The flocculator is used to make small clumps of particles into big ones so that they can settle out more easily in the next unit process, which is sedimentation. This is most easily achieved by having particles collide with each other. Since the AguaClara plants use no electricity, this must be done by controlling the flow of the water. The water flows around a series of baffles for this to occur. The baffles are in several channels to minimize construction by maximizing shared wall space. There are N.FlocChannels channels. The width of each channel is W.FlocChannel.

The main goal of the design is to achieve the correct energy dissipation so that the particles are mixed well without breaking up from too much mixing. The target energy dissipation rate that was set for the flocculator was ED.Floc. The actual energy dissipation in all channels except the last was ED.FlocChannelFirst. The actual energy dissipation in the last channel is ED.FlocChannelLast.

The particles must collide a certain number of times for them be large enough to settle out in the sedimentation tank but not prematurely in the flocculation tank. The target collision potential that was set for the flocculator was CP.Floc. The actual total collision potential was CP.FlocTotal.

The height of the floc tank wall was calculated by adding the head loss of the water through the flocculator to the height of the water at the end and a freeboard height that was set as H.PlantFreeboard. The height of each floc tank wall is H.Floc.

The total width of the floc tank, including the thickness of the walls is W.FlocWithWalls. The total length of the floc tank, including the thickness of the walls is L.FlocWithWalls.

**Vertical Flocculator (will only display for vertical)**

Rigid (Will display only for rigid baffles):

The baffle type for the plant you designed is BaffleType. The thickness of the baffle, which you specified, is T.FlocBaffle.The space between baffles is designed to be larger than a minimum human width, S.FlocBaffleMin, so that a human can walk through the flocculator for maintenance. The space between baffles in all the channels except the last is S.FlocBaffleFirst. The spacing in the last channel (except in the first and last spaces of the channel) is S.FlocBaffleLast. The spacing in the last channel is slightly different to maintain the flow pattern and accommodate the width of the inlet channel to the sedimentation tank.

The number of baffles in the all the channels except the last is N.FlocChannelBafflesFirst. The number of baffles in the last channel is N.FlocChannelBafflesLast.

In a vertical flocculator the baffles are staggered up and down. The lower baffles start from the floor of the flocculator. They have a length of L.FlocBaffleLower. The upper baffles start a distance that is the same as the spacing between the baffles higher than the floor. They have a length of L.FlocBaffleUpper. The width of all the baffles is W.FlocBaffle.

To keep the baffle in place, slots of length L.slot should be cut into the walls on each side. They have the same thickness, T.FlocBaffle, as the baffles. They extend to the floor of the flocculator for the lower baffles. They start a distance S.FlocBaffle above the floor for upper baffles.

Plastic (will display only for plastic baffles):

The baffle type for the plant you designed is BaffleType. The thickness of the baffle, which you specified, is T.FlocBaffle. The width of each baffle and thus each channel is W.FlocBaffle. It is calculated as half of the width of the plastic sheet that you specified for the sedimentation tank lamella. The spacing in all the channels except the last is S.FlocBaffleFirst. The spacing in the last channel (except in the first and last spaces of the channel) is S.FlocBaffleLast. The spacing in the last channel is slightly different to maintain the flow pattern and accommodate the width of the inlet channel to the sedimentation tank.

The number of baffles in the all the channels except the last is N.FlocChannelBafflesFirst. The number of baffles in the last channel is N.FlocChannelBafflesLast.

In a vertical flocculator the baffles are staggered up and down. The lower baffles start from the floor of the flocculator. They have a length of L.FlocBaffleLower. The upper baffles start a distance that is the same as the spacing between the baffles higher than the floor. They have a length of L.FlocBaffleUpper. The width of all the baffles is W.FlocBaffle.

Display for both types of baffles:

There are ports in the bottom of the walls connecting channels that maintain the vertical flow pattern. These can be cut into the wall of the channel. The width of the port is W.FlocPort0. The height of the port is H.FlocPort0.

In order to drain the flocculator, ports need to be cut in each lower baffle.(Add May and Jeff's stuff)

**Horizontal Flocculator (will only display for horizontal)**

In a horizontal flocculator, the baffles are staggered from side to side. The length of the baffles is L.FlocBaffle Lower. The width of the baffles is W.FlocBaffle. The thickness of the floc baffles is T.FlocBaffle.

The baffles must be made of rigid for a horizontal flocculator because plastic baffles will not work well in the horizontal staggered positions. It would be difficult to keep them in place and have them withstand the force of water flowing around them.

The spacing in all the channels except the last is S.FlocBaffleFirst. The spacing in the last channel (except in the first and last spaces of the channel) is S.FlocBaffleLast. The spacing in the last channel is slightly different to maintain the flow pattern and accommodate the width of the inlet channel to the sedimentation tank.

The number of baffles in the all the channels except the last is N.FlocChannelBafflesFirst. The number of baffles in the last channel is N.FlocChannelBafflesLast.

The width of each channel is W.FlocChannel. It was calculated by multiplying the space between the baffles by 3.

The channels are connected by an open space that has the same width as the space between baffles, W.FlocPort0.