brandt Curvel / Insituform / 904-838-0090	4/6/2015	5/28/2015