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WATER POLLUTION CONTROL

MODULE 1 – GENERAL INFORMATION SEWERAGE

APPLICANT _____

LOCATION OF PROJECT: MUNICIPALITY BLOOMSBURG COUNTY _____

DESIGN ENGINEER AND FIRM ROGER K. HEPNER, MID-PENN ENGINEERING CORPORATION

DESIGN ENGINEERS ADDRESS D.O.W. BUILDING, ROUTE 15 SOUTH LEWISBURG, PENNA. ZIP CODE 17837 TELEPHONE 717/524-2214

DESCRIPTION OF PROJECT CONSTRUCTION OF SEWAGE TREATMENT PLANT TO TREAT SANITARY SEWAGE FROM YOHEY DEVELOPMENT (WONDERVIEW, INC.)

A. DOCUMENTATION REQUIRED

1. HAS A CHECK FOR $25.00, PAYABLE TO THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL RESOURCES, BEEN INCLUDED? (NOT REQUIRED OF STATE OR FEDERAL AGENCIES) — [X] Yes [ ] No [ ] N/A

2. HAVE 2 COPIES OF THE APPLICATION, FORM H710.046, BEEN SUBMITTED? (3 COPIES REQUIRED FOR PROJECTS IN ALLEGHENY COUNTY AND DELAWARE RIVER BASIN). — [X] Yes [ ] No

   A. HAS THE AFFIDAVIT BEEN PROPERLY COMPLETED AND EXECUTED? — [X] Yes [ ] No

3. DOES THE APPLICATION INCLUDE THE FOLLOWING APPLICABLE MODULES:

MODULE NUMBER	TITLE	NUMBER OF PAGES	
1	GENERAL INFORMATION – SEWERAGE	9	[X] Yes
4	WASTE LOAD AND CHARACTERISTICS	3	[X] Yes
5	GEOLOGY AND GROUND WATER INFORMATION	2	[ ] Yes
6	SEWERS AND APPURTENANCES	5	[X] Yes
7	SEWAGE PUMPING STATIONS	4	[X] Yes (2)
8	PUMPING FACILITIES	1	[X] Yes
9	FLOW EQUALIZATION AND STORAGE BASINS	2	[ ] Yes
10	GRIT CHAMBERS	1	[ ] Yes
11	SCREENING AND COMMINUTING DEVICES	2	[X] Yes
12	IMHOFF AND SEPTIC TANKS	2	[ ] Yes
13	SETTLING TANKS	2	[X] Yes
14	EARTHEN SETTLING BASINS	2	[ ] Yes

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A. **DOCUMENTATION REQUIRED** – CONTINUED

MODULE NUMBER	TITLE	NUMBER OF PAGES	
15	TRICKLING FILTERS	2	☐ Yes
16	AERATION TANKS OR BASINS	3	☒ Yes
17	WASTE STABILIZATION PONDS	3	☐ Yes
18	CHEMICAL TREATMENT (INCLUDING FEEDERS)	3	☐ Yes
19	MIXING AND FLOCCULATION FACILITIES	1	☐ Yes
20	SAND FILTERS	2	☐ Yes
21	DISINFECTION	2	☒ Yes
22	SPRAY IRRIGATION	1	☐ Yes
23	PHYSICAL ABSORPTION, ION EXCHANGE, AND CONTACT UNITS	2	☐ Yes
25	DEEP WELL DISPOSAL	4	☐ Yes
26	SLUDGE TREATMENT AND DISPOSAL		
	A. SEPARATE DIGESTION TANKS AND SLUDGE THICKENING TANKS	2	☒ Yes
	B. ELUTRIATION	1	☐ Yes
	C. WET OXIDATION	1	☐ Yes
	D. SLUDGE DRYING BEDS	1	☐ Yes
	E. LAND DISPOSAL OF SLUDGE	1	☐ Yes
	F. SLUDGE BASINS	1	☐ Yes
	G. FILTERS AND CENTRIFUGES	1	☐ Yes
	H. INCINERATION	1	☐ Yes

B. **REQUIRED DATA**

1. THE FRONT COVER OR FLYLEAF OF EACH SET OF DRAWINGS AND SPECIFICATIONS MUST BEAR THE SIGNATURE AND SEAL OF THE REGISTERED PROFESSIONAL ENGINEER, SURVEYOR BY OR UNDER WHOM PREPARED. EACH DRAWING MUST BEAR AN IMPRINT OR REASONABLE FACSIMILE OF SUCH SEAL.

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

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MODULE 1 – GENERAL INFORMATION
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B. REQUIRED DATA – CONTINUED

2. INFORMATION RELATIVE TO SPECIFIC PROGRAMS:

A. 2 COPIES OF DESIGNER'S PLANS, MODULES, AND SPECIFICATIONS (3 COPIES REQUIRED FOR PROJECTS IN ALLEGHENY COUNTY AND DELAWARE RIVER BASIN) ☐ N/A

B. HYDRAULIC PROFILE OR SCHEMATIC FLOW DIAGRAM FOR PROPOSED TREATMENT PLANT. ☐ N/A

C. UNITED STATES GEOLOGICAL SURVEY TOPOGRAPHICAL MAP SHOWING EXACT POINT OF DISCHARGE AND TREATMENT PLANT OR PUMP STATION LOCATION AND/OR AREA TO SEWERS.

D. HAVE YOU APPLIED FOR A PUBLIC UTILITY COMMISSION CERTIFICATE OF PUBLIC CONVENIENCE? ☐ Yes ☐ No ☒ N/A

(1) SPECIFY PUBLIC UTILITY COMMISSION APPLICATION NUMBER _____

(2) IS CERTIFICATE OF PUBLIC CONVENIENCE ENCLOSED? ☐ Yes ☐ No

E. HAVE YOU APPLIED FOR APPROVAL OF STREAM ENCROACHMENT(S)? ☒ Yes ☐ No ☐ N/A

F. HAVE YOU APPLIED FOR DEPARTMENT OF LABOR AND INDUSTRY APPROVAL FOR FEATURES AFFECTING EMPLOYEE SAFETY? ☐ Yes ☐ No ☒ N/A

G. DO YOU HAVE AN AGREEMENT INDICATING APPROVAL TO DISCHARGE TO SEWER SYSTEM AND TREATMENT PLANT OF ANOTHER PERMITTEE? ☐ Yes ☐ No ☒ N/A

H. HAVE YOU APPLIED FOR APPROVAL OF AIR POLUTION CONTROL FACILITIES? ☐ Yes ☐ No ☒ N/A

I. HAVE YOU SUBMITTED A LIST WITH NAMES, ADDRESSES, AND TITLES OF ALL PARTNERS IN THE CASE OF A PARTNERSHIP OR ALL OFFICERS IN THE CASE OF A CORPORATION, UNINCORPORATED ASSOCIATION, INCORPORATED ASSOCIATION, PARTNERSHIP, OR OTHER ENTITY (NOT MUNICIPAL)? ☐ Yes ☐ No ☐ N/A

3. SPECIFY THE FOLLOWING:

A. PLANS: WONDERVIEW, INC. (TITLE/DESCRIPTION) NO. OF SHEETS _____ DATE _____

PLANS: _____ (TITLE/DESCRIPTION) NO. OF SHEETS _____ DATE _____

PLANS: _____ (TITLE/DESCRIPTION) NO. OF SHEETS _____ DATE _____

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B. REQUIRED DATA – CONTINUED

B. SPECIFICATIONS (IF APPLICABLE): SPECIFICATIONS FOR YOHEY DEVELOPMENT
TITLE

NUMBER OF VOLUMES 1 DATE

C. OTHER (SPECIFY TYPE AND NUMBER):

4. ARE THE PLANS:

A. CLEAR, LEGIBLE, AND DRAWN TO SCALE WITH NORTH ARROW INDICATED? [X] Yes [ ] No

B. WITHIN MAXIMUM SIZE OF 36 INCHES BY 50 INCHES? [X] Yes [ ] No

C. SEAL AND SIGNATURE OF PROFESSIONAL ENGINEER OR SURVEYOR RESPONSIBLE FOR THIS APPLICATION

1. SIGNATURE OF PROFESSIONAL ENGINEER (OR SURVEYOR WHERE PERMITTED BY LAW)

2. SEAL OF PROFESSIONAL ENGINEER (OR SURVEYOR WHERE PERMITTED BY LAW)

SEAL

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CLASS OF CONSTRUCTION

(Check all applicable blocks)

[X] NEW
[ ] REPLACEMENT OF EXISTING UNIT(S)
[ ] ADDITIONS AND/OR
[ ] MODIFICATIONS TO EXISTING UNIT(S)

TABLE I – DESIGN LOADING DATA			Existing Facilities Design	Present Operating Load	Proposed Total Facilities Design
1. EQUIVALENT POPULATION TO BE SERVED (NO. OF PERSONS – SUBMIT CALCULATIONS)					
	A. DOMESTIC				455
	B. INDUSTRIAL				
	C. TOTAL				455
2. DESIGN YEAR OR PERIOD FOR OPERATING DATA					1980
3. RUNOFF PERIOD		(HRS)			16
4. DOMESTIC WASTE FLOW DATA	A. PER CAPITA FLOW	(GPCD)			75
	B. AVERAGE DAILY FLOW	(MGD)			0.034
	C. INFILTRATION	(MGD)			-----
	D. RUNOFF FLOW RATE	(MGD)			0.051
	E. MAXIMUM FLOW RATE	(MGD)			0.1275
5. INDUSTRIAL WASTE FLOW DATA	A. AVERAGE DAILY FLOW	(MGD)			
	B. MAXIMUM DAILY FLOW	(MGD)			
6. TOTAL DESIGN AVERAGE FLOW		(MGD)			0.035

TABLE II – FACILITIES DESIGN DATA (Specify number of units)

Units	Existing	To Be Abandoned	Total Proposed	Units	Existing	To Be Abandoned	Total Proposed
1. SCREENING DEVICES			One	13. CHLORINE CONTACT TANK(S)			One
2. GRIT CHAMBER(S)				14. DISINFECTION FACILITIES			One
3. COMMINUTOR(S)			One	15. SEPARATE SLUDGE DIGESTORS			
4. PRE-AERATION TANKS				16. SLUDGE DRYING BEDS			
5. PRIMARY SETTLING TANKS				17. MECHANICAL SLUDGE DEWATERING			
6. IMHOFF TANK(S)				18. SLUDGE ELUTRIATION TANKS			
7. TRICKLING FILTERS				19. SLUDGE STABILIZATION TANKS			Two
8. INTERMEDIATE SETTLING TANKS				20. INCINERATOR(S)			
9. AERATION TANKS			Two	21. MIXING AND FLOCCULATION TANKS			
10. FINAL SETTLING TANKS			Two	22. OTHER (Specify)			
11. INTERMITTENT SAND FILTERS				23. OTHER (Specify)			
12. WASTE STABILIZATION POND(S)				24. OTHER (Specify)			

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D. GENERAL INFORMATION

1. EXISTING COMBINED SEWERS MAKE UP _____ % OF THE TOTAL AREA SERVED BY THE SYSTEM.

2. ARE THE EXISTING SANITARY SEWERS SUBJECT TO EXCESSIVE INFILTRATION? ☐ Yes ☐ No ☒ N/A

   A. IF YES, SPECIFY MAJOR SOURCES OF INFILTRATION: _____

   B. HAS A REGULATION PROHIBITING THE ADMITTANCE OF STORM WATER FROM PAVEMENTS, ROOFS, AND OTHER SOURCES BEEN ADOPTED? (IF YES, ENCLOSE COPY.) ☐ Yes ☒ No

   C. SPECIFY STEPS TAKEN OR BEING TAKEN TO CORRECT THE INFILTRATION PROBLEM, INCLUDING DATES: ☒ N/A

3. TYPES OF INDUSTRIAL WASTES OF SPECIAL CONSIDERATION: NONE

4. WILL THE APPLICANT BE RESPONSIBLE FOR REPAIR AND MAINTENANCE OF SEWAGE FACILITIES FOR WHICH APPLICATION IS SUBMITTED? ☒ Yes ☐ No

   A. IF NO, EXPLAIN: _____

5. THE DISTANCE OF THIS PLANT TO THE NEAREST OCCUPIED DWELLING:

   A. PRESENT _____ FEET

   B. PROPOSED _____ FEET

6. IF THE APPLICANT IS OTHER THAN A MUNICIPALITY OR MUNICIPAL AUTHORITY, HAS THE GOVERNING MUNICIPALITY OBJECTED TO THE PROPOSED SEWAGE TREATMENT PLANT? ☐ Yes ☒ No ☐ N/A

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D. GENERAL INFORMATION – CONTINUED

A. IS THE LETTER FROM MUNICIPAL OFFICER, SIGNIFYING THE OPINION, APPENDED TO THIS APPLICATION? ☐ Yes ☐ No

7. ARE DUPLICATE TREATMENT UNITS PROVIDED WHERE REQUIRED? ☒ Yes ☐ No ☐ N/A

A. IF NO, EXPLAIN: _____

B. DO ANY BY-PASS STRUCTURES DISCHARGE TO WATERS OF THE COMMONWEALTH? (SPECIFY PLAN SHEET NUMBER(S) SHOWING BY-PASS STRUCTURES) ☐ Yes ☒ No

8. HAS AN AUXILIARY STANDBY POWER SOURCE BEEN PROVIDED? ☐ Yes ☐ No ☒ N/A

9. DOES ANY PIPING OR CONNECTION EXIST IN ANY PART OF THE TREATMENT WORKS WHICH MAY CAUSE CONTAMINATION OF THE POTABLE WATER SUPPLY? ☐ Yes ☒ No

10. IF A NON-POTABLE WATER SUPPLY IS PROVIDED, ARE ALL OUTLETS PERMANENTLY POSTED TO INDICATE WATER IS NOT SAFE FOR DRINKING? ☐ Yes ☐ No ☒ N/A

11. ARE FACILITIES PROVIDED FOR MEASURING THE SEWAGE FLOW? ☒ Yes ☐ No

12. SAFETY:

A. ARE FACILITIES PROVIDED TO EFFECTIVELY PROTECT THE OPERATOR AND VISITORS? ☒ Yes ☐ No

13. OUTFALL SEWER:

A. IS THE OUTFALL SEWER ADEQUATELY PROTECTED TO ENSURE ITS STRUCTURAL STABILITY AND FREEDOM FROM STOPPAGE? ☒ Yes ☐ No

B. IS AN OUTFALL HEAD WALL PROVIDED? ☒ Yes ☐ No ☐ N/A

C. DOES THE OUTFALL EXTEND TO THE LOW WATER MARK OF THE RECEIVING STREAM? ☒ Yes ☐ No ☐ N/A

14. HAVE PROVISIONS BEEN MADE TO PROTECT ALL STRUCTURES AGAINST FLOTATION? ☒ Yes ☐ No

15. IF THE PROJECT INVOLVES ADDITIONS TO AN EXISTING TREATMENT PLANT, DO THE SPECIFICATIONS INCLUDE A PROGRAM TO PREVENT BY-PASSING OF ANY UNIT TO WATERS OF THE COMMONWEALTH DURING CONSTRUCTION? ☐ Yes ☐ No ☒ N/A

A. SPECIFY VOLUME AND PAGE NUMBER OF SPECIFICATIONS: _____

16. SPECIFY NAMES OF MUNICIPALITIES AND POPULATION SERVED OR TO BE SERVED BY THIS PLANT: NONE

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E. RECEIVING STREAM*

1. WHAT IS THE NAME OF THE RECEIVING STREAM? SUSQUEHANNA

A. TRIBUTARY OF _____

B. TRIBUTARY OF _____

C. MAJOR DRAINAGE BASIN:

- [ ] DELAWARE
- [X] SUSQUEHANNA
- [ ] POTOMAC
- [ ] LAKE ERIE
- [ ] GENESEE
- [ ] ALLEGHENY
- [ ] MONONGAHELA
- [ ] OHIO

2. DESCRIBE THE EXACT POINT OF DISCHARGE:

_____ DEG, _____ MIN, _____ SEC LATITUDE

_____ DEG, _____ MIN, _____ SEC LONGITUDE

A. WATERSHED AREA ABOVE POINT OF DISCHARGE IS

_____ SQUARE MILES.

3. WHAT IS THE:

A. MINIMUM 7-CONSECUTIVE-DAYS FLOW OCCURRING ONCE IN 10 YEARS?

_____ CUBIC FEET PER SECOND.

B. MINIMUM STREAM FLOW: _____

C. ABOVE FLOWS ARE BASED ON:

- [ ] MEASUREMENTS
- [ ] ESTIMATES
- _____ YEARS OF RECORD

4. IS THE TREATMENT PLANT SUBJECT TO FLOODING? [ ] Yes [ ] No

5. THE PROBABILITY OF THE TREATMENT PLANT BEING OUT OF SERVICE DUE TO FLOODING IS ONCE IN _____ YEARS.

A. LIST BRIEFLY THE METHODS USED FOR FLOOD PROTECTION: _____

_____

_____

_____

* *Attach U.S. Geological Survey 7.5' or 15' Quadrangle Map showing exact points of discharge.*

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E. RECEIVING STREAM – CONTINUED

6. TO THE BEST OF YOUR KNOWLEDGE, WILL THE TREATED WASTE DISCHARGE ADVERSELY AFFECT:

A. DOMESTIC WATER SUPPLY?	☐ Yes	☒ No
B. BATHING?	☐ Yes	☒ No
C. STOCK WATERING?	☐ Yes	☒ No
D. FISH AND AQUATIC LIFE?	☐ Yes	☒ No
E. INDUSTRIAL WATER SUPPLY?	☐ Yes	☒ No
F. IRRIGATION?	☐ Yes	☒ No
G. BOATING AND AESTHETICS?	☐ Yes	☒ No

7. IF ANY ITEMS IN 6 ABOVE ARE ANSWERED YES, INDICATE DISTANCE TO, LOCATION OF, AND EXTENT OF ADVERSE EFFECT:

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MODULE 4 – WASTE LOAD AND CHARACTERISTICS

TABLE I – WASTE STATUS REPORT

			TOTAL WASTE FLOW (MGD)	SOURCE OF WASTE:	SOURCE OF WASTE:	SOURCE OF WASTE:	SOURCE OF WASTE:
			0.035	RESIDENTIAL DEVELOPMENT			
				[ ] PRESENT [X] FUTURE	[ ] PRESENT [ ] FUTURE	[ ] PRESENT [ ] FUTURE	[ ] PRESENT [ ] FUTURE
1.	TYPE OF WASTE			SANITARY			
2. FLOW	A. MGD (AVERAGE)			0.035			
	B. MGD (MAXIMUM)			SAME			
3. WASTE DISCHARGE	A. TREATED SEPARATELY			YES			
	B. NOT TREATED	UNIT EXISTING					
		UNIT PROPOSED					
	C. COMBINED AND TREATED	UNIT EXISTING					
		UNIT PROPOSED					
4. SEQUENCE OF TREATMENT STEPS	COMMUNITION						
	AERATION						
	SETTLING						
	SLUDGE RECIRCULATION						
	CHLORINATION						

A. GENERAL INFORMATION

1. WILL ALL LABORATORY ANALYSES BE IN ACCORDANCE WITH THE LATEST EDITION OF "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER"? [X] Yes [ ] No [ ] N/A

2. WILL THE TREATMENT PROCESS PRODUCE FOR EACH WASTE ABOVE A SATISFACTORY EFFLUENT THAT WILL HAVE NO ADVERSE EFFECT UPON THE RECEIVING STREAM OR ITS USES? [X] Yes [ ] No [ ] N/A

ONLY SEWERAGE AND INDUSTRIAL WASTE APPLICANTS COMPLETE ITEM 3.

3. GIVE EXPECTED PERCENTAGE REDUCTION OF:
   A. BOD (5 DAY 20° CENTIGRADE) 90 % [ ]
   B. SUSPENDED SOLIDS 95 % [ ]
   C. SETTLEABLE SOLIDS (SEWAGE ONLY) 99 % [ ]

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MODULE 4 – WASTE LOAD AND CHARACTERISTICS

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TABLE II – WASTE LOAD CHARACTERISTICS

Sample Or Data Location	WASTE: SANITARY LOCATION: ☐ PRESENT ☒ FUTURE		WASTE: LOCATION: ☐ PRESENT ☐ FUTURE		WASTE: LOCATION: ☐ PRESENT ☐ FUTURE		WASTE: LOCATION: ☐ PRESENT ☐ FUTURE	
INDUSTRIAL WASTE APPLICANTS COMPLETE ALL APPLICABLE ITEMS. SEWAGE APPLICANTS COMPLETE ONLY ITEMS CODED "S." MINE DRAINAGE APPLICANTS COMPLETE ONLY ITEMS CODED "M."	Waste Load		Waste Load		Waste Load		Waste Load	
	Raw	Treated	Raw	Treated	Raw	Treated	Raw	Treated
	☐ Actual ☒ Est.	☐ Actual ☒ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.
1. WASTE FLOW Mgd	S 0.035	S 0.035	S M	S M	S M	S M	S M	S M
2. COLOR	GREY	CLEAR						
3. TEMPERATURE Deg.F	55°	55°						
4. pH	S 6.7	S 7.0	S M	S M	S M	S M	S M	S M
5. ALKALINITY (Minus for Acid) Mg/L	S 4.5	S 2.5	S M	S M	S M	S M	S M	S M
6. SOLIDS – SUSPENDED Mg/L	S 379	S 19	S M	S M	S M	S M	S M	S M
7. SOLIDS–SUSPENDED Lbs/Cap/Day	S 0.18	S –	S	S	S	S	S	S
8. SOLIDS – SUSPENDED Lbs/Day	S 111	S 5.6	S M	S M	S M	S M	S M	S M
9. SOLIDS – SETTLEABLE Ml/L	S 50	S TRACE	S M	S M	S M	S M	S M	S M
10. SOLIDS – DISSOLVED Mg/L	M	M	M	M	M	M	M	M
11. IRON – DISSOLVED Mg/L	M	M	M	M	M	M	M	M
12. IRON (Total) Mg/L	M	M	M	M	M	M	M	M
13. MANGANESE Mg/L	M	M	M	M	M	M	M	M
14. ALUMINUM Mg/L	M	M	M	M	M	M	M	M
15. BOD (5 Day 20° C) Mg/L	S 309	S 31	S	S	S	S	S	S
16. BOD (5 Day 20° C) Lbs/Cap/Day	S 0.17	S –	S	S	S	S	S	S
17. BOD (5 Day 20° C) Lbs/Day	S 78	S 8	S	S	S	S	S	S

Sample or Data Location – Continued	WASTE: SANITARY LOCATION: ☐ PRESENT ☒ FUTURE		WASTE: LOCATION: ☐ PRESENT ☐ FUTURE		WASTE: LOCATION: ☐ PRESENT ☐ FUTURE		WASTE: LOCATION: ☐ PRESENT ☐ FUTURE	
INDUSTRIAL WASTE APPLICANTS COMPLETE ALL APPLICABLE ITEMS. SEWAGE APPLICANTS COMPLETE ONLY ITEMS CODED "S." MINE DRAINAGE APPLICANTS COMPLETE ONLY ITEMS CODED "M."	Waste Load		Waste Load		Waste Load		Waste Load	
	Raw	Treated	Raw	Treated	Raw	Treated	Raw	Treated
	☐ Actual ☒ Est.	☐ Actual ☒ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.	☐ Actual ☐ Est.
18. DISSOLVED OXYGEN Mg/L	0	S 2.0		S		S		S
19. TURBIDITY Units		S–M 20 JCU		S–M		S–M		S–M
20. NITROGEN – AMMONIA Mg/L	S 20	S 2.0	S	S	S	S	S	S
21. NITROGEN – NITRITE Mg/L	1.0	S 1.0		S		S		S
22. NITROGEN – NITRATE Mg/L	0	S 18.0		S		S		S
23. PHOSPHATE (TOTAL SOLUBLE PO_4) Mg/L	S 35	S 20	S	S	S	S	S	S
24. SULFATE Mg/L	M	M	M	M	M	M	M	M
25. OIL Mg/L								
OTHER (Specify) (Give Units)								

B. DESCRIPTION OF SAMPLING PROCEDURE

1. FOR EACH WASTE LOAD ON TABLE II, DESCRIBE BELOW THE METHOD AND DATE(S) OF SAMPLING.

PROPOSED WASTE AND NO SAMPLING IS POSSIBLE THEREFORE CONVENTIONAL VALVES HAVE BEEN UTILIZED.

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MODULE 6 – SEWERS AND APPURTENANCES

CLASS OF CONSTRUCTION (Check All Applicable Blocks)

[X] NEW SYSTEM
[ ] REPLACEMENT OF EXISTING SYSTEM
[ ] EXTENSION(S) TO EXISTING SYSTEM

TABLE I – DESIGN FLOW AND LOADING INFORMATION

1. POPULATION TO BE SERVED	INITIAL: 455	DESIGN: 455	DESIGN YEAR: 1980
2. AREA TO BE SERVED	ACRES (INITIAL): 150		
TYPE OF AREA (Residential, Commercial, Etc.): RESIDENTIAL	ACRES (FUTURE): ----------		

3.		
A. LATERALS AND SUB-MAIN SEWERS (GPCD)		
B. MAIN AND TRUNK SEWERS (GPCD)		
C. INTERCEPTORS (GPCD)		
(1) MEASURED DRY-WEATHER FLOW (%)		
(2) ESTIMATED DRY-WEATHER FLOW (%)		
D. IF ANY VALUES LESS THAN PRESCRIBED IN MANUAL, EXPLAIN:		

4. DESIGN FLOW DATA	GPCD	MGD
A. AVERAGE DAILY FLOW	75	0.034
B. INFILTRATION		-----
C. MAXIMUM INDUSTRIAL WASTE FLOW		-----
D. TOTAL DESIGN FLOW		0.035
E. MAXIMUM FLOW RATE		0.1275

TABLE II – GENERAL DESIGN

PIPE DIAMETER (IN.)	MINIMUM SLOPE (%)	MAXIMUM SLOPE (%)	MAXIMUM VELOCITY (FPS)	MAXIMUM FLOW (MGD)	MAXIMUM DISTANCE BETWEEN MANHOLES (Ft.) SEWERS 15 IN. OR LESS	MAXIMUM DISTANCE BETWEEN MANHOLES (Ft.) SEWERS 18 IN. TO 30 IN.	TYPE OF SEWER MATERIAL	"N" VALUE
8	0.20	0.004	18.1	2.71	400		V.C.P.	0.011

(USE ADDITIONAL SHEETS IF NECESSARY)

TABLE III – CRITICAL DATA

PLAN SHEET NUMBER	MANHOLE NUMBER FROM	MANHOLE NUMBER TO	SEWER PIPE SIZE (IN.)	SEWER SLOPE (%)	POPULATION SERVED	TOTAL DESIGN FLOW (MGD)	SEWER FLOWING FULL VEL. (FPS)	SEWER FLOWING FULL CAP. (MGD)	MAXIMUM FLOW VELOCITY (FPS)
1/11 (MIN)	29	25	8	.004	48	0.0048	2.6	.39	2.6
1/11 (MAX)	1	2	8	.157	20	.0020	16.3	2.44	16.3
1/11 (TOTAL)	8	8A	8	.144	445	.0445	15.6	2.34	15.6

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

MODULE 6 – SEWERS AND APPURTENANCES

For Department Use Only

A. GENERAL DESIGN

1. ARE THE PROPOSED SEWERS DESIGNED AS SEPARATE SANITARY SEWERS? [X] Yes [ ] No

   A. IF NO, EXPLAIN IN DETAIL, INCLUDING THE POSSIBLE EFFECTS UPON WATER COURSES.

2. ARE THE PROPOSED SEWERS DEEP ENOUGH TO SERVE ALL ADJACENT BASEMENTS? [X] Yes [ ] No

   A. IF NO, EXPLAIN.

3. ARE THERE ANY OVERFLOWS OR BYPASSES OTHER THAN FROM PUMP STATIONS? [ ] Yes [X] No

   A. IF YES, SPECIFY PLAN SHEET(S) WHERE SHOWN.

4. WHERE SMALLER SEWERS JOIN LARGER ONES, HAVE THE INVERTS OF THE LARGER SEWERS BEEN LOWERED SUFFICIENTLY TO MAINTAIN THE SAME ENERGY GRADIENT? [ ] Yes [ ] No [X] N/A

5. SPECIFY THE TYPE OF LEAKAGE TEST (INFILTRATION AND/OR EXFILTRATION) AND THE LIMIT TO BE USED, PREFERABLY IN TERMS OF GALLONS PER INCH OF PIPE DIAMETER PER MILES PER DAY. (INDICATE VOLUME AND PAGE NUMBER OF SPECIFICATIONS.) VOL. 1, PAGE 7-2, PARA. 7.4.1

   TYPE AND LIMITS: 500 GAL/DAY PER MILE PER INCH OF DIAMETER

6. HAVE PROVISIONS BEEN MADE TO PROTECT SEWERS AT VELOCITIES OF OVER 15 FEET PER SECOND? [X] Yes [ ] No [ ] N/A

   A. ARE SEWERS SECURED WITH CONCRETE ANCHORS (OR EQUAL) SPACED AS REQUIRED? [X] Yes [ ] No [ ] N/A

7. ARE MANHOLES PROVIDED AT ALL CHANGES IN SIZE, GRADE, ALIGNMENT, AND SEWER INTERSECTIONS? [X] Yes [ ] No

8. ARE DROP MANHOLES PROVIDED WHERE THE ENTRANCE SEWER INVERT IS 24 INCHES OR MORE ABOVE MANHOLE INVERT? [X] Yes [ ] No

9. ARE WATERTIGHT COVERS USED WHERE MANHOLES ARE SUBJECT TO FLOODING BY STREET RUNOFF OF HIGH WATER? [X] Yes [ ] No

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WATER POLLUTION CONTROL

MODULE 6 – SEWERS AND APPURTENANCES

A. GENERAL INFORMATION – CONTINUED

10. ARE SEWERS IN STREAMS PROTECTED WITH AT LEAST 1 FOOT COVER IN ROCK AND 3 FEET COVER IN OTHER MATERIAL? ☐ Yes ☐ No ☒ N/A

11. ARE SEWERS IN STREAMS CONSTRUCTED TO REMAIN WATERTIGHT AND IN ALIGNMENT? ☐ Yes ☐ No ☒ N/A

12. DOES THE APPLICATION INVOLVE CAPPED SEWERS? ☐ Yes ☒ No

A. IF YES, SPECIFY PLAN SHEET NUMBER. _____

13. HOW MANY INVERTED SIPHONS ARE INCLUDED IN THIS DESIGN? NONE

14. IF SIPHONS ARE INCLUDED, SPECIFY THE FOLLOWING:

	SIPHON:	SIPHON:	SIPHON:
A. NUMBER OF BARRELS			
B. MINIMUM PIPE SIZE			
C. MINIMUM VELOCITY AT AVERAGE FLOW			

D. HAS PROVISION BEEN MADE FOR FLUSHING, RODDING, AND MAINTENANCE? ☐ Yes ☐ No

15. IS THERE ANY CONNECTION BETWEEN THE SEWER AND A PUBLIC OR PRIVATE POTABLE WATER SUPPLY OR APPURTENANCES? ☐ Yes ☒ No

16. ARE ANY WATER SUPPLY SOURCES, PUBLIC OR PRIVATE, LOCATED WITHIN 200 FEET OF THE SEWERS? ☐ Yes ☒ No

A. IF YES, SPECIFY PLAN SHEET(S) ON WHICH SOURCES ARE SHOWN. _____

B. IF YES, WILL SEWERS BE ENCASED OR WATERTIGHT? ☐ Yes ☐ No

17. ARE SEWERS AT LEAST 10 FEET HORIZONTALLY FROM WATER LINES AND/OR AT LEAST 18 INCHES BELOW THE WATER LINE? ☒ Yes ☐ No

18. IF THE PROPOSED FACILITY WILL DISCHARGE TO THE SEWER SYSTEM AND TREATMENT PLANT OF ANOTHER MUNICIPALITY, HAVE APPROPRIATE AGREEMENTS BEEN REACHED? ☐ Yes ☐ No ☒ N/A

A. IS THE AGREEMENT A CERTIFIED AGREEMENT? ☐ Yes ☐ No ☐ N/A

B. IS THE AGREEMENT A LETTER OF INTENT? ☐ Yes ☐ No ☐ N/A

C. HAVE DUPLICATE COPIES BEEN ENCLOSED? ☐ Yes ☐ No

19. DO THE EXISTING SEWERS TO WHICH THE PROPOSED SEWERS WILL CONNECT HAVE ADEQUATE CAPACITY TO CONVEY THE ADDITIONAL FLOW? ☐ Yes ☐ No ☒ N/A

ER710.046.6

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MODULE 6 – SEWERS AND APPURTENANCES

A. GENERAL INFORMATION – CONTINUED

20. ON THE PLANS, INDICATE THE PERMIT NUMBER OF EXISTING SEWER AT EACH PROPOSED POINT OF CONNECTION AND THE NAME OF THE PERMITEE; SPECIFY PLAN SHEET NUMBER(S) ON WHICH INDICATED: _____ [X] N/A

21. WILL THERE BE A PUMP STATION INVOLVED IN RECEIVING SEWAGE FROM THE SEWER EXTENSION? [ ] Yes [ ] No [X] N/A

A. IF YES, SPECIFY PRESENT AND DESIGN FLOWS OF PUMPING STATION. _____

22. RECEIVING SEWAGE TREATMENT PLANT (FILL IN FOR EXTENSION(S) TO EXISTING SYSTEM ONLY) N/A

A. OWNER OF PLANT _____

B. NAME OF PLANT _____

C. DISCHARGE DATA

	WASTE FLOW (MGD)	SOLIDS		BOD 5 DAY 20°C (#/DAY)
		SUSPENDED (#/DAY)	SETTLEABLE (ML/L)	
(1) ALLOWABLE LOAD TO STREAM AUTHORIZED UNDER PRESENT PERMIT				
(2) PRESENT LOAD TO STREAM FROM TREATMENT PLANT				
(3) ADDITIONAL LOAD TO STREAM EXPECTED DURING THE NEXT FIVE YEARS FROM EXISTING SYSTEM				
(4) ADDITIONAL LOAD TO STREAM DURING THE NEXT FIVE YEARS FROM PROPOSED EXTENSION				
(5) TOTAL ANTICIPATED LOAD TO STREAM IN NEXT FIVE YEARS (2+3+4)				

D. TREATMENT PLANT OPERATING EFFICIENCY

	SOLIDS		BOD 5 DAY 20° C (%)
	SUSPENDED (%)	SETTLEABLE (%)	
(1) PRESENT TREATMENT PLANT			
(2) AFTER INITIAL LOAD FROM PROPOSED EXTENSION			
(3) IN FIVE YEARS			

23. WILL THE LOAD UNDER 22.B.(5) ABOVE PRODUCE AN EFFLUENT THAT WILL HAVE AN ADVERSE EFFECT UPON THE RECEIVING STREAM? [ ] Yes [ ] No N/A

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WATER POLLUTION CONTROL

MODULE 6 – SEWERS AND APPURTENANCES

For Department Use Only

A. GENERAL INFORMATION – CONTINUED

A. IF YES, EXPLAIN _____

_____

B. IF APPLICANT IS NOT OWNER OF THE RECEIVING SEWAGE TREATMENT PLANT, INDICATE SOURCE OF INFORMATION.

_____

_____

_____

TO BE COMPLETED BY THE REGIONAL SANITARY ENGINEER

1. WILL THE LOAD UNDER 22.8.(5) MEET THE PERMIT REQUIREMENTS? ☐ Yes ☐ No

   A. WILL THE LOAD UNDER 22.8.(5) CAUSE POLLUTION OF THE RECEIVING STREAM? ☐ Yes ☐ No

2. IS THERE ANY QUESTION AS TO WHETHER THE LOAD IS NOW CAUSING OR WILL CAUSE POLLUTION? ☐ Yes ☐ No

   A. IF YES, COMPLETE A POLLUTION REPORT.

3. IS THE TREATMENT PLANT IN COMPLIANCE? ☐ Yes ☐ No

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DATE PREPARED	DEPARTMENT OF ENVIRONMENTAL RESOURCES WATER QUALITY MANAGEMENT **WATER POLLUTION CONTROL**	For Department Use Only
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MODULE 7 – SEWAGE PUMPING STATIONS

STREET LOCATION WONDERVIEW DEVELOPMENT PLAN SHEET NUMBER _____

CLASS OF CONSTRUCTION (Check All Applicable Blocks)
- [X] NEW
- [ ] REPLACEMENT OF EXISTING UNIT(S)
- [ ] ADDITIONS AND/OR MODIFICATIONS TO EXISTING UNIT(S)

NOTE: SUBMIT SEPARATE MODULE FOR EACH PUMPING STATION

TABLE I – DESIGN LOADING INFORMATION

1. POPULATION TO BE SERVED	INITIAL	DESIGN	DESIGN YEAR
	455	455	1980

2. DESIGN FLOW DATA	RATE (GPCD)	RATE (MGD)
A. MAXIMUM FLOW RATE (BASED ONLY ON DESIGN POPULATION TO BE SERVED)	75	0.035
B. MAXIMUM INDUSTRIAL WASTE FLOW RATE	---	-----
C. MAXIMUM INFILTRATION RATE	---	-----
D. MAXIMUM DESIGN FLOW RATE	---	0.035

TABLE II – FACILITIES DESIGN INFORMATION

1. PROBABILITY OF FLOODING IS ONCE IN 0 YEARS.

2. PROBABILITY OF POWER FAILURE IS ONCE IN _____ YEARS.

3 Elevation Information	A. MAXIMUM WATER ELEVATION IN COLLECTION SYSTEM AT A POWER FAILURE		
	B. OVERFLOW LEVEL IN WET WELL		
	C. LOWEST BASEMENT FLOOR IN SYSTEM CONNECTED TO PUMP STATION		
4. CAPACITY AND OPERATION	A. EFFECTIVE WET WELL CAPACITY	(Gal.)	220
	B. DETENTION TIME	(Min.)	5
	C. FORCE MAIN (1) TYPE OF MATERIAL		C.I.
	C. FORCE MAIN (2) LENGTH	(Ft.)	1070
	C. FORCE MAIN (3) DIAMETER	(In.)	4"
	C. FORCE MAIN (4) DESIGN AVERAGE VELOCITY	(Fps.)	2
	D. COMPUTED TOTAL DYNAMIC HEAD (Pump Station + Force Main)		FT.

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COMMONWEALTH OF PENNSYLVANIA
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WATER QUALITY MANAGEMENT

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WATER POLLUTION CONTROL

For Department Use Only

MODULE 7 – SEWAGE PUMPING STATIONS

TABLE III – PUMPING FACILITIES

UNIT NUMBER	CHECK TWO ITEMS (IF PUMP, SPECIFY TYPE)	CHECK ONE ITEM	RATED CAPACITY (GPM)	RATED HEAD (FT.)	PIPE SIZE (IN.) SUCTION	PIPE SIZE (IN.) DISCHARGE
1	[ ] EJECTOR [X] PUMP ______ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [X] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ______	110	60	3"	4"
2	[ ] EJECTOR [ ] PUMP ______ [ ] EXISTING [X] PROPOSED [X] STANDBY	[ ] BUBBLER [X] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ______	120	60	3"	4"
	[ ] EJECTOR [ ] PUMP ______ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [ ] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ______				
	[ ] EJECTOR [ ] PUMP ______ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [ ] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ______				
	[ ] EJECTOR [ ] PUMP ______ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [ ] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ______				
	[ ] EJECTOR [ ] PUMP ______ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [ ] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ______				

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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

For Department Use Only

MODULE 7 – SEWAGE PUMPING STATIONS

A. GENERAL INFORMATION

1. THE WET WELL VENTILATION IS ☐ CONTINUOUS AT _____ AIR CHANGES PER HOUR.
   ☐ INTERMITTENT

2. THE DRY WELL VENTILATION IS ☐ CONTINUOUS AT _____ AIR CHANGES PER HOUR.
   ☐ INTERMITTENT

3. IF NO GRIT REMOVAL FACILITIES PRECEDE PUMP STATIONS, IS WET WELL AND PUMP PIPING DESIGNED TO PREVENT GRIT SETTLING IN DISCHARGE LINES OF PUMPS THAT ARE NOT OPERATING? ☐ Yes ☐ No ☐ N/A

4. ARE WET AND DRY WELLS, INCLUDING THEIR SUPERSTRUCTURES, COMPLETELY SEPARATED? ☐ Yes ☐ No

5. SPECIFY THE TYPE OF ACCESS TO DRY AND WET WELLS: _____

6. ARE PUMPS, EXCEPT EJECTORS, HANDLING RAW SEWAGE PROTECTED BY BAR SCREENS (2 INCHES MAXIMUM CLEAR OPENING) OR COMMINUTORS? ☒ Yes ☐ No ☐ N/A

7. MAXIMUM SIZE OF SPHERE PASSED BY PUMPING FACILITIES: 3 INCHES.

8. DOES ELECTRICAL EQUIPMENT IN ENCLOSED PLACES WHERE GAS MAY ACCUMULATE COMPLY WITH NATIONAL BOARD OF FIRE UNDERWRITERS' SPECIFICATIONS FOR HAZARDOUS CONDITIONS? ☒ Yes ☐ No

9. DOES EACH PUMP HAVE A SEPARATE INTAKE? ☒ Yes ☐ No

10. IS A SEPARATE DRY WELL PUMP PROVIDED WITH DISCHARGE TO WET WELL ABOVE OVERFLOW ELEVATION? ☒ Yes ☐ No

11. UNDER NORMAL CONDITIONS, WILL PUMPING FACILITIES OPERATE UNDER A POSITIVE SUCTION HEAD? ☒ Yes ☐ No

12. ARE SHUTOFF VALVES PROVIDED FOR EACH PUMP SUCTION AND DISCHARGE LINE WITH A CHECK VALVE BETWEEN THE SHUTOFF VALVE AND PUMP ON THE DISCHARGE LINE? ☒ Yes ☐ No

13. ARE WET WELL HOPPER SIDE SLOPES AT A MINIMUM OF 1 TO 1 AND THE HOPPER BOTTOM HORIZONTAL AREA NO LARGER THAN NECESSARY? ☒ Yes ☐ No

14. DO WET WELLS CONTAINING EQUIPMENT REQUIRING INSPECTION AND MAINTENANCE HAVE A VENTILATION SYSTEM INDEPENDENT OF DRY WELL SYSTEM? ☒ Yes ☐ No

15. IS THERE ANY PHYSICAL CONNECTION BETWEEN THE POTABLE WATER SUPPLY AND SEWAGE PUMP STATION FACILITIES? ☐ Yes ☐ No ☒ N/A

16. ARE AUTOMATIC AIR RELIEF VALVES PROVIDED AT HIGH POINTS IN FORCE MAIN? ☒ Yes ☐ No

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WATER QUALITY MANAGEMENT

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MODULE 7 – SEWAGE PUMPING STATIONS

For Department Use Only

A. GENERAL INFORMATION – CONTINUED

17. IF NO OVERFLOW IS PROVIDED, ARE TWO INDEPENDENT GENERATING SOURCES PROVIDED? ☐ Yes ☐ No ☒ N/A

18. IF NO OVERFLOW IS PROVIDED, IS EMERGENCY POWER EQUIPMENT PROVIDED? ☒ Yes ☐ No ☐ N/A

19. SPECIFY TYPE OF EMERGENCY EQUIPMENT: _____

A. IF OVERFLOW IS PROVIDED, WHAT PROVISIONS HAVE BEEN MADE TO MINIMIZE OBJECTIONABLE CONDITIONS AND STREAM POLLUTION DURING EMERGENCY USE OF OVERFLOW?

20. DO THE EXISTING SEWERS TO WHICH THE PROPOSED PUMP STATION AND FORCE MAIN WILL CONNECT HAVE ADEQUATE CAPACITY TO CONVEY THE ADDITIONAL FLOW? ☐ Yes ☐ No N/A

21. DO THE PLANS INDICATE THE PERMIT NUMBER OF THE EXISTING SEWER(S) AT THE PROPOSED POINT OF CONNECTION AND THE NAME OF THE PERMITEE? ☐ Yes ☐ No N/A

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WATER QUALITY MANAGEMENT

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MODULE 7 – SEWAGE PUMPING STATIONS

STREET LOCATION WONDERVIEW DEVELOPMENT PLAN SHEET NUMBER

CLASS OF CONSTRUCTION (Check All Applicable Blocks)
[X] NEW
[ ] REPLACEMENT OF EXISTING UNIT(S)
[ ] ADDITIONS AND/OR MODIFICATIONS TO EXISTING UNIT(S)

NOTE: SUBMIT SEPARATE MODULE FOR EACH PUMPING STATION

TABLE I – DESIGN LOADING INFORMATION

1. POPULATION TO BE SERVED	INITIAL	DESIGN	DESIGN YEAR
	105	105	1980

2. DESIGN FLOW DATA	RATE (GPCD)	RATE (MGD)
A. MAXIMUM FLOW RATE (BASED ONLY ON DESIGN POPULATION TO BE SERVED)	75	0.011
B. MAXIMUM INDUSTRIAL WASTE FLOW RATE		0
C. MAXIMUM INFILTRATION RATE		-----
D. MAXIMUM DESIGN FLOW RATE		0.011

TABLE II – FACILITIES DESIGN INFORMATION

1. PROBABILITY OF FLOODING IS ONCE IN 0 YEARS.

2. PROBABILITY OF POWER FAILURE IS ONCE IN _____ YEARS.

3. Elevation Information	A. MAXIMUM WATER ELEVATION IN COLLECTION SYSTEM AT A POWER FAILURE	
	B. OVERFLOW LEVEL IN WET WELL	
	C. LOWEST BASEMENT FLOOR IN SYSTEM CONNECTED TO PUMP STATION	
4. CAPACITY AND OPERATION	A. EFFECTIVE WET WELL CAPACITY (Gal.)	220
	B. DETENTION TIME (Min.)	5
	C. FORCE MAIN (1) TYPE OF MATERIAL	C.I.
	(2) LENGTH (Ft.)	600
	(3) DIAMETER (In.)	4
	(4) DESIGN AVERAGE VELOCITY (Fps.)	2
	D. COMPUTED TOTAL DYNAMIC HEAD (Pump Station + Force Main)	38 FT.

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DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

For Department Use Only

MODULE 7 – SEWAGE PUMPING STATIONS

TABLE III – PUMPING FACILITIES

UNIT NUMBER	CHECK TWO ITEMS (IF PUMP, SPECIFY TYPE)	CHECK ONE ITEM	RATED CAPACITY (GPM)	RATED HEAD (FT.)	PIPE SIZE (IN.) SUCTION	PIPE SIZE (IN.) DISCHARGE
1	[ ] EJECTOR [X] PUMP ________ [ ] EXISTING [X] PROPOSED [ ] STANDBY	[ ] BUBBLER [X] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ________	110	60	3	4
2	[ ] EJECTOR [X] PUMP ________ [ ] EXISTING [X] PROPOSED [X] STANDBY	[ ] BUBBLER [X] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ________	120	60	3	4
	[ ] EJECTOR [ ] PUMP ________ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [ ] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ________				
	[ ] EJECTOR [ ] PUMP ________ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [ ] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ________				
	[ ] EJECTOR [ ] PUMP ________ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [ ] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ________				
	[ ] EJECTOR [ ] PUMP ________ [ ] EXISTING [ ] PROPOSED [ ] STANDBY	[ ] BUBBLER [ ] SEALED ELECTRODE [ ] FLOAT [ ] OTHER (SPECIFY) ________				

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MODULE 7 – SEWAGE PUMPING STATIONS

A. GENERAL INFORMATION

1. THE WET WELL VENTILATION IS ☐ CONTINUOUS AT _____ AIR CHANGES PER HOUR.
   ☐ INTERMITTENT

2. THE DRY WELL VENTILATION IS ☐ CONTINUOUS AT _____ AIR CHANGES PER HOUR.
   ☐ INTERMITTENT

3. IF NO GRIT REMOVAL FACILITIES PRECEDE PUMP STATIONS, IS WET WELL AND PUMP PIPING DESIGNED TO PREVENT GRIT SETTLING IN DISCHARGE LINES OF PUMPS THAT ARE NOT OPERATING? ☐ Yes ☐ No ☐ N/A

4. ARE WET AND DRY WELLS, INCLUDING THEIR SUPERSTRUCTURES, COMPLETELY SEPARATED? ☐ Yes ☐ No

5. SPECIFY THE TYPE OF ACCESS TO DRY AND WET WELLS: _____

6. ARE PUMPS, EXCEPT EJECTORS, HANDLING RAW SEWAGE PROTECTED BY BAR SCREENS (2 INCHES MAXIMUM CLEAR OPENING) OR COMMINUTORS? ☒ Yes ☐ No ☐ N/A

7. MAXIMUM SIZE OF SPHERE PASSED BY PUMPING FACILITIES: 3 INCHES.

8. DOES ELECTRICAL EQUIPMENT IN ENCLOSED PLACES WHERE GAS MAY ACCUMULATE COMPLY WITH NATIONAL BOARD OF FIRE UNDERWRITERS' SPECIFICATIONS FOR HAZARDOUS CONDITIONS? ☒ Yes ☐ No

9. DOES EACH PUMP HAVE A SEPARATE INTAKE? ☒ Yes ☐ No

10. IS A SEPARATE DRY WELL PUMP PROVIDED WITH DISCHARGE TO WET WELL ABOVE OVERFLOW ELEVATION? ☒ Yes ☐ No

11. UNDER NORMAL CONDITIONS, WILL PUMPING FACILITIES OPERATE UNDER A POSITIVE SUCTION HEAD? ☒ Yes ☐ No

12. ARE SHUTOFF VALVES PROVIDED FOR EACH PUMP SUCTION AND DISCHARGE LINE WITH A CHECK VALVE BETWEEN THE SHUTOFF VALVE AND PUMP ON THE DISCHARGE LINE? ☒ Yes ☐ No

13. ARE WET WELL HOPPER SIDE SLOPES AT A MINIMUM OF 1 TO 1 AND THE HOPPER BOTTOM HORIZONTAL AREA NO LARGER THAN NECESSARY? ☒ Yes ☐ No

14. DO WET WELLS CONTAINING EQUIPMENT REQUIRING INSPECTION AND MAINTENANCE HAVE A VENTILATION SYSTEM INDEPENDENT OF DRY WELL SYSTEM? ☒ Yes ☐ No

15. IS THERE ANY PHYSICAL CONNECTION BETWEEN THE POTABLE WATER SUPPLY AND SEWAGE PUMP STATION FACILITIES? ☐ Yes ☒ No ☐ N/A

16. ARE AUTOMATIC AIR RELIEF VALVES PROVIDED AT HIGH POINTS IN FORCE MAIN? ☒ Yes ☐ No

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WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

MODULE 7 – SEWAGE PUMPING STATIONS

For Department Use Only

A. GENERAL INFORMATION – CONTINUED

17. IF NO OVERFLOW IS PROVIDED, ARE TWO INDEPENDENT GENERATING SOURCES PROVIDED? ☐ Yes ☐ No ☒ N/A

18. IF NO OVERFLOW IS PROVIDED, IS EMERGENCY POWER EQUIPMENT PROVIDED? ☒ Yes ☐ No ☐ N/A

19. SPECIFY TYPE OF EMERGENCY EQUIPMENT: _____

A. IF OVERFLOW IS PROVIDED, WHAT PROVISIONS HAVE BEEN MADE TO MINIMIZE OBJECTIONABLE CONDITIONS AND STREAM POLLUTION DURING EMERGENCY USE OF OVERFLOW?

20. DO THE EXISTING SEWERS TO WHICH THE PROPOSED PUMP STATION AND FORCE MAIN WILL CONNECT HAVE ADEQUATE CAPACITY TO CONVEY THE ADDITIONAL FLOW? ☐ Yes ☐ No N/A

21. DO THE PLANS INDICATE THE PERMIT NUMBER OF THE EXISTING SEWER(S) AT THE PROPOSED POINT OF CONNECTION AND THE NAME OF THE PERMITEE? ☐ Yes ☐ No N/A

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DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

MODULE 8 – PUMPING FACILITIES

(Do Not Use This Module For Sewage Pumping Stations)

For Department Use Only

TABLE I – LIST ALL THE PUMPS IN THE FACILITY. CLASSIFY EACH PUMP ACCORDING TO THE CLASSIFICATION KEY AND ANSWER ALL RELEVANT QUESTIONS.

Classification Key
A. RAW WASTE PUMP
B. RECIRCULATION PUMP
C. RAW SLUDGE PUMP
D. SLUDGE RECIRCULATION PUMP
E. EFFLUENT PUMP
F. MINE DEWATERING PUMP
G. OTHER (Specify) FROTH SPRAY PUMP

NUMBER OF IDENTICAL PUMPS	CLASSIFICATION KEY (Indicate By Letter)	INDICATE POINT OF SUCTION	MAXIMUM SUCTION HEAD (FT.)	SPECIFY POINT OF DISCHARGE	FORCE MAIN VELOCITY (FPS.)	Check Columns That Apply To Each Pump: EXISTING	PROPOSED	VARIABLE SPEED	CONSTANT SPEED	AUTOMATIC CONTROL	MANUAL CONTROL	PNEUMATIC EJECTOR	STANDBY OPERATION	Pump Capacity (GPM.)	Pump Capacity TDH (FT.)	Wet Well Or Sump: TOTAL CAPACITY (GAL.)	EFFECTIVE CAPACITY (GAL.)	DETENTION PERIOD (MIN.)
2	D	Settling Tank Hopper	N/A	Front of Aeration Tank	4		X	X			X			35	2			
2	G	1'-0" Beldon Settling Tank Surface	N.A.	Along side of Aeration Tank	3		X		X	X				30	15			

ER710.046.11

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DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

MODULE 11 – SCREENING AND COMMINUTING DEVICES

For Department Use Only

TABLE I SCREENING DEVICES	UNIT	UNIT	UNIT
	☐ EXISTING ☒ PROPOSED	☐ EXISTING ☐ PROPOSED	☐ EXISTING ☐ PROPOSED
IDENTIFY BY FUNCTION AT RIGHT AND ANSWER ALL APPLICABLE INFORMATION LISTED BELOW.	☒ MANUALLY CLEANED ☐ MECHANICALLY CLEANED ☒ BYPASS BAR SCREEN ☐ VIBRATING SCREEN ☐ ROTATING SCREEN ☐ OTHER* (Specify)	☐ MANUALLY CLEANED ☐ MECHANICALLY CLEANED ☐ BYPASS BAR SCREEN ☐ VIBRATING SCREEN ☐ ROTATING SCREEN ☐ OTHER* (Specify)	☐ MANUALLY CLEANED ☐ MECHANICALLY CLEANED ☐ BYPASS BAR SCREEN ☐ VIBRATING SCREEN ☐ ROTATING SCREEN ☐ OTHER* (Specify)
1. SPECIFY SOURCE OF WASTE**			
2. PROPRIETARY DEVICES — A. TYPE **			
2. PROPRIETARY DEVICES — B. MANUFACTURER ** MODEL **			
3. DESIGN DATA — A. RATED CAPACITY (Mgd)	0.5		
3. DESIGN DATA — B. TOTAL	COMPUTE THE TOTAL FOR ALL UNITS AND ENTER HERE		0.5
3. DESIGN DATA — C. CAPACITY RANGE (Mgd)	0 - 0.5		
3. DESIGN DATA — D. CLEAR OPENING BETWEEN BARS (IN.) OR SIZE OF MESH OR SCREEN (NO.)	1-1/4"		
3. DESIGN DATA — E. VELOCITY THROUGH BARS (Fps)	3		
3. DESIGN DATA — F. SLOPE OF BARS FROM HORIZONTAL (Deg)	45		

** If other device than listed, describe.*

*** Only Industrial Waste Applicants*

A. GENERAL INFORMATION – SCREENING

1. SCREENINGS DISPOSAL

A. DESCRIBE DISPOSAL METHOD AND LOCATION: WHEN UTILIZED, SCREENINGS WILL BE DRIED ON DRYING RACK THEN REMOVED FOR INCINERATION OR TAKEN TO AN APPROVED SANITARY LANDFILL.

2. IS AN AUXILIARY SCREEN PROVIDED WITH AUTOMATIC DIVERSION OF FLOW WHEN MECHANICALLY OPERATED SCREEN FAILS? ☐ Yes ☐ No ☒ N/A

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MODULE 11 – SCREENING AND COMMINUTING DEVICES

A. GENERAL INFORMATION – SCREENING (CONTINUED)

3. ARE PROVISIONS MADE TO DE-WATER EACH UNIT? ☐ Yes ☐ No N/A

4. IS INLET CHANNEL DESIGNED TO PREVENT DEPOSITION OF SOLIDS? ☒ Yes ☐ No

***5. ARE UNITS LOCATED IN DEEP PITS PROVIDED WITH STAIRWAY ACCESS, ADEQUATE LIGHTING AND VENTILATION, AND ADEQUATE MEANS FOR REMOVAL OF SCREENINGS? ☐ Yes ☐ No ☒ N/A

*** *Only Sewerage Applicants*

TABLE II COMMINUTING DEVICES	UNIT ONE ☐ EXISTING ☒ PROPOSED	UNIT_____ ☐ EXISTING ☐ PROPOSED	UNIT_____ ☐ EXISTING ☐ PROPOSED	UNIT_____ ☐ EXISTING ☐ PROPOSED
1. A. RATED CAPACITY (Mgd)	0.28			
B. CAPACITY RANGE (Mgd)	0 - 0.28			
2. DIFFERENCE IN ELEVATION BETWEEN THE INVERT OF THE INCOMING SEWER AND THE INVERT OF THE SCREEN AND COMMINUTING CHANNEL (In)	2			

B. GENERAL INFORMATION – COMMINUTING DEVICES

1. ARE CHANNELS PROVIDED WITH NECESSARY GATES TO DIVERT FLOW FROM EACH COMMINUTING UNIT? ☐ Yes ☐ No ☒ N/A

2. ARE PROVISIONS MADE TO DE-WATER EACH UNIT? ☐ Yes ☐ No N/A

3. IS AN AUXILIARY BAR SCREEN PROVIDED WITH AUTOMATIC DIVERSION OF FLOW WHEN COMMINUTING DEVICE FAILS? ☒ Yes ☐ No

4. IS INLET CHANNEL DESIGNED TO PREVENT DEPOSITION OF SOLIDS? ☒ Yes ☐ No

***5. ARE UNITS LOCATED IN DEEP PITS PROVIDED WITH STAIRWAY ACCESS, ADEQUATE LIGHTING, AND VENTILATION? ☐ Yes ☐ No ☒ N/A

*** *Only Sewerage Applicants*

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DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

MODULE 13 – SETTLING TANKS

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TABLE I

IDENTIFY FUNCTION AND SEQUENCE IN THE PROCESS USED.

			UNIT ONE	UNIT TWO	UNIT	UNIT
			[ ] EXISTING [X] PROPOSED	[ ] EXISTING [X] PROPOSED	[ ] EXISTING [ ] PROPOSED	[ ] EXISTING [ ] PROPOSED
			[ ] Primary [ ] Intermediate [X] Final	[ ] Primary [ ] Intermediate [X] Final	[ ] Primary [ ] Intermediate [ ] Final	[ ] Primary [ ] Intermediate [ ] Final
	WASTE ENTERS THIS UNIT FROM: (Indicate Unit)		AERATION TANK	AERATION TANK		
1.	CONSTRUCTION MATERIAL (Indicate)		STEEL	STEEL		
2. DIMENSIONS	A. LENGTH	(Ft)	8.00	8.00		
	B. WIDTH	(Ft)	8.00	8.00		
	C. DIAMETER	(Ft)	----	----		
	D. SWD	(Ft)	10.50	10.50		
	E. FREEBOARD	(Ft)	1.5	1.5		
3. CLEANING METHOD	A. MECHANICAL (Flight Travel Rate Or Tip Speed in Ft/Min)					
	B. NON-MECHANICAL		YES	YES		
4. HYDRAULIC LOADING DURING RUNOFF PERIOD	A. FORWARD FLOW	(Mgd)	0.026	0.026		
	B. RECIRCULATION FLOW (If Applicable)	(Mgd)	N/A	N/A		
	C. TOTAL FLOW (A + B)	(Mgd)	0.026	0.026		
5. DESIGN INFORMATION	A. CAPACITY	(1) GALLONS	2900	2900		
		(2) TOTAL	COMPUTE THE TOTAL FOR ALL UNITS AND ENTER HERE			5800
	B. DETENTION TIME (Hrs)	(1) AVERAGE	4.0	4.0		
		(2) MINIMUM	2.7	2.7		
	C. SURFACE SETTLING RATE (Gal/Day/Sq Ft)	(1) AVERAGE	273	273		
		(2) MAXIMUM	410	410		
	D. WEIR OVERFLOW RATE (Gal/Ft/Day)	(1) AVERAGE	2190	2190		
		(2) MAXIMUM	3280	3280		
6.	A. WASTES ENTER BY	(1) PUMPING				
		(2) GRAVITY	YES	YES		
	B. WASTES LEAVE BY	(1) PUMPING				
		(2) GRAVITY	YES	YES		

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WATER POLLUTION CONTROL

MODULE 13 – SETTLING TANKS

For Department Use Only

A. GENERAL INFORMATION

1. DESCRIBE METHOD OF SCUM REMOVAL AND DISPOSAL (If To Land or Earthen Basins, Complete Module 5)

FLOATING SCUM TO BE REMOVED BY AIRLIFT SKIMMERS WITH DISCHARGE TO AERATION TANK.

2. DESCRIBE METHOD AND FREQUENCY OF SLUDGE REMOVAL AND METHOD AND LOCATION OF SLUDGE DISPOSAL: (If To Land or Earthen Basins, Complete Module 5) SLUDGE TO BE REMOVED BY A SCAVENGER UNIT TO AN APPROVED SANITARY LAND FILL WHEN THE AERATION TANK MLSS EXCEEDS 6,500 MG/L.

3. IS THE INLET DESIGNED TO PROVIDE ADEQUATE FLOW DISTRIBUTION ACROSS EACH UNIT? [X] Yes [ ] No

4. ARE THE WEIRS ADJUSTABLE? [X] Yes [ ] No

ONLY SEWERAGE APPLICANTS *Complete Items 5 Through 8*

5. PROVISIONS FOR VIEWING AND SAMPLING SLUDGE: SLUDGE MAY BE VIEWED AND SAMPLED AT ANY TIME AT THE END OF THE SLUDGE RETURN LINES.

6. IF SUBMERGED PORTS ARE USED ON INLETS, HAS PROVISION BEEN MADE TO ELIMINATE OR REMOVE FLOATING MATERIAL? [X] Yes [ ] No [ ] N/A

7. DOES EACH SLUDGE HOPPER HAVE AN INDIVIDUALLY VALVED WITHDRAWAL LINE? [X] Yes [ ] No

A. MINIMUM DIAMETER OF WITHDRAWAL LINES IS 3 INCHES.

B. HEAD FOR SLUDGE WITHDRAWAL IS 2 FEET.

8. THE SIDE WALLS OF:

A. PYRAMIDAL HOPPERS HAVE A MINIMUM SLOPE OF 1.7 VERTICAL TO 1.0 HORIZONTAL.

B. CONICAL HOPPERS HAVE A MINIMUM SLOPE OF _____ VERTICAL TO _____ HORIZONTAL.

C. DEPTH OF HOPPER IS 6.0 FEET.

D. HORIZONTAL DIMENSIONS OF HOPPER BOTTOM ARE 1.0 FEET BY 1.0 FEET.

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WATER POLLUTION CONTROL

MODULE 16 – AERATION TANKS OR BASINS

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INDICATE PROCESS:
- ☐ Conventional Activated Sludge
- ☐ Contact Stabilization
- ☐ Multi-Stage Activated Sludge
- ☒ Extended Aeration
- ☐ Oxidation of Iron
- ☐ Other (Specify) _____

TABLE I			UNIT ONE	UNIT TWO	UNIT	UNIT
			☐ Existing ☒ Proposed	☐ Existing ☒ Proposed	☐ Existing ☐ Proposed	☐ Existing ☐ Proposed
WASTE ENTERS THIS UNIT FROM: (Indicate Unit)			COMMINUTOR/SCREENING			
CONSTRUCTION MATERIAL (Indicate)			STEEL	STEEL		
1. TYPE BASIN & CAPACITY	A. AERATION OR CONTACT BASIN	(Gal)	17,500	17,500		
	B. STABILIZATION/REAERATION	(Gal)				
	C. AEROBIC DIGESTION BASIN	(Gal)				
	D. PRIMARY AERATION BASIN	(Gal)				
	E. SECONDARY AERATION BASIN	(Gal)				
	F. OXIDATION DITCH	(Gal)				
	(1) MAXIMUM LIQUID DEPTH	(Ft)				
	(2) CROSS-SECTIONAL VELOCITY	(Fps)				
	(3) MAXIMUM ROTOR SUBMERGENCE	(In)				
	(4) PROVISIONS FOR VARYING LIQUID LEVEL					
2. DIMENSIONS	A. LENGTH	(Ft)	19.25	19.25		
	B. WIDTH	(Ft)	11.67	11.67		
	C. DIAMETER	(Ft)				
	D. SWD	(Ft)	10.50	10.50		
	E. FREEBOARD	(Ft)	1.50	1.50		
	F. DETENTION TIME (WITHOUT RECIRCULATION)	(Hrs)				
3. EARTH EMBANKMENT BASIN	A. INSIDE SLOPE RATIO	(Vert.:Horiz.)	1:_____	1:_____	1:_____	1:_____
	B. OUTSIDE SLOPE RATIO	(Vert.:Horiz.)	1:_____	1:_____	1:_____	1:_____
	C. BERM WIDTH	(Ft)				
4. RETURN SLUDGE		(%)	150	150		

5. DIFFUSED AERATION

A. BLOWERS: NUMBER EXISTING _____ NUMBER PROPOSED TWO

B. CAPACITY OF EACH BLOWER: (1) 160 CFM AT 5.0 PSI (3) _____ CFM AT _____ PSI

(2) 160 CFM AT 5.0 PSI (4) _____ CFM AT _____ PSI

SPECIFY WHICH IS THE STANDBY UNIT: EITHER MAY BE STANDBY AS SELECTED BY OPERATOR

CAPACITY EXISTING _____ CFM

CAPACITY PROPOSED TOTAL 320 CFM

C. TOTAL CFM OF AIR: (INCLUDING AUXILIARIES) REQUIRED 160 PROVIDED 320

D. IF BLOWER IN SERVICE CEASES TO OPERATE, IS EQUIPMENT PROVIDED TO AUTOMATICALLY CUT IN THE STANDBY BLOWER? ☒ Yes ☐ No

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WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL
MODULE 16 – AERATION TANKS OR BASINS

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TABLE I – CONTINUED		UNIT ONE ☐ Existing ☒ Proposed	UNIT TWO ☐ Existing ☒ Proposed	UNIT ☐ Existing ☐ Proposed	UNIT ☐ Existing ☐ Proposed
MECHANICAL AERATION 6.	A. UNITS PER TANK				
	B. TOTAL RATED CAPACITY (Lbs O_2/Hr) (Each Tank)				
LOADING 7.	BOD (Lbs/Day/1000 Cu. Ft.) (Sewage & Industrial Wastes Only)	16.8	16.8		
	OR				
	IRON (Lbs/Day) (Mine Drainage Only				
	APPLICATION RATE Cu. Ft. Air/Lb. ☒ BOD ☐ IRON	2100	2100		
	OR				
	POUNDS OXYGEN/LB. ☐ BOD ☐ IRON				
8. ANTICIPATED WASTE SLUDGE PRODUCTION (Cu Ft Wet Sludge/Day)		.80	.80		
9. METHOD AND LOCATION OF SLUDGE DISPOSAL (If to Land, Complete Module 5)		TO AERATED SLUDGE HOLDING TANK			

A. GENERAL INFORMATION

1. IF AN EARTHEN BASIN, HAS MODULE 5 BEEN COMPLETED? ☐ Yes ☐ No ☒ N/A

ONLY SEWERAGE AND INDUSTRIAL WASTES APPLICANTS ANSWER QUESTIONS BELOW

2. WHERE AIR LIFTS ARE USED FOR SLUDGE RETURN, ARE THE AIR LIFTS PROVIDED WITH A VALVE ON THE DISCHARGE PIPE TO PERMIT BLOWING OUT THE TAIL PIPE? ☒ Yes ☐ No

3. ARE SLUDGE STORAGE TANKS PROVIDED ☒ Yes ☐ No ☐ N/A

   A. IF YES, SPECIFY CAPACITY OF EACH TANK. 245 ☒ CU FT ☐ GALLONS

   245 ☒ CU FT ☐ GALLONS

4. ARE THE SLUDGE TANKS AERATED? ☒ Yes ☐ No ☐ N/A

   A. IF YES, SPECIFY QUANTITY OF AIR PROVIDED IN EACH TANK.

   11.5 CUBIC FEET PER MINUTE

   11.5 CUBIC FEET PER MINUTE

WATER POLLUTION CONTROL

MODULE 16 – AERATION TANKS OR BASINS

ONLY SEWERAGE APPLICANTS ANSWER QUESTIONS BELOW

A. GENERAL INFORMATION – CONTINUED

5. IF CONVENTIONAL ACTIVATED SLUDGE PROCESS, HAS A BY-PASS OF THE PRIMARY SETTLING TANKS BEEN PROVIDED TO PERMIT THE DISCHARGE OF RAW SEWAGE TO THE AERATION TANKS? ☐ Yes ☐ No ☒ N/A

6. ARE THE DIMENSIONS AND PROPORTIONS OF THE AERATION TANKS SUCH AS TO MAINTAIN EFFECTIVE MIXTURE AND UTILIZATION OF AIR, TO PREVENT UNAERATED SECTIONS AND NOTICEABLE CHANNELING, AND TO MAINTAIN VELOCITIES SUFFICIENT TO PREVENT DEPOSITION OF SOLIDS? ☒ Yes ☐ No

7. ARE INLETS AND OUTLETS FOR EACH AERATION TANK PROVIDED WITH VALVES, GATES, STOP-PLANKS, WEIRS, OR OTHER DEVICES TO PERMIT FLEXIBILITY IN CONTROLLING THE FLOW TO ANY UNIT TO MAINTAIN A REASONABLE CONSTANT WATER LEVEL AND TO PERMIT CLEANING OF INDIVIDUAL UNITS? ☒ Yes ☐ No ☐ N/A

8. IS A POSITIVE METHOD OF SHUTOFF PROVIDED BETWEEN THE AERATION AND SETTLING TANKS? ☒ Yes ☐ No ☐ N/A

   A. IF NO, IS A MECHANICAL MIXING PROVIDED TO MAINTAIN SELF-CLEANSING VELOCITIES ON HOPPER SLOPES? ☐ Yes ☐ No

9. ARE CHANNELS AND PIPES CARRYING LIQUIDS WITH SUSPENDED SOLIDS DESIGNED TO MAINTAIN SELF-CLEANSING VELOCITIES OR AGITATED TO KEEP SOLIDS IN SUSPENSION? ☒ Yes ☐ No ☐ N/A

10. DOES THE DESIGN PROVIDE FOR THE INTRODUCTION OF AIR IN SUFFICIENT VOLUME AND IN SUCH A MANNER AS TO MAINTAIN AT LEAST 2 MILLIGRAMS PER LITER OF DISSOLVED OXYGEN UNDER ALL CONDITIONS OF LOADING, IN ALL PARTS OF AERATION TANK EXCEPT IMMEDIATELY BEYOND THE INLETS? ☒ Yes ☐ No

11. ARE THE AERATION PLATES, TUBES, OR JETS USED FOR THE INTRODUCTION OF AIR TO MIXED LIQUOR REMOVABLE FOR INSPECTION, MAINTENANCE, AND REPLACEMENT WITHOUT DE-WATERING THE TANK? ☒ Yes ☐ No ☐ N/A

12. DO INDIVIDUAL ASSEMBLY UNITS OF DIFFUSERS HAVE UNIFORM PRESSURE LOSS, AND ARE THE UNITS EQUIPPED WITH CONTROL VALVES, PREFERABLY WITH INDICATORS OR MARKINGS FOR THROTTLING OR FOR COMPLETE SHUTOFF? ☒ Yes ☐ No ☐ N/A

13. ARE SUITABLE DEVICES PROVIDED FOR READILY OBSERVING, SAMPLING, CONTROLLING, AND APPORTIONING THE ACTIVATED SLUDGE? ☒ Yes ☐ No ☐ N/A

14. IS A HEATED WALK-IN HOUSING PROVIDED AROUND CONTROLS, BLOWERS, AND CHLORINATORS WITH REASONABLE SPACE FOR STORAGE? ☒ Yes ☐ No

15. WHERE AIR LIFTS OR PUMPS ARE USED FOR SLUDGE RETURN, DO THE SETTLING TANK HOPPER BOTTOMS HAVE A MAXIMUM HORIZONTAL DIMENSION OF 12 INCHES? ☒ Yes ☐ No

16. ARE DRAINS INSTALLED IN ALL AERATION TANK UNITS? ☐ Yes ☐ No ☒ N/A

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DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

MODULE 21 – DISINFECTION

For Department Use Only

TABLE I – CHLORINATION UNITS			UNIT ONE [ ] Existing [X] Proposed	UNIT [ ] Existing [ ] Proposed	UNIT [ ] Existing [ ] Proposed	UNIT [ ] Existing [ ] Proposed
WASTE ENTERS THIS UNIT FROM: (Indicate Unit)			CLARIFIER			
CAPACITIES 1. A. Gas	(1) Rated Capacity Range	(Lbs/Day)				
	(2) Total		COMPUTE TOTAL FOR ALL UNITS AND ENTER HERE			
	(3) Initial Capacity Range	(Lbs/Day)				
B. Hypochlorinator	(1) Feeder Capacity Range	(Gpd)	0-20			
	(2) Total		COMPUTE TOTAL FOR ALL UNITS AND ENTER HERE			0-2
	(3) Type of Hypochlorite		SODIUM			
	(4) Available Chlorine	(%)	15			
	(5) Manufacturer's Maximum Recommended Solution Feed Strength	(%)	15			
2. Chlorine Dosage Range		(Mg/L)	8-12			
3. Point(s) of Application			INLET AREA CHLORINE TANK			

A. GENERAL INFORMATION – CHLORINATION UNITS

1. IF GAS CHLORINATION EQUIPMENT AND CHLORINE CONTAINERS ARE INSTALLED IN A BUILDING USED FOR OTHER PURPOSES, DOES A TIGHT PARTITION SEPARATE THESE ROOMS FROM ANY OTHER PORTION OF THE BUILDING? [ ] Yes [ ] No [X] N/A

2. DO DOORS TO THE GAS CHLORINATION EQUIPMENT AND CHLORINE STORAGE ROOMS OPEN ONLY TO THE OUTSIDE OF THE BUILDING? [ ] Yes [ ] No [X] N/A

3. DO THE GAS CHLORINATION EQUIPMENT AND CHLORINE STORAGE ROOMS HAVE AMPLE FORCED AIR VENTILATION? [ ] Yes [ ] No [X] N/A

4. DOES THE CHLORINATION EQUIPMENT PROVIDE ADEQUATE CAPACITY TO MAINTAIN AT LEAST 1 MILLIGRAM PER LITER RESIDUAL IN THE FINAL EFFLUENT? [X] Yes [ ] No [ ] N/A

5. IS A COMPARATOR OR OTHER TYPE OF EQUIPMENT PROVIDED FOR MEASURING CHLORINE RESIDUALS? [X] Yes [ ] No [ ] N/A

6. ARE PROVISIONS, SUCH AS FURNISHING A GAS MASK, ETC., MADE FOR SAFETY AND PROTECTION AGAINST CHLORINE GAS? [ ] Yes [ ] No [X] N/A

7. IS THE CHLORINE EQUIPMENT INSTALLED IN A HEATED ROOM? [X] Yes [ ] No [ ] N/A

8. DESCRIBE HOW WATER IS SUPPLIED TO THE CHLORINATION FACILITIES:

WATER SUPPLY IS NOT REQUIRED TO OPERATE CHLORINATION FACILITIES.

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TABLE II – CONTACT UNITS				UNIT ONE [ ] Existing [X] Proposed	UNIT [ ] Existing [ ] Proposed	UNIT [ ] Existing [ ] Proposed	UNIT [ ] Existing [ ] Proposed
1. DIMENSIONS	A. Length		(Ft)	11.83			
	B. Width		(Ft)	4.0			
	C. Diameter		(Ft)	------			
	D. SWD		(Ft)	4.00			
	E. Freeboard		(Ft)	3.00			
2.	A. Capacity		(Gal)	1400			
		Total	(Gal)	COMPUTE TOTAL FOR ALL UNITS AND ENTER HERE			1400
3.	A. Contact Time	(1) Based on Peak Hourly Flow	(Min)	15			
		OR					
		(2) Maximum Rate of Pumpage	(Min)				

B. GENERAL INFORMATION – CONTACT TANKS

1. ARE TANKS BAFFLED OR SO CONSTRUCTED AS TO REDUCE SHORT CIRCUITING OF FLOW TO A MINIMUM? [X] Yes [ ] No

2. DESCRIBE PROVISIONS FOR CLEANING TANK(S) AND FOR MAINTAINING ADEQUATE DISINFECTION DURING CLEANING OPERATIONS:

CONTACT TANK MAY BE CLEANED OF SEDIMENT WHEN REQUIRED BY SCAVENGER SERVICE WITHOUT AFFECTING OPERATION OF THIS UNIT.

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WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

SLUDGE TREATMENT AND DISPOSAL FACILITIES

MODULE 26A – SEPARATE DIGESTION TANKS AND SLUDGE THICKENING TANKS

For Department Use Only

TABLE I	UNIT ONE	UNIT TWO	UNIT	UNIT
	[ ] Existing [X] Proposed	[ ] Existing [X] Proposed	[ ] Existing [ ] Proposed	[ ] Existing [ ] Proposed
	[X] Single Stage [ ] Multi Stage [ ] Thickening	[X] Single Stage [ ] Multi Stage [ ] Thickening	[ ] Single Stage [ ] Multi Stage [ ] Thickening	[ ] Single Stage [ ] Multi Stage [ ] Thickening
1. INDICATE UNIT PRODUCING SLUDGE	EXTENDED AERATION PROCESS			
2. CLASSIFICATION A. CONVENTIONAL				
B. HIGH RATE				
C. AEROBIC	X	X		
(1) AIR QUANTITY PROVIDED (Cfm)	11.5	11.5		
3. A. DIAMETER * (Ft)	11.67 WIDE, 12.00 HIGH, 200 LG. EACH			
B. CAPACITY (Cu Ft)	245	245		
C. TOTAL EFFECTIVE CAP. (Cu Ft)				490
D. TOTAL EFFECTIVE CAP. (Cu Ft/Cap)**				1.1 FT.^{3}/ CAP.
4. SLUDGE A. ANTICIPATED VOL. (Gal/Day)	15 GAL.	15 GAL.		
B. SOLIDS CONCENTRATION (%)	2	2		
C. DETENTION TIME (Days)	VARIABLE	VARIABLE		
D. IS RECIRCULATION PROVIDED?	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No
E. ARE MECHANICAL SCUM BREAKERS PROVIDED?	[ ] Yes [X] No	[ ] Yes [X] No	[ ] Yes [ ] No	[ ] Yes [ ] No
(1) IF NO, DOES ONE SLUDGE INLET DISCHARGE NEAR TANK CENTER AND ABOVE LIQUID LEVEL?	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No
5. TYPE OF COVER A. FIXED				
B. FLOATING				
C. NONE	X	X		
6. HEATING FACILITIES (Specify) A. TEMPERATURE (Deg F)	N/A	N/A		
7. MIXING FACILITIES (Specify)	DIFFUSED AIR	DIFFUSED AIR		
8. SUPERNATANT A. WITHDRAWAL FACILITIES (Pipe Diameter) (In)	N/A	N/A		
B. NUMBER OF WITHDRAWAL LEVELS	N/A	N/A		
C. METHOD OF WITHDRAWAL	SUCTION HOSE	SUCTION HOSE		
D. SUPERNATANT DISPOSED TO:	AERATION TANK	AERATION TANK		
E. IS POSITIVE, UNVALVED, VENTED OVERFLOW PROVIDED?	[X] Yes [ ] No	[X] Yes [ ] No	[ ] Yes [ ] No	[ ] Yes [ ] No
9. GAS UTILIZATION EQUIPMENT (Specify)	N/A	N/A		
10. SAFETY EQUIPMENT USED (Specify)	N/A	N/A		

* IF RECTANGULAR, GIVE APPROPRIATE DIMENSIONS (Feet).

** SEWERAGE PROJECTS ONLY

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DEPARTMENT OF ENVIRONMENTAL RESOURCES
WATER QUALITY MANAGEMENT

WATER POLLUTION CONTROL

SLUDGE TREATMENT AND DISPOSAL FACILITIES
MODULE 26A – SEPARATE DIGESTION TANKS AND SLUDGE THICKENING TANKS

For Department Use Only

ONLY SEWERAGE APPLICANTS ANSWER QUESTIONS BELOW.

A. GENERAL INFORMATION

1. TANK CAPACITY IS COMPUTED (Attach Calculations): 1.4 FT.^{3}/100 GAL. DESIGN FLOW

☐ FROM VOLUME AND CHARACTER OF SLUDGE TO BE DIGESTED

A. HAS DUE ALLOWANCE BEEN MADE FOR SLUDGE STORAGE AND SUPERNATANT? ☒ Yes ☐ No ☐ N/A

OR

☐ ON POPULATION BASIS

A. HAS CAPACITY BEEN INCREASED TO ALLOW FOR SUSPENDED SOLIDS POPULATION EQUIVALENT TO ANY INDUSTRIAL WASTE? ☐ Yes ☐ No ☒ N/A

B. HAS ADDITIONAL CAPACITY BEEN PROVIDED FOR GARBAGE SOLIDS? ☐ Yes ☐ No ☒ N/A

2. ARE ALL PORTIONS OF THE GAS SYSTEM, INCLUDING THE SPACE ABOVE THE TANK LIQUOR, STORAGE FACILITIES AND PIPING, DESIGNED SO THAT UNDER ALL NORMAL OPERATING CONDITIONS, INCLUDING SLUDGE WITHDRAWAL, THE GAS WILL BE MAINTAINED UNDER PRESSURE? ☐ Yes ☐ No ☒ N/A

3. ARE ALL ENCLOSURES INTO WHICH GAS MIGHT LEAK PROVIDED WITH ADEQUATE FORCED VENTILATION OR OTHERWISE ADEQUATELY PROTECTED AGAINST EXPLOSION? ☐ Yes ☐ No N/A

4. ARE ALL NECESSARY SAFETY FACILITIES, INCLUDING PRESSURE AND VACUUM RELIEF VALVES AND FLAME TRAPS TOGETHER WITH AUTOMATIC SAFETY SHUT-OFF VALVES, PROVIDED ON ALL GAS PRODUCTION, CONTROL, AND UTILIZATION EQUIPMENT? ☐ Yes ☐ No ☒ N/A

5. ARE ALL ELECTRICAL FIXTURES IN ENCLOSED PLACES WHERE GAS MAY ACCUMULATE SPARK-PROOF AND IN COMPLIANCE WITH THE NATIONAL BOARD OF UNDERWRITERS' SPECIFICATIONS FOR HAZARDOUS CONDITIONS? ☐ Yes ☐ No N/A

6. IS GAS METER PROVIDED? ☐ Yes ☐ No ☒ N/A

7. GAS PIPING DIAMETER IS _____ INCHES.

8. DOES GAS PIPING SLOPE TO ADEQUATE NUMBER OF CONDENSATION TRAPS AT LOW POINTS? ☐ Yes ☐ No ☒ N/A

9. ARE SLUDGE SAMPLING FACILITIES PROVIDED? ☒ Yes ☐ No ☐ N/A

T E C H N I C A L   S P E C I F I C A T I O N S

A. 98490

SEWAGE TREATMENT PLANT

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O.K. W.W.P. FILE

RECORD FOLDER

RECEIVED
JAN 23 1974
Secretary's Office
Public Utility Commission

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PROJECT NUMBER:
P19/1-73 2.4

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SPEC. FOR SUBURBIA EXTENDED AREATION PLANT.

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DIVISION I

SEWAGE TREATMENT PLANT

LIMITS OF CONTRACT

GENERAL AND MECHANICAL CONSTRUCTION

1B.1 WORK INCLUDED. The work under this contract includes all labor, supervision, materials, equipment, tools, transportation, insurances, and appurtenances necessary for general, mechanical and electrical construction of the sewage treatment facilities including the interceptor sewer; flow directional change manhole; comminutor and bar screen; aeration tanks; clarifiers; sludge holding tank; chlorine tank; two blowers; air lines and auxiliary equipment; instrumentation and equipment for addition of chlorine to the sewage plant effluent flow; control house, including laboratory equipment; outfall sewer; miscellaneous process equipment and process piping including excavation and backfill of the pipe trenches; all yard and interceptor piping and site improvements in the plant area; all electrical construction, wiring, fixtures, controls, heating equipment connec- and appurtenances at the sewage treatment plant. Motor wiring is included in the electrical work. Motors are to be included by sewage treatment package plant manufacturer.

1B.2 WORK NOT INCLUDED. The work under this contract does not include the following items which are provided under separate contracts:

Construction of the sanitary sewage collection system.

1B.3 WORKMANSHIP. All work and execution of same shall be completed in a first class workmanlike manner and shall conform to the best practice of the trade. The Engineer shall if he deems necessary reject and cause to be redone or replaced any work or manufactured item regardless of any prior approval of data or method and such reconstruction or replacement shall be completed at the sole expense of the Contractor.

CLEARING AND GRUBBING

2.1 SCOPE OF WORK. This section of the Contract includes all labor, supervision, materials, equipment, tools, transportation, insurances and appurtenances necessary to complete the clearing and grubbing work. The limits of the work shall be as indicated on the plans and as required to construct the sanitary sewerage system.

2.2 CLEARING. Clearing shall consist of the felling, trimming, cutting up and disposing of all trees, vegetation, brush, undergrowth, downfalls, trash and rubbish designated for removal.

2.3 PROTECTION. All trees, shrubs, bushes, or other vegetation and any existing facilities designated to remain shall be protected by the Contractor by installation of barricades, braces or other facilities required. Cost of any facilities required for protection shall be included in the cost of clearing and grubbing.

2.4 GRUBBING. Grubbing shall consist of the removal, by excavation, pulling, blasting, cutting or other approved methods of all stumps, roots, or other buried or embedded organic material.

2.5 DISPOSAL OF CLEARED AND GRUBBED MATERIAL. All waste material resulting from clearing and grubbing operations shall be disposed of in the following manner:

2.5.1 By burning on the site in complete accordance with State or local laws relative to the building and control of such fires. All burning to be done at the responsibility and risk of the Contractor.

2.5.2 All unburnable material and refuse from burning shall be removed from the site and placed in areas specifically designated for this purpose. All costs of loading, hauling and disposal shall be included in the cost of clearing and grubbing work.

2.6 PAYMENT FOR CLEARING AND GRUBBING. Payment for clearing and grubbing work required for sanitary sewerage system shall be included in the unit price bid for sewers, house connections or force mains.

DIVISION 6

MATERIALS

6.1 SCOPE OF WORK. This section of the Contract includes all labor, supervision, materials, equipment, tools, transportation, insurances and appurtenances necessary to provide the materials indicated on the plans, specified herein and as required to construct the sewage treatment plant.

6.2 SHOP DRAWINGS. The Contractor shall submit shop drawings, catalog cuts, mill test reports or laboratory analysis indicating manufacturer or producer, quality, size or detail of fabrication for all materials to the Engineer. Such drawings, cuts or data must be approved before any materials are purchased.

6.3 GENERAL. All materials and equipment shall be new and of the standard specified herein. All materials offered under this Contract shall be limited to products regularly produced and recommended for service intended and so rated in accordance with engineering data or other comprehensive literature made available in effect at the time of opening of bids.

6.4 PIPE AND FITTINGS.

6.4.1 Cast Iron: All cast iron pipe and fittings, except cast iron soil and waste pipe and fittings, shall be Class 150 and shall conform to the requirements of ASA Standard Specification A21.6 or A21.8 Cast Iron pipe joints shall conform to the following:.

Mechanical Joints: ASA A21.11

Tyton Joints: Brand name manufacturer's minimum requirements.

Flanged Joints: ASA 21.2 Class 150, Flanges ASA B16.1, Class 125 drilling.

6.4.2 Cast Iron Soil and Waste: All cast iron soil and waste pipe shall conform to the requirements of ASTM Standard Specification A74.

6.4.3 Vitrified Clay: All clay shall conform with ASTM Specifications C200 or CSPA 2-65 for extra strength clay pipe. Joints shall conform to ASTM Specification C425, Type III.

6.4.4 Steel Pipe: Steel pipe shall be black seamless steel conforming to ASTM Standard Specification A-120.

shall be Schedule 40 and shall conform to ASTM Standard Specification A 72 for wrought iron and ASTM Standard Specification B6 for zinc coating. Galvanized pipe shall have standard weight screwed galvanized malleable iron fittings with a union connection at all pieces of equipment and wherever necessary to facilitate dismantling of the line.

6.4.6 Asphalt Coated Corrugated Metal Pipe: All corrugated metal pipe shall conform to the requirements of AASHO Specifications 190. Unless otherwise indicated, all corrugated metal pipe shall be fully asphalt coated in conformance with Sec.707.4 (a,b,c) of the "Pennsylvania Department of Highways Standard Specifications Form 408, 1967". Bands for corrugated metal pipe shall be fully asphalt coated and shall conform to all requirements of Section 707.4 (d) Of the above standard Specifications.

6.4.7 Copper: Copper water tubing shall conform to ASTM Standard Specification B88. Pressure tubing shall conform to ASTM Standard Specification B68. Plant water line shall be Type K soft conforming to the above requirements. Inside water distribution lines to be Type L hard tubing conforming to the above requirements.

6.4.8 Brass Fittings (Flare Connections): Brass fittings for copper tubing shall be bar stock flare joint fittings and shall conform to ASTM Standard Specification B62.

6.4.9 Soldered (Sweat) Joints (Flux & Solder): Solder (Sweat) joints on copper water tube shall be made with 95-5 solder. All joints of pipes and fittings to be soldered shall be given a uniform coat of Streamline #50 or Nokorode soldering flux to the outside of the pipe and the inside of the fitting.

6.4.10 Plastic Tubing (Chlorine Feed Line): Tubing to be 1/2" inside diameter and 1/8" wall thickness, fabricated of polyethylene or polypropylene.

6.4.11 Corporation Stops: The corporation stop for the sewage plant water line shall be Mueller No. H-15025 with inlet thread for iron pipe and outlet for copper or an approved equal. Size of stop shall be 1-1/2".

6.4.12 Curb Stops: The curb stop for the sewerage plant water line shall be Mueller No. 15201 Oriseal curb valve or approved equal. Both inlet and outlet shall be for copper service pipe connection. Size of curb valve shall be 3/4".

6.4.13 Valve Boxes: Valve boxes for gate valves shall be two piece screwed type box with cover. Covers shall have the word "Water" cast in the top and shall have two (2) pick holes. Valves boxes shall be Figure 123 as manufactured by Kennedy Valve Manufacturing Company or equal.

6.4.14 Service Boxes: Service boxes shall be Buffalo Type with two and one-half (2-1/2) inch shaft. Covers shall have the word "Water" cast in the top. Service boxes shall be Catalog No. H-10350 as manufactured by Mueller Company, Decatur, Illinois or equal.

6.4.15 Accessories: All valves, curb stop and boxes shall be supplied with the required keys and wrenches. Where indicated on the plans extension stems, stem supports and guides, and operators shall be furnished and installed. Accessories shall be products of the same manufacturer as the valves installed.

6.4.16 Unions: Unions, 2" and smaller in copper tubing, shall be standard weight, all brass, ground joint for soldered or sweated type connection. Unions for galvanized pipe shall have ends for NPT connections, malleable pattern of ground joint type with brass seating pressed into the head piece.

6.5 BACKWATER VALVE. Backwater valve for effluent line in manhole No. 1A to be 8" diameter check type, Model 1190-F as manufactured by Josam Manufacturing Company, or approved equal

6.5.1 Tide Gates: Tide gates shall be 15" Model 10C for corrugated metal pipe, as manufactured by Armco Steel Corp., Middletown, Ohio, or approved equal.

6.6 VALVES.

6.6.1 Gate Valves: All gate valves under 2" shall be 125#, non-rising stem and bronze body. Bronze for body shall conform to ASTM Specification B-62. Valves shall be as manufactured by Crane, Walworth or Lunkenheimer or as approved.

6.6.2 All gate valves over 2" shall be non-rising stem iron body, brass mounted, equipped with 2" stem nut for remote operation. Eddy Valve Company, Crane Company, Walworth Valve Co., or approved equal.

NOT PROVIDED

6.6.3 Hose Bibs: All hose bibs shall be one-half (1/2) inch garden hose valves and shall be the Catalog No. 58 as manufactured by Crane Co. or an approved equal.

6.6.4 Yard Hydrants: All yard hydrants shall be self-draining type to receive one-half (1/2) inch garden hose and shall be the Series 1440N as manufactured by Josam or an approved equal.

6.7 CONCRETE. Measuring, mixing and placing of concrete shall be in accordance with American Concrete Institute Standard "Recommended Practice for Measuring, Mixing and Placing Concrete". (ACI-614-59).

6.7.1 Cement: Type IA (ASTM C 175) shall be used in all items of concrete work.

6.7.2 Sand: Shall be of an approved quality, conforming to the current ASTM designation (C33).

6.7.3 Stone: Shall be crushed slag, gravel or limestone graded 1/2" to 3/4: for reinforced concrete. Maximum size of aggregate shall be not larger than 1/5 narrowest dimension between forms of the member for which concrete is to be used, nor larger than 3/4 of minimum clear spacing between reinforcing bar.

oil, acid, alkali, organic matter or other deleterious substances.

6.8 CONCRETE. All concrete for this project shall be Ready-Mixed conforming to specifications for Ready-Mixed Concrete, ASTM Designation (C94) and shall have a minimum compression strength of 3000# at 28 days.

6.8.1 The Contractor shall retain and pay for the services of a qualified laboratory to test concrete cylinders to determine strength of mix. During the pouring operation, four (4) samples will be taken.

The taking of samples, making cylinders, and curing test cylinders shall be done by the Contractor under supervision of the Engineer. All work shall conform to ASTM (C31) and ASTM (C172).

6.8.2 Testing for compression shall conform to ASTM (C39) and flexure tests according to ASTM (C78). Tests as heretofore required shall be made for 7 day tests and 28 day tests using one-half of the cylinders of test for 7 day test and the balance for 28 day test.

6.9 BAR AND MAT REINFORCEMENT. Shall be deformed steel bars or coldrawn steel wire or fabricated forms of these materials as required by the drawings of the specifications of both. Bars shall be deformed intermediate grade, new billet steel. These materials shall conform to Standard Specifications of the ASTM of the following applicable titles and serial designations:

6.9.1 Bars:
- Billet-Steel Bars for Concrete Reinforcement A15
- Rail-Steel Bars for Concrete Reinforcement A16
- Minimum Requirements for the deformation of Deformed Steel Bars for Concrete Reinforcement A305

6.9.2 Wire:
- Cold-drawn Steel Wire for Concrete Reinforcement A82
- Fabricated Steel Bar or Rod Mats for Concrete Reinforcement A184
- Welded Steel Wire Fabric for Concrete Reinforcement A185

6.10 MASONRY MATERIALS. Concrete Masonry Units: Shall be standard size, commercially made load bearing concrete block properly cured and aged by a reputable manufacturur and shall comply with ASTM (C90 and have physical requirements as follows:

	Compressive Strength Minimum P.S.I.		Water Absorption lbs. per cu. ft.
	Average 5 Units	Individual Units	Average of 5 Units
1-1/4" or over Grade A	1000	800	15

Moisture Content, minimum 40% of total absorption.

Blocks shall be Grade "A" and may be constructed with the use of lightweight aggregates such as shale, blast furnace slag or anthracite cinders. Blocks shall be modular type with a 7-5/8" x 15-5/8" face by thickness required and be square and true without chips or surface blemished; and have two finished faces and shall be seasoned at plant 28 days before delivery to site.

6.11 MANHOLE MASONRY MATERIALS. Brick shall be Grade H, hard burned common, conforming to ASTM Specification C62-37.

6.12 MORTAR MATERIALS. Portland Cement: Standard American Brand, ASTM (C150) Type 1 or ASTM (C205).

Masonry Cement: Standard American Brand, ASTM (C91).

Hydrated Lime: Masons hydrated or finisheng lime, ASTM (C207), Type S.

Quick Lime: ASTM (C5) pass #20 sieve.

Lime Putty: Stiff mixture of lime and water thoroughly slaked and allowed to cool. Putty shall be soaked not less than 24 hours after cooling and kept moist until used.

Sand: ASTM (C144) approved color, except that 100% shall pass a #8 sieve and 94% shall be retained on #100 sieve.

Water: Fresh, clean and free from alkali, oils, acids, or other impurities.

6.13 MORTAR TYPES. Mortar shall be the following types, and proportions are by volume. ASTM (C270).

6.13.1 Type "S": (High strength mortar)(C.S. 1800 psi 28 days). Use for exterior masonry below grade, masonry walls in contact with earth.

1 part portland cement
1/4 to 1/2 parts hydrated lime or lime putty

or

1 part masonry cement, Type II

with sand

Not less than 2-1/2 and not more than 3 times the sum of the volumes of cements and lime used.

6.13.2 Type "N": (Medium strength mortar) (C.S. 750 psi 28 days). Use for all other masonry.

1 part portland cement
1 to 1-1/2 part hydrated lime of lime putty

or

1 part masonry cement, Type II

with sand

Not less than 2-1/4 and not more than 3 times the sum of the volumes of cement and the lime used.

6.13.3 Mortar for plastering (5/8" thick) the inside and outside of the manholes shall be composed of one part Portland Cement to two parts sand with approximately 20 pounds of hydrated lime added for each sack of cement. The cement shall conform to Standard Specification of ASTM C150, Type II.

6.14 MASONRY WALL REINFORCEMENT. Masonry wall reinforcement shall be Dur-O- aL truss designed or approved equal truss designed and shall have product approval by Southern Building Code Congress (SBCC), Building Officials Conference of America, Inc. (BOCA) or International Conference of Building Officials (ICBO) building codes.

6.14.1 Dur-O-WaL shall be manufactured from cold drawn steel wire conforming to ASTM A82-62T, and shall consist of two deformed longitudinal rods welded at 16 inch intervals to a continuous diagonal cross rod forming a truss design. Out to out spacing of side rods shall be approximately 2 inches less than the nominal thickness of the wall or wythe. Cross rods shall be not less than No. 9 gage. Cross rods which serve as metal ties in cavity and other multi-wythe walls shall be galvanized.

6.14.2 Prefabricated or job fabricated corner and tee sections shall be used to form continuous reinforcement around corners and for anchoring abutting walls and partitions. Material in corner and tee sections shall correspond to type and design of reinforcement used.

6.14.3 Unless otherwise noted on the plans, masonry walls shall be reinforced with standard type Dur-O-wal, Unless otherwise noted, reinforcement shall be installed in the first and second bed joints, 8 inches apart immediately above lintels and below sills at openings and in bed joints at 16 inch vertical intervals elsewhere. Reinforcement in the second bed joint above or below openings shall extend two feet beyond the jambs. All other reinforcement shall be continuous except that it shall not pass through vertical masonry control joints. Side rods shall be lapped at least 6 inches at splices. Reinforcement shall be so placed as to assure a 5/8" mortar cover measured from outside face of mortar joint.

6.15 MISCELLANEOUS METAL. All sheet metal shall conform to the following standard specifications:

(a) Sheet Copper: ASTM (B152) for furnished sheets, roofing temper.

(b) Sheet Lead: FS, QQ-L-201, of qualities required, 2-1/2 pound hard lead without pits, grit, porosity or foreign matter.

(c) Solder: 50% block tin, 50% pig lead.

(d) Flux: Muriatic acid killed with zinc or an approved brand.

(e) Elastic Cement: FS SS-C-153

(f) Steel: QQ-S-741, Type I or Type II as best suited, Grade B, Class I.

(g) Cast Iron: QQ-I-652, Malleable castings shall be heat treated.

(h) Aluminum: 6061-T6 for structural aluminum, gratings stop plates, etc. 6063-T5 alloy for windows, finish suitable for use intended in all cases.

(j) Anchor Bolts: All equipment to be mounted and anchored to the concrete floor or foundation shall be anchored by means of alloy steel anchor bolts of a number and size as recommended by the equipment manufacturer.

6.16 FRAMES AND COVERS. Frames and covers, shall be of the type and duty shown on the drawings. Iron castings shall conform to ASTM. A-48, Class 20.

All castings shall be true to pattern in form and dimensions, free from faults, sponginess, cracks, blowholes, and other defects affecting their strength.

The frames and covers shall be heavy duty, and average weight of cover, 150 lbs., average weight of frame, 280 lbs., with "sanitary sewer" imprinted on cover or match type of cover and frame used on manholes in the existing system.

6.17 FENCING MATERIALS. The chain link fence indicated on the drawings shall be fabricated of materials as detailed below.

6.17.1 Wire Fabric: The base metal of the wire fabric shall be a good commercial quality steel and shall contain not less than 0.20 percent copper. The fabric shall consist of No. 9 gauge wire, conforming to the dimensions given in the applicable ASTM Specifications of Galvanizing below, woven in 2-inch mesh. The wire picket from which the fabric is made shall have a maximum tensile strength of 70,000 pounds per square inch, based on the cross-sectional area of the galvanized wire. Galvanizing shall conform to the requirements hereinafter specified and shall weigh not less than 1.4 ounces per square foot of actual surface area. Unless otherwise specified, both selvages of the fabric shall have a twisted and barbed finish and barbing shall be done by cutting on the bias. The size of the mesh shall be determined by measuring from inside to inside of the wires of the mesh and at approximately right angles to them. Wire shall be stretched so that there will be no slack edges or warped sections.

6.17.2 Tension Wire: No. 7 gauge wire, conforming to the dimensions given in the applicable ASTM Specifications of Galvanizing below. Galvanizing shall conform to the requirements hereinafter specified and shall weigh not less than 1.4 ounces per square foot of actual surface area.

6.17.3 Fasteners: Fasteners for attaching the fabric to the tension wires and to line posts shall be No. 9 gauge tie wire, as specified above for actual surface area and in conformance with the requirements hereinafter.

6.17.4 End Posts, Corner Posts, Pull Posts and Line Posts: All posts and braces as hereafter specified shall be a good commercial quality steel, malleable iron or wrought iron. Satisfactory moisture excluding caps shall be provided and be firmly and rigidly secured to the top of tubular and other than solid section posts. Posts shall be straight and true to section. Posts, braces, truss rods, stretcher bars and clamps shall be galvanized. Tubular sections shall be

galvanized inside and outside. Galvanizing shall weigh not less than 2.0 ounces per square foot of actual surface area. End posts shall be not less than 3 inch O.D. tubular steel, or U-shape, I-beam, H-column section, weighing not less than 5.7 pounds per linear foot before galvanizing. End posts shall have a horizontal brace midway between the top and bottom of the fabric and extending to the nearest line post. Braces for end posts shall not be less than 1-5/8 inches O.D. tabular section weighing not less than 2.27 pounds per linear foot. The brace shall be trussed from the line post back to the end post by means of a 3/8 inch nominal diameter rod with turnbuckle or other provisions for adjustment. Stretcher bars for fabric at all end, corner and pull posts shall have two (2) braces, truss rod and stretcher bar assemblies conforming to the requirements herein before specified except the brace clamps or attachments shall be adjustable to various horizontal and vertical angles. Line posts shall be tubular steel not less than 2-1/2 inches O.D. weighing not less than 3.65 pounds per linear foot, I-beam weighing not less than 4.1 pounds per linear foot, or U-shape 2-1/2 x 1-7/8 x 3/16 inches weighing not less than 3.62 pounds per linear foot.

6.17.5 Gate Posts: Gate posts shall meet the material and galvanizing requirements hereinbefore specified for end posts. Gate posts shall be 3-inch O.D. tubular steel section weighing not less than 5.7 pounds per linear foot before galvanizing. Bracing for gate posts shall meet the requirements hereinbefore specified for end posts.

6.17.6 Gates: Gate for fence around the sewage treatment facility shall be a twelve (12) foot double gate using two (2) six (6) foot leaves. Direction of gate swing shall be as indicated on the drawings. Gate frames shall be 2 inch O.D. tubular steel section weighing not less than 2.7 pounds per linear foot before galvanizing. Gate cross bracing shall meet the requirements specified for end posts. Frames shall be of sufficient structural strength to prevent any twisting or flexing during opening and when closed. Gate fabric and fasteners shall meet the requirements specified for fencing. Gate hinges shall be socket ball type securely mounted to gate, and gate post and shall be smooth operating without sticking or dragging. Gates shall be complete with all hardware including latch forks, latch fork catches, lock keepers, lock keeper catches, stop holders, plunger bars, plunger bar catches, etc.

6.17.7 Galvanizing: Fittings, posts, post caps, braces, and metal fence material shall be galvanized by either the hot-dip or the electrolytic method, in conformity with the latest Standard Specifications of the ASTM as follows:

For Electrolytic Method: ASTM Designation A164

For Hotdip Method:

Posts, Braces & Fittings	ASTM Designation A123
Fabric	ASTM Designation A116 or A392
Hardware	ASTM Designation A153

Tests for galvanizing will be weight - ASTM A90. The weight of the galvanizing shall be as hereinbefore specified.

6.8 TOOLS. The Contractor shall furnish and place in the control house hand tools for maintenance of the facilities as hereinafter specified. The tools shall be "Stanley" or an approved equal.

(a) (1) Tool Box-8" with small parts tray.
(b) (1) Hammer-16 ounce.
(c) (4) Screwdrivers-Assorted-Flat (2); Phillips (2).
(d) (2) Pliers-6" and 10" Pump Type.
(e) (2) Chisels-Cold-1/2" and 1".
(f) (1) Hacksaw-12" with 1/2 dozen spare blades.
(g) (1) Socket Wrench Set-1/4" to 5/8"
(h) (1) Wrench Set-Open End 1/4" to 5/8".

DIVISION 8

EXCAVATION AND BACKFILLING FOR STRUCTURES

8.1 SCOPE OF WORK. This section of the Contract includes all labor, supervision, materials, equipment, tools, transportation, insurances, and appurtenances necessary to complete the excavation and backfilling work indicated on the plans and required to complete the sewage treatment facilities (and the sewage ejector stations, where required on the plans).

8.2 CLEARING AND GRUBBING. Clearing and grubbing shall conform to all requirements of Division 2.

8.3 EXCAVATION. Excavation shall conform to the limits indicated on the plans and as required to provide sufficient working space to permit placing, inspection and completion of work. Limits of excavation shall at all times provide for the conduct of all work in the safest possible manner and shall be in complete accordance with all applicable Federal, State and Local laws.

8.3.1 All foundations shall extend a minimum of one (1) foot into undisturbed solid bearing material. All exterior foundations shall extend a minimum of three (3) feet below finished grade. The above requirements shall take precedence over all elevations and details indicated on the drawings. The bottoms of all footings are to be poured without forms, care shall be taken to attain uniform, true, clean trench sides. No earth filling will be allowed under foundations.

8.4 DEWATERING. All requirements hereinbefore specified under EXCAVATION FOR PIPELINES - DEWATERING, Division 3, shall govern work under this Contract.

8.5 SHORING, SHEETING, ETC. Contractor shall be responsible for protecting personnel and excavation from cave-ins.

8.6 BACKFILLING, STRUCTURES. No filling is to be done around any part of the structure, walls, piers, or columns until such parts have been inspected and the backfilling authorized by the Engineer. No filling inside the building and backfilling against the foundations, walls, curbs, footings and platforms shall be done until concrete forms have been removed and pointing of masonry work has been completed. Filling and backfilling inside of the building and to a point 5' outside of exterior building lines shall be installed in 8" layers, wet down and tamped solid with pneumatic tampers. Filling more than 5' outside of building lines shall be installed in layers uniformly spread and tamped and then leveled or sloped as required.

8.6.1 For backfilling, Contractor shall use earth, free from waste or objectionable matter; and shall not place stone over 1/2 cu. ft. or frozen material in backfill. If sufficient sound materials are not on hand to complete filling operations to required grades, clean earth shall be furnished at no extra cost to Owner.

8.6.2 Rough grading shall be done to a uniform finish 4" to 6" below finished grades as shown on drawings. In rough grading, bases for all banks, lawns and paved areas shall be formed. Areas to be paved shall be graded to depth required for placing of fill and paving material.

8.6.3 Any foundation wall damaged due to backfilling or carelessness shall be replaced or repaired by the Contractor at his own expense to the satisfaction of the Engineer.

Where concrete walks, slabs, and platforms are to be placed on earth, any loam, or organic or other unsuitable material shall be removed and fill added to bring subgrade to proper elevation.

Then where indicated the Contractor shall spread a uniform layer of slag or gravel graded 1/2" to 3/4" size. Stone fill shall be thoroughly compacted to a minimum thickness of 4" for sidewalks and as indicated for platforms and slabs.

8.7 EXCAVATION AND BACKFILL FOR PIPELINES. Where pipelines are required to be installed in fill areas, these areas shall be brought to grade as described in Section 8.6 and then trenched for the pipe. The trench shall be inspected for proper compaction and approved by the Engineer before installation of the pipe. The pipe shall be backfilled as detailed on the drawings.

8.8 SEWAGE TREATMENT PLANT ACCESS ROAD

8.8.1 Subgrade under all access road and gravelled walk areas to be treated with an accepted herbicipe to impede the growth of grass and weeds in the stabilized area.

8.8.2 The roadway - dark shaded area - shall be paved using 4 inches 2RC in accordance with Pennsylvania Department of Transportation Specification Form 408. All material used in the roadway shall be supplied by Highway Department approved quarries.

8.9 EMBANKMENTS AND SUBGRADING. All embankment and earthwork structures are to be constructed as shown on the drawings. Material to be used for embankments and earth work, shall be free of loam, sand, organic material and shall contain rock pieces no larger than 8" diameter.

Earth is to be placed in six inch (6") uncompacted layers, moistened to optimum moisture and mechanically rolled or compacted. Drainage structures are to be constructed in place before beginning backfilling or embankment work. Material for backfilling and embankment may be obtained from trench excavation for the collector sewer extensions covered under a separate contract.

8.10 CLASSIFICATION OF EXCAVATED MATERIAL. All material excavated under this Contract shall be unclassified. No additional payment will be made for any specific type of material regardless of the measures required for removal from the excavation.

8.11 PAYMENT FOR EXCAVATION FOR STRUCTURES. All costs of excavation for structures shall be paid under the lump sum bid for the sewage treatment facilities.

8.12 PAYMENT FOR BACKFILLING AND EMBANKMENTS. Backfilling Structures: All cost of backfilling and embankment earth work under this Contract shall be included in the lump sum bid for the sewage treatment plant. No payment other than the lump sum bid will be made for any backfilling work or cost.

8.13 PAYMENT FOR PLANT ACCESS ROAD. All costs of temporary access road construction and maintenance and all costs of permanent access road construction and maintenance shall be paid at the lump sum bid complete in place. Such lump sum bid shall be full payment for all grading surfacing, storm drains, culverts, side ditches of permanent road and any temporary facilities required during construction. No additional payment will be made for this work regardless of facilities or maintenance required.

DIVISION 10

LANDSCAPING AND SITE IMPROVEMENTS

10.1 SCOPE OF WORK. This section of the Contract includes all labor, supervision, materials, equipment, tools, transportation, insurance and appurtenances necessary to complete the landscaping and site improvements indicated on the plans, specified herein and required to complete the sewage treatment facility (and sewage ejector stations, where required in the plans).

10.2 FENCING. The Contractor shall furnish and install where indicated on the drawings a six (6) foot high chain link type fence. Fence installation shall include metal posts, metal braces and fittings, wire fabric, gates and accessories as specified under MATERIALS, Division 6.

10.2.1 Fence: Fence shall be erected to alignment as indicated on the drawings. The completed fence shall be plumb and taut and shall conform to the best established practices of this work. Where rock is encountered, a hole shall be drilled a minimum of 12 inches into the rock. The diameter of the hole shall be 1/2 inch larger than the maximum dimension of the post. The post shall be grouted in place using grout consisting of one (1) part cement and two (2) parts of fine aggregate with a minimum amount of water.

10.2.2 Corner Posts: Corner posts shall be placed at angle points in horizontal alignment and/or where directed.

10.2.3 Pull Posts: Pull posts shall be placed at angle points in vertical alignment, at maximum 500 feet intervals between end and/or corner posts in level terrain, and/or where directed.

10.2.4 Concrete Footings: Concrete footings shall be provided for all posts. Concrete footings shall extend from finished grade to a minimum depth of three (3) feet below finished grade and posts shall extend to within four (4) inches of bottom of footings. Outside diameter of concrete footings shall be fourteen (14) inches for pull corner and gate posts and twelve (12) inches for line posts.

10.5 LAWNMAKING. Time of Operations:

10.5.1 Spring Seeding: Preliminary operations for seed bed preparation may be completed as early after March 15th as ground conditions permit. Sowing of seed will be permitted between April 1st and May 15th.

10.5.2 Fall Seeding: Preliminary operations for seed bed preparation may be completed at any time after August 1st. Sowing of seed will be permitted between September 1st and October 10th.

10.5.3 Preparation of Subgrade: If the general area is "hard pan" or heavy shale, ground shall be plowed to a depth of six (6) inches.

After plowing, ground shall be further loosened and graded by harrowing, discing or dragging, as dictated by the condition of the ground after plowing. The entire subgrade shall then be raked by hand and all stones over 1-1/2", grade stakes, rubbish and general debris removed.

If original ground is loose loam, sandy loam or a light clay, the six (6) inch plowing may be omitted if it will loosen up satisfactorily by discing or harrowing.

10.5.4 Topsoil. Topsoil shall have a ph. of between 5 and 7 and it shall be friable loam, sand loam or clay loam which will hold a ball when squeezed with the hand but which will crubble shortly after being released.

10.5.5 Topsoil shall be dumped in piles, uniformly spaced, or otherwise distributed by approved equipment. The piles may be spread with blade graders or any other approved equipment. Any irregularities in the surface shall be corrected in order to prevent the formation of low places and pockets where water will stand.

Topsoil shall not be placed when the subgrade is frozen, excessively wet or extremely dry, and no topsoil shall be handled when in a frozen or muddy condition. During all operations the surface shall be kept free of stones over 1-1/2 inch in size or any rubbish, debris, or other material which will be detrimental to seeding or to maintenance.

10.5.6 Limestone and Fertilizer. The Contractor shall apply lime in the form of ground raw limestone at a rate 100 pounds per 1000 sq. feet of area and shall wait at least one full week after lime has been spread before adding fertilizer.

Fertilizer shall be 5-10-5. Fertilizer shall be spread uniformly at a rate of 30 pounds per 1000 square feet and then the area shall be gone over with a spike drag or a rototiller, and then raked to a smooth even grade.

10.5.7 Seeding: Seed shall be sown at a rate of 8 pounds per 1000 square feet of area, sowing 4 pounds in one direction and 4 pounds in a direction at right angles to the first operation. Seed shall be applied by the use of approved mechanical power driven or hand seeder, or by hand in areas where inaccessible to a mechanical seeder.

10.5 Seed mix shall be as follows:

	% Parts	% Purity	% Germination
Fescue, Kentucky 31 (festuca elatior var. Kentucky 31)	51	98	85
Fescue, Pennlawn (Festuca rubra, var. Pennlawn)	20	98	85
Bluegrass, Kentucky (Poa pratensis) (21 lbs. to bu.)	20	85	75
Bluegrass, Merion (poa pratensis var. Merion) (21 lbs. to bu.)	10	90	75

The Contractor shall brush or rake to obtain a light covering of earth over the seed, and rake out all stones over 1" inch or other debris. After seed has been raked or brushed in, area shall be rolled very lightly with an "empty" water roller in two (2) directions.

10.6 MAINTENANCE OF SEEDED AREAS. All seeded areas shall be kept constantly wet to close to the saturation point to a depth of three (3) inches for the ten (10) days immediately following the seeding.

The Contractor's attention is directed to the GENERAL CONDITIONS. In accordance with the above the Contractor shall furnish all necessary labor, equipment and temporary facilities required to assure the satisfactory watering of the lawn as hereinbefore specified. Water will be available from system of the Owner.

All areas and spots which cannot show a prompt catch of grass shall be reseeded, and this operation repeated until a complete coverage is obtained. When the area does not need to be reseeded it shall be wet to a depth of three (3) inches every time the surface shows evidence of drying out, and this should continue through the entire period of maintenance.

When the average height of the grass is about 2-1/2 inches, it shall be cut to a height of 1-1/2 inches with an approved mowing equipment, and at that time, any depressions or other irregularities in the lawn surface shall be "leveled up" and reseeded.

The Contractor's maintenance shall continue until all areas are grassed and free from bare spots or large "off-color" areas and all work under the Contract is complete and has been accepted by the Engineer.

The lightly shaded area around the tanks shall be stabilized with 4" rounded river gravel (1-1/2" max size). Before placing the gravel, the area shall be treated with a herbicide as recommended by the manufacturer.

10.7 PAYMENT FOR LANDSCAPING AND SITE IMPROVEMENT (under this Contract). All costs of landscaping and site improvement under this contract shall be included in the lump sum bid for the sewage treatment plant. No payment other than the lump sum bid will be made for any landscaping and site improvement work or cost.

DIVISION 11

CONSTRUCTION OF PIPELINES - INTERIOR AND YARD

11.1 SCOPE OF WORK. This section of the Contract includes all labor, supervision, materials, equipment, tools, transportation and insurances necessary or required to complete the installation of all process piping, both interior and yard piping; all water supply piping; and all sanitary drainage piping as indicated on the plans and as required to complete the general and mechanical construction of the sewage treatment facilities (and the sewage ejector stations where required on the plans).

11.2 PIPING LAYOUT DRAWINGS. The Contractor shall, at the time of shop drawing submittal, at his own cost and expense prepare and submit to the Engineer detail piping layout drawings. All alterations to piping layout required by field conditions shall be submitted on revised drawings and approved by the Engineer prior to work. All piping drawings shall be such that at completion of work the drawings may be utilized to prepare final as-built plans.

11.3 INSTALLATION OF INTERIOR PIPING. All cast iron piping shall be installed in accordance with approved drawings. The contract drawings for small diameter pipe are generally diagramatic due to the small scale of drawings and it is not possible to indicate all fittings, offsets, valves or other items required for a complete operating system. This Contractor shall provide all such valves, fittings, and specialities. The Contractor shall carefully investigate all conditions affecting his work and so coordinate his work with other trades to prevent interference between architectural, structural, electrical and mechanical features. He shall furnish and install such offsets, fittings or other items as may be required to suit the conditions of the building. Where interference develops at the site, the authorized representative of the Engineer at the site shall determine which equipment shall be relocated regardless of which was first installed.

11.3.1 All piping within the buildings shall be run exposed in the unfinished portions as shown on the drawings. The Contractor shall locate and provide all chases or openings.

11.3.2 No pipes shall interfere with any opening, door, or window. In no case shall the headroom in front of the openings or doors be less than the top of the opening.

11.3.3 Wrapping threads or caulking screwed connections for tightness is prohibited. No horizontal piping shall be built-in or buried in partitions. No piping shall be run in cinder

fill unless protected by a stone concrete envelope of 2 inch minimum thickness. Joints or fittings shall not be erected over any motors, switchboards, panels, or other electrical equipment.

11.3.4 All pipes shall be cut accurately to measurements established at the building and shall be emplaced without springing, forcing, excessive cutting or weakening of the building structure. All pipes shall be installed in a manner permitting proper drainage and free expansion and contraction. Threaded pipe shall have full clean-cut threads. All burrs in pipes shall be removed by reaming. All changes in direction shall be made with fittings. The Contractor shall cap or plug all open ends of piping and equipment during construction to keep dirt and foreign matter out of systems, and shall clean all piping during erection, and if necessary, clean after erection to remove dirt and foreign material.

11.3.5 The Contractor shall furnish and install cleanouts, where indicated on the drawings, at each change of direction of sanitary drainage piping whether above or below ground and at the base of all exposed sanitary drainage stacks.

11.3.6 Unions shall be installed adjacent to all equipment and wherever their use will facilitate easy removal of equipment for repair or replacement. No unions shall be placed in a location which will be inaccessible after completion of the building unless so shown on the contract drawings or so specified.

Hose and valves shall be placed at all low points of water system to facilitate draining. Stops shall be provided on all water supply lines connected to plumbing or mechanical equipment.

All piping two (2) inch size and under running along the walls of the building shall be adequately anchored to the walls.

11.4 SLEEVES AND WALL PIPES. All pipes passing through concrete or masonry construction shall be fitted with sleeves or wall pipe fittings of the type and size indicated. Each sleeve shall extend through its respective floor, all or partition and shall be flush with each surface unless otherwise required. Field fabricated sleeves, except where otherwise specified or shown, shall be two pipe sizes larger than the pipe to allow caulking space.

11.4.1 Field fabricated sleeves in bearing and masonry walls, floors and partitions shall be of standard weight-galvanized steel pipe finished with smooth edges. For other than masonry partitions and for concealed vertical piping, field fabricated sleeves shall be No. 22 USG galvanized iron.

11.4.2 All sleeves shall be properly installed and securely cemented in place. Floor sleeves shall extend 1" above the finished floor unless otherwise shown. All sleeves for pipes passing through structures below ground or through walls, roof or floors of watertight or gastight structures shall have seal flanges falling in center of wall. Where shown or required, all flanged or mechanical joint wall pipes set flush with concrete surface shall have bolts set in concrete at pouring or shall be furnished with tapped flanges.

11.4.3 Pipe sleeves through footings shall be of required size to pass the hubs of the pipe to be installed. All sleeves shall have the space between pipes and sleeves caulked watertight.

11.5 INSTALLATION OF EXTERIOR AND YARD PIPING. Contractor shall give ample notice to the Engineer in advance of any pipe laying and shall at all times allow access to the work for proper inspection. All pipe and fittings shall be thoroughly cleaned and inspected as to soundness of structure and joint material before lowering into the trench. No pipe shall be lowered into the trench except that which is to be immediately installed any jointed. Pipe shall only be lowered into the trench by methods which assure the safety of personnel and materials. Each pipe installed shall be checked as to line and grade in place and any deviation shall be immediately corrected. The invert grade as shown on the plans indicates the elevation of the inner side of the bottom of the pipe in place and a deviation of one-quarter (1/4) inch from the grade as shown or required will be deemed sufficient cause for rejection. Under no circumstances shall pipe be dropped or blocked up to attain the required grade. Upon completion of work, the pipe shall present a smooth straight uniform invert free of any irregularity of projection. All pipe laying shall be started at the lowest point and shall proceed with the spigot ends pointing in the direction of flow.

11.6 PIPE JOINTS. All pipe joints shall be as shown on the plans and as specified herein. Prior to jointing, all parts of joint surfaces and materials shall be wiped clean and closely examined for defects. Any defective material shall be immediately removed from the area of the work and indelibly marked or destroyed.

All materials for manholes including concrete and reinforcing for precast units and bases, brick, mortar, manhole frames, cover, steps, and accessories shall be as specified under MATERIALS, Division 6.

11.7 FORCE AND SUPPORT BLOCKS. The Contractor shall furnish and install, complete in place, force and support blocks and/or tie rods at all bends, fittings and valves on force mains. All force and support blocks shall be of concrete poured in place and no precast blocks will be acceptable. All force and support blocks shall be securely installed and tightened.

11.8 CUTTING AND PATCHING. Cutting or patching will not be done unless absolutely necessary and only after prior permission has been granted by the Engineer.

11.8.1 All cutting and patching required in connection with these specifications shall be carried out by the Contractor. All patching shall match the adjacent finishes.

11.8.2 Cutting shall be accomplished in such a manner as not to cause damage to the building or leave unsightly surfaces which cannot be concealed by plates, escutcheons or other construction. Where such unsightly conditions are caused by the Contractor, he shall be required at his own expense to repair the damaged areas to the approval of the Engineer.

11.9 VENTS AND FLASHING. All vent pipes shall terminate at least twelve (12) inches and not more than eighteen (18) inches above the finished roof line.

11.10 PAYMENT FOR INTERIOR AND YARD PIPING. All costs of interior and yard piping shall be included in the lump sum for the sewage treatment plant. No payment other than the lump sum bid will be made for any interior or yard piping work or cost.

PAINTING

12.1 SCOPE OF WORK. The Contractor shall provide all items, articles, materials, operations or methods listed, mentioned or scheduled on the drawings and/or herein including all labor, materials, equipment and incidentals necessary and required for their completion.

12.2 WORK INCLUDED. The following surfaces shall be painted under this Contract:

(a) Exterior Masonry Surfaces.
(b) Interior Masonry Surfaces.
(c) Interior and Exterior Lumber and Millwork.
(d) Miscellaneous Metalwork (interior and exterior).
(e) Interior and Exterior of all Steel Tanks.
(f) Interior and Exterior Piping, Valves and Appurtenances.
(g) Mechanical Equipment.
(h) Electrical Equipment and Conduit.
(i) Interior Floors.

12.3 WORK NOT INCLUDED. The following shall not be painted under this Contract:

(a) Aluminum.
(b) Any surface or equipment that has received a finish coat of paint at the factory, if such finish is undamaged and matches color schedule.
(c) Manufacturer's serial number or identification plate on equipment when such plates are prefinished or polished type. (This does not include cast or embossed names or equipment casings.)
(d) Machined or polished surfaces of equipment where such surfaces are susceptable to rolling or sliding friction.

12.4 SCAFFOLDING. The Contractor shall furnish, install and remove upon completion of the painting work all scaffolding, ladders or other facilities required to complete the painting work.

12.5 DELIVERY AND STORAGE. All painting and finishing materials shall be delivered to the site in unopened, original containers, bearing manufacturers' labels. The materials shall be stored at the site where directed. The storage space shall be kept clean and accessible to the Engineer at all times. Oily rags shall be burned or removed from the job site at the close of each days work and all other necessary precautions taken to avoid damage by fire. A fire extinguisher shall be kept outside the paint storage room and the room shall be kept locked when not in use.

manufactured by Inertol Company, Inc. Products of other manufacturers comparable in quality and type to those specified shall be acceptable if said paints are submitted to the Engineer along with satisfactory data on past performance in sewage plants, certification of composition and detail directions for application and use including recommended coverages.

12.7 PREPARATION OF SURFACES. All surfaces to be painted shall be prepared in a workmanlike manner so as to obtain a smooth, clean and dry surface. No painting shall be done until the surfaces are approved by the Engineer.

All metal to be painted that has not been shop primed shall have all rust, scale and dust, as well as all other loose or foreign substances removed by wirebrushing with power tools, chipping or sandblasting. Cleaned metal shall be field primed immediately after cleaning to prevent new rusting.

12.8 APPLICATION OF PAINT. All paint shall be applied in strict accordance with the manufacturer's instructions in a manner satisfactory to the Engineer.

Each coating shall be applied at the rate specified by the manufacturer. If material has thickened or must be diluted for application by spray gun, the coating shall be built up to the same film thickness achieved with undiluted material. In other words, one gallon of paint as originally furnished by the manufacturer must cover a greater square foot area when applied by spray fun than when applied unthinned by brush. Deficiencies in film thickness shall be corrected by the application of additional coats of paint.

Drying time shall be construed to mean "under normal conditions". Where conditions are other than normal because of weather or because painting must be done in confined spaces, longer drying times will be required. Additional coats of paint shall not be applied, nor shall unit be placed in service until paints are thoroughly dry.

The Contractor's attention is directed to the fact that where required due to dampness or confined spaces, temporary heating and ventilating facilities will be required. These facilities and all other methods or equipment required to facilitate painting work or afford protection of the workmen or work shall be furnished, installed and removed at the completion of work as a part of this Contract.

purpose, will be allowed; and all such thinning shall be done trictly in accordance with the manufacturers' instructions, as well as with the full knowledge and approval of the Engineer.

Drop cloths shall be used to fully protect work adjacent to the being painted, and all surfaces spotted with paint, shall be thoroughly cleaned and restored to their orininal condition by the Contractor to the complete satisfaction of the Engineer.

12.9 PAINTING SCHEDULE. Included hereinafter is a general painting schedule and any work not specifically names thereon, but required by the intent of the plans and specifications to be painted, shall be painted in accordance with similar items. All coats named in the schedule are in addition to shop coats specified or required elsewhere in these specifications. All abraded areas of shop primed metal shall be touched up with the appropriate field primer named in this schedule. All nonferrous or galvanized metal shall receive one (1) treatment of "Inertol Metal Passivator No. 35" with a maximum coverage of 300 square feet per gallon prior to shop or field primer. All bituminous coated pipe shall receive two (2) coats of "Inertol Tar Stop" with a maximum coverage of 200 square feet per gallon in place of the specified primer. Non-submerged shall be defined as above the elevation of the top of wall of a structure containing liquid. Submerged shall be defined as below the top of wall of a structure containing liquid. In all cases, the Engineer's decision shall be final in determining classification of surfaces.

12.10 DO OR SCHEDULE. All color code numbers indicated in this specification and in the finish schedule on the plans are those shown on the "Master Color Chart No. 560-G" of the Inertol Company, Inc.

All exterior woodwork shall be Color No. 378 (Antique Ivory). All doors and door frames shall be Color No. 369 (Eye rest green). All interior and exterior metalwork and conduit shall be Color No. 306 (Light Grey) except that which is attached to surfaces painted in accordance with finish schedule which shall be matched. Electrical equipment shall be Color No. 306 (Light Grey). Exterior Masonry #369 (Eye-rest Green) Interior floor-#331 Flagstone Grey), Interior masonry walls and ceiling #368 (Spencer Green).

Where painted wainscot is indicated, a color separation bank two (2) inches wide, Color No. 321 (Black) shall be applied at a height of three (3) feet six (6) inches from floor to bottom of band.

GENERAL PAINTING SCHEDULE

Surface	Inertol Product Name	No. of Coats	Coverage Sq. Ft. per Gal. per Coat
Interior Masonry	Primer: Dampfoil Surface	1	60
	Finish: Dampfoil	1	300
Interior Woodwork	Primer: Interior Undercoater No. 623	1	400
	Finish: Ponkote Enamel	2	400
Exterior Woodwork	Primer: Exterior Undercoater No. 625	1	400
	Finish: Exterior Trim Enamel	2	400
Interior Metalwork, Conduit, Electrical Equipment, Piping, Valves and Mechanical Equipment	Shop Primer: Rustinhibitive Primer No. 621	1	250
	Field Primer: Rust-penetrating Primer No. 622 (touch up of first coat)	1	300
	Finish: Ponkote Enamel	2	400
Non-submerged Exterior Metalwork, Conduit, Electrical Equipment, Piping, Valves and Mechanical Equipment	Shop Primer: Rustinhibitive Primer No. 621	1	250
	Field Primer: Rust-penetrating Primer No. 622	1	550
	Finish: Rustarmor Enamel	2	00
Submerged Exterior Metalwork, Conduit, Electrical Equipment, Piping, Valve & Mechanical Equipment including interior & exterior of steel tanks prior to gunnite	Shop Primer: Rustinhibitive Primer No. 621	1	250
	Field Primer: Quick Drying Primer No. 626	1	250
	Finish: Standard Thick (Black)	3	160
Submerged Interior Surfaces of Concrete Tanks (Primary, Secondary, Holding, digestor, etc.)	Inertol Standard	2	300
Exterior Masonry	Dampfoil Exterior	2	300
Interior Floor	Primer: Ramuc floor enamel thinned 10-20% with Inertol thinner #2000 (bare concrete etched with Muriatic Acid).	1	300

can consistency 2 250

12.12 PAYMENT FOR PAINTING

All cost for painting under this contract shall be included in the lump sum bid for the sewage treatment plant and sewage ejector stations. No payment other than the lump sum bid will be made for any painting work or cost.

DIVISION 14

INSTALLATION AND WIRING

14.1 SCOPE OF WORK. This section of the Contract includes all labor, supervision, materials, equipment, tools, transportation, insurances and appurtenances necessary to install and connect all wiring, connections, controls, equipment and appurtenances for the sewage treatment facility (and the sewage ejector system, where required in the plans).

14.2 GENERAL. The Contractor shall effectually protect at his own expense such of his work, materials, or equipment as are liable to injury during the construction period. All openings into any part of the conduit system as well as all associated fixtures, equipment, etc., both before and after being set in place, must be securely covered or otherwise protected to prevent obstruction, etc. or injury due to carelessly or maliciously dropped tools or materials, grit, dirt or any foreign matter. The Contractor shall be held responsible for all damage so done, until his work is fully and finally accepted. Conduit ends shall be covered with capped bushings.

All electrical equipment or apparatus of any one system must be the product of one manufacturer or equivalent products of a number of manufacturers, which are suitable for use in a unified system. The term "manufacturer" as used in this specification shall be understood as applying to a company of established reputation in the manufacture of the particular equipment or apparatus; from products of their own make, or others, and who assume full responsibility for products used and equipment manufactured by them.

The layout of wiring as shown on the drawings shall not be considered as being absolute unless so stated herein. It shall be subject to such changes as will facilitate erecting the work, or where necessary to overcome obstacles in building construction. Where a major deviation from the plans is indicated by practical consideration, the Contractor shall submit shop drawings showing all deviations in such detail as will clearly indicate the necessity or desirability for the change.

All electrical equipment and appurtenances not specifically designated but required for completion of electrical system shall be provided using type and quality similar to those used at other locations for the same function and purpose.

The Contractor shall apply for detailed information regarding the position of all outlets and equipment as the final or required location may differ from those indicated on the drawings.

trades so that all work may be installed in the most direct manner and so that interference between piping, ducts, equipment, architectural or structural features will be avoided. In case of interference, the Engineer shall decide which work is to be relocated, regardless of which is first installed.

All materials and equipment installed by the Contractor shall be firmly supported and secured to the building construction.

14.3 REGULATIONS. The electrical installation shall meet the requirements of the National Electric Code and the National Board of Fire Underwriters as amended to date. In addition, any State, Municipal or other Authority's laws, rules or regulations applicable to the work shall be followed.

The Contractor shall secure any and all permits and inspections required by any of the foregoing authorities any pay all other costs in connection with the work. All certificates shall be in triplicate and shall be delivered to the Engineer and become the property of the Owner.

Electrical inspection shall be made by Middle Department Association.

14.4 UNDERWRITERS LABELS. Where applicable all materials and equipment shall bear the label of approval of the National Board of Fire Underwriters Laboratory.

14.5 OPENINGS AND CHASES. The Contractor shall determine in advance the locations and sizes of all chases and openings necessary for proper installation of his work and shall have same provided during erection of the work in which such chases and openings may be required.

In case any cutting of the building construction is necessary due to the Contractor's failure to properly install the conduit or cable systems, such cutting shall be done and repaired to match original conditions at Contractor's expense.

14.6 MOUNTED HEIGHTS. Unless otherwise specifically instructed, outlets shall be located as follows:

(a) Local Lighting Control Switches: Locate all outlets for single or gang switches 4'-0" above finished floor and unless otherwise noted on strike side of door. The Contractor shall check the plans for swing of door.

except where otherwise noted. At Locations shown on Drawing.

(c) Yard Floods: Mounted to under side of roof soffit as shown on Drawing.

Mounting heights and exact location of all outlets and switches shall be verified by Engineer before roughing in.

14.7 MOVING OUTLETS. The Owner through the Engineer reserves the right to move any outlet a distance of five (5) feet before roughing-in without any additional cost to the Owner.

14.8 METHODS AND MATERIALS. All conduit, wire, cable, wiring devices and equipment shall be installed in such a manner as to preserve access to any other equipment installed under this Contract.

Drawings are generally indicative of work to be installed but do not indicate all bends, fittings, boxes, etc. as may be required. Contractor shall carefully investigate the structural and finish conditions affecting his work, arrange his work accordingly and furnish such fittings as may be required to meet such conditions.

14.9 METHODS OF WIRING. Service conductors shall be installed in rigid galvanized conduit.

All wiring other than the previously mentioned or unless otherwise noted, shall be installed using electrical metallic tubing with raintight concrete-tight couplings.

All wiring shall be installed concealed except where otherwise approved by the Engineer.

Where switches or convenience outlets occur on beams or masonry walls F.S. condulets shall be used.

Conduit shall be installed in such a manner that wires may be removed and replaced at a later date.

All conduits shall be run as straight and direct as possible to limit the number of bends or offsets to a minimum. Exposed conduits shall be installed with runs parallel or perpendicular to walls and ceilings, and with tight angle turns utilizing condulets or symmetrical bends. Exposed vertical conduit runs shall be run on the building walls or columns where possible.

for motor connections. Length of run shall not exceed 18" unless required by code.

Running threads will not be permitted. Approved threaded couplings such as the O.Z. shall be used where such construction is required.

Supports for conduit shall be spaced not more than 5' apart. Conduit shall be supported by one-hole malleable iron pipe straps on beam clamps.

Not more than four 90 degree bends will be allowed in any one run of conduit; where more bends are necessary, a pull box shall be installed.

14.10 WIRING. All wiring shall be run in rigid galvanized conduit and electrical metallic tubing, unless otherwise noted. The voltage drop at the end of any circuit shall not exceed 2% of the normal line voltage under full load. No wires smaller than #12 B & S shall be used for branch circuits; pilots and control circuits shall not be smaller than #14 guage B & S.

Switches shall not be connected to the neutral conductor. Neutral wire shall have a neutral grey or white braid.

For convenience in maintenance and testing the Contractor shall make full use of color coded wire in all installations. The following color coding is recommended.

Lighting branch circuits and convenience receptacles, single phase-white, neutral, black phase wire.

Single phase-black, red and white.

Great care shall be exercised in pulling wire into conduit so as not to injure insulation. No oils, grease, or compounds other than powdered soapstone shall be used to assist in the pulling in of wires with outer covering of braid.

Conductors shall be continuous from outlet to outlet and no splice shall be made except within outlets or junction boxes.

The Contractor shall balance all circuits so as to provide as close an electrical balance as possible across the phase wires of the branch and distribution panels.

The Contractor shall furnish and install outlet boxes of proper type and size as required at all outlets. Boxes shall be secured firmly in place and set true, square with building lines.

less connectors either of the insulation type or non-insulated type. However, at locations where the non-insulated type are used, they shall be covered with rubber and friction tape to the same thickness as the original insulation of the wire used. Solderless connections shall be A.M.P. or equal.

14.12 SECONDARY SERVICE. Contractor shall contact the local power company for specific service requirements before beginning this phase of his work.

14.12.1 Sewage Treatment Facilities: The Contractor shall furnish and install the service head and mast to the height and in accordance with the requirements of the power company. The Contractor shall provide and install conduit, wire, meter base, etc. from service head to main distribution panel excepting only those items furnished and installed by the power company. The meter base shall be installed on the mast as shown on drawing. See Division 13.5 for secondary service conductor.

14.12.2 Sewage Lift Station: The Contractor shall furnish and install the indicated ecndary service poles and guying facilities. He shall furnish, install and connect the service head, service conduit, service wiring, main disconnect device and appurtenances from the service head to the main station panel excepting only those items furnished and installed by the power company.

The Contractors attention is directed to the service entrance connections to sewage ejector station. It is the intention of this specification to require a system that may be operated completely submerged to the elevation of the station overflow tube. Therefore all electrical facilities, connections, etc. below this elevation must be sealed completly watertight and shall be capable of operation in this condition.

14.13 WIRING FOR EQUIPMENT. All of the equipment connected under this Contract shall be connected in complete accordance with the detailed wiring diagrams of the equipment manufacturer. A complete detail wiring diagram of the sewage treatment facilities "as built" shall be prepared by this Contractor and furnished to the Engineer at final inspection.

14.14 CIRCUIT IDENTIFICATION. Contractor shall furnish and install a typed list identifying all circuits and insert in frames provided for same inside of panel door.

All electrical conductors, after installation of wiring and apparatus has been completed, shall be tested by the Contractor to ensure continuity, proper splicing, freedom from Grounds (except "made grounds" and those required for protection) and insulation resistance in accordance with Underwriters Requirements. Contractor shall furnish and employ suitable instruments such as ammeters, voltmeters, "meggers", etc. Preliminary testing with magneto, will be permitted but will not be accepted as final or conclusive test.

14.16 CLEAN UP.

This Contractor shall, upon completion of the electrical work, remove all dirt, foreign materials, stains, fingerprints, etc. from all lighting fixtures, glassware, panelboards, wall plates, system equipment, walls or ceilings adjacent to the above equipment where stains were caused by this Contractor's workmen and leave the electrical work in such a condition that no cleaning will be required by the Owner. The complete system shall be subject to inspection and approval by the Engineer before acceptance.

14.17 PAYMENT FOR INSTALLATION AND WIRING.

All costs for installation and wiring under this Contract shall be included in the lump sum bid for the electrical work on the sewage treatment plant and sewage ejector stations. No other payment other than the lump sum bid will be made for any electrical work or cost.

DIVISION 15

INITIAL OPERATION - TREATMENT PLANT

15.1 SCOPE OF WORK. This section of the Contract includes all labor, supervision, materials, equipment, tools, transportation, supplies and insurances necessary to lubricate, treat, start-up and initially operate the sewage treatment facilities (and the sewage ejector stations where required in the plans).

15.2 GENERAL. It is the intent of these specifications to require that the Contractor shall provide all items and services necessary or required to have each item of mechanical equipment adequately lubricated; inspected and approved by a representative of the manufacturer prior to operation; initially operated under the supervision of the manufacturer's representative; and in operation at the time of final approval.

15.3 COORDINATION OF WORK. It shall be the responsibility of this Contractor to coordinate his work and in all ways cooperate with other Contractors and specifically with the Electrical Contractor in preparing all equipment for testing and operation.

It shall also be the responsibility of the Contractor to assure that no equipment shall be operated under any circumstances previous to the final adjustment and lubrication. Should equipment suffer any damage or fail in any way due to improper lubrication the equipment shall be repaired or replaced by this Contractor at no cost to the Owner.

15.4 CLEANING. Prior to assembly of any equipment or parts of equipment requiring lubrication, all parts that have received a protective coating at the factory shall be thoroughly cleaned as recommended by the manufacturer. Protective coating shall be removed by the use of recommended solvents or cleaners which shall in no way damage the protected surface. Under no circumstances shall protective coatings be removed by scraping, scratching, heating or any other methods that result in damaging the protected surface.

Immediately prior to assemply all parts shall be closely examined for damage or faults and shall be wiped completely clean, free of dirt, dust, old grease or other substances, and prepared for prelubricant as hereinafter specified.

15.5 LUBRICANTS. In general all lubricants shall be in accordance with the recommendation of the equipment manufacturer.

In the event that the equipment manufacturer does not make a specific recommendation as to brank, lubricants provided and utilized as hereinafter specified shall be used.

All lubricants shall be the best available of the specific type and shall be of a type specifically designed for the type of service and use intended. As nearly as possible, products of one manufacturer shall be used to facilitate reordering. All lubricants shall be supplied in their original, unopened containers and shall be labeled to show manufacturer, type, specification conformance, etc. All lubricants shall meet SAE and Military Specifications for type of service and operating conditions. The Contractor shall supply one (1) one (1) gallon can of each type of lubricant required.

15.6 PRELUBRICATION: Prelubrication shall be in strict and complete accordance with the written instructions or the verbal instructions of the manufacturer's representative.

15.7 LUBRICATION. Lubrication shall be in strict and complete accordance with the written instructions of the manufacturer or the verbal instructions of the manufacturer's representative.

15.8 LUBRICATION OF EQUIPMENT. The Contractor shall provide and mount on a wooden board in the control building one of each piece of lubrication equipment required to provide complete lubrication of each piece of equipment furnished and installed under this Contract in the sewage treatment plant.

15.9 LUBRICATION AND OPERATING INSTRUCTIONS. The Contractor shall furnish and install on the wall of the control building a chart showing the number and location of areas requiring lubrication, the type of lubricant, frequency of lubrication and the lubrication equipment required for each piece of equipment furnished and installed under this contract.

The Contractor shall furnish and install in the file in the control building two (2) copies each of the manufacturers' operating, maintenance and lubricating recommendations and instructions for all equipment furnished and installed under this Contract.

15.10 VISITS OF MANUFACTURERS' REPRESENTATIVES. The requirements of this section shall apply to the following items of equipment furnished under this Contract:

Comminutor and Diversion Box
Centrifugal Blowers and Appurtenances
Aeration Tanks and Clarifiers and Appurtenances
Air Diffusers
Spray Nozzles
Flow Measurement and Chlorination Equipment
Lift Station (Contract No. 1 Only)

Upon the completion of installation and connection of the mechanical equipment and at such time as the equipment is ready for initial operation, the Contractor shall arrange to have the equipment inspected by an approved representative shall supervise the start-up of the equipment and shall complete any fine adjustment required. Upon completion of final adjustments, the manufacturer's required. Upon completion of final adjustments, the manufacturer's representative shall certify by letter to the Engineer that the equipment is complete, properly installed and ready for operation. Such certification shall specifically state the name and description of the equipment and the title of the facility in which it is installed and the certification shall be properly sworn and attested.

During the inspection and start-up visit the manufacturer's representative shall instruct the plant operating personnel in the lubrication, operation and maintenance of the equipment.

Each manufacturer's representative shall make visitation as set forth in Division 9. In the event that equipment is not ready for operation or is improperly installed or for any other reason cannot be started, tuned, and certified during the specified visit, the Contractor shall provide all necessary additional visits at no additional cost or expense to the Owner.

15.11 TESTING. Upon certification by the representative of the manufacturer, the Contractor shall test run the equipment on clear water. The tanks shall be filled and all equipment shall operate for a continuous eight (8) hour period without failure or adjustment. In the case of pumping and ejector equipment, a supply of clear water shall be provided to allow the equipment to operate through successive cycles without failure or adjustment for eight (8) hours.

All water to fill tanks and test equipment shall be provided by the Contractor at his sole expense and no water will be available from the system of the Owner. Test water shall not be drained from the tanks.

15.12 INITIAL OPERATING PERIOD. Upon completion of the test on clear water, the Contractor shall allow sewerage to enter the systems and shall start the initial operating period. The initial operating period shall be started only upon the approval by the Engineer of the tests on clear water. The initial operating period shall be five (5) continuous days during which the sewage ejector stations and sewage treatment facility shall be in full, effective, continuous operation receiving, treating and discharging sewage. During this period the facilities shall be operated by the Contractor who shall assume full responsibility therefore and who shall provide all electricity, materials, supplies, chemicals and other facilities to undertake and maintain the operation. Personnel of the Owner shall have full access to the facilities to observe the operation by the Contractor. During this period the Contractor shall complete all final adjustment of the equipment to the satisfaction of the Engineer, and failure to complete final adjustment shall act to extend the initial operation period.

In the event of major equipment or facility failure during the initial operating period, the Contractor shall make all repairs or replacements required and shall then restart the facilities. Such failure and restarting shall constitute beginning of the full period of initial operation and no consideration will be given to time operated prior to equipment or facility failure.

At the completion of the initial operating period the final inspection will be performed by the Owner, the Engineer and the Contractor. If all facilities are acceptable, the operation will be taken over by the personnel of the Owner; however, should final acceptance not be given the Contractor shall maintain continuous operation until final acceptance.

15.13 FACILITIES TO BE TURNED OVER. The facility to be turned over is the completely erected and operating sewage treatment plant.

15.14 PAYMENT FOR INITIAL OPERATIONS. All cost of initial operation under this Contract shall be included in the lump sum bid for the sewage treatment plant. No payment other than the lump sum bid will be made for any initial operation work or cost.

DIVISION 16

INITIAL OPERATION - ELECTRICAL

16.1 SCOPE OF WORK. This section of the Contract includes all labor, supervision, materials, equipment, tools, transportation, insurances and appurtenances necessary to place in operation the equipment and facilities constructed under this Contract.

16.2 GENERAL. The Contractor shall in every way coordinate and verify with the other contractors and particularly the General and Mechanical Contractor in placing in operation this facility. In addition the Contractor shall thoroughly familiarize himself with the requirements of INITIAL OPERATION, Division 15, in order to provide required assistance in the checking, testing and initial operation of facilities.

16.3 CHECKING PRIOR TO START OF EQUIPMENT. The Contractor shall have available sufficient personnel on the job at the time of manufacturer's representative visit. The Contractor shall provide all required assistance and verify his connections or alter as required by the manufacturer's representative. Actual connections shall be complete prior to this visit but under no circumstances is any equipment to be energized or supplied power or checked for rotation except under the direction of and when personally viewed by the representative of the manufacturer.

16.4 TESTING AND INITIAL OPERATION. The Contractor shall have present on the jobsite, or immediately available without delay, sufficient personnel to make any required electrical changes, connections or other tuning and adjustment during the periods of testing on clear water and initial operation as specified under Division 15.

16.5 FINAL INSPECTION. At such time as final inspection of work under this Contract shall prove acceptable completion the Contractor shall turn over all keys, accessories, wiring diagrams and other items hereinbefore specified and shall place all items where directed by the Engineer.

16.6 PAYMENT FOR INITIAL OPERATION-ELECTRICAL. All costs for initial operation - electrical under this Contract shall be included in the lump sum bid for the electrical work on the sewage treatment plant and the sewage ejector stations. No other payment other than the lump sum bid will be made for any initial operation - electrical work or cost.

SPECIFICATIONS FOR SUBURBIA
EXTENDED AERATION
SEWAGE TREATMENT PLANT
MODEL DARA - 15S

1. GENERAL.

There shall be furnished, as shown on the plans one (1) SUBURBIA SYSTEMS, INC., Model DARA 15S, Rectangular Diffused Air Extended Aeration Sewage Treatment Plant with all required equipment for efficient operation of the plant.

Each extended aeration treatment plant shall be designed to treat an average sewage or waste flow of 15,000 gallons per day having a 5-day BOD of 30 lbs. per day. The treatment plant shall be designed for a peak flow two and one-half times greater than the average daily flow.

2. TANK FABRICATION, PIPING AND VALVES.

The materials, design, welding and fabrication of the steel tank shall conform to AWWA Standard D100-59 for steel tanks, standpipes, reservoirs, and elevated tanks for water storage, where applicable.

Tank shall be fabricated of 1/4" thick steel plate conforming to ASTM A-283, Grade C, or better and structural shapes conforming to ASTM A-7 or A-131.

Tank shall be of welded construction throughout except as specifically shown otherwise on the plans. Insofar as possible, vessel seams shall be located to clear openings and attachment welds by at least two inches. Bolt holes of flanged nozzles shall straddle a center line parallel to the axis of the vessel unless otherwise noted. Welding shall be performed only by qualified welders using shielded arc fusion welding process. Attachment of internal baffles not subject to water pressure may be by continuous full penetration single weld.

The structure shall be designed to withstand normal soil pressures when installed empty in below-ground installation and shall withstand hydrostatic pressures when any one compartment is filled in above or below grade installations.

All air piping shall be Schedule 40 galvanized steel pipe and galvanized malleable iron fittings with flexible sleeve-type couplings. Vertical drop pipes and diffuser headers below the disconnect unions shall also be galvanized. All valves shall be specially selected to be of the type and material best suited for the specific application. Other internal plant piping shall be Schedule 40 galvanized steel.

3. AERATION CHAMBER.

The aeration chamber shall provide a minimum of 24-hours retention at the average flow. The effluent well of this chamber shall be connected to the clarifier chamber in such a manner as not to allow the mixed liquor suspended solids settling out within the entrance well.

4. CLARIFIER CHAMBER.

The clarifier chamber shall provide for a minimum of 2.58 hours retention at average flow. Only the upper one-third of the clarifier hoppers shall be considered in determining the effective volume of the clarifier. A baffle shall be located near the entrance of the clarifier chamber and an effluent launder placed at the opposite end. The effluent launder shall be fitted with an adjustable V-notch weir.

An airlift sludge pump shall be provided in each clarifier chamber of sufficient capacity to provide continuous sludge recycle from the clarifier to the aeration chamber in an amount at least equal to the design average flow. The piping on the sludge discharge line shall be so arranged as to allow for either recyling or sludge withdrawal. All air piping, valves and fittings are to be furnished and installed.

An airlift skimmer and scum baffle shall be located in close proximity to the effluent weir and shall be designed so as to pick up floating material and return such material to the aeration chamber.

An equipment platform shall be provided over the clarifier to provide a location for mounting the blowers and control panel. Sufficient grating shall be furnished to provide access to the mechanical and electrical equipment on the plant.

5. SLUDGE HOLDING TANK (INCLUDED).

There shall be provided as shown on the plans a sludge holding tank. Tank volume shall be 264 Gal. Sufficient drop pipes and diffusers shall be provided to thoroughly mix the tank and provide 10 CFM of air.

6. AIR DIFFUSION SYSTEM.

The diffuser tubes shall be suspended from Schedule 40 galvanized fittings and piping. They shall be the Type P diffusers and shall be formed of a cone-shaped plastic base with an elastomer cover which lifts around the edge to let the air escape in fine bubbles. This insures small bubbly diffusion with excellent resistance to clogging.

As the air flow is reduced, the cover moves back into place thereby preventing any entry by solids. The unit is designed to prevent clogging by impurities in the air supply, compressor oil and header scale.

The drop pipe assembly shall be connected to the air header through a union to allow for easy removal and diffuser inspection. Each drop pipe shall be preceded by an air control valve with position indicator of the butterfly or plug valve type.

7. BLOWERS.

Two (2) positive displacement type blowers shall be furnished, each to deliver 63 CFM of air, measured at the blower inlet, with a discharge pressure of 5.0 psig. Air delivered by each blower shall be sufficient to accomplish aeration of the aeration tank and sludge holding tank (if included) and operation of sludge return airlifts and airlift skimmer.

The blowers shall be furnished equipped with a suitable drive motor with v-belt drive, combination filter-silencer, pressure relief valve, check valve, plug valve, flexible inlet and discharge piping sections and common base for blower and motor. Spare sheaves shall be provided so that blower capacity can be adjusted to 50% and 75% of the design air rate.

There shall be furnished for each blower, a protective housing fabricated of galvanized sheet steel.

8. BLOWER MOTORS.

Each blower shall be driven by a 3.0 HP, 1800 RPM, 3 phase, 60 cycle, 230 volt, horizontal drip-proof motor with grease lubricated ball bearings. Motors shall be mounted on an adjustable sliding base only when blowers are belt driven. The motors shall have a 15% service factor but shall not be loaded beyond the nameplate rating at the design conditions specified above.

9. ELECTRICAL CONTROLS.

A NEMA 3R electrical control enclosure shall be furnished, for installation by others in the service building provided by the purchaser, with breakers and magnetic starters installed for blower motors and all accessory equipment motors supplied by the sewage treatment plant manufacturer.

Main disconnect controls and enclosures are not furnished.

Wiring in the control cabinet shall be color coded and shall be in accordance with the National Electrical Code.

All conduit and wiring between the electrical control panel enclosure and the various motors furnished with the treatment plant and between the panel and the power utility pole shall be furnished and installed by the purchaser.

10. DEFOAMING.

For foam suppression, five (5) gallons of Hodag (included) anti-foam chemical or equal shall be provided, including syphon type dispensing tube. During the first six (6) weeks of operation a dosage of 0.5 ppm to 1.0 ppm is recommended with a reduction in rate made after that period in accord with need.

Following shop fabrication, all surfaces shall be sandblasted to bare metal to remove all dirt, rust, scale and grease. Pits shall be inspected and cleaned. Weld splatters and burrs shall be removed. Excess sand shall be blown from pockets and completely removed from tank interior. Surfaces shall be completely dry before application of coating.

Two shop finish coats of coal-tar-epoxy resin coating shall be applied, each to a wet film thickness of 6 mils, to produce a dry film total thickness of not less than 10 mils. Coating shall be applied in accord with manufacturer's recommendation and shall be Koppers, TNEMEC or equal. Angles, bolts, welds and other irregular surfaces shall be sprayed or brushed first and succeeding coats shall overlap these surfaces. The second coat shall be applied until the first coat is dry. Any voids or other imperfections disclosed by visual inspection or by electrical detector when deemed advisable, shall be cut away and neatly patched with fresh coating material. All other unprotected steel surfaces shall be coated with a primer and followed by two coats of blue metal enamel.

For cathodic protection of plants installed below the ground (and as an optional item) sufficient anode packs may be buried around the structure and connected by copper wire to the raw steel to provide good electrical contact.

12. ~~HYPOCHLORINATOR (GAS CHLORINATOR INCLUDED).~~

~~A hypochlorinator shall be provided. The hypochlorinator shall be provided with 35 gallon polyethylene solution tank with cover. The capacity shall be _____ gallons/day. Hypochlorinator shall also include foot valve, suction strainer, anti-syphon device and injection check valve.~~

13. MANUFACTURER'S SUPERVISION AND SERVICE.

The manufacturer shall provide two (2) days' supervision of testing and initial operation. For this purpose, water or sewage shall be furnished BY OTHERS. Six (6) copies of the complete operations and maintenance shall be furnished to the owner by the manufacturer.

14. WORKMANSHIP AND EXPERIENCE.

All workmanship and materials throughout shall be of the highest quality. The treatment plans shall be the product of a manufacturer with a minimum of five years experience in the design and building of sewage treatment equipment.

15. GUARANTEE.

The manufacturer of the sewage treatment plant shall guarantee for one year from date of shipment that the structure and all equipment will be free from defects in design, material and workmanship. Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility by the manufacturer will not be accepted. The manufacturer shall be solely responsible for the guarantee of the plant and all components.

In the event a component fails to perform as specified or is proven defective in service during the guarantee period, the manufacturer shall provide a replacement part without cost to the owner.

MODEL DARA - 15S

Population (Actual or Equivalent)		150
Gallons/Day @ 100 Gal/Cap/Day		15,000
Homes @ _____	Persons/Home	----
BOD_5	Lbs./Capita	0.2
BOD_5	Total Lbs.	30

Aeration Tank		
Length		20'-0"
Width		10'-0"
Water Depth		10'-0"
Volume, Gal.		15,000
Retention, Hrs.		24
Aeration Capacity, CFM		44

Clarifier		
Length		10'-0"
Width		10'-0"
Water Depth	SWD	12'-0"
Volume, Gal.		4,844
* Retention Time, Hrs.		2.58
Surface Area	SF	100
* Settling Rate	Gal/SF/Day	450
Effluent Weir Length		10'-0"
* Weir Overflow Rate	Gal/Ft/Day	4,500

Sludge Holding Tank		
Length		----
Width		----
Water Depth		----
Volume	Cu. Ft.	----
Aeration Capacity	CFM	----

* Based on 8 hour runoff or 1,875 GPH

SPECIFICATIONS
FOR
DUAL GRAVITY TERTIARY FILTER
SUBURBIA TYPE DGF OR EQUAL

1. DESCRIPTION OF SYSTEM.

There shall be provided a factory built tertiary treatment unit, complete and ready for operation in accordance with plans and specifications stated herein. The plant shall be a SUBURBIA Model DGF-7, treating 15,000 gallons per day in 8 hours.

The tertiary treatment units shall consist of a), dual filter tanks with filter media for parallel operation, b), backwash pumps, process pumps and backwash return pumps, as required, c), manifold piping and valves, d), control panel, e), air scour compressor, f), filter backwash tank and, g), mudwell tank. All equipment shall be mounted on a common skid except the backwash and mudwell tanks, which will be mounted along side the skid unit. All manifold piping, valves, wiring and conduit, control panel, air tubing and controls, shall be assembled on the skid, the unit requiring only connection of inlet and outlet piping and electrial supply to be put into service. On units with filter tanks too large for skid mounting, the filter tanks will be shipped separately for installation along side the piping skid.

2. FABRICATED STEEL TANKS.

The materials, design, welding, and fabrication of the steel tank shall conform to AWWA Standard D100-59 for steel tanks, standpipes, reservoirs and elevated tanks for water storage, where applicable.

Tanks shall be fabricated of steel plate conforming to ASTM A-36, Grade C, or better and structural shapes conforming to ASTM A-7 or A-131.

Tank shall be of welded construction throughout except as specifically shown otherwise on the plans. Insofar as possible, vessel seams shall be located to clear openings and attachment welds by at least two inches. Bolt holes of flanged nozzles shall straddle a center line parallel to the axis of the vessel unless otherwise noted. Welding shall be performed only by qualified welders using shielded arc fusion welding process.

All steel will be a minimum of 1/4" thick in its thinnest section.

3. FILTRATION.

The filter system shall consist of dual tertiary filters having a combined area of 13.74 square feet and being capable of treating 31.2 gallons per minute at the rate of 2.27 gallons per minute per square foot of surface area, based on

average daily flow, with filter tanks in parallel. Each filter tank shall be complete with influent and backwash troughs and underdrain system. Filter tanks shall be 36 inches diameter.

Properly sized, clean filter sand and support gravel shall be provided for field installation in the tanks to a total depth of 35 inches.

The filter sand shall have an effective size of 0.57 mm, a uniformity coefficient of 1.66 and a depth of 24 inches.

Three layers of support gravel having an effective size as shown shall be installed as follows:

LAYER	DEPTH	SIZE
Top	3"	1/2 X 1/4
Middle	5"	1/4 X 1/8
Bottom	3"	1/8 X 1/16

The underdrain system shall consist of a galvanized bar grating bed support of sufficient section to support the filter bed with a 26 gauge perforated, 304 stainless steel retainer plate.

4. VALVES AND PIPING.

Automatic valves shall be wafer-type butterfly valves with single acting cylinder or diaphragm operator, DeZurik, or equal.

Solenoid valves shall be ASCO, or equal.

All maniford piping shall be supplied by the filter manufacturer and shall be Schedule 40 seamless steel.

Control air lines shall be supplied by the filter manufacturer and shall be copper tubing, properly supported and installed in neat and workmanlike manner.

Piping between skid and plant, backwash tank, mudwell and air scour blower is BY OTHERS.

5. BACKWASH.

1718 gallons of backwash water will be provided from the chlorine contact tank.

Centrifugal pump mounted in control building shall be driven by 230V, 3 phase, 60 cycle motor and shall deliver 79 GPM at 20 TDH providing a backwash rate of 11.5 GPM per square foot of filter area for 10 minutes.

6. MUDWELL.

A 3000 gallon septic tank shall be provided to store backwash water from one filter cycle. A manual throttling valve shall be provided in the mudwell to return the backwash water to the lift station by gravity.

7. AIR SCOUR.

Air shall be piped from the treatment plant blowers to provide 35 cfm at 5 psig. This provides an air scour rate of 5 cfm per square foot of filter area.

8. ELECTRICAL CONTROLS.

In operation, at a head loss measured by an adjustable level switch, the filter controls shall automatically close the influent and effluent lines to the filter, open the drain line and commence the air-water backwash cycle. The air-wash step shall be timer-adjustable, commencing automatically with the closing of the head loss switch. On termination of the air agitation period, the air inlet valves shall automatically close and the backwash pump shall start, initiating the water phase of this cycle. Upon completion of the water wash, the filter shall automatically return to normal filtering operation. No unfiltered water shall pass to the discharge during the entire backwash cycle.

Positive interlocks shall be provided to prevent both filters from backwashing at one time or from backwashing with insufficient water in backwash tank, or with too much water in mudwell.

A means shall be provided to allow manual initiation of the backwash cycle at the operator's discretion. After initiation, the backwash cycle is completed and the unit returned to service without further operator attention.

The electrial controls shall consist of the necessary magnetic starters, timers and switches to automatically control all electric motors, solenoids and timers on the plant. The pump motors shall be controlled by a hand-off-auto selector switch in conjunction with a magnetic starter. All electric equipment and circuitry shall be protected by a properly sized circuit breaker. The prewired electrical control panel shall be mounted in a NEMA 4 enclosure. The operation of all pumps will be automatically controlled by liquid level controls including pressure switches or electrodes, magnetic starters with overload protection, relays, circuit breakers and all other necessary appurtenances. All duplex equipment shall be alternated.

9. PROTECTIVE COATINGS.

Following shop fabrication, all surfaces shall be sandblasted to bare metal to remove all dirt, rust, scale and grease. Pits shall be inspected and cleaned. Weld splatters and burns shall be removed. Excess sand shall be blown from pockets and completely removed from all surfaces. Surfaces shall be completely dry before application of coating.

Tank surfaces in contact with sewage or with ground shall be coated with coal tar epoxy resin to produce a dry film thickness of not less than 8 mils. All other steel surfaces shall be coated with epoxy enamel to a dry film thickness of not less than 3 mils. Coatings shall be applied in accord with manufacturer's recommendations, and shall be Koppers, TNEMEC, or equal.

10. FIELD SERVICE, WORKMANSHIP, EXPERIENCE AND GUARANTEE.

The manufacturer shall provide two (2) days' supervision of initial operation. For this purpose, water or sewage shall be furnished BY OTHERS.

All workmanship and materials throughout shall be of the highest quality. The filter shall be the product of a manufacturer with a minimum of five years' experience in the design and building of sewage treatment equipment.

The manufacturer of the filter shall guarantee for one year from date of shipment that the structure and all equipment will be free from defects in design, material and workmanship. Warranties and guarantees by the suppliers of various components in lieu of a single source responsibility by the manufacturer will not be accepted. The manufacturer shall be solely responsible for the guarantee of the filter and all components.

In the event a component fails to perform as specified or is proven defective in service during the guarantee period, the manufacturer shall provide a replacement part without cost to the owner.

DUPLEX HYDR–O–GRIND HYDR–O–RAIL
COMPLETE PACKAGED SYSTEM

GENERAL — Furnish and install the complete pumping system as manufactured by HYDR-O-MATIC PUMP CO., Hayesville, Ohio. System shall include two sewage grinder pumps, three 3900 mercury switch level controls, discharge plumbing with hydraulically sealed discharge flange, pump mounting plate with bottom rail supports, upper rail supports, lifting chain, ~~steel pump cover plate~~, water-tight explosion-proof junction box; ~~all installed in fabricated steel basin with cover~~. A Nema III weatherproof control box shall be supplied for mounting at the sump site or remote from the basin as required. Structure and dimensions to be as shown on drawing 5900. Complete package Model No. HRSPG-150AD3 .________ ~~S3~~ ________

OPERATING CONDITIONS — Each pump shall have a capacity of __________ G.P.M. against a total head of __________ feet. Pump motor shall be 1½ horsepower, 3 phase, 230 volts, 3450 RPM, 60 cycle. Pump performance shall be as shown on curve 671.

MOTOR — Submersible motor to be constructed with open winding and to operate in clean dielectric oil for cooling winding and lubricating bearings. Motor shaft and housing to be sealed with two mechanical shaft seals with an oil chamber between seals. Seals to have carbon and ceramic seal faces. Integral motor and pump shaft to be of stainless steel supported by an upper ball radial and thrust bearing and a lower bronze sleeve bearing.

MATERIAL — Pump and motor housings to be of high quality cast iron. Impeller to be of ductile iron cadmium plated. All fasteners to be of 18-8 stainless steel. The grinder stationary and rotary cutters to be of hardened and ground stainless steel.

SUMP LEVEL CONTROLS — Sealed float type mercury switches shall be supplied to control sump level and alarm signal. The mercury tube switches shall be sealed in a solid polyurethane float for corrosion and shock resistance. The support wire shall have heavy Neoprene jacket and a weight shall be attached to cord above the float to hold switch in place in sump. Weight shall be above the float to prevent sharp bends in the cord when the float operates under water. The float switches shall hang in the sump supported only by the cord that is held to the Nema 4 junction box ~~or the wiring channel~~. Three float switches shall be used to control level. One for pump turn-on, one for pump turn-off, and one for both pumps turn-on. A fourth switch shall be provided for alarm control. Float switches shall be Model No. 3900.

ALARM — A high water alarm shall be supplied.

OPTIONAL — Alarm flashing light,* bell ~~or horn~~ to be supplied in separate Nema 3 enclosure for mounting at the control box or remote from box. Alarm light shall glow dim at all times except under alarm conditions, then light shall glow bright and flash. Alarm bell ~~or horn~~ shall have silencing switch with automatic reset.

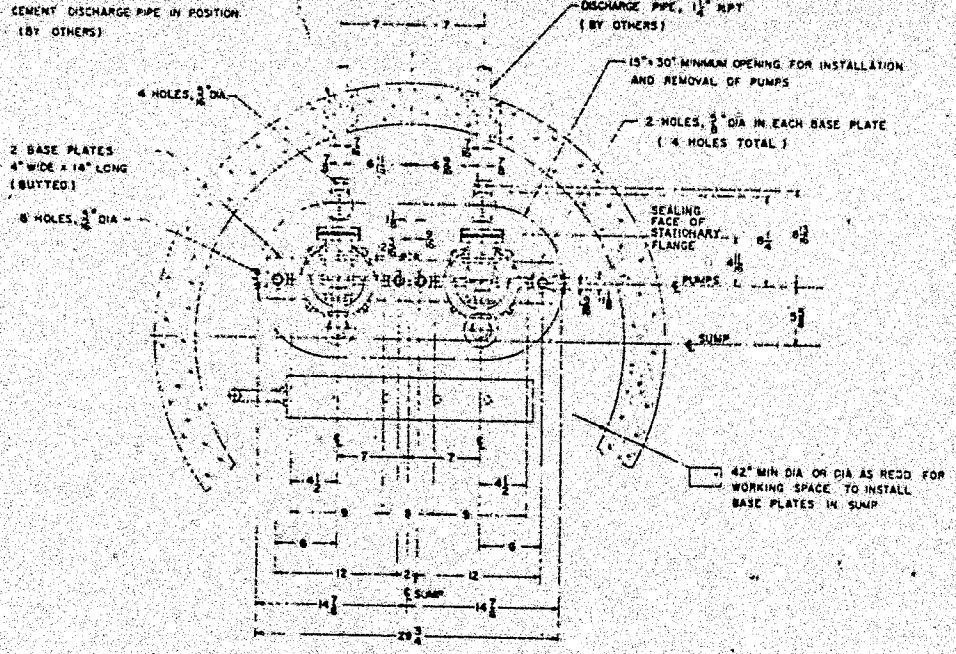
☒ Flashing Alarm Light *	Model No. ~~4410~~ 5496P
☒ Alarm Bell	~~Model No. 485A~~
~~☐ Alarm Horn~~	~~Model No. 638A~~

OPERATION OF SYSTEM — On sump level rise lower mercury switch shall first be energized, then upper level switch shall next energize and start lead pump. With lead pump operating, sump level shall lower to low switch turn-off setting and pump shall stop. Alternating relay shall index on stopping of pump so that lag pump will start on next operation. If sump level continues to rise when lead pump is operating override switch shall energize and start lag pump. Both lead and lag pump shall operate together until low level switch turns off both pumps. If level continues to rise when both pumps are operating, alarm switch shall energize and signal the alarm. If one pump should fail for any reason, the second pump shall operate on the override control and if level rises above override control, alarm shall signal. All level switches shall be adjustable for level setting, from the surface.

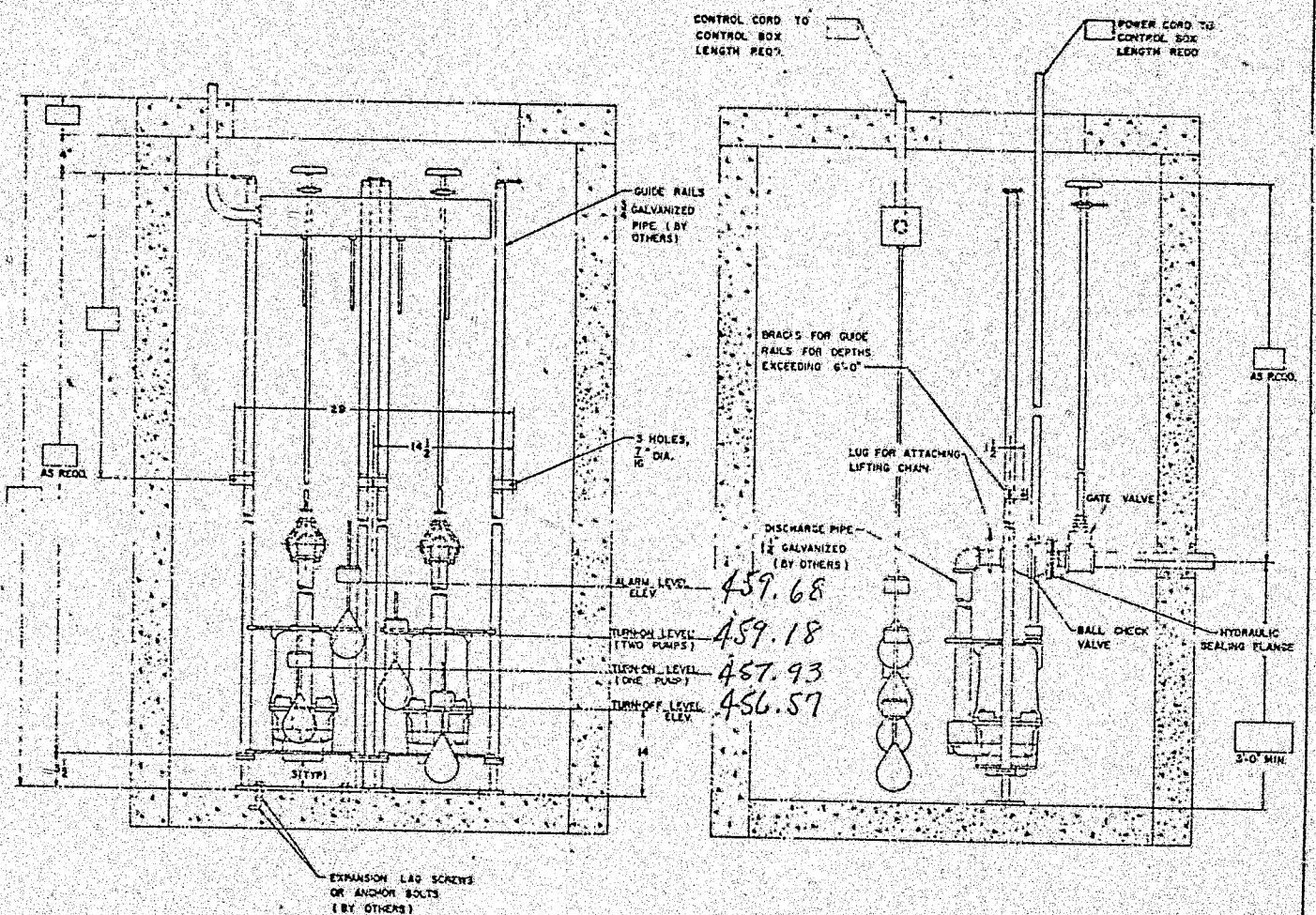
ELECTRICAL CONTROL PANEL — Control panel shall have a Nema III weatherproof enclosure. A lock hasp shall be provided on door. A circuit breaker shall be provided for each pump and a magnetic starter with 3 leg overload protection for three phase operation ~~or 1 leg overload protection for single phase operation~~ shall be supplied for each pump. An alternating relay shall be provided to alternate pumps on each successive cycle of operation. Starters shall have auxiliary contacts to operate both pumps on override condition. An interlock relay shall be provided to automatically re-connect the control circuit in case of circuit breaker trip on one pump. H-O-A switches and run lights shall be supplied for each pump. Terminal strip shall be provided for connecting pump and control wires. Additional terminals shall be provided to connect alarm. A transformer shall be supplied to give 24 volt control circuit. Panel Model No.__________.

CHECK VALVE & PIPING — The discharge piping shall include a HYDR-O-MATIC ball check valve with hydraulically sealed discharge flange and a gate valve with handle extension for each pump. Discharge from station shall be fitted with two 1¼" NPT couplings. All piping external to the station shall be furnished and installed by the contractor.

~~SUMP BASIN — The fabricated steel basin shall have an inside diameter of 3 feet, 0 inches, and a height of _____ feet and _____ inches. The basin cover shall be 40 inches O.D. and ¼ inch thick. Basin and cover shall be sandblasted inside and outside to remove scale, slag, rust, etc., before painting. Basin shall be coated inside and outside with two coats of tar-base Epoxy paint for corrosion resistance.~~



ALL OPTIONAL LISTED FEATURES ARE EXTRA COST OPTIONS



DUPLEX HYDR-O-RAIL HYDR-O-GRIND
SUBMERSIBLE SEWAGE PUMPING SYSTEM

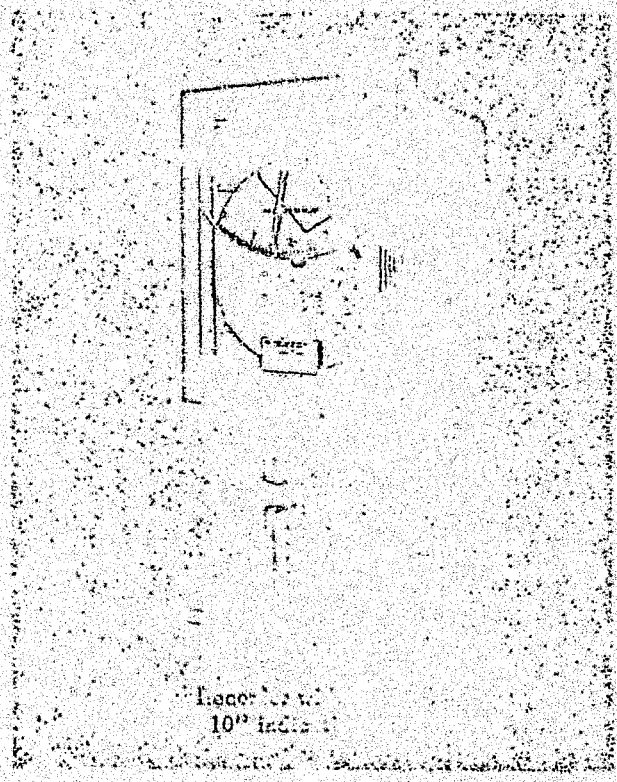
HYDR-O-MATIC PUMP CO.
TYPICAL INSTALLATION OUTLINE
DRAWING NO. 635

Model 10F1272

The Model 10F1272 Float-Actuated Flowmeter measures flow rate in terms of the head produced across flumes, weirs and other head-producing devices. The flowmeter converts vertical changes of float position into corresponding units of liquid flow. Flow data can be indicated, recorded or totalized.

This flowmeter can be equipped with an electric, vacuum or pneumatic transmitter to transmit the measured value as a linear or non-linear signal for remote indicating, recording or totalizing. In addition, the transmitted signal can be used by an automatic proportioning chlorinator or other chemical feed device for automatically regulating the chlorine or other chemical feed rate in proportion to the flow rate. If desired, the flowmeter can be equipped with two transmitters, each transmitting a signal as a different function of the flow rate.

The float-actuated flowmeter can also be used to measure liquid level (over a narrow range) in open or vented tanks. When used in this mode, local and remote indicating, recording and controlling is possible.



DESIGN FEATURES

- MAINTENANCE FREE: Corrosion resistant, stainless steel float and nylon covered stainless steel cable assures long life.
- ECONOMICAL: Weatherproof construction permits outdoor installation, without special housing.

ENGINEERING SPECIFICATIONS

OPERATING LIMITS: Between 4 and 30 inches of head at the maximum flow rate

ACCURACY: Float travel is within ± 1/16-inch of actual liquid level

INDICATOR: 5-inch strip; 10-inch strip; or 11-inch diameter 270 degree dial type scale (5-inch and 10-inch strips are auxiliary indicators that can be installed in the recorder.)

RECORDER

Size: 12-inch circular chart

Drive: 117 VAC, 60 cps single phase is standard; spring wound drive is optional

Speed: 1 rev/24 hours is standard; 1 rev/7 days is optional

TOTALIZER: 8-digit counter; 117 VAC, 60 cps single phase

MATERIALS OF CONSTRUCTION

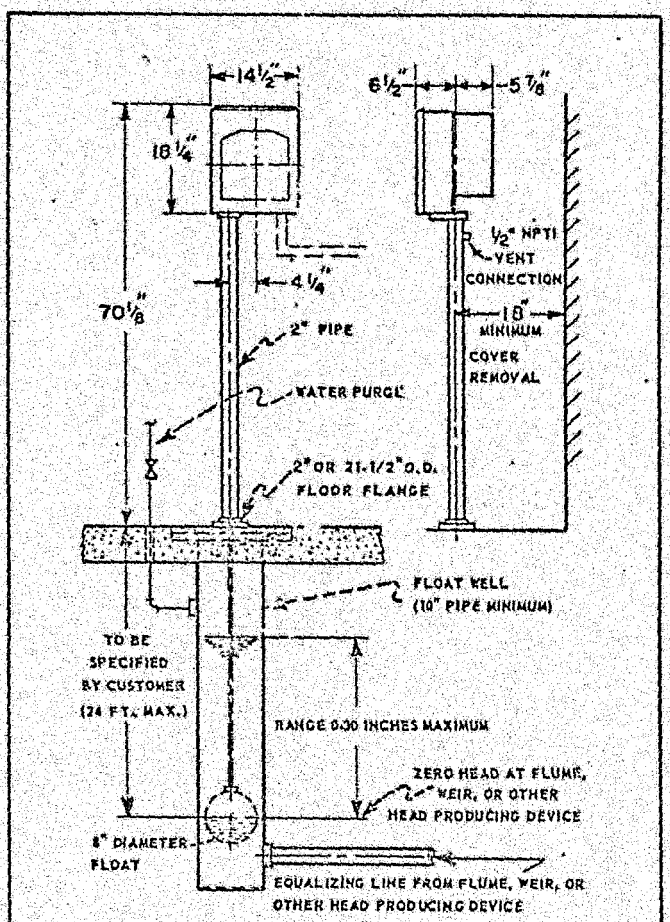
Float: Weighted Polystyrene 8-inch diameter is standard; 302 S.S. 12-inch diameter float is optional (recommended when the head at maximum flow is 7 inches or less)

Case and Door: Die cast aluminum, gasketed door with glass window, weatherproof construction for outdoor installation

Linkage, Pointer, Hinges and Door Latch: Stainless steel

Finish: Case and door are black, baked enamel

SHIPPING WEIGHT: 90 pounds



OPERATION

The float cable from which the float is suspended, is wound on a drum in the instrument case. As the float rises and falls with changes in the liquid level, the float cable winds or unwinds from the drum, causing the drum to rotate. The position of the drum, therefore, reflects the measurement of the liquid level. This measurement is translated into the desired functional motion for recording, indicating or totalizing through mechanical linkages to a characterized cam attached to the drum.

OPTIONAL EQUIPMENT

Pneumatic Transmitter

Vacuum Transmitter

Electric Time Pulse Transmitter

Electronic 2-wire Transmitter

Retransmitting Slidewire

ORDERING INFORMATION

When ordering, please specify:

Model 10F1272

Head producing device

Flow range

Head at maximum flow

Float size

Mounting flange (2" floor flange or 21-1/2" O.D. flange)

Optional equipment and signal output

SAMPLE EQUIPMENT DESCRIPTION

The flowmeter shall be of the float actuated type and shall (indicate) (record) (totalize) the flow rate through the ____[1]____. The flowmeter shall have a range of 0 to _____(mgd) (gpm).

The float shall be an (8-inch weighted polystyrene) or (12-inch stainless steel) ball and shall be suspended on a cable. The instrument case shall be of die cast aluminum mounted on a 2-inch pipe stand and shall be suitable for outdoor mounting. All linkages shall be of stainless steel. The flowmeter shall be Fischer & Porter Model 10F1272.

Flow shall be recorded on evenly graduated 12-inch circular charts which make one revolution every _____. The chart drive shall be (spring wound) (electric, 117 volt, 60 cycle, single phase).

Flow shall be totalized on an 8 digit counter mounted in the instrument case. The totalizing mechanism shall be of the high speed electric type. Totalizer drive shall be 115 volt, 60 cycle, single phase.

A signal proportional to the flow rate shall be transmitted to the _____by means of a ____[2]____ (vacuum) (pneumatic) (electric time pulse) (electronic) signal.

1. Parshall flume, 90° V-notch weir, etc.
2. Linear, square root, etc.

Pub. 15956a

Printed in U.S.A. June 1968

SUPPLEMENTARY

SPECIFICATIONS FOR CHLORINATOR SYSTEM

1.0 Scope

This specification covers an ADVANCE Modular Automatic Switchover System that shall automatically switch chlorine feed from one container(s) when it becomes empty to another container(s) to provide continuous chlorination.

2.0 Description

The ADVANCE modular automatic switchover system (MAS) shall be vacuum operated and shall automatically switch chlorine feed from an empty container to a full container. The system shall have automatic reset and shall not permit return to the initial source until the second source is empty.

2.1

The MAS system shall be an ADVANCE Model 205 manufactured by Capital Controls Company, Colmar, Pennsylvania 18915, or equal. With a total system capacity of 50 pounds of chlorine feed per day.

2.2 Model with Remote, and/or Multiple Feed Points

The Model 205 MAS system is used to provide for remote installation and to supply several feed points, it consists of the following components:

(a) One (1) Model 771 switchover module without rate valve.

(b) Two (2) chlorinators (similar to Model 201) without rate valves.

(c) Two (2) remote flow meters each with rate valves and having capacities of 50 PPD.

(d) Two (2) ejector-diffuser assemblies.

3.0 Requirements

The MAS system is designed for operation with chlorine cylinders.

4.0 Components

The Model 205 system component descriptions are as follows.

4.1 Switchover Module

The switchover module shall be vacuum operated, switching from an empty chlorine container(s) to a full chlorine container(s). There shall be no manual reset required when switchover has been made and the empty container(s) replaced with a full container(s).

The module shall be wall mounted.

4.2 Chlorinator

Each chlorinator regulator shall have its own chlorine flow meter to indicate which

chlorine source is being used. The flow meter shall also indicate the exact amount of gas being fed from the chlorine container. The chlorine flow rate and vacuum shall be controlled by a spring opposed diaphragm regulator which shall close tight on loss of vacuum. Pressure shall be prevented from building up in the system by means of a spring-loaded, diaphragm-actuated emergency relief valve located in the chlorinator at the point of mounting.

Each chlorinator shall mount directly on the chlorine container with a positive, yoke type, gasketed, connection.

4.3 Ejector-diffuser Assembly

The ejector-diffuser assembly shall be of the chlorine-water solution type, and shall create the vacuum required for operation. The assembly shall be equipped with a check valve arrangement to prevent water from entering the chlorination system. The ejector shall be entirely submerged into a tank or channel.

4.4 Remote Meters (as required)

The flow meter(s) shall indicate the exact amount of gas being fed to each feed point(s) and shall be equipped with a rate valve.

The flow meter(s) shall be panel mounted and shall not need a differential pressure regulator for flow control when feed rates are 500 pounds per day or less.

The flow meter(s) shall be factory mounted on a single plastic support panel suitable for wall mounting individually.

5.0 Quality Assurance

Each component shall be set up and operated in accordance with the manufacturer's operating manual and procedures.

Any evidence of a leak or improper operation shall be cause for rejection.

6.0 Standard Equipment

The following equipment shall be furnished with each chlorinator as standard equipment. (Number, length, diameter, etc. to be filled in as required for each system - refer to product specification).

(a) ___ft. - ___ ejector water supply hose
(b) ___ft. - 3/8 vent and vacuum tubing
(c) ___lead gaskets
(d) ___ - 1" metal hose adaptor
(e) ___ - 1" hose clamps
(f) 1 standard spare parts set
(g) 1" multi-purpose wrench

7.0 Optional Equipment

7.1 Booster Pump

The booster pump shall be a submersible type. It shall be a Hydr-O-Matic Model SP40M or equal. The pump shall be powered by 115 vac, 60 hz, single phase, 4/10 horsepower.

The vacuum shut-off valve shall be 1/4" plastomatic valve. The valve shall be Capital Controls Company part Number R-456 or equal and shall cone complete with bracket.

7.3 Timer

The timer shall be a 24 hour timer with on, off set points. It shall be a Paragon Model 4001-0, or equal.

T E C H N I C A L S P E C I F I C A T I O N S

SEWAGE TREATMENT PLANT

MR. CLYDE E. YOHEY, OWNER AND DEVELOPER

PREPARED BY: Mid-Penn Engineering Corp.
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PROJECT NUMBER:
P19/1-73 2.4

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SPEC. FOR SUBURBIA EXTENDED AREATION PLANT.

SPEC. FOR DUAL GRAVITY TERTIARY FILTER

SPEC. FOR LIFT STATION

SPEC. FOR FLOAT ACTUATED FLOW METER

SPEC. FOR CHLORINATOR SYSTEM

A 98490

WONDERVIEW SANITARY FACILITIES

Maps attached with the Original Application are filed in a roll on top of the cabinet.

OVERSIZE

Documents

OVERSIZE
DOCUMENTS

OVERSIZE DOCUMENTS