New York City Department of Health and Mental Hygiene

Bureau of Environmental Sciences and Engineering
Public Health Engineering
Gotham Center, 42-09 28th Street
Long Island City, NY, 11101-4132

Spray Ground Submission Package

The emphasis of the spray ground review process is to ensure the design of the proposed facility or modifications to an existing one will provide a safe and healthy recreational water environment. The review consists of comparing the design of the proposed facility or modifications to the requirements outlined in Article §165 of the New York City Health Code (NYCHC).

The submission of plans and specifications must comply with the following requirements.

All plans shall be prepared by a person licensed by the State of New York to practice engineering or architecture. All construction shall comply the requirements of the Uniform Code. Plans, specifications, and reports submitted for formal approval must contain sufficient information to demonstrate that the proposed spray ground, or improvements thereto, will meet the standards set by the NYCHC.

The review consists of several steps. The project is submitted by the design professional to the health department. The project reviewer will provide comments to the design professional. The review comments include discrepancies between the design of the facility and the requirements of the NYCHC. Additional comments may be made concerning issues that may affect public health that are not specifically discussed in the code. These comments must be addressed by the design professional to the satisfaction of the health department. Once the design of the proposed facility or modification meets the requirements and intent of the code, the department of health will issue an approval letter with signed copies of the plans and specifications. Generally, construction may not commence until approval by the health department is granted.

This interactive design report serves as the basis of the submission package and is an important part of the submission and review process. It provides an outline for the design professional as well as an efficient means of capturing information that will streamline and standardize the review process. It also provides a means of capturing an accurate description of the proposed facility or modification that may be useful in the future. For that reason each subsequent resubmission of the plans and specifications should contain an updated copy of the interactive form with the most up to date information.

Please read and follow the instructions on page ii of this package.

Instructions for the Spray Ground Submission Form

The NYCDOHMH-321spray ground submission form has been designed to structure the data so that the project reviewer can accurately determine whether the project design complies with Article § 165.42 of the NYCHC. The form consists of six sections as outlined below.

- **Section 1**: General Information
- **Section 2**: Spray pad, deck, and feature design
- **Section 3**: Water Supply and Wastewater Disposal
- **Section 4**: Spray Pad Water Treatment System
- **Section 5:** Water Disinfection
- **Section 6:** Lighting, electrical, and ventilation
- **Section 7:** Bathhouse Design

The design professional must fill each section with the appropriate information. If additional information is required that cannot fit into the allotted section, include it as an addendum on separate paper and add it to the back of the appropriate section. The end of each section includes a list of required cut sheets. These must be included at the end of the appropriate section as well

The second page contains fields for contact information for both the owner of the proposed facility and the design professional. There is a space for the design professional to both sign and stamp. The form will not be valid and therefore not reviewed until it is both signed and stamped.

One form is required for each spray pad treatment system even if there are many spray pads and treatment systems located within the confines of an aquatic park. A single treatment system may have multiple spray pads, so one form applies to as many spray pads served by each treatment system. The NYCDOHMH-321 spray ground submission form must be submitted in addition to the plans and specifications.

Instructions for Hydraulic Calculations

The purpose of the hydraulic calculations is to demonstrate that the specified filtration pump, filtration equipment, automatic flow rate controller(s), water velocities, and other equipment in the water treatment system will perform as specified and required by the NYC Health Code. The calculations must be performed so the values can be confirmed by the project reviewer. There are several methods by which these calculations may be performed. However, one of the most readily checked methods is the one that uses the extended Bernoulli equation using the Blaisus friction calculator with the Fanning or Moody friction factor. Note that the Fanning friction factor is a factor of four (4) times the Moody friction factor and it should be noted on the calculations which factor is used.

A schematic of the path that is modeled is required to be included with the calculation sheet. Highlight on the drawing the path that is chosen to model. The calculation is required to include all changes in height, piping, fittings, valves, filters, heaters (if used) and any pressure difference that is imposed by the automatic flow controller. A listing of all values must be included so that the reviewer can check the calculations. The table below shows an example of the minimum information that must be supplied for one method of calculation.

Component	Flow rate gpm	ID of pipe or fitting*	Velocity ft/s	e/D	L ft	f* for pipes	K for fittings	Cv** for fittings	P ft of H20

*use actual inside diameter of the pipes, ** indicate whether the Fanning or Moody friction factor is used, ***the units of pressure for most Cv formulas are not in feet of water and must be converted.

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New York City Department of Health and Mental Hygiene

Spray Ground Submission Form

Spray Ground Name:

Department of Health Engineer Signature

Submission Date: _____

Please provide a brief description of the proposed project and the scope of work.

Contact Information

Contact Information

Spray ground owner:		
Name of company or corporation:		
Owner representative:		
Address:		
City:	State:	ZIP Code:
Phone:	E-mail:	Fax:
Design firm:		
Name of company:		
Engineer/architect:		
Address:	State	ZIP Code:
Phone:	E-mail:	Fax:
Signature of design engineer or architect:		Date:

Apply professional seal and license number

The following questions provide a summary of the design of the spray pad and fulfill the requirements of Article§165.42 of the NYCHC.

Section 1: General Information

1.1 What is the spray pad shape? _____

1.2 What is the spray pad area in feet? *(Include only the spray pad, not the decking that surrounds the spray pad)*

_____

1.3 On what page is the drawing of the spray pads shown? _____

1.4 On what page of the drawings is the spray pad surface specified? _____

1.5 How many features will the proposed spray pad have? _____

1.6 How many drains will the proposed spray pad have? _____

1.7 What is the maximum feature flow rate in gpm? _____

1.8 Is the proposed spray pad treatment a bypass or full flow filter system? (*Note: A full flow filter system filters all the water before it is supplied to the spray pad. A bypass filter system removes water from the treatment tanks, filters it, and then returns it while the water supplied to the features is not filtered.)*

_____

1.9 What is the filter flow rate in gpm? _____

1.10 What is the feature to filter flow rate ratio? *(Note: Feature to filter flow rate ratio must be less than < 3.0. Full flow filtration s stems have a feature to filter flow rate of 1.0)*

_____

1.11 What is the anticipated maximum patron use? _____

1.12 What is the anticipated average patron use? _____

Section 2: Spray Pad, Deck and Feature Design

2.1 What is the spray pad material? *As Required by §165.42(b)(1)*:

_____

2.2 What is the spray pad finish (e.g. brushed concrete, slip resistant coating)? *As Required by §165.42(b)(2) (Note: Include a cut sheet for a surface material if it is other than concrete)*:

_____

2.3 What is the slope of the spray pad toward the drain (inches per foot)? *As Required by §165.42(c)(1)*:

_____

2.4 On what drawing are the drains shown? *As Required by §165.42(c)(2) (Note: The size number, and locations of the spray pad drains must be specified)*:

_____

2.5 On what drawings page is the drain valving shown and detailed? The drain valving provides a means for discharging spray pad water to waste prior to returning to the treatment tank. *As Required by §165.42(c)(3)*:

_____

A. How is the valving in the plumbing that diverts water to waste actuated? *(e.g. manually, electronically, timer, PLC controls)?*:

_____

B. Where is the spray pad waste water disposed? *(e.g. sewer, on-site septic)?*:

_____

2.6 What manufacturer and model of the grates are used on the spray pad? *As Required by §165.42(c)(4)*:

_____

A. What is the size of the openings of the spray pad grating? *Note: Include a cut sheet for the spray pad drain grates (openings must be less than or equal to 0.5 inches)*:

_____

2.7 What material is used for the decking that surrounds the spray pad? *As Required by §165.42(d)(1) (Note: The deck material must be a uniform, easily cleaned, impervious material and protected from surface runoff. Include a cut sheet for the proposed surface material if it is other than concrete)*:

_____

2.8 What is the slope of the decking that surrounds the spray pad? *As Required by §165.42(d)(2) (Note: Minimum of one fourth inch per foot required to drains or grade.)*

_____

2.9 Describe the type of deck drains used to convey water (to waste) from the decking that surrounds the spray pad. *As Required by §165.42(d)(3) (Note: The deck may drain to grade.)*

_____
_____
_____

A. If multiple drains are used (vs. a trench type drain) how many square feet are the tributary to each drain?

_____

B. How is the water that runs from the deck disposed of (e.g. sanitary sewer)? *(Note: the method of disposal must be approved the local health department)*

_____

2.10 Describe the type of antisiphon protected hose bibs that supply water for flushing or the spray pad and deck areas. What drawing number shows the locations of the hose bibs? *As Required by §165.42(d)(5):*

_____
_____
_____
_____

2.11 Describe the spray features to be used on the spray pad. *As Required by §165.42(e):*

Feature Designation Manufacturer Model

_____
_____
_____
_____
_____
_____
_____

2.14 Describe the type of fencing used to prevent access by patrons and animals when the spray pad is not supervised. *As Required by §165.42(g) (Note: Include a cut sheet for the foot shower):*

_____
_____
_____

Cutsheets to be provided for this section:

- Spray pad surface material if other than concrete
- Drain Gates
- Deck drain gates
- Foot shower
- Fencing
- Features

Anything else pertinent to this section

2.15 If the features cannot be described using the grid above, please provide an explanation why below:

2.16 What is the maximum velocity of the water flowing from a feature? *(Note: Include a cut sheet for the features used.)*

2.17 Add any additional information that was not captured above, that may be helpful to the project reviewer

Section 3: Water Supply and Wastewater Disposal

3.1 What is the source of water that supplies all plumbing fixtures, including drinking fountains, lavatories, and showers? *As Required by §165.43(a)(1)*:

_____

3.2 Explain how the water distribution system is protected against backflow of spray pad water. *As Required by §165.43(a)(1)*:

_____
_____
_____
_____

A. Which drawing shows the air gap or other method that prevents water from backing up into the water distribution system from the spray pad treatment tank/system?

_____
_____

3.3 How are sanitary wastes disposed (i.e. subsurface waste disposal or municipal sanitary sewerage system)? *As Required by §165.43(b)(1)*:

_____

3.4 How is water that is used to flush the spray pad disposed (i.e. subsurface waste disposal, municipal sanitary sewerage, etc.)? *As Required by §165.43(b)(2)*:

_____
_____
_____

A. What drawing shows the air gap that prevent backup of wastewater onto the spray pad?

_____

Section 4: Spray Pad Water Treatment System

4.1 Is the water combined or recirculated with water from other aquatic facilities such as swimming pools, water slides or wave pools? *As Required by §165.45(a)*:

_____

If the answer is NO and spray pad recirculation system treats water from the spray pad only (stand-alone system), go directly to section 3.5.

4.2 Is the water from the spray pad treated with ultraviolet light prior to combining or circulating with water from other aquatic facilities such as swimming pools? *As Required by §165.45(a)(2)(A)(1).*

_____

Fill out one of the following two sections 165.45(a)(2)(A)(2)(i) 4.3& (ii) 4.4 that describe the shared treatment system:

4.3 Is there an ultraviolet light reactor in the circulation system that treats all the water in the other aquatic facilities? *As Required by §165.45(a)(2)(A)(2)*

_____

If you answered YES to the question above, perform the following calculation to determine the minimum flow rate through the ultraviolet light reactor:

A. Volume of pool gallons_____

$$Q\ (gpm) = \frac{V*(14.8-\ln(V))}{720} \qquad \text{equation (1)}$$

Use the above equation to calculate the minimum flow in gpm.
Solution to equation (1)

B. Minimum UV reactor flow as per equation 1: _____

4.4 The minimum filtration flow rate shall be at least the sum of the flow rate for the pool type specified in 165.45(a) and one third of the spray feature flow rate. *As Required by §165.45(a)(2)(C)(iii)(Note: All water that flows through the UV reactor must also flow through the filtration system).*

Pool Type	Minimum Turnover Rate
Swimming Pool	6 Hours
Wading Pool	2 Hours
Spa	0.5 Hour

A. What is the feature flow rate (gpm)? _____

B. What is the minimum filtration rate based on type of pool (gpm)? _____

Q (gpm)=Minimum filtration rate based on pool type+ 1/3 feature flow rate- equation (2)

Solution to equation (2):

Minimum recirculation rate (equation 2) (gpm)

C. Minimum flow rate through the recirculation system and the ultraviolet light reactor is the larger value between equations (1) and (2) (gpm)

_____

D. Actual flow rate through the circulation system (gpm)

_____

4.5 What is the feature flow rate (gpm)? *As Required by §165.45(a)(2)(B)*:

_____

A. What is the proposed design for the filtration system (full flow or bypass)?

_____

B. If the proposed filtration system is neither "full feature filtration" nor "treatment tank filtration" explain the proposed filtration method.

_____

_____

_____

C. What is the feature to filter flow rate ratio? *(Note: The feature to filter flow rate may not exceed 3.0)*:

_____

What is the working volume of water retained in the treatment tanks in gallons?

_____

D. What is the amount of time in hours required for one turnover of the treatment tank with respect to the UV reactor flow? *(Note: Use the minimum feature flow rate)*:

_____

_____

4.6 What is the manufacturer and model of the recirculation pump? (Complete the pump hydraulic worksheet below.) *As Required by §165.45(b)(4)(d)*:

_____

A. What is the manufacturer and model of the feature pump?

_____

B. What is the manufacture and model of the filter?

_____

How to use the head loss calculation worksheet:

The form has nine columns that are needed to determine the pressure drop of the each component in the flow path of the recirculation system. The first column lists the component in the flow path. There are four different possibilities that can be chosen including straight run of pipe, fitting (wye, tee, etc), valve, or absolute pressure drop (for heaters and items like a flow control valve). The next column requires the flow rate in gallons/minute. This may vary throughout the recirculation system as pipes branch off and a stream joins a flow. The next column is the velocity of the water through the item being modeled. This is particularly important for straight runs of pipe and fittings. The next column is the Reynolds number, which is calculated using the following formula: Re=pDV/j..t and is essential for straight runs or equivalent lengths of pipe. Use the values for p and J.l that are consistent with the temperature of the water that will be used. Input the value of "L" only if the component is a straight run of pipe or if the fitting is being modeled as an equivalent length of pipe. The next column f, K, or Cv will automatically be produced based on whatever component type that was chosen in the first column. The column labeled "Value" is asking for the value off, K, or Cv from the earlier column. The last two columns require the input of the pressure drop that is due to flow through the component being modeled. Please make sure the proper units are being used for each column. The Health Department project reviewer will check the data that are input into this worksheet.

Hydraulic Calculation Worksheet

T(F) = _____

ε = _____

μ = _____

p = _____

K = Loss coefficient for calculating the pressure drop associated with flow through a fitting
f =Friction factor for calculating pressure drop due to wall friction
Cv = Valve coefficient associated with low through the valve

$$Q = C\,\Delta P_{(psi)} \quad ;$$

V = Average water velocity through the pipe

Q = Volumetric flow rate of water in the pipe

ε = Specific roughness for pipe materials (ft)

Component Type	Q(gpm)	Dp (feet)	V (ft/s)	Reynold #	L (ft)	F, K or Cv	Value	ΔP (lbf/ft2)	ΔP (ft H2O)	Add Row
										Remove this Row

Total ΔP = _____

4.7 Include a schematic of the recirculation system and associated equipment. The schematic must include all filters, pumps, control valves, chemical control systems, etc. The flow rates must be included on the schematic as well as water velocities. Include with the schematic the following information. *As Required by §165.45(a) (Note: All chemical feeders and pumps, circulation pumps, filters, and skimmers (if used) are required to be tested and listed by the National Sanitation Foundation (NSF) or another testing laboratory under standards promulgated by NSF)*:

- Manufacturer and model of pump(s)
- Manufacturer and model of filter(s)
- Manufacturer and model of the automatic flow regulators in the feature and filter systems
- Piping material
- Manufacturer and model of the chemical control system
- Specification and location of all control valves
- Volume of the treatment tank (effective volume of water)
- Manufacturer and model of the water level control system
- Manufacturer and model of the chemical feed system(s)
- Location of backflow prevention systems/methods that protect the water distribution system
- Elevations for pipe flow calculations
- Treatment tank overflow disposal location
- Manufacturer and model of the ultraviolet light reactor(s)

4.8 If the spray pad system filters all the water that is supplied to the features, a reduced pumping rate for the filtration/treatment of the spray pad treatment tank water may be used when the spray pad features are not in operation. *As Required by §165.45(a)(C)(ii) (Note: A minimum 4-hour turnover rate is required).*

A. Will the spray pad filtration rate be reduced during the time the spray pad features are not in use?

_____

B. If so, explain how the system is activated from one phase to another:

_____

4.9 What is the material of construction of the treatment tank? *As Required by §165.45(p)(1)*:

_____

A. What is the manufacturer and model of the automatic water level controller that will be used to maintain the water level in the treatment tank?

_____

4.10 Explain how the effective water volume in the treatment tank is sufficient to assure continuous operation of the filtration system. Note: The volume of water must be sufficient to prevent the tank from going dry when the spray pad is started from a dry condition. *As Required by §165.45(p)(2)*:

_____

_____

4.11 Explain how the treatment tank design provides ready access for cleaning and Inspections and what size openings are available for access? *As Required by §165.45(p)(4)*:

_____

_____

_____

A. Explain how the treatment tank has been designed for complete draining.

_____

_____

B. What is the proposed method of cleaning the inside of the treatment tank?

_____

_____

C. What drawing shows the location of the air gap through which overflow water passes to waste from the treatment tank?

_____

_____

4.12 What drawing shows the air gap or other system that prevents backflow and back siphonage of water into the potable water distributions system? *As Required by §165.45(p)(5)*:

_____

_____

4.13 Describe what is used to prevent or remove potential debris from the surface of the treatment tank water (i.e. screens, skimmers). *As Required by §165.45(p)(6)*:

_____

_____

4.14 Describe how the filtered/treated water inlets are sufficient in quantity, location and operation to completely mix the water in the spray treatment tank. *As Required by §165.45(p)(7)*:

_____

_____

4.15 What is the plumbing material used for the spray ground water treatment system? *As Required by §165.45(c)*:

_____

4.16 What drawing shows the schematic that shows the water velocities in the pipes in the treatment system? *As Required by §165.45(c)(2)*:

_____

4.17 Include the plumbing color code. *As Required by §165.45(c)(3)*:

_____

4.18 Explain how the equipment and piping have been designed to drain completely. *As Required by §165.45(c)(4)*:

_____

_____

4.19 What drawing shows the location and specification of the strainers that are required to be installed upstream of the filter and feature pumps? *As Required by §165.45(e) (Note: Pumps that have a filter installed upstream of it do not need a strainer)*

_____

_____

4.20 What is the manufacturer and model of the proposed filtration system pumps? *As Required by §165.45(d)*:

_____

A. Is the proposed location for the filter pump below the hydraulic grade?

_____

B. Is the proposed filter pump self priming?

_____

C. Include a set of hydraulic calculations that support the use of the filtration system pump. See the example in the instructions that shows the information that is required for the review process.

_____

_____

4.21 Explain how the proposed location for the filter(s) provides adequate clearance and facilities for ready and safe inspection, maintenance, disassembly, and repair. *As Required by §165.45(i)*:

_____

_____

_____

A. What type of filter is proposed?

_____

4.22 What is the design filter flux= flow rate [gpm/ft^2] filter area? *As Required by §165.45(i)(1) (Note: the maximum filter flow rate is 15 gpm/ft^2 for sand filters, 1.5 gpm/ft^2 for diatomaceous earth filters (2.0 gpm/ft^2 for body feed filters), and 0.375 gpm/ft^2 for cartridge filters or the maximum):*

_____

A. **Sand filter accessories:**
What drawing shows the location of influent and effluent pressure gauges and the backwash sight glass?

_____
_____

B. **DE filter accessories:**
What drawing shows the filter piping that is designed to re-filter or waste the effluent until a uniform body coat is applied?

_____
_____

How much diatomaceous earth can the body feed equipment apply per square foot of filter area in 24 hours? *(Note: Not less than 0.1 pound per square foot in 24 hours)*

_____

What type of diatomaceous filter is proposed?

_____

What drawing shows the location of influent and effluent pressure gauges, the backwash sight glass,and the vacuum limit switch that is interconnected with the pump (for vacuum systems)?

_____

C. **Cartridge filter accessories:**

What drawing shows the influent and effluent pressure gauges for the cartridge filter?

_____

4.23 What is the brand and model number of the flow measuring device (flow meter) that is used in the recirculation system? *As Required by §165.45(j)*:

_____
_____

A. Explain how the proposed location of the filtration flow meter meets the installation requirements of the manufacturer (i.e. the length of straight pipe up and downstream of the flow meter) :

_____
_____
_____

4.24 What is the manufacturer and model of the proposed automatic flow regulation device that will maintain the flow rate in the recirculation system and to the features? *As Required by §165.45(j)(2)*:

_____

A. Filter pump: _____

B. Feature pump: _____

C. If the filtration system includes more than one filter, explain how the flow through the filters will be controlled so that the maximum allowable filter flux, or m/s, ft., is not exceeded.

_____
_____
_____

Cutsheets needed for this section:

- Recirculation (filter) pump cut sheet and pump curve
- Feature pump cut sheet and pump curve
- Automatic water level controller
- Device used to remove debris from the surface of the treatment tank water
- Pump strainers (if not included with the pump)
- Flow meter for the filtration system
- Flow meter for the feature system
- Filter

Section 5: Water Disinfection

5.1 What is the manufacturer and model of the proposed chemical disinfectant feeder for the water for the spray pad? *As Required by §165.45(k)(1)*:

_____

_____

A. Explain how the chemical feeder is designed to prevent foreign materials from creating a stoppage in the chemical feed pump.

_____

_____

5.2 Provide a calculation that supports that the chemical feeder is capable of supplying up to 10 mg/1 of chlorine or equivalent in the recirculation system. The formulas on the next page may be used as a reference. *As Required by §165.45(k)(3)*:

_____

_____

_____

A. Fill out only one

Liquid Chlorine:
Based on 12% sodium hypochlorite solution, the number of gallons per day required for the liquid chlorine chemical feed pump in gallons per day is: _____

Solid Chlorine:
Based on 100% chlorine, the number of pounds per day of solid chlorine is (lb/day):

_____

The formulas below provide a means of calculating the chemical feed pump or the solid feed capacity for chlorine disinfecting systems. For a salt generator, use the solid feed capacity to obtain the number of pounds per day required.

Chlorine feed capacity: _____

$$\text{Minimum pump capacity (gpd)} = \frac{\text{flow for recirculation system gallons} \times 24\ \frac{\text{hr}}{\text{day}} \times 60\ \frac{\text{min}}{\text{hr}} \times \text{LO ppm}}{1.22 \times \text{Concentration of feed solution in ppm}}$$

$$\text{Minimum soHdfeed capacity (lbm/ day)} = 0.120\ \frac{\text{1b}}{\text{m}}\ \text{Flowrate (gpm)}$$

(day) (gpm)

Chlorine solution converter: 10%= 100,000 ppm 12%= 120,000 ppm 15% = 150,000 ppm

B. What is the manufacturer and model of the automatic chemical controller for the disinfectant and pH feed system?

_____

C. Explain how the chosen chlorine feed system is capable of providing flow of disinfectant solution to the recirculation system under all conditions. (i.e. the chemical feed pump must be capable of producing flow against the pressure in the recirculation system):

_____

_____

_____

D. If calcium hypochlorite solution is fed into the recirculation system as the disinfectant, provide the anticipated quantity of chlorine needed per day and the total volume of the solution tanks that are maintained. *(Note: at least two solution tanks with a minimum capacity of one-day supply is required.)*

_____
_____
_____

5.3 What are the manufacturer and model of the proposed ultraviolet light reactor? *As Required by §165.45(k)(9)*:

_____

A. What drawing shows the location of the ultraviolet reactor that treats all the water that is supplied to the spray pad?

_____

B. At what flow range has the ultraviolet light reactor been validated? (*Note: include a copy of the validation letter/ certificate in this section)*

_____

5.4 165.45(k)(9)(B) Is the proposed ultraviolet light reactor capable of having the quartz sleeves and sensor window cleaned without mechanical disassembly?

_____
_____

5.5 What is the manufacturers recommendation for calibration frequency of the ultraviolet light intensity sensor? *As Required by §165.45(k)(9)(C)*:

_____
_____

5.6 Explain how the system that supplies water to the features prevents flow to the features when the light ultraviolet light intensity is lower than required to produce 40 mJ/cm^2 for the maximum flow rate through the reactor? Include an extra area if needed. *As Required by §165.45(k)(9)(D)*:

_____
_____
_____
_____
_____

5.7 What are the specifications of the audible alarm that sounds to warn of impending shutdown of the features in the event of a failure of the ultraviolet light system? *As Required by §165.45(k)(9)(E)*:

_____
_____

A. How the alarm is activated (i.e. what signal activates the alarm)?

_____

5.8 Where is the UV reactor housed? *As Required by §165.45(k)(9)(G)*: (*Note the reactor must be protected against extremes of temperature and in an enclosure)*

_____

_____

5.9 What page of the drawings includes a specification that the facility shall maintain a spare UV lamp and other necessary equipment to effect prompt repair of the UV reactor? *As Required by §165.45(k)(9)(H)*:

_____

_____

5.10 Is bromine the proposed chemical disinfectant? *As Required by §165.45(k)(4)).*

_____

A. If bromine is proposed as the chemical disinfectant, what is the manufacturer and model of the chemical feeder?

_____

B. Demonstrate, using calculations that the bromine feeder is capable of feeding up to 22 mg/l of bromine in the treatment tank distribution system?

_____

_____

5.11 Is ozone proposed to be used as an auxiliary disinfectant for the spray pad treatment water tank? *As Required by §165.45(k)(4))(Note: If ozone is not proposed for this system, skip to Section 165.45 (m)).*

_____

_____

A. What is the maximum application rate of ozone for the proposed ozone generator (g/hr)?

_____

5.12 What automatic device is used to deactivate the chemical feeders when there is no flow in the spray pad treatment tank recirculation system? *As Required by §165.45(1)*:

_____

_____

A. If there a flow sensor used to detect the flow in the system, where is it located in the drawings?

_____

5.13 Is the ozone system a corona discharge generator? *As Required by §165.45(1)(5)(B)*:

_____

Note: If the ozone is generated with a corona discharge it must be a vacuum system. If no, proceed to Section 165.45 (1) (5) (C)

Explain how backflow of spray pad water into the ozone generator (OGE) is prevented *As Required by §165.45(1)(5)(C)*:

_____

_____

5.14 What manufacturer and model of the proposed pH control system? *As Required by §165.45(m)*:

_____

A. What chemical is proposed for pH adjustment?

_____

If carbon dioxide is used for pH adjustment, fill out the next section, otherwise go to Section 6-3.24 (c)

5.15 What page of the drawing shows the location of the carbon dioxide injection point? *As Required by §165.45(m)*:

_____

A. How much time does the water spend in the pipe between the carbon dioxide injection point and discharge into the treatment tank or discharge to the spray pad? Show calculations to support this number.

_____

_____

5.16 What drawing shows the proposed location of the carbon dioxide cylinder storage area? *As Required by §165.45(m)(2)* (*Note: cylinders should be inaccessible to the general public)*

_____

A. What page of the drawings shows the location of the carbon dioxide injection point?

_____

B. How much time does the water spend in the pipe between the carbon dioxide injection point and discharge into the treatment tank or discharge to the spray pad? Show calculations to support this number.

_____

_____

_____

5.17 What persons shall be designated to operate the cylinders? *As Required by §165.45(m)(3)* (*Note: these persons should also be designated in the safety plan)*

_____

_____

5.18 Describe the protective enclosure in which the carbon dioxide cylinders shall be stored. *As Required by §165.45(m)(3)*:

_____

_____

A. If the cylinders are to be stored indoors, describe how the proposed ventilation system will protect in case of a carbon dioxide leak.

_____

_____

_____

_____

_____

5.19 Describe how the plumbing and chemical feed equipment is resistant to the action of the chemical applied to disinfect and adjust the pH of the water. *As Required by §165.45(c)*:

_____

_____

5.20 What is the manufacturer and model of the colorimetric test kits that are proposed to be used for testing the disinfectant levels and pH treatment tank water? *As Required by §165.23(c)* (*Note: Include a cutsheet for the kit(s))*

_____

_____

Cutsheets needed for this section:

- Ultraviolet reactor
- Ultraviolet light reactor validation certificate
- Chlorine and pH controller
- Low ultraviolet light intensity alarm
- Ozone generator
- Carbon dioxide cylinder retaining system (if applicable)
- Disinfectant and pH test kit
- Chemical feed pump(s) and/ or disinfectant feed system

Section 5: Lighting, Electrical and Ventilation

6.1 Will artificial lighting be used around the spray pad? *As Required by §165.47(a)*:

_____

A. If the spray pad is located outdoors will it be used at night?

_____

B. Explain why the amount and type of lighting specified (if used) provides sufficient illumination so that all portions of the spray pad and deck may be readily seen. Has a minimum of 50 foot candles for the spray pad and/ or the deck area been provided?

_____
_____
_____

C. Explain why the amount and type of lighting specified for the mechanical and supply room(s) is sufficient to illuminate all equipment and supplies:

_____
_____

6.2 What page of drawings contains the specifications that electrical work must conform to the New York City "Electrical Code" and the National Electric Code of the National Underwriters Laboratory or any successor regulation of the code. *As Required by §165.47(a)(1)*:

_____

6.3 On what page of the drawings is the specification that prohibits electrical wiring from passing overhead within a 20-foot horizontal distance of the spray pad? *As Required by §165.47(a)(6)*:

_____

6.4 On what page of the drawings is the specification that ground-fault circuit interrupters are to be provided on all lighting and other electrical circuits in the area of the spray pool? *As Required by §165.47(a)(8)*:

_____

6.5 Explain how ventilation for the bathhouse meets the requirement of Article 12 of the New York City Building Code. Include what the Code requirements are for the bathhouse and the details of that which has been specified. *As Required by §165.47(b)*:

_____
_____
_____

A. Explain how the ventilation for the mechanical and equipment storage room(s) meets the requirement of Article 12 of the New York City Building Code. Include in this explanation what the Code requirements are for the mechanical and equipment storage room(s)and the details of that which has been specified.

_____
_____

B. Explain how the ventilation for the indoor spray pad enclosure (if the spray pad is located indoors) meets the specifications of the Building Code. Include in this explanation what the Building Code requirements are for the spray pad enclosure and the details of that which has been specified

_____
_____

C. Add any other information that may be helpful to the project reviewer that was not captured above.

_____
_____

Section 7: Bathhouse Design

7.1 Explain how the number of sanitary facilities is sufficient to serve the anticipated patronage of the spray ground. *As Required by §165.49(d)*:

_____
_____
_____

A. What drawing(s) show the design of the bathhouse?

_____

B. What is the material of the floor of the bathhouse?

_____

7.2 Explain how the number of hand washing facilities is adequate for the number of anticipated patrons of the spray ground? *As Required by §165.49(e)*:

_____
_____
_____

7.3 What drawing(s) show the proposed diaper changing area? *As Required by §165.49(f)*:

_____
_____

7.4 Where on the drawings are the antisiphon protected hose bibbs shown? *As Required by §165.42(d) and 165.49(h)* (*Note: the hose bribbs are for flushing the bathhouse as needed)*

_____
_____

Cutsheets needed for this section:

- Diaper changing station