Assumptions to make for horizontal:

The spacing between baffles must be at least 45 cm since we are using concrete baffles.

The T/S can be the optimal value of 3.

1. Set P as height of water at end of flocculator.

2. Use S.FlocBaffleIterative to calculate the spacing using a T/S of 3.

3. Make sure that the S is greater than 45 cm, if it isn’t, set it at 45 cm.

4. Calculate T from the T/S ratio of 3 and the S found in step 3.

5. Calculate head loss in flocculator and see if it is significant. If it is, tapered spacing might need to be done.

Create an algorithm using slide 73 of Monroe’s notes on flocculation that chooses a minimum flow rate for horizontal flocculation using the height of the sedimentation tank and a minimum baffle spacing of 45 cm.

Create an if statement for S. If Q> Qmin, recalculate S as higher than 45 cm.

Calculate the number of spaces using this S from N.FlocSpacesF

Need to look up how things are plotted on the y axis

Solution Algorithm

1. Define array of ratio of baffle height to baffle spacing from experimental results ()

2. Define array of the fraction of the maximum collision potential that could be achieved if the energy dissipation rate was uniformly distributed from experimental results ()

3. Define array of collision potential from experimental results ()

4. Define array of minor loss coefficients from experimental results ()

5. Define array of maximum energy dissipation rate over average energy dissipation rate from experimental results ()

6. Use linear interpolation of the experimental results to create functions for , and 

7. Create a function that determines the number of spaces in a flocculator channel and another function that determines the spacing between the baffles. **Make sure they create an odd number of baffles.**

~~8. Create an iterative solution to solve for the space between the baffles since we don’t know H/S before calculating S.~~**Since we know the H/S ratio (as opposed to the horizontal flocculator where we don’t), create a function that directly solves for S.**

9. Create a function for the collision potential

~~10. Create a function for the maximum energy dissipation rate.~~

~~11. Create an algorithm to find the target energy dissipation rate as a function of the collision potential.~~

~~12. Create an algorithm to find the number of spaces in each channel with the correct energy dissipation rate and cumulative collision potential.~~

13. Determine the height of the water at the end of the flocculator (equal to the height of the water in the sed tank). This is equal to the minimum height of the tank. For now, set this value as P (the height of the water in the flocculator).

14. **Calculate S using the function created in step 8.**

**15. Create a function that makes S the maximum of what was found in step 14 and 45 cm.**

**16. Calculate T (width of channel) as the S found in 15 multiplied by Pi.TS=3.**

**17. Calculate the number of spaces in each channel using the function created in 7.**

**18. Determine the collision potential in each space.**

**19. Divide the target overall collision potential by the collision potential in each space to find the total number of spaces. Round this value up?**

**20. Divide the total number of spaces by the number of spaces per channel to get the number of floc channels. Round this value up?**

**21. Calculate the head loss per baffle in each channel, per each channel, and for the whole flocculator.**

**22. Make sure the head loss is negligible enough for untapered flocculation? Algorithm or manual?**

2**3**. Calculate the total length of all the flocculator channels and the residence time in the flocculator.

24. Determine the height and width, and thus the area, of the ports that connect the floc channels.

25. Calculate the **length of the baffles**. ~~Subtract half of the freeboard height from the length of the top baffles to allow a place for water to go in the event of an overflow.~~

25. Create an array for the X (distance along flocculator) positions of the baffles. **Same as vertical code? Change because odd spaces in all channels?**

26. Create an array for the Z (height) positions of the baffles. **(All 0)**

27. Create an array for the length of the baffles in each channel.

**28. Figure out why vertical code doesn’t have Y array using MathCAD to AutoCAD scripts. Create one for horizontal?**