

CHAPTER III
RULES AND REGULATIONS
STANDARD SPECIFICATIONS FOR DESIGN
CONSTRUCTION AND OPERATION OF
SEWAGE FACILITIES

STANDARDS FOR DESIGN OF SEWAGE SYSTEMS

These standards set forth requirements for the design and construction of all sewerage systems in the Township of Concord, both public and private. Standards shall apply to all types of systems including stream discharge, on-lot systems, retaining tanks, collection and conveyance systems.

1. The developer's engineer will discuss details of the proposed system with the Township and its representatives prior to initiating design.
2. Prior to the initiation of construction, the developer will be required to enter into an agreement with the Township with respect to the system. This agreement will include an agreement for a construction escrow account and releases therefrom as well as other items including these details herein. A sample of an agreement is included herein.
3. Design of the system will be in accordance with Pennsylvania DEP, County and Township regulations and specifications. All permit forms will be completed by the developer and submitted by the Township or the Department in the Township's or Department's name.

The design of the system will stress ease of operation and will fit into the comprehensive sewer plan for the Township. The design will provide for expansion of the system as necessary and where feasible. Land areas designated for the system will include areas for expansion and/or replacement of the systems.

Specifications, plans and catalog cuts will be approved by the Township prior to submission of construction permit forms.

The developer's engineer will supply detailed plans and specifications to the Township for review. Plans will be to scale and sufficiently detailed to show the fit of all components. The submission will include calculations for sizing of all components and include such things as pump curves, emergency generator calculations, tank sizing, tank flotation calculations, engineered calculations of the 100 year flood plan, and others as applicable. Plans will include a detailed site plan showing grading based

on fieldrun topography. Design calculations will be based on four times average daily flow for smaller systems.

4. The system will be constructed by a contractor experienced in this type of construction. Sewage treatment plans, seepage beds and pumping stations will be constructed by a contractor experienced in that type of construction. The developer will supply to the Township an experience record of all contractors involved in the construction.
5. The Township, by its Engineer, shall review and approve the design and specifications of the system, its construction, and start-up of the system, both the developer's engineer and the Township Engineer shall certify that the entire system has been constructed in accordance with the plans and specifications for the project approved by the Township. The developer shall reimburse the Township for all fees and expenses charged by the Sewer Engineer for the Engineer's review of system design, and inspections during construction and start-up. In addition, the developer shall pay an application and filing fee to the Township, at the time plans and specifications are lodged with the Township, in the amount of ten cents (\$0.10) per gallon of facility capacity.
6. As-built plans of the entire system will be supplied to the Township upon completion of construction and prior to start-up.
7. Operations and Start-up will be accomplished with representatives of the Township present. Start-up will be done with representatives of the various equipment suppliers present. Copies of all start-up checklists will be supplied to the Township.

If the system is to be operated privately, copies of signed contracts with a Pennsylvania licensed plant operator and a maintenance contractor will be supplied to the Township. In the case of a sewage treatment plant, copies of a sludge removal contract will be supplied to the Township.

If the system is to be owned and operated by the Township, the developer will agree to operate the system for a minimum of four months or until all start-up problems are eliminated. The developer will guarantee all components for one year from the date of start-up.

The developer will supply an operations manual that includes an index, is loose-leaf bound and includes such things as model numbers, serial numbers, parts, lists, etc. for all components.

8. In the case of privately owned and operated systems, the developer will agree to transfer ownership of the system to the Township for the sum of One Dollar (\$1.00). When requested, this agreement shall extend to

subsequent owners (such as a homeowner's association). The developer shall also agree to abandon any treatment system and connect to a public system should the Township require it. Included in the transfer will be any capital reserve funds and operating funds.

At the time of plan approval, rights of way shall be shown for all sewer lines on the plans for the project. These rights of way shall be recorded with each deed of each property. Rights of way shall be twenty (20) feet wide and centered on the sewer line. Future sewer connections will be provided for by rights of way. Where future sewers are to be constructed, an additional ten (10) foot wide temporary construction easement shall be shown. Areas necessary for pumping stations and sewage treatment facilities shall be dedicated in fee simple to the owner of the system.

9. If a system is to be privately owned and operated and sewer charges are to be made, the developer will present the necessary authorization from the Pennsylvania Public Utility Commission to the Township. Should the Township become owner of the system, the developer will agree to transfer service area rights to the Township free of charge.
10. If the system is privately operated, the owner will transmit to the Township monthly flow records, copies of all tests, and correspondence with Pennsylvania DEP and other agencies, and will agree to a minimum of two (2) yearly inspections by the Township. The owner will obtain a yearly permit from the Township to operate the facility after paying required fees.

11. Design Details:

A. Retaining Tanks:

Retaining tanks, in addition to meeting other sections of this Chapter and other Township rules, shall be designed to meet the following:

1. The effective usable capacity of the retaining tank shall be three times the daily wastewater flow or 1,000 gallons, whichever is greater. Daily wastewater flow shall be computed in accordance with Chapter 73, Section 73.17 Sewage Flos of the PA-DEP Rules and Regulations.
2. Retaining tanks shall be constructed pursuant to the same standards as septic tanks, shall be either pre-cast concrete, steel, or fiberglass, and shall meet the design loading requirements of AASHTO HS20-44. Because all retaining tanks are interim use only, the use of cast-in-place concrete tanks are permitted on a

case by case basis. In general only standard septic tank designs will be permitted.

3. All retaining tanks shall have both visual and audible alarms. An additional visual level indicator on the tanks shall be provided, and this indicator shall not require any power but shall be float operated. The visual alarm shall be a rotating red beacon. The audible alarm may be replaced with an automatic telephone dialing system, and for retaining tanks exceeding 10,000 gallons an automatic telephone dialing system shall be required. All alarms shall sound or indicate at 75% tank capacity.
4. Lockable access covers shall be provided for septage removal. A suitable access driveway to the retaining tanks for large trucks shall be provided.

B. General

1. All collection sewer systems and force mains will be constructed in accordance with Township specifications and standards. All sewers will be sized to accommodate ultimate flows from the entire drainage area.
2. Pump stations and treatment facilities constructed in flood plans will have floor elevations, tops of tanks, etc. one foot above the 100 year flood elevation. Engineered calculations will be supplied to verify this. Calculations shall include flotation calculations for all underground tanks.
3. All construction will be by experienced contractors to accepted trade standards and finishes.
4. All exposed piping and valves shall be protected against freezing.
5. All treatment facilities and pump stations shall have a 24 hour recording meter. Meter flows shall be submitted to the Township monthly.
6. Tanks may be concrete (case-in-place, or pre-case) or steel. Steel tanks shall have proper cathodic protection and an epoxy finish. Details of the epoxy finish shall be submitted to the Township. All steel tanks shall have the finish repaired as necessary with the same epoxy system.
7. All mechanical equipment will be completely specified including manufacturer, model number, performance curves and catalog

cuts. All mechanical equipment will be manufactured in uniform style by a recognized firm acceptable to the Township with a local parts supply and service. Once approved, changes in components will be made only with the Township's permission.

C. Pump Station Standards¹

1.1 GENERAL

- A. Pre-engineered and/or pre-fabricated pumping stations will be considered by the Township on a case-by-case basis.
- B. All pumping station designs, uses, and installations must be approved by the Township. The design of the pump station shall include materials and equipment necessary to make the pump station facilities vandalism-proof.
- C. Extender shall meet all Federal, State, and local laws, regulations, and codes applicable to pump station, building, site design and construction and shall meet all requirements of the Commonwealth of Pennsylvania "Domestic Wastewater Facilities Manual", latest edition. All required panels and approvals shall be obtained and paid for by the Extender.
 - 1. Essential Facility: Pumping station and the associated building shall be considered an essential facility and shall be designed for time increased importance factor and other special provisions dictated by the building code.
- D. When a sinkhole is discovered before, during, or after construction, the Township must be notified immediately. Remediation of the sinkhole will proceed under the supervision of a geotechnical professional, registered with the Commonwealth of Pennsylvania at the Extender's expense.

1.2 EXTENDER'S WARRANTY

- A. The Extender shall warrant the pumping station equipment, materials, and workmanship for a period of 12 months following the date that the pumping station is dedicated to the Township. Any equipment or materials manufacturer warranties which extend beyond this 12-month warranty period shall be transferred from the Extender to the Township.

¹ Section C Amended 11/14/2000

1.3 SUBMITTALS

- A. Three sets of complete construction drawings, structural calculations, specifications, and hydraulic computations for the pumping station shall be submitted to the Township for approval. All drawings, specifications, and hydraulic computations shall be prepared, signed, and sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania.

- B. Five copies of each of the following items shall be submitted to the Township prior to dedication of the pumping station to the Township:
 - 1. *Shop Drawings*: Submit approved manufacturer's assembly-type shop drawings indicating dimensions, weights, required clearances, and methods of assembly of components.

 - 2. *Product Data*: Submit manufacturer's technical product data, including installation and start-up instructions, furnished specialties, and accessories.

 - 3. *Wiring Diagrams*: Submit manufacturer's electrical requirements for pumping station, including ladder wiring diagrams for interlock and control wiring. Clearly indicate required field connections.

 - 4. *Maintenance Data*: Submit maintenance data and parts lists -for all pumping station equipment, controls, and accessories. Include lubrication schedule which shows recommended frequency and type of lubrication for each equipment item. Include trouble-shooting guide for each piece of equipment.

 - 5. *Operation and Maintenance Manuals*: Submit five complete O&M manuals containing all items listed above under Paragraph 11.3.B. The manuals shall be organized so that all data for a given equipment item is contained in a single section of the manual. Dividers shall be provided to identify the various sections. For major equipment items, a separate manual may be provided in lieu of a separate section within a larger manual.

1.4 SITEWORK

No construction work shall commence until all plans have been reviewed and all items addressed in the review have been resolved.

- A. The finished grade slope on any portion of the pumping station lot shall be no steeper than 10 percent and all unpaved areas outside the building (areas which will be seeded) shall be accessible by 24-

inch wide mower. The lot shall be graded to prevent erosion of soils on the lot and in areas adjacent to the lot. Ditches, swales, culverts, and riprap shall be provided where necessary to prevent erosion and control storm runoff. Finished grade of all lot areas shall be a minimum of 2 feet above the 100-year flood elevation.

- B. Access to the pumping station lot shall be provided by a minimum 14-foot wide paved access road with a turnaround lane. The extent of pavement around the pumping station building shall be as approved or directed by the Township. Paving shall consist of, as a minimum, 6 inches of compacted PennDot 2A coarse aggregate, 4 inches of Bituminous Concrete Base Course, and 2 inches of ID-2 Wearing Course. All materials used in pavement construction shall meet the requirements of Commonwealth of Pennsylvania, Department of Transportation (PennDOT) Specifications, Publication 408 (PennDOT 408), latest edition, and shall be obtained from a source approved by PennDOT.
- C. At completion of construction, all unpaved areas outside the building shall be topsoiled, limed, fertilized, seeded, and mulched in accordance with Section 9, Paragraph 9.3.A, 9.3.B.1, and 9.3.B.2. Prior to the start of seeding, specifications for liming, fertilizing, seeding, and mulching shall be submitted to and approved by the Authority. The seeding shall be covered by the Extender's one-year warranty and the Extender shall re-seed any areas where a healthy stand of grass has failed to develop during the warranty period.
- D. Where necessary, the Township will require that landscaping be used to screen the pumping station from streets and adjacent properties or to otherwise improve the appearance of the pumping station lot. The Extender shall submit the landscaping plan to the Township for approval. Landscaping shall be covered by the Extender's one-year warranty and the Extender shall replant trees, shrubs, and ground cover which have died or otherwise failed to develop properly.
- E. Underground water and sewer lines associated with the pumping station shall be installed in accordance with the Township's Sewer and Water System Regulations and Technical Specifications (latest revision). Electric and telephone service entrances and underground electric and telephone lines shall be installed in accordance with the appropriate Utility Company's requirements. Extender shall make arrangements for and pay for all service entrances, lines, and connections required to serve the pumping station.

1.5 STRUCTURAL EXCAVATION AND BACKFILL

- A. All excavation operations shall comply with OSHA rules and regulations. Excavations shall be sheeted and shored where required to meet OSHA rules and regulations and where required to protect property and improvements adjacent to the pumping station lot.
- B. Prior to the start of excavation operations, all topsoil shall be stripped from the excavation areas. Topsoil shall be stockpiled, in accordance with Delaware County's Erosion and Sedimentation and Control Plan Requirements, and replaced to a minimum depth of 6-inches on all areas to be seeded. All materials other than topsoil, which was cleared from the pumping station lot before starting excavation operations, shall be disposed of legally off the pumping station site at the expense of the Extender. On-site burning of cleared materials will not be permitted.
- C. Blasting during clearing and excavation operations will be allowed only if prior permit is obtained, on a case-by-case basis, from the Township. If allowed, the use of explosives shall be governed by the "Regulations for the Storage, Handling and the Use of Explosives" of the Pennsylvania Department of Labor and Industry.
- D. Structural backfill may consist of excavated material approved for re-use by the Township. Structural backfill shall contain no stones larger than 4-inches in any dimension. If material excavated on the pumping station site is not approved for use as structural backfill by the Authority, the Extender shall import suitable backfill. Where warranted by poor soil conditions, the Township may require that the structural excavations be backfilled with PennDOT 2B aggregate.
- E. Prior to the construction of concrete foundations within the excavation(s), the entire bottom of the excavation shall be covered with a minimum 8-inch thick compacted layer of PennDOT 2A or AASHTO No. 57 coarse aggregate.
- F. The Extender shall submit a list of and specifications for the compaction equipment to be used for backfill compaction. In no case shall backfill be placed in lift thicknesses which exceed the equipment's compaction capability as specified by the equipment manufacturer for a given soil type. Maximum lift thickness, regardless of the equipment used, shall be 24 inches. Backfill shall

be compacted to a minimum of 98 percent of standard Proctor density as determined by ASTM D698.

1.6 STRUCTURAL CONCRETE

- A. The entire pumping station substructure, including footings, foundation walls, frost walls, wet wells, dry wells, channels, stairwells, exterior stairs, and at-grade slabs, shall be constructed of reinforced concrete.
- B. Concrete shall meet the PennDOT 408 requirements for Class AAA concrete and shall be obtained from a source approved by PennDOT. Portland cement used for all concrete shall be ASTM C150 Type H.
- C. Reinforcing steel used in all reinforced concrete shall be deformed steel bars meeting the requirements of ASTM A615 Grade 60. Welded wire fabric, if approved by the Township for use as reinforcing, shall meet the requirements of ASTM A185.
- D. Reinforced concrete shall be designed in accordance with ACI 318 "Building Code Requirements for Reinforced Concrete" (latest edition), ACI 350 "Environmental Engineering Concrete Structures" (latest edition), and local building codes. The most strict requirement shall govern when differing provisions are encountered. Concrete structures shall be designed to prevent uplift and flotation (minimum Factor of Safety = 1.2) when the structure is empty and the surrounding soil is saturated to finished grade. Concrete foundation shall be designed for allowable soil bearing/bedding and to Mine differential settlement.
- E. Concrete shall be placed, consolidated, and cured in accordance with the requirements of the latest editions of ACI standards 304R, 305R, 306.1, and 309R.
- F. Access to the main floor of the pump station shall be 6" above finished grade elevation. Access to the pump level of the dry well shall be provided by means of aluminum stairs with I-bar grating tread. Access to the influent level of the wet well (bar screen, grinder, and flow measurement channel) shall be provided by means of an exterior reinforced concrete stairwell or a stainless steel ladder assembly with safety climbing equipment. Minimum clear width of all stairs shall be 3 feet.
- G. The substructure shall be designed to facilitate removal of all pumps and grinders from the wells to a position on the at-grade

floor from which these equipment units can then be easily moved to a paved area outside the pumping station.

- H. The entire interior surface of wet wells and all other concrete surfaces which will be in contact with sewage shall be coated as follows:
 - I. Surface Preparation: Use dry abrasive blasting equipment with a compressed air blast nozzle. Perform abrasive blast cleaning to open up surface voids and remove laitance. Do not expose aggregate. After abrasive blasting, clean surface by vacuuming.
 - 2. First and Second Coats: Tnemec 69 Hi-Build Epoxoline II 6 to 8 10 mils dry film thickness each coat.

1.7 STRUCTURAL STEEL

- A. Structural steel shapes shall meet the requirements of ASTM A36. Structural steel tubing shall meet the requirements of ASTM ASOO.
- B. Steel shall be welded in accordance with AWS D1.1.
- C. Structural steel shall be designed, fabricated, and erected in accordance with AISC Specifications.
- D. Structural steel shall be coated as follows:
 - 1. *Surface preparation:* SSPC-SP10, Near-white Blast Cleaning for steel that is immersed or in the splash zone; SSPC-SP6, Commercial Blast Cleaning for all other steel.
 - 2. *First Coat:* Tnemec 66-Color High Build Epoxoline, minimum 6 mils dry film thickness.
 - 3. *Second Coat:* -Tnemec 104-Color High Solids Epoxy, minimum 10 mils dry film thickness.
 - 4. Where approved by the Township, galvanizing may be substituted for painting. Structural steel shall be galvanized in accordance with ASTM A123 to provide a minimum of 1.25 ounces per square foot of galvanized coating on all surfaces.

1.8 SUPERSTRUCTURE (BUILDING) DESIGN AND COMPONENTS

- A. The building shall be designed to provide sufficient interior space for all pumping station components, including all pump system components, grinder drive units, all flow metering equipment components, and the Generator set. The generator fuel tank shall be located above floor-elevation under the generator set as an integral part of the generator package. Ceiling height shall be a minimum of 10 feet but in no case less than required to allow for handling and removal of pumps, motors, and all other equipment units. The building shall have sufficient floor space to provide equipment manufacturers' minimum specified repair and maintenance clearances.
- B. Walls: Building walls shall be cavity wall construction and shall consist of the following components:
1. *Interior wall:* Minimum 8-inch sound-absorbing concrete masonry units (CMUs). The requirement for sound absorbing CMUs will be waived only under the following conditions:
 - a. The pump motors are located within the dry well.
 2. *Cavity:* The cavity located between the interior and exterior walls shall be approximately 2.5 inches wide. The cavity shall contain 2-inch thick polystyrene board insulation securely fastened to the interior CMU wall. Through-wall flashing and weepholes shall be used to convey water collecting at the bottom of the walls to the exterior of the building.
 3. *Exterior Wall:* The exterior wall shall consist of standard 3-5/8 x 2-1/4 x 8-inch brick meeting the requirements of ASTM C216, Type FBS, Grade SW; color and texture to be selected by the Township.
 4. *Wall Reinforcing:* CMU wall reinforcing shall be galvanized truss type with box ties for tying brick wall to CMU wall. Reinforcing shall be horizontally continuous and shall be located in every other CMU course.
 5. *Bond Beams:* A continuous bond beam shall be installed as the top course of CMU walls. The bond beam shall be reinforced with two (2) No. 5 deformed steel bars and shall be filled with coarse sand/cement grout. Anchors for the wall cap plate shall be embedded in the bond beam. The cap plate shall be 2-inch thick (nominal) SPIB Utility Grade wood

treated with CCA preservative to 0.25 pounds/cubic foot retention in accordance with AWWPA standards.

6. *Grout:* As a minimum, fill CMUs adjacent to all wall openings and at all corners with portland/cement grout and No. 5 bar doveled into foundation or concrete substructure.
7. *Lintels:* Lintels over all wall openings shall be precast concrete with minimum 28-day compressive strength of 3,000 psi. Minimum bearing length on each side of opening shall be 8- inches.

C. Roof Trusses

1. Roof trusses shall be designed by a professional engineer, registered in the Commonwealth of Pennsylvania, and shall be fabricated in accordance with the published standards of the National Forest Products Association and the Truss Plate Institute's TPI-85 standard. Trusses are to be designed for the following minimum loads:
 - a. Top chord dead load: 10 psf
 - b. Top chord live load: 30 psf (both balanced, unbalanced, and drifting snow conditions)
 - c. Bottom chord dead load: 6 psf
 - d. Bottom chord live load: 0 psf
 - e. Wind load: As required by local building code
 - f. Duration-of-load factor, snow: 1.15
 - g. Duration-of-load factor, wind: 1.33
 - h. Add truss dead loads to the dead loads specified above.
2. Minimum size of any truss member: 2-inch x 4-inch.
3. Provide lateral and diagonal truss bracing in accordance with TPI's "Bracing Wood Trusses: Commentary and Recommendations". Minimum brace size shall be 2-inch x 4-inch.

4. Provide hurricane hold-down mechanical connections at each truss bearing location.
- D. Roofing shall consist of the following components:
1. Minimum 3/4-inch; APA Rated Sheathing 48/24, Exposure 1.
 2. Unperforated No. 15 asphalt felt underlayment; ASTM D226, Type 1.
 3. Fiberglass-base asphalt shingles, minimum 240 pounds per square; ASTM D3018, Type I, and ASTM D3462. Shingles shall have UL Class A fire rating and UL wind resistance label. Color and pattern will be selected by Township from manufacturer's standard range.
 4. Ridge Vent or Roll Vent: Alcoa ROVAR.
 5. Soffit: Vented aluminum with minimum metal thickness of 0.019 inches; Alcoa Building Products with Alumalure 2000 finish.
- E. Roof Drainage System: Five-inch OG aluminum gutters with minimum metal thickness of 0.032 inches and 2 x 3 inch aluminum downspouts with minimum metal thickness of 0.024 inches; Alcoa Building Products 320.
- F. Ceiling: Minimum 5/8-inch thick gypsum board; ASTM C36; USG 200 Series or equal.
- G. Attic Insulation: Minimum 9.5-inch thick unfaced fiberglass batt insulation; ASTM C855, Type I.
- H. Doors and Frames:
1. Provide double doors with minimum clear opening of 6 feet. Locate and size doors so that all pumping station equipment units can be moved to the outside of building directly onto a paved area. Minimum door height shall be 7 feet, except that monorail doors shall be higher to accommodate the monorail projecting through the door opening. Monorail doors shall be equipped with weathertight seals surrounding the monorail. The dry well access door may be a single door, which shall be equipped with hardware similar to that specified for double doors. Minimum clear opening for a single door shall be 3 feet wide by 6 feet 8 inches high.

2. *Doors:* Insulated hollow metal doors meeting the requirements for SDI-100 Grade III doors.
3. *Frames:* Provide welded steel frames with minimum metal thickness of 16 gauge and mitered corners. After installation, fill frames with fine sand/cement grout.
4. *Hardware:* Equip each double door with the hardware as follows:
 - a. 3 pairs hinges; TB 2314, 4.5 x 4.5 inches, US26D finish, NRP; McKinney.
 - b. One panic rim exit device with overlapping strike; 372 x 33K x SNB; Russwin.
 - c. 2 surface bolts attached to interior of inactive leaf; Ives.
 - d. One flat stainless steel astragal attached to exterior of active leaf
 - e. 2 kick plates; 0.05-inch stainless steel, 8 inches high x door width minus 2 inches; Ives.
 - f. One door closer attached to active leaf; P2810 BH-4-SBL; Russwin.
 - g. One aluminum threshold; 185 AV; Pemko.
 - h. One set of weather-stripping; 303 AV; Pemko.
 - i. Locks and keys: As directed by the Authority.

I. Painting:

1. *Interior CMU Walls:* Tnemec 54-560 Acrylic Block Filler applied at the rate of 80 to 100 SF/gal followed by two coats of Tnemec 104-Color High Solids Epoxy at 5 to 10 mils DFT per coat.
2. *Gypsum Board Ceiling:* Two coats of Tnemec Series 6 Tneme-Cryl at 2 to 3 mils DFT per coat.

3. *Interior Wood Trim*: Tnemec Series 36 Undercoater at 2 to 3.5 mils DFT followed by two coats of Tnemec Series 7 Tneme-Cryl SG at 2 to 3 mils DFT per coat.
4. *Doors*: Tnemec 66-BJ45 High Build Epoxoline at 2 to 3 mils DFT per coat followed by one coat of Tnemec 104-Color High Solids Epoxy at 8 to 10 mils DFT.

1.9 METAL FABRICATIONS

- A. Access Hatches: Aluminum; Bilco Type J (single leaf) or Type JD (double leaf).
- B. Railing:
 1. Design railing in accordance with local building codes. If there are no codes directly applicable to railing, design in accordance with the BOCA Building Code (latest edition) requirements for guards and handrails.
 2. Railing shall be all-welded 1.5-inch diameter (minimum) 40-gauge (minimum) aluminum pipe set to a minimum depth of 6-inches in concrete and secured with non-shrink, nonmetallic grout.
- C. Grating: Grating shall be aluminum I-bar type designed to provide a maximum deflection of 0.25 inch under a concentrated load of 300 pounds at mid-span and under a uniform load of 150 pounds per square foot (two loads not applied simultaneously). Grating shall be banded at each end of each panel. Grating shall be supported by aluminum angles set in and anchored to the concrete slab.
- D. Ladder: Design ladder to meet ANSI A14.3 "American National Standard for Fixed Ladders" (latest edition) and the local building code.
- E. Interior Stairs: Design stairs to meet ANSI A1264.1 "American National Standard Safety Requirements for Workplace Floor and Wall Openings, Stairs and Railing Systems" (latest edition) and the local building code.

1.10 EQUIPMENT

- A. Sewage Pumps:

1. The pump system shall include a minimum of two (2) pumps and shall be designed to handle the peak instantaneous flow, tributary to the pump station, in accordance with Commonwealth of Pennsylvania, Department of Environmental Protection "Domestic Wastewater Facilities Manual". When peak instantaneous flow exceeds one million gallons per day (1.0 MGD), the pumping system shall include a minimum of three (3) pumps. The pump system shall also be designed to handle the peak instantaneous flow with the largest pump out of operation. Flow used for design purposes shall be peak instantaneous flow projected 20 years into the future.
2. Minimum pump efficiency shall be 70 percent. Exceptions to this requirement will be granted by the Authority only if it can be shown, using manufacturer's data, that this efficiency can not be achieved with pumps of the required capacity and of the specific type and manufacturer required by the Authority's rules and regulations.
3. Pumps shall be one of the following, but all sewage pumps within a given pumping station shall be of the same type and by the same manufacturer:
 - a. Type A
Pump Rated Horsepower: 15-40 Hp
Configuration: Vertical non-clog dry-pit centrifugal pumps with closed coupled motor
 - b. Type B
Pump Rated Horsepower: 5-15 Hp
Configuration: Same as Class A; or submersible centrifugal non-clog pumps
 - c. Type C
Pump Rated Horsepower: 1-5 Hp
Configuration: Same as Class A or B; or Wet Well with suction lift, positive prime duplex pump configuration
4. Submersible pumps shall be of the air filled type and shall be equipped with a cooling jacket unless the Extender submits, to the Authority, the manufacturer's certification stating that a cooling jacket is not required. Jackets shall provide cooling action by circulating the pumped liquid around the motor.

The cooling jacket shall also be equipped with fittings to provide for future use of an external source of cooling liquid.

5. Vertical dry-pit pumps shall be equipped with a double mechanical sealing system which uses an external source of clear water for lubricating and flushing the seal. The Extender shall make all provisions for conveying clear water to the pump seal, including piping, valves, pressure regulator or pumping system, pressure gage, and, if an existing source of clear water is not available at the site, a water well specifically installed for the purpose of providing seal water. Requests for use of proprietary sealing systems, not requiring an external source of water, will be considered by the Authority on a case-by-case basis. Shaft and coupling guards shall be provided and shall meet OSHA requirements.
6. Maximum rotational speed for all pumps shall be 1,800 rpm.
7. All submersible pumps shall be equipped with a seal leakage detector system.
8. Submittals: Extender shall submit the following items to the Authority:
 - a. Pump curves showing head vs. flow, efficiency, horsepower, and shutoff head. Pump curves shall be developed from factory tests performed in accordance with Hydraulic Institute Standards.
 - b. Two shaft sleeves, two sets of mechanical seals and gaskets.
 - c. Two complete sets of bearings for each pump.
 - d. One replacement impeller for each pump.
 - e. Any special tools required for pump maintenance and disassembly.
 - f. Manufacturer's standard municipal 5-year materials and workmanship warranty.

B. Sewage Pump Motors:

1. Provide squirrel-cage, premium-efficiency induction motors.

2. *Insulation System:* Class F.
3. *Temperature Rise Rating:* Class B.
4. *Enclosure:* Provide submersible, explosion-proof enclosures for submersible pumps. Provide TEFC enclosures for vertical dry-pit pumps.
5. *Service Factor:* 1.15; the service factor shall be reserved for the Authority's protection. The motors shall not be loaded beyond their nameplate horsepower rating at any point in the operating range.
6. Design pumps for continuous duty under full load and to sustain a minimum of 10 starts per hour.
7. Equip motors with heavy-duty lifting lugs which will, in the case of submersible pumps, support the entire pump motor assembly.
8. Equip pumps with sealed ball bearings designed for a minimum L(10) life of 40,000 hours.
9. Locate conduit box so that it will be accessible in the final installation.
10. *Power Supply:* 240/480 volts AC, 3-phase, 60 Hz.
11. Equip each pump with a stainless steel nameplate which is visible in the final installation and which shows, as a minimum, the following information: manufacturer's name and address; type or style, model designation, serial number, and catalog number-, horsepower rating; speed in rpm; full-load current; voltage; frequency; number of phases; time rating; maximum ambient temperature; insulation class code number-, power factor; and service factor.
12. Motors with 25 HP or more may require a slow start-up feature. This will be subject to the service conditions and/or other considerations.

C. Pump Station Force Mains²

² Added by Resolution 3-2011, adopted June 13, 2011.

All piping material within the limits of the sewage pump station shall be constructed using Class 52 ductile iron pipe.

1. Manufacturer: Pipe, couplings and specials shall be products of a manufacturer approved by the Engineer.
2. Rated working pressure 350 psig.
3. Pipe Material
 - a. 4 – 10 inch: Ductile iron pipe, ANSI A21.50, ANSI A21.51
 - b. 12 inch: Ductile iron pipe shall have a thickness Class of 52 and manufactured in accordance with ANSI/AWWA C151/A21.51
4. Joints
 - a. 4 – 10 inch: Push-on, mech. joint at fittings, flanged at valves
 - b. 12 inch: Push-on joints shall be in accordance with ANSI/AWWA C111/A21.11
 - c. Coating: Shop coat pipe and fittings inside and outside with bituminous material per AWWA C-106 or C-151. Coating shall be free of cracks or other defects. Inside of pipe or fitting shall be smooth and free from obstacles.
 - d. Gaskets:
 - 1) For push-on joints, provide with the pipe and fittings rubber gaskets, ANSI A21.11, for each joint, including necessary lubricant
 - 2) For flanged joints – Provide 1/8 inch thick red-rubber full face gasket.
 - e. Bolting: ASTM A307, Grade A, galvanized bolts and nuts must be.”

D. Grinder:

1. A sewage grinder shall be installed in the influent channel of the pumping station. The grinder, and the channel in which it is installed, shall be sized to handle the peak instantaneous flow.
2. The grinder shall meet the following JWC Environmental channel units: 3000 Series; 4000 Series; Model CMD; or Model SPF. The grinder unit shall be driven by a JWC Environmental hydraulic drive unit equipped with either a Model PC2240 or Model PC2280 Controller. The hydraulic drive unit shall be mounted on the main (at-grade) floor of the pumping station. The Franklin-Miller Taskmasters will be considered during the review process.
3. The grinder shall be mounted in a frame fabricated from Type 304 stainless steel and shall be designed to facilitate removal of the channel by lifting the grinder vertically out of the frame. Unless the station arrangement is such that the grinder can be lifted to the main floor by the station monorail system, a jib crane/manual winch system, provided by the grinder manufacturer, shall be installed to lift the grinder to main floor.
4. In addition to the straight-through grinder channel, a grinder bypass channel, sized to handle the peak instantaneous flow, shall be provided. A sloped aluminum bar screen shall be installed in the bypass channel and a perforated aluminum plate, designed for temporary storage of material removed from the bar screen, shall be installed in a horizontal orientation above the bar screen. The bypass channel shall be isolated from the grinder channel by removable aluminum stop plates.

1.11 WET WELL MOUNTED PUMP STATION HOUSING (TYPE C PUMPS)

- A. *Pump Station Housing:* In the event of a Type C Rated Pump (1-5 Hp) it will be acceptable to have the substructure wet well mounted with all mechanical equipment located above the baseplate and located under a fiberglass hood. The pump station equipment is to be at-grade or recessed.
- B. *Emergency Controls:* The Type C wet well mounted pump station is to have:

1. An additional suction pipe shall be installed into the wet well and a force main bypass connection for a portable diesel powered pump; or
2. A permanent emergency generator installed.

1.12 MECHANICAL

- A. Pipe: Raw sewage piping shall be flanged Special Class 53 ductile iron meeting the requirements of AWWA C115 and C151 and shall have a double-thick cement mortar lining meeting the requirements of AWWA C104. Each pump suction line shall have a down-t bell fitting within the wet well. The vertical distance between the wet well floor and the open end of the bell shall be as recommended by the pump manufacturer. The exterior of the pipe shall be painted with one coat of Tnemec 66-BJ45 High Build Epoxoline to a dry film thickness (DFT) of 2 to 3 mils followed by a coat of Tnemec 104-Color High Solids Epoxy to a DFT of 8 to 10 mils; color to be selected by the Authority.
- B. Sleeve Couplings: Sleeve couplings, including flanged coupling adapters, shall meet the requirements of AWWA C219 and shall be manufactured by Dresser, Smith-Blair, or approved equal.
- C. Pipe Seals: Where pipes pass through walls, a seal shall be effected by the use of cast iron wall pipes or double Link-Seal by Thunderline Corporation. Under some conditions, the Authority may approve the use of single Link-Seal. All bolts shall be stainless steel.
- D. Gate Valves (3"-12" in diameter): Stem type when installed underground and rising stem type otherwise. Valve stem seal of such design that allows replacement of Orings with valve under pressure in the fully open position. Iron body, outside screw and yoke, bronze mounted with resilient-seated wedge conforming to AWWA C509. Resilient seat of Styrene Butadiene SBR or Urethane Rubber bonded to cast iron wedge. Stem seals of "O"-ring type. Exterior and interior ferrous metal parts to be epoxy coated, AWWA C 550. Acceptable manufacturers are American Darling or equal. Each gate valve shall be equipped with handwheel operator, except where the valve is more than 6 feet above the operating floor, a chain wheel shall be installed. Gate valves shall open counterclockwise.

- E. Check Valves: Provide check valves on each pump discharge line. Check valves shall be swing check with outside lever and weight. Check valves shall be manufactured by GA Industries, Dresser, or approved equal. Check valves shall, in all cases, be installed in a horizontal position. Under conditions, of high head, the Authority may require the installation of oil-controlled swing check valves by APCO Valve and Primer Corporation, American Flow Control, or approved equal.
- F. Surge Relief Valves: Under high head conditions, the Authority may require the installation of a surge relief valve. The surge relief valve shall be GA Industries 6600-D, or approved equal. The surge relief valve shall discharge to the wet well when the set-point pressure in the raw sewage pump discharge piping is exceeded.
- G. Air Valve: A combination single-body sewage air valve shall be located at the high point of the discharge header. The air valve shall be APCO Valve and Primer Corporation SCAV Series, Crispen, or approved equal and shall be equipped with backflushing accessories.
- H. Pressure Gages: A pressure gage shall be installed on each pump discharge line. The gage shall read in psi to 100 percent above the pump shutoff head. PSI readings shall be in increments of 2 PSI. The gage shall be liquid filled, shall have a stainless steel case and safety glass window, and shall be a minimum of 4 inches in diameter. Each gage shall be installed on a Ronningen Petter Iso-Ring with an isolation valve.
- I. Pipe Supports: Concrete and/or steel pipe supports shall be installed to prevent movement of the pipe system during pump startup and shutdown and to assure that the pumps do not carry any of the piping system weight.

1.13 PLUMBING

- A. Piping: Clear water piping shall be Type L hard-temper copper with solder (sweat) joints. Drain piping shall be PVC Schedule DWV with solvent weld joints.
- B. Hose Bibs: A minimum of three 3/4-inch brass hose bibbs shall be provided in the pump station to provide for washdown. Hose bibbs shall be supplied with potable water or clear-well water. Each bibb shall be labeled with the type of water being supplied.

- C. Backflow Preventer: Where municipal water is provided for washdown and/or pump seal water, a reduced pressure backflow preventer shall be provided to protect the municipal water system from contamination. The backflow preventer shall be as specified under the cross connection regulations.

1.14 HEATING

- A. Heating: The pump station shall be heated by means of electric unit heaters. The heaters shall be sized and located to maintain the temperature within the building at no less than 60 degrees F when the outside ambient temperature is minus 15 degrees F. Heaters shall be Chromolox Type LUH, or equal.

1.15 GENERATOR SET

- A. Generator shall be Onan, Kohler, Spectrum, or Holt Caterpillar sized to provide 100% back-up power for the pump station, in the event of an electrical utility company power outage.
- B. The generator shall be equipped with residential grade muffler, battery charger, batteries and cables, line circuit breaker, standard generator set control panel with common fail output contact, AC meter package, frequency meter, running time meter, and all fluids.
- C. The generator set manufacturer shall provide field start-up, testing, test report and certification.
- D. Fuel System:
 - 1. The engine shall be capable of operating on No. 2 diesel fuel, or natural gas.
 - 2. The fuel supply line shall be black steel (no galvanized) with a flexible fuel connection to engine for gas-fired engines.
 - 3. The fuel storage tank shall be a subbase tank provided as an integral part of the generator package for diesel engines. The tank shall be sized to provide a run-time of 24 hours.
- E. Exhaust System: The exhaust system shall consist of a residential grade muffler, a flexible stainless steel exhaust connection to engine, a drip leg at the first point of rise of exhaust line, a condensate trap and manual valve, and horizontal exhaust lines that slope toward discharge. The muffler and exhaust piping shall be insulated to

maintain a surface temperature not to exceed 120 degrees F. Do not insulate flexible exhaust fitting. No asbestos shall be allowed.

- F. Combustion and Cooling Air System: The combustion air intake shall consist of an aluminum louver with motorized damper installed in an exterior building wall. Power for the motorized damper shall be tapped from the generator output. The damper circuit shall be fused the cooling air exhaust system shall consist of an aluminum louver, installed in an exterior building wall, and ductwork between the louver and the engine radiator. A flexible duct adapter shall be installed between the engine radiator and the exhaust air duct.
- G. Automatic Transfer Switch: The transfer switch shall be supplied by the generator manufacturer as a package with 7-day load/no-load exercise clock, battery charger, standard time delays including adjustable loss-of-power delay on start, emergency/normal door mounted indicator lights, one NO and one NC auxiliary contacts for each normal and emergency position, test switch, and solid state controls. House the transfer switch in a NEMA 12 enclosure of the motor control center (when motor control center is provided).
- H. Testing: The Extender shall provide a four-hour full load test of the generator at the site after finalizing the project. Use load banks for performing the test. Submit a test report to the Authority.

1.16 ELECTRICAL

A. General:

1. Comply with the National Electrical Code (NEC) in performing all electrical work. In addition, comply with electrical construction code requirements of State and local agencies and requirements of electrical Utility Company. Provide electrical equipment which is listed by Underwriters Laboratories, Inc. (UL).
2. Obtain and pay for all required electrical system permits and approvals. Upon completion of the electrical work, have it inspected by an authorized inspection agency for compliance with NEC and State and local codes. Obtain certificates of approval, acceptance, and compliance. Submit permits and certificates to the Authority.

B. Earthwork: Perform all excavation, trenching, and backfilling required for underground conduit and outdoor equipment pads. Backfill shall be in layers not exceeding 8 inches in thick ' ness and shall be thoroughly

compacted. Soil or crushed rock materials used for backfill shall not contain stones with any dimension greater than 2 inches and shall not contain organic material.

C. Reinforced and Plain Concrete: Underground duct tanks shall be encased in concrete with 28-day compressive strength of 3,000 psi. Equipment pads shall be constructed of PennDOT Class A reinforced concrete. Outdoor concrete equipment pads shall be constructed on an 8-inch compacted base of AASHTO No. 57 coarse aggregate. Indoor equipment pads shall be mounted on a 4-inch high curb or pad of reinforced concrete.

D. Conduit:

1. *Interior Non-corrosive Areas:* Rigid-metal conduit and fittings.
2. *Wet Well:* PVC coated rigid thick-wall metal conduit and fittings by Robroy Industries.
3. *Underground:* Rigid high-impact PVC conduit and fittings. Use Schedule 40 conduit and fittings except where NEC requires Schedule 80. All underground conduit bends shall be long-radius steel.
4. *Connections to Motorized Equipment:* Flexible liquid-tight metal conduit with PVC jacket, in lengths not exceeding 24 inches.

E. Boxes: Outlet, switch, junction, and pull boxes shall be cast steel. In hazardous and corrosive areas, hubs shall be cast integrally with the box. Boxes in the wet well shall be PVC coated. Use UL listed "wet location" boxes in outdoor and wet areas. Pressed steel boxes may be used for general interior work.

F. Wire and Cable:

1. Use single-conductor copper stranded wire, except that conductors 10 AWG and larger may be solid. Size wire and cable as follows:
 - a. Power Circuits: Minimum size of 12 AWG.
 - b. Control and Alarm Circuits: Minimum size of 14 AWG.
 - c. Signal Circuits: 2/C #18 AWG shielded, 300 volt

insulation.

2. Insulation shall be rated for 600 volts and type shall be as follows:
 - a. 8 AWG and Smaller- THHN/THWN/XHHN.
 - b. 6 AWG and Larger. RHW (EPR Type) with overall sheath of polyethylene.
 - c. All Submerged Wire and Cable: Hypalon jacketed SPC.

F. Grounding: Grounding and bonding shall be provided in accordance with NEC and basic materials shall be as follows:

1. Ground Rods: 3/4-inch by 10 feet long Copperweld.
2. Ground Conductors: Code gage stranded copper or equivalent ampacity copper-clad cable.
3. Ground Clamps: Thermite weld.
4. Conduit Ground Bushings: Galvanized malleable iron with screw pressure connector and, where required, insulated throat.

H. Wiring Devices:

1. *Switches*: Specification Grade meeting requirements of Federal Specification (FS) W-S-896 and NEMA WD-1-2. Switches shall have screw terminals; push-in terminals are not allowed.
2. *Receptacles*: Specification Grade meeting requirements of FS W-C-596 and NEMA WD-1-3.
3. *Toggle-handle Snap Switches*: 20-amp, single-pole, double-throw, 3- or 4-way, with metal cover plate.
4. *Weatherproof Wiring Devices*: Enclosed in cast aluminum weatherproof box with gasketed metal weatherproof cover. Provide "in-use" weatherproof covers where required by the NEC.

5. *Standard Face Design Receptacles*: Specification Grade, 20-amp, two-pole, 3-wire, grounding duplex, with metal cover plate.
 6. *Ground Fault Interrupter Receptacle*: 20-amp.
 7. *Power Outlet Receptacles*: Simplex, heavy-duty design, polarized, twist-lock.
- H. Disconnect Switches: UL listed safety switches meeting NEMA KS-1 and UL 98 standards, heavy-duty, horsepower rated, fusible or non-fusible (as necessary), enclosure rated for duty, padlockable OFF; Square D or equal.
- I. Fuses: UL listed Class RK, Class J, or Class L. Provide 10 percent spare fuses of each rating (minimum 3 per rating).
- J. Nameplates: Provide engraved phenolic nameplates on each panel, cabinet, motor starter, enclosed circuit breaker, disconnect switch, and all other electrical system components which require identification. Nameplates shall be attached by means of rivets.
- K. Service Entrance: Meet requirements of electric Utility Company. Coordinate service entrance work with Utility Company and pay all costs required to provide a suitable service entrance.
- L. Branch Circuit Panelboard: Provide dead-front safety type panelboard equipped with automatic thermal-magnet circuit breakers, copper bus bars, enclosure with cover, lock, and typed directory. The short circuit withstand and interrupting rating shall be no less than 10,000 symmetrical RMS amps. Panelboard shall be Square D Type NQOD or Type NF.
- N. Motor Control Center (MCC):
1. MCC shall be NEMA Class II, Type B Construction, with number of sections and devices as necessary for control of all pumping station equipment. Spare sections shall be provided as required by the Authority. The complete unit shall meet the requirements of NEMA ICS-2 and UL 845 standards.
 2. Enclosure: NEMA 1 ventilated.
 3. MCC shall be equipped with:

- a. Horizontal wireway top and bottom accessible by removal of cover plate.
 - b. Bus assemblies rated for not less than 42,000 symmetrical RMS amps.
 - c. Tin plated copper bus bars.
 - d. Combination NEMA line starters. Circuit breakers used with combination line starters shall be adjustable instantaneous (magnetic) motor circuit protectors.
 - e. Bimetallic type overload relays.
 - f. NO and NC electrical interlocks.
 - g. Molded case circuit breakers with thermal inverse time limit overload and instantaneous short circuit protection (for use as individual circuit breakers not associated with motor starters).
 - h. Engraved nameplates for circuit identification.
4. MCC shall be Allen Bradley, Square D, or approved equal.

O. Lighting:

1. Fluorescent, incandescent, and/or sodium vapor luminaries shall be provided as required by the Authority.
2. Industrial grade fluorescent luminaries, with 10 percent up-light Component shall be provided for the main floor of the pumping station.
3. Vapor-tight enclosed and gasketed fluorescent luminaries shall be used for lower-level interior locations.
4. Exterior luminaries shall be factory equipped with waterproof gaskets and anodized aluminum wires and shall be either incandescent or high-pressure sodium vapor type. Incandescent luminaries shall be used when ON/OFF control is required and sodium vapor luminaries shall be used when dusk-to-dawn control is required.
5. Ballasts shall be CBM certified and UL listed and shall have high-power factor and low-noise-level characteristics.

Ballasts used with fluorescent luminaries shall be the rapid-start type and ballasts used for sodium vapor luminaries shall be auto-transformer type.

- P. Explosion Proof Requirements: All electrical equipment and devices installed within the wet well shall be explosion proof as recommended by NFPA 820.

1.17 TELEPHONE SYSTEMS

- A. Service Entrance: Meet requirements of telephone Utility Company. Coordinate service entrance work with Utility Company and pay all costs required to provide a suitable service entrance.
- B. Hand Set: Provide a factory assembled touch-tone, single-line beige plastic telephone equipped for wall mounted at a modular jack. Provide a one-year warranty. Hand set shall be either Bell of PA, GTE, ITT, or AT&T.
- C. Autodialer:
 1. Provide self-contained, automatic, microprocessor-controlled real-voice telephone dialer connected to a standard dial-up telephone line by means of a standard modular jack.
 2. Autodialer shall be housed in a heavy-cage JIC and UL listed steel cabinet.
 3. The unit shall operate from a standard 120-volt AC circuit lit and shall be provided with batteries for 24-standby operation. An external surge suppression system shall be provided for both power supply and telephone line.
 4. The autodialer shall include a separate power failure monitor and provisions for the following 8 independent alarm conditions plus a minimum of two spares: power failure, wet well high level, wet well low level pump failure, dry well high level, louver failure, generator failure, and primary level control system failure.

1.18 INSTRUMENTATION AND CONTROLS

- A. Equipment not Housed in a Building. If acceptable by the Authority and no building is proposed, all equipment shall be installed in stainless steel enclosure(s) with a NEMA 4 rating. The enclosure shall be heated and properly ventilated to prevent excessive moisture build-up and allow for

proper temperature control. The layout of the equipment will be subject to the review and approval of the Township.³

B. Flow Measurement System: The flow measurement system shall consist of an inline Mag Meter, a transmitter, and a circular chart recorder. All flow measurement system components shall be located in the pumping station building/structure.

1. The mag meter shall be provided with hat flanges for installation and ground rings when required.
2. The transmitter shall provide a 4-20 mA output, proportional to flow.
3. The circular chart recorder shall be programmable for seven-day operation and provided with a totalizer and digital readout which will indicate flow total or instantaneous flow, operator selectable.⁴
4. Approved manufacturers are Sparling TigerMag flow meter and Eurotherm Chessel chart recorder, Model #392. Other manufacturers providing like kind and quality equipment will be considered by the Authority.⁵
5. The flow sensor shall be rated NEMA 6 defined as continuously submersible in minimum of 10ft of water.⁶

C. Sewage Pump Control System: The following requirements are for a duplex constant-speed pump system. Control system descriptions for systems requiring more than 2 pumps and/or pumps with VFDs shall be submitted to the Township for approval.

1. The Pump Control System shall be provided with an alternator with provisions for automatic pump alternation and manual selection of lead and lag pumps in non-automatic alternation.
2. The Pump Control System shall be protected by a lightning and surge arrestor system.
3. Each pump shall be provided with the following:

³ Added by Resolution 3-2011, adopted June 13, 2011.

⁴ Amended by Resolution 3-2011, adopted June 13, 2011.

⁵ Added by Resolution 3-2011, adopted June 13, 2011.

⁶ Added by Resolution 3-2011, adopted June 13, 2011.

- a. NEMA-rated combination motor starter with MCP type circuit breaker.
 - b. Non-resettable run-timer meter with 99999.9 readout.
 - c. HAND/OFF/AUTO (H-O-A) selector switch.
 - d. Pump Run indicating light.
4. When the selector switch is in the OFF position, the pump shall not operate.
 5. When the selector switch is in the HAND position, the pump shall operate regardless of the level in the wet well.
 6. When both selector switches are in the AUTO position, the pumps shall be controlled automatically by the primary level control system, the redundant float switch system, and the alternator as follows:
 - a. The control circuit is placed in "permissive start" mode when the liquid level rises to the lowest level activation point, which is a float-switch function. The float switch is a redundant pump shutoff and low wet well level alarm system which is located just below the primary level control system point which normally activates the pump shutoff and low wet well level alarm functions.
 - b. As the liquid level continues to rise, the control circuit is energized when the primary level control system low level point is reached.
 - c. As the liquid level continues to rise and the next primary level control system activation point is reached, the lead pump starts. In this step, the pumps will alternate on successive cycles. If pump #1 starts first on one cycle, pump #2 will start first on the next cycle.
 - d. As the liquid level in the wet well is pumped down, the lead pump will continue to operate until the liquid level drops just below the primary level control system pump off point and the lead pump is then shut down.

- e. If the liquid level in the wet well continues to rise with the lead pump in operation, the lag pump will be activated when the liquid level reaches the primary level control system lag pump on position. At this point, the lead pump will continue running until the pump off point has been reached where both lead and lag pumps will turn off. The system shall be manufactured by Time Mark or approved equal.
- C. Primary Level Control System: The primary wet well level control system shall produce a 4-20 mA analog signal which is directly proportional to depth of liquid in the wet well. The system shall have provisions for a minimum of 4 liquid level set or activation points. The primary level control system shall be manufactured by Time Mark or approved equal.
- D. Annunciator:
- 1. The annunciator shall be an integral part of the level sensing and pump control system. Each alarm shall be provided with a contact to activate the autodialer.
 - 2. The following alarms and conditions shall be displayed on the level control/sensing device:
 - a. High Wet Well Level; activated by either primary level, control system or redundant float switch.
 - b. Low Wet Well Level activated by either primary level control system or redundant float switch.
 - c. High Water in Dry Well: activated by float switch in sump.
 - d. Louver Failure: activated from louver control enclosure.
 - e. Generator Malfunction; activated from generator control panel, Pump Malfunction; activated by current sensors shall shut down the pump and provide alarm contacts to the autodialer.
- E. Miscellaneous Control System Devices:
- 1. Limit Switches: Lever-arm type, DPDT, 10-amp contacts, 120-volt AC, with NEMA 4X enclosure and standard pre-travel spring return; Square D Class 9007, Type C.

2. Float Switches: Mercury switches sealed in a polypropylene shell with cable molded in end and cable weights to key--p float switches in position.
3. H-O-A Switches and Pushbuttons: Oil tight.
4. Indicator Lights: Push-to-test, transformer type. Indicator lights shall continuously glow dim to verify bulb condition and then glow at full brilliance when energized. Indicator lights shall be color coded according to function.
5. Control Relays and Timers: Relays shall be general-purpose type with contact rating of not less than 10 amps at 120 volts AC. Each relay shall be equipped with dust cover and quick-disconnect terminals. All relays and timers shall be mounted in sockets.

D. Treatment Plants:

All sewage treatment facility designs must be approved by the Township as well as DEP, and must utilize an accepted process for sewage treatment, capable of meeting all State and Local effluent requirements.

- E. Spray irrigation fields, seepage beds and sand filtration beds will be designed in accordance with Pennsylvania DEP standards. Design will be in accordance with recommendations and tests by a soil scientist which shall be submitted to the Authority.
- F. The control building shall be constructed in accordance with all local building codes and the BOCA Code. The building shall be of masonry construction with a stucco finish. In lieu of stucco, a brick or stone facing may be used. The roof shall be fiberglass shingle. The building will be completely trimmed and finished into an attractive whole. Doorways shall be steel with a steel frame locked with a flush mounted deadbolt. Smaller buildings will have no windows. Larger buildings requiring light will have glass block installed. All other openings such as vents will have vandal resistant screening installed. The interior of the building will have a concrete floor sloped to the doorways. A drywall ceiling with a minimum of six (6) inches of insulation will be installed. Sufficient 110 volt lighting, 110 volt outlets, and electric heating will be installed. All interior and exterior surfaces will be painted with a minimum of one primer coat and two finish coats. Rain gutters and downspouts will be installed. The building will be sized to contain all controls and mechanical equipment with ample work space around. Blowers will be enclosed in a separate room. All treatment plants will have a lavatory containing a toilet and sink with hot water. A

counter, cabinets, and sink will be provided for testing. Emergency generators will be enclosed in the building.

- G. Site Work - All backfill of excavations will be thoroughly compacted to prevent settlement. A driveway will be constructed on a stable subgrade with six (6) inches of 3A modified and two and one-half (2 1/2) inches of ID-2 laid in two courses. The driveway will be a minimum of twelve (12) feet wide. A turnaround will be provided that will accommodate a large pickup truck.

A walkway of concrete will be provided to the control house.

Fine grading and seeding will be done and a dense even stand of grass will be established. The site will be graded at a minimum of two (2) percent away from tanks and buildings. Plans will show detailed grading of the site.

Landscaping will be provided as necessary for the site.

Fencing as necessary shall be six (6) foot high plastic coated chain link fence with three strands of barbed wire on top, facing outside.

- H. Piping - Ductile iron pipe (flanged joints), shall be used for four (4) inch diameter and larger pipe. PVC pipe may be used for three (3) inch diameter and smaller. PVC pipe used inside structures or otherwise exposed shall be schedule 80, solvent weld joint, and shall be completely braced and supported. All unions shall be of the threaded type and not the compression type.

Check valves shall be of the external lever and spring/weight type. Gate valves shall be of the AWWA resilient seat type. All valves shall be capable of exterior maintenance. All exposed piping shall be cleaned and painted with primer and two coats of paint. Color coding shall be used. Force main shall be PVC C-900 from a point five (5) feet outside the valve pit.

- I. Electrical - Electrical power shall be three phase. All electrical work shall be inspected by a Township approved inspection agency for both service entrance and all other wiring. This agency will issue a certificate that all wiring conforms to the National Electric Code.

All pump stations and treatment plants to have appropriate alarm systems with a telephone dialer to a central station.

Emergency generator to be propane fueled and air cooled. Generator manufacturer to supply complete system including generator, automatic

transfer switch, automatic exerciser, and lock out switch. Generator shall have sufficient fuel to run it for 24 hours.

All pumps fifteen Hp. and up shall have reduced voltage starters. All control boxes mounted outdoors will be NEMA IV rated and will have strip heaters to control moisture. Control boxes mounted in unheated areas will have strip heaters to control moisture and corrosion.

No 480 volt services will be used.

12. Additional Sewer Design Criteria

- A. Construction Drawings - All drawings shall be submitted on 18' x 24' or 24' x 36' sheets with a scale of 1' = 50' horizontal and 1' = 5' vertical.
- (i) All elevations shall be based on U.S.G.S. (N.G.V.D.) datum with benchmark noted and described.
 - (ii) Drawings shall contain a note that all construction of sanitary sewers shall be in accordance with the standards and specifications adopted by the Township.
 - (iii) Drawings shall contain the name of the design engineer, the Applicant, and the development name. All drawings will be signed and sealed by a Professional Engineer registered in the Commonwealth of Pennsylvania.
 - (iv) If required by the Township, index map at the scale of 1' = 400' (or other scale to conform to master sewer plan of municipality) shall be included showing sewer sizes, manhole numbers, and streets and approximate property lines. Manhole numbers shall conform to the Township numbering system if one exists.
 - (v) Plan and Profile Sheets: Plan View drawn to a scale of 1' = 50' and a vertical scale of 1' = 5' (or as otherwise approved) and having the following items included thereon.
 - (1) Location of each existing building with elevation of any basement (Plan View). If existing, the invert elevation of any vent trap will be shown.
 - (2) Top elevations of proposed manholes (Profile View).
 - (3) Accurate existing and proposed ground surface elevations (Profile View).

- (4) Proposed invert elevations of a manhole (Profile View).
- (5) Manhole numbers corresponding to those on Index Map (Plan View and Profile View).
- (6) Distance between manholes from centerline to centerline of manhole (Profile View).
- (7) Grade of proposed sewer (Profile View).
- (8) Size of proposed sewer with type and class of pipe noted (Profile View).
- (9) Location of proposed laterals (Plan View and Profile View).
- (10) Location, size and elevation of all existing and proposed underground utilities - include Act 287 information and file number (Plan View and Profile View).
- (11) All easements shown with width, distances, and courses as necessary. Legal descriptions must be provided.
- (12) Each set of plans will contain a sheet showing standard construction details. These may be from the Standard Authority Detail Sheet which may be included in the plan set. In addition a detail of bedding of the pipe will be put on one of the plan and profile sheets.

B. The following information will be submitted as a supplement to the construction drawings and planning modules:

- (i) Number of persons or units to be served initially.
- (ii) Number of persons or units to be served in the future.
- (iii) Number of acres to be served initially.
- (iv) Number of acres to be served in the future.
- (v) Initial and future sanitary sewer flows if the development is other than residential.
- (vi) Design assumptions and source material.

C. As-Built Drawings

Prior to acceptance of the work, copies of as-built drawings shall be submitted by the Applicant. As-built drawings will be copies of the approved construction drawings. Existing design numbers (top and invert elevations, pipe lengths and slopes) shall be crossed out with one line so that the original numbers can still be determined. As-built numbers will be indicated below the crossed out numbers. A statement that the drawings are as-built shall also be submitted. In addition to other information, plans will show locations and depths of all lateral stubs. Locations shall provide a minimum of three dimensions and depth shall be from a permanent object such as curbing, etc. All easements shall be shown and shall be fully described. Property lines shall be located accurately by scale with respect to the sewer.

D. Design Criteria

All designs shall be in accordance with Pennsylvania Department of Environmental Resources criteria as well as additional criteria from other agencies having jurisdiction such as PennDOT and County or local agencies. The following are general criteria that are not meant to be all inclusive. Criteria will apply to public or private sewers. Private sewer systems will be constructed and inspected to Municipal standards.

- (i) Service - All lots that cannot have basement service must be noted on the plans. Design engineer shall note the required first floor elevations of proposed buildings in the low lying areas where necessary to insure service. Land adjacent to off-site sewers that are to be constructed by the developer will be investigated for possible future connections to prevent future road openings.
- (ii) Laterals - Minimum diameter shall be four (4) inches. Where a larger lateral is required it will be noted on the plans. Minimum grade on a lateral will be 1/4 inch per foot unless otherwise approved by the sewer engineer. Maximum length of a lateral will be 150 feet unless approved otherwise by the sewer engineer. Cleanouts will be installed as required by other ordinances.
- (iii) Manholes - Maximum manhole spacing will be 350 feet. Spacing of 400 feet between manholes may be used with the permission of the sewer engineer in special cases. Manholes will not be located in or near the gutterline of the road where they will be exposed to surface flooding. All manholes will have a drop of 0.2 feet between the inlet and outlet built-in. Manhole cones will be a minimum of three feet. Shorter cones and slab top manholes may be used only with the permission of the sewer engineer. Watertight lids will be used and noted on the plans when the manhole is within a 100 year flood plain or may become submerged. Manholes will be provided at all

changes in grade, size or alignment. In junction manhole pipes entering and leaving should be oriented so that the flow angle is more than 90 degrees.

(iv) Sewer Design

- (1) Minimum sewer size will be 8 inches in diameter with a minimum grade of one-half percent for 8 inch sewer.
- (2) Minimum cover over the top of the sewer shall be 4-1/2 feet unless special construction precautions such as cast iron pipe or concrete encasement are specified and approved.
- (3) When sewers are designed with a grade in excess of 20 percent, steep slope anchors will be installed.
- (4) Sewers off public rights-of-way with a minimum permanent width of 20 feet and a construction easement of 30 feet.
- (5) When a sewer crosses a stream or ditch, the design shall be in accordance with Pennsylvania DEP. rules and regulations.
- (6) Sewers shall be located a minimum of ten feet horizontally from any obstruction such as a building. Sewers must be a minimum of ten feet from a water main or 18 inches (measured from top of sewer to bottom of water main) under same. When a sanitary sewer line crosses above or under any other pipeline with a vertical separation of less than 18 inches the sanitary line will be provided with concrete encasement per the standard detail that extends ten feet on either side of the pipe being crossed.
- (7) When connection to an existing manhole which contains an existing pipe of larger diameter the designer will match elevations of the tops of both pipes.
- (8) Depths of sewers along a stream shall be adequate to serve the other side of the stream.

- E. Erosion and Sedimentation Control Plans will be submitted wherever sewers are being constructed through land not covered by the overall Erosion and Sedimentation Plan.
- F. All permit forms must be filled out by the Applicant and will be submitted to Pennsylvania DEP. by the Concord Township Sewer Department.

- G. Plan reviews, inspections during construction, and final inspections will be by the sewer engineer.
- 13. All improvements installed shall be constructed in accordance with the design standards and specifications adopted by Concord Township. If there are no applicable Township, County or State regulations, the Township may authorize that specifications be prepared by a Registered Professional Engineer.
- 14. If a private or community sewage disposal system (other than individual on-lot) is proposed, the Township shall review and approve the plans and inspect the construction.
- 15. OPERATION, REPAIR AND MAINTENANCE⁷

A. The Owner of an Improved Property using or intending to use a sewerage system, including a pump station, not intended to be dedicated to the Township shall be responsible for the operation, repair and maintenance of the sewage system (the Sewage Facilities) in accordance with the requirements of the Township and DEP.

B. To assure the long term proper operation, repair and maintenance of the proposed Sewage Facilities, the Township shall require one or more of the following:

- (1) A maintenance agreement between the property Owner and the Township which establishes the owner's responsibility for operating, repairing and maintaining the Sewage Facilities and the responsibility of the Township for oversight of the Sewage Facilities, and requires the posting of financial security to guarantee performance of the Owner's responsibility.
- (2) A maintenance agreement between the property Owner with an individual, firm or corporation experienced in the maintenance, repair and operation of such Sewage Facilities and the posting of financial security to guarantee performance of the Owner's responsibility.
- (3) The establishment of a property chartered association, trust or other private legal entity to assure long term administration of an operation, repair and maintenance program, including the posting of financial security to guarantee performance of the Owner's responsibility.

⁷ Added by Motion on February 13, 2011.

- (4) A maintenance agreement between the property Owner and the Township which establishes the Township's responsibility for operating, repairing and maintaining the Sewage Facilities and the responsibility of the Owner for all costs of operating, repairing and maintaining the Sewage Facilities, and requires the posting of financial security to guarantee performance of the Owner's responsibility.
- (5) A combination of the requirements in sub-paragraphs B.1,2,3 and 4 above or other requirements permitted by and consistent with the Pennsylvania Sewage Facilities Act (35 P.S. Section 750.1 et seq) and the Clean Streams Law (35 P.S. 691.1 et seq) found necessary by the Township to assure proper installation, maintenance, repair and operation of the proposed Sewage Facilities.
- (6) The required financial security may be by a bond, other security or escrow account sufficient to cover the cost of future operations, repairs and maintenance of the Sewage Facilities, and which meets the requirements of Section 509 of the Pennsylvania Municipalities Planning Code. The bonding, escrow or other security shall be for an amount up to a maximum of 50% for each of the first two (2) years of operation and shall provide for a refund of a portion of the original bond after two (2) years of operation so that only 10% of the cost of the equipment and installation be retained thereafter by the bond holder. This remaining bond totaling 10% of the cost of the equipment and installation shall be maintained for the life of the Sewage Facilities. Pursuant to regulations of the Department of Environment Protection (DEP"), and especially Section 71.72 (a)(1), the financial security shall be forfeited upon notice by the Township and/or DEP of continuing non-compliance with established operation and maintenance standards.

C. The following specific requirements are associated with each of the various methods:

- (1) Homeowners' association. The operation, repair and maintenance of the proposed Sewage Facilities shall be the obligation of a non-profit homeowners' association which shall post financial security to guarantee performance of its obligation. If a homeowners' association is formed it shall be governed according to the following regulations:

- (a) The landowner or developer shall provide the Township with a description of the organization, including its bylaws and methods of maintaining the Sewage Facilities, which shall be acceptable to the Township Solicitor.
- (b) The organization is to be organized by the landowner or developer and operating with financial subsidization by the landowner or developer, if necessary, before the sale of any lots within the development.
- (c) Membership in the organization is mandatory for all purchasers of dwelling units therein and their successors. The conditions and timing of transferring control of the association from developer to homeowners shall be identified.
- (d) The association shall be responsible for maintenance and insurance on the Sewage Facilities, enforceable by liens placed by the homeowners' association. Maintenance obligations also may be enforced by the Township which may place liens to recover its costs.
- (e) The members of the organization shall share equitably the costs of maintaining the Sewage Facilities, in accordance with procedures established by them. Shares shall be defined within the association bylaws. If a member fails to pay his pro rata share, then a lien against an individual property may be made in accordance with the provisions for same in the bylaws of the organization. Association dues shall be structured to provide for both annual operating costs and to cover projected long-range costs relating to the operation, repair and maintenance of any capital facilities (which shall be deposited in a sinking fund reserved for just such purposes).
- (f) The organization shall be responsible for maintenance of and insurance on the Sewage Facilities.
- (g) The organization shall have or hire adequate staff to oversee the Sewage Facilities and maintain the said Sewage Facilities to the satisfaction of the Township,

or shall enter into an agreement with an individual, firm or corporation experienced in the operation, repair and maintenance to provide such operation and maintenance.

- (h) Homeowners' association documentation demonstrating compliance with the provisions herein shall be filed with the Township at the time final subdivision and land development plans are filed with Concord Township. At the time of preliminary plan submission to Concord Township, the applicant shall provide the Township a draft homeowners' association documentation with sufficient detail to demonstrate feasible compliance with this section.
- (i) In the event that the homeowners' association at any time after designation fails to maintain the Sewage Facilities in reasonable order and condition in accordance with any and all approved plans, and the requirements of the Township and DEP, the Township may serve written notice upon such homeowners' association or upon the residents and owners setting forth the manner in which the homeowners' association has failed to maintain the Sewage Facilities in reasonable condition, and said notice shall include a demand that such deficiencies of maintenance be cured within 30 days thereof and shall state the date and place of a hearing thereon which shall be held within 14 days of the notice.
 - (a) At such hearing the Township may modify the terms of the original notice as to the deficiencies and may give an extension of the time within which they shall be cured. If the deficiencies set forth in the original notice or in the modifications thereof shall not be cured within said 30 days or any extension thereof, the Township may forfeit the financial security and the Township shall use the forfeited security to cover the costs of repair for future operation and maintenance of the Sewage Facilities over its design life or until the system is in compliance and being properly operated, repaired and maintained. Any costs incurred by the Township over and above the forfeited security shall be assessed ratably against the properties within the development.

- (2) Experienced operator. In the event the operation, repair and maintenance of the Sewage Facilities are to be by an agreement between the property Owner and an individual, firm or corporation experienced in the operation, repair and maintenance of the Sewage Facilities such arrangement shall be in accordance with the following:
 - (a) The property Owner shall submit evidence to the Township to document to the Township's satisfaction that the Owner's contractor possesses the experience, resources and ability to operate, repair and maintain the Sewage Facilities in accordance with the requirements of the Township and DEP.
 - (b) The agreement shall be in writing and subject to and approved by the Township. The agreement shall obligate the contractor to provide service and supply parts and labor on a 24 hour a day, 7 day a week basis. Said serve shall include an arrangement to pump and haul the sewage to another facility during any period when the Sewer Facilities are out of service. Said service agreement shall be for a minimum of 24 months and the contractor shall be obligated to continue to perform the operation, repairs and maintenance services until the contractor is replaced with a new contractor acceptable to the Township.
 - (c) The property Owner and/or the contractor shall demonstrate to the Township's satisfaction that satisfactory arrangements have been made for the availability on emergency basis of spare parts and replacement parts to assure the proper continuing operation, repair and maintenance of the Sewage Facilities.
 - (d) The property Owner and/or the contractor shall submit reports to the Township on a periodic basis and at least annually to document that the Sewage Facilities are being operated, repaired and maintained in accordance with the requirements of the Township and DEP.
- (3) Township operations. In the event the operations, repair and maintenance of the Sewage Facilities are to be the

obligation of the Township the agreement shall include, inter alia, the following:

- (a) The agreement shall be in writing and shall be for a minimum period of 36 months.
- (b) The agreement shall obligate the Township to operate, repair and maintain the Sewage Facilities in accordance with the requirements of DEP, the Township and the Environmental Protection Agency. The Township shall be authorized to make provisions for the availability on an emergency basis of spare parts and replacement parts to assure the proper continuing operation, repair and maintenance of the Sewage Facilities, and an arrangement to pump and haul the sewage to another facility during any period when the Sewage Facilities are out of service.
- (c) The agreement shall contain provisions whereby the property Owner grants the Township full, complete and free access to the Sewage Facilities on a 24 hour a day, 7 days a week basis.
- (d) The agreement shall require the property Owner to deposit with the Township funds to cover the Township's estimate of the costs of operation, repair and maintenance for the period of the agreement and to include a Township administrative fee of 10% of such estimated costs. The Township shall be obligated to submit quarterly reports to the property Owner itemizing all costs expended for the operation, repair and maintenance.
- (e) The agreement shall obligate the property Owner to provide at its sole cost all ancillary equipment and supplies as reasonably required to cause the Sewage Facilities to operate on a continuing basis in accordance with all design criteria, including without limitation, electrical and telephone power and service, alarm service, water and fuel for generators and so forth.
- (f) The agreement shall contain such other provisions as deemed reasonably necessary by the Township to assure proper operation, repair and maintenance of

the Sewage Facilities and payment of all costs for same by the property Owner.

SAMPLE AGREEMENT

THIS AGREEMENT made this day of , by and between TOWNSHIP OF CONCORD, Delaware County, Pennsylvania (Township) and (Developer).

WITNESSETH:

WHEREAS, the Township, pursuant to the Pennsylvania Sewage Facilities Act, being Act 537, has heretofore adopted a Sewage Facilities Plan (Plan) for the Township; and

WHEREAS, the Township has heretofore amended the Plan by Resolution No. 4 of 1972, Resolution No. 4 of 1977, Resolution No. 5 of 1977, Resolution No. 8 of 1982, Resolution No. 13 of 1982, Resolution No. 4 of 1983 and Resolution No. 5 of 1983; and

WHEREAS, Developer has submitted a request for plan revision to amend the Plan so as to provide for a package treatment plant and facility, discharging into the Branch of the Chester Creek, to accommodate _____ to be constructed in accordance with approved development plans; and

WHEREAS, Township is prepared to amend the Plan upon the terms and conditions set forth herein and upon the execution of this Agreement by Developer.

NOW, THEREFORE, upon the request of the Developer, the parties hereto intending to be legally bound hereby, agree as follows:

1. The Township will request approval of the Department of Environmental Protection of the Commonwealth of Pennsylvania (DEP) to amend the Plan to permit Developer to construct and operate, in accordance with the provisions of this Agreement, a package treatment plant and facility (the Plant) to accommodate _____ to be constructed in accordance with approved development plans.

2. The Plant shall be designed, constructed and operated in accordance with the requirements of DEP and the Township of Concord

3. The Township shall adopt, for approval by the Township, standards, specifications, design criteria, materials and equipment lists, operational requirements, inspection procedures and rules and regulations to govern the design, construction and operation of package treatment facilities in the Township. It is the desire and intent of the Township to have uniformity of

design, construction and operation of package treatment facilities in the Township so that such facilities may, in the future become part of an integrated Township-wide sewage facility.

a. Design. The Township Requirements shall address the issues of location, treatment process, materials, construction methods, equipment (including pumps, lines, treatment plants), plans and drawings, financial feasibility and responsibility, rates and like matters.

b. Construction. The Township Requirements shall address the issues of plans, schedules, inspections, approvals, plan review, penalties, fees and like matters.

c. Operation. The Township Requirements shall address the issues of operations, testing, reports, maintenance, records, inspections, penalties, fees, and like matters.

4. Developer agrees to comply with all such Township Requirements, as approved by the Township.

5. Developer agrees to provide, as part of the land development approval, sufficient adjoining vacant land area suitable for future expansion of the Plant, to satisfy Township needs. The size, location and future use of said additional land area shall be as determined by the Township following consultation with the Township Sewer Department and shall be in conformance with the long-range objectives set forth in the Act 537 Official Sewage Facilities Plan.

6. Developer acknowledges that it is the desire and intent of the Township to establish a Township-wide sewage treatment system, with one or more Township treatment facilities, and required interceptors (trunk lines). In such event, at any time in the future, and in the event such an interceptor (trunk line) is constructed to accommodate Developer's residential development, Developer agrees at its sole cost, to connect its development to the Township system upon ninety (90) days notice. In such event, Developer shall cease operation of its Plant, and shall dismantle and remove the same.

7. As an alternative to the provisions of Paragraph 6 above of this Agreement, the Township may elect to operate the Plant as part of a Townshipwide sewage system. In such event, and upon six (6) months notice from the Township to Developer, the Developer agrees to transfer to the Township or its nominee, the Plant and all its facilities, land, easements and records, free and clear of all liens and encumbrances, for a consideration of one (\$1.00) Dollar. Thereafter, the Plant shall be the property of the Township, or its nominee, who shall be solely responsible for its operation.

8. A copy of this Agreement, properly executed, shall be filed with DEP as part of the Township's request to amend the Plan as herein provided.

9. This Agreement shall extend to and be binding upon the successors, representatives and assigns of Developer and upon the successors and assigns of the Municipality; provided, however, the Developer may not assign its obligations and responsibilities under this Agreement without the prior written approval of the Municipality and without the assignee executing an amendment to this Agreement, agreeing to be bound by the terms and provisions of this Agreement.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed and their respective seals affixed thereto the day and year first above written.

TOWNSHIP OF CONCORD

BY: _____

ATTEST: _____

DEVELOPER

BY: _____

ATTEST: _____