MUNICIPAL WATER AUTHORITY OF ALIQUIPPA

MUNICIPAL WASTELOAD MANAGEMENT REPORT
OPERATING YEAR 2019

NPDES PERMIT NO. PA0025968

MARCH 2020

160 HOPEWELL AVENUE
ALIQUIPPA, PA 15001

MUNICPAL WATER AUTHORITY OF ALIQUIPPA
WATER POLLUTION CONTROL PLANT
MUNICIPAL WASTELOAD MANAGEMENT REPORT
OPERATING YEAR 2019

TABLE OF CONTENTS

NO.		PAGE
PURPOSE AND SCOPE		1
SECTION 1:	HYDRAULIC LOADING GRAPH	1
SECTION 2:	ORGANIC LOADING GRAPH	2
SECTION 3:	DISCUSSION OF HYDRAULIC AND ORGANIC LOADINGS	2
SECTION 4:	SEWER EXTENSIONS	4
SECTION 5:	SEWER SYSTEM MONITORING, MAINTENANCE, REPAIR AND REHABILITATION	4
SECTION 6:	PUMPING STATIONS	8
SECTION 7:	INDUSTRIAL WASTE DISCHARGES	9
SECTION 8:	SEWAGE MANAGEMENT PLAN	9
SUMMARY		11
SECTION 9:	SIGNATURES	11

TABLE OF CONTENTS (CONT'D)

APPENDIX

FIGURE 1: STP HYDRAULIC LOADING GRAPH

FIGURE 2: STP ORGANIC LOADING GRAPH

TABLE 1: SEWAGE TREATMENT PLANT HYDRAULIC LOADING DATA SUMMARY

TABLE 2: SEWAGE TREATMENT PLANT ORGANIC LOADING DATA SUMMARY

TABLE 3: CHAPTER 94 PROJECTED HYDRAULIC LOADING

TABLE 4: CHAPTER 94 PROJECTED ORGANIC LOADING

TABLE 5: LIFT STATION OVERFLOW & BYPASS DATA

REPORTED SLUDGE TRANSFERS

SLUDGE ESTIMATING WORKSHEET

STP FLOW METER CALIBRATION CERTIFICATE

WWTP / PUMP STATION MAINTENANCE LOGS

HOPEWELL TOWNSHIP SANITARY SEWER SYSTEM AND PUMP STATION QUESTIONNAIRE

MUNICPAL WATER AUTHORITY OF ALIQUIPPA
SEWAGE TREATMENT PLANT
MUNICIPAL WASTELOAD MANAGEMENT REPORT
OPERATING YEAR 2019
MARCH 2020

PURPOSE AND SCOPE

This report is submitted in fulfillment of the requirements of Chapter 94 - Municipal Wasteload Management, of the Pennsylvania Department of Environmental Protection (PaDEP) Rules and Regulations. This report presents the following:

1. Hydraulic and organic loading graphs including five-year projections.
2. A discussion of the hydraulic and organic load projection methodology.
3. A description of all sewer extensions approved and all sewer extensions constructed in the year reported; and all known proposed projects which will require public sewers but are presently in the preliminary planning stages.
4. A description of the operation and maintenance program for the sewer system including monitoring.
5. A discussion of the condition of the sewer system.
6. A discussion of the condition and capacities of all sewage pumping stations.
7. Description of industrial waste dischargers.
8. Plan to reduce or eliminate existing/projected overload conditions.
9. Information on tributary communities. See Appendix.

SECTION 1: HYDRAULIC LOADING GRAPH (§ 94.12.(a)(1))

Figure 1 contained in the Appendix presents the hydraulic loading graph presenting flows as recorded at the sewage treatment facility for the period of time between 2015 through 2019. Figure 1 also presents flow projections for the coming five-year period (2020

through 2024). The actual data is presented in tabular form appended as Table 1. Hydraulic loading data is taken from Discharge Monitoring Reports (DMRs) submitted monthly by the Municipal Authority to PaDEP. Section 3 of this report provides discussion of the past and projected future hydraulic loadings on the Municipal Authority's sewage treatment facility.

SECTION 2: ORGANIC LOADING GRAPH (§ 94.12.(a)(2))

Figure 2 contained in the Appendix presents the organic loadings tributary to the Municipal Authority's sewage treatment facility for the most recent five year period (2015 through 2019) and projects anticipated organic loadings for the coming five year period (2020 through 2024). Organic loading data is taken from DMRs submitted monthly by the Municipal Authority to PaDEP. Historic loading data is provided in tabular form appended as Table 2. Section 3 of this report discusses past and projected future organic loadings.

SECTION 3: DISCUSSION OF HYDRAULIC AND ORGANIC LOADINGS (§ 94.12.(a)(3))

Hydraulic Loadings

The average daily hydraulic loading for Operating Year 2019 ranged from a low of 2.30 mgd in August and September to a high of 4.00 mgd in February. The 3-month maximum hydraulic loading during the 2019 Operating Year was 3.57 mgd, therefore, the treatment plant was hydraulically overloaded in 2019.

The projected hydraulic loading for the next five years was determined using a nominal estimated increase of 1% additional flow per year. The average annual and 3-month maximum hydraulic loading projections for 2024 is 3.22 mgd and 3.94 mgd respectively. Therefore, the treatment plant is projected to be hydraulically overloaded in the next five

(5) years. A summary table of the projected hydraulic loading during each of the next five (5) years is presented as Table 3.

Organic Loadings

The average daily organic loading for Operating Year 2019 ranged from a low of 562 lbs/day in December to a high of 2,098 lbs/day in July. Monthly average organic loadings at the WWTP did not exceed the design organic capacity of 5,673 lbs/day at any time during the 2019 Operating Year, therefore the WWTP was not organically loaded in 2019.

The projected organic loading was determined using an estimated increase of 1% loading per year. The projected organic loading for 2024 is 1,220 lbs BOD_5/day with a maximum monthly load projection of 2,325 lbs BOD_5/day, which are lower than the permitted organic capacity of 5,673 lbs BOD_5/day. Therefore, the treatment plant is not projected to be organically overloaded in the next five (5) years. A summary of the projected organic loading during each of the next five years is presented as Table 4.

Sewage Sludge Management Inventory

Reported sludge transfer calculations and Sludge Estimating Worksheet is provided in the Appendix.

A total of 0 dry tons of dewatered sludge were removed from the reed beds and hauled to the landfill for disposal in 2019. It is anticipated that dewatered sludge will be removed from the reed beds in 2020.

SECTION 4: SEWER EXTENSIONS (§ 94.12.(a)(4))

The Woodlawn Road sewer extension was completed in 2012, consisting of 1,392 linear feet of gravity sewer, 1,150 linear feet of force main and one pump station (Permit No. 0410402). All future flows will be metered through the pump station.

A sewer extension was completed in 2016 to serve a new 200,000 sf warehouse and laydown yard development along Woodlawn Road in Hopewell Township. The sewer extension consisted of 1,895 linear feet of 4-inch and 8-inch gravity sewer, 4-inch force main discharging into the existing 10-inch gravity sewer tributary to the Jail pump station, and one E-One duplex grinder pump station.

A sewer extension was completed in 2017 to serve 2 commercial buildings along Bet-Tech Drive, consisting of 505 linear feet of 8-inch gravity sewer.

No sewer extensions were completed in the Authority's service area in 2018 or 2019.

SECTION 5: SEWER SYSTEM MONITORING, MAINTENANCE, REPAIR AND REHABILITATION (§ 94.12.(a)(5) and (a)(6)

The Municipal Water Authority of Aliquippa currently employs two (2) licensed wastewater operators and two (2) laborer to operate, maintain and oversee daily WWTP operations. Additionally, the Authority currently employs eight (8) full-time maintenance personnel that devote part of their time to sanitary system inspection and maintenance. Authority staff or outside contractors perform sanitary system rehabilitation and cleaning as needed to maintain system integrity.

Routine maintenance performed by Authority staff includes:

1. Maintain Operator License and meet all continuing education requirements of PaDEP.

2. Operate and maintain the sewage collection, conveyance and treatment facilities in good operating condition necessary to maintain compliance with NPDES Permit.

3. Keep good housekeeping of Authority facilities including the WWTP and five (5) active pump stations (Wye Lift Station, West Aliquippa Lift Station, Golf Course Road Lift Station, Jail Pump Station, Steel Street Pump Station).

4. Provide labor to perform all preventative maintenance on existing facilities in accordance with manufacturers' recommendations.

5. Collect influent and effluent samples at the WWTP in accordance with the NPDES Permit and delivered to CWM Environmental for analysis.

6. Prepare all documents required to report compliance with NPDES Permit.

7. Advise the Authority management as to necessary repairs, replacement and upgrades of the system.

8. Prepare and submit a monthly written report to the Authority summarizing all work performed. Provide in report an update on system operating condition and permit compliance.

9. Test operation of generators, pumps and equipment three times per week.

10. Investigate/resolve customer complaints.

The Authority maintains a stock of spare parts, filters and lubricants for its equipment. The Authority owns a backhoe, mini excavator and trailer, three (3) dump trucks, air compressor and other miscellaneous tools and equipment. In 2019, sewer maintenance equipment (i.e. root cutter, flush / jet truck, etc.) was contracted through Tri-State Maintenance.

Analysis of historical flow data indicates an infiltration / inflow (I/I) flow component is present. As shown in Table 1, average monthly flows are higher during winter/spring season than during the summer. CCTV inspection and sewer line cleaning was performed by Tri-State Maintenance on an as needed basis in 2019. The Authority spent

approximately $46,000 in 2019 flushing and/or televising sewer lines in the following areas:

- Monaca Road
- Main Street
- Lincoln Street
- 5th Avenue
- McMinn Street
- Return Street
- Wilker Avenue
- Maratta Road
- McLean Street
- MWAA Office / Shop Service Line
- Brook Street
- Carroll Street
- Irwin Street
- Hall Street
- Brodhead Road
- Davis Street
- Burton Street
- Phillips Street
- 4th Street
- 5th Street
- Hospital Drive
- Plum Street
- Grand Avenue
- Hospital Drive
- Filmore Street
- Glen Street
- Erie Avenue
- Mill Street
- Kennedy Boulevard
- Gregory Street
- Highland Avenue
- 21st Street
- Jail Pump Station
- WWTP Primary Splitter Box
- Wye Pump Station
- Calvert Street
- Davidson Street
- Linmar Homes
- Green Street
- Franklin Avenue
- Mill Street
- Walnut Street
- 4th Avenue
- Reed Street
- WWTP Secondary Clarifiers
- Plum Street

No sanitary sewer collection system repairs were made in 2019.

Influent and effluent samples are collected with an auto sampler at the headworks and downstream side of the chlorine contact tanks, respectively. The plant flow meter was calibrated in 2019. The flow meter calibration certificate is provided in the appendix.

The Authority inspects its sewage lift stations at a minimum two to three times per week. The inspection includes a review of flow data, pump status / operation and observation of the wet well. Minor deficiencies found (i.e. grease on floats, clogged pumps, etc.) are repaired in-house. Major repairs such as pump service, wet well cleaning, electrical work, etc. is performed by outside contractors. The grounds at the lift stations are mowed and treated for weeds.

A copy of the maintenance records for the WWTP and pump stations is provided in the appendix.

The condition of the sewer collection and conveyance system is commensurate with age. Overflows and / or bypasses reported in 2019 are summarized in Table 5.

Primary Clarifier

Primary Clarifier No. 2 shut down in July 2017. An inspection determined rotating equipment was damaged beyond repair. Procurement bids were received by the Authority and a Contract was awarded to Envirodyne Systems in July 2018. Equipment shop drawings were submitted and approved in October 2018.

Installation bids were received by the Authority and a Contract was awarded to JP Environmental in March 2019. The clarifier equipment was installed and placed into operation in July 2019.

During the time that the clarifier was out of service, the Authority used the tank as an equalization tank during wet weather periods and drawn off settled solids as conditions warrant.

Wye Lift Station

The Wye Lift Station is equipped with a mechanically-clean bar screen to protect the raw sewage pumps from damage by bricks and other larger debris entering the station from the sanitary sewer system. In September 2018, the bar screen stopped rotating and shut down. It was determine that several steel components of the screen was damaged beyond repair.

Design of the new mechanically-cleaned bar screen has been completed and Construction Bids were received by the Authority in January 2020. It is anticipated that a Contract will be awarded in February 2020 and Notice to Proceed be issued to the Contractor

during the 2nd quarter of 2020. Construction is expected to be completed and equipment placed into service by the end of 2020.

In addition to the screen, the lift station influent, screen bypass and overflow slide gates (3 total) will be replaced. The lights and exhaust fans in the Screen Room will be replaced and the room painted.

SECTION 6: PUMPING STATIONS (§ 94.12.(a)(7))

There are six active sewage pump stations that contribute flow to the WWTP which are detailed below. Flows from each of the lift stations are not metered. Each of the five (5) lift stations owned and maintained by the Authority is equipped with pump run time meters to estimate flow rates.

1. The Wye Lift Station serves Aliquippa and portions of Hopewell Township. It is equipped with four 3000 gpm pumps powered by 75 HP motors. The maximum daily flowrate in 2018 was 7,075 gpm. The projected 2-year maximum flow is 7,162 gpm.

2. The West Aliquippa Lift Station serves West Aliquippa and portions of Hopewell Township. It is equipped with two 500 gpm pumps powered by 10 HP motors. The maximum daily flowrate in 2018 was 140 gpm. The projected 2-year maximum flow is 143 gpm.

3. The Golf Course Road Lift Station serves the Hospital Drive area. It is equipped with two 160 gpm pumps powered by 15 HP motors. The maximum daily flowrate in 2018 was 182 gpm. The projected 2-year maximum flow is 186 gpm.

4. The Jail Pump Station serves the Beaver County Jail. It is equipped with two 300 gpm pumps powered by 5 HP motors. The peak daily flowrate in 2019 was 51 gpm. The projected 2-year maximum flow is 53 gpm.

5. The Steel Street Pump Station serves the Industrial Park. It is equipped with two 200 gpm pumps powered by 5 HP motors. The peak daily flowrate in 2019 was 16 gpm. The projected 2-year maximum flow is 60 gpm.

6. The Woodlawn Park Pump Station is owned and maintained by Hopewell Township. The pump station serves 11 residential units in the Woodlawn Park area and is equipped with two 85 gpm pumps. The 2017 maximum flow was 11 gpm and the projected 2-year maximum flow is 11 gpm

There is one inactive sewage pump station; the Woodlawn Road Pump Station completed in 2012. It is equipped with two 122 gpm pumps powered by 4 HP motors. Projected average future flows are 6,000 gpd (30,000 gpd peak).

SECTION 7: INDUSTRIAL WASTE DISCHARGES (§ 94.12.(a)(8))

There were no known industrial wastes being discharged into the sanitary sewer collection and conveyance system or treated at the WWTP in 2019.

SECTION 8: SEWAGE MANAGEMENT PLAN (§ 94.12.(a)(9))

The Wasteload Management Report for the 2017 Operating Year indicated that the treatment plant was hydraulically overloaded and was projected to be hydraulically overloaded during the next five (5) years. In addition, the report indicated that the Wye Lift Station overflowed. As a result of these findings, PaDEP requested the Authority in a letter dated July 19, 2018 to submit a written plan (Corrective Action Plan) setting forth

the steps to be taken to prevent additional overflows at the Wye Lift Station and address the overload conditions at the treatment plant.

The proposed Correction Action Plan was submitted to PaDEP on September 24, 2018 and approved on November 15, 2018. The following tasks contained in the Corrective Action Plan will be completed over a 5-year period ending December 2024. Status of this work as of January 2020 is provided.

Task	Status as of January 2020
1. Mapping and Manhole Physical Surveys	In Progress – Approximately 85% Complete
2. Smoke / Dye Testing and Targeted CCTV	Phase I to be initiated in January 2020
3. Flow Monitoring	Phase I completed in October 2018; Phase II completed in July 2019; Phase III meters installed in January 2020
4. Nighttime Flow Isolation (NFI) Measurements	Phase I and II completed in March 2019; Phase III schedule for mid February 2020
5. NFI Bubble Diagram Preparation	Phase I and II "draft" completed June 2019
6. Hydrograph Deconstruction	Phase I and II complete; currently under review as part of model calibration task
7. Hydrologic and Hydraulic Modeling	In Progress; Existing Conditions Hydraulic Model "Gap Analysis" completed October 2019
8. Cost-Effectiveness Analysis and Alternative Analysis	
9. Sewage Facilities Planning	

SUMMARY

As presented in this Municipal Wasteload Management Report, the Municipal Water Authority of Aliquippa Wastewater Treatment Plant was considered hydraulically overloaded in 2019. Projected loadings indicate that the WWTP will also be hydraulically overloaded in the next five (5) years.

SECTION 9: SIGNATURES

To comply with the requirements of the Chapter 94 Municipal Wasteload Management Program, the following signatures are provided.

Preparer / Permittee:

Robert J. Bible, P.E., General Manager
Municipal Water Authority of Aliquippa

3/11/20
Date

FIGURE 1
HYDRAULIC LOADING GRAPH
MWAA WASTEWATER TREATMENT PLANT

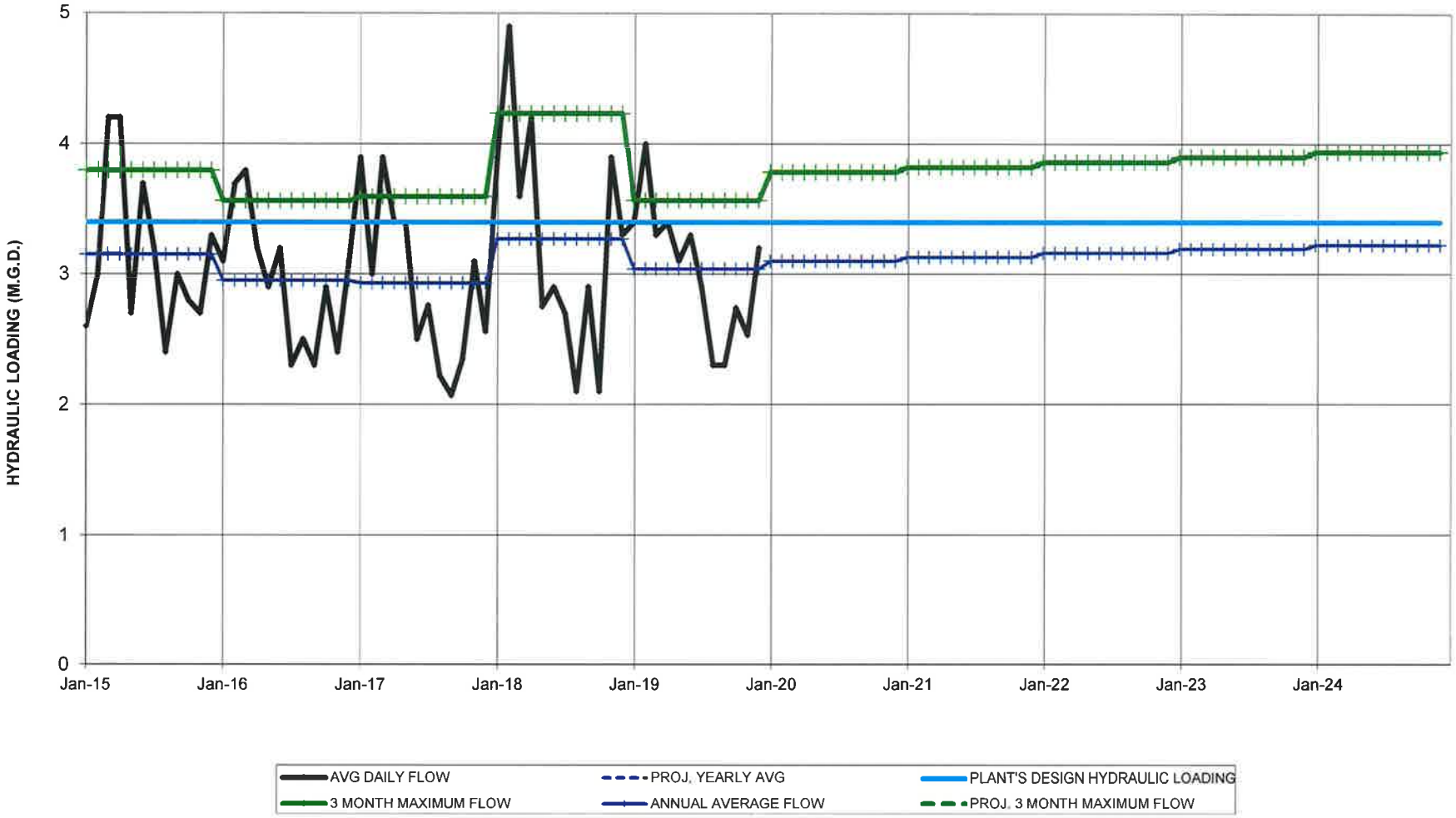


FIGURE 2
ORGANIC LOADING GRAPH
MWAA WASTEWATER TREATMENT PLANT

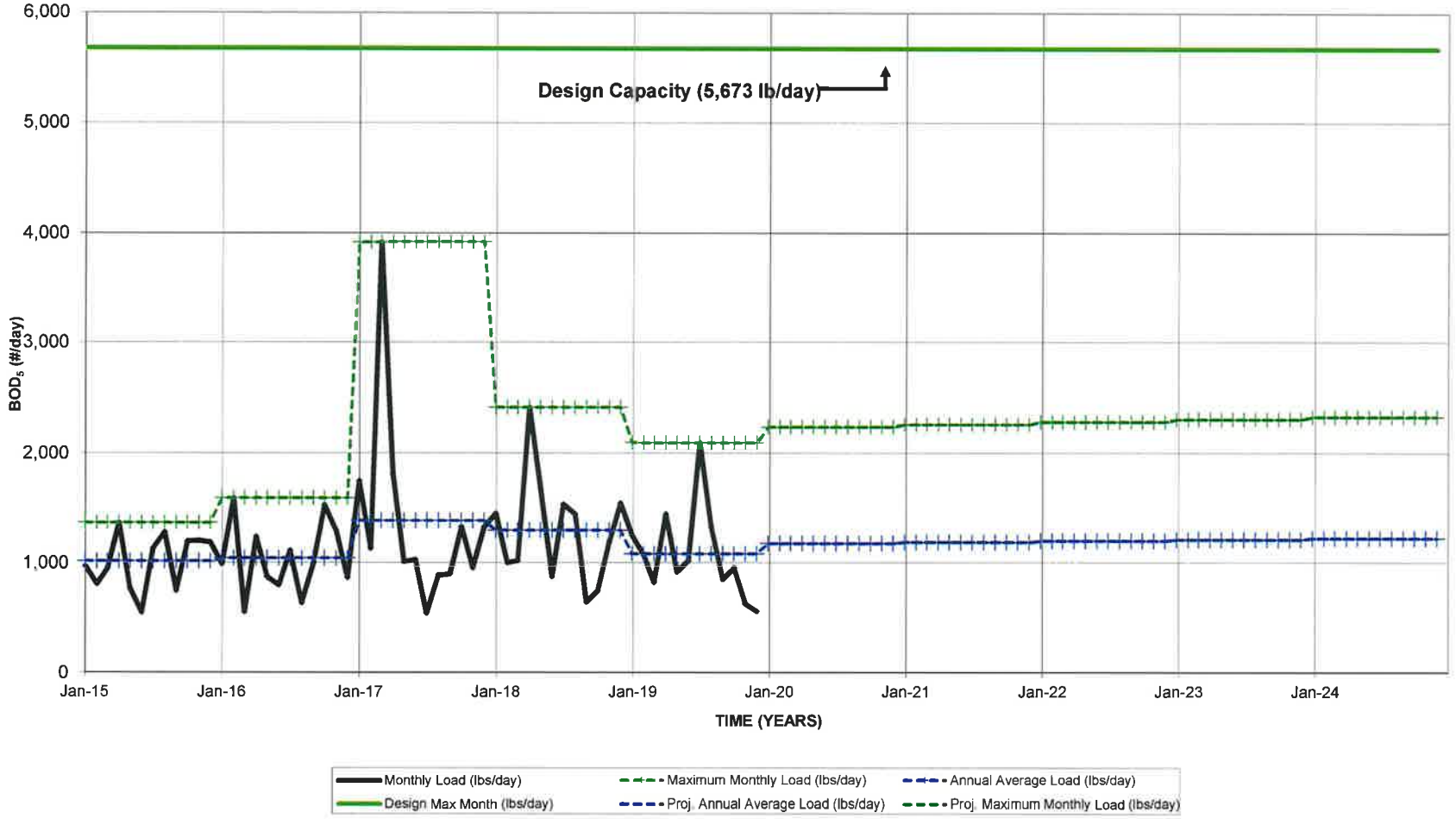


TABLE 1
MUNICIPAL WATER AUTHORITY OF ALIQUIPPA
WATER POLLUTION CONTROL PLANT
HYDRAULIC LOADING DATA SUMMARY
JANUARY 2015 THROUGH DECEMBER 2019

DATE	2015	2016	2017	2018	2019
January	2.60	3.10	3.90 *	3.90	3.40 *
February	3.00 *	3.70 *	3.00 *	4.90 *	4.00 *
March	4.20 *	3.80 *	3.90 *	3.60 *	3.30 *
April	4.20 *	3.20 *	3.40	4.20 *	3.40
May	2.70	2.90	3.40	2.75	3.10
June	3.70	3.20	2.50	2.90	3.30
July	3.20	2.30	2.76	2.70	2.90
August	2.40	2.50	2.22	2.10	2.30
September	3.00	2.30	2.07	2.90	2.30
October	2.80	2.90	2.35	2.10	2.74
November	2.70	2.40	3.10	3.90	2.53
December	3.30	3.10	2.56	3.30	3.20
Annual Average (mgd)	**3.15**	**2.95**	**2.93**	**3.27**	**3.04**
90 Day Sustained Flow Rate (mgd)	**3.80**	**3.57**	**3.60**	**4.23**	**3.57**
Ratio (90-Day Sustained to Annual Average)	**1.21**	**1.21**	**1.23**	**1.29**	**1.17**
5-Year 90-Day Sustained/Annual Average Ratio	**1.22**				
5-Year Annual Average Hydraulic Loading (mgd)	**3.07**				
5-Year 90-Day Sustained Hydraulic Loading (mgd)	**3.75**				

*Maximum 3-month flow period.

TABLE 2
MUNICIPAL WATER AUTHORITY OF ALIQUIPPA
WATER POLLUTION CONTROL PLANT
ORGANIC LOADING DATA SUMMARY
JANUARY 2015 THROUGH DECEMBER 2019

DATE	2015	2016	2017	2018	2019
January	968	988	1,747	1,450	1,249
February	806	**1,590**	1,131	1,001	1,070
March	945	552	**3,920**	1,020	826
April	**1,364**	1,238	1,809	**2,414**	1,445
May	765	871	1,009	1,679	921
June	547	798	1,027	879	1,018
July	1,129	1,111	544	1,534	**2,098**
August	1,280	634	888	1,445	1,324
September	745	995	901	645	851
October	1,197	1,527	1,328	748	955
November	1,202	1,291	954	1,187	627
December	1,187	865	1,325	1,542	562
Annual Average (LBS BOD_5/Day)	**1,011**	**1,038**	**1,382**	**1,295**	**1,079**
Maximum Month (LBS BOD_5/Day)	**1,364**	**1,590**	**3,920**	**2,414**	**2,098**
Ratio (Maximum Month to Annual Average)	**1.35**	**1.53**	**2.84**	**1.86**	**1.94**
5-Year Maximum Month/Annual Ratio Average	**1.91**				
5-Year Annual Average Organic Loading (LBS BOD_5/Day)	**1,161**				
5-Year Maximum Month Average (LBS BOD_5/DAY)	**2,277**				

TABLE 3

MUNICIPAL WATER AUTHORITY OF ALIQUIPPA
WATER POLLUTION CONTROL PLANT

PROJECTED HYDRAULIC LOAD

YEAR	ANNUAL AVERAGE FLOW (mgd)			90 DAY SUSTAINED AVERAGE (mgd)		
	BASE FLOW	ADDED FLOW *	TOTAL	AVERAGE	RATIO	FLOW
2020	3.07	0.031	3.10	3.10	1.22	3.79
2021	3.10	0.031	3.13	3.13	1.22	3.83
2022	3.13	0.031	3.16	3.16	1.22	3.86
2023	3.16	0.032	3.19	3.19	1.22	3.90
2024	3.19	0.032	3.22	3.22	1.22	3.94

* Estimated 1% increase per year

TABLE 4

MUNICIPAL WATER AUTHORITY OF ALIQUIPPA
WATER POLLUTION CONTROL PLANT

PROJECTED ORGANIC LOAD

ANNUAL AVERAGE LOADING LBS BOD_5/DAY				**MAXIMUM MONTH LOADING** LBS BOD_5/DAY			
YEAR	**BASE**	**ADDED LOAD ***	**TOTAL**	**YEAR**	**BASE**	**RATIO**	**TOTAL**
2020	1,161	11.6	1,173	2019	1,173	1.91	2,234
2021	1,173	11.7	1,184	2020	1,184	1.91	2,256
2022	1,184	11.8	1,196	2021	1,196	1.91	2,279
2023	1,196	12.0	1,208	2022	1,208	1.91	2,302
2024	1,208	12.1	1,220	2023	1,220	1.91	2,325

* Estimated 1% increase per year

TABLE 5

MUNICIPAL WATER AUTHORITY OF ALIQUIPPA
WASTEWATER TREATMENT PLANT

2019 OVERFLOW & BYPASS DATA

Location	Date	Duration (hours)	Reason
Wye Lift Station	2/7/2019	14.75	Wet Weather
Wye Lift Station	2/12/2019	48.75	Wet Weather
Wye Lift Station	2/20/2019	36.00	Wet Weather
Wye Lift Station	3/9/2019	9.25	Wet Weather
Wye Lift Station	4/26/2019	18.00	Wet Weather
Wye Lift Station	5/25/2019	12.67	Wet Weather
Wye Lift Station	5/28/2019	39.00	Wet Weather
Wye Lift Station	6/10/2019	19.00	Wet Weather
Wye Lift Station	6/13/2019	16.25	Wet Weather
Wye Lift Station	6/16/2020	71.75	Wet Weather
Wye Lift Station	6/20/2020	38.50	Wet Weather
Wye Lift Station	7/7/2019	18.50	Wet Weather
Wye Lift Station	7/11/2019	21.50	Wet Weather
Wye Lift Station	9/1/2020	13.00	Wet Weather
Wye Lift Station	10/31/2020	18.00	Wet Weather

SLUDGE ESTIMATING WORKSHEET

This document is designed as a diagnostic aid in the estimation of sludge quantities produced at a well operated wastewater treatment plant. The calculations are based upon the observations made at hundreds of facilities. The sourse document is the EPA Handbook "Improving POTW Performance Using the Composit Correction Program Approach"

Required Information

1. Average Daily Flow	3.04	mgd
2. BOD_{inf}	43	mg/l
3. BOD_{eff}	3	mg/l
4. Digester Capacity	84500	gallons
5. Waste Sludge (combined w/ primary)	30000	mg/l
6. % solids of sludge leaving plant	6.19	%

STEP 1: Calculate the pounds of BOD being removed by the plant.
(BOD_{inf} - BOD_{eff}) x flow, mgd x 8.34 = pounds/day $BOD_{removed}$ **1006**

STEP 2: Convert pounds/day BOD to pounds/day TSS removed
Pounds/day $BOD_{removed}$ x TSS/BOD factor = Pounds/day $TSS_{removed}$ **1006**
(from step 1) (see Table #1)

STEP 3: Determine sludge feed rate to digesters
(from step #2)
$\frac{\text{(Pounds/day TSS) x } 10^6}{\text{(WAS}_{conc}\text{ x 8.34)}}$ = sludge feed rate, gpd **4020** 5,073 gpd in calcs

STEP 4: Determine Digester Hydraulic Detection Time (HDT)
$\frac{\text{Digester Capacity, gallons}}{\text{(Sludge Feed Rate, gpd)}}$ = HDT, days **21.02**
(from step #3)

STEP 5: Estimate Volatile Solid destruction using HDT **0.45**
(see Table #2)

STEP 6: Calculate digested solids amount

TSS x (1.0 - Total Solids Reduction) = Solids Produced, #/d **553** 351 lbs/day in calcs
(from step # 2) (from step # 5)

STEP 7: Convert from Dried Solids to sludge

(from step #6)
$\frac{\text{pounds per day dry solids produced}}{\text{\% solids of sludge leaving plant}}$ = sludge, pounds/day **8936**

STEP 8: Convert from pounds of sludge to gallons

$\frac{\text{pounds/day sludge produced}}{\text{8.34 pounds/gallon}}$ = Sludge, gpd **1071**

Total Gallons Wasted **892**

Low Range 0.85 x 1071 = 911 , gpd

High Range 1.15 x 1071 = 1232 , gpd

This calculation should be within ± 15% of actual production of a well operated facility

Source : EPA Handbook "Improving POTW Performance Using the Composite Correction Program Approach" EPA-625/6-84-008

TABLE 1

Process Type	$TSS_{sludge}/BOD_{removed}$
Primary Clarification	1.7
Activated Sludge with Primary Clarification	0.7
Activated Sludge w/o Primary Clarification	
Conventional	0.85
Extended Aeration	0.65
Contact Stabilization	1.00
Attached Growth (TF, RBC, ABF)	1.00

TABLE 2

	Digester HDT	Total Solids Reduction
	Days	%
Aerobic Digesters Following Extended Aeration (MCRT>20 days)	10	10
	15	20
	20	30
	30	35
Aerobic Digesters Following Conventional Activated Sludge (MCRT<12)	10	20
	15	35
	20	40
Anaerobic Digesters for Activated + Primary, and Fixed Film (Supernating Capability Useable)	20	25
	30	35
	40	45

TABLE 3

Typical Sludge Concentrations for Suspended Growth POTW's

Sludge Type	Waste Concentrations (mg/l)
Primary	50,000
Activated	
Return Sludge/Conventional	6,000
Return Sludge/Extended	7,500
Return Sludge/Cont. Stab	8,000
Return Sludge/small plants with low SOR	10,000
Separate waste hopper in clarifier	12,000
Primary + Trickling Filter	45,000
Primary + RBC	45,000
Primary + ABF	35,000
Trickling Filter	30,000
RBC	30,000
ABF	12,000

Diameter	SWD	Area	Volume		Gal/ft	Gal /inch
ft	ft	sq.ft	cu.ft	gal		
55	18	2,374.6	42,743	319,720	17,762.20	1,480.18
			85,487			

Reported Sludge Transfers

Date	From Process To #1		From #1 To #2		Supernate from #2		From #2 To Reed Beds			
	inches	gallons	inches	gallons	inches	gallons	inches	gallons	% Solids	#'s Dry Solids
1/31/2018	118	174,662	125	185,023	66	97,692		-		
2/28/2018	110	162,820	99	146,538	68	100,652	84	124,335	7.62%	79,016
3/31/2018	105	155,419	108	159,860	73	108,053		-		
4/30/2018	137	202,785	132	195,384	139	205,745		-		
5/31/2018	114	168,741	76	112,494	148	219,067		-		
6/30/2018	115	170,221	130	192,424	0	-	96	142,098	6.50%	77,031
7/31/2018	100	148,018	93	137,657	0	-		-		
8/31/2018	103	152,459	75	111,014	68	100,652		-		
9/30/2018	116	171,701	118	174,662	66	97,692		-		
10/31/2018	97	143,578	105	155,419	139	205,745		-		
11/30/2018	129	190,944	119	176,142	0	-	110	162,820	7.24%	98,313
12/31/2018	118	174,662	141	208,706	64	94,732	80	118,415	5.20%	51,354
		2,016,009		1,955,322		1,230,032		547,668	6.64%	305,715
Monthly Average		168,001		162,943		102,503		45,639		
Daily Average		5,523		5,357		3,370		1,500		838
							4,870	>Daily Total Supernate plus volume to reed beds		
1/31/2019	116	171,701	103	152,459	0	-		-		
2/28/2019	110	162,820	141	208,706	143	211,666		-		
3/31/2019	102	150,979	83	122,855	73	108,053	60	88,811	5.60%	41,478
4/30/2019	131	193,904	113	167,261	73	108,053		-		
5/31/2019	132	195,384	138	204,265	143	211,666		-		
6/30/2019	113	167,261	125	185,023	80	118,415	80	118,415	6.26%	61,822
7/31/2019	111	164,300	103	152,459	81	119,895		-		
8/31/2019	84	124,335	98	145,058	151	223,508		-		
9/30/2019	103	152,459	104	153,939	74	109,534		-		
10/31/2019	106	156,899	123	182,062	65	96,212	80	118,415	6.70%	66,168
11/30/2019	92	136,177	88	130,256	72	106,573		-		-
12/31/2019	116	171,701	102	150,979	76	112,494		-		-
		1,947,921		1,955,322		1,526,069		325,640	6.19%	127,990
Monthly Average		162,327		162,943		127,172		27,137		
Daily Average		5,337		5,357		4,181		892		351
							5,073	>Daily Total Supernate plus volume to reed beds		

Formula = (Col. K /1,000,000)* (Col. L*10,000)*8.34

HCS Instrumentation, LLC

326 Cycle Drive
Portersville, PA 16051
P: (724) 368-9282
F: (724) 368-9264

Certificate of Calibration

Customer: Aliquippa WWTP

Model #: (2) Vantage 2210, w/ Chessel 392

Location: Effluent

Type of Primary Device: (2) 36" rectangular weir w/end contractions

Date of Calibration: 10 July 2019

Remarks: 0-10 MGD Combined Verified distance, level, and in Process flow. No Adj needed, Chessel 392 Per CAL Zero, Span

HCS Instrumentation Representative

JANUARY 2019

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 1-2-19 **GRADE** 1 **RECORD NUMBER:** 119-001
MALFUNCTION or PM: # 2 PUMP SEAL LEAKING

G.C ✓

DATE: 1-4-19 **REMEDY:** PULL # 2 INSTALL NEW SEAL & WEE

SIGN OFF BK

DATE: 1-6-19 **GRADE** 2 **RECORD NUMBER:** 119-002
MALFUNCTION or PM: GET CHAMBER NOT WORKING

PRI ✓

DATE: 1-7-19 **REMEDY:** INSTALL NEW VACUM PUMP STRAINER, SOLENOID & FITTINGS

SIGN OFF BK

DATE: 1-9 19 **GRADE** 4 **RECORD NUMBER:** 119-003
MALFUNCTION or PM: GENERATOR AUX FAULT

STEEL ST ✓

DATE: 1-9-19 **REMEDY:** TOP OFF ANTIFREEZE OK

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

Y ✓

DATE: 1-16-19 **GRADE** 4 **RECORD NUMBER:** 119-004

MALFUNCTION or PM:

INSTALL #1 REBUILT PUMP

DATE: 1-16-19 **REMEDY:**

SIGN OFF BK

PRIM ✓

DATE: 1-24-19 **GRADE** 4 **RECORD NUMBER:** 119-005

MALFUNCTION or PM:

DATE: 1-24-19 **REMEDY:** PM AQUA SCREEN
TOP OFF FLUIDS & GREASE

SIGN OFF

DIS ✓

DATE: 1-25-19 **GRADE** 1 **RECORD NUMBER:** 119-006

MALFUNCTION or PM: ~~PUMP~~ # 2 NON POTABLE WATER PUMP
NOISY & LOW PRESSUEE

DATE: 1-25-19 **REMEDY:** PULL # 2 NON POTABLE
WATER BOOSTER PUMP

SIGN OFF

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS ✓

DATE: 1-26-19 **GRADE** 2 **RECORD NUMBER:** 119-007

MALFUNCTION or PM: SO2 BUILDING NEEDS EQ REPAIRS + ADJUSTMENTS

DATE: 1-26-19 **REMEDY:** WEATHERPROOF DOOR, ADJUST EXHAUST FAN TIMERS, CALIBRATE ALARMS, PM EQ WITH FACTORY REP + TRAINING

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DEC

DATE: 2-4-19 GRADE 2 RECORD NUMBER: 219-001

MALFUNCTION or PM: #2 PUMP RAW SEWAGE PUMP SEAL FAILURE

DATE: 2-5-19 REMEDY: DISCONNECT SEAL FAIL MAINT & TEST

SIGN OFF BK

JAIL S.S

DATE: 2-7-19 GRADE 4 RECORD NUMBER: 219-002

MALFUNCTION or PM: NEED TO INSTALL NEW CHIPS IN MISSION CONTROL UNITS

DATE: 2-7-19 REMEDY: INSTALL CHIPS CALL MISSION OK

SIGN OFF BK

PUMP HOUSE

DATE: 2-9-19 GRADE 2 RECORD NUMBER: 219-003

MALFUNCTION or PM: POWER FEED FROM PUMP HOUSE BREAKER TRIPPED

DATE: 2-9-19 REMEDY: RESET BREAKER & TEST OK.

SIGN OFF B.K.

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

WEST ✓

DATE: 2-10-19 GRADE 2 RECORD NUMBER: 219-004
MALFUNCTION or PM: WEST POWER FAILURE

DATE: 2-11-19 REMEDY: DUQUESNE LIGHT REPAIRED SERVICE ENTRANCE

SIGN OFF BK

PM ✓

DATE: 2-11-19 GRADE 2 RECORD NUMBER: 219-005
MALFUNCTION or PM: SAMPLER NOT SAMPLING

DATE: 2-11-19 REMEDY: PM. SAMPLER CLEAN HOSES & PUMP

SIGN OFF OK

DIS ✓

DATE: 2-14-19 GRADE 2 RECORD NUMBER: 219-006
MALFUNCTION or PM: #2 SO2 OUT

DATE: 2-14-19 REMEDY: SWITCH OUT SO2 CYLINDERS

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 2-15-19 **GRADE** 2 **RECORD NUMBER:** 219-007

MALFUNCTION or PM: # 1 DISCHARGE VALVE PUMP LEVEL OPERATOR BROKEN

DATE: 2-16-19 **REMEDY:** DRILL & TAP HOLES ADJUST OPERATOR

SIGN OFF BK

DATE: 2-15-19 **GRADE** 1 **RECORD NUMBER:** 219-008

MALFUNCTION or PM: #1 CHECK VALVE BROKEN SHAFT RAW SEWAGE PUMP

DATE: 2-16-19 **REMEDY:** INSTALL REBUILT CHECK VALVE #1 RAW SEWAGE PUMP

SIGN OFF BK

DATE: 2-22-19 **GRADE** 2 **RECORD NUMBER:** 219-009

MALFUNCTION or PM: SO2 BUILDING FAN RUNNING TO OFTEN

DATE: 2-22-19 **REMEDY:** CHANGE TIMER TO LONGER CYCLING.

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PRI

DATE: 2-22-19 **GRADE** 2 **RECORD NUMBER:** 219-010

MALFUNCTION or PM: AQUA SCREEN DOOR LOCKING DEVICE BROKEN

DATE: 2-22-19 **REMEDY:** INSTALL NEW DOOR LOCKING DEVICE & ADJUST

SIGN OFF BK

DIS

DATE: 2-28-19 **GRADE** 1 **RECORD NUMBER:** 219-011

MALFUNCTION or PM: SCREEN IN Y STRAINER NEEDS CHANGED SO2

DATE: 2-28-19 **REMEDY:** CHANGED SCREEN IN Y STRAINER SO2

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS ✓

DATE: 3-1-19 **GRADE** 4 **RECORD NUMBER:** 319-001

MALFUNCTION or PM: #1 SO2 EMPTY

DATE: 3-1-19 **REMEDY:** INSTALL NEW TANKS

SIGN OFF BK.

PUMP HOUSE ✓

DATE: 3-6-19 **GRADE** 4 **RECORD NUMBER:** 319-002

MALFUNCTION or PM: #3 PUMP DISCHARGE VALVE STUCK OPEN + CHECK VALVE LEAKING

DATE: 3-6-19 **REMEDY:** INSTALL NEW 12 MILLIKEN PLUG VALVE + REBUILD CHECK VALVE

SIGN OFF B.K

SEE TREAT ✓

DATE: 3-8-19 **GRADE** 2 **RECORD NUMBER:** 319-003

MALFUNCTION or PM: BYPASS GATE NEEDS REPAIRED

DATE: 3-8-19 **REMEDY:** CUT GATE SMALLER INSTALL NEW FIBERGLASS 13"x26"x 3/16"

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 3-13-19 **GRADE** 2 **RECORD NUMBER:** 319-004

MALFUNCTION or PM: SEAL FAILURE #2

PUMP HOUSE

PULL PUMP & CHECK TURN ON SIDE TO CLEAN
NEED SERVICED IN FUTURE

DATE: 3-14-19 **REMEDY:**

REINSTALL AFTER CLEARING SEAL FAILURE
OK **SIGN OFF** BK

DATE: 3-15 19 **GRADE** 2 **RECORD NUMBER:** 319-005

MALFUNCTION or PM: #9 BED VALVE & PIPE SEPERATED

BEDS

DATE: 3-15-19 **REMEDY:** REPAIR VALVE & PIPING #9

SIGN OFF BK

DATE: 3-15-19 **GRADE** 4 **RECORD NUMBER:** 319-006

MALFUNCTION or PM: MISSION BATTERIES IN

SS. JAIL

S STREET & JAIL NEED CHANGED

DATE: 3-15-19 **REMEDY:** CHANGE BATTERIES

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 3-20-19 **GRADE** 4 **RECORD NUMBER:** 319-007

MALFUNCTION or PM: Y BAR SCREEN NEEDS VACUUMED

DATE: 3-20-19 REMEDY: VACUUM BAR SCREEN & CHANNEL

SIGN OFF BK

DATE: 3-20-19 **GRADE** 4 **RECORD NUMBER:** 319-008

MALFUNCTION or PM: WET WELL NEEDS VACUUMED

DATE: 3-20-19 REMEDY: VACUUM WET WELL

SIGN OFF BK

DATE: 3/29/19 **GRADE** 4 **RECORD NUMBER:** 319.009

MALFUNCTION or PM: Cleaned STRAINER ON NON POTABLE LINE IN CONTROL Building.

DATE: 3-29-19 REMEDY: CLEANED STRAINER ALL POTABLE WATER LINES

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS ✓

DATE: 3-29-19 **GRADE** 2 **RECORD NUMBER:** 319-010

MALFUNCTION or PM: SO2 LOW

DATE: 3-29-19 **REMEDY:** CHANGED SO2 CYLINDERS ON # 2 SIDE

SIGN OFF BK

PUMP HOUSE ✓

DATE: 3-29-19 **GRADE** 2 **RECORD NUMBER:** 319-011

MALFUNCTION or PM: #3 DRIVE FAULTING

DATE: 3-29-19 **REMEDY:** DRV INSTALLED NEW DRIVE ON #3 INSTALLED NEW LEVEL SENSOR

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 4-2-19 **GRADE** 4 **RECORD NUMBER:** 419-001

MALFUNCTION or PM: DRIP TRAPS NEED REBUILT

SLUDGE DIGESTER

DATE: 4-2-19 **REMEDY:** REBUILT DRIP TRAPS AT DIGESTER

SIGN OFF BK

DATE: 4-2-19 **GRADE** 4 **RECORD NUMBER:** 419-002

MALFUNCTION or PM: PM ALL EQ

PRIMARY TREAT

DATE: 4-2-19 **REMEDY:** PM ALL EQ OIL-GREASE ADJUST

SIGN OFF BK

DATE: 4-3-19 **GRADE** 4 **RECORD NUMBER:** 419-003

MALFUNCTION or PM: EQ NEEDS PM

SEC TREAT

DATE: 4-3-19 **REMEDY:** PM ALL EQ OIL-GREASE ADJUST

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

SEC ✓

DATE: 4-7-19 **GRADE** 4 **RECORD NUMBER:** 419-004

MALFUNCTION or PM: HOSED TANKS

DATE: 4-7-19 **REMEDY:** HOSED TANKS + APPLIED ALGAE CONTROL SOLUTION 150LB TO 300 GAL 0.5 LB PER GALLON

SIGN OFF BK

SEC TRT ✓

DATE: 4-7-19 **GRADE** 4 **RECORD NUMBER:** 419.005

MALFUNCTION or PM: TRICKLING FILTER NEEDS PM'D

DATE: 4-7-19 **REMEDY:** PM FILTER + CLEAN DEBRIS

SIGN OFF BK.

DIS. ✓

DATE: 4-8-19 **GRADE** 4 **RECORD NUMBER:** 419-006

MALFUNCTION or PM: # 1 + # 2 CHLORINE TANKS NEED HOSED + CLEANED

DATE: 4-8-19 **REMEDY:** HOSED + CLEANED TANKS

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS

DATE: 4-9-19 **GRADE** 2 **RECORD NUMBER:** 419-007

MALFUNCTION or PM: NEED DOOR CUT IN #1 & #2 CHLORINE TANK SO2 BAFFLE

DATE: 4-19-19 **REMEDY:** CUT DOOR IN #1 & #2 SO2 BAFFLE 8"X14"

SIGN OFF BK

✓

DIS

DATE: 4-16-19 **GRADE** 4 **RECORD NUMBER:** 419-008

MALFUNCTION or PM: SO2 # 2 SIDE EMPTY

DATE: 4-16-19 **REMEDY:** CHANGE SO2 TANKS #2 SIDE

SIGN OFF BK

✓

DIS

DATE: 4-23-19 **GRADE** **RECORD NUMBER:** 419-009

MALFUNCTION or PM: SO2 # 1 SIDE EMPTY

DATE: 4-23-19 **REMEDY:** CHANGE SO2 TANKS #1 SIDE

SIGN OFF

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 4-24-19 **GRADE** 2 **RECORD NUMBER:** 419-010

MALFUNCTION or PM: U.S. SCREEN BARS NEEDED WELDED

DATE: 4-25-19 **REMEDY:** WELD BARS & TEST

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

MAY 2019

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

SLUDGE

DATE: 5-3-19 GRADE 4 RECORD NUMBER: 519-001

MALFUNCTION or PM: TELEMETERING BATTERIES NEED CHANGED G.C, Y, WEST

DATE: 5-3-19 REMEDY: CHANGED BATTERIES G.C, Y, WEST

SIGN OFF BK

PIS

DATE: 5/10/19 GRADE 4 RECORD NUMBER: 519-002

MALFUNCTION or PM: SO2 LINE STRAINERS Need Cleaned

DATE: 5/10/19 REMEDY: CLEANED STRAINERS

SIGN OFF R. ROSS

CONTROL BLDG

DATE: 5-14-19 GRADE 2 RECORD NUMBER: 519-003

MALFUNCTION or PM: BOILER ALARM NOT WORKING

DATE: 5-14-19 REMEDY: INSTALL NEW ALARM

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DISC ✓

DATE: 5-15-19 **GRADE** 4 **RECORD NUMBER:** 519-004

MALFUNCTION or PM: SO2 OUT # 2 SIDE

DATE: 5-15-19 **REMEDY:** CHANGE SO2 TANKS #2 SIDE

SIGN OFF BK

SECOND ✓

DATE: 5-22-19 **GRADE** 2 **RECORD NUMBER:** 519-005

MALFUNCTION or PM: WINDOWS ON ROTATING DISTRIBUTOR NEED BUILT UP

DATE: 5-22-19 **REMEDY:** BUILT UP WINDOWS WITH 1/2" PVC 24"X30" & SILICONE

SIGN OFF BK

Y & JAIL ✓

DATE: 5-28-19 **GRADE** 4 **RECORD NUMBER:** 519-006

MALFUNCTION or PM: Y SCREEN & JAIL WET WELL NEED VACUUMED

DATE: 5-28-19 **REMEDY:** VACUUM & HAUL AWAY

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 5/30/19 **GRADE** 2 **RECORD NUMBER:** 519-007
MALFUNCTION or PM: 60 Amp Breaker for GateHouse on Pole Needs Replaced

DATE: 5/31/19 **REMEDY:** Replaced 60 Amp Breaker for GateHouse

SIGN OFF R. Ross

DATE: 6/2/19 **GRADE** 4 **RECORD NUMBER:** 619-001
MALFUNCTION or PM: Need To Clean Non Potable Water Strainers

DATE: 6/3/19 **REMEDY:** Cleaned Not Potable Water Strainers

SIGN OFF B.K.

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____
MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS ✓

DATE: 6-2-19 **GRADE** 4 **RECORD NUMBER:** 619-001

MALFUNCTION or PM: NON POTABLE WATER STRAINERS NEED CLEANED

DATE: 6-3-19 **REMEDY:** CLEANED NON POTABLE STRAINERS

SIGN OFF BK

SLUGT ✓

DATE: 6-5-19 **GRADE** 2 **RECORD NUMBER:** 619-002

MALFUNCTION or PM: POWER TO PANEL FOR DIGESTER BLOWN UP UNDERGROUND

DATE: 6-6-19 **REMEDY:** RESTORE POWER TO PANEL FROM MIXER CKT

SIGN OFF BK

CONTROL BLDG ✓

DATE: 6/9/19 **GRADE** 2 **RECORD NUMBER:** 619-003

MALFUNCTION or PM: LAB SINK DRAIN- leaking

DATE: 6/10/19 **REMEDY:** Replaced LAB SINK DRAIN

SIGN OFF

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PRI ✓

DATE: 6/19/19 **GRADE** 4 **RECORD NUMBER:** 619-004

MALFUNCTION or PM: GRAVEL IN INFLUENT LINE TO #1 CLARIFIER

DATE: 6/20/19 **REMEDY:** TRI-STATE Sucked out influent Line To #1 Clarifier And Sludge Skimmer Pit

SIGN OFF R. ROSS

DIS ✓

DATE: 6/20/19 **GRADE** 4 **RECORD NUMBER:** 619-005

MALFUNCTION or PM: Pressure on NON Potable Line Dropped TO 60 PSI

DATE: 6/21/19 **REMEDY:** CLEANE FILTERS ON SO2 NON POTABLE LINE PSI is 100

SIGN OFF R. ROSS

PIS ✓

DATE: 6/24/19 **GRADE** 2 **RECORD NUMBER:** 619-006

MALFUNCTION or PM: OPEN # 2 Side SO2 TANK # 1 RAN OUT

DATE: 6/25/19 **REMEDY:** Changed out # 1 Side SO2 TANKS

SIGN OFF R ROSS

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DISC ✓

DATE: 6/27/19 **GRADE** 2 **RECORD NUMBER:** 619-007

MALFUNCTION or PM: Effluent Sampler Sent Out For Repair

DATE: 6/27/19 **REMEDY:** Installed Rebuilt Effluent Sampler

SIGN OFF R Ross

SEC TAT ✓

DATE: 6/27/19 **GRADE** 4 **RECORD NUMBER:** 619-008

MALFUNCTION or PM: Secondary Clarifiers Need Hosed

DATE: 6/28/19 **REMEDY:** Hosed Secondary Clarifiers With City Water. Shut Grundfos Pumps off

SIGN OFF R Ross

DISC ✓

DATE: 6/28/19 **GRADE** 4 **RECORD NUMBER:** 619-009

MALFUNCTION or PM: Y Strainer Needs Cleaned

DATE: 6/28/19 **REMEDY:** Cleaned Strainers For Non Potable Water Line

SIGN OFF R Ross

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PRIM ✓

DATE: 7/14/19 **GRADE** 4 **RECORD NUMBER:** 719-001

MALFUNCTION or PM: #2 CLARIFIER Need one SKIMMER ARM RAISED To eliminate excess WATER

DATE: 7/15/19 **REMEDY:** RAISED one SKIMMER ARM ON #2 CLARIFIER To eliminate excess WATER

SIGN OFF R. ROSS

PRIM ✓

DATE: 7/14/19 **GRADE** 4 **RECORD NUMBER:** 719-002

MALFUNCTION or PM: #2 PRIMARY CLARIFIER Needs Hosed

DATE: 7/15/19 **REMEDY:** Hosed #2 PRIMARY CLARIFIER

SIGN OFF R. ROSS

CONTROL BLDG ✓

DATE: 7/15/19 **GRADE** 2 **RECORD NUMBER:** 719-003

MALFUNCTION or PM: URINAL in GARAGE BATHROOM NOT Flushing.

DATE: 7/15/19 **REMEDY:** Repaired URINAL in GARAGE BATHROOM WITH SPARE PARTS

SIGN OFF R. ROSS

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PRIMARY ✓

DATE: 7.16.19 **GRADE** 2 **RECORD NUMBER:** 719-004

MALFUNCTION or PM: EXHAUST FAN NOT WORKING IN AQUA SCREEN ROOM

DATE: 7.18.19 **REMEDY:** INSTALL NEW FAN & WIRING

SIGN OFF BK

DIS ✓

DATE: 7/20/19 **GRADE** 4 **RECORD NUMBER:** 719-005

MALFUNCTION or PM: #2 Side SO_2 RAN OUT

DATE: 7/20/19 **REMEDY:** Opened #1 side SO_2

SIGN OFF B Koch

DIS ✓

DATE: 7/22/19 **GRADE** 4 **RECORD NUMBER:** 719-006

MALFUNCTION or PM: #2 Side SO_2 TANKS Empty.

DATE: 7/22/19 **REMEDY:** Changed out SO_2 Tank on #2 side

SIGN OFF R. Ross

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

SLUG IT PIG ✓

DATE: 7-29-19 **GRADE** 4 **RECORD NUMBER:** 719-007

MALFUNCTION or PM: GAS VALVES NEED PM & DRIP TRAPS

DATE: 7-29-19 **REMEDY:** PM & LUBE GAS VALVES & DRIP TRAPS

SIGN OFF BK

DIS ✓

DATE: 7-29-19 **GRADE** 3 **RECORD NUMBER:** 719-008

MALFUNCTION or PM: OLD CHLORINE LINE & BRACKETS, HANGER ECT NEED REMOVED

DATE: 7-29-19 **REMEDY:** REMOVE ALL OLD CHLORINE LINE, BRACKET, HANGER & FITTINGS

SIGN OFF BK

DIS ✓

DATE: 7-31-19 **GRADE** 4 **RECORD NUMBER:** 719-009

MALFUNCTION or PM: PM MOTOR & PUMP. SO2 WATER SUPPLY. INSTALL DRAIN HOLES IN PIT

DATE: 7-31-19 **REMEDY:** COMPLETE ABOVE PM & INSTALL DRAIN & HOLES IN VAULT

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

SEC ✓

DATE: 8-1-19 GRADE 4 RECORD NUMBER: 819-001

MALFUNCTION or PM:
VACUUM ALGAE #1 CLARIFIER SECONDARY

DATE: 8-1-19 REMEDY:
HOSE VACUUM + SPRAY GREEN CLEAN

SIGN OFF BK

SEC ✓

DATE: 8-6-19 GRADE 4 RECORD NUMBER: 819-002

MALFUNCTION or PM:
VACUUM # 2 CLARIFIER SECONDARY

DATE: 8-6-19 REMEDY:
HOSE VACUUM + SPRAY GREEN CLEAN

SIGN OFF BK

PUMP HOUSE ✓

DATE: 8-8-19 GRADE 4 RECORD NUMBER: 819-003

MALFUNCTION or PM: 3 RAW SEWAGE PUMPS SECONDARY

DATE: 8-8-19 REMEDY: CHANGE OIL #1 + #2 + #3 RAW SEWAGE PUMPS SECONDARY

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PUMP HOUSE ✓

DATE: 8-9-19 **GRADE** 4 **RECORD NUMBER:** 819-004

MALFUNCTION or PM: SERVICE DRIVES

DATE: 8-9-19 **REMEDY:** CLEAN CABINETS INSTALL NEW CLEAN AIR FILTERS

SIGN OFF BK

SLUDGE IT ✓

DATE: 8/11/19 **GRADE** 2 **RECORD NUMBER:** 819-005

MALFUNCTION or PM: DRIP STRAP Going OUT TO BURNER AT GATE HOUSE Needs Replaced

DATE: 8/12/19 **REMEDY:** REPLACED DRIP TRAP. Going OUT TO BURNER

SIGN OFF R. ROSS

WEST ✓

DATE: 8/11/19 **GRADE** 2 **RECORD NUMBER:** 819-006

MALFUNCTION or PM: # 2 Pump AT WEST HAS MORE HOURS ON THEN # 1 Pump. Double Hours. 8/12/19 R. Ross Ed JABER TRIED TO BACK FLUSH # 2 Line. Check VALVE STUCK CLOSED.

DATE: 8/13/19 **REMEDY:** Removed DEBRIS FROM Check VALVE from JAIB.

SIGN OFF R. ROSS

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS ✓

DATE: 8-19-19 **GRADE** 4 **RECORD NUMBER:** 819-007

MALFUNCTION or PM: CHLORINE MONITOR NEEDS CALIBRATED

DATE: 8-19-19 **REMEDY:** CALIBRATE CHLORINE MONITOR & TEST

SIGN OFF BK

LAB ✓

DATE: 8-19-19 **GRADE** 2 **RECORD NUMBER:** 819-008

MALFUNCTION or PM: AUTO FILL IN SAMPLER NEEDS REPAIRED

DATE: 8-19-19 **REMEDY:** SOLDER NEW WIRING ON BOTTLE FILL ELECTRODE

SIGN OFF BK

LAB ✓

DATE: 8-20-19 **GRADE** 4 **RECORD NUMBER:** 819-009

MALFUNCTION or PM: COMBUSTIBLE GAS DETECTER IN GATE HOUSE NEEDS CALIBRATED

DATE: 8-20-19 **REMEDY:** CALIBRATE & TEST

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

WEST ✓

DATE: 8/21/19 **GRADE** 2 **RECORD NUMBER:** 819-010

MALFUNCTION or PM: WATER ON Third FLOOR OF WEST #2 Pump check VALVE LEAKing And Sump Pump NOT WorKing And Sump Pump LINE Plugged. Check VALVE on Sump Pump Needs RepLACed.

DATE: 8/21/19 **REMEDY:** Fixed LEAKy Check VALVE (STILL LEAKing A little) RePLACed Sump Pump.

SIGN OFF R. ROSS

WEST ✓

DATE: 8/22/19 **GRADE** 2 **RECORD NUMBER:** 819-011

MALFUNCTION or PM: Sump Pump Check VALVE Needs RepLACed AT WEST.

DATE: 8/22/19 **REMEDY:** RepLACed Sump Pump VALVE And check VALVE ASSEMBLY

SIGN OFF R. ROSS

PEI ✓

DATE: 8/23/19 **GRADE** 2 **RECORD NUMBER:** 819-012

MALFUNCTION or PM: # 1 CLARIFIER NOT Working

DATE: 8/23/19 **REMEDY:** STARTED UP # 1 CLARIFIER PUT INTO OPERATION.

SIGN OFF R. ROSS

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

JAH ✓

DATE: 8-28-19 **GRADE** 2 **RECORD NUMBER:** 819-013

MALFUNCTION or PM: GENERATOR WON'T START

DATE: 8-28-19 **REMEDY:** INSTALL NEW BATTERY

797.9 HRS

SIGN OFF B. KODA

DIS ✓

DATE: 8-29-19 **GRADE** 4 **RECORD NUMBER:** 819-014

MALFUNCTION or PM: TANKS NEED SCRUBBED + HOSED

DATE: 8-29-19 **REMEDY:** CLEAN ALL TANKS

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

WEST

DATE: 9-3-19 **GRADE** 2 **RECORD NUMBER:** 919-001

MALFUNCTION or PM: CONTROL FLOAT AT WEST NEEDS CHANGED

DATE: 9-3-19 **REMEDY:** CHANGE CONTROL OFF FLOAT

SIGN OFF BK

CONTROL BLDG

DATE: 9-3-19 **GRADE** 2 **RECORD NUMBER:** 919-002

MALFUNCTION or PM: TELEMETERING DIALOG SCOUT NOT WORKING

DATE: 9-3-19 **REMEDY:** SURGE TERM STRIP PHONE JACK SHORTED, INSTALL NEW PHONE + SURGE STRIP

SIGN OFF BK

CONTROL BLDG

DATE: 9-9-19 **GRADE** 2 **RECORD NUMBER:** 919-003

MALFUNCTION or PM: PHONE RINGER

DATE: 9-9-19 **REMEDY:** INSTALL NEW PHONE RINGER

SIGN OFF

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS ✓

DATE: 9-10-19 **GRADE** 4 **RECORD NUMBER:** 919.004

MALFUNCTION or PM: SO2 OUT # 1 SIDE

DATE: 9.10.19 **REMEDY:** CHANGED OUT # 1 SIDE OPEN # 2 SIDE

SIGN OFF BK

G.C. ✓

DATE: 9-10-19 **GRADE** 2 **RECORD NUMBER:** 919-005

MALFUNCTION or PM: FLYGT DEWATERING PUMP STOPPED WORKING

DATE: 9-10-19 **REMEDY:** REPAIR WIRING + INTERNAL EXTERNAL WIRING

SIGN OFF BK

WEST ✓

DATE: 9.11.19 **GRADE** 1 **RECORD NUMBER:** 919.005

MALFUNCTION or PM: BAD EXHAUST FAN WEST

DATE: 9.11.19 **REMEDY:** INSTALL NEW EXHAUST FAN

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

LAB

DATE: 9-18-19 **GRADE** 2 **RECORD NUMBER:** 919-006

MALFUNCTION or PM: SAMPLER NOT WORKING. INF

DATE: 9-18-19 **REMEDY:** INSTALL REBUILT SAMPLER & BOTTLE FULL ELECTRODE INF

SIGN OFF BK

DIS

DATE: 9-26-19 **GRADE** 2 **RECORD NUMBER:** 919-007

MALFUNCTION or PM: CHLORINE LINE IN MAN HOLE BY DIFUSSER LEAKING

DATE: 9-26-19 **REMEDY:** REPAIR CHLORINE LINE NEW HOSE IN MAN HOLE BY DIFUSSER

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 10-1-19 GRADE 4 RECORD NUMBER: 1019-001
MALFUNCTION or PM: CHLORINE VAULT NEED VENTED

DATE: 10-1-19 REMEDY: FABRICATE VENT + INSTALL
SIGN OFF BK

DIS ✓

DATE: 10-2-19 GRADE 4 RECORD NUMBER: 1019-002
MALFUNCTION or PM: CHLORINE VAULTS NEED LIDS CLEANED + PAINTED

DATE: 10-2-19 REMEDY: CLEAN + PAINT CHLORINE VAULT LIDS
SIGN OFF

DIS ✓

DATE: 10-4-19 GRADE 4 RECORD NUMBER: 1019-003
MALFUNCTION or PM: INFLUENT CHANNEL + GRIT CHAMBER NEED VACUUMED

DATE: 10-4-19 REMEDY: TRI STATE VACUMED INF CHANNEL + GRIT CHAMBER
SIGN OFF BR

PCI ✓

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

JAIL

DATE: 10-4-19 **GRADE** 4 **RECORD NUMBER:** 1019-004
MALFUNCTION or PM: JAIL PUMP STATION NEEDS VACUUMED

DATE: 10-4-19 **REMEDY:** VACUUM JAIL & HAUL AWAY TRI STATE DALTON
SIGN OFF BK

CONTROL BLDG

DATE: 10-8-19 **GRADE** 2 **RECORD NUMBER:** 1019-005
MALFUNCTION or PM: AIR RELIEF NOT WORKING

DATE: 10-8-19 **REMEDY:** REBUILD AIR RELIEF VALVE
SIGN OFF BK

SLUDGE

DATE: 10-9-19 **GRADE** 2 **RECORD NUMBER:** 1019-006
MALFUNCTION or PM: TIMER ON MIXER NOT TURNING

DATE: 10-9-19 **REMEDY:** INSTALL NEW TIMER MOTOR ON DIGESTER MIXER
SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS ✓

DATE: 10-10-19 **GRADE** 4 **RECORD NUMBER:** 1019-007
MALFUNCTION or PM: SO2 OUT ON # 2 SIDE

DATE: 10-10-19 **REMEDY:** SWITCH OUT # 2 TANKS + TURN # 1 SIDE ON

SIGN OFF BK

JAIL ✓

DATE: 10-16-19 **GRADE** 2 **RECORD NUMBER:** 1019-008
MALFUNCTION or PM: BATTERY AT JAIL LIFT STATION GENERATOR WAS dead.

DATE: 10-16-19 **REMEDY:** RETURNED old BATTERY And REPLACED WITH NEW BATTERY. UNDER WARRANTY.

SIGN OFF RRoss

DIS ✓

DATE: 10-23-19 **GRADE** 4 **RECORD NUMBER:** 1019-009
MALFUNCTION or PM: CHLORINE NEEDS CHANGED

DATE: 10-23-19 **REMEDY:** CHANGED 1 TO CYLINDER

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 10-24-19 **GRADE** 2 **RECORD NUMBER:** 1019-010

MALFUNCTION or PM: #3 RAW SEWAGE PUMP OVERLOADING

DATE: 10-24-19 **REMEDY:** UNPLUG PUMP & TEST RUN OK

SIGN OFF BK

DATE: 10-28-19 **GRADE** 2 **RECORD NUMBER:** 1019-011

MALFUNCTION or PM: LIGHTS IN OFFICE NOT WORKING

DATE: 10-28-19 **REMEDY:** INSTALL NEW LIGHTS IN OFFICE

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DATE: 11-6-19 **GRADE** 4 **RECORD NUMBER:** 1119-001

MALFUNCTION or PM: BAR SCREEN NEEDS VACUUMED

DATE: 11-6-19 **REMEDY:** VACUUM BAR SCREEN + CHANNEL

SIGN OFF BK

DATE: 11-6-19 **GRADE** 2 **RECORD NUMBER:** 1119-002

MALFUNCTION or PM: SLUICE GATE NEEDS REPAIRED

DATE: 11-6-19 **REMEDY:** RECONNECT SHAFT + GATE

SIGN OFF BK

DATE: 11-13-19 **GRADE** 2 **RECORD NUMBER:** 1119-003

MALFUNCTION or PM: HEATERS + OUTLETS IN SCREEN ROOMS + GRIT CHAMBER NOT WORKING

DATE: 11-13-19 **REMEDY:** REWIRE WHERE NEEDED INSTALL NEW RECEPTACLES + HEATERS

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: **Serious enough to require Shut Down = 1**
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PUMP HOUSE

DATE: 11-14-19 **GRADE** 1 **RECORD NUMBER:** 1119-004

MALFUNCTION or PM: #1 RAW SEWAGE PUMP ~~REPIPE~~ WATER LINE BROKEN ON COOLING JACKET

DATE: 11-14-19 **REMEDY:** REPIPE ~~WATER~~ WATER LINE COOLING JACKET

SIGN OFF BK

PUMP HOUSE

DATE: 11-15-19 **GRADE** 2 **RECORD NUMBER:** 1119-005

MALFUNCTION or PM: RECEPTACLES ON TOP FLOOR NOT WORKING

DATE: 11-15-19 **REMEDY:** INSTALL NEW RECEPTACLES & WIRING TOP FLOOR

SIGN OFF

WYE

DATE: 11-18-19 **GRADE** 2 **RECORD NUMBER:** 1119-006

MALFUNCTION or PM: Telecommunication Problems Between Wye And PLANT

DATE: 11-19-19 **REMEDY:** VERIZON Replaced Telemetering Box At Wye With NEWER VERSION.

SIGN OFF R ROSS

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

DIS ✓

DATE: 11-21-19 **GRADE** 4 **RECORD NUMBER:** 1119-007

MALFUNCTION or PM: CHLORINE 1 TON TANK EMPTY

DATE: 11-21-19 **REMEDY:** CHANGED 1 TON CYLINDER

SIGN OFF BK

DIS ✓

DATE: 11-22-19 **GRADE** 4 **RECORD NUMBER:** 119-008

MALFUNCTION or PM: SO2 TANK EMPTY #1 SIDE

DATE: 11-22-19 **REMEDY:** INSTALL NEW SO2 TANKS OPEN #2 SIDE

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____

MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PUMP HOUSE ✓

DATE: 12-2-19 **GRADE** 1 **RECORD NUMBER:** 1219-001

MALFUNCTION or PM: GAS FUENACE BAD

DATE: 12-3-19 **REMEDY:** INSTALL NEW 10,000WATT ELECTRIC HEATER + WIRING

SIGN OFF BK

DIS ✓

DATE: 12-6-19 **GRADE** 4 **RECORD NUMBER:** 1219-002

MALFUNCTION or PM: NON POTABLE WATER LINE PRESSURE LOW

DATE: 12-6-19 **REMEDY:** CLEAN Y STRAINER ON NON POTABLE WATER LINE

SIGN OFF BK

DIS ✓

DATE: 12-11-19 **GRADE** 4 **RECORD NUMBER:** 1219-003

MALFUNCTION or PM: SO2 OUT # 2 SIDE

DATE: 12-11-19 **REMEDY:** CHANGED OUT # 2 SIDE OPEN # 1

SIGN OFF

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PUMP HOUSE

DATE: 12-11-19 **GRADE** 2 **RECORD NUMBER:** 1219-004
MALFUNCTION or PM: #1 DISCHARGE VALVE BROKEN ON RAW SEWAGE #1 PUMP

DATE: 12-11-19 **REMEDY:** CHANGE DISCHARGE VALVE #1 RAW SEWAGE PUMP

SIGN OFF BK

SLUDGE DIGESTER

DATE: 12-12-19 **GRADE** 2 **RECORD NUMBER:** 1219-005
MALFUNCTION or PM: SUPERNATANT PUMP NOT PRIMING

DATE: 12-13-19 **REMEDY:** REBUILD & CLEAN CHECK VALVES ON PUMP.

SIGN OFF BK

STEEL ST

DATE: 12-18-19 **GRADE** 4 **RECORD NUMBER:** 1219-006
MALFUNCTION or PM: AUX FAULT GENERATOR STEEL ST.

DATE: 12-18-19 **REMEDY:** CHECK ALL FLUIDS & TOP OFF AUX FAULT CLEARED

SIGN OFF BK

MONTHLY MAINTENANCE RECORD

Classes of Grading: Serious enough to require Shut Down = 1
Serious enough to Repair = 2
Long range Repair = 3
Preventative Maintenance = 4

PISV

DATE: 12-19-19 **GRADE** 4 **RECORD NUMBER:** 1219-007
MALFUNCTION or PM: 1 TON CYLINDER EMPTY

DATE: 12-19-19 **REMEDY:** INSTALL NEW 1 TON CYLINDER

SIGN OFF BK

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____
MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

DATE: _____ **GRADE** _____ **RECORD NUMBER:** _____
MALFUNCTION or PM: _____

DATE: _____ **REMEDY:** _____

SIGN OFF _____

HERBERT, ROWLAND & GRUBIC, INC.
200 West Kensinger Drive
Suite 400
Cranberry Township, Pennsylvania 16066
(724) 779-4777

LETTER OF TRANSMITTAL

JOB NO.: **8322.0426**
PHASE :
DATE: **3/10/2020** TASK:

TO: **Municipal Water Authority of Aliquippa**
160 Hopewell Avenue
Aliquippa, PA 15001-3545

ATTENTION: **Mr. Robert J. Bible, P.E.**

RE: **Chapter 94 Report**
Hopewell Township
Beaver County, PA

WE ARE SENDING YOU: ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change Order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1	3/9/2020		Hopewell Township- 2019 Wasteload Management Report

These Are Transmitted as Checked Below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ 20 _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

c: Mr. Christopher Thompson, Hopewell Twp. (w/attachments) – via email

SIGNED: _____
Anna L. Barr, E.I.T.- Staff Professional I

If enclosures are not as noted, kindly notify us at once.

HOPEWELL TOWNSHIP
MUNICIPAL WASTELOAD MANAGEMENT
SEWER SYSTEM AND PUMP STATION INFORMATION

INSTRUCTIONS:	Please provide information as completely as possible. Additional pages may be attached to complete a response as may be necessary.

1. MUNICIPAL INFORMATION:

Name of Municipality: Hopewell Township
Address: 1700 Clark Boulevard
Aliquippa, PA 15001

Name of Person Completing Form: Anna L. Barr
Title or Company: Herbert, Rowland & Grubic, Inc.
Address: 200 West Kensinger Drive Cranberry Township, PA 16066

2. SEWERED POPULATION AND PROJECTED HYDRAULIC AND ORGANIC LOAD:

Year	Residential Customers	Population	Estimate Flow (gpd)	Estimate Raw Sewage BOD (lb/day)
2019 Actual	See Attachment No. 1			
2020 Estimated				
2021 Estimated				
2022 Estimated				
2023 Estimated				
2024 Estimated				

3. INDUSTRIAL WASTE SURVEY:

Are industrial wastes discharged into your sewer system?
Yes _____ No X

A. Discuss your municipality's program for surveillance and monitoring of industrial waste discharges into the sewer system during the last year.
See Attachment 1.

B. Describe specific problems in the sewer system known to be caused by industrial waste discharges and summarize any steps being taken to alleviate or eliminate the problems.
See Attachment 1.

NAME OF MUNICIPALITY: Hopewell Township

C. Please attach a copy of the ordinance or regulation governing industrial waste discharges to the sewer system or a copy of the amendments adopted during the past year if it has not previously been permitted.

Ordinance No. 2010-04 is included in Attachment No. 2.

4. SYSTEM CONDITION:

Provide the following information concerning your sewer system.

A. Sewer system condition:
Please see Attachment No. 1.

B. Describe sections of sewer where capacity is exceeded or will be exceeded in the next five years.
Please see Attachment No. 1.

C. Describe your program for monitoring flows in the sewers. State if it included periodic flow gauging or smoke and dye testing in sewers suspected of having illegal storm connections.
Please see Attachment No. 1.

D. Describe your routine maintenance programs. Indicate if on a regular basis or as needed. List the number of employees (full and part time) and provide a list of the equipment available for inspection and maintenance work.
Please see Attachment No. 1.

E. If applicable, briefly describe your program for maintenance and control of diversion chambers and indicate how often they are inspected.
Not applicable.

F. Describe any work being performed to reduce infiltration/inflow, or any extraordinary sewer rehabilitation during the past year.
Please see Attachment No. 1.

NAME OF MUNICIPALITY: Hopewell Township

5. SEWAGE PUMP STATIONS:

Provide the following information for each pump station:

NAME	CONDITION	DESIGN CAPACITY (gpm)	PRESENT MAXIMUM FLOW (gpm)	PROJECTED 2-YEAR MAXIMUM FLOW (gpm)
Woodlawn Park	Good	85 GPM	11 GPM	11 GPM

6. SEWER EXTENSIONS:

Provide the following information for each sewer system extension.
Attach a copy of the plot plan or a map of each sewer system extension.

Development / Extension Name	Population Served	Status (Constructed, Approved for Construction, or Proposed)	Length (feet)	Size (inches)
Not Applicable				
See Attachment 1.				

ATTACHMENT 1
HOPEWELL TOWNSHIP- TRIBUTARY
CHAPTER 94 REPORT

HRG
Herbert, Rowland & Grubic, Inc.
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

200 W. Kensinger Drive Suite 200
Cranberry, PA 16066
724.779.4777

2019 Chapter 94 Report >

Hopewell Township

MARCH 2020

The following report summarizes wasteload management by Hopewell Township (Township) during the 2019 operating year:

System Condition

The general condition of the collection and conveyance system maintained by the Township ranges from fair to good. In the Township sewer system tributary to Aliquippa, there are no areas where the conveyance capacity is being exceeded and the system is not anticipated to be exceeded within the next five years. There were no wet weather overflow events within the system during 2019.

MONITORING, MAINTENANCE, AND REHABILITATION:

The Hopewell Township Wastewater Collection, Conveyance, Pumping, and Treatment Facilities are operated and maintained by a staff of nine (9) full-time employees. Major repairs or replacements to the sanitary sewer system are performed by private contractors. Minor repairs or replacements are performed by Township personnel. Equipment available for Township personnel includes safety equipment, backhoe, front end loader, dump trucks, pickup trucks, sewer jet truck, vacuum truck, and internal inspection/camera equipment.

Sewer problems are inspected as soon as the Township is made aware of the problem. Routine inspection (approximately quarterly) occur in all areas of the wastewater collection system where known problems exist. Cleaning of known problem areas is performed on an as needed basis.

It is routine that all new sanitary sewers are air tested and new manholes are vacuum tested. Additionally, new lateral connections are visually inspected by WPCS Staff. Roof drains, surface drains, and other stormwater connections are not permitted to be connected into the sanitary sewer system.

During 2019, the Township did not perform any comprehensive system-wide repair/rehabilitation work, smoke testing, dye testing, or wastewater flow monitoring in this area of the system. During operating year 2019 no resale dye tests were performed within the Township sewer system tributary to Aliquippa.

Sewage Pump Stations

There is one (1) wastewater pumping station tributary to the Aliquippa sewer system that is located in the Woodlawn Park area of Hopewell Township. The Woodlawn Park Wastewater Pumping Station serves eleven Equivalent Dwelling Units (EDUs). Flow data presented in the Hopewell Township Survey is based on 3.0 persons/EDU at 100 gallons per capita per day and a peaking factor of 4 as there is no flow meter exists at this location.

Sewage Extensions

There were three taps added into the Aliquippa Sewer System in 2019. No sewer extensions were added.

Industrial Waste

Hopewell Township adopted Sewer System Rules and Regulations via Ordinance No. 2010-04 on October 11th, 2010 which contains industrial waste discharge requirements. As there are no known industrial wastes discharged into the sewer system.

Population Projections

No major developments are proposed to be connected to this portion of the Hopewell Township Sewer System in 2020. An estimated two EDUs per year will be connected to the system each calendar year. The below table shows the estimated growth in the area for the next five years. These calculations were estimated with 3.0 persons per EDU. With the growth estimated to be minimal, the estimated raw sewage BOD should remain nearly the same for the next five years.

Projected Growth			
Parameter	**EDUs**	**Population**	**Estimated Flow (gpd)**
2019 Actual	1,015	3,045	304,500
2020 Estimated	1,017	3,051	305,100
2021 Estimated	1,019	3,057	305,700
2022 Estimated	1,021	3,063	306,300
2023 Estimated	1,023	3,069	306,900
2024 Estimated	1,025	3,075	307,500

Respectfully submitted,

HERBERT, ROWLAND & GRUBIC, INC.

Anna L. Barr, E.I.T.
Staff Professional | Water & Wastewater

R008322.0426

ATTACHMENT 2
SEWER SYSTEM RULES AND REGULATIONS
(ORDINANCE 2010-04)

ORDINANCE 2010-04

HOPEWELL TOWNSHIP

BEAVER COUNTY, PENNSYLVANIA

SEWER SYSTEM

RULES AND REGULATIONS

OCTOBER, 2010

WIDMER ENGINEERING INC.
225 West Crawford Avenue
Connellsville, PA 15425
Telephone: (724) 626-1909
Facsimile: (724) 626-8509

WIDMER ENGINEERING INC.

HOPEWELL TOWNSHIP
SEWER SYSTEM RULES AND REGULATIONS

TABLE OF CONTENTS

SECTION	PAGE NUMBER
Article I – General	1
Article II – Definitions	2
Article III – Discharge of Sanitary Sewage to Public Sanitary Sewage System Required	7
Article IV – Exclusion of Storm Water Runoff, Surface Water, and Subsurface Water	8
Article V – General Requirements for Industrial Wastewater	9
Article VI – Prohibitions and Limits for Waste Discharges	12
Article VII – Grease Trap or Grease Interceptor Requirements	14
Article VII – Sewage Collection, Transportation, and Treatment Charges	16
Article IX – Surcharge for Certain Compatible Constituents	18
Article X – Billing and Collection	20
Article XI – Connections to the Public Sanitary Sewage System	21
Article XII – Proposed Extensions of System by Developers	24
Article XIII – Delinquencies, Violations, and Remedies	28
Article XIV – Validity	29
Article XV – Standard Details	30
Article XVI – Standard Forms	31

ORDINANCE NO. 2010-04

AN ORDINANCE OF HOPEWELL TOWNSHIP, BEAVER COUNTY, PENNSYLVANIA, ESTABLISHING RULES AND REGULATIONS FOR CONNECTION TO, DISCHARGE INTO, CONSTRUCTION AND EXTENSION OF THE EXISTING SANITARY SEWER SYSTEM, AND PROVIDING FOR SURCHARGES AND PENALTIES ASSOCIATED THEREWITH.

WHEREAS, Hopewell Township is desirous of regulating connections to, discharge into, and construction and extension of the existing sanitary sewer system by establishing Sewer System Rules and Regulations; and

WHEREAS, Hopewell Township is desirous of providing for surcharges and penalties associated with violations of the Sewer System Rules and Regulations.

NOW, THEREFORE, BE IT ORDAINED AND ENACTED by the Board of Commissioners of Hopewell Township, Beaver County, Pennsylvania, and the Authority of the same as follows:

ARTICLE I
GENERAL

Section 101. Hopewell Township reserves the right to refuse connection into the sanitary sewer system; to compel discontinuance of use of a sewer; or to compel pretreatment of industrial waste by any industry in order to prevent a discharge into the Hopewell Township Sanitary Sewer System deemed to be harmful to the sanitary sewer system, or deemed to have a deleterious effect on the sewage treatment or sludge handling process.

Section 102. No discharges or activities in conflict with the Sewer System Rules and Regulations shall be permitted by Hopewell Township.

ARTICLE II
DEFINITIONS

Unless the context specifically indicates otherwise, the following words and terms used in these Rules and Regulations shall have the following meanings:

Section 201. Authority shall mean the Hopewell Township Sewer Authority, Beaver County, Pennsylvania.

Section 202. Abnormal Industrial Waste shall mean any industrial waste having a suspended solid content or a B.O.D. appreciably in excess of that normally found in municipal sewage. For the purposes of these regulations, any industrial waste containing more than 275 milligrams per liter of suspended solids, or having a B.O.D. in excess of 300 milligrams per liter, shall be considered an abnormal industrial waste regardless of whether or not it contains other substances in concentrations differing appreciably from those normally found in municipal sewage.

Section 203. Board shall mean the elected members of the Hopewell Township Board of Commissioners, Beaver County, Pennsylvania, as now or hereafter constituted, and its duly authorized agents or representatives.

Section 204. B.O.D. of Sewage or Industrial Waste shall designate its Biochemical Oxygen Demand and shall mean the quantity of oxygen utilized in the biochemical oxidation of the organic matter in said sewage or industrial waste under standard laboratory procedure in 5 days at 20°C. (under aerobic conditions), expressed in milligrams per liter by weight. It shall be determined by one of the acceptable methods described in the latest edition of "Standard Methods for the Examination of Water and Wastewater," published jointly by the American Public Health Association, the American Water Works Association, and the Water Environment Federation.

Section 205. Combined Sewer shall mean a sewer designed to receive both sanitary sewage and storm water runoff which has been approved for such purpose.

Section 206. DEP shall mean the Pennsylvania Department of Environmental Protection.

Section 207. Document of Certification shall mean an official statement from Hopewell Township stating that there are no known illegal storm water, surface water, or subsurface water connections to the Hopewell Township Sanitary Sewer System on the specific property which is being sold.

Section 208. An Equivalent Dwelling Unit (EDU) with regard to Residential Customers shall be defined as each single family dwelling, dwelling in a double house, dwelling in the row of connecting houses, mobile home, dormitory room, group of rooms, enclosure or other facility occupied or intended for occupancy as separate living quarters by a family or other group or persons living together or by persons living alone. Each single family dwelling containing five (5) bedrooms or more shall be equivalent to one and one-half (1½ EDU).

The EDU equivalent of an apartment unit within an apartment building or complex shall be defined as follows:

Efficiency Apartment (Single Occupant Only)	0.50 EDU per Apartment Unit
One-Bedroom Apartment	0.75 EDU per Apartment Unit
Two-Bedroom Apartment or Larger	1.00 EDU per Apartment Unit

Each single family dwelling, dwelling in a double house, dwelling in a row of connecting houses, mobile home, dormitory room, or apartment, shall be billed as a separate entity. Any room, group of rooms, mobile home, etc. occupied or intended for occupancy as a separate living quarters by a family or other group of persons living together or by persons living alone, shall be classified a an equivalent domestic unit.

An Equivalent Dwelling Unit (EDU) with regard to Commercial and Industrial Customers shall be defined as any non-residential building or complex of buildings selling a product or rendering a service, including offices, stores, shops, restaurants, clubs, taverns, barber and beauty shops, service stations, car washes, laundromats, funeral homes, motels, hotels, hospitals, nursing homes, professional buildings, schools, churches, factories and any other commercial or industrial facilities. An Equivalent Dwelling Unit (EDU) for Commercial and Industrial Customers shall be defined as each 80,000 gallons or less of water used per year therein. Therefore, to determine the EDU equivalent for a particular commercial or industrial facility, the annual water usage of the facility shall be divided by 80,000 gallons. No commercial or industrial facility shall be considered less than one (1) EDU, regardless of the calculated or measured water usage. Hopewell Township reserves the right to review, on an annual basis, the historical water usage of any commercial or industrial customer and to recalculate the number of EDU's and then revise accordingly the monthly sanitary sewage collection, transportation, and treatment charges.

Section 209. Garbage shall mean solid wastes from the preparation, cooking and dispensing of food and from the handling, storage and sale of produce.

Section 210. Grease Interceptor – A tank mechanism with a flow rate greater than 35 gallons per minute which is installed underground outside the structure being served and which extracts grease content from sanitary wastewater prior to the discharge of said wastewater into the public sanitary sewer system owned and/or operated by Hopewell Township.

Section 211. Grease Trap – A tank mechanism with a flow rate of 35 gallons per minute or less which is installed in the sanitary wastewater drainage system of an individual premises, which mechanism extracts grease content from sanitary wastewater prior to the discharge of said wastewater into the public sanitary sewer system owned and/or operated by Hopewell Township. Grease traps shall be rated at a minimum of 22.5 gallons per minute.

Section 212. Industrial Discharger – An industry which discharges wastewater to the public sanitary sewer system owned and/or operated by Hopewell Township and which is identified in the Standard Industrial Classification Manual, Bureau of the Budget, 1967, as amended and supplemented, under the category "Division D – Manufacturing" and such other classes of significant waste producers as deemed appropriate under the Federal Water Pollution Control Act, 33 U.S.C. § 1251 et. seq.

Section 213. Industrial Wastewater - Liquid and water-carried industrial wastes from commercial buildings, industrial and manufacturing facilities and institutions, whether treated or untreated.

Section 214. Non-Domestic Discharger shall mean any owner and/or occupier of premises used for purposes other than residential and who discharges wastewater into the sanitary sewer system owned and/or operated by Hopewell Township. This term shall include, but not be limited to, any and all commercial and/or manufacturing operations, commercial buildings and nursing and/or group homes with more than 10 residents.

Section 215. Non-Domestic Preparation of Food shall mean any food preparation conducted for consumption by a person or persons other than those residing on the subject premises and/or their household guests. This includes all restaurants, whether eat-in or take-out, cafeterias, snack bars, church kitchens and halls, grocery store kitchens, banquet halls, nursing and/or group homes with more than 10 residents, and food processing businesses.

Section 216. Occupied Building shall mean any structure erected and intended for continuous or periodic habitation, occupancy or use by human beings or animals, and from which structure sanitary sewage and industrial wastes, or either thereof, is or may be discharged.

Section 217. Oil and Grease shall mean either immiscible or emulsified substances as measured by the petroleum ether (or Freon) extraction gravimetric method of oil analysis as described in the latest edition of "Standard Methods for the Examination of Water and Wastewater," cited above.

Section 218. Pass Through shall mean any discharge which exits Hopewell Township's wastewater treatment facility into the waters of the Commonwealth of Pennsylvania in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of Hopewell Township's NPDES permit, including an increase in the magnitude or duration of a violation.

Section 219. Person shall include natural persons, syndicate, association, partnership, firm, corporation, institution, agency, authority, or other entity recognized by law as the subject of rights and duties.

Section 220. pH shall mean the logarithm to the base 10 of the reciprocal of the hydrogen ion concentration expressed in moles per liter. It shall be determined by one of the acceptable methods described in the latest edition of "Standard Methods for the Examination of Water and Wastewater," cited above.

Section 221. Premises Accessible to the Public Sanitary Sewage System shall mean any real estate abutting on or adjoining or having access to any street, alley or right-of-way in which a sewer is located which ultimately connects to the public sanitary sewage system.

Section 222. Properly Shredded Garbage shall mean wastes from the preparation, cooking and dispensing of food and from the handling, storage and sale of produce that have been shredded to such degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half inch (½") in any dimension.

Section 223. Private Sanitary Sewage System shall mean all or part of any privately owned device or devices located on an individual parcel of land and intended to treat and/or dispose of the sanitary wastewater discharged from any structure or structures located on that parcel of land.

Section 224. Public Sanitary Sewage System ("Sewer System") shall mean all sanitary sewers, pumping stations, inverted siphons, force mains, sewage treatment works, and other sewerage facilities owned or leased and operated by the Township for the collection, transportation and treatment of sanitary sewage and industrial wastes, together with their appurtenances, and any additions, extensions or improvements thereto. It shall also include sewers within the Township's service area which serve one or more person and discharge into the public sanitary sewerage system even though those sewers may not have been constructed by the Township and are not owned or maintained by the Township. It does not include separate

storm sewers or culverts which have been constructed for the sole purpose of carrying storm and surface runoff, the discharge from which is not and does not become tributary to the sewage treatment facilities.

Section 225. Residential User shall mean the owner and/or occupier of premises used only for human residency and who discharges sanitary wastewater to the sanitary sewer system owned and/or operated by Hopewell Township.

Section 226. Sanitary Lateral shall mean a pipe extension from a structure's sanitary wastewater plumbing system to the sanitary sewer system owned and/or operated by Hopewell Township.

Section 227. Sanitary Sewage shall mean the normal water-carried household and toilet wastes from residences, business buildings, institutions, industrial and commercial establishments, exclusive of storm water runoff, surface water or ground water.

Section 228. Sanitary Sewer shall mean a pipe or conduit which carries sewage or industrial wastewater and to which storm, surface and ground waters are not intentionally admitted.

Section 229. Sewage shall mean a combination of water-carried wastes from residences, business buildings, institutions, industrial and commercial establishments, together with such ground, surface or storm water as may be present.

Section 230. "Shall" is mandatory; "may" is permissive.

Section 231. Slug shall mean any discharge of water, sewage, or industrial waste which, in concentration of any given constituent or in quantity of flow, exceeds for any period of duration longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation.

Section 232. Storm Sewer shall mean a pipe or conduit which is intended to carry storm water runoff, surface waters, ground water drainage, etc., but which is not intended to carry any sanitary sewage or polluted industrial waste.

Section 233. Storm Water Runoff shall mean that portion of the rainfall which reaches a channel, trench, sewer, or sink.

Section 234. Suspended Solids shall mean solids that either float on the surface or are in suspension in water, sewage, industrial waste or other liquids, and which are removable by laboratory filtration. The quantity of suspended solids shall be determined by one of the acceptable methods described in the latest edition of "Standard Methods for the Examination of Water and Wastewater," cited above.

Section 235. Township shall mean Hopewell Township, Beaver County, Pennsylvania.

Section 236. Unpolluted Water or Waste shall mean any water or waste containing none of the following: free or emulsified grease or oil; pH less than 6.0 or greater than 8.5; phenols or other substances imparting taste and odor to receiving waters; toxic or poisonous substances in suspension, colloidal state or solution; obnoxious or odorous gases. It shall contain not more than 500 milligrams per liter by weight of dissolved solids of which not more than 250 milligrams per liter shall be as chloride and not more than 10 milligrams per liter each of suspended solids and B.O.D. The color shall not exceed 5 color units. Analyses for any of the above mentioned substances shall be made in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater," cited above.

Section 237. Water Authority shall mean any publicly or privately owned duly authorized agency, corporation or organization which is the approved purveyor of the public water supply within the limits of the Township's service area.

ARTICLE III
DISCHARGE OF SANITARY SEWAGE TO PUBLIC SANITARY SEWAGE SYSTEM REQUIRED

Section 301. All persons owning property within the Township's service area whose existing building is accessible to the public sanitary sewage system shall, at their own expense, make connection with the public sanitary sewage system, if they are not presently so connected. A building or structure shall be considered accessible to the public sanitary sewage system if the sanitary sewer lateral connection at the property line or edge of the right-of-way is located one hundred fifty feet (150') from the nearest corner of the principal building or structure to be served.

Section 302. All persons owning property within the Township's service area upon which an occupied building is subsequently erected which is accessible to the public sanitary sewage system shall, at their own expense, make connection with the public sanitary sewage system.

Section 303. All persons owning any occupied building within the Township's service area upon premises which subsequently become accessible to the public sanitary sewage system shall, at their own expense, make connection with the public sanitary sewage system within the time period stipulated after proper notice to do so has been given in accordance with applicable law.

Section 304. All connections to the public sanitary sewage system shall be made in accordance with Article XI hereof and in accordance with the attached "Specifications for Installation of Sanitary Sewers and Appurtenances."

Section 305. No privy vault, cesspool, septic tank, mine hole or similar receptacle for human excrement shall presently or at any time hereafter be connected with the public sanitary sewage system.

ARTICLE IV
EXCLUSION OF STORM WATER RUNOFF, SURFACE WATER, AND SUBSURFACE WATER

Section 401. The discharge of storm water runoff, surface water, and subsurface water to sanitary sewers is prohibited.

Section 402. All persons connecting to the public sanitary sewage system shall provide adequate means for excluding storm water runoff, surface water, and subsurface water in the event the connection is made to the sanitary sewer.

Section 403. No person connected to a sanitary sewer shall connect any roof drain or foundation drain or sump pump or cellar drain thereto or permit any such drains to remain connected thereto, nor shall he permit, allow or cause to enter into any sanitary sewer, any spring water, surface water, or subsurface water from any other source.

Section 404. The provisions of these Rules and Regulations do not prohibit the present or future discharge of storm water runoff to combined sewers or storm sewers or to natural water courses within the Township's service area.

ARTICLE V
GENERAL REQUIREMENTS FOR INDUSTRIAL WASTEWATER

Section 501. The economy and desirability of the combined treatment of industrial wastes and sanitary sewage are recognized. It is the intent of these Rules and Regulations to accommodate the waste disposal needs of industries within the service area of the Township to the extent that the industrial discharges do not inhibit or interfere with the public sanitary sewage system's intended and required functions, cause physical damage to the structures of the public sanitary sewage system, or cause hazard to those responsible for the operation and maintenance of the public sanitary sewage system or to the general public. In addition, the industrial discharges must be limited in amounts of specific contaminants of a toxic or polluting nature which may pass through the treatment system in objectionable levels as effluent constituents and/or as a residue constituent of the sludge.

These Rules and Regulations are intended to provide the basis for this required control and protection of Township property and responsibility. It should be further understood that the Township and all industries are subject to the "Toxic and Pretreatment Effluent Standards," Section 307 of Public Law 92-500. The Federal regulations pertaining to these Federal requirements were developed by the Federal Environmental Protection Agency (EPA) in 40 CFR, Parts 129 and 403. The EPA regulations on Pretreatment Standards control the prerogatives of the Township in the control of industrial discharges, and will always supersede the requirements of these Rules and Regulations, where discrepancies exist.

Section 502. In general, an industrial waste shall be considered harmful to the public sanitary sewage system if it may cause any of the following damaging effects:

A. Chemical reaction either directly or indirectly with the materials of construction of the public sanitary sewage system in such a manner as to impair the strength or durability of any sewerage structures.

B. Mechanical action that will destroy any sewerage structures.

C. Restriction of the hydraulic capacity of any sewerage structures.

D. Restriction of the normal inspection or maintenance of any sewerage structure.

E. Danger to public health and safety.

F. Obnoxious conditions inimical to the public interest.

All such wastes shall be prohibited from discharge to the public sanitary sewage system

Section 503. For all industrial waste constituents which are not compatible with the treatment systems and/or will persist through the treatment systems as a pollutant or toxic substance, pretreatment will be required to the extent the objectionable constituents are reduced to acceptable levels. It is the current intent of EPA to promulgate pretreatment standards for all known toxin and polluting substances on an industrial classification basis. As these standards are developed, they will become applicable to all industries according to a schedule also to be developed by EPA. EPA Standards are minimum standards which can be further altered to meet local conditions. Until these pretreatment standards become effective, the prohibition and limits of Article VI hereof will govern.

Section 504. The variability of the rate of discharge from an industrial establishment is an important consideration of the compatibility of the industrial waste with the public sanitary sewage system, and is also subject to regulation. When the variability is considered excessive by Township review or by EPA regulation, the industry shall employ methods and means to reduce the flow rate variability to acceptable levels.

Section 505. For waste constituents compatible with the public sanitary sewage treatment system and for which the public sanitary sewage treatment system is to provide specific removal capability, the industrial waste shall be subject to surcharge for such constituent concentration in excess of the average influent value upon which the plant design was based. The constituents to which surcharges are applicable include BOD_5, suspended solids, ammonia nitrogen, phosphorous, ABS, and oils, fats and greases. The allowable concentrations and surcharge formula are given in Article IX.

Section 506. A special industrial waste discharge permit is required for all industrial establishments discharging industrial process waters to the public sanitary sewage system. No industrial waste discharges from existing industrial connections will be permitted to be made to the public sanitary sewage system without a Permit from the Township. For all new industrial discharges to be made after the date of approval of these Rules and Regulations, permit application and approval is required prior to any actual discharge being made to the public sanitary sewage system.

Each said application shall be submitted to the Township and shall contain the following information:

A. Description of process(es) producing the wastes.

B. Description of any pretreatment facilities being or to be utilized.

C. Description of waste being or to be discharged to the public sanitary sewage system in terms of quantity and quality. Complete information regarding flow variability and chemical/physical/ biological constituency is required. Analysis and flow records will also be required for existing installations or for situations where similar installations exist at some other site of the requesting industrial establishment.

Upon review of the application, the Township will advise the applicant in writing of its approval or disapproval. If disapproval is indicated, full explanation of the reason for disapproval will be given, as will be an opportunity for the applicant to have a hearing before the Township for reconsideration, if so requested by the applicant within 30 days of the Township's notice of disapproval.

All permits will be granted subject to cancellation by the Township in the event that the industrial discharge becomes adversely different from the conditions upon which approval was originally granted.

All permittees are required to obtain amended permits for all new or different industrial discharges from those described in the original or last amended permit.

All permits are also subject to amendment by the Township in the event that pretreatment requirements of EPA as originally promulgated or amended differ from the requirements upon which the prevailing permit was based.

All permits when granted by the Township will describe in detail the specific monitoring requirements of the discharge(s).

All new industrial establishments desiring to make physical connection to the public sanitary sewage system shall be required to apply for and obtain a connection permit as described in Article XI, in addition to the industrial waste permit described in this Article V.

Section 507. When required by the Township, any person discharging to the public sanitary sewage system any industrial wastes, or industrial wastes and sanitary sewage together, shall install a suitable manhole or manholes or metering chamber on his connecting sewer or sewers to facilitate observation, sampling and measurement of the combined flow of wastes from his premises. Such manhole or manholes or metering chamber shall be accessible and safely located and shall be constructed in accordance with plans approved by the Township or its designated representative. The manhole or manholes or metering chamber shall be installed by such person at his expense and shall be maintained by him so as to be safe and accessible to the Township or its designated representative at all times.

Section 508. All industrial establishments shall install fine screens to remove husk, hull, vegetable skins and peelings, threads, lint, grease, and any and all materials considered by Hopewell Township to overload, impair the efficiency of, or cause difficulties in the operation of the sewers, sewage treatment plant, or other sewer facilities.

Section 509. Although the specific monitoring requirements will be established for each permit at the time of application review, the general guidelines for establishing these requirements, based on EPA Pretreatment Standards (40 CFR 403), latest revision, are hereby incorporated. The categorical Pretreatment Standards found at 40 CFR Chapter I, Subchapter N, Parts 405-571, latest revision, are hereby incorporated.

ARTICLE VI
PROHIBITIONS AND LIMITS FOR WASTE DISCHARGES

Section 601. The discharge of unpolluted water or waste to a sanitary sewer is expressly prohibited. The Township reserves the right to define the amount it deems excessive in each particular instance.

Section 602. The discharge of garbage to the public sanitary sewage system is expressly prohibited unless the garbage is first properly shredded.

Section 603. The discharge of sewage or other wastes directly to a sanitary sewer manhole without the express written permission of Hopewell Township is expressly prohibited.

Section 604. No sanitary sewage or industrial waste from any property other than that for which a connection permit has been issued as provided in Article XI hereof shall be discharged to the public sanitary sewage system. No industrial waste shall be discharged to the public sanitary sewage system by an industry without a special industrial waste discharge Permit obtained in accordance with Article V hereof.

Section 605. No person shall discharge to the public sanitary sewage system any sanitary sewage or industrial wastes having any of the following characteristics:

A. Wastes containing liquids, solids or gases which by reason of their nature or quality may cause fire, explosions, or be in any other way injurious to persons, the structures of the public sanitary sewage system or its operation.

B. Wastes having a temperature in excess of 130°F or less than 32°F.

C. Wastes having a pH lower than 6.0 or higher than 9.0 or having any corrosive properties capable of causing damage or hazards to structures, equipment or personnel of the public sanitary sewage system. Where the Township deems it advisable, it may require any person discharging industrial wastes to install and maintain, at his own expense, in a manner approved by the Township or its designated representative, a suitable device to continuously measure and record pH of the wastes so discharged.

D. Wastes containing any noxious or malodorous gas or substance which either singly or by interaction with sewage or other wastes is, in the opinion of the Township, likely to create a public nuisance or hazard to life, or prevent entry to sewerage structures for their maintenance and repair.

E. Wastes containing ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, hair, chemical or paint residues, greases, lime slurry or viscose materials of such character or in such quantity that, in the opinion of the Township, they may cause an obstruction to the flow in the sewers or otherwise interfere with the proper operations of the public sanitary sewage system. Attention is called to the fact that the maximum permissible concentration will vary throughout the public sanitary sewage system depending upon the size of the particular interceptor sewer receiving the same and the flows therein.

F. Wastes containing insoluble, non-flocculent substances having a specific gravity in excess of 2.65.

G. Wastes containing soluble substances in such concentration as to cause the specific gravity of the waste to be greater than 1.1.

H. Wastes containing any of the following substances in solution or in suspension in concentrations exceeding those shown in the following table:

Substance	Maximum Permissible Concentration
Phenolic Compounds as C_5H_6OH	1.0 mg./L.
Cyanide as CN	1.0 mg./L.
Cyanate as CNO	5.0 mg./L.
Antimony as Sb	1.0 mg./L.
Arsenic as As	0.8 mg./L.
Barium as Ba	100.0 mg./L.
Beryllium as Be	0.5 mg./L.
Boron as B	5.0 mg./L.
Cadmium as Cd	0.5 mg./L
Trivalent Chromium as Cr^{+3}	1.0 mg./L.
Hexavalent Chromium as Cr^{+6}	0.5 mg./L.
Copper as Cu	1.0 mg./L.
Iron as Fe	4.0 mg./L.
Lead as Pb	0.5 mg./L.
Manganese as Mn	0.05 mg./L.
Mercury as Hg	0.1 mg./L.
Molybdenum as Mo	1.0 mg./L.
Nickel as Ni	1.0 mg./L.
Selenium as Se	1.0 mg./L.
Silver as Ag	0.5 mg./L.
Thallium as Tl	0.5 mg./L.
Tin as Sn	1.0 mg./L.
Zinc as Zn	0.75 mg./L.
Total Toxic Organics (TTO)*	0.75 mg./L.

** TTO is defined as the sum of all priority organic pollutants found in concentrations greater than 0.01 mg./L.

When the waste volume is less than 1,000 gallons per day, the Township may permit higher concentration limits.

I. Wastes containing more than 100 mg./L. by weight of fat, oil, or grease.

J. Wastes containing more than 10 mg./L. of any of the following gases: Hydrogen sulfide, sulfur dioxide, nitrous oxide, or any of the halogens.

K. Wastes containing gases or vapors, either free or occluded, in concentrations toxic or dangerous to humans or animals.

L. Wastes containing toxic substances in quantities sufficient to interfere with the biochemical processes of the sewage treatment works or that will pass through the treatment process and still exceed the state and federal requirements for the receiving stream.

M. Wastes containing toxic radioactive isotopes without a special permit.

N. Wastes at a flow rate and/or pollutant discharge rate which is excessive over relatively short time periods.

ARTICLE VII
GREASE TRAP OR GREASE INTERCEPTOR REQUIREMENTS

Section 701. It shall be unlawful for any person to engage in the non-domestic preparation of food or the washing of dishes used to serve food for non-domestic consumption without a properly installed, operational, and regularly maintained grease interceptor or grease trap system to separate, remove, collect, and contain grease content from wastewater prior to the discharge of said wastewater into the sanitary sewer system owned and/or operated by Hopewell Township. The grease interceptor or grease trap system shall be installed and maintained in accordance with the requirements of Hopewell Township.

Section 702. The type of installation (either grease interceptor system or grease trap system) shall be determined by the total fixture flow through rate of potential grease-laden fixtures discharging through the building sanitary wastewater lines as determined by a registered master plumber and approved by Hopewell Township.

1. For flow through rates of 35 gallons per minute or less, an internal grease trap system is required.
2. For flow through rates in excess of 35 gallons per minute, an external, underground grease interceptor system is required.

Section 703. A grease interceptor system or grease trap system shall be installed at an appropriate location along the building sanitary sewer line before the point of connection between the building sanitary sewer line and public sanitary sewer system. Said grease interceptor system or grease trap system and its installation shall be in compliance with the rules, regulations, plans, and specifications established by Hopewell Township.

Section 704. The grease interceptor system or grease trap system shall limit the amount of grease discharged into the public sanitary sewer system to a level not to exceed 100 mg/l as oil and grease downstream of the grease interceptor or grease trap.

Section 705. Where a grease interceptor system is required, an inspection site tee shall be installed between the interceptor discharge point and the sanitary wastewater service line connection to the public sanitary sewer system.

Section 706. Grease interceptor systems and grease trap systems shall be maintained and kept in proper working order at all times in accordance with the rules, regulations and requirements as established by Hopewell Township. Records of all grease interceptor system or grease trap system cleaning and/or maintenance shall be kept on the subject premises at all times and shall be available for review by Hopewell Township.

Section 707. No solid waste devices, such as waste grinders, disposals, potato peelers, etc. shall discharge through a grease trap system or grease interceptor system. Only potential grease laden fixtures may discharge through the grease trap system or grease interceptor system.

Section 708. The Hopewell Township Inspector or his designee, bearing proper identification, shall be permitted to enter any premises subject to Article VII at any reasonable time for the purpose of inspection of facilities and/or records to ensure compliance with the provisions of this Article.

Section 709. All grease interceptor systems and/or grease trap systems located on premises subject to Article VII shall be inspected at least annually by the Hopewell Township Inspector or his designee. All such grease interceptor systems and/or grease trap systems located upon premises which maintain a dining seating capacity of fifty (50) or more shall be inspected semi-annually. A written record of all inspections shall be maintained by Hopewell Township.

Section 710. All owners or occupiers of premises subject to Article VII shall be required to pay the Township a fee for each annual or semi-annual inspection conducted pursuant to Section 709 above. The fee shall be established by Hopewell Township as reimbursement for costs incurred in conducting the required inspection. The fee shall be invoiced by Hopewell Township following the subject inspection.

Section 711. Hopewell Township is hereby authorized, empowered and directed to make reasonable rules and regulations regarding the grease trap system or grease interceptor system requirement and inspection as set forth in Article VII as it deems necessary, which shall include, but not be limited to:

A. Establishing the appropriate materials, plans, and specifications for the type of grease interceptor system and/or grease trap system to be installed;

B. Establishing the appropriate materials, plans, and specifications for the installation of a grease interceptor system and/or grease trap system;

C. Establishing the appropriate inspection and/or testing methods;

D. Establishing the appropriate maintenance activities and schedule required for grease interceptors and/or grease trap systems.

E. Establishing the appropriate fee for inspection of grease trap systems and/or grease interceptor system.

All rules and regulations issued pursuant to this Article shall be in writing and shall be approved by the Board of Commissioners of Hopewell Township prior to such rules and regulations becoming effective.

ARTICLE VIII
SEWAGE COLLECTION, TRANSPORTATION AND TREATMENT CHARGES

Section 801. There is imposed upon the owners of, or the users of water in or on, all properties served by the public sanitary sewage system, sewage collection, transportation and treatment charges for the use of said system, payable in the amounts and as provided in the Sewer Rate Ordinance heretofore adopted by the Township and as it is hereinafter from time to time amended and modified. Said owners and users will be jointly and severally liable for the payment of said sewage collection, transportation and treatment charges and, the penalties therein prescribed for delinquent payments thereof.

Section 802. All bills for sewage collection, transportation and treatment charges shall be due when rendered and shall be subject to the penalty provisions set forth in the Township's Sewer Rate Resolution. Owners, and where adequate arrangements have been made with the Township, users will be billed periodically for the sewage collection, transportation and treatment charges in accordance with the billing practices of the Township.

Section 803. The Township's sewage collection, transportation and treatment charges shall be on a water usage and flat rate basis in accordance with the Township's Sewer Rate Resolution. The Township may, if it deems it advisable, elect at some time in the future to impose, in whole or in part, the sewage collection, transportation and treatment charges on such other basis as it may determine. When water usage is used as the basis for said charges, the volume of water to be used for billing purposes shall be based upon water meter readings of the Water Authority or, in the absence of such readings, upon estimates made by the Township or flat rate charges.

Section 804. When water usage is used as the basis of charges, then if an owner or user obtains part or all of the water used in or on a property from sources other than the Water Authority, such owner or user may, after written approval from the Township, at no expense to the Township or the Water Authority, install and maintain a water meter or meters satisfactory to the Township and the Water Authority for measuring all water used other than that obtained from the Water Authority, and the quantity of water used to determine the sewage collection, transportation and treatment charges shall be the quantity of water measured by all such meters plus the quantity of water obtained from the Water Authority. In lieu of such additional meters, the Township may establish under the Sewer Rate Resolution, a flat rate charge which shall be applicable to such non-metered water usage.

Section 805. When water usage is used as the basis of charges, then if it is established to the satisfaction of the Township that a portion of the water used in or on any property served by the public sanitary sewage system does not and cannot enter said system, and in the event that the total water used in or on said property exceeds 100,000 gallons per quarter, the Township may determine, in such manner and by such method as it may deem practical, the percentage of the water entering the public sanitary sewage system, or the Township may require or permit the installation of additional meters in such manner as to determine either the quantity of water excluded from the public sanitary sewage system or the quantity of water, sewage or industrial waste actually entering the public sanitary sewage system. In such case, the sewage collection, transportation and treatment charge shall be based upon the quantity of water estimated, measured or computed by the Township to be actually entering the public sanitary sewage system.

Section 806. When water usage is used as the basis of charges, then any person requesting consideration for a reduction of the amount of the sewage collection, transportation and treatment charges because of water not entering the public sanitary sewage system shall make written application to the Township for such consideration, giving the name of such person, his address and setting forth supporting data fully describing other sources of water, if any, as well as the disposition of water alleged not to be entering the public sanitary sewage system. The application shall be accompanied by a sketch to approximate scale showing the plan of the property, the water distribution system, sewer layout, existing meters, and proposed meters in the scheme to determine the quantity of flow entering, or not entering, the public sanitary sewage system. The cost of furnishing, installing and maintaining any meters other than those utilized to measure water purchased from the Water Authority shall be borne by the applicant. The type, size, location, arrangement and maintenance of such meters shall be subject to the approval of the Township and the Water Authority.

Section 807. Vacant Structures. A reduced sewer rental fee equal to 100% of the minimum quarterly charge plus 25% of the rate per 1,000 gallons, based upon 9,000 gallon of water per quarter used, shall be available to owners of vacant structures which are connected to the sewer system. To be eligible for the reduced quarterly sewer rental fee, a property owner must complete the Vacant Structure Agreement and must comply with the following requirements:

a. The reduced quarterly sewer rental fee is only available for structures that will be vacant for at least three (3) months.

b. The potable water service for the structure must be shut off.

Upon receipt of the Vacant Structure Agreement, the Township will verify the vacancy, and will then at the beginning of the following quarter, start billing at the reduced rate. The property owner is responsible for notifying the Township when the vacant structure becomes occupied. The Township will then bill the property owner at the current sewer rental fee per EDU as provided herein. The Township reserves the right to inspect the structure, at any time, to verify that the structure is vacant.

ARTICLE IX
SURCHARGE FOR CERTAIN COMPATIBLE CONSTITUENTS

Section 901. For waste constituents compatible to the public sanitary sewage system and for which the sewage treatment works is to provide specific removal capability, the industrial waste shall be subject to surcharge for such constituent concentration in excess of the average influent value upon which the plant design is based. Those constituents for which surcharges are applicable are BOD_5, suspended solids, ammonia nitrogen, phosphorus, ABS, chlorine demand, and oil, greases and fats. The surcharges shall be in addition to the regular sewage collection, transportation and treatment charges set forth in the Township's Sewer Rate Resolution, and shall be payable as therein provided.

Section 902. The concentration of the applicable surcharge constituents of any industrial waste shall be determined not less than once per year as the Township shall determine, from samples taken either at the manhole or manholes or metering chamber referred to in Article V hereof, or at any other sampling point mutually agreed upon by the Township and the producer of such waste. The frequency and duration of the sampling period shall be such as, in the opinion of the Township, will permit a reasonably reliable determination of the average composition of such waste, exclusive of storm water runoff. Samples shall be collected or their collection supervised by a representative of the Township and shall be in proportion to the flow of waste, exclusive of storm water runoff, and composited for analysis in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater," cited above. Except as hereinafter provided, the strength of the waste so found by analysis shall be used for establishing the surcharge or surcharges. However, the Township may, if it so elects, accept the results of routine sampling and analyses by the producer of such wastes in lieu of making its own samplings and analyses. The specific requirements for monitoring the waste flow for surcharge constituent strength will be determined at the time of the industrial waste permit application referred to in Article V and will be made a condition of this permit.

Section 903. All non-residential units that discharge excess strength sewage waste into the Sanitary Sewers shall be subject to the following surcharges:

A. Any discharge having an average 5-day biochemical oxygen demand (BOD_5) greater than 300 parts per million (PPM) shall pay a surcharge equal to 1/10 of 1 percent of the quarterly charges as computed on the quarterly bill for each ppm by which that BOD_5 exceeds the 300 ppm BOD_5. The strength shall be determined no less than once each year by sampling and analysis of the discharge for two (2) consecutive days during a period of normal operation. All analysis shall be made in accordance with procedures outlined in the latest edition of "Standard Methods for Examination of Water and Wastewater," cited above.

B. Any discharge having a suspended solids content greater than 275 ppm shall pay a surcharge equal to 1/10 of 1 percent of the quarterly charges for each ppm by which the suspended solids exceed the 275 ppm limit. Sampling and analysis will be conducted as described in Section 903(A).

C. Any discharge having a phosphorus concentration in excess of 10 milligrams per liter; an ammonia nitrogen concentration in excess of 20 milligrams per liter; a concentration of oil, grease or fat in excess of 100 milligrams per liter; or a concentration of ABS in excess of 10 milligrams per liter shall pay a surcharge equal to 1/10 of 1 percent of the quarterly charge for each milligram per liter that exceeds the above stated limits for each parameter. Sampling an analysis will be conducted as described in Section 903(A).

D. Any discharge having a chlorine demand in excess of 15 milligrams per liter shall pay a surcharge of 1/2 of 1 percent of the quarterly charge for each milligram per liter that exceeds the above stated limits for each parameter. Sampling an analysis will be conducted as described in Section 903(A).

ARTICLE X
BILLING AND COLLECTION

Section 1001. Bills and notices relating to the sewage collection, transportation and treatment charges and surcharges will be mailed or delivered to the property owner's last address, or where proper arrangements have been made with the Township, to the user's last address, as shown on the billing books of the Township.

ARTICLE XI
CONNECTIONS TO THE PUBLIC SANITARY SEWAGE SYSTEM

Section 1101. Application for connection to the public sanitary sewage system shall be made to the Township upon the permit form to be formulated and furnished by the Township.

Section 1102. All information requested on said form shall be furnished by the applicant, including the character and use of each structure located upon the property.

Section 1103. Any required service connection and inspection fees shall be paid at the time of making application for permission to make a connection.

Section 1104. No work shall commence before the payment of any aforementioned service connection and inspection fees and issuance of the aforementioned connection permit. The Township may refuse service to any customer failing to satisfy the above requirements.

Section 1105. Sewage collection, transportation, and treatment charges, and connection fees will be charged for each building unit connected or to be connected to the sewer system. Unless written permission is obtained from the Township, separate connections, and corresponding service connection and inspection fees, will be required for each Equivalent Domestic Unit (EDU), whether constructed as a separate building or detached unit or as one of a pair or row, but a single connection with payment of the service connection and inspection fees for the appropriate number of actual EDU's served will be permitted to serve a school, factory, apartment house or other permanent multiple unit structure whose individual apartments or units may not be subject to separate ownership. The Township, however, does not assume any obligation or responsibility for damages caused by or resulting from any permitted single connection for multiple units.

Section 1106. Connections to sanitary sewers shall be completed within sixty (60) calendar days after receipt of proper notice by the Township. If the owner or owners of the property fail to do so, the Township will install the connection and file a lien against the property for all costs, including connection fees. For new and proposed buildings, the connection permit shall expire one year after the date of issuance. The permit may be renewed, prior to expiration, for another period of one year upon payment of any fees. Fees paid for a connection permit that is allowed to expire shall be forfeited.

Section 1107. All connections to the sanitary sewers shall be subject to certain restrictions as to unacceptable sanitary sewage which are set forth herein in Article VI.

Section 1108. The Inspector, designated by the Township, shall be given at least 24 hours notice before any connection is made to the system so that the Inspector can be present to inspect and approve the work of building the sewer and connection. The Inspector shall signify his approval to the connection by endorsing his name and the date of approval on the aforementioned connection permit in the possession of the permittee. The Inspector shall be permitted to enter upon all properties receiving sewer service for the purpose of inspection, observation, measurement, sampling and testing; such entries to be made during reasonable daylight hours with prior notification to the customer.

Section 1109. At the time of inspection of the connection, the owner or owners of properties shall permit the Inspector full and complete access to all sanitary and drainage arrangements and facilities in each building and in and about all parts of the property. No building sewer line shall be covered over, or in any manner concealed, until after it is inspected and approved by said Inspector.

Section 1110. It is the intention of these Rules and Regulations that the entire connection be inspected at one time; however, if the property owner feels that special conditions warrant more than one inspection, he may request the same subject to such additional inspection fees as the Township shall determine.

Section 1111. All pipe installed shall be either:

A. Polyvinyl chloride (PVC) sewer pipe (solid core), SDR-35, ASTM 3034, bell-and-spigot joints with rubber gaskets. *Cellular core pipe shall not be used.*

B. Polyvinyl chloride (PVC) sewer pipe (solid core), Schedule 40, with gasketed bell-and-spigot or solvent-welded joints, conforming to ASTM D1785, D2665, or D2672. *Cellular core pipe shall not be used.*

C. Other pipe materials must be approved by the Township, in writing, before they may be used. Where different pipe materials are joined, a watertight rubber coupling or doughnut connection must be used. In no case will concrete encasemet be permitted in lieu of such proper transition fittings.

All pipe installed shall be at least six (6) inches inside diameter. Four (4) inch inside diameter pipe may be used if sufficient slope is available. Six (6) inch inside diameter pipe must be utilized to serve all duplex residential structures requesting a single service connection. Each section of pipe shall be stamped with the manufacturer's certification.

Section 1112. All sewer pipe shall be installed in strict accordance with the manufacturer's recommendations. Where rock trench foundation exists, a 6" gravel cradle shall be provided under the pipe. Notwithstanding the above, all sewer pipe shall be installed on top of a 4" minimum layer of compacted Size 57 stone. Additional stone shall be placed and tamped around the pipe to a minimum depth of 4" above the crown of the pipe.

Section 1113. All pipe shall be installed with the following minimum slope:

4" diameter	¼" per Foot (2%)
6" diameter	1/8" per Foot (1%)
8" diameter	1/20" per Foot (0.4%)

All pipe shall have a minimum cover of four (4') feet unless otherwise approved. All pipe shall be laid to an even grade and straight alignment to the public sanitary sewer. All pipe shall be laid with full and even bearing and no block supports will be allowed. Bell holes shall be dug to allow sufficient space to properly make each joint. Backfill shall be tamped uniformly around the pipe. All work shall be done in a workmanlike manner and shall provide a durable installation.

Section 1114. The use of outside traps with vent is required. Traps must be installed as shown on the applicable Standard Detail. All vents must extend to at least six (6) inches above the finished ground surface and must have a commercially manufactured vent cap to keep out leaves, debris, and animals. Trap vents must be laterally supported with properly compacted backfill and must not be installed in driveways or other areas where they would be subject to damage from vehicular traffic and/or used as an area drain for surface water. Establishments which discharge grease or oil must install a grease trap approved by the Township as provided in Article VII.

Section 1115. The use of cleanouts is required. Cleanouts must be installed as shown on the applicable Standard Detail. One (1) cleanout with solid cap must be installed immediately downstream of the trap with vent. Additional cleanouts are required every 50' for 4" diameter pipe and every 100' for 6" diameter pipe. Cleanouts must be laterally supported with properly

compacted backfill and must not be installed in driveways or other areas where they would be subject to damage from vehicular traffic and/or used as an area drain for surface water.

Section 1116. The use of an inspection port is required. The inspection port shall consist of a 6" diameter vertical riser with 6" diameter solid screw-on cap. The inspection port shall be installed by the property owner at the property line or the right-of-way line at the point where the sanitary sewer lateral connects to the public sewer system. The inspection port must be laterally supported with properly compacted backfill and must not be installed in driveways or other areas where it would be subject to damage from vehicular traffic and/or used as an area drain for surface water.

Section 1117. Commercial and industrial installations must also comply with all local construction regulations.

Section 1118. Maintenance and repair of all building sewers shall be the responsibility of the property owner.

Section 1119. Old building sewers may not be used to connect existing buildings to the sewer system unless the property owner can verify that the pipe conforms to Section 1113 and can demonstrate by the use of tests, which are acceptable to the Township, that the existing sewer is in an acceptable condition. Even if the existing sewer is found to be acceptable, a trap and vent as shown on the Standard Detail must be installed.

No more than five (5) feet of the existing lateral sewer line, measured from the foundation wall, will be permitted to remain.

If the existing building sewer is rejected, the owner of the property shall install a new building sewer to comply with these Rules and Regulations.

Section 1120. In buildings that are too low to permit gravity flow to the public sewer, the property owner shall install a pump, approved by the Township, to convey the building's sewage to the public sewer system. Purchase, installation, operation, and maintenance of the pump is the responsibility of the property owner and must be conducted in accordance with the Township's Rules and Regulations.

Section 1121. In buildings that are to be razed or in buildings that the sanitary sewage service is to be disconnected, the sanitary sewer connection shall be uncovered and properly capped/closed *at the property line or edge of the right-of-way*. Proper closure/capping of the sanitary sewer connection is the responsibility of the property owner and must be conducted in accordance with the Township's Rules and Regulations and the applicable Standard Detail. The Inspector, designated by the Township, shall inspect and approve the work of properly closing/capping the sanitary sewer connection.

ARTICLE XII
PROPOSED EXTENSIONS OF SYSTEM BY DEVELOPERS

Section 1201. Five (5) copies of plans for proposed extensions shall be submitted to the Township on 24"x36" sheets showing plan views to a scale no smaller than 1"=50' and profiles to a scale of 1"=10' vertically and no smaller than 1"=50' horizontally, a north point, a title block, date and the name of the engineer or surveyor and imprint of his registration seal. Sheet sizes and scales may differ from the aforementioned, with prior written approval of the Township.

Section 1202. All sewers shall be designed in accordance with the Domestic Wastewater Facilities Manual of the Pennsylvania Department of Environmental Protection, Bureau of Water Quality Management, latest revision, and these Rules and Regulations.

Section 1203. Construction of sewers and appurtenances shall not be permitted until the proper State and Local Permits have been obtained. The total cost of permitting shall be borne entirely by the Developer.

Section 1204. Prior to final acceptance of any sewer extensions by the Township, it shall be necessary for the Developer to furnish to the Township "Record Drawings" showing the angle and distance between manholes, the top elevation of each manhole, the invert elevation of every pipe entering and exiting each manhole, GPS coordinates (northing, easting, and elevation) of the center of each manhole, and the exact location of all house sewer connections relative to the nearest manhole both downstream and upstream. Record Drawings shall be provided in hardcopy format and digitally in AutoCAD or Microstation format as requested by Hopewell Township and the Hopewell Township Engineer.

Section 1205. Easements shall be recorded in the name of Hopewell Township for all sewers to be constructed outside of dedicated street rights-of-way.

Section 1206. Requirements for pipe and installation procedures shall be as detailed in the Specifications for Installation of Sanitary Sewers and Appurtenances, and any amendments thereto, which can be obtained from the Township. These specifications must be strictly followed.

Section 1207. The Developer shall file all necessary connection Permits and pay the applicable service connection and inspection fees for each house or building to the Township which shall become due and payable prior to inspection and approval by the Inspector for each representative house service sewer. All applicable fees are set forth in the Township's Sewer Rate Resolution.

Section 1208. The Developer shall also reimburse the Township in full for all costs of legal reviews, engineering reviews, and inspection of construction of all sanitary sewers, pump stations, and appurtenances. The amount and type of inspection required shall be determined by the Township during construction.

Section 1209. No sewer extensions constructed by a Developer shall be approved for use and acceptance by the Township until said sewers are formally approved by the Township, all building service connection and inspection fees have been paid for each building connected to the system, and the Township has been reimbursed in full for all legal, engineering, and inspection costs incurred during construction, testing and approval and all permits acquired and all related costs paid in full.

Section 1210. All such facilities shall be conveyed at no cost to the Township unless the applicant has the franchise right to provide sewerage service and proposes to operate such facilities in accordance with the requirements of the Public Utility Commission.

Section 1211. Responsibility for Cost - the entire cost of all work shall be borne by the applicant except, if approved, for the difference in the cost of facilities required for the proposed use and the cost of more adequate facilities which will permit additional service for other areas.

Section 1212. The applicant shall deposit with the Township, in advance, the estimated cost of each month's work; the amount will be adjusted at the end of each month, in connection with resident engineering, legal and/or inspection services.

Section 1213. Agreement - the applicant shall enter into an agreement with the Township, prior to the execution of any work. The agreement will contain such pertinent conditions as the following:

A. The cost of all work to be borne by the owner, except as otherwise indicated.

B. The highways, streets, alleys, and lanes in which sewer extensions and pump stations are to be located must be dedicated to public use; the lines and grades thereof established, and the rough grading completed.

C. The ownership title to all installations to be conveyed to and vested in the Township, except as otherwise indicated.

D. The Township shall have the right to make further extensions beyond or laterally from the main extensions, and to enlarge or improve sewage treatment facilities.

Section 1214. General Plans - the applicant shall submit a general plan covering the entire area of the municipality or sewer district in the case of a new sewer system, and of any extension or modification of any sewer system, unless such a general plan of the entire area of the municipality has already been submitted.

A. These plans must show the boundary line of the municipality or sewer district to be provided sewers, all existing and proposed streets, watercourses, and other salient topographic features; contour lines with intervals of not less than five (5) feet, and the surface elevations at street intersections and at points where changes of slope occur. The plans must show clearly the locations of all existing sanitary and combined sewers and all other utilities.

B. In all cases the plans must clearly show the size of the sewer, the character of the sewer material, the slope, the elevation at the location of all points of change of slope, the direction of flow, the location of all manholes, flushing manholes, inverted siphons, pumping stations, the elevations of all stream beds, the direction of stream flow, the high and low water elevations of all water surfaces, and such other data.

Section 1215. Detailed Plans - the applicant shall submit detailed plans accompanying the general plans.

A. Profiles shall be prepared with the horizontal scale at least as large as the scale of the corresponding plans, the vertical scale not smaller than 10 feet to 1 inch; the scales are to be indicated on the plans. The profiles shall indicate all the applicable details as set forth relative to the general plans.

B. Detailed plans shall include plans of all sewers and regular and special sewer appurtenances, pumping stations, structures of all types and such other features.

Section 1216. Report - the application shall be accompanied by an engineer's report giving a full description of the proposed system and setting forth the basis of design, prepared in accordance with the Pennsylvania Department of Environmental Protection requirements. This report may be in the form of a "Module" as submitted to the Pennsylvania Department of Environmental Protection.

A. The report must include a statement and description of the extent of area which it is proposed to include within the system at the present time and in the future, the estimated per capita rates or volume of sewage to be provided for, the general character of the sewage and the proportion and nature of any industrial wastes, and such other data and information.

B. Industrial Waste Report - All applications for service, regardless of location of the premises, where industrial wastes are involved must be accompanied by a detailed report setting forth the quantities and character of the wastes, the proposed rates of discharge, and such other facts as required.

Section 1217. Maintenance Bond Requirements - prior to acceptance of any portion of any pump station, sewer line or lines from a developer, the developer must provide the Township with a maintenance bond supplied by a bonding company licensed to do business within the Commonwealth of Pennsylvania wherein the bonding company as surety will be firmly bound to Hopewell Township to remedy, without cost to the Township, any defect which may develop in the pump station or sewer line during a period of eighteen (18) months from the date of acceptance of the pump station or sewer lines, including the work and material utilized by the developer in installing the pump station or sewer lines that the Township will accept. The maintenance bond must guarantee that any defect caused by defective or inferior material or workmanship will be remedied without cost to Hopewell Township during a period of eighteen (18) months from the date of acceptance of the pump station or sewer lines.

The maintenance bond shall be in the amount of fifteen percent (15%) of the actual cost of installation of the pump station and sewer lines to be accepted by the Township. The cost of installation is to be determined by the Township Engineer, and the developer must submit to the Township all reasonable documentation requested by the Township or its Engineer so as to allow the Township to set the amount of the bond.

No connection may be made into the sewer lines and no sewer service connection permits will be issued by the Township until the Township has accepted the line or any portion of the lines constructed by a developer.

The Township's acceptance shall be in writing and delivered to the developer indicating the exact date of acceptance. No acceptance of the lines will be performed until all work is performed in compete satisfaction to the Township's engineers and the maintenance bond is posted with the Township.

Section 1218. The Developer shall not commence work until he has obtained all insurance required under this paragraph and such insurance has been reviewed and approved by the Township, and the developer shall not allow any subcontractor to commence work on the project until all similar insurance required of said subcontractor has been so obtained and approved by the Township and a Certificate of Insurance has been approved and provided to the Township. Said insurance cannot be cancelled during the term of said work and the

contractor and developer must both notify the Township of the completion of said work before final cancellation of the enumerated insurances.

Worker's Compensation	Statutory Limits
Comprehensive Liability	Minimum Limits
Bodily Injury	$5,000,000/$5,000,000
Personal Property	$5,000,000/$5,000,000

Hopewell Township and its agents, and the Township Engineer shall be named as additional insured parties on all policies.

Section 1219. Performance Bond Requirements:

A. If any line or any part thereof is to provide service to a parcel of property that is part of a subdivision, or a subdivision plan, the developer must cause to be filed and posted with Hopewell Township, an initial deposit as determined by Hopewell Township to guarantee that the Township will be reimbursed for all costs of engineering fees, inspection of construction, and/or legal expenses incurred in review and/or right-of-way acquisition for the proposed extension of the system by the developer.

The developer must also cause to be posted with Hopewell Township, prior to recording of any subdivision or subdivision plan served by the proposed extension, a performance bond in the amount of 110%, of the Engineer's estimate of the cost of construction of all pump stations, interceptors, and/or internal lines that will serve the subdivision.

The developer acknowledges that the Laws of Hopewell Township require the developer cause sanitary sewers to be constructed and installed prior to the approval of a plat.

The developer may elect in writing, with notice to Hopewell Township, to file financial security, in a form acceptable to the Township, in accordance with applicable Laws and the subdivision and land development ordinance of Hopewell Township and of Beaver County. Any financial security filed in accordance with applicable Laws must name Hopewell Township as a named oblige.

ARTICLE XIII
DELINQUENCIES, VIOLATIONS, AND REMEDIES

Section 1301. Each sewage collection, transportation and treatment charge, surcharge and penalty imposed by the Sewer Rate Resolution of the Township shall be a debt due the Township and shall be a lien on the property served, and if not paid within the period prescribed in the Sewer Rate Resolution after the date of the bill shall be deemed delinquent. In such an event, the Township shall proceed to file a lien in the office of the Prothonotary of Beaver County and collect the same in the manner provided by law for the filing and collection of municipal claims. In the event of failure to pay the sewage collection, transportation and treatment charge or surcharge or penalty after they become delinquent, the Township may also authorize the appropriate personnel to shut off water service to said property, or to remove or close the sewer connection and to take such steps as may be necessary to accomplish such shut off or removal or closing. The expense of such shut off or removal or closing, as well as the expense of restoring any such service, shall likewise be a debt due the Township and a lien on the property served and may be filed and collected as hereinabove provided. Such sewage service shall not be restored until all sewage collection, transportation and treatment charges, surcharges and penalties, including the expense of removal, closing and restoration, legal fees incurred by Hopewell Township, and lien filing fees incurred by Hopewell Township, shall have been paid or adequate provisions for their payment shall have been made.

Section 1302. Any person found to be violating any provision of these Rules and Regulations shall be served by the Township with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations.

Section 1303. Any person who shall continue any violation beyond the time limit provided for in Section 1302 shall be guilty of a misdemeanor, and on conviction thereof shall be fined in an amount not to exceed $7,500 per violation plus remedial costs incurred by Hopewell Township. Each day in which any such violation shall continue shall be deemed a separate offense.

Section 1304. Any person violating any of the provisions of these Rules and Regulations shall become liable to the Township for any expense, loss or damage occasioned the Township by reason of such violation.

ARTICLE XIV
VALIDITY

Section 1401. All ordinances and resolutions or parts of ordinances and resolutions which are in conflict with any Article or Section of this Ordinance shall be deemed to be repealed to the extent of such conflict. Further, the invalidity of any section, clause, sentence, or provision of this Ordinance shall not affect the validity of any other part of this Ordinance which can be given effect without such invalid parts or parts, and if any one or more of the provisions of this Ordinance shall for any reasons be held to be illegal or invalid or otherwise contrary to law, then such provisions shall be null and void and shall be deemed separable from the remaining provisions hereof, but shall in no way otherwise affect the validity of this Ordinance.

Section 1402. This Ordinance is effective immediately upon its adoption by the Hopewell Township Board of Commissioners.

ORDAINED AND ENACTED into law by the Board of Commissioners of Hopewell Township, Beaver County, Pennsylvania.

ATTEST:

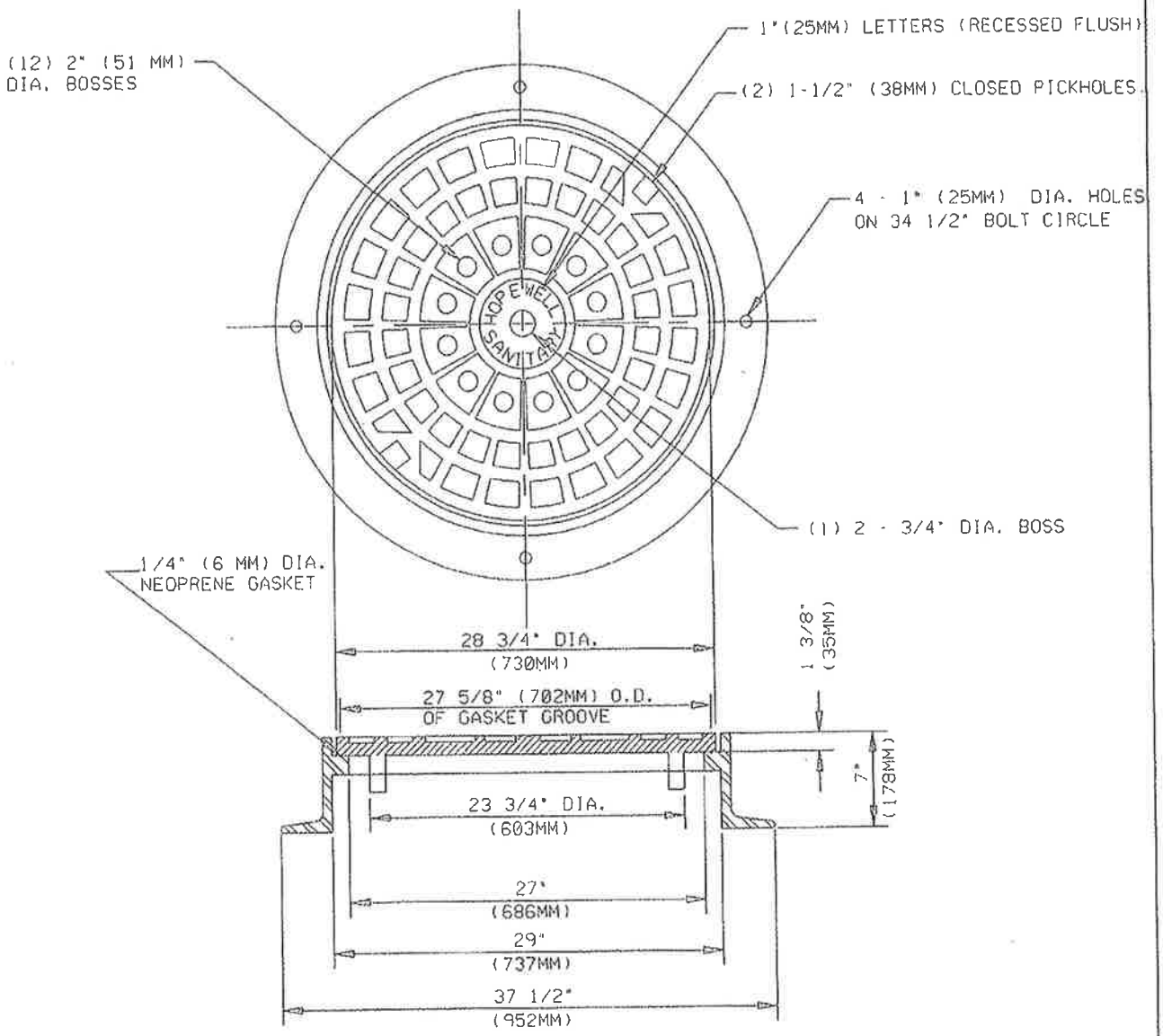
Andy Brunette
Township Manager/Controller

Richard Bufalini, President
Hopewell Township Board of Commissioners

(SEAL)

ARTICLE XV
STANDARD DETAILS

SD-1	Standard Manhole Frame and Cover
SD-2	Watertight Manhole Frame and Cover
SD-3	48" Reinforced Concrete Pre-Cast Manhole
SD-4	Drop Manhole Connection Detail
SD-5	Interior Drop Manhole Connection Detail
SD-6	Standard Trench Excavation Detail "A" – Gravity Sanitary Sewer
SD-7	Standard Trench Excavation Detail "B" – Gravity Sanitary Sewer
SD-8	Standard Trench Excavation Detail "C" – Gravity Sanitary Sewer
SD-9	Standard 6" Sewer Service Connection
SD-10	Sanitary Sewer Lateral Connection
SD-11	Sanitary Sewer Lateral Cap Detail
SD-12	Typical Bore Profile
SD-13	Sewer Casing and Support Details for Boring
SD-14	Concrete Pipe Anchor Detail
SD-15	Concrete Encasement Detail
SD-16	Force Main Thrust Blocking Detail
SD-17	Stream Crossing Detail
SD-18	Rip-Rap Placement and Concrete Encasement Stream Crossing Detail
SD-19	Bailed Straw Barrier Detail
SD-20	Filter Fabric Fence Details
SD-21	Standard Township Lane Replacement Detail
SD-22	Pavement Replacement for Bituminous Parking Areas, Driveways, Berms, and Township Roads
SD-23	Concrete Pavement, Concrete Shoulder, and Driveway Restoration Detail
SD-24	Typical Concrete Sidewalk Replacement Details
SD-25	Stone Driveway Restoration Detail
SD-26	Lawn and Grass Area Restoration Detail



NOTES:

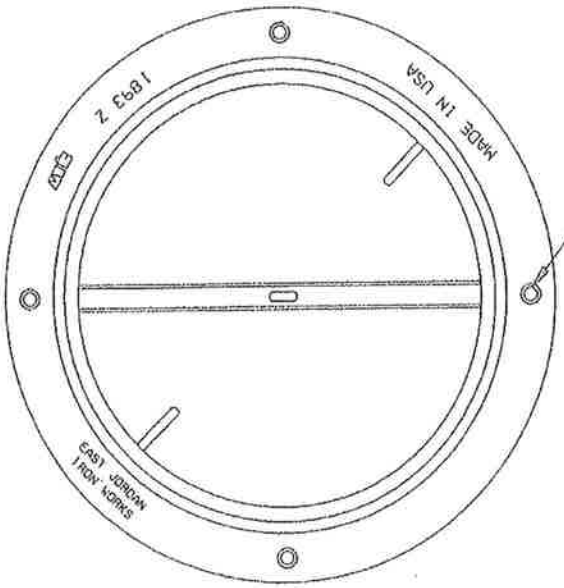
1. MANHOLE FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS PRODUCT NO. 00188943, HEAVY DUTY OR APPROVED EQUAL. LID SHALL HAVE SELF SEALING GASKET.

2. COVER SHALL BE STAMPED AS SHOWN IN PLAN VIEW OR AS OTHERWISE NOTED.

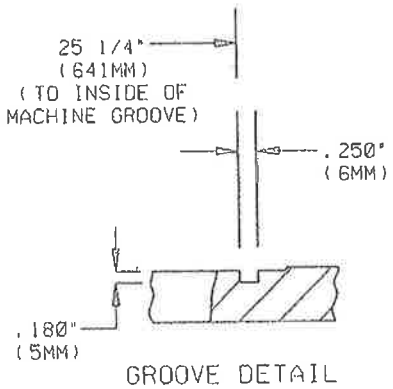
HOPEWELL TOWNSHIP
STANDARD MANHOLE FRAME & COVER
WIDMER ENGINEERING, INC.

FILE NO. HTSD-1

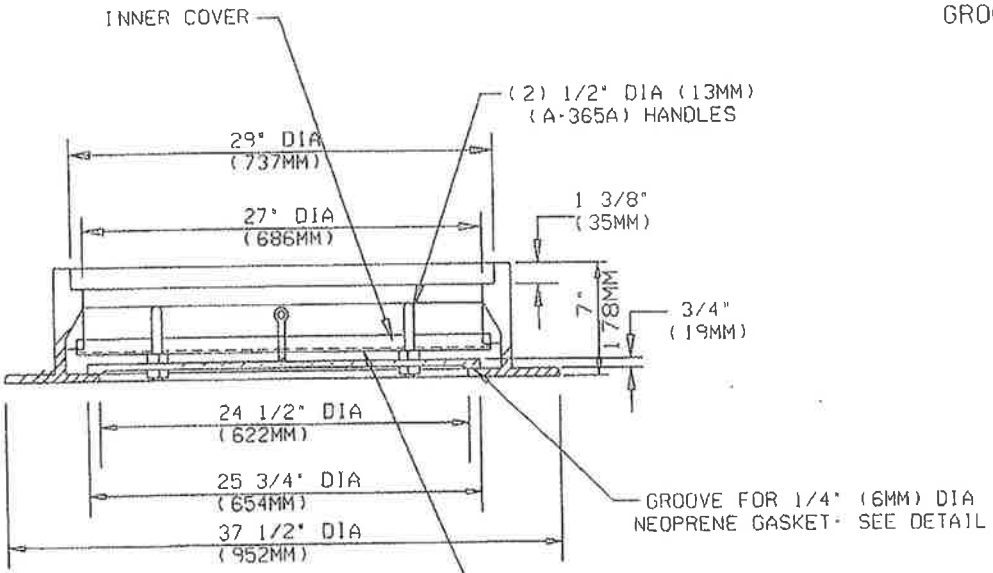
SD-1



(4) 1" (25MM) DIA. HOLES
ON 34 1/2" BOLT CIRCLE



GROOVE DETAIL



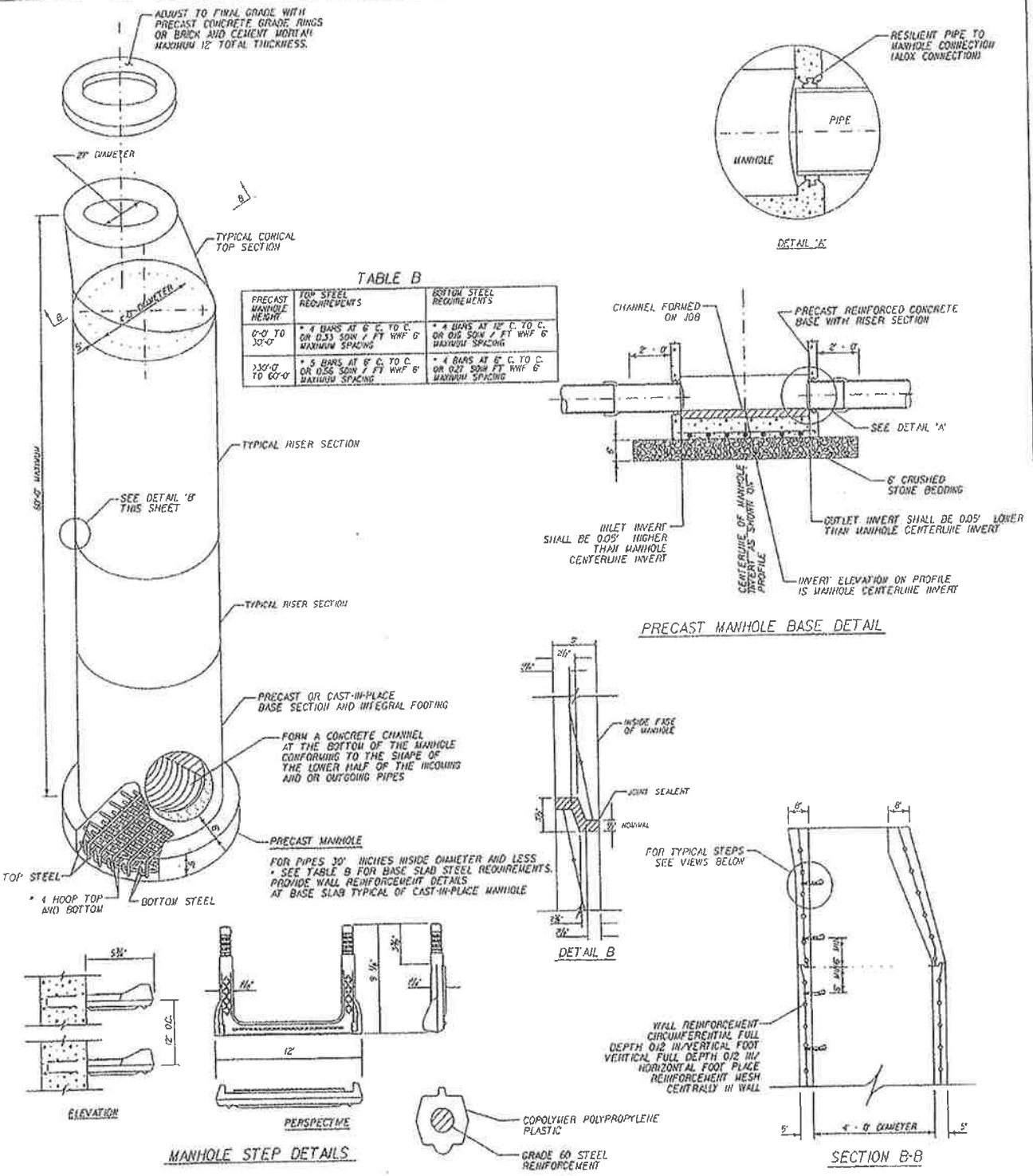
FRAME SECTION

NOTES:
1. MANHOLE FRAME AND COVER SHALL BE EAST JORDAN IRON WORKS PRODUCT NO. 00189300 OR APPROVED EQUAL. LID SHALL HAVE SELF-SEALING GASKET.
2. FROST PROOF UNIT WITH INNER COVER, CROSS BAR AND EYE BOLT.
3. COVER SHALL BE STAMPED AS PER SD-1 DRAWING

HOPEWELL TOWNSHIP
WATERTIGHT MANHOLE FRAME & COVER
WIDMER ENGINEERING, INC.

FILE NO. HTSD_2

SD-2



PRECAST MANHOLE HEIGHT	TOP STEEL REQUIREMENTS	BOTTOM STEEL REQUIREMENTS
0'-0" TO 30'-0"	* 4 BARS AT 6" C. TO C. OR 0.33 SQIN / FT WWF 6" MAXIMUM SPACING	* 4 BARS AT 12" C. TO C. OR 0.15 SQIN / FT WWF 6" MAXIMUM SPACING
>30'-0" TO 60'-0"	* 5 BARS AT 6" C. TO C. OR 0.36 SQIN / FT WWF 6" MAXIMUM SPACING	* 4 BARS AT 6" C. TO C. OR 0.27 SQIN FT WWF 6" MAXIMUM SPACING

NOTES:

1. PAYMENT UNITS FOR MANHOLES SHALL BE MEASURED FROM THE ELEVATION OF THE MANHOLE AT THE LOWEST POINT IN THE CHANNEL TO THE ELEVATION OF THE TOP OF THE FRAME AND COVER.
2. PAYMENT FOR MANHOLES SIX FEET DEEP AND UNDER AND THE FIRST SIX FEET OF MANHOLES OVER SIX FEET DEEP, SHALL BE AT THE UNIT PRICE BID, EACH COMPLETE IN PLACE.
3. PAYMENT FOR DEPTH OVER SIX FEET SHALL BE AT THE PRICE BID, PER VERTICAL FOOT COMPLETE IN PLACE.
4. FINAL GRADE MAY VARY ABOVE OR BELOW ORIGINAL GRADE DUE TO ROAD SURFACING, GRADING, ETC. FINAL GRADE TO BE DETERMINED BY THE ENGINEER.
5. PAYMENT FOR MANHOLE FRAMES AND COVER SHALL BE IN ADDITION TO THE ABOVE, PAYMENT FOR FRAMES AND COVERS SHALL BE AT THE UNIT PRICE BID.
6. ANY MANHOLE WITH INVERT DIFFERENCES 2'-0" OR LESS ARE CONSIDERED 'SPLASH' MANHOLES. CONCRETE FLOW LINES SHALL BE FORMED FROM INVERT IN(S) TO INVERT OUT.

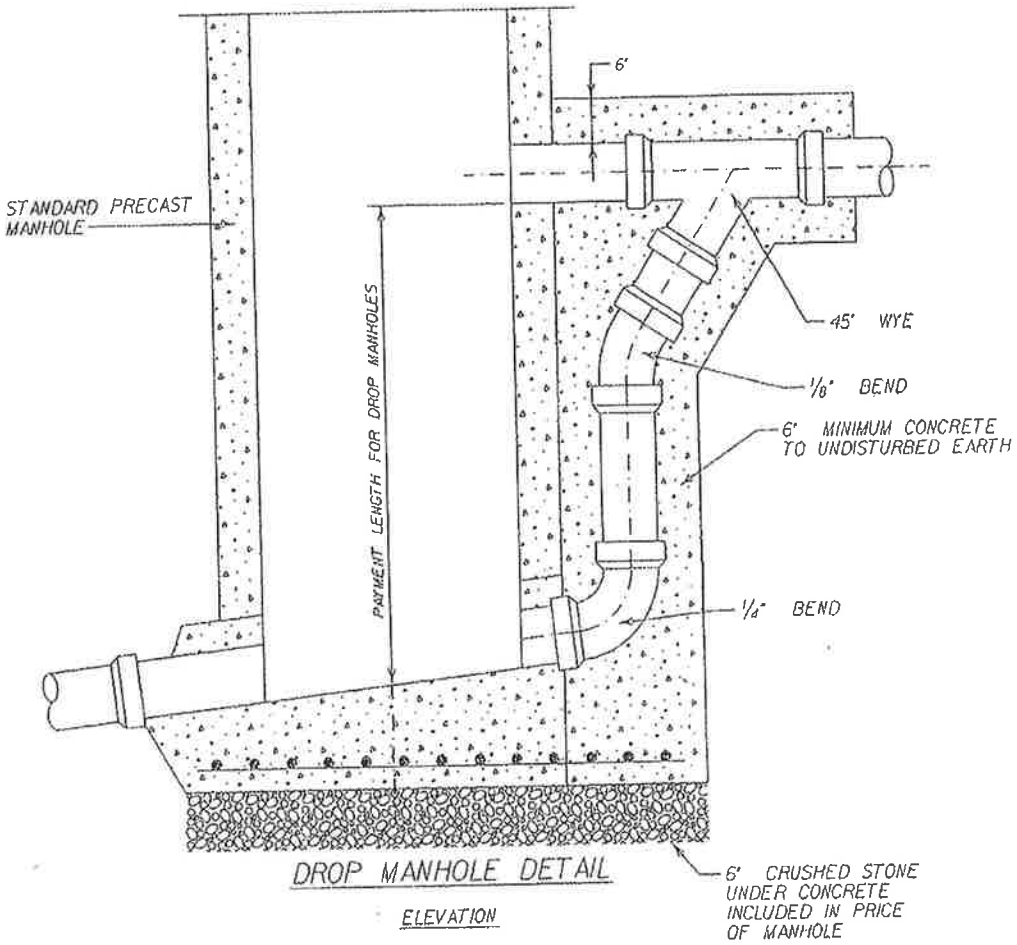
HOPEWELL TOWNSHIP

48" REINFORCED CONCRETE PRE-CAST MANHOLE

WIDMER ENGINEERING, INC.

SD-3

FILE NO. HTSD_3



DROP MANHOLE DETAIL

ELEVATION

NOTES:

1. PAYMENT FOR DROP CONNECTIONS WILL BE MADE IN ADDITION TO PAYMENT FOR THE MANHOLE.
2. PAYMENT FOR MANHOLE DROP CONNECTIONS WILL BE MADE USING TWO BID ITEMS:
   A. BY THE NUMBER OF DROP CONNECTIONS OF EACH SIZE AND TYPE.
   B. BY THE VERTICAL FEET OF DROP FOR EACH SIZE.
3. THE VERTICAL DISTANCE WILL BE MEASURED FROM THE MANHOLE INVERT AT CENTERLINE TO THE INVERT OF THE UPPER INFLUENT PIPE, AS SHOWN ON THE APPROVED GRADE SHEET.
4. A DROP CONNECTION IS REQUIRED FOR ALL SEWER LINES ENTERING A MANHOLE AT AN ELEVATION OF 24" OR MORE ABOVE THE MANHOLE INVERT.

NOTE: PIPE MATERIAL & SIZE SHALL BE EQUAL TO THAT OF THE MAIN LINE SEWER.

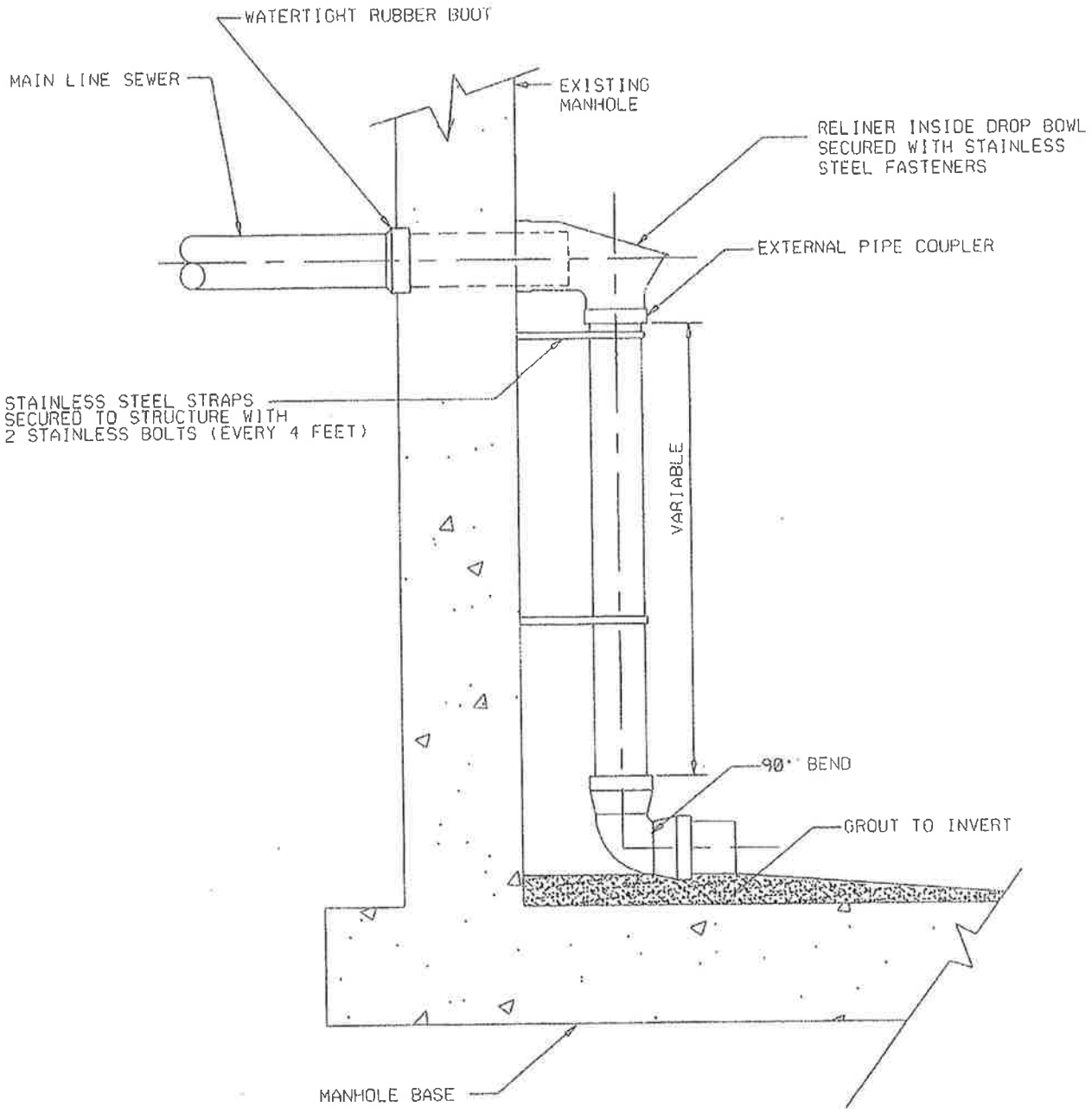
HOPEWELL TOWNSHIP

DROP MANHOLE CONNECTION DETAIL

WIDMER ENGINEERING, INC.

SD-4

FILE NO. HTSD-4



NOTE: 1. PIPE MATERIAL & SIZE SHALL BE EQUAL TO THAT OF THE MAIN LINE SEWER.

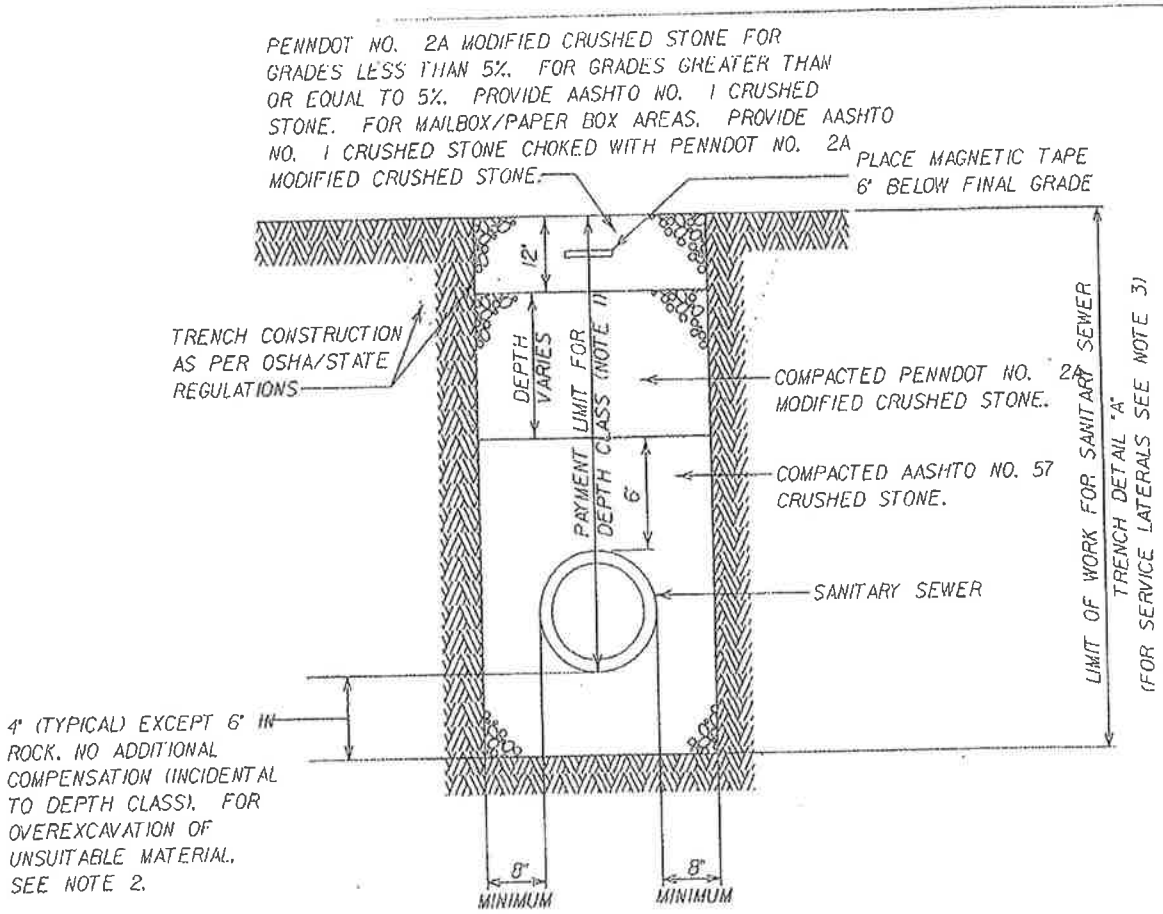
2. INSIDE DROP SYSTEM SHALL BE INSIDE DROP SYSTEM BY RELINER OR APPROVED EQUAL.

HOPEWELL TOWNSHIP

INTERIOR DROP MANHOLE CONNECTION DETAIL

WIDMER ENGINEERING, INC.

FILE NO. HTSD-5



SANITARY SEWER AND SERVICE LATERAL TRENCH DETAIL "A"

1. DEPTH CLASSES: 0 - 6' DEPTH
   6' - 10' DEPTH
   10' - 14' DEPTH
   14' - 18' DEPTH
   18' - 22' DEPTH

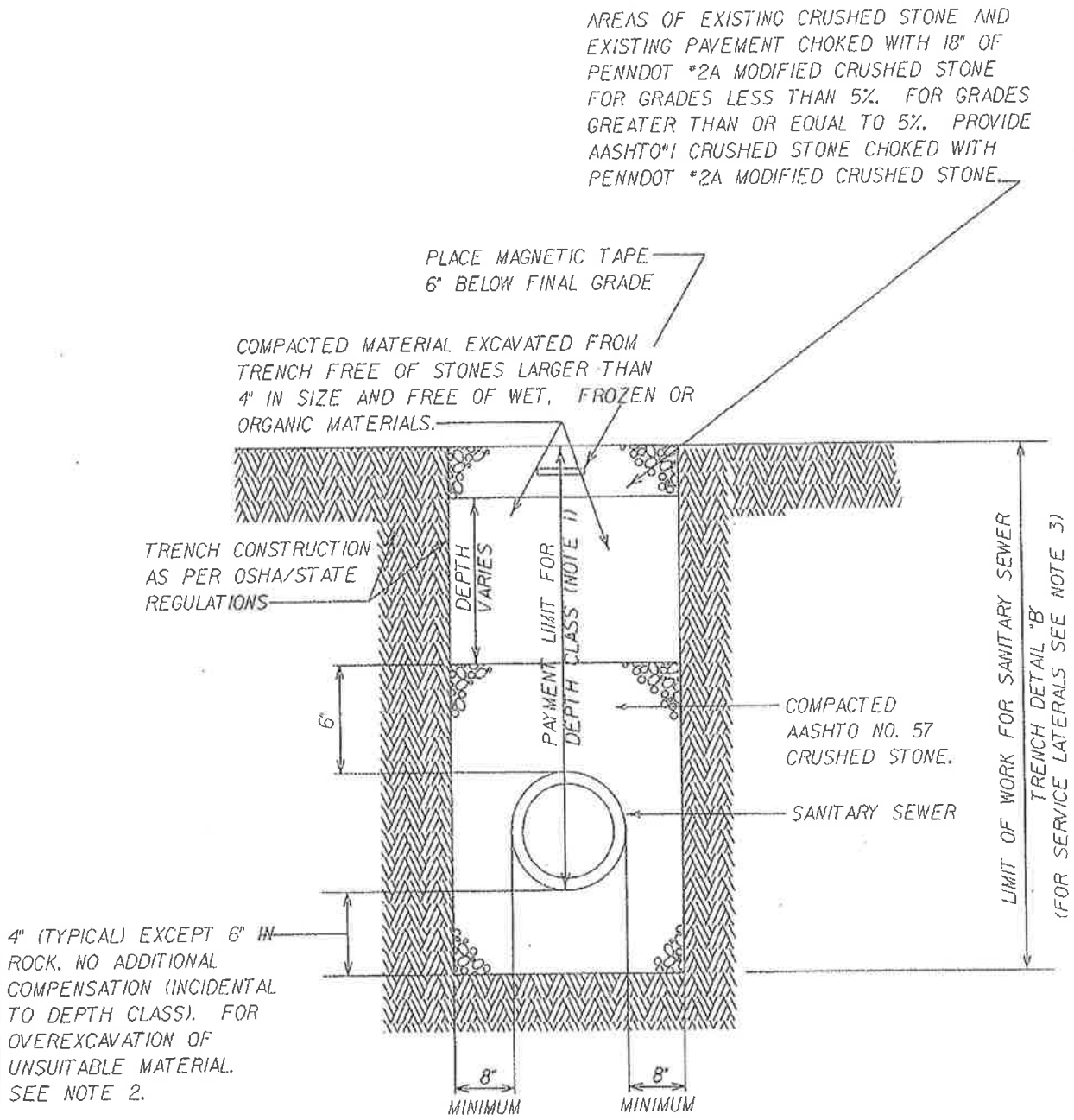
   PAYMENT LIMIT FOR DEPTH CLASS SHALL BE MEASURED BETWEEN THE SANITARY SEWER INVERT AND FINAL GRADE. PAYMENT SHALL BE MADE AT THE UNIT COST PER LINEAR FOOT AT AVERAGE DEPTHS AT 25 FOOT STATIONS BASED ON AN APPROVED GRADE SHEET. IN THE EVENT THAT THE PAYMENT DEPTH IS EQUAL TO THE UPPER LIMIT OF A DEPTH CLASS, PAYMENT SHALL BE MADE AT THE LOWER DEPTH CLASS UNIT PRICE.

2. PAYMENT FOR ADDITIONAL CRUSHED STONE FOR REPLACEMENT IN AREAS OF OVER EXCAVATION OF UNSUITABLE MATERIAL, AS DIRECTED BY THE ENGINEER, SHALL BE MADE AT A UNIT COST PER CUBIC YARD.

3. NO PAYMENT CLASSES FOR SERVICE LATERALS

HOPEWELL TOWNSHIP
STANDARD TRENCH EXCAVATION DETAIL "A" GRAVITY SANITARY SEWER
WIDMER ENGINEERING, INC.

FILE NO. HTSD-6

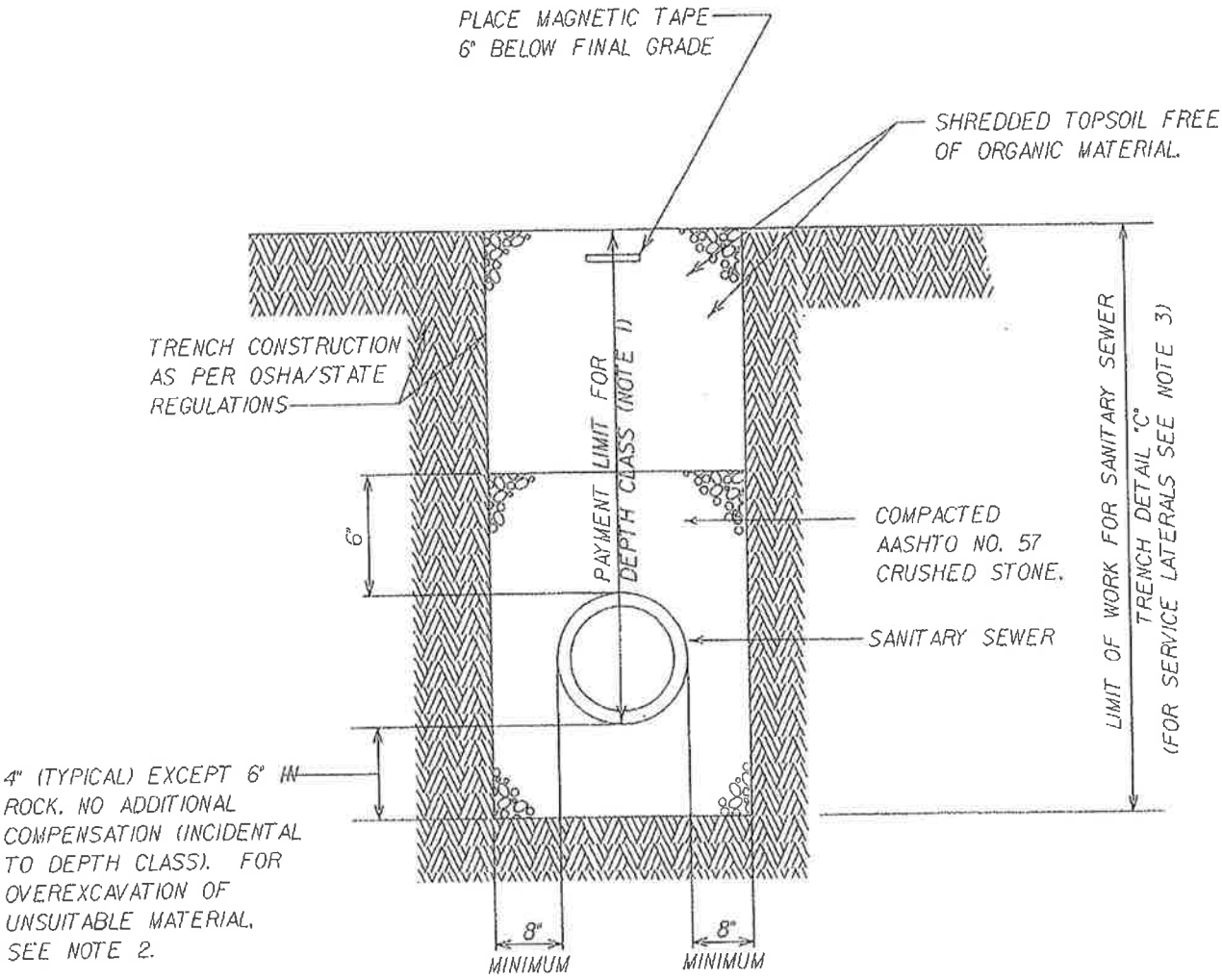


SANITARY SEWER AND SERVICE LATERAL TRENCH DETAIL "B"

HOPEWELL TOWNSHIP
STANDARD TRENCH EXCAVATION DETAIL "B" GRAVITY SANITARY SEWER
WIDMER ENGINEERING, INC.

FILE NO. HTSD_7

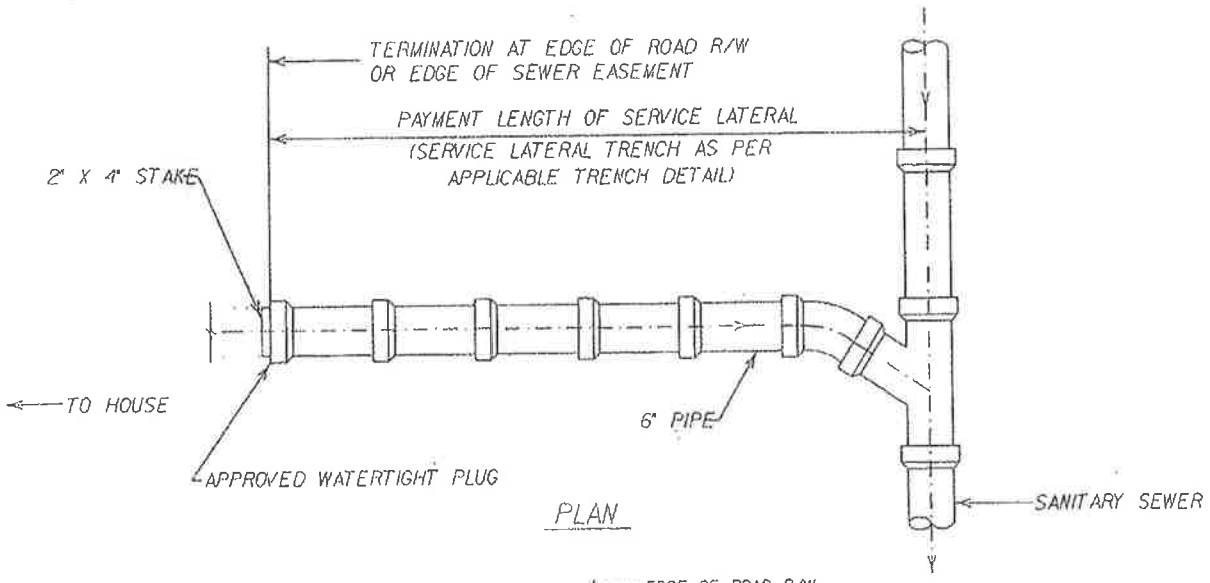
SD-7



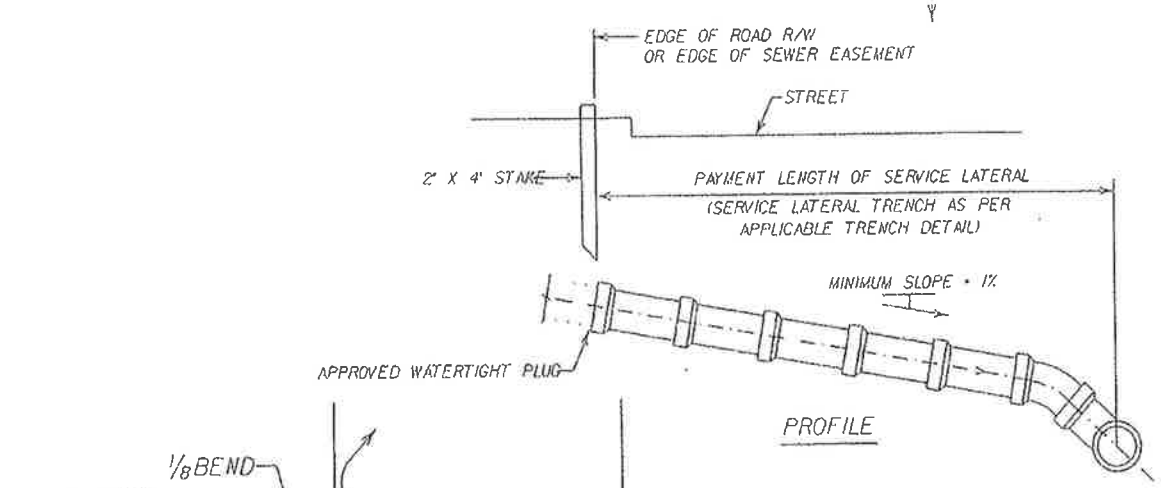
SANITARY SEWER AND SERVICE LATERAL TRENCH DETAIL "C"

HOPEWELL TOWNSHIP
STANDARD TRENCH EXCAVATION DETAIL "C" GRAVITY SANITARY SEWER
WIDMER ENGINEERING, INC.

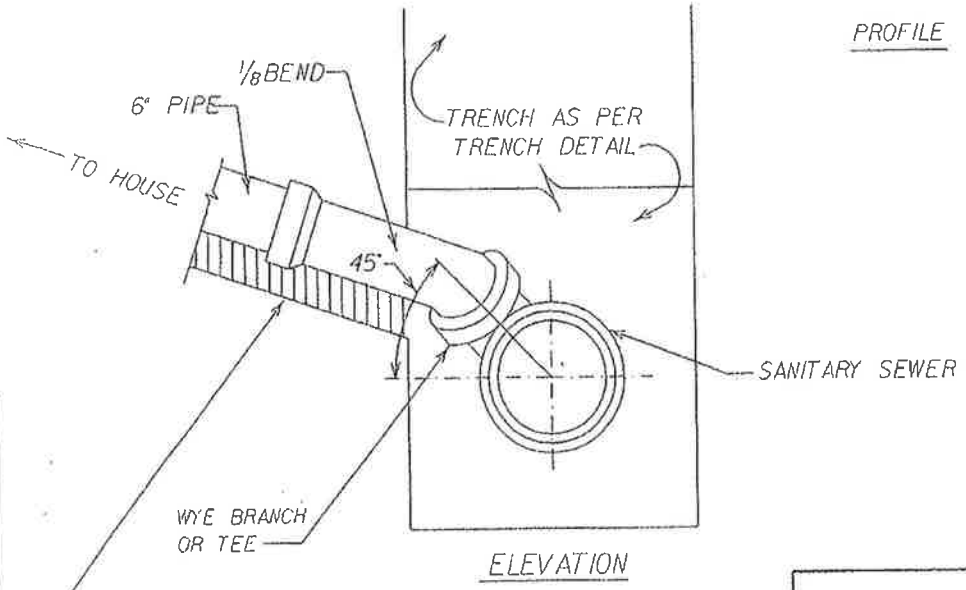
FILE NO. HTSD_8



PLAN



PROFILE



ELEVATION

STANDARD CONNECTION

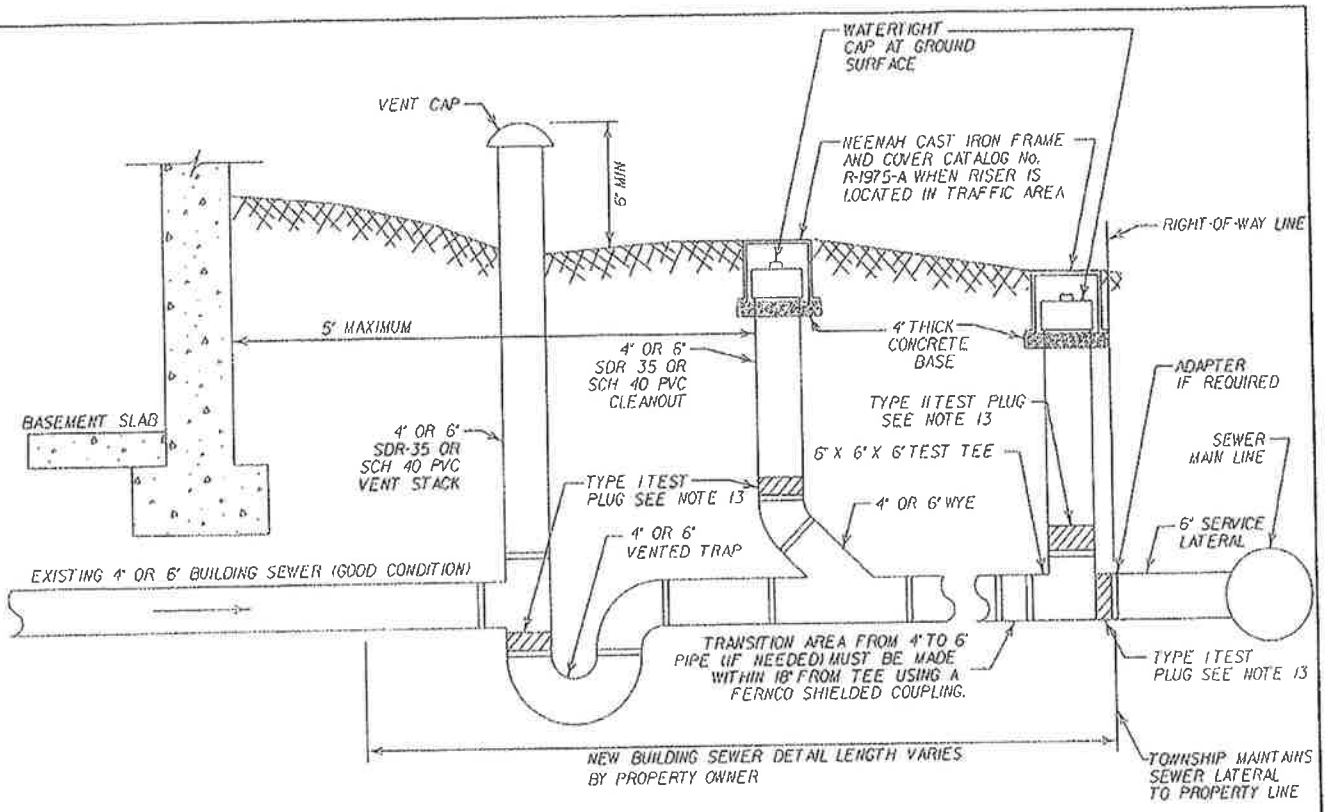
HOPEWELL TOWNSHIP

STANDARD 6" SEWER SERVICE CONNECTION

WIDMER ENGINEERING, INC.

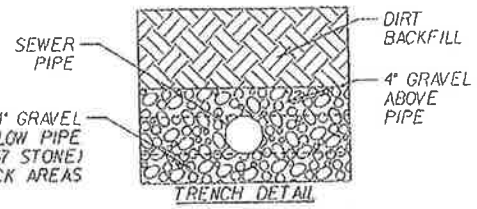
SD-9

FILE NO. HTSD-9



NOTES:

1. THE ENTIRE INSTALLATION MUST BE INSPECTED AND APPROVED BY A HOPEWELL TOWNSHIP REPRESENTATIVE.
2. THE SANITARY SEWER LATERAL CONNECTION MUST BE INSTALLED IN ACCORDANCE WITH THE HOPEWELL TOWNSHIP RULES AND REGULATIONS.
3. BEFORE ANY WORK IS STARTED, AN APPLICATION FOR SANITARY SEWER CONNECTION MUST BE FILED WITH HOPEWELL TOWNSHIP.
4. ALL PIPING AND FITTINGS SHALL BE SDR 35 PVC (SOLID CORE), SCH.40 PVC (SOLID CORE) OR STD.WEIGHT CAST IRON. CELLULAR CORE PIPE SHALL NOT BE USED.
5. ANY LINES INSTALLED IMPROPERLY OR COVERED WITHOUT INSPECTION BY A HOPEWELL TOWNSHIP REPRESENTATIVE MUST BE REMOVED OR UNCOVERED AT THE PROPERTY OWNER'S EXPENSE.
6. ALL COMMERCIAL BUILDINGS SHALL BE MINIMUM OF 6" PIPE OR LARGER. ALL RESIDENTIAL BUILDINGS SHALL HAVE OPTION TO INSTALL 4" OR 6" PIPE.
7. VERTICAL RISERS MAY NOT BE LOCATED IN AREAS SUBJECT TO FLOODING OR SURFACE WATER INFLOW.
8. PERFORATED CAPS ARE NOT PERMITTED.
9. ALL JOINTS SHALL BE WATERTIGHT.
10. MINIMUM SLOPES:
    4" SDR-35 OR SCH 40 PVC 1/4" PER FOOT
    6" SDR-35 OR SCH 40 PVC 1/8" PER FOOT
11. CLEANOUTS ARE REQUIRED EVERY 50' FOR 4" PIPE & EVERY 100' FOR 6" PIPE OR AT ALL DIRECTIONAL CHANGES.
12. NOT MORE THAN 5' OF THE EXISTING SEWER LATERAL MEASURED FROM THE BUILDING FOUNDATION WALL IS PERMITTED TO REMAIN ON RECONSTRUCTED SEWER LATERALS.
13. INSTALL AIR INFLATABLE (TYPE I) DEADEND PLUGS IN FLOW LINE OF TEE, WYE, AND TRAP AS INDICATED. PROVIDE AIR INFLATABLE (TYPE II) TEST PLUG WITH FILL TUBE IN BRANCH OF TEE TO FACILITATE LOW PRESSURE AIR TEST. AIR TEST SHALL BE PASS/FAIL ONLY. TO PASS THE LOW PRESSURE AIR TEST THE SECTION OF THE LINE UNDER TEST MUST MAINTAIN AN INTERNAL PRESSURE OF 5 PSIG FOR 5 MINUTES WITH NO PRESSURE LOSS.
14. THE VENTED TRAP AND CLEANOUT SHALL BE LOCATED WITHIN 5' MAXIMUM OF THE EXTERIOR FOUNDATION WALL.



TRENCH DETAIL

(THE USE OF GRAVEL IN THE TRENCH IS MANDATORY)

TO ALL PROPERTY OWNERS:

IF A PROBLEM OCCURS WITH YOUR SEWER LATERAL AFTER INSTALLATION, THE CONTRACTOR THAT INSTALLED THE SEWER LATERAL SHOULD BE NOTIFIED TO CORRECT THE PROBLEM. IF THE CONTRACTOR IS NOT ABLE TO REMEDY THE PROBLEM, THE TOWNSHIP SHOULD BE NOTIFIED. IF THE TOWNSHIP DETERMINES THAT THE PROBLEM IS NOT THEIR RESPONSIBILITY, THE PROPERTY OWNER WILL BE INVOICED FOR ALL COSTS INCURRED.

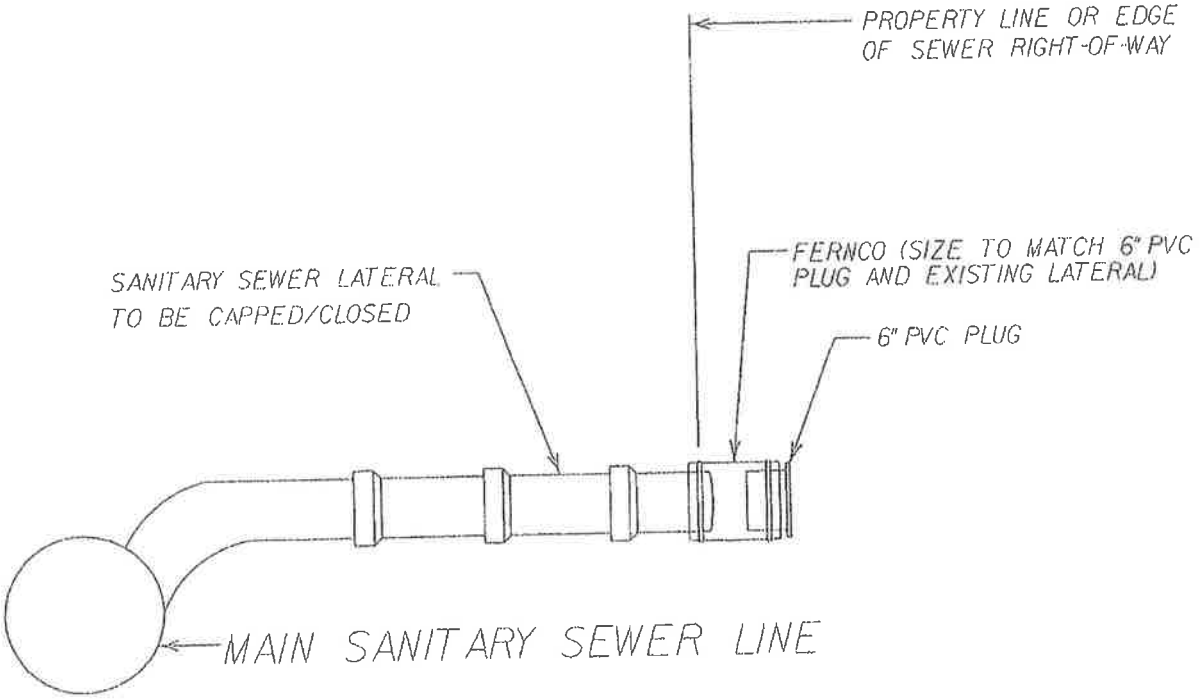
HOPEWELL TOWNSHIP

SANITARY SEWER LATERAL CONNECTION

WIDMER ENGINEERING, INC.

SD-10

FILE NO. HTSD_10



NOTES:

1. THE ENTIRE INSTALLATION MUST BE INSPECTED AND APPROVED BY A HOPEWELL TOWNSHIP REPRESENTATIVE.

2. THE SANITARY SEWER LATERAL SHALL BE CAPPED/CLOSED IN ACCORDANCE WITH THE HOPEWELL TOWNSHIP RULES AND REGULATIONS.

3. ANY WORK INSTALLED IMPROPERLY OR COVERED WITHOUT INSPECTION BY A HOPEWELL TOWNSHIP REPRESENTATIVE MUST BE REMOVED OR UNCOVERED AT THE PROPERTY OWNER'S EXPENSE.

4. SIZE FERNCO TO MATCH EXISTING SEWER LATERAL SIZE AND MATERIAL OF CONSTRUCTION AND 6" PVC PLUG.

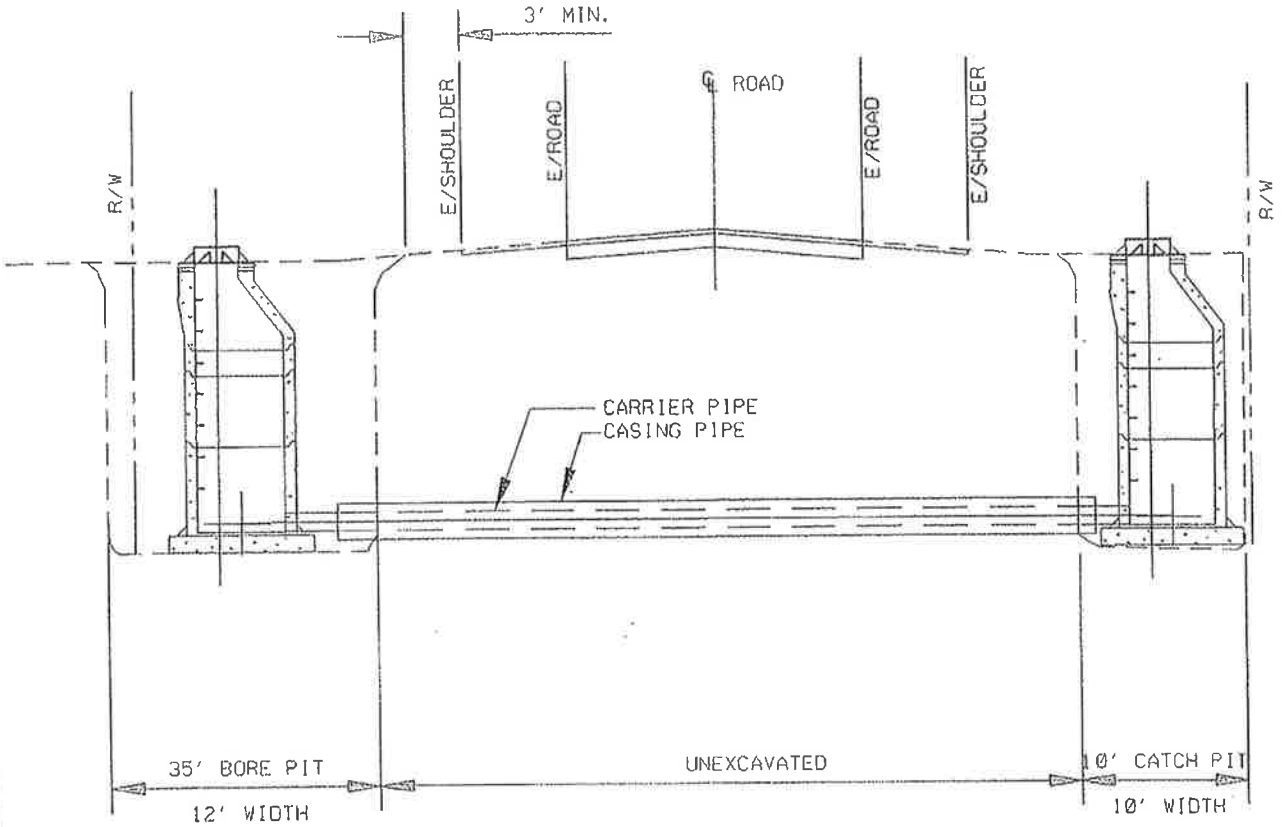
HOPEWELL TOWNSHIP

SANITARY SEWER LATERAL CAP DETAIL

WIDMER ENGINEERING, INC.

SD-11

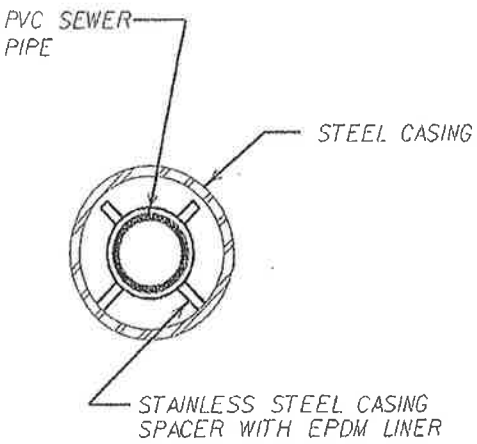
FILE NO. HTSD_11



HOPEWELL TOWNSHIP
TYPICAL BORE PROFILE
WIDMER ENGINEERING, INC.

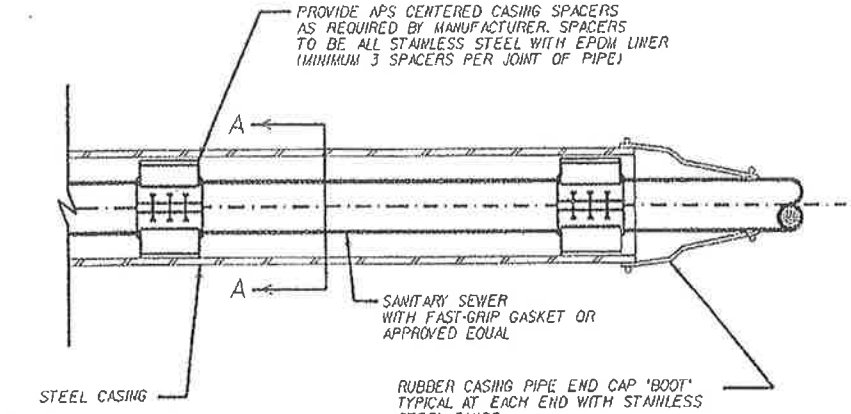
FILE NO. HTSD_12

SD-12



NOTE:
SPACING AS REQUIRED BY MANUFACTURER

SEWER SIZE	6"	8"	10"	12"	15"	18"	21"	24"	27"	30"	42"
CASING SIZE	14"	16"	18"	20"	24"	28"	30"	34"	38"	42"	52"



SECTION A-A

NOTE:
1) DUCTILE IRON PIPE LOCATED OUTSIDE OF END CAP 'BOOT' SHALL BE CONCRETE ENCASED
2) DUCTILE IRON PIPE SHALL BE CONNECTED TO PVC OR HDPE PIPE WITH MECHANICAL JOINT SLEEVES

TYPICAL CASING/ SEWERLINE DETAIL WITH SPACERS
BORING DETAIL

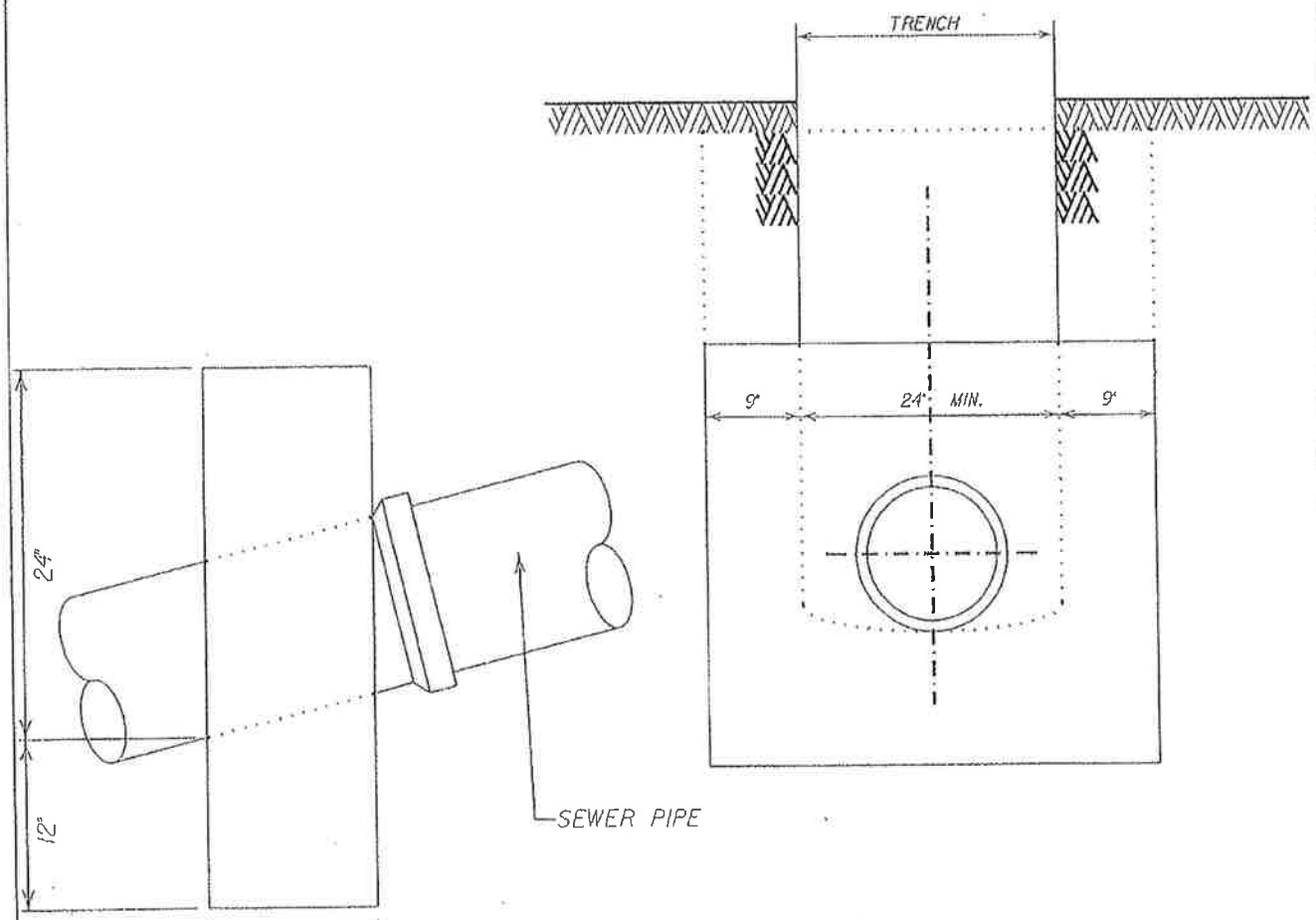
NOTE: BOTH ENDS OF CASING SHALL BE CAPPED WITH CASCADE MODEL "CCES" END SEALS

HOPEWELL TOWNSHIP

SEWER CASING AND SUPPORT DETAILS FOR BORING

WIDMER ENGINEERING, INC.

FILE NO. HTSD_13



12"	FOR SEWERS 12" IN DIAMETER OR LESS
18"	FOR SEWERS 15" TO 20" IN DIAMETER
24"	FOR SEWERS 24" TO 30" IN DIAMETER

PIPE ANCHOR SPACING	
SLOPE	C-C SPACING
20% - 35%	36' - 0" MAX.
35% - 50%	24' - 0" MAX.
50% - >	16' - 0" MAX.

NOTE: 1. ANCHORS TO BE SPACED AS SPECIFIED

2. ALL CONCRETE TO BE CLASS 'A' IF CONCRETE IS NOT FORMED, CONCRETE DIMENSIONS SHALL BE MINIMUM.

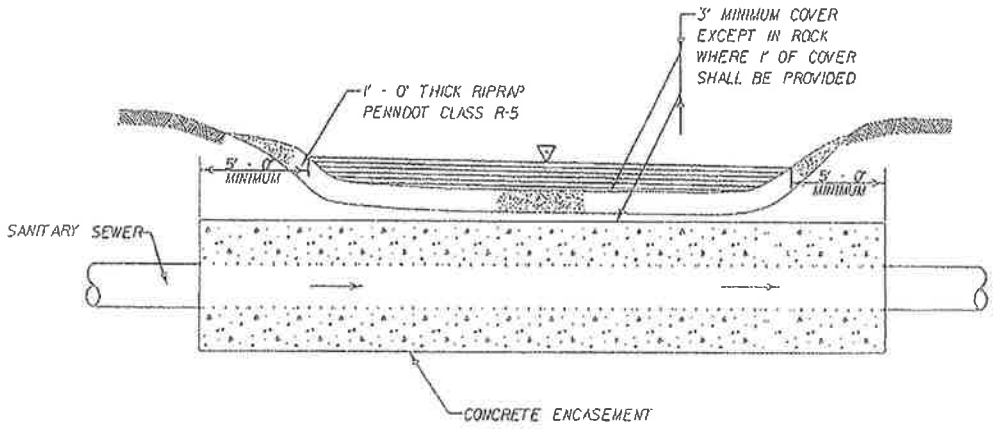
HOPEWELL TOWNSHIP

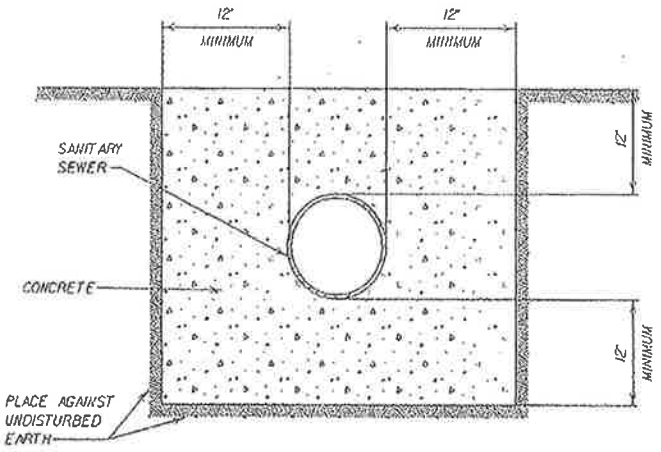
CONCRETE PIPE ANCHOR DETAIL

WIDMER ENGINEERING, INC.

SD-14

FILE NO. HTSD_14



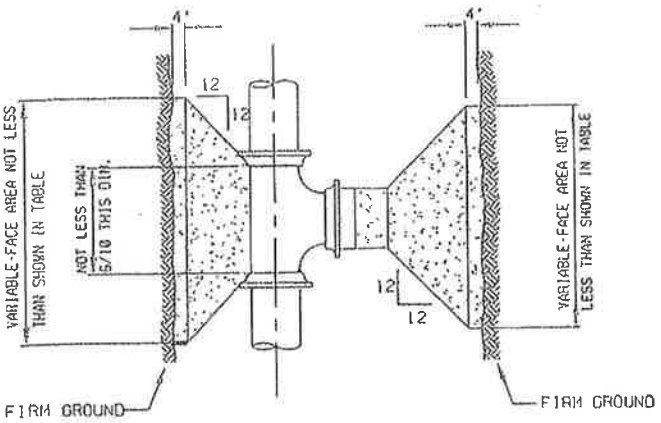


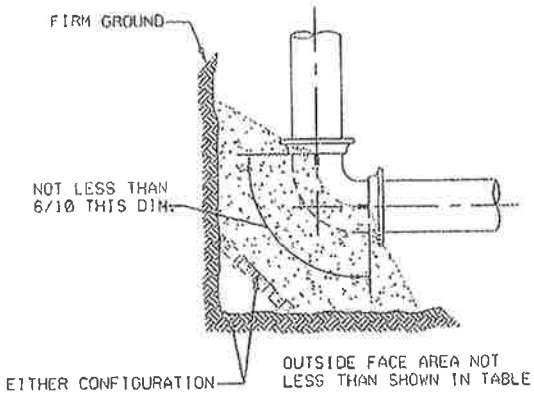
CONCRETE ENCASEMENT CROSS SECTION

HOPEWELL TOWNSHIP
CONCRETE ENCASEMENT DETAIL
WIDMER ENGINEERING, INC.

FILE NO. HTSD_15

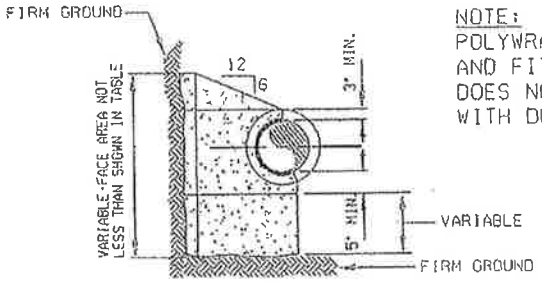
SD-15





BLOCKING FOR TEES AND PLUGS

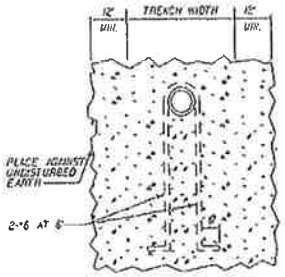
PLAN VIEW



NOTE:
POLYWRAP DUCTILE IRON PIPE AND FITTINGS SO THAT CONC. DOES NOT COME IN CONTACT WITH DUCTILE IRON.

BLOCKING FOR BENDS

PLAN VIEW



VERTICAL CONCRETE ANCHOR DETAIL

APPLICABLE TO TEES, WYES, AND BENDS

ALL TEES, WYES, CROSSES & PLUGS, AND BENDS OF 10° OR MORE SHALL BE BLOCKED AGAINST FIRM EARTH WITH CONCRETE.

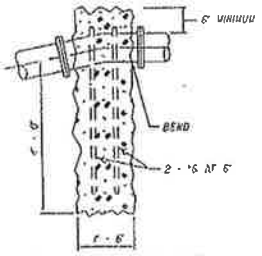
NOTE:
EARTH PRESSURE FIGURED AT 4000 LBS/SQ. FT. IF EARTH ENCOUNTERED WILL NOT WITH STAND THIS PRESSURE.
THE AREA OF THE BLOCK MUST BE INCREASED PROPORTIONATELY.

CALCULATIONS ARE BASED ON 225 LBS/SQ. IN. OR 150 LBS WORKING PRESSURE PLUS 50% WATER HAMMER FOR SIZES 4" TO 24" INCLUSIVE.

PIPE SIZE (IN.)	AREA SQ.'	TOTAL FORCE (LBS.)	AREA OF BLOCK IN SQUARE FEET				
			TEES & PLUGS	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
0-4	13	2,90	1.0	1.0	1.0	1.0	1.0
6	29	6.50	1.7	2.3	1.3	1.0	1.0
8	53	12.0	3.0	4.1	2.2	1.2	1.0
10	82	19.0	4.8	6.3	3.4	1.8	1.0
12	118	26.80	6.7	9.1	4.9	2.5	1.3
14	168	37.80	9.5	12.3	6.7	3.4	1.8
16	220	48.50	12.2	16.1	8.8	4.5	2.3
18	276	82.20	15.6	20.4	11.0	5.6	2.9
20	342	77.0	19.3	25.7	13.7	7.0	3.6
24	486	109.50	27.4	36.3	19.7	10.0	5.2
* 30	706	84.80	21.2	30.5	18.5	8.4	4.4
* 36	1017	122.0	30.5	43.7	23.7	12.1	6.2

* FOR SIZES 30" AND 36" THE TABLE IS BASED ON 120 LBS/SQ. IN. OR 75 LBS. WORKING PRESSURE PLUS 50% WATER HAMMER.

CONTRACTOR RETAINS RESPONSIBILITY FOR ADEQUATE BLOCKING. THE TABULATION IS PROVIDED AS A CONVENIENCE TO AID IN THE CALCULATIONS OF REQUIRED AREA OF BLOCKING UNDER ACTUAL CONDITIONS. VALUES MUST BE INCREASED PROPORTIONATELY FOR TEST PRESSURES OVER 200PSI AND BEARING CAPACITY LESS THAN 4000PSF.



VERTICAL CONCRETE ANCHOR DETAIL ELEVATION

REINFORCED CONCRETE GRAVITY ANCHORS FOR VERTICAL BENDS

(A) WHERE INLET OR OUTLET IS HORIZONTAL, WEIGHT OF ANCHOR CAN BE DETERMINED BY MULTIPLYING AREA IN THE TABLE BY 1000LBS.
(B) OTHER CONDITIONS REQUIRE SPECIAL DESIGN.

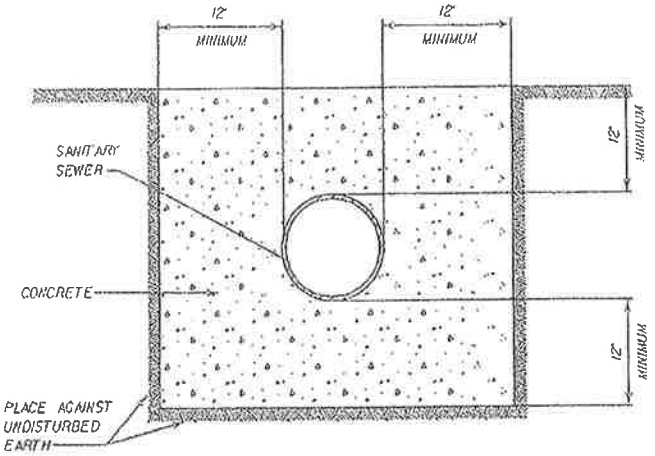
HOPEWELL TOWNSHIP

FORCE MAIN
THRUST BLOCKING DETAIL

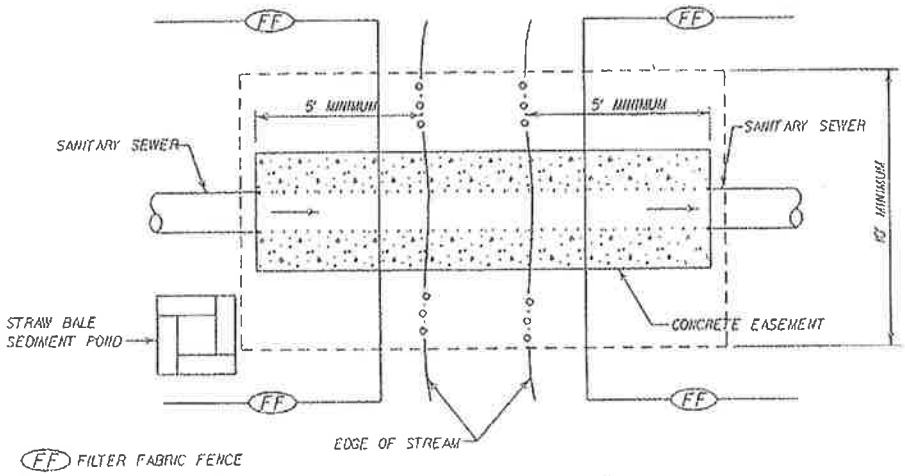
WIDMER ENGINEERING, INC.

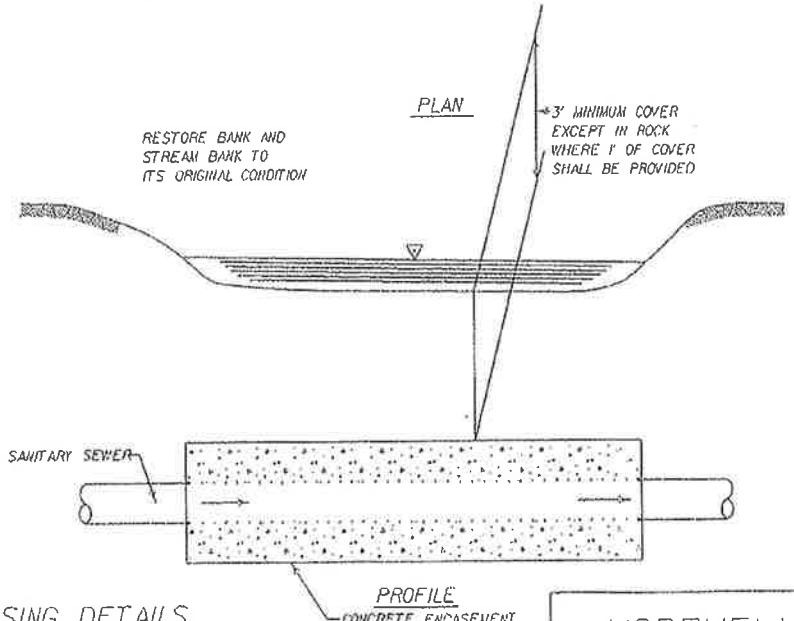
FILE NO. HTSD_16

SD-16



CONCRETE ENCASEMENT CROSS SECTION





STREAM CROSSING DETAILS

(SEE THE APPROVED SOIL EROSION AND SEDIMENTATION CONTROL PLAN AND THE APPROVED PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF DAMS AND WATERWAY MANAGEMENT GENERAL PERMIT 5 (UTILITY LINE STREAM CROSSING) INCLUDED IN THE ATTACHMENTS TO THE TECHNICAL SPECIFICATIONS).

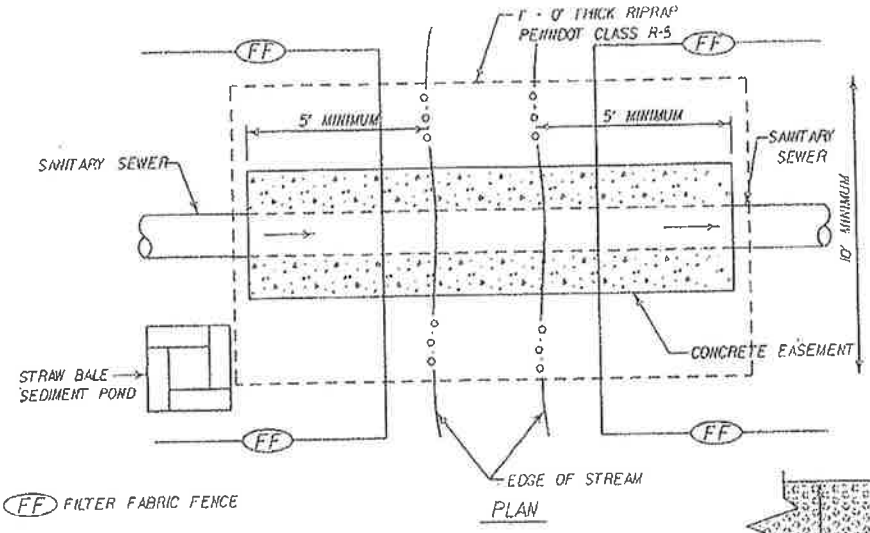
HOPEWELL TOWNSHIP

STREAM CROSSING DETAIL

WIDMER ENGINEERING, INC.

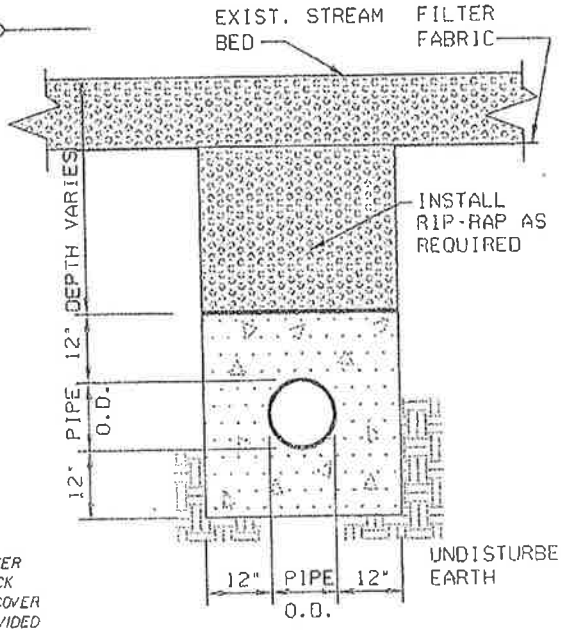
FILE NO. HTSD-17

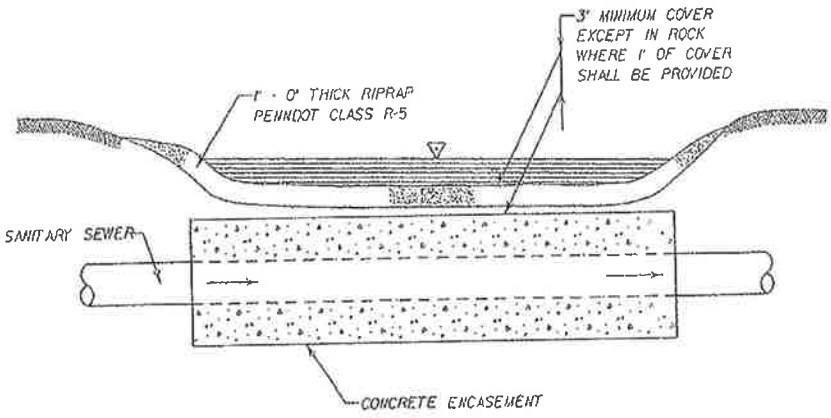
SD-17



PLAN

(FF) FILTER FABRIC FENCE





PROFILE

NOTES:
1. PAYMENT FOR CONCRETE ENCASEMENT SHALL BE INCIDENTAL TO STREAM CROSSING.
2. USE NSA #R-5 RIP-RAP, MIN. 5" STONE
3. CLASS 2 GEOTEXTILE TO BE INSTALLED ALONG ALL INTERFACE AREAS WITH GROUND CONTACT. INCIDENTAL TO PAY ITEM STREAM CROSSING.
4. NO VEHICLES OR EQUIPMENT PERMITTED IN STREAM
5. USE TEMPORARY FLOW DIVERSION CHANNEL AS PER DETAIL AND AS REQUIRED.

STREAM CROSSING DETAILS

(SEE THE APPROVED SOIL EROSION AND SEDIMENTATION CONTROL PLAN AND THE APPROVED PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF DAMS AND WATERWAY MANAGEMENT GENERAL PERMIT 5 (UTILITY LINE STREAM CROSSING) INCLUDED IN THE ATTACHMENTS TO THE TECHNICAL SPECIFICATIONS).

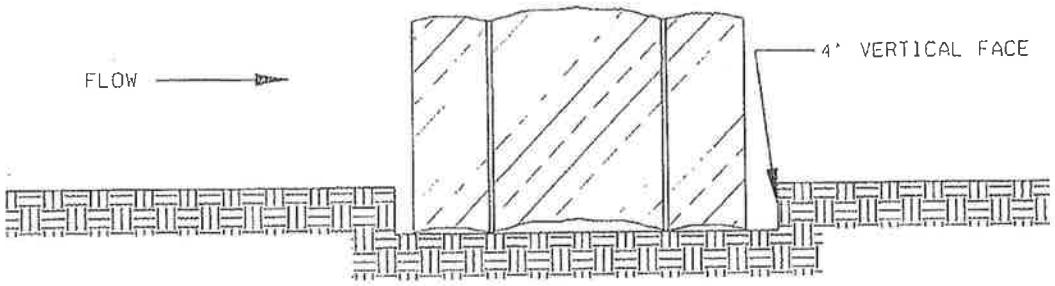
HOPEWELL TOWNSHIP

RIP-RAP PLACEMENT AND CONCRETE ENCASEMENT STREAM CROSSING DETAIL

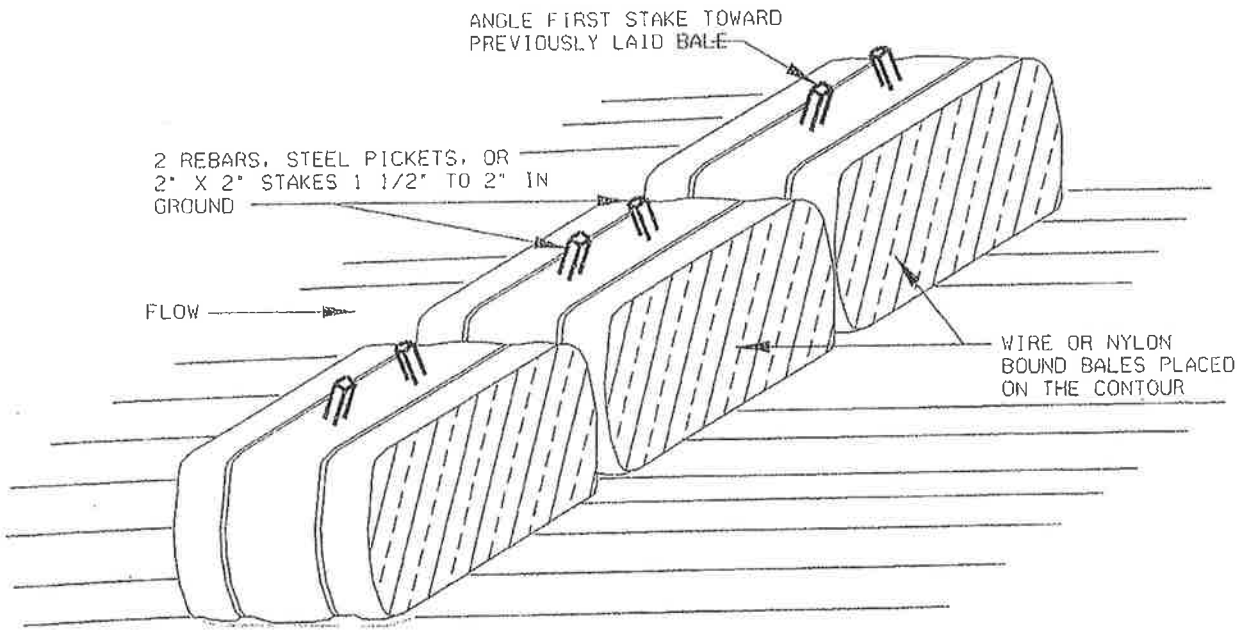
WIDMER ENGINEERING, INC.

FILE NO. HTSD-18

SD-18



EMBEDDING DETAIL



ANCHORING DETAIL

NOTES:
1. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4".
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY STAKES OR REBARS DRIVEN THROUGH THE BALES. THE FIRST STAKE IN EACH BALE SHALL BE ANGLED TOWARD PREVIOUSLY LAID BALE TO FORCE BALES TOGETHER.
4. INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

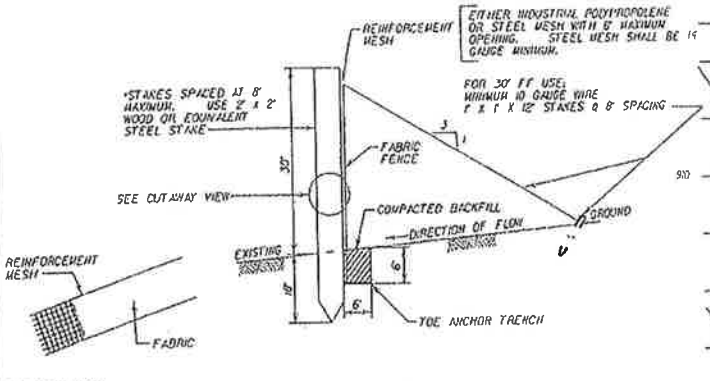
HOPEWELL TOWNSHIP

BALED STRAW BARRIER DETAIL

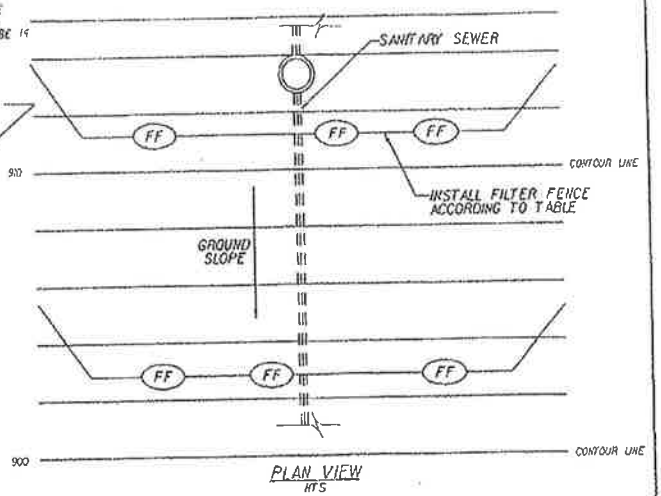
WIDMER ENGINEERING, INC.

FILE NO. HTSD_19

SD-19

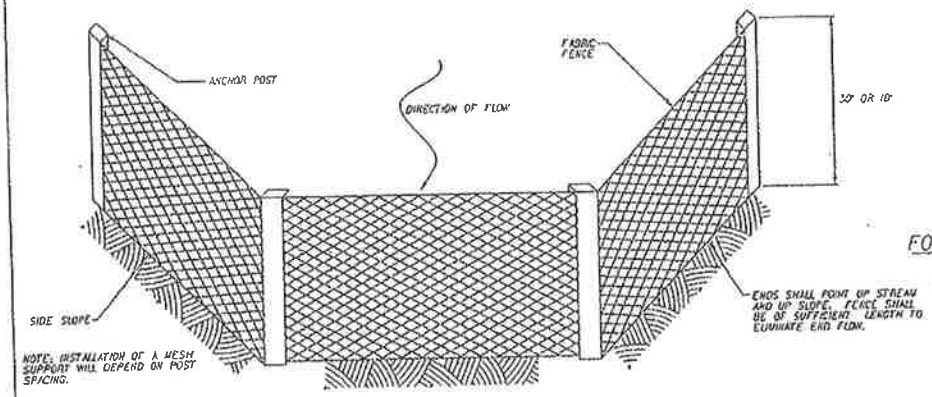


FILTER FABRIC FENCE DETAIL



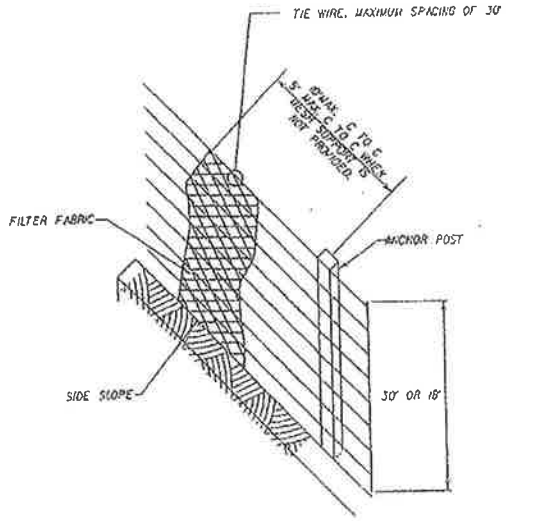
PLAN VIEW
NTS

TABLE: MAXIMUM SLOPE LENGTHS FOR FILTER FABRIC FENCES		
SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT) ABOVE FENCES	
	18" H. FENCE	30" H. FENCE
2 (OR LESS)	250	500
5	100	250
10	50	150
15	35	100
20	25	70
25	20	55
30	15	45
35	15	40
40	15	35
45	10	30
50	10	25



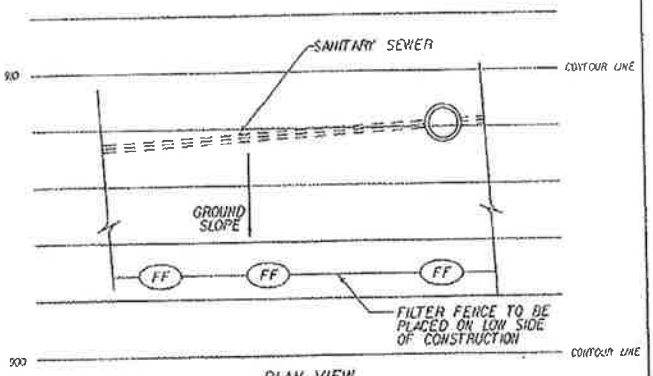
FILTER FABRIC FENCE INSTALLATION FOR SEWER LINE RUNNING PERPENDICULAR TO CONTOURS
NTS

DETAIL NO. 3



FILTER FABRIC FENCE INSTALLATION DETAIL
NTS

DETAIL NO. 2



PLAN VIEW
NTS

FILTER FABRIC FENCE INSTALLATION FOR SEWER LINE RUNNING PARALLEL TO CONTOURS
NTS

DETAIL NO. 4

HOPEWELL TOWNSHIP

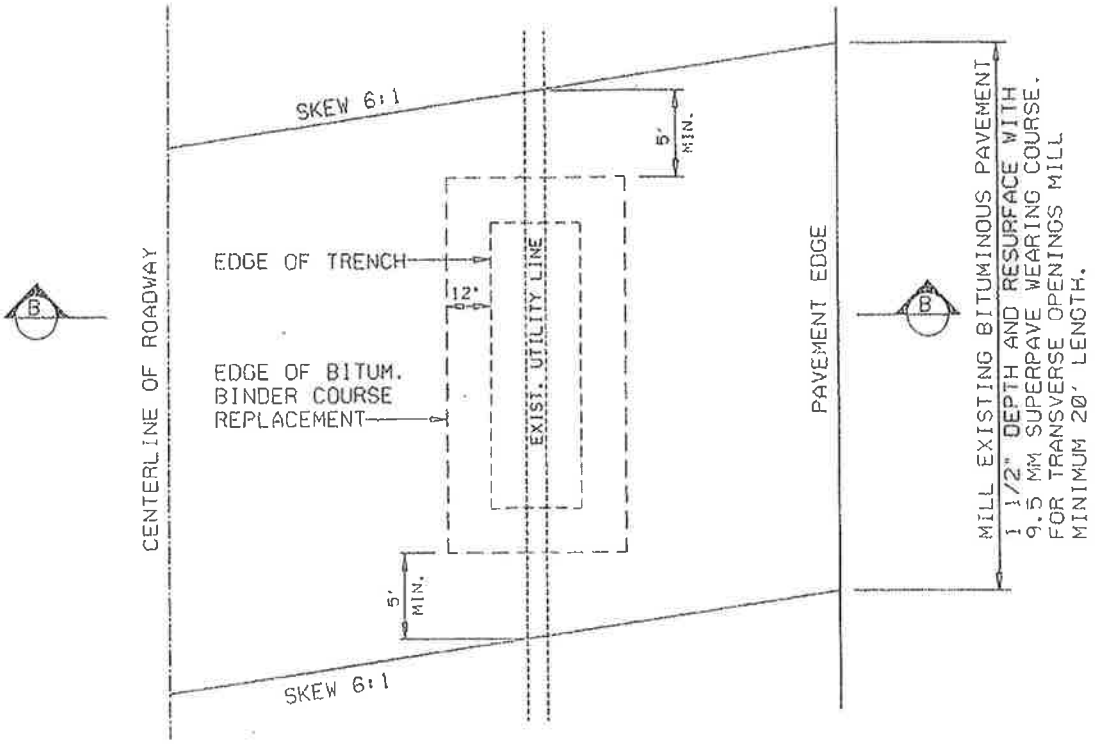
FILTER FABRIC FENCE DETAILS

WIDMER ENGINEERING, INC.

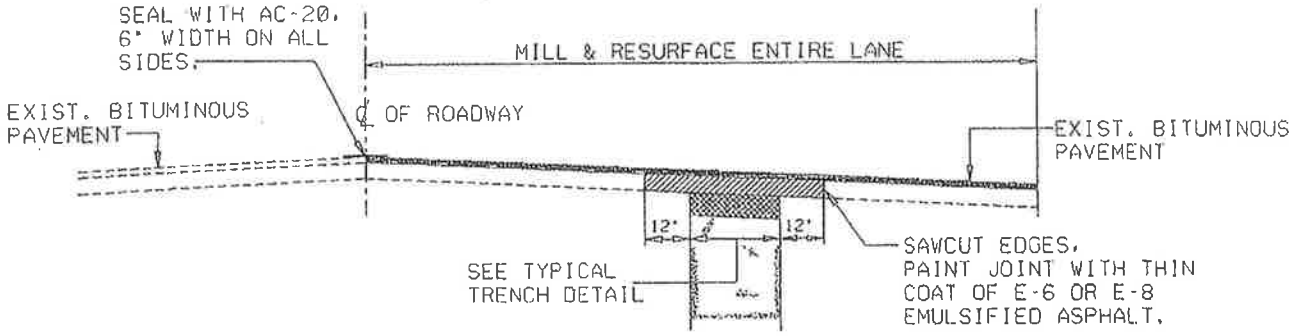
SD-20

FILE NO. HTSD_20

(APPLICABLE ONLY TO ROADS RESURFACED IN THE LAST FIVE (5) YEARS.)



PLAN - PAVEMENT RESTORATION DETAIL 'B'



SECTION B-B

NOTE:

1. 2" MINIMUM BITUMINOUS COLD PATCH (TEMPORARY SURFACE) REQUIRED IN TRENCH AREA ON DAY OF OPENING.
2. IF UTILITY OPENING EXTENDS INTO OR INVOLVES BOTH LANES THE ENTIRE CARTWAY SHALL BE MILLED AND RESURFACED.
3. THE MINIMUM LENGTH OF THE MILLED AND RESURFACED AREA SHALL BE 20 FEET.

1 1/2" 9.5MM SUPERPAVE WEARING COURSE, PENNDOT SECT. 420

5" 25MM SUPERPAVE BASE COURSE, PENNDOT SECT. 305

12" NO. 2A SUBBASE ON 12" OF #3 STONE, PENNDOT SECT. 350

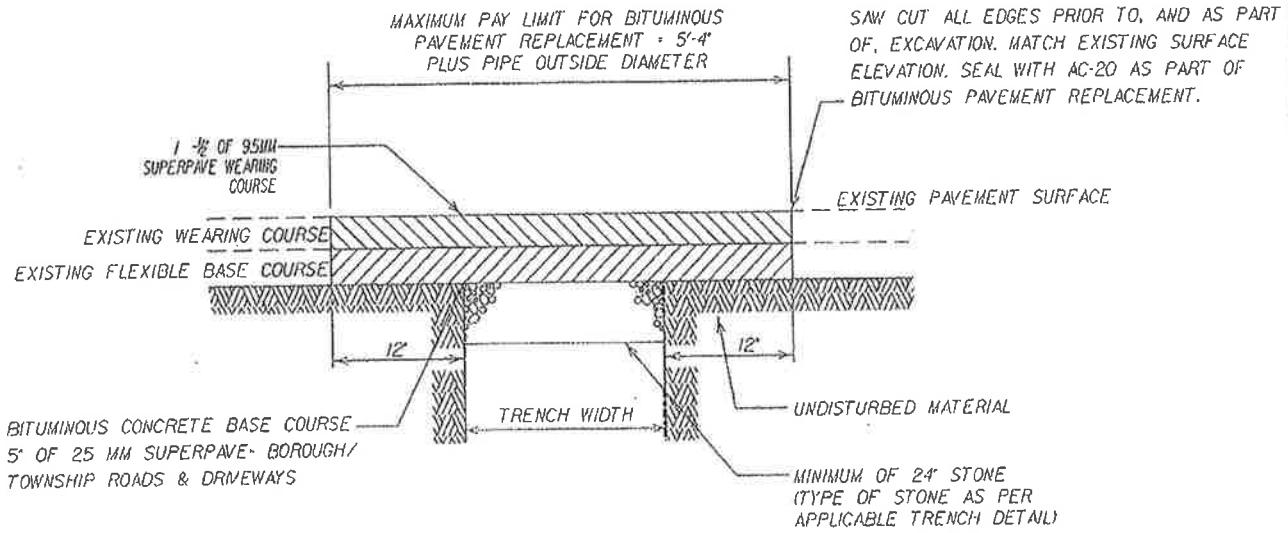
FILE NO. HTSD_21

SD-21

HOPEWELL TOWNSHIP

STANDARD TOWNSHIP LANE REPLACEMENT DETAIL

WIDMER ENGINEERING, INC.



BITUMINOUS PAVEMENT REPLACEMENT DETAIL

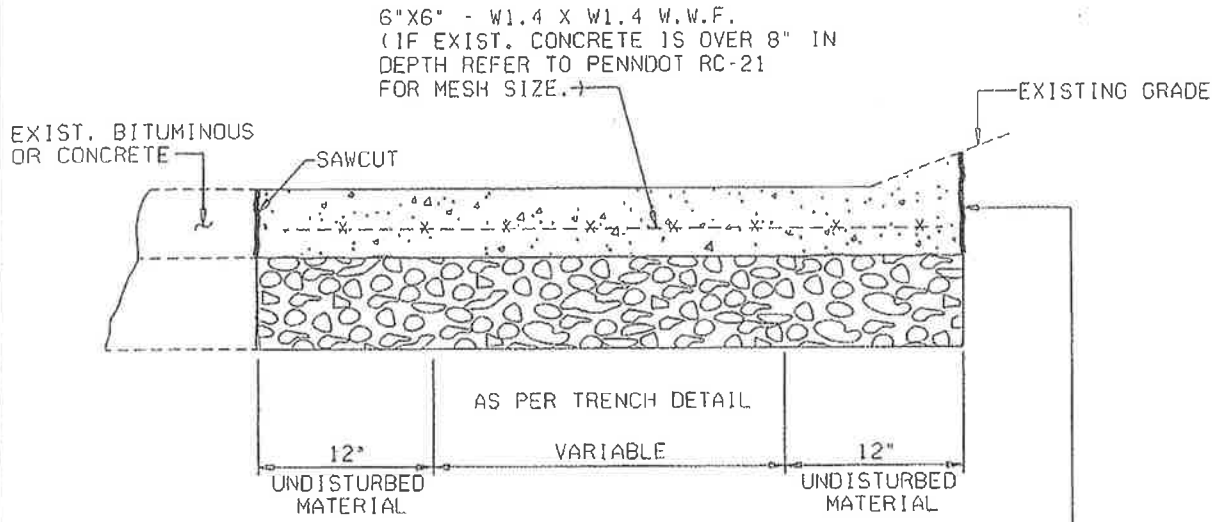
NOTES:
1.) FOR STATE ROADS, REFER TO STATE ROAD BITUMINOUS PAVEMENT REPLACEMENT DETAIL

NOTE:
1. ALL BACKFILL SHALL BE COMPACTED IN 6" LAYERS, MECHANICALLY TAMPED.
2. TEMPORARY BITUMINOUS COLD PATCH SHALL BE USED IN ALL AREAS WHERE EXISTING FLEXIBLE-BASE PAVEMENT HAS BEEN REMOVED.

HOPEWELL TOWNSHIP
PAVEMENT REPLACEMENT FOR BITUMINOUS PARKING AREAS, DRIVEWAYS, BERMS & TWP. ROADS
WIDMER ENGINEERING, INC.

FILE NO. HTSD-22

SD-22



SAWCUT AND FORM TO MATCH EXISTING CONCRETE SHOULDER OR DRIVEWAY. USE 1/2" PREMOLDED EXPANSION JOINT FILLER WHERE CONCRETE BUTTS TO CONCRETE. WHERE CONCRETE BUTTS TO ASPHALT, PAINT ASPHALT JOINT WITH A THIN COAT OF E-6 OR E-8 EMULSIFIED ASPHALT.

NOTE:

TEMPORARY BITUMINOUS COLD PATCH SHALL BE USED IN ALL AREAS WHERE EXISTING RIGID-BASE PAVEMENT HAS BEEN REMOVED.

CLASS AA CEMENT CONCRETE, DEPTH TO MATCH EXISTING.

6" NO. 2A COARSE AGGREGATE, PENNDOT SECT. 350

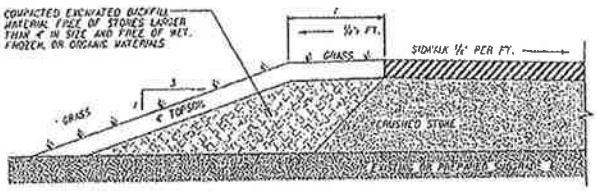
HOPEWELL TOWNSHIP

CONCRETE PAVEMENT, CONCRETE SHOULDER, AND DRIVEWAY RESTORATION DETAIL

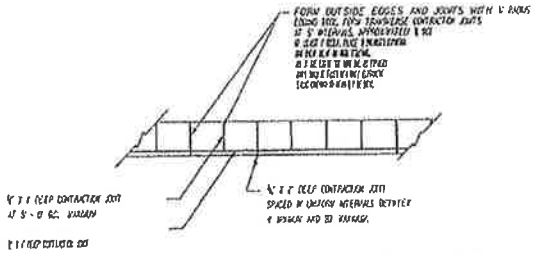
WIDMER ENGINEERING, INC.

FILE NO. HTSD_23

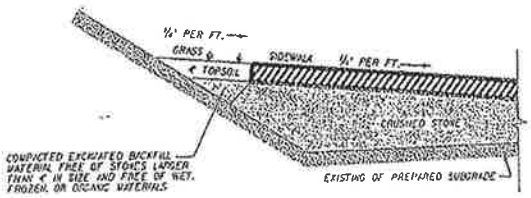
SD-23



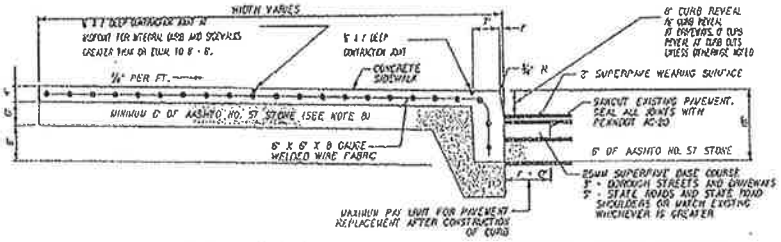
BACK OF SIDEWALK TREATMENT DETAIL - TYPE I



INTEGRAL CONCRETE CURB AND SIDEWALK



BACK OF SIDEWALK TREATMENT DETAIL - TYPE II



TYPICAL INTEGRAL CONCRETE CURB AND SIDEWALK CROSS SECTION

CONCRETE CURB, GUTTER, SIDEWALK, AND DRIVEWAY NOTES

1. THE FOLLOWING PENNSYLVANIA DEPARTMENT OF TRANSPORTATION ROADWAY CONSTRUCTION STANDARDS ARE INCORPORATED BY REFERENCE INTO THESE MISCELLANEOUS DETAILS:

A. RC-64 "CURBS AND GUTTERS": LATEST EDITION.
B. RC-65 "CONCRETE VERTICAL CURBS": LATEST EDITION.
C. RC-67 "CURB RAMPS" DATED JULY 29, 2008

COPIES OF THE REFERENCED STANDARDS ARE INCLUDED IN THE TECHNICAL SPECIFICATIONS, SECTION 02620 "CONCRETE CURB, GUTTER, SIDEWALK AND DRIVEWAY."

2. FOR CURB, PLACE ½" PREMOLDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES, AT THE END OF THE WORK DAY, AND EVERY 30 FEET. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB. ALL EXPANSION JOINTS SHALL BE FILLED WITH WHITE ELASTOMERIC SEALING COMPOUND TO WITHIN ⅛" OF THE SURFACE.

3. FOR SIDEWALK, FORM OUTSIDE EDGES AND JOINTS WITH ¼" RADIUS EDGING TOOL. FORM TRANSVERSE CONTRACTION JOINTS AT 5' INTERVALS, APPROXIMATELY ¼" WIDE AT LEAST 1" DEEP. PLACE ½" PREMOLDED EXPANSION JOINT EVERY 30 FEET, AT ANY RADII STRUCTURE, AND AT THE END OF THE WORK DAY. ALL EXPANSION JOINTS SHALL BE FILLED WITH WHITE ELASTOMERIC SEALING COMPOUND TO WITHIN ⅛" OF THE SURFACE.

4. ALL CONCRETE SURFACES SHALL RECEIVE LINSEED OIL TREATMENT UPON COMPLETION.

5. ALL EDGES OF NEW PAVEMENT SHALL BE SEALED WITH PENNDOT AC-20.

6. AROUND UTILITY POLES, METERS, AND FIRE HYDRANTS, CONSTRUCT AN INDEPENDENT RECTANGULAR-SHAPED SLAB A MINIMUM OF 1'-0" IN ALL DIRECTIONS. PLACE ½" PREMOLDED EXPANSION JOINT AROUND THE INDEPENDENT SLAB. FILL WITH WHITE ELASTOMERIC COMPOUND TO WITHIN ⅛" OF THE SURFACE.

7. IF THE EXISTING SIDEWALK HAS FLAG POLE HOLDERS, REMOVE THE EXISTING HOLDERS AND REINSTALL THEM AT A LOCATION AS CLOSE TO THE ORIGINAL LOCATION AS POSSIBLE WHEN THE SIDEWALKS AND CURB RAMPS ARE RECONSTRUCTED AT NO ADDITIONAL COST TO THE OWNER.

8. ON CONCRETE CURB, GUTTER, SIDEWALK, AND DRIVEWAY REPLACEMENT PROJECTS IN WHICH THE NEW CURB, GUTTER, SIDEWALK, AND/OR DRIVEWAY ARE TO BE CONSTRUCTED AT A HIGHER ELEVATION THAN THE EXISTING, THE CONTRACTOR SHALL FURNISH AND PLACE ALL REQUIRED AASHTO NO. 57 CRUSHED STONE FROM THE EXISTING SUBGRADE TO THE BOTTOM OF THE NEW CURB, GUTTER, SIDEWALK, AND/OR DRIVEWAY AT NO ADDITIONAL COST TO THE OWNER. THE COST TO DO SO SHALL BE INCLUDED IN THE UNIT COST OF THE NEW CURB, GUTTER, SIDEWALK, OR DRIVEWAY FOR WHICH IT IS REQUIRED. SEE THE BACK OF SIDEWALK TREATMENT DETAILS.

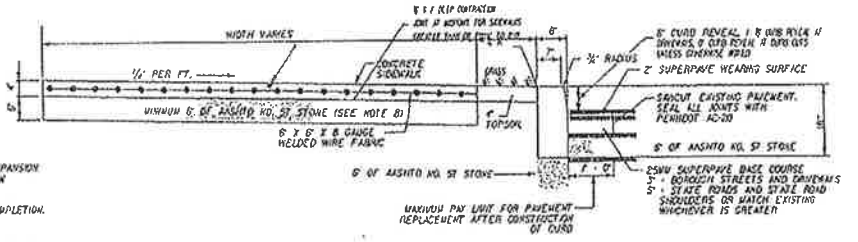
9. PLACE BACKFILL, TOPSOIL, SEEDING AND MULCHING IN THE GRASS AREA OF INDEPENDENT CONCRETE CURB AND SIDEWALK AND BEHIND ALL SIDEWALK AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER. THE COST TO DO SO SHALL BE INCLUDED IN THE UNIT COST FOR THE CURB AND/OR SIDEWALK FOR WHICH THE BACKFILL, TOPSOIL, SEEDING AND MULCHING IS REQUIRED. SEE THE BACK OF SIDEWALK TREATMENT DETAILS.

10. PLACE CRUSHED STONE BACKFILL BEHIND DRIVEWAYS AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER. THE COST TO DO SO SHALL BE INCLUDED IN THE UNIT COST FOR THE DRIVEWAY FOR WHICH THE CRUSHED STONE BACKFILL IS REQUIRED.

11. EXISTING CURB RAMPS SHALL BE EVALUATED. CURBS AND OR SIDEWALKS SHALL BE ELEVATED TO MATCH EXISTING ADJACENT CURB HEIGHTS. SIDE WALK SHALL MATCH CURB HEIGHT.

12. CURB RAMPS AND SIDEWALKS SHALL BE CONSTRUCTED TO NOT POND WATER ON RAMPS, SIDEWALKS OR ON EDGE OF ROADWAY. IF ANY WATER PONDS IN THESE LOCATIONS THE SIDEWALKS SHALL BE REMOVED AND RECONSTRUCTED BY CONTRACTOR TO ELIMINATE PONDING.

13. SIDEWALKS SHALL MEET ALL WIDTH AND SLOPE REQUIREMENTSAS SET FORTH IN PENNDOT PUBLICATIONS ANY SIDEWALK WHICH DOES NOT MEET SHALL BE RECONSTRUCTED. IF A CURB RAMP NEEDS ADJUSTED TO MEET CURRENT STANDARDS THE CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO POURING CONCRETE.



TYPICAL INDEPENDENT CONCRETE CURB AND SIDEWALK CROSS SECTION

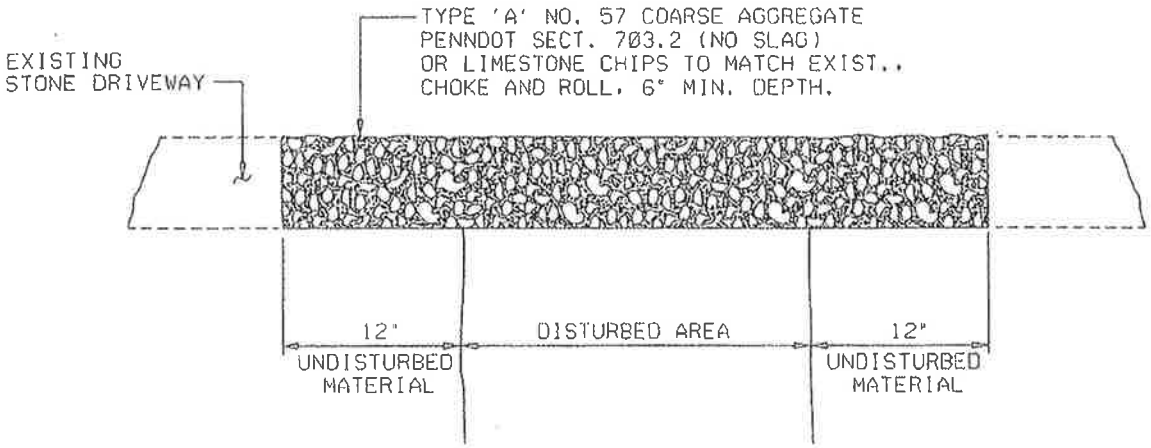
HOPEWELL TOWNSHIP

TYPICAL CONCRETE SIDEWALK REPLACEMENT DETAILS

WIDMER ENGINEERING, INC.

SD-24

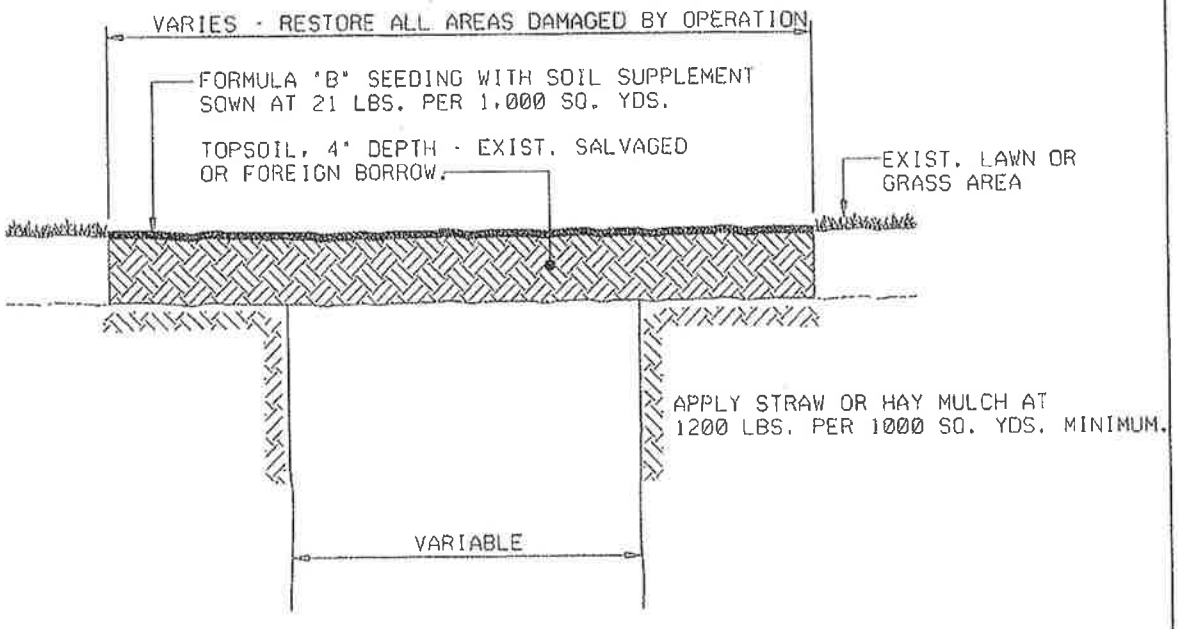
FILE NO. HTSD_24



HOPEWELL TOWNSHIP
STONE DRIVEWAY RESTORATION DETAIL
WIDMER ENGINEERING, INC.

FILE NO. HTSD_25

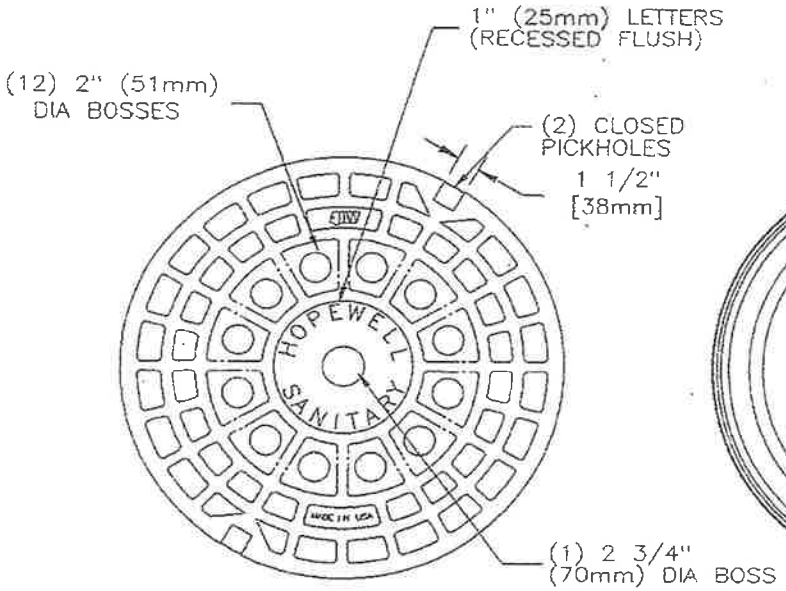
SD-25

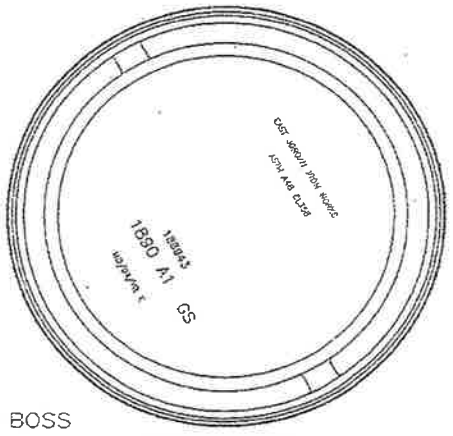


HOPEWELL TOWNSHIP
LAWN AND GRASS AREA RESTORATION DETAIL
WIDMER ENGINEERING, INC.

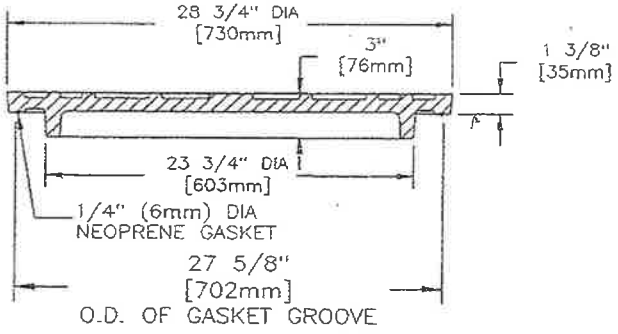
FILE NO. HTSD_26

SD-26

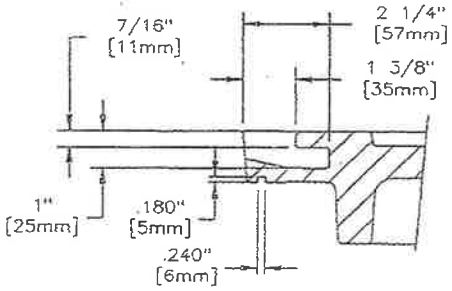




BOTTOM VIEW
OF COVER



COVER SECTION



PICKHOLE & GASKET
GROOVE DETAIL

√ MACHINE SURFACE

EAST JORDAN
IRON WORKS, INC.
P.O. BOX 439
EAST JORDAN, MI. 49727
1-800-874-4100
FAX 231-536-4458

DRAWN	DATE
TCL	04/13/04
APPROVED	DATE

SPECIAL LETTERED
MANHOLE COVER

PRODUCT NO.
00188943

CATALOG NO.
1890A1GS

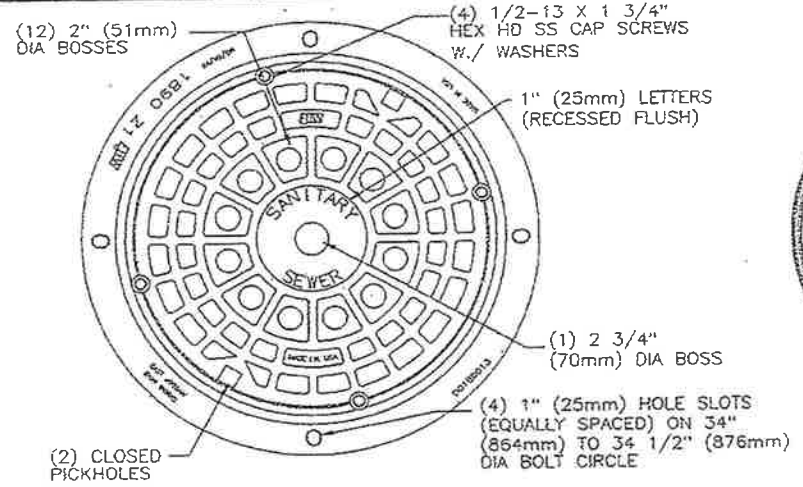
REF. PRODUCT DRAWING
189022

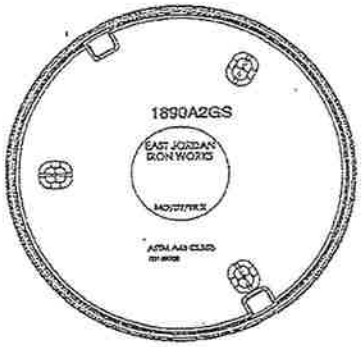
EST. WT.
COVER: 215 LBS 98kg

OPEN AREA
N/A

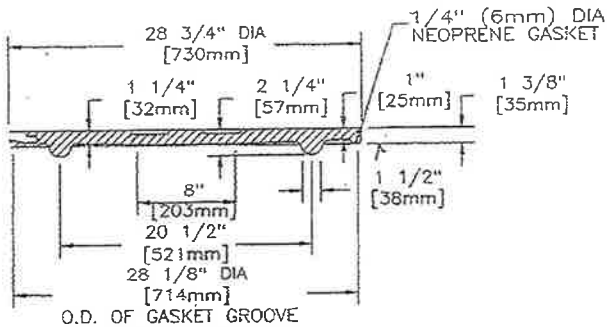
MAT'L SPEC.
COVER – GRAY IRON
ASTM A48 CL35B

LOAD RATING
HEAVY DUTY

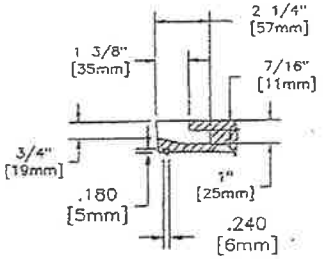




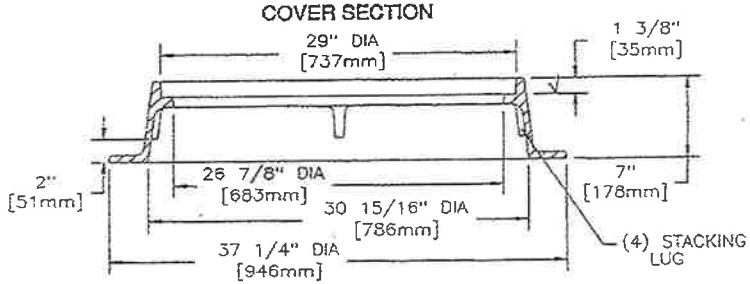
BOTTOM VIEW OF COVER



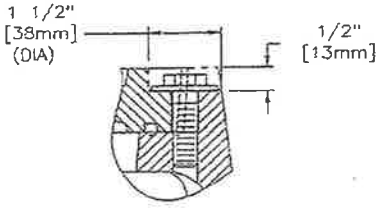
COVER SECTION



PICKHOLE DETAIL & GASKET DETAIL



FRAME SECTION



CRACK-DRILL DETAIL

√ MACHINED SURFACE

EAST JORDAN IRON WORKS, INC.
P.O. BOX 439
EAST JORDAN, MI. 49727
1-800-874-4100
FAX 231-536-4458

DRAWN	DATE
DEW	03/11/05
APPROVED	DATE

MANHOLE COVER & FRAME ASSEMBLY

PRODUCT NO.
00189007

CATALOG NO.
1890A2GS
1890Z1

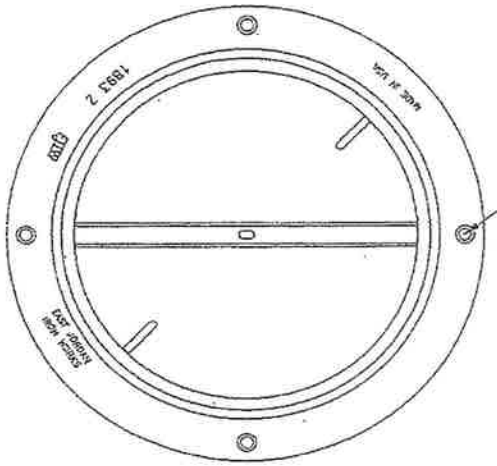
REF. PRODUCT DRAWING
188955
189014

EST. WT.
COVER: 165 LBS 75kg
FRAME: 179 LBS 81kg
UNIT: 344 LBS 156kg

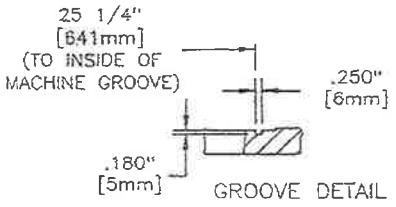
OPEN AREA
N/A

MAT'L SPEC.
COVER – GRAY IRON ASTM A48 CL35B
FRAME – GRAY IRON ASTM A48 CL35B

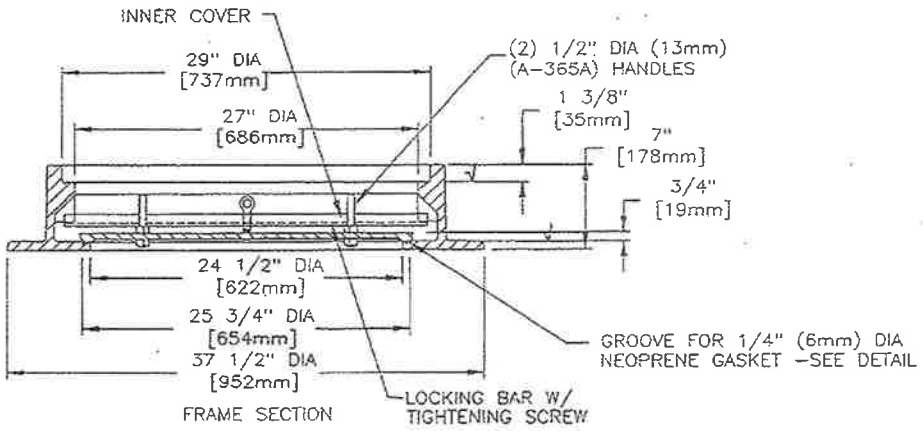
LOAD RATING
HEAVY DUTY



(4) 1" (25mm) DIA. HOLES
ON 34 1/2" BOLT CIRCLE



GROOVE DETAIL



FRAME SECTION

CONFIDENTIAL: This drawing is the property of East Jordan Iron Works, Inc. and embodies confidential information, trade secret information, and/or know how that is the property of East Jordan Iron Works, Inc. © Copyright 2006 East Jordan Iron Works, Inc.

EJIW EAST JORDAN IRON WORKS EST.1883

800-626-4653
www.ejiw.com
MADE IN USA

PRODUCT NUMBER
00189300

CATALOG NUMBER
1893Z
1893G

FROST PROOF UNIT WITH INNER COVER, CROSS BAR AND EYE BOLT

LOAD RATING
HEAVY DUTY

COATING
DIPPED

ESTIMATED WEIGHT
COVER: 77Lb. 35kg
FRAME: 301Lb. 137kg
LOCK BAR: 12Lb. 5kg
UNIT: 390Lb. 177kg

MATERIAL SPECIFICATION
COVER - GRAY IRON
ASTM A48 CL35B
FRAME - GRAY IRON
ASTM A48 CL35B

OPEN AREA
N/A

√ DESIGNATES MACHINED SURFACE

DRAWN	DATE
JIJ	03/12/04
LAST REVISED	DATE
DEW	12/22/06

REFERENCE INFORMATION
00189310
00189325

ARTICLE XVI
STANDARD FORMS

Application for Sanitary Sewerage Service - Property Owner

Application for Sanitary Sewer Connection

Sanitary Sewer Lateral Inspection Report

Instructions for Construction of Sewer Lateral Connection to Main Sanitary Sewer Line

Industrial Waste Discharge Permit

Vacant Structure Agreement

Specifications for Installation of Sanitary Sewers and Appurtenances

HOPEWELL TOWNSHIP
APPLICATION FOR SANITARY SEWERAGE SERVICE
PROPERTY OWNER

I, or We, Owner or Owners of property in the Township of Hopewell, County of Beaver, Pennsylvania, do hereby apply to Hopewell Township for sewerage services for the premises located at _____ occupied as Owner or Owners, and in consideration thereof, agree to pay to said Hopewell Township thereof, such sewerage charges and other charges for the use of the Public Sanitary Sewerage System in accordance with the prevailing rates, and Rules and Regulations of Hopewell Township as shall be established by Hopewell Township from time to time.

I, or We, agree that, in the event default is made on any of the payments hereinabove agreed to be made for a period of ninety (90) days from the date due, then the proper officers of Hopewell Township are hereby authorized and empowered to request and direct the Municipal Water Authority of Aliquippa or Creswell Heights Joint Authority to shut-off and discontinue water service to the premises above described, covered by this Application, until, as and when all such overdue charges, together with any penalties and interest thereon shall be paid and satisfied. The charges shall include the cost of turning off the water service and the cost of returning service incurred thereby.

I, or We, do hereby agree that this Agreement shall be binding upon me or us, and my or our heirs and assigns.

IN WITNESS WHEREOF, I, or We, intending to be legally bound hereby, have hereunto set my or our hand(s) and seal(s), this _____ day of _____, _____.

Sealed and Delivered in the Presence of:

_____ _____ (Seal)

_____ _____ (Seal)

_____ _____ (Seal)

_____ _____ (Seal)

WIDMER ENGINEERING INC.

HOPEWELL TOWNSHIP
APPLICATION FOR SANITARY SEWER CONNECTION

Date:_____

I, the undersigned, do hereby make application to connect a _____ story building to be used as _____ into the Hopewell Township Sanitary Sewer System.

The property address is _____, and the sewer line I wish to connect into is located on _____ Street and my property is served by the above listed line.

I realize that the connection costs are separate charges that will be based upon Hopewell Township's Ordinances/Resolutions and/or Hopewell Township's Rules and Regulations. The cost for Inspection of a Sanitary Sewer Connection will be in accordance with Hopewell Township's Ordinances and/or Hopewell Township's Rules and Regulations. I agree to supply to Hopewell Township all of the necessary information, plans, and/or records to correctly calculate any additional charges that may be due.

Name of Applicant:_____

Present Address:_____

Telephone Number:_____

Signature:_____

HOPEWELL TOWNSHIP ACTION

1. Application approved this _____ day of _____, _____, in payment of $_____ received by Hopewell Township.

   Signed:_____

2. Application reviewed this _____ day of _____, _____, and rejected because _____

   _____.

   Signed:_____

3. Property not served by Hopewell Township Sanitary Sewer System and owner will be required to secure a Septic Tank Approval for a private system.

   Signed:_____

WIDMER ENGINEERING INC.

HOPEWELL TOWNSHIP
APPLICATION FOR SANITARY SEWER CONNECTION

BUILDING INSPECTOR

Building Permit No. _____ issued by Hopewell Township on the _____ day of _____, _____.

Building Inspector:_____

INSPECTOR'S APPROVAL

Inspection of Sanitary Sewer Connection made this _____ day of _____, _____, and approval is hereby given to cover the Sanitary Sewer Lateral.

Inspector:_____

NOTICE OF CONNECTION

The Applicant further agrees to notify Hopewell Township, 1700 Clark Boulevard, Aliquippa, Pennsylvania 15001, Telephone No. (724) 378-4875, of the date of the proposed connection and will allow the Hopewell Township Representative to inspect the Sanitary Sewer Lateral Connection into the Hopewell Township Sanitary Sewer Lines before the same are covered. The Applicant must provide at least twenty-four (24) hours advance notice to Hopewell Township. The Applicant agrees to uncover the Sanitary Sewer Lateral Connection into the Hopewell Township Sanitary Sewer Lines should the Applicant fail to secure an inspection and approval of the Hopewell Township Representative.

INSTRUCTIONS

Applicant to file original and four (4) copies - Original to Hopewell Township, Copy to Applicant, Copy to Consulting Engineer, Copy to Building Inspector, Final Completed Copy to be returned to Hopewell Township.

NOTE: ALL COMMERCIAL AND INDUSTRIAL STRUCTURES WILL BE REQUIRED TO SUBMIT PLANS TO HOPEWELL TOWNSHIP ALONG WITH THIS APPLICATION AND AN INITIAL DEPOSIT. THE APPLICATION WILL THEN BE CONSIDERED FOR APPROVAL.

KEY

WHITE - HOPEWELL TOWNSHIP COPY
YELLOW - BUILDING INSPECTOR COPY
PINK - CONSULTING ENGINEER COPY
GREEN - INSPECTION COPY FOR HOPEWELL TOWNSHIP
GOLD - APPLICANT FILE COPY

HOPEWELL TOWNSHIP
APPLICATION FOR SANITARY SEWER CONNECTION

SANITARY SEWER LATERAL INSPECTION REPORT

INSPECTION REQUESTED BY (OWNER):

_____

LOCATION

ADDRESS AND/OR LOT NUMBER:_____

_____

PLUMBER

NAME:_____

ADDRESS:_____

TELEPHONE NUMBER:_____

INSPECTOR'S COMMENTS

_____

_____

_____

_____

_____

SKETCH/PHOTOGRAPH

( ) APPROVED ( ) DENIED

INSPECTOR'S SIGNATURE:_____

DATE:_____

WIDMER ENGINEERING INC.

HOPEWELL TOWNSHIP
APPLICATION FOR SANITARY SEWER CONNECTION

INSTRUCTIONS FOR CONSTRUCTION OF SEWER LATERAL CONNECTION TO MAIN SANITARY SEWER LINE

1. Any RESIDENT/OWNER or Master Plumber representing either NONRESIDENT or RESIDENT/OWNER of property must complete a Hopewell Township Application for Sanitary Sewer Connection. The Hopewell Township Application for Sanitary Sewer Connection may be obtained at the Hopewell Township Sewer Department Office or on-line at www.hopewelltwp.com.
2. Private residential sewer laterals must be installed in accordance with Hopewell Township Rules and Regulations. Installation can be performed by a Registered Plumber or a RESIDENT/OWNER of an existing single family dwelling.
3. Commercial sewer laterals must be installed in accordance with Hopewell Township Rules and Regulations. Installation must be performed by a Registered Plumber.
4. The Applicant must leave the installed sewer lateral completely uncovered until construction and testing is observed by the Hopewell Township Representative.
5. The request for inspection must be in accordance with Hopewell Township Rules and Regulations. The Applicant shall provide at least twenty-four (24) hours notice to Hopewell Township.
6. Prior to installing any private sewer laterals, both the lateral provided by Hopewell Township and the existing house lateral to be connected should be excavated to verify that proper grade is available.
7. All installations shall be constructed in accordance with SD-10 Sanitary Sewer Lateral Connection.

WIDMER ENGINEERING INC.

HOPEWELL TOWNSHIP
INDUSTRIAL WASTE DISCHARGE PERMIT

PERMITTEE:

MAILING ADDRESS:

FACILITY ADDRESS:

1.0 EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

DISCHARGE PARAMETER	ALLOWABLE DISCHARGE (mg/L)	MEASUREMENT FREQUENCY	SAMPLE TYPE

SAMPLING LOCATION:

2.0 CONDITIONS OF INDUSTRIAL WASTE DISCHARGE PERMIT

(1) Failure to comply with any of the terms or conditions of this Industrial Waste Discharge Permit or the Sewer System Rules and Regulations is grounds for enforcement action; for Industrial Waste Discharge Permit termination, revocation and reissuance, or modification; or for denial of Industrial Waste Discharge Permit renewal.

(2) Application for renewal of this Industrial Waste Discharge Permit, or notification of intent to cease Discharging by the expiration date, must be submitted to Hopewell Township at least thirty (30) days prior to the Permit expiration date. In the event that a timely and complete application for renewal has been submitted and Hopewell Township is unable, through no fault of the Permittee, to reissue the Industrial Waste Discharge Permit prior to the expiration date, the terms and conditions of this Industrial Waste Discharge Permit will be automatically continued and will remain fully effective and enforceable pending the grant or denial of Industrial Waste Discharge Permit renewal.

PERMIT ISSUED: BY_____
Hopewell Township Manager

DATE_____

This Industrial Waste Discharge Permit and the authorization to Discharge shall expire at midnight _____. This Industrial Waste Discharge Permit may be revoked and reissued by Hopewell Township.

WIDMER ENGINEERING INC.

HOPEWELL TOWNSHIP
VACANT STRUCTURE AGREEMENT

I, _____ certify that I own the _____
Owner

_____ located at _____

_____

and I hereby notify Hopewell Township that the structure is now vacant or will be vacant as of _____, 20_____ and will remain vacant until _____, 20_____. (This agreement and the reduced sewer rental fee can only be used for structures that will be vacant for at least three (3) months.)

I therefore request a reduced quarterly sewer rental fee for my property. I understand and agree that I must have the potable water service shut off to my property, and that I am required to notify Hopewell Township when the vacant structure becomes occupied.

_____
Owner

Date:_____

Sworn to and subscribed

Before me this _____ day of

_____, 20___.

HOPEWELL TOWNSHIP

By:_____

Title:_____

Date:_____

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES:

WIDMER ENGINEERING INC.

HOPEWELL TOWNSHIP

BEAVER COUNTY, PENNSYLVANIA

SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

JUNE, 2010

WIDMER ENGINEERING INC.
225 West Crawford Avenue
Connellsville, PA 15425
Telephone: (724) 626-1909
Facsimile: (724) 626-8509

WIDMER ENGINEERING INC.

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 01000
TABLE OF CONTENTS - TECHNICAL SPECIFICATIONS

SECTION	TITLE
01001	Special Provisions
01505	Construction Stake-Out
02102	Clearing and Grubbing
02270	Soil Erosion and Sedimentation Control
02500	Test Pits
02555	Excavation and Backfill for Pipeline Utilities and Appurtenances
02570	Materials and Installation of Sanitary Sewer Lines and Related Appurtenances
02571	Bypass Pumping
02601	Manholes
02602	Subgrade
02604	Subbase
02610	Plant-Mixed Bituminous Concrete Courses
02651	Sanitary Sewer and Sewage Force Main Pipeline Testing
02825	Topsoil, Seeding, Mulching, and Maintenance

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 01001
SPECIAL PROVISIONS

1.1 Scope of Work.

A. The Developer shall furnish all labor, materials, equipment, machinery, apparatus and tools, and perform all operations necessary to install, equip and put in to satisfactory operation, the work specified.

1.2 Specifications Incorporated By Reference.

The latest edition of the Pennsylvania Department of Transportation (PennDOT) Publication 408 Specifications, and all supplements thereto, are incorporated by reference into these Technical Specifications.

1.3 Standard Drawings Incorporated By Reference.

The latest edition of the Pennsylvania Department of Transportation (PennDOT) Standard Drawings are incorporated by reference into these Technical Specifications.

1.4 Local Roads.

A. The Developer shall cooperate with municipal officials in maintaining safe and passable conditions on all roads, streets, and alleys affected by the work. Detours may be established only with written approval of officials having jurisdiction. A copy of such approval must be submitted to the Engineer and approved by him before becoming effective. Nothing in this section shall operate to release the Developer from his responsibilities under his Surety Bond.

No permanent pavement shall be installed from October 31 through April 1. During this period, disturbed surfaces shall be temporarily paved in accordance with other sections of these Technical Specifications and Pennsylvania Department of Transportation (PennDOT) Publication 408, latest revision.

1.5 State Roads

A. The Developer shall comply with all Pennsylvania Department of Transportation (PennDOT) requirements regarding any work along and across state roads.

The Developer shall be familiar with PennDOT Publication 408, and all supplements thereto, and perform all work as specified therein. The Developer shall also be familiar with Pennsylvania Code Title 67. Transportation, latest revision, and shall perform all work as specified therein.

No permanent pavement shall be installed from October 31 through April 1. During this period, disturbed surfaces shall be temporarily paved in accordance with other sections of these Technical Specifications and PennDOT Publication 408.

1.6 Traffic Control Plan

A. When working within the right-of-way of state roads, the Developer shall conform to the traffic control requirements of the Pennsylvania Department of Transportation's (PennDOT) Publication No. 203, all other applicable PennDOT publications, and as required by any applicable PennDOT permit(s) for the project.

B. Developer shall coordinate and get all approval for all detours with PennDOT and Hopewell Township. The Developer shall notify all involved emergency services three (3) working days prior to a detour being installed.

1.7 Existing Utilities.

A. The Developer is cautioned of the existence in the project area of underground utility lines. The depth and size of all existing utilities shall be verified in the field by the Developer with a representative from the appropriate utility company. The Developer shall be responsible for notifying all utility companies at least seventy-two (72) hours before any work commences on this project.

Pennsylvania One-Call
1-800-242-1776

1.8 Construction Stake-Out

A. The Developer is responsible for the stakeout of all construction work. The Developer shall furnish the Engineer with such assistance as he may require in checking any alignment, elevation or measurement of the Developer's work.

1.9 As-Built Plans

A. The Developer is required to maintain accurate and complete logs of his work of any locations where the proposed work is revised from that shown on the Plans. This shall include dimensions to show surface features. All revisions will be noted on a set of Plans in a neat fashion. The Developer shall prepare "As-Built" Plans for the Owner.

1.10 Stream Crossings/Encroachments

A. All stream crossings/encroachments shall be made in accordance with the approved Plans and Specifications and all requirements of the Pennsylvania Department of Environmental Protection Water Obstruction and Encroachment Permit(s) and/or Pennsylvania Department of Environmental Protection and Department of Army Corps of Engineers Joint Application For Pennsylvania Water Obstruction and Encroachment Permit and U.S. Army Corps of Engineers Section 404 Permit, as applicable.

1.11 Erosion and Sedimentation Control Plan

A. It is the responsibility of the Developer to adhere to all requirements which are stated and shown on the approved Erosion and Sedimentation Control Plan. These requirements are regulated by the County Soil Conservation Agency, which is capable of ordering work stoppage on any project which does not comply with the Soil Erosion and Sedimentation Control measures. It is the sole responsibility of the Developer to construct and maintain these measures throughout the project within the time limit specified for project completion. No time extensions will be justified for work stoppage due to insufficient compliance with the Erosion and Sedimentation Control Plan.

1.12 Photographs/Videotape

The Developer shall furnish two (2) sets of photographs to the Engineer. The photographs shall be digital color photographs and shall be provided in both hardcopy format and on a CD. The photographs shall be taken before construction begins and after construction is

completed. The photographs shall show all areas affected by the construction. Additional photographs shall be taken in critical areas where work is adjacent to sidewalks, walls, fences, structures, trees, etc. The Developer shall also clearly video all areas at which work shall take place. All DVDs shall be neatly labeled, dated, and identified. Two (2) copies of DVDs shall be furnished to the Engineer.

The photographs shall be bound, with each photo having an identification number, date, label, and any necessary comments.

The Developer shall furnish the following information, on either 40 or 100 scale drawings, the position of each photograph (marked by the identification number) and an arrow to show the direction of the view.

1.13 Special Requirements

A. Right of Ways

While installing sanitary sewers, the Developer must stay within the permanent right-of-way obtained for the installation of the sanitary sewer lines, unless permission is given by the property owner or by the Engineer to work outside of the required right-of-way. This requirement for staying within the right-of-way applies to the actual sewer construction work and also to the storage of materials and equipment.

When the Developer is working within or along public roads, he must not disturb any private property outside of the public right-of-ways.

B. Cut Sheets and Photos

Cut sheets with elevations at 25 foot intervals must be prepared by the Developer and provided to the Engineer before the installation of sewer lines.

The Develooper's attention is directed to the requirements for pre-construction photographs. No site clearing or sewer installation will be authorized by the Engineer until the requirements regarding pre-construction photographs are met by the Developer.

C. Excess Material

Excess material from construction activities shall be wasted by the Developer on an approved site. It is the Developer's responsibility to obtain an approved site, and to haul and place the excess material on the approved site. The Developer must obtain the required approvals from the DEP, and must obtain a signed agreement from the property owner. The removal and disposal of the excess material shall be done at no additional cost to Hopewell Township. All liabilities associated with the disposal of the excess material shall be borne by the Developer.

D. As-Built Drawings

The Developer's attention is directed to the requirement of providing As-Built drawings. The As-Built drawings must include; 1) distance from manhole to manhole, 2) top and invert elevations of manholes, 3) wye station from the lower manhole, and 4) elevation of the end of the service lateral based on the first floor or basement elevation of the house or building, (the as-builts must show which house floor level was used).

E. Test Holes and Existing Utilities

The Developer's attention is directed to the requirement for making test holes to determine the location of existing utilities prior to installing a sewer line. The excavation of test holes is especially critical for determining the placement of manholes to avoid conflicts with existing waterlines and other utilities.

F. Temporary Paving

Any open cuts made in the pavement of State Roads must be paved with temporary pavement by the end of each day on which the open cut was made. The Engineer reserves the right to require that the Developer also install temporary pavement in open cuts in Township roads.

G. Watertight Sewer System

Before the Engineer and the Township authorize the acceptance of the sanitary sewer system, the Engineer will inspect the sewer system to verify that the sewer system is not experiencing any ground water infiltration. If any water infiltration is found by the Engineer, the Developer must locate the sources of the infiltration and must do the work required to eliminate the infiltration. Hopewell Township will not accept the sanitary sewer system until the Developer has eliminated the infiltration to the satisfaction of the Engineer and the Township.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 01505
CONSTRUCTION STAKE-OUT

1.1 Submittals

A. Submit proof of professional registration of the Professional Engineer or Registered Surveyor employed or subcontracted to perform construction stake-out services.

B. Submit one (1) copy of all field notes to the Engineer.

1.2 Using generally accepted surveying methods, stake-out all horizontal and vertical elements as required by the Plans and prepare grade sheets as required.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 02102
CLEARING AND GRUBBING

1.1 Clearing and grubbing

A. The Developer shall not proceed with clearing and grubbing prior to the Engineer's review of the construction stake-out.

B. Clearing and grubbing shall consist of the removal of all trees, brush and other vegetation, old structures, fences, walls, guiderail posts, guiderail, signs, direction markers, sidewalks, curbs and pavement from site of the work, which will be required to be removed so that the planned construction may be made. The Developer shall dispose of all such material. All live trees shall be protected and not removed unless permitted or ordered by the Engineer. The method of clearing, including the use of bulldozers, shall be at the option of the Developer. However, he will not be permitted to cover up brush and similar debris with earth. All work under this heading shall be done sufficiently ahead of topsoil removal and excavation so as not to interfere with those operations. The Developer shall remove stumps and large roots and refill the depression with suitable compacted earth fill where necessary to bring the grade back to its original elevation or final grade.

C. All brush, stumps, roots, etc., cleared or grubbed from the site shall be burned or otherwise disposed of in a manner satisfactory to the Engineer. Burning if permitted by the Engineer, shall be conducted under guard at all times, and each Developer shall exercise every possible precaution to prevent fires from getting out of hand and destroying adjacent property, or from causing unnecessary smoke nuisance and/or hazards. Burning will not be permitted where local ordinances or State or Federal laws prohibit same. When in the opinion of the Engineer, weather is not conducive to non-nuisance or non-hazardous burning, burning operations shall be suspended at his discretion until conditions are satisfactorily improved. Regardless of whether the Engineer has or has not suspended such operations, any and all damages resulting from burning shall be the Developer's responsibility.

D. The Developer shall remove all salvageable surface items, over the area to be excavated; and he shall properly separate, classify, store, protect and preserve such materials and items for use in backfilling, resurfacing, replanting or otherwise replacing the area of construction to its original condition prior to construction, except as may hereinafter be noted.

E. For all cultivated, landscaped areas, all shrubbery, hedges and small trees in the area of construction shall be carefully removed, stored, and preserved for reuse upon completion of construction, unless otherwise authorized by the Engineer. Large trees which cannot be safely transplanted or reasonable replaced shall be left standing unless permission is specifically granted by the Engineer to remove the tree. Where trees are to be permanently removed, the Developer shall be responsible for the complete removal of the tree.

F. For all cultivated, landscaped areas, the lawn sod shall be cut and removed for the width of expected excavation within the right-of-way. The topsoil in these areas of excavation shall be stripped off to a depth of at least eight (8) inches and replaced upon completion of backfilling. All grass areas not to be excavated shall be

protected from permanent damage.

G. All fencing, mailboxes, drainage pipes, doghouses, clothes posts, steps, ornamental lawn fixtures and the like which may be in the way of construction shall be carefully removed and placed temporarily in a place convenient to the property owner until construction is completed and then replaced in their original condition and location.

H. All property corners in the line of work shall be properly referenced before excavation begins. As soon as the backfilling and compaction operations have been completed, the property corners shall be replaced in the exact position of the original corner, utilizing an equal or better marker than the original.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 02270
SOIL EROSION AND SEDIMENTATION CONTROL

1.1 All materials shall meet the requirements of the latest edition of the Erosion and Sediment Pollution Control Program Manual published by the Commonwealth of Pennsylvania Department of Environmental Resources, Office of Resources Management, Bureau of Soil and Water Conservation, Division of Soil Resources and Erosion Control.

1.2 Construct and maintain all measures required by the approved Soil Erosion and Sedimentation Control Plan.

END OF SECTION

SECTION 02500
TEST PITS

1.1 In accordance with Pennsylvania Act 287, contact Pennsylvania One-Call (1-800-242-1776) to have all utilities located in the field.

1.2 Prior to commencement of construction, at all locations where potential vertical conflicts exist between utility lines (marked and/or observable from the surface, e.g. combined sewer systems) and the location of proposed facilities, construct test pits to determine the following:

A. Location

B. Elevation of the top of utility.

C. Utility size (outside diameter).

Provide this information in writing to the Engineer. Do not commence construction until the information is reviewed by the Engineer and adjustments, if necessary, are made to the Drawings.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 02555
EXCAVATION AND BACKFILL FOR PIPELINE UTILITIES AND APPURTENANCES

1.1 Section Includes

A. Excavation and backfill, classification, trench excavation including sawcutting of existing pavement, explosives and blasting, accommodation of traffic, accommodation of drainage, pumping, embankment, backfilling trenches, restoration, temporary paving and restoration of paved traveled areas, protection of property and structures, obstruction shown on drawings, removal of obstructions, and clean up.

B. This Section is applicable to waterlines, sanitary sewer lines, storm sewer lines, other utility lines, and related appurtenances.

1.2 Excavation and Backfill - General

A. The Developer shall excavate, protect and backfill all foundations, trenches, and other excavations that may be necessary for completing the work to be done under the Contract. All excavation shall be in open cuts, except where and to such extent as the Engineer may authorize or direct that same be done by boring or jacking, or where such is specified in the Special Requirements or Drawings. Trenches may be, in general, excavated and backfilled either by machinery, or by hand as the Developer may elect; provided however, that the Engineer is empowered wherever he shall decide that such necessity exists, to direct that hand excavation be employed. The Developer shall have no claim for extra compensation due to the fact that hand, instead of machine, excavation may be necessary from any cause whatever.

B. The Developer shall perform all excavation of every description and of whatever substances encountered, to the lines and grades or depths indicated by the Drawings, as specified herein, or as directed by the Engineer. Embankments shall be prepared in accordance with the Specifications, and as necessary to bring the ground surface to finished grade elevations for areas as shown on the Drawings or directed by the Engineer. All excavated material not required for backfill or embankment shall be removed and wasted or otherwise disposed of as directed or specified.

1.3 Trench Excavation

A. The Engineer shall have the right to limit the amount of trench opened in advance of backfilling. Generally a length of 100 feet of open trench will be permitted.

B. In case more material is excavated from any trench than can be backfilled over the completed pipe or can be stored on the street or within the limits of the right-of-way, leaving space for the traffic and drainage as herein provided, the excess material shall be removed to a site mutually agreeable to the Owner and Developer. The Developer is responsible for providing this site and any soil and erosion control and permitting which is required. The Developer shall at his own cost and expense, bring back as much of the material removed as may be required to properly backfill the trench. If not of the proper kind or if so directed by the Engineer, the Developer shall, at his own cost and expense, furnish such other suitable material as may be necessary.

C. All removal and protection of pavement of will be done in accordance with Pennsylvania Code Title 67 Transportation, latest revision. In case the Developer removes or disturbs any pavement on account of settlement, slides, blasting, or cave-ins, the Developer is required to replace all such pavement removed or disturbed. Pavement shall be saw cut prior to excavation, and the edges of the pavement shall be protected and maintained by the Developer until the repaving is completed.

D. For excavation in paved areas, the backhoe out-rigger pads shall be equipped with rubber blocks to protect the pavement areas. When utilizing the loader bucket for stabilization, it shall also be blocked.

1.4 Explosives and Blasting

A. The Engineer shall be empowered to regulate the character and strength of any explosives used, and the manner of their use and storage. Only small amounts of any explosives shall be kept at any place and they shall be kept under lock, the key to be only in the hands of a trustworthy person. Great care shall be taken in handling dynamite and similar explosives during freezing weather. Caps and exploders shall not be kept in the same place as explosives. Blasts shall be properly matted and securely covered.

B. The Developer shall be solely responsible for injury to persons or property that may result from his use of explosives, and the exercise of, or failure to exercise control on the part of the Engineer shall in no way relieve him of responsibility for injury or damage resulting from their use.

C. If allowed, the blasting work shall be performed by a licensed and competent blasting Developer in accordance with State Regulations (Chapter 211 of Departments Rules and Regulations), having current acceptable insurance coverage in amounts satisfactory to the Engineer.

D. The Developer must secure a permit from the Pennsylvania Fish Commission if blasting is to be done in or along a stream. In addition, the local waterways patrolman must be notified when explosives are to be used.

1.5 Accommodation of Traffic

A. Streets shall not be unnecessarily obstructed and unless the Engineer, in writing, shall authorize the complete closing of the street, the Developer shall take such measures at his own expense, as may be necessary to keep the street or road open and safe for traffic.

B. The Developer shall employ traffic control measures in accordance with Pennsylvania Department of Transportation Publication 203 Work Zone Traffic Control, latest revision.

C. The Developer shall construct and maintain such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians or vehicles. The Developer shall furnish and erect substantial barricades at crossings of trenches, or along the trench, to protect the traveling public.

D. The Developer shall not obstruct fire hydrants.

E. The roadway on one side of the line of work shall be kept open at all times.

F. The streets, crosswalks, and sidewalks shall be kept clean, clear and free for the passage of vehicles or pedestrians, unless otherwise authorized in writing by the Engineer. A straight and continuous passageway on sidewalks and over crosswalks, at least three feet in width, shall be preserved free from all obstructions.

G. Where deemed necessary, such additional passageway as may be directed shall be maintained free of obstructions.

H. In narrow or congested streets or alleys, when so directed, the Developer shall complete his work up to a point designated by the Engineer before opening the work ahead, in order to give access to garages and other places. The Developer shall in all cases so arrange his work as to cause the least inconvenience to property owners consistent with the proper prosecution of the work as determined by the Engineer.

1.6 Accommodation of Drainage

A. Gutters, sewers, drains and ditches shall be kept open at all items for surface drainage. No damming or ponding of water in gutters or other waterways will be permitted, except where stream crossings are necessary and then only to an extent which the Engineer shall consider necessary. The Developer shall not direct any flow or water across or over pavements except through approved pipes or properly constructed troughs; and he shall, when so required and at his own cost and expense, provide pipes or troughs of such sizes and lengths as may be required and place the same as directed. The grading in the vicinity of pipe trenches shall be controlled so that the ground surface is properly pitched to prevent water running into the trenches.

1.7 Pumping

A. The Developer shall keep all excavations free from water, at his own expense, while installation work is in progress, and to such extent as may be necessary while excavation work alone is being carried on. The Developer shall build all dams and other devices necessary for this purpose, including lowering the water table below trench bottom by well points and pumping, and provide and operate pumps of sufficient capacity for dewatering the excavations. He shall provide for the disposal of the water removed from excavations in such manner as shall not cause injury to the public health, to public or private property, to the work of other Developers, to any portion of the work completed or in progress, or produce any impediment to the use of the highways, roads, lanes and streets by the public.

1.8 Embankment

A. Where embankment is necessary to support the foundations of or cover the pipe, it shall be made to the height, width and slopes shown on the Plans or as directed. The entire embankment or such portion thereof as may be deemed necessary by the Engineer, shall be made prior to the construction of the pipe or the foundation thereof at such time and in such order as the Engineer may direct.

B. The material for embankment shall be deposited in layers of not more than eight inches in thickness; each layer shall be separately compacted by heavy pavers'

rammers. No breaks or irregularities in the distribution of the material or the formation of the layers will be allowed. The whole embankment shall be carried up evenly to the height given by the Engineer in such a manner as to make a compact and solid foundation. When pipe is to be laid in a fill, the embankment shall be brought to a height at least one foot above the proposed top of the pipe before the trench is excavated. The embankment shall then be excavated to the proper form and grade and the pipe placed thereon; after which the embankment shall be carried up to a height of not less than three feet above the top of the pipe, the material being placed and rolled or rammed in layers as above described.

C. In case the embankment over the pipe should obstruct any natural drainage, the Developer will be required to do any work and furnish any material necessary to preserve natural drainage, to the satisfaction of the Engineer.

1.9 Backfilling Trenches

A. After the pipeline and its appurtenances have been constructed, all trenches shall be backfilled with the material indicated in the Trench Details included in the Drawings to a height twelve inches (12) above the top of the pipe and solidly rammed down and tamped around the pipe under it, with mechanical tampers and proper tools made for this purpose. The remainder of the trench shall be backfilled to the required height in layers not exceeding eight (8) inches in thickness. Mechanical tampers shall be used do as to obtain maximum compaction of the material.

B. Compaction of all trenches along and across State roads and Local roads, travelways, and shoulders shall be in accordance with Pennsylvania Code Title 67 Transportation, latest revision, and the latest edition of the Commonwealth of Pennsylvania, Department of Transportation Publication 408.

C. After the pipe is satisfactorily laid, backfill the trench with coarse aggregate, as shown on the Standard Drawings. Complete the backfill with suitable material. Place material in 4-inch layers; however, 8-inch layers will be permitted when using vibratory compaction equipment, provided backfill material is suitable for compacting testing. When coarse aggregate backfill is not required, backfill the entire trench with the material indicated for a trench condition. Thoroughly compact each layer of backfill with mechanical tampers, or by other acceptable methods for the full trench width to a height of not less than 1 foot above the pipe top. Compact to not less than 100% of the determined dry weight density of the backfill material.

D. All backfilled surfaces shall be maintained flush with the adjacent undisturbed surfaces.

E. As the trenches are filled in and the work completed, the Developer shall, at his own cost and expense, remove and dispose of all surplus earth, stone, slag, or other material from the work, in such manner and at such point or points as he may select or provide, subject to the approval of the Engineer; or he may deposit the same, either with or without rehandling, at any point or points on the lines of the work covered by the Contract, if so directed by the Engineer; and shall leave all roads, sidewalks and other places free, clear and in good order. In case the Developer shall fail or neglect to do so, or to make satisfactory progress in doing

so, within 24 hours after the receipt of a written notice from the Engineer, the Owner may remove such surplus material and clear the roadways, sidewalks and other places, and the cost of said work shall be charged to the Developer.

1.10 Restoration

A. Upon completion of all compacted backfilling of non-topsoil excavation, the top soil previously removed and stored shall be replaced and mounded over the backfilled area. Immediately upon backfilling of the trench for the entire length over each individual property, the entire disturbed area of this property shall be cleaned of all debris, graded, and fine-raked. Thereafter, all shrubbery, hedges, trees, fences, walkways, etc., shall be replaced to a condition equal to that before construction. Reseeding of the backfilled area within the reasonable limits of the construction is required. However, the careful replacement of the soil, the prompt cleanup and raking of the construction area on each property, the complete replacement of all removed surface items and the continued maintenance of the top surface of the trench shall be strictly enforced. In the event that the trench surface compacts in some places lower than the original grade, these areas shall be refilled with top soil, whether or not available on the property upon which the depression occurs. The Developer shall be required to periodically inspect all mounded areas of backfill and repair and maintain these areas as necessary until no further compaction results. Reseeding and mulching must be done within twenty (20) days of backfilling, weather permitting. Hydro-seeding methods are acceptable.

1.11 Temporary Paving and Restoration of Paved Traveled Areas

A. In all paved areas other than State Highways and in all unpaved areas used as thoroughfares, road shoulders, driveways or parking areas, the Developer shall provide over all backfilled excavations a temporary paving consisting of a layer of crushed stone. Developer shall maintain these temporary crossings until permanent pavement is placed.

B. The Developer, at his option, may elect to provide the permanent replacement of any bituminous paving immediately after backfilling is completed. In such cases, the requirements for temporary crushed stone are waived.

C. Temporary restoration of a pavement or paved shoulder may be required by the Engineer prior to permanent restoration, under the following:

1. The base shall consist of compacted select granular material with a surface of 2-inch bituminous material. If the existing pavement structure includes a course of subbase material, it shall be replaced to a depth equal to the existing course depth with material meeting the requirements of Section 350.2 of Publication 408, latest revision.

2. Temporary pavement restoration shall be completed before traffic is allowed to travel on the disturbed area. The temporary pavement may be kept in place for up to 6 months or as specified in the Pennsylvania Department of Transportation Highway Occupancy Permit (if applicable), if it is properly maintained.

3. The temporary pavement shall be removed and permanent restoration performed.

Paint Identification. Upon completion of pavement or paved shoulder restoration, the restoration date shall be painted immediately adjacent to the restored cut but not in an area where tires normally contact the pavement. The painted date shall indicate the month and year numerically. The numerals shall be 6 to 9 inches in height. The paint shall be color coded as follows: blue (water), yellow (gas-petroleum), red (electric), orange (communications), and green (sewer). The paint shall be maintained for 2 years after the acknowledged completion of the permitted work. If the pavement or shoulder is being overlayed for more than 100 linear feet, the PennDOT District Office may, upon request, exempt the permittee from complying with this subsection.

Appurtenances to Underground Installations. Requirements relating to appurtenances to underground installations shall include:

1. The top of every manhole, valve box or other access to the facility shall be at the same elevation as the surface in which it is located.

2. The surface surrounding manhole covers located in paved shoulders shall be paved with 4 inches bituminous concrete base course a distance of at least 1 foot around the structure to prevent washouts.

3. A manhole, including those cast-in-place, shall be constructed in compliance with current industry standards and Section 713.2(c) of PennDOT Publication 408, latest revision.

D. The Developer shall be responsible for any injury or damage resulting from lack of required trench maintenance during the prescribed maintenance period.

1.12 Responsibility for Condition of Excavation

A. The Developer shall be responsible for the condition of all excavations made by him. All slides and cave-ins shall be removed, at whatever circumstances they may occur.

B. The neglect, failure, or refusal of the Engineer to order the use of bracing or sheeting, or a better quality, grade or section, or larger sizes of steel or timber, or to order sheeting, bracing, struts, or shoring to be left in place or the giving or failing to give orders or directions as to the manner or method of placing or driving sheeting, bracing, jacks, wales, rangers, etc., shall not in any way or to any extent relieve the Developer of any responsibility concerning the condition of excavation or of any of his obligations under the contract; nor shall any delay, whether caused by any action or want of action on the part of the Developer, or by any act of the Owner, or his agents, or employees, resulting in the keeping of an excavation open longer than would otherwise have been necessary, relieve the Developer from the necessity of properly and adequately protecting the excavation from caving or slipping, nor from any of his obligations under the Contract relating to injury of persons or property.

1.13 Trench Shoring

The Developer shall provide all labor, material, and tools to furnish sheeting, shoring, and bracing as required by Department of Labor and Industry Regulations and the Federal

Occupational Safety and Health Act of 1970 (including all amendments). Trench shoring and bracing shall also be provided to protect other adjacent utilities.

Shoring shall not be removed until the permanent work is in proper condition to receive the load.

1.14 Protection of Property and Structures

A. The Developer shall, at his own expense, sustain in their places, and protect from direct or in-direct injury, all pipes, tracks, walls, buildings, and other structures or property in the vicinity of his work, whether above or below the ground, or that may appear in the trench. He shall at all times have a sufficient quantity of timber and plank, chains, ropes, etc., on the ground and shall use them as necessary for sheeting his excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened, or weakened.

B. The Developer shall take all risks attending the presence or proximity of pipes, poles, tracks, walls, building and other structures and property, of every kind and description, in or over his trenches, or in the vicinity of his work, whether above or below the surface of the ground; and he shall be responsible for all damages and assume all expense for direct or indirect injury, caused by his work to any of them, or to any person or property by reason of injury to them, whether such structures are or are not shown on the Drawings.

C. The Engineer reserves the right under such conditions to stop the excavation or any other part of the work, and to require the Developer to complete the pipeline and the backfilling up to such a point as the Engineer may direct before proceeding further with the excavation.

D. If a homeowner believes that the Developer has damaged or destroyed existing drainage pipes, etc. belonging to the homeowner, then the homeowner, at their own expense, should hire a plumber to video inspect the drain lines in question. If upon review of the video it is shown that the Developer is at fault, the Developer must reimburse the homeowner for the video inspection cost as well as the cost of repairs.

1.15 Site Work and Cleanup

A. It shall be the responsibility of the Developer to keep the site neat and clean as the work progresses. Prior to final acceptance, the structure, machinery, and appurtenant materials, as well as the site on which the pipeline is located, shall be thoroughly cleaned and made pleasing in appearance. Should the Developer fail to keep clean-up current, the Engineer is authorized to shut down all parts of the job until clean-up is current.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 02570
MATERIALS AND INSTALLATION OF SANITARY SEWER LINES AND RELATED APPURTENANCES

1.1 Quality Assurance

A. Reference Standards

1. American National Standards Institute (ANSI):
   - A21.4 Cement-Mortar Lining for Cast-Iron and Ductile Iron Pipe and Fittings
   - A21.11 Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings
   - A21.51 Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
2. American Society for Testing and Materials (ASTM):
   - A53 Specification for Pipe, Steel, Black and Hot-Dipped Zinc-Coated, Welded and Seamless
   - D1785 Specification for Poly(vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
   - D2241 Specification for Poly(vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)
   - D3033 Specification for Type PSP Poly(vinyl Chloride) (PVC) Sewer Pipe and Fittings
   - D3034 Specification for Type PMS Poly(vinyl Chloride) (PVC) Sewer Pipe and Fittings
   - D3139 Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals
   - D3212 Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
   - F477 Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
   - F679 Specification for Poly(vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings

B. Reject materials contaminated with gasoline, lubricating oil, liquid or gaseous fuel, aromatic compounds, paint solvent, paint thinner, or acid solder.

1.2 Product Delivery, Storage, and Handling

A. Delivery and Handling

1. Do not place materials on private property without written permission of the property owner.
2. During loading, transporting, and unloading, exercise care to prevent damage to materials.
3. Do not drop pipe or fittings. Avoid shock or damage at all times.
4. Take measures to prevent damage to the exterior surface or internal lining of the pipe.

B. Storage

1. Pipe may be strung along alignment where approved by the Engineer.
2. Do not stack pipe higher than recommended by the pipe manufacturer.
3. Store gaskets for mechanical and push-on joints in a cool, dry location out

of direct sunlight and not in contact with petroleum products.

1.3 Ductile Iron Pipe

A. Pipe
1. ANSI A21.51, Thickness Class as shown.
2. Standard cement-mortar lining, ANSI A21.4.

B. Fittings
1. Ductile-Iron or gray iron, ANSI A21.10.
2. Provide with standard lining as for ductile iron pipe.

C. Joints: ANSI A21.11
1. Where not specifically shown on the Contract Drawings, joints may be either mechanical joint or push-on joints.

D. Rubber gaskets, lubricants, glands, bolts and nuts: ANSI A21.11.

1.4 Polyvinylchloride (PVC) Sewer Pipe

A. Gravity Sewer Pipe and Fittings (Cellular Core Pipe shall not be used)
1. Pipe 15" diameter and smaller: ASTM D3033 or ASTM D3034, SDR-35.
2. Pipe 18" to 27" diameter: ASTM F679, PS-46.
3. Flexible Elastomeric Seals: ASTM D3212 Seal Material: ASTM F477.

B. Pressure Sewer Pipe and Fittings (Cellular Core Pipe shall not be used)
1. Pressure-Rated
a. ASTM D2241, Pressure rating as shown, 125 minimum.
2. Schedule-Rated
a. ASTM D1785, Schedule rating as shown.
3. Flexible Elastomeric Seals: ASTM D3139 Seal Material: ASTM F477

1.5 Concrete
PennDOT Publication 408 Class A.

1.6 Steel Casing Pipe

A. Steel casing pipe shall conform to all applicable requirements of ASTM A-53. The inside diameter of the casing pipe shall be at least 4 inches greater than the largest outside diameter of the carrier pipe. Steel pipe shall have a minimum yield strength of 35,000 PSI. Casing pipe shall have a thickness as follows:

Nominal Diameter (IN)	W/O Protective Coating
Under 14	0.251 Inches
14 and 16	0.282 Inches
18	0.313 Inches
20	0.344 Inches
22	0.375 Inches
24	0.407 Inches

B. Provide full circumference welded joints.

1.7 Timber Skids

A. Pressure treated, cut to a cross-sectional size to allow placement of the carrier pipe in the casing and to support the barrel of the carrier pipe.

1. Provided with notches to accommodate fastening. Treat notches at time of pipe installation.

B. Creosoting: AASHTO M133.

1.8 Steel Strapping

A. ASTM A36.

1.9 Casing Spacers

A. Carbon Steel as manufactured by Advance Products and Systems, Inc.

1.10 End Seals/End Caps

A. 1/8" synthetic rubber as manufactured by Advance Products and Systems, Inc. Secure with T-304 stainless steel clamps with 100% non-magnetic worm gear mechanism.

1.11 Sand (fine aggregate)

A. Section 703.1, PennDOT Publication 408 Specifications, Type A.

1.12 Grout

A. One part portland cement (ASTM C150), and 6 parts mortar sand mixed with water to a consistency applicable to pressure grouting.

1.13 Rip-Rap

A. Rock Gradation as per National Stone Association (NSA). Class as indicated in Plans or Details.

1.14 Laying Pipe in Trenches

A. Prepare trench excavation to the line and grade indicated in the Plans and as specified in Section 02555-Excavation and Backfill for Pipeline Utilities and Appurtenances.

B. Give ample notice to the Engineer in advance of pipe laying operations.

C. Maintain no less than three batter boards or their equivalent between adjoining manholes during pipe laying operations, or use laser alignment instruments.

D. Lower pipe into trench using handling equipment designed for the purpose to assure safety of personnel and to avoid damage to pipe. Do not drop pipe.

E. Lay pipe proceeding up-grade with the bell or groove pointing upstream.

F. Lay pipe to a true uniform line with the barrel of the pipe resting solidly in bedding material throughout its length. Excavate recesses in bedding material to accommodate joints, fittings, and appurtenances. Do not subject pipe to a blow or shock to achieve solid bearing or grade.

G. Lay each section of pipe in such a manner as to form a close concentric joint with the adjoining section and to avoid offsets in the flow line.

H. Clean and inspect each section of pipe before joining. Assemble to provide tight, flexible joints that permit movement caused by expansion, contraction, and ground movement. Use lubricant recommended by the pipe or fitting manufacturer for making joints. If unusual joining resistance is encountered or if the pipe cannot be fully inserted in to the bell, disassemble joint, inspect for damage, reclean joint components, and reassemble joint.

I. Assemble joints in accordance with recommendation of the manufacturer.

1. Push-on Joints

a. Clean the inside of the bell and the outside of the spigot. Insert rubber gasket into the bell recess.

b. Apply a thin film of gasket lubricant to either the inside of the gasket or the spigot end of the pipe, or both.

c. Insert the spigot end of the pipe into the socket using care to keep the joint from contacting the ground. Complete the joint by forcing the plain end to the bottom of the socket. Mark pipe that is not furnished with a depth mark before assembly to assure that the spigot is fully inserted.

2. Mechanical Joints

a. Wash the socket and plain end. Apply a thin film of soapy water. Slip the gland and gasket over the plain end of the pipe. Apply soapy water to gasket.

b. Insert the plain end of the pipe into the socket and seat the gasket evenly in the socket.

c. Slide the gland into position, insert bolts, and finger-tighten nuts.

d. Bring bolts to uniform tightness. Tighten bolts 180 degrees apart, alternately.

J. Disassemble and remake improperly assemble joints using a new gasket.

K. Check each pipe installed as to line and grade in place. Correct deviation from line and grade immediately. A deviation from the designed grade as shown on the Contract Drawings, or deflection of pipe joints, will be cause for rejection.

L. Place sufficient compacted backfill on each section of pipe, as it is laid, to hold firmly in place.

M. Clean interior of the pipe as work progresses. Where cleaning after laying is difficult because of small pipe size, use a suitable swab or drag in the pipe and pull forward past each joint immediately after the jointing has been completed.

N. Keep trenches and excavations free of water during construction.

O. When the work is not in progress, and at the end of each work day, securely plug open ends of pipe and fittings to prevent trench water, earth, or other substances

from entering the pipes or fittings.

P. When the vertical separation between the sanitary sewer and existing waterlines is less than 18 inches, the sanitary sewer line shall be concrete encased for a minimum of 10 feet on either side of the waterline.

Q. Deflection

1. When it is necessary to deflect pressure sewer mains from a straight alignment horizontally or vertically, do not exceed the following limits:

a. Ductile Iron Pipe: Deflection of joints shall not exceed that shown in the following table:

	MAX DEFLECTION - INCHES PER LENGTH										
LAYING LENGTH	CIP/DIP SIZE										
	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"
12 FT.	12.5	12.5	12.5	12.5	12.5	12.5	8	7	7	7	7
16 FT.	17	17	17	17	17	17	10	10	10	10	10
18 FT.	19	19	19	19	19	19	11	11	11	11	11
20 FT	21	21	21	21	21	21	12	12	12	12	12

1.15 Wye Branches and Tees

A. Install wye branches or pipe tees concurrent with pipe laying operations. Use standard fittings of the same material and joint type as the pipeline into which they are installed.

B. For taps into an existing pipeline, use a saddle wye or tee with stainless steel clamps or core drill pipe and install watertight resilient boot. Mount saddles with solvent cement or gasket and secure with metal bands. Layout holes with a template and cut holes with a mechanical hole cutter.

1.16 Laterals

A. Construct laterals in accordance with the Details in the Drawings.

B. Install an approved watertight plug, braced to withstand pipeline test pressure thrust, at the termination of the lateral. Install a temporary marker stake extending from the end of the lateral to 1-foot above finished grade.

1.17 Thrust Restraint

A. Provide thrust blocking or restrained joints for pressure pipeline at all bends, tees, and changes in direction.

1.18 Backfilling and Trenching

A. Backfill pipeline trenches only after examination of pipe laying by the Engineer.

B. Backfill trenches as specified in Section 02555-Excavation and Backfill for Pipeline Utilities and Appurtenances.

1.19 Boring

A. Push the pipe into the ground with a boring auger rotating within the pipe to remove the spoil. Do not advance the cutting head ahead of the casing pipe except for that distance necessary to permit the cutting teeth to cut clearance for the pipe. The machine bore and cutting head arrangement shall be removable from within the pipe. Arrange the face of the cutting head to provide a barrier to the free flow of soft material.

B. If unstable soil is encountered during boring retract the cutting head into the casing to permit a balance between the pushing pressure and the ratio of pipe advancement to quantity of soil.

C. If voids should develop greater than the outside diameter of the pipe by approximately one inch, grout to fill voids. Grouting to fill voids will be at the expense of the Developer.

D. Provide full circumference welded joints.

1.20 Carrier Pipe Installation

A. Place the carrier pipe as shown in the Details. Exercise care to prevent damage to pipe joints when carrier pipe is placed in casing.

B. Support pipeline within casing so that no external loads are transmitted to carrier pipe. Attach casing spacers in accordance with the manufacturer's recommendations to the barrel of carrier pipe. Do not rest carrier pipe on bells.

C. Close ends of casing with end caps/end seals in accordance with the manufacturer's recommendations.

1.21 Detectable Tape

A. Detectable tape shall consist of a minimum thickness .5 mils solid aluminum foil core running the full length and width, encased in a protective, high visibility, color coded inert plastic jacket that is impervious to all known alkalis, acids, chemical reagents and solvents found in soil. Foil to be visible on unprinted side. Minimum overall thickness 5.5 mils. Minimum weight 2-1/2 pounds/1" X 1,000 ft. unit. Tape shall be 3" wide, green in color, marked sewer, shipped in a roll, and magnetically detectable.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 02571
BYPASS PUMPING

1.1 The work covered by this item consists of furnishing all labor, supervision, tools, equipment, appliances, and materials to perform all operations in connection with pumping of sewage around pipe segment(s). Bypass pumping will be between existing manholes. Discharging to outlets such as storm sewers, streams will not be permitted. The Developer shall maintain sewage flow in the construction area in order to prevent backup and/or overflow into upstream pipe segments and laterals.

Bypass pumping shall be required for all instances in which the existing sanitary sewer line is replaced with a new sanitary sewer line, and the existing sanitary sewer line will not be able to maintain service during the construction period.

Bypass pumping shall be required as necessary during the construction of new sanitary sewer lines in locations where the existing sanitary sewer lines will remain in place and function as storm sewer lines.

1.2 The Developer shall provide and maintain adequate pumping equipment, force mains and other necessary appurtenances in order to maintain reliable sanitary sewer service in all sanitary sewer lines as required for construction. The Developer shall have backup pump(s), force main(s) and appurtenances ready to deploy immediately.

Any backups and/or overflows as the result of inadequate equipment are the responsibility of the Developer.

The Developer shall demonstrate that the pumping system is in good working order and is sufficiently sized to successfully handle flows.

The Developer shall be required to have all materials, equipment and labor necessary to complete the repair or replacement on the job site prior to isolating the sewer manhole or line segment and beginning bypass pumping operations.

1.3 The Developer shall be responsible for all required bulkheads, pumping, equipment, piping, etc.

All piping(s), joints and accessories shall be designed to withstand at least twice the maximum system pressure, or a minimum of 50 psi, whichever is greater. During bypass pumping, no sewage shall be leaked, dumped, or spilled in or unto, any area outside of the existing sanitary sewer system. When bypass pumping operations are complete, all pumping shall be drained into the sanitary sewer prior to disassembly.

1.4 Pump Operation

1. The Developer shall plug off and pump down the sewer manhole or line segment in the immediate work area and shall maintain the sanitary sewer system so that surcharging does not occur. Where work requires the line to be blocked beyond working hours, Developer shall operate bypass pumping and man the system twenty-four (24) hours a day.

2. The Developer shall ensure that no damage will be caused to private property as a result of bypass pumping operations. Ingress and egress to adjacent properties shall be maintained at all times. Ramps, steel plates or other methods shall be deployed by the Developer to facilitate traffic over surface piping.

3. The Developer shall complete the work as quickly as possible and satisfactorily pass all test, inspections and repair all deficiencies prior to discontinuing bypass pumping operations and returning flow to the sewer manhole or line segment.

4. The Developer shall immediately notify the Project's Inspector should a surcharge occur that results in an overflow of sewage. If the Developer is unable to remedy the situation, then he should suspend or terminate the work until such time as the overflows have been controlled.

   In the event that sewage accidentally drains into the drainage system or street, the Developer shall immediately stop the overflow, and take the necessary action to clean up and disinfect the spillage. If sewage is spilled onto public or private property, the Developer shall wash down, clean up and disinfect the spillage.

   The Developer shall locate bypass pumping suction and discharge lines so as to not cause undue interference with the use of streets, private driveways and alleys.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 02601
MANHOLES

1.1 Quality Assurance

A. Reference Standards
1. Pennsylvania Department of Transportation Publication 408 Specifications.
2. American Society for Testing and Materials (ASTM):

C32	Specification for Sewer and Manhole Brick
C270	Specifications for Mortar for Unit Masonry
C443	Specification for Joints for Circular Concrete
C478	Specifications for Precast Reinforced Concrete Manholes Sections
C923	Specification for Resilient Connections Between Reinforced Concrete Manholes Structures and Pipes

1.2 Basic Materials

A. Crushed Stone Subbase
1. Size 57, Type C, Section 703.2, Publication 408 Specifications.

B. Manholes Brick: ASTM C32, grade MS, Solid

C. Concrete Masonry Units: ASTM C270, Type S

D. Masonry Mortar: ASTM C270, Type S

E. Concrete: Class A, Penn-DOT Publication 408.

F. Joint Sealant Compound: FS SS-S-00210, preformed, flexible, self-adhering, cold-applied.

G. Rubber Gaskets: ASTM C443

H. Resilient Pipe-to-Manhole Connection: ASTM C923

1.3 Fabricated Products

A. Precast Concrete Manhole Sections: ASTM C478
1. 5.5 ± 1% air-entrained cement concrete.
2. Eccentric cone or flat slab top sections; minimum 24" access opening unless otherwise indicated.
3. Precast riser sections of length to suit.
4. Precast bases of a design similar to the precast riser sections.

B. Manhole Steps:
1. Cast Iron: ASTM A48, Class 30 or better.
2. Aluminum: Alloy 6061-T6
3. Plastic Coated Steel: Deformed steel reinforced bar encapsulated with injection molded polypropylene. Serrated tread and end lugs to prevent feet from slipping off.

C. Manhole Frames and Covers:
1. Domestic cast iron castings: ASTM A48, Class 30 or better; free of bubbles, sand and air holes, and other imperfections.

2. Contact surfaces machined and matched.
3. All Manhole Covers to bear the lettering **"Hopewell Sanitary"**.

1.4 Excavation

A. Perform excavation to the line and grade shown on the Contract Drawings and as specified in Section 02555-Excavation and Backfill for Pipeline Utilities and Appurtenances.

B. Location and depth of manholes as shown on the Drawings.

1.5 Construction

A. Construct watertight manholes of precast concrete sections.

B. Construct drop connections of the required type.

C. Install crushed stone subbase.

D. Provide cast-in-place concrete or precast concrete bases.

E. Form flow channels in manhole bases. Slope channels uniformly from influent invert to effluent invert; minimum 1" drop. Construct bends of the largest possible radius. Form channel sides and invert smooth and uniform; free of cracks, holes or protrusions.

F. Do not permit pipe to project more than 2" into the manhole.

G. Seal joints between precast concrete manhole sections with preformed rubber gaskets or joint sealant compound.
1. Place joint sealant compound on lower section to be squeezed by the weight of the upper section.
2. Place rubber gasket in groove formed in spigot end. Equalize gasket tension.

H. Install manhole sections with steps in proper vertical alignment.

I. Use masonry or precast manhole rings to achieve elevation shown for frame and cover. Do not adjust elevation more than one-foot with masonry or precast rings.

J. Install manhole frames and covers.
1. Set top of frames at finished grade elevation or other elevation shown on the Drawings.
2. Anchor manhole covers installed in unpaved areas.
3. Seal joint between manhole frame and manhole with joint sealant compound.

K. Where new manholes are to be constructed on existing pipelines, carefully excavate around existing pipeline for placement of the new manhole base. Take all measures necessary to control flow through the existing pipeline and to prevent leakage into the new base. After completion of the manhole, carefully remove the top portion of the existing pipeline.

L. Waterproof exterior of all manholes and concrete structures with an approved bituminous material. Bituminous waterproof material shall meet the requirements of PennDOT Publication 408, Section 680.2(a). Waterproofing material shall be applied in accordance with PennDOT Publication 408, Section 680.3(a) and (b) to the level of bury on the exterior of all manholes and concrete structures.

1.6 Backfilling

A. Backfill only after examination of the manhole by the Engineer.

B. Perform backfilling as specified in Section 02555-Excavation and Backfill for Pipeline utilities and Appurtenances.

1.7 Vacuum Testing of Manholes

A. All proposed sanitary manholes shall be tested after assembly and installation as directed by the Engineer.

B. All lift holes shall be plugged with an approved non-shrink grout.

C. No grout will be placed in the horizontal joints before testing.

D. All pipes entering the manhole shall be plugged, taking care to securely brace the plugs from being drawn into the manhole.

E. The test head shall be placed at the inside of the top section or in the slab frame as required, and the seal inflated in accordance with the manufacturer's recommendation.

F. A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches. The manhole shall pass if the time is greater than 60 seconds for a 48-inch diameter manhole, 75 seconds for 60-inch, and 90 seconds for 72-inch.

G. If the manhole falls the initial test, necessary repairs to the outside of the manhole shall be made with a non-shrink grout while the vacuum is still being drawn. Retesting shall proceed until a satisfactory test is obtained.

END OF SECTION

SECTION 02602
SUBGRADE

1.1 Subgrade shall conform to the latest edition of the Pennsylvania Department of Transportation Publication 408 Specifications (PennDOT Publication 408), Section 210 "Subgrade."

1.2 Subgrade shall be constructed in accordance with Penn-DOT Publication 408, Section 210 "Subgrade."

END OF SECTION

SECTION 02604
SUBBASE

1.1 Subbase shall conform to the latest edition of the Pennsylvania Department of Transportation Publication 408 Specifications (PennDOT Publication 408), Section 350 "Subbase."

1.2 Subbase shall be constructed in accordance with PennDOT Publication 408, Section 350 "Subbase."

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF
SANITARY SEWERS AND APPURTENANCES

SECTION 02610
PLANT-MIXED BITUMINOUS CONCRETE COURSES

1.1 Plant-Mixed Bituminous Concrete Courses shall conform to the latest edition of the Pennsylvania Department of Transportation Publication 408 Specifications (PennDOT Publication 408), Section 401 "Plant-Mixed Bituminous Concrete Courses", Section 420 "Bituminous Wearing Course ID-2", Section 421 "Bituminous Binder Course ID-2", and Section 305 "Bituminous Concrete Base Course", with the following exception(s):

A. Section 401.2 Material. Supplier certification of materials shall be accepted in lieu of all material proportion and mixture tests.

1.2 Asphalt cement shall be AC-20 conforming to PennDOT Publication 408, Section 702 "Bituminous Material".

1.3 Bituminous Tack Coat shall conform to PennDOT Publication 408, Section 460 "Bituminous Tack Coat".

1.4 A. All Plant-Mixed Bituminous Concrete Courses, Asphalt Cement, and Bituminous Tack Coat shall be constructed in accordance with PennDOT Publication 408.

B. No asphalt pavement shall be placed while it is raining. Asphalt pavement shall be placed only when the outside temperature is 40°F and rising.

C. Compaction of asphalt shall be met by using 2-ten ton vibratory rollers, and hand tamping or mechanical compaction equipment shall be used on all areas inaccessible to rollers.

D. All mixtures shall be in a plant meeting the requirements of A.S.T.M. designation D-995. The material shall be transported to the site of placing in clean, tight vehicles with the asphalt temperature between 265° and 325°.

1.5 TESTING FINISHED BASE COURSE SURFACE

The surface of the base course shall be tested with a 10-foot straight-edge during and after the rolling operation. Any irregularities greater than 1/2 inch shall be corrected prior to placing the surface courses thereon.

1.6 TESTS FOR THICKNESS OF BASE COURSE

The holes may be required, and the thickness checked. If any test hole shows a deficiency of more than ¼ inch additional holes shall be cut, 2 each on the lines at right angles to each other. The thickness for all five shall be averaged.

If the average thickness is deficient from the specified thickness by ¼ inch or more, the extent of the deficient area shall be established by similar procedures and the deficient area shall be corrected at the Developer's expense.

1.7 TESTING FINISHED SURFACE

The wearing surface shall be tested with a 10-foot straightedge during and after the rolling operation. Any irregularities greater than ¼ inch shall be corrected.

1.8 TEST FOR THICKNESS OF WEARING COURSE

Test holes may be required to verify the thickness. If any test hole shows a deficiency of more than ¼ inch, 4 additional holes shall be cut, 2 each on lines at right angles to each other. The thickness for all 5 shall be averaged.

If the average thickness is deficient from the specified thickness by ¼ inch or more, the extent of the deficient area shall be established by similar procedures and the deficient area shall be corrected at the Developer's expense.

END OF SECTION

SECTION 02651
SANITARY SEWER AND SEWAGE FORCE MAIN PIPELINE TESTING

1.1 Preparation

A. Backfill trenches in accordance with Section 02555-Excavation and Backfill for Pipeline Utilities and Appurtenances.

B. Provide pressure pipeline with concrete reaction support blocking.

C. Flush pipeline to remove debris. Collect and dispose of flushing water and debris.

D. Clean pipelines by propelling a snug fitting rubber ball through the pipeline with water from the upstream manhole to the downstream manhole. Investigate and correct any stoppage of the cleaning ball. Collect and dispose of cleaning water and debris.

E. Lamping

1. After flushing and cleaning, lamp gravity pipeline in the presence of the Engineer.

2. Assist the Engineer in the lamping operation by shining a light at one end of each pipeline section between manholes. The Engineer will observe the light at the other end. Pipeline that has not been installed with uniform line and grade will be rejected. Remove and re-lay rejected pipeline sections. Re-clean and lamp until pipeline section achieves a uniform line and grade to the satisfaction of the Engineer.

F. Plug outlets, wye-branches and laterals. Brace plugs to offset thrust.

1.2 Testing Gravity Sewer Pipelines

A. Low Pressure Air Tests

1. Test each newly installed section of gravity sewer line between manholes.

2. Slowly introduce air pressure to approximately 4.0 psig.

a. If ground water is present, determine its elevation above the springline of the pipe by means of a piezometric tube. For every foot of ground water above the springline of the pipe, increase the starting air test pressure reading by 0.43 psig. Do not increase pressure above 10 psig.

3. Allow pressure to stabilize for at least five (5) minutes. Adjust pressure to 3.5 psig or the increased test pressure as determined above if ground water is present. Start the test.

4. Test:

a. Determine the test duration for a sewer section with a single pipe size from the table below:

Low Pressure Air Test - Test Times			
Nominal Pipe Size	T (time) Min/100 Ft.	Nominal Pipe Size	T (time) Min/100 Ft.
4	.3	21	3.0
6	.7	24	3.6
8	1.2	27	4.2
10	1.5	30	4.8
12	1.8	33	5.4
15	2.1	36	6.0
18	2.4		

b. Record the drop in pressure during the test period. If the air pressure has dropped more than 1.0 psig during the test period, the line is presumed to have failed. If the 1.0 psig air pressure drop has not occurred during the test period, the test shall be discontinued and the line will be accepted.

c. If the line fails, determine the source of the air leakage, make corrections and retest. The Contractor has the option to test the section in incremental stages until the leaks are isolated. After the leaks are repaired, retest the entire section between manholes.

B. Testing Pipe over 36" Diameter

1. Pipe over 36" diameter shall be subjected to a visual interior inspection.

C. Infiltration Test

1. Use only when gravity pipeline is submerged in ground water. Obtain prior approval of the Engineer.

2. Maximum Allowable Infiltration: 100 gallons per inch of pipe diameter per mile per day for any one section under test, including the allowances for leakage from manholes.

1.3 Testing Pressure Sewer Pipelines

A. Hydrostatic Leakage Test

1. Test each newly laid pressure pipeline, including any valved section thereof, hydrostatically at 1.5 times the working pressure of the pipeline based on the elevation of the lowest point in the pipeline corrected to the elevation of the test gauge. Obtain test pressure from the Engineer.

2. Slowly fill the section to be tested with water, expelling air from the pipeline at the high points. Install corporation stops at high points if necessary. After all air is expelled, close air vents and corporation stops and raise the pressure to the specified test pressure.

3. Observe joints, fittings and valves under test. Remove and renew cracked pipe, joints, fittings, and valves showing visible leakage. Retest.

4. After visible deficiencies are corrected, continue testing at the same test pressure for an additional two hours to determine the leakage rate. Maintain pressure within plus or minus 5.0 psi of test pressure. Leakage is defined as the quantity of water supplied to the pipeline necessary to maintain test pressure during the period of the test.

5. Compute the maximum allowable leakage by the following formula:

$$L = \frac{ND\sqrt{P}}{7,400}$$

Where:
- L is the allowable leakage in gallons/hour
- N is the number of joints in the section tested
- D is the nominal diameter of the pipe in inches
- P is the average test pressure in psig

If the line under test contains sections of various diameters, the allowable leakage shall be the sum of the computed leakage for each size.

6. If the test of the pipe indicates leakage greater than that allowed, locate the source of the leakage, make corrections and retest until leakage is within allowable limits. Correct visible leaks regardless of the amount of leakage.

1.4 Deflection Testing of Plastic Sewer Pipe

A. Perform vertical ring deflection testing on all portions of PVC and ABS sewer piping, in the presence of the Engineer, after backfilling has been in place for at least 30 days but not longer than 12 months.

B. The maximum allowable deflection for installed plastic sewer pipe shall be limited to 5% of the original vertical internal diameter.

C. Perform deflection testing with a deflectometer, calibrated, television, or a properly sized 'Go, No-Go' mandrel. The mandrel(s) shall be constructed at the Contractor's expense and subject to the approval of the Engineer. The mandrel(s) shall conform with ASTM Specification D3034 and have a diameter not less than 95 percent of the average inside diameter of the pipe. Testing shall be performed without mechanical pulling devices.

D. Pipe exceeding the allowable deflection shall be located, excavated, replaced, and retested at the sole expense of the Contractor.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SECTION 02825
TOPSOIL, SEEDING, MULCHING, AND MAINTENANCE

1.1 Section Includes

A. Topsoil
B. Seeding
C. Mulching
D. Maintenance

1.2 Applicable Standard Tables

A. Seeding Restoration Table (attached)

1.3 References

A. Commonwealth of Pennsylvania, Department of Transportation, Publication 408 Specifications current edition with all supplements. (PennDOT Publication 408)

B. Pennsylvania Seed Act of 1965, Act 187, as amended.

C. Agricultural Liming Materials Act of 1978, P.L.15, No. 9 (3P.S.132.1), as amended.

D. Pennsylvania Soil Conditioner and Plant Growth Substance Law, Act of December 1, 1977, P.L. 258, No. 86 (3P.S.68.2), as amended.

E. Rules for Testing Seeds of the Association of Official Seed Analysts.

F. AASHTO T194.

1.4 Definitions

A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.5 Regulatory Requirements

A. Comply with regulatory agencies for seed mixture, fertilizer, and herbicide composition.

1.6 Quality Assurance

A. Provide seed mixture in containers showing percentage of seed mix, date of production, net weight, date of packaging, and location of packaging.

B. The Developer has the option of using soil testing to justify decreasing lime and fertilizer rates. When soil testing is selected by the Developer, the soil and soil supplement testing shall be performed by a Soils Testing Laboratory engaged and paid for by the Developer and approved by the Engineer. The Developer shall collect soil samples under the direction of the Engineer.

If soil tests are performed to justify decreased liming and fertilizer rates, the Developer shall submit certified soil sample analysis, including the laboratory's recommended soil supplement formulation.

1.7 Topsoil

A. Having a pH of between 6.0 and 7.0, containing not less than 2% nor more than 10% organic matter as determined by AASHTO T194.

B. Fertile friable loam, sand loam, or clay loam which will hold a ball when squeezed with the hand, but which will crumble shortly after being released.

C. Free of clods, grass, roots, or other debris harmful to plant growth.

D. Free of pests, pest larvae, matter toxic to plans, and weeds.

E. Topsoil removed under Section 02300-Earthwork may be reincorporated into this work. Additional topsoil, as required, shall be furnished by the Developer at no additional cost to the Owner.

1.8 Seed

A. Fresh, clean, dated material from the last available crop and within the date period specified with a date of test not more than 9 months prior to the date of sowing. Percentage of pure seed present shall represent freedom from inert matter and from other seeds distinguishable by their appearance. All seeds will be subject to analysis and testing.

TABLE 1 - GRASS AND AGRICULTURAL SEEDS

Species	Minimum Guaranteed Purity (Percent)	Maximum Weed Seed (Percent)	Minimum Guaranteed Germination (Percent)
Kentucky Bluegrass (Poapratensis) Domestic Origin; min. 21 lb. per bushel	90	0.20	80
Perennial Ryegrass (Lolium perenne, var. Pennfine)	95	0.15	90
Kentucky 31 Fescue (Festuca elatior arundinacea)	98	0.25	85
Crownvetch (Coronilla varia, var. Penngift)	99	0.10	70
Pennlawn Red Fescue (Festuca rubra, var. Pennlawn)	98	0.25	90
Annual Rye Grass (Lolium multiflorum)	95	0.15	90
Timothy (Phleum pratense)	98	0.25	95

1.9 Seed Mixtures

A. See "Seeding Restoration Table" at end of this Section.

1.10 Inoculant

A. Inoculant leguminous seed before seeding with nitrogen fixing bacteria culture prepared specifically for the species.

B. Do not use inoculant later than the date indicated by the manufacturer.

C. Protect Inoculated seed from prolonged exposure to sunlight prior to sowing.

D. Reinoculate seed not sown within 24 hours following initial inoculation.

1.11 Fertilizer

A. Basic Dry Formulation Fertilizer

1. Analysis 0-20-20 and as defined by the Pennsylvania Soil Conditioner and Plant Growth Substance Law.

B. Starter Fertilizer

1. Analysis 10-5-5 or 12-6-6 as defined by the Pennsylvania Soil Conditioner and Plant Growth Substance Law.

1.12 Lime

A. Raw ground limestone conforming to Section 804.2(a), of PennDOT Publication 408.

1.13 Mulching Materials

A. Mulches for seeded areas shall be one, or a combination of, the following:

1. Hay

a. Cured to less than 20% moisture content by weight.
b. Contain no stems of tobacco, soybeans, or other coarse or woody material.
c. Timothy hay or mixed clover and timothy hay.

2. Straw

a. Cured to less than 20% moisture content by weight.
b. Contain no stems of tobacco, soybeans, or other coarse or woody material.
c. Wheat or oat straw.

3. Wood Cellulose

a. No growth or germination inhibiting substances.
b. Green, air dried. Packages not exceeding 100 pounds.
c. Requirements:

Moisture Content:	12% ± 3%
Organic Matter:	98.6% ± 0.2% on the oven dry basis.
Ash Content:	1.4% ± 0.2%
Minimum Water-Holding Capacity:	1,000%

4. Mushroom Manure

a. Organic origin, free of foreign material larger than 2" and substances toxic to plant growth.
b. Organic Matter: 20% minimum
c. Water-Holding Capacity: 120% minimum
d. pH: 6.0

1.14 Accessories

A. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

B. Erosion Fabric: Jute matting, open weave.

C. Stakes: Softwood lumber, chisel pointed.

D. String: Inorganic fiber.

1.15 Preparation of Subgrade

A. "Hard pan" or heavy shale

1. Plow to a minimum depth of 6".
2. Loosen and grade by harrowing, discing, or dragging.
3. Handrake subgrade. Remove stones over 2" in diameter and other debris.

B. Loose loam, sandy loam, or light clay

1. Loosen and grade by harrowing, discing, or dragging.
2. Handrake subgrade. Remove rocks over 2" in diameter and other debris.

1.16 Placing Topsoil

A. Place topsoil and spread over the prepared subgrade to obtain the required depth and grade elevations. Final compacted thickness of topsoil not less than 3 1/2". Compact with a roller weighing not over 120 pounds per foot width of roller or by other acceptable means, as directed.

B. Handrake topsoil and remove all materials unsuitable or harmful to plant growth.

C. Do not place topsoil when the subgrade is frozen, excessively wet, or extremely dry.

D. Do not handle topsoil when frozen or muddy.

1.17 Tillage

A. After seed bed areas have been brought to proper compacted elevation, thoroughly loosen to a minimum depth of 5" by discing, harrowing, or other approved methods. Do not work topsoiled areas when frozen or excessively wet.

B. Liming

1. Distribute limestone uniformly at a rate of 100 pounds per 1,000 square feet.
2. Thoroughly incorporate into the topsoil to a minimum depth of 4".
3. Incorporate as a part of the tillage operation.

C. Basic Fertilizer

1. Distribute basic fertilizer uniformly at a rate of 50 pounds per 1,000 square feet.
2. Incorporate into soil to a depth of 4" by approved methods.
3. Incorporate as a part of the tillage operation.

D. Liming and Fertilizer rates may be decreased if lesser rates are indicated by soil tests provided by the Developer.

1.18 Finish Grading

A. Remove unsuitable material larger than 2" in any dimension.

B. Uniformly grade surface to the required contours without the formation of water pockets.

C. Rework areas which puddle by the addition of topsoil and fertilizer. Rerake.

D. Distribute starter fertilizer at the following rates:
10-5-5: 50 pounds per 1,000 square feet.
12-6-6: 33 pounds per 1,000 square feet.

E. Incorporate starter fertilizer into the upper 1" of soil.

1.19 Seeding

A. Uniformly sow specified seed mix by use of approved hydraulic seeder, power-drawn drill, power-operated seeder, or hand-operated seeder or by hand. Do not seed when winds are over 15 mph.

B. Upon completion of sowing, cover seed to an average depth of 1/4" by hand reraking or approved mechanical methods.

1.20 Mulching

A. Mulch within 48 hours of seeding.

B. Place hay and straw mulch in a continuous blanket at a minimum rate of 1,200 pounds per 1,000 square yards.

1. Anchor hay or straw mulch by use of twine, stakes, wire staples, paper, or plastic nets.

2. Emulsified asphalt may be used for anchorage provided it is applied uniformly at a rate not less than 31 gallons per 1,000 square yards.

3. Apply approved chemical mulch binders at the manufacturer's recommended rate.

C. Chemical mulch binders or a light covering of topsoil may be used for anchorage when the size of the area precludes the use of mechanical equipment.

D. Apply wood cellulose fiber hydraulically at a rate of 320 pounds per 1,000 square yards.

1. Incorporate as an integral part of the slurry after seed and soil supplements have been thoroughly mixed.

E. Spread mushroom manure uniformly to a minimum depth of 1/2" or to the depth indicated on the drawings.

F. When mulch is applied to grass areas by blowing equipment, the use of cutters in the equipment will be permitted to the extent that a minimum of 95% of the mulch is 6" or more in length. For cut mulches applied by the blowing methods, achieve a loose depth in place of not less than 2".

G. When mulching by the asphalt mix method, apply the mulch by blowing. Spray the asphalt binder material into the mulch as it leaves the blower. Apply the binder to the mulch in the proportion of 1.5 to 2.0 gallons per 45 pounds of mulch.

1. Protect structures, pavements, curbs, and walls to prevent asphalt staining.

2. Erect warning signs and barricades at intervals of 50 feet or less along the perimeter of the mulched area.

3. Do not spray asphalt and chemical mulch binders onto any area within 100 feet of a stream or other body of water.

1.21 Seed Protection

A. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.

B. Lay fabric smoothly on surface, bury top end of each section in 6 inch (150 mm) deep excavated topsoil trench. Provide 12 inch (300 mm) overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.

C. Secure outside edges and overlaps at 36 inch (900 mm) intervals with stakes.

D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

1.22 Maintenance

A. Maintenance includes watering, weeding, cleanup, edging and repair of depressions, washouts or gullies.

B. Those areas which do not show a prompt catch of grass within 14 days of seeding shall be reseeded until complete grass catch occurs.

END OF SECTION

HOPEWELL TOWNSHIP
SPECIFICATIONS FOR INSTALLATION OF SANITARY SEWERS AND APPURTENANCES

SEEDING RESTORATION TABLE					
Restoration Condition	Topsoil	Lime*	Basic Fertilizer	Starter Fertilizer	Seed Mix & Sowing Rate (% By Weight)
Temporary Condition (**)	N/A	N/A	N/A	N/A	100% Annual Ryegrass Sow 9# per 1,000 Sq. Yds. Mar. thru May/Aug. thru Sept.
Roadside; Non-mowed	Yes	100# per 1,000 Sq. Ft.	No	10-5-5 @ 50# per 1,000 Sq. Ft. or 12-6-6 @ 33# per 1,000 Sq. Yds.	80% Kentucky 31, Fescue 20% Pennlawn Red Fescue Sow 21# per 1,000 Sq. Yds. Mar. thru May/Aug. thru Sept.
Roadside; Mowed	Yes	100# per 1,000 Sq. Ft.	No	10-5-5 @ 50# per 1,000 Sq. Ft. or 12-6-6 @ 33# per 1,000 Sq. Yds.	50% Kentucky Bluegrass 30% Pennlawn Red Fescue 20% Perennial Ryegrass Sow 21# per 1,000 Sq. Yds. Mar. thru May/Aug. thru Sept.
Bank Areas	Yes	100# per 1,000 Sq. Ft.	No	10-5-5 @ 50# per 1,000 Sq. Ft. or 12-6-6 @ 33# per 1,000 Sq. Yds.	45% Crownvetch 55% Annual Ryegrass Sow 9# per 1,000 Sq. Yds. Anytime except Sept. & Oct.
Lawns	Yes	100# per 1,000 Sq. Ft.	0-20-20 @ 50# per 1,000 Sq. Ft.	10-5-5 @ 50# per 1,000 Sq. Ft. or 12-6-6 @ 33# per 1,000 Sq. Yds.	50% Kentucky Bluegrass 30% Pennlawn Red Fescue 20% Perennial Ryegrass Sow 21# per 1,000 Sq. Yds. Mar. thru May/Aug. thru Sept.
Open Fields	No	No	No	10-5-5 @ 50# per 1,000 Sq. Ft. or 12-6-6 @ 33# per 1,000 Sq. Yds.	100% Timothy Sow 9# per 1,000 Sq. Yds. Mar. thru May/Aug. thru Sept.
Open Fields; Cultivated	No	No	No	10-5-5 @ 50# per 1,000 Sq. Ft. or 12-6-6 @ 33# per 1,000 Sq. Yds.	100% Annual Ryegrass Sow 9# per 1,000 Sq. Yds. Mar. thru May/Aug. thru Sept.
Wood: Sparse	No	No	No	10-5-5 @ 50# per 1,000 Sq. Ft. or 12-6-6 @ 33# per 1,000 Sq. Yds.	100% Red Fescue Sow 36# per 1,000 Sq. Yds. Mar. thru May/Aug. thru Sept.

* Unless lesser rate indicated by soils tests.

** Unless otherwise specified in the Erosion and Sedimentation Control Plan