



IOWA DEPARTMENT OF NATURAL RESOURCES  
 WATER SUPPLY ENGINEERING SECTION  
**CONSTRUCTION PERMIT APPLICATION**  
 SCHEDULE-13a, Chemical Addition

Date Prepared _____	Project Name/Description : _____
Date Revised _____	Purpose of Project: _____

1. Design Data:
  - a. Chemical Name (i.e. Chlorine, Orthophosphate, Caustic soda) \_\_\_\_\_
  - b. State (Granular, Liquid, etc.) \_\_\_\_\_
  - c. Purity: \_\_\_\_\_ % Density: \_\_\_\_\_ lbs./gallons
  - d. Feed Rate: \_\_\_\_\_ mg/L
  - e. Manufacturer and Model of the Chemical Feeder: \_\_\_\_\_
  - f. Minimum to Maximum Feed Rate of Feeder: \_\_\_\_\_ gal/day to \_\_\_\_\_ gal/day
  - g. Feeder Accuracy: \_\_\_\_\_ % Max. Discharge Pressure: \_\_\_\_\_ psi
  - h. Type and capacity of **Scale** if provided: \_\_\_\_\_
  - i. Type and Capacity of **Day Tank** if provided: \_\_\_\_\_
  - j. Type and Capacity of **Bulk Tank** if provided: \_\_\_\_\_
  
2. For chlorine addition, what is the raw water concentration of:
  - a. Iron \_\_\_\_\_ c. Hydrogen sulfide (H<sub>2</sub>S) \_\_\_\_\_
  - b. Manganese \_\_\_\_\_ d. Ammonia (as N) \_\_\_\_\_
  
3. Average Day water demand: \_\_\_\_\_ gallons per day.  
 Peak Day water demand: \_\_\_\_\_ gallons per day.
  - a. What is the rate of flow of the **water** at the chemical injection location? \_\_\_\_\_ gallons per minute  
 (Note: This is usually equal to the capacity of the well pump(s) or high service pump(s) discharging into that line.)
  - b. If the flow rate at the chemical injection site is controlled by a VFD, how is the chemical feed pump controlled?  
 \_\_\_\_\_
  
4. Describe the method of determining the liquid level in day and bulk storage tanks: \_\_\_\_\_ Spec. Page No. \_\_\_\_\_
  
5. Describe the method of conveying chemicals to and from bulk storage:  N/A \_\_\_\_\_ Spec. Page No. \_\_\_\_\_
  
6. Describe the control system for each feeder (including on/off, rate adjustment, etc.): \_\_\_\_\_ Spec. Page No. \_\_\_\_\_
  
7. How is antisiphon and cross connection control provided for each feeder (water makeup, chemical feed lines, drains & overflows)? \_\_\_\_\_ Spec. Page No. \_\_\_\_\_
  
8. Are separate chemical transfer and feed lines provided for each chemical?  Yes  No
9. Are chemical storage tanks located above grade?  Yes  No
10. Does each tank containing chemical solutions have a valved drain?  Yes  No  
 (Note: Does not apply to shipping containers or day tanks less than 30 gallons in volume)
11. Is secondary containment provided for chemical storage facilities?  N/A  Yes  No
12. Are all acid storage tanks vented to the outside atmosphere?  N/A  Yes  No
13. If carbon dioxide is being fed:  N/A
  - a. Is carbon dioxide being generated at the treatment plant site?  Yes  No  
**If Yes**, what precautions have been taken to prevent the possibility of carbon monoxide entering the treatment plant from recarbonation components?  
 \_\_\_\_\_
  - b. Maximum CO<sub>2</sub> feed rate: \_\_\_\_\_ mg/L
  - c. Design detention time in Mixing Basin: \_\_\_\_\_ minutes; in Reaction Basin: \_\_\_\_\_ minutes
  - d. Is a baffle provided separating the mixing basin from the reaction basin?  Yes  No