Liberty Series Manual

Erie Strayer Company
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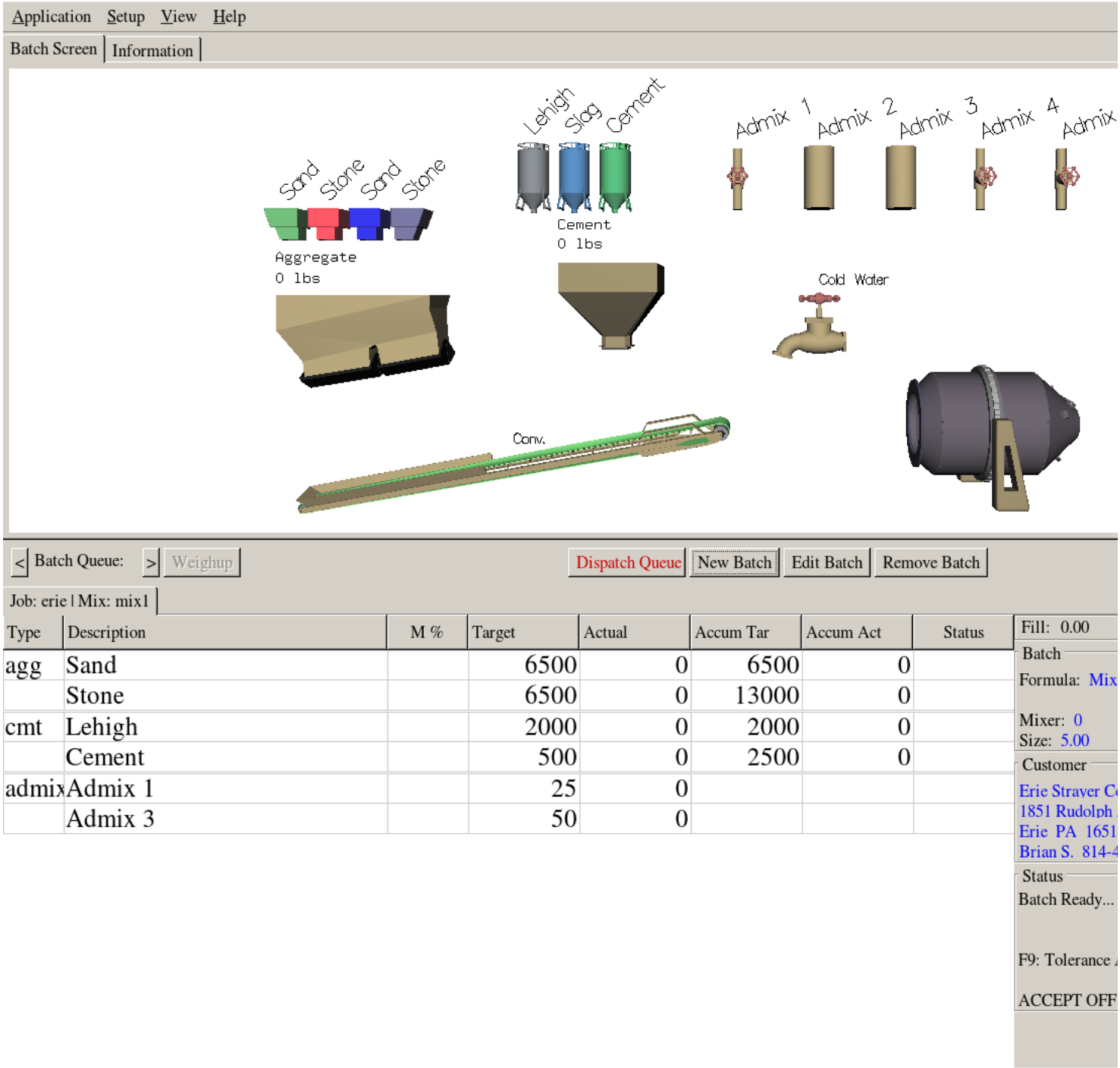
1. Liberty Series Batching Software

The batching software is the part of the **Liberty Series** package that handles concrete production. It can be opened in three different modes: **Real**, **Simulation**, and **Setup**. **Real** mode is the version of the software that communicates directly with the manual panel to control the plant. More than likely, you will be using real mode exclusively. **Simulation** mode (also called *sim* mode) is the same software as real mode without the connection to the manual panel. Instead it simulates the connection, which is useful for testing batches before running them on the plant. The final mode is Setup. **Setup** mode is used when the plant is initially set up or if any new components are added. All three of these modes can be accessed by clicking the icons on the desktop of the batching computer. Only one version of the software can be running at any given time.



The **toolbar** at the very top of the window contains most of the information regarding the plant as a whole. Plant configuration and settings can be found within those menus. Directly under the toolbar is the 3D batch screen. This section is not only a visual aid but also allows the user to access control-specific settings and dialogs by simply right clicking on the control you'd like to configure.

The top right-hand corner of the screen contains the **main controls**. This section indicates whether or not features are turned on from the main controls of the manual control panel, such as Inspect mode or Auto/Manual mode.

The notifications panel is located directly underneath the main controls. Any time there is an error or a warning generated by the software, it will show up here. Notifications include things such as a missing material, mixer out of position or batch transfer conveyor not running.

The **batch** queue is the large area in the bottom-left of the screen where the current ticket to batch appears. This section shows the current formula and updates the values as the batch proceeds. Upcoming batches in the queue appear here as tabs. Next to the batching queue is the **ticket information panel**. This panel displays information about the currently selected batch in the batch queue.

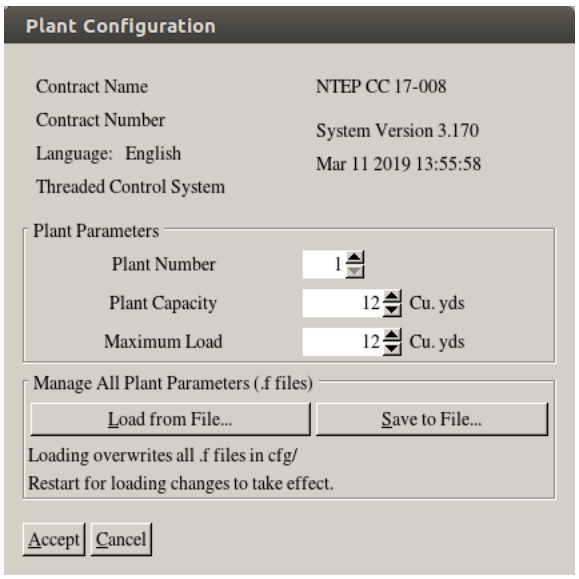
1.1 Plant Settings

The following pages outline all menus and settings that can be accessed from the software toolbar.

1.1.1 Plant Configuration

The **Plant Configuration** menu can be found under the **Setup** tab in the toolbar. Its primary use is to show information about the plant as well as backup and restore plant parameters.

Note: Plant parameter files can only be accessed when the software is opened in setup mode.

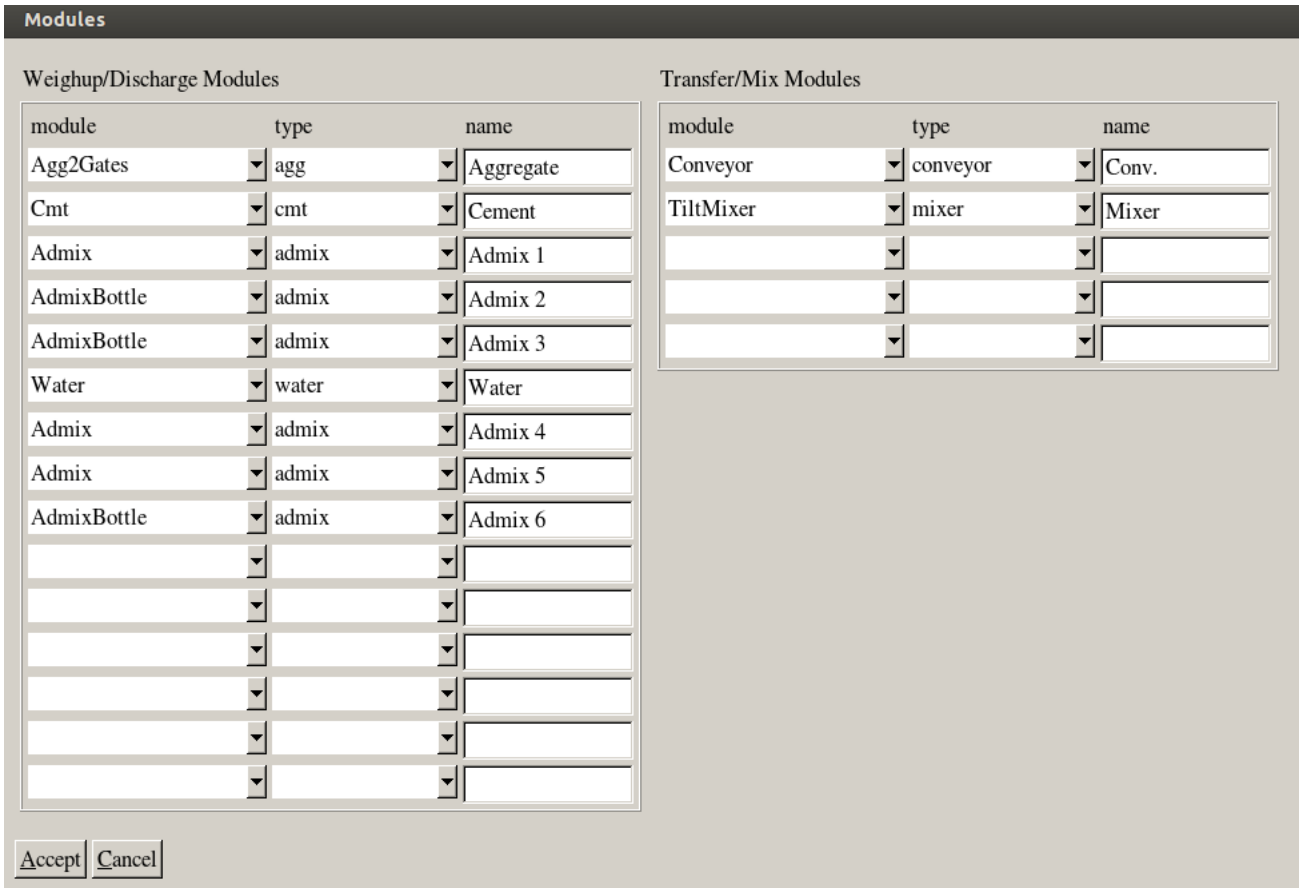


The top of the plant configuration menu shows information about the plant. This includes the company name, the contract number, program language, type of system, and the date the software was last compiled. Directly under that are input boxes to configure plant number, plant capacity, and maximum load size. Plant number is used for any company with more than one plant. Capacity and load are defined by the physical limits of the plant itself.

The *Load from File* and *Save to File* buttons are used to backup or move settings made for the entire plant. This includes most settings found in the toolbar. Once changes are loaded, the program must be restarted for the changes to appear.

1.1.2 Modules Menu

The modules display menu is only accessible when running the software in Liberty Series Setup mode and can be found under the *Setup* tab. It is used to add and remove the plant components and their 3D models from the 3D batch screen.

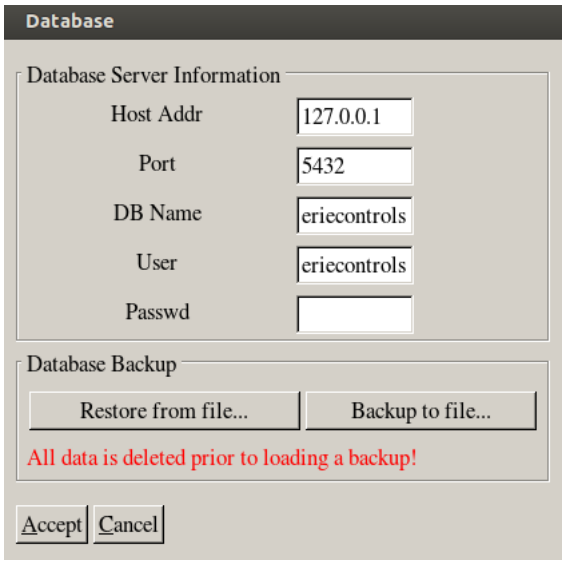


To add a new module to the page, fill out a new row with information on the control to add. To delete one, delete all data from the row it's in. For changes to be seen, the program must be closed and reopened. After adding a new module, return to setup mode to confirm or configure its D19 and Plant Settings.

Once the module has been added to the 3D batch screen it can be set to a desired position using the Selected Control buttons. Once properly positioned, click Save as Default within the Control Transform dialog.

1.1.3 Database Configuration

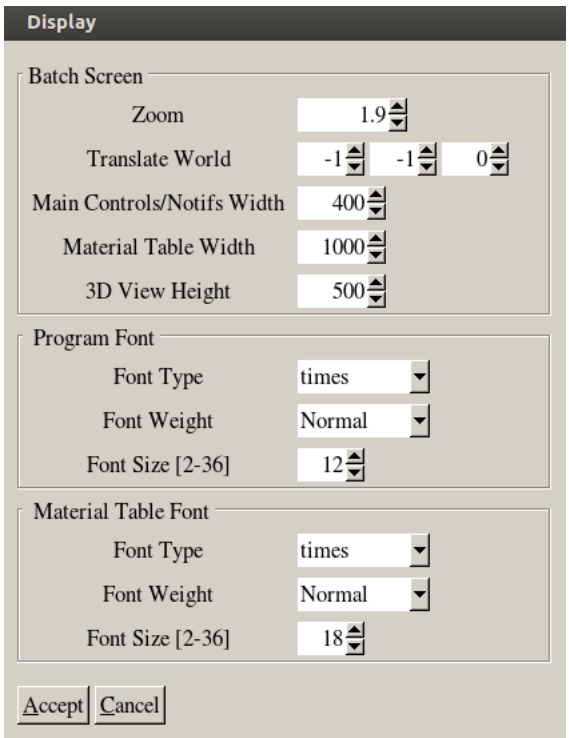
The database menu is only accessible when running the software in Liberty Series Setup mode. It contains information for communicating with the database and can be found under the **Setup** tab in the toolbar. The primary use of this menu is to back up important data from the database.



The information at the top of the screen is information about the database server. This information should not be edited.

The *Restore from file* and *Backup to file* buttons are used for data backup. Restoring from a file will delete all current data associated with the plant and replace it with whatever is in the file. Only use this if you are sure you'd like to overwrite all your current data. Backing up from file saves a copy of all data associated with the plant into a single file. It is best practice to save this database onto a flash drive or external hard drive periodically to avoid potential data loss.

1.1.4 Display Settings



Batch Screen:

Zoom: Increasing this value will make the objects within the 3D world larger.

Translate World: This set of X-Y-Z parameters sets the position of the 3D world within the display.

Main Controls/Notifs Width: This parameter sets the width of the display area for the Main Controls and Notifications.

Material Table Width: This parameter sets the visible width of the ticket table information of the Batch Queue.

3D View Height: This parameter sets the height of the 3D view.

Program Font:

Font Type: Use this drop down box to select one of the available font types for the main program window.

Font Weight: Use this drop down box to select the weight(boldness) of the font selected above.

Font Size: Use this drop down box to select the desired font size of the font selected above.

Material Table Font:

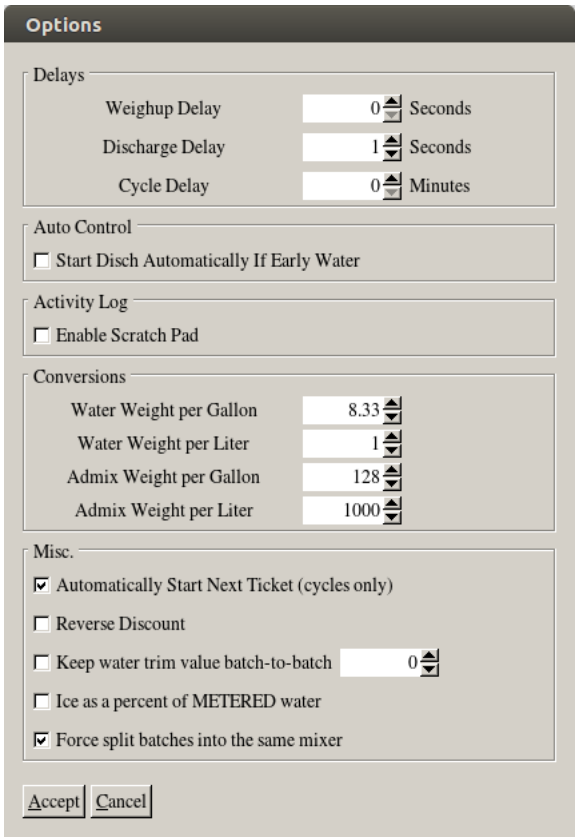
Font Type: Use this drop down box to select one of the available font types for the Material Table section of the program display.

Font Weight: Use this drop down box to select the weight(boldness) of the font selected above.

Font Size: Use this drop down box to select the desired font size of the font selected above.

1.1.5 Options Menu

The options menu is accessible from the *Setup* tab in the toolbar. This menu allows various plant-wide settings to be changed.



Weighup Delay: The amount of time the system will delay starting to weigh-up after beginning a cycle.

Discharge Delay: The amount of time the system will delay the discharge sequence after selecting discharge.

Cycle Delay: The amount of time between cycles of a batch. Can also be set on a per-job basis.

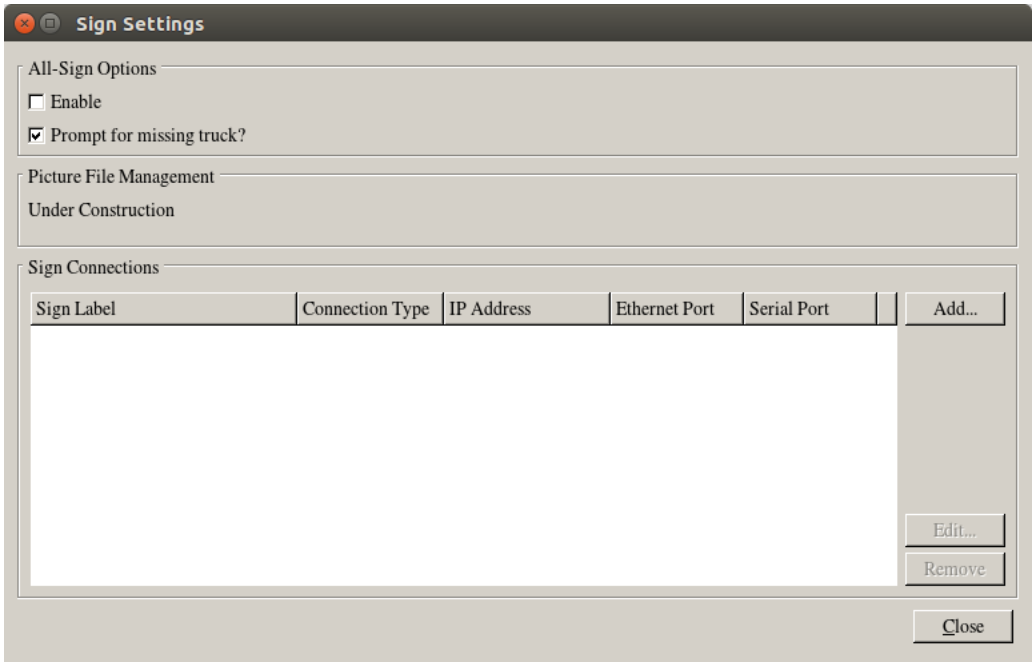
Start Discharge Automatically: (Transit Mix version only) Select this option by clicking on the checkbox. The discharge sequence will automatically begin once weigh-up is complete and the early water option has been selected.

Activity Log: Selecting this checkbox option will enable writing of the activity log for troubleshooting purposes.

Automatically Start Next Ticket: Selecting this checkbox option will automatically create the next tab to be batched within the Batch Queue. Deselecting this option will put the remaining cycles back into the Dispatch Queue.

Reverse Discount: There are two options for inputting a discount into customer entries: positive values and negative values. When this feature is toggled off, the user is expected to use a positive value for discount that will be subtracted from the total. When this feature is toggled on, the user is expected to input a negative number (including the minus sign) for discount that will add the negative number to the total. Both options produce the same result.

1.1.6 Sign Settings



All-Sign Options

Enable: Clicking the checkbox for Enable will turn on communications with the LED Sign.

Prompt for missing truck?: When the checkbox for this option is selected and a New Batch has been created without assigning a truck, the system will prompt the user to assign a truck before weighup can be enabled.

Picture File Management

This option is currently under development. This will be where image files can be stored and selected for the LED Sign display.

Sign Connections

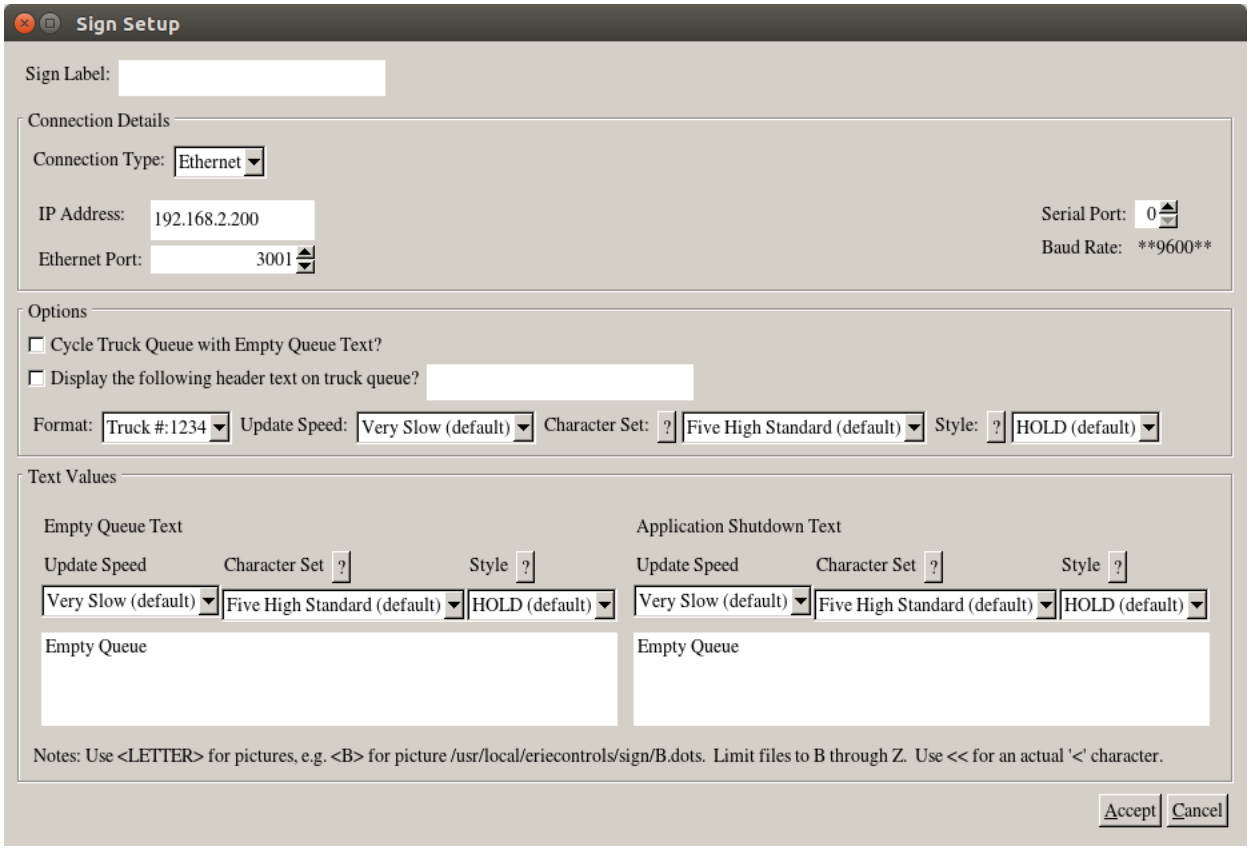
The user can add a new LED Sign connection, edit an existing connection or delete an existing connection.

Add...: By clicking *Add*, the system will display the following dialog options for a new sign.

Edit...: By clicking *Edit*, the system will display the following dialog options for an existing sign.

Remove: By clicking *Remove*, the user is choosing to discard any LED Sign settings for that particular sign.

This dialog opens when the user clicks *Add* or *Edit*.



Sign Label: Name for the specific LED Sign connected to the plant.

Connection Details This section details the connection type and parameters.

Connection Type: Available options are Ethernet and Serial. Erie Strayer Company as a standard uses Ethernet.

IP Address: If Ethernet Connection Type is selected, enter the applicable IP Address to communicate with the LED Sign. Typically 192.168.2.200 is used.

Ethernet Port: If Ethernet Connection Type is selected, enter the applicable port the Liberty Series system will communicate to the LED Sign. Typically 3001 is used.

Serial Port: If Serial Connection Type is selected, use the up or down arrows to select the appropriate port number.

Baud Rate: As a standard, the only option to communicate via Serial Port is 9600.

Options

Cycle Truck Queue with Empty Queue Text? Check to enable.

Display the following header text on truck queue? Check to enable. Fill out the box to the right with text.

Format: Select the desired format to be used for displaying the truck numbers on the LED Sign.

Update Speed: Select the desired update speed from the available options.

Character Set: The Character set is the font type displayed on your sign. You can choose between different styles and sizes. Keep in mind that a larger font will leave less room for text on your sign. Consider using a different display format if your text no longer fits after changing your character set. If you have extra space, consider changing the number of trucks to display on your sign at once(FUTURE).

Style:

```
ROTATE     "a" 61H Message travels right to left.
HOLD       "b" 62H Message remains stationary.
FLASH      "c" 63H Message remains stationary and flashes.
reserved   "d" 64H
ROLL UP    "e" 65H Previous message is pushed up by a new message.
ROLL DOWN  "f" 66H Previous message is pushed down by a new message.
ROLL LEFT  "g" 67H Previous message is pushed left by a new message.
ROLL RIGHT "h" 68H Previous message is pushed right by a new message.
WIPE UP    "i" 69H New message is wiped over the previous message from bottom to top.
WIPE DOWN  "j" 6AH New message is wiped over the previous message from top to bottom.
WIPE LEFT  "k" 6BH New message is wiped over the previous message from right to left.
WIPE RIGHT "l" 6CH New message is wiped over the previous message from left to right.
SCROLL     "m" 6DH New message line pushes the bottom line to the top line if 2-line sign.
AUTOMODE   "o" 6FH Various Modes are called upon to display the message automatically.
ROLL IN    "p" 70H Previous message is pushed toward the center of the display by the new message.
ROLL OUT   "q" 71H Previous message is pushed outward from the center by the new message.
WIPE IN    "r" 72H New message is wiped over the previous message in an inward motion.
WIPE OUT   "s" 73H New message is wiped over the previous message in an outward motion.
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COMPRESSED ROTATE "t" 74H Message travels right to left. Characters are approximately one half their ROTATE normal width. (Only
available on certain sign models.)
EXPLODE          "u" 75H Message flies apart from the center (Alpha 3.0 protocol).
CLOCK            "v" 76H Wipe in a clockwise direction (Alpha 3.0 protocol).
```

Text Values

This section is used to setup what the LED Sign will display if there is no upcoming batches or if the Liberty Series Application is not running.

Empty Queue Text: This setting is used when the Liberty Series Software is running but there are no batches to be processed.

Update Speed: Select the desired update speed from the available options.

Character Set: The Character set is the font type displayed on your sign. You can choose between different styles and sizes. Keep in mind that a larger font will leave less room for text on your sign. Consider using a different display format if your text no longer fits after changing your character set. if you have extra space, consider changer the number of trucks to display on your sign at once(FUTURE).

Style: See *Style* above.

Empty Queue Textbox: Type the desired Empty Queue message you'd like the LED Sign to display.

Application Shutdown Text: This setting is used when the Liberty Series Software is not running and the user would like the LED Sign to display a specific message.

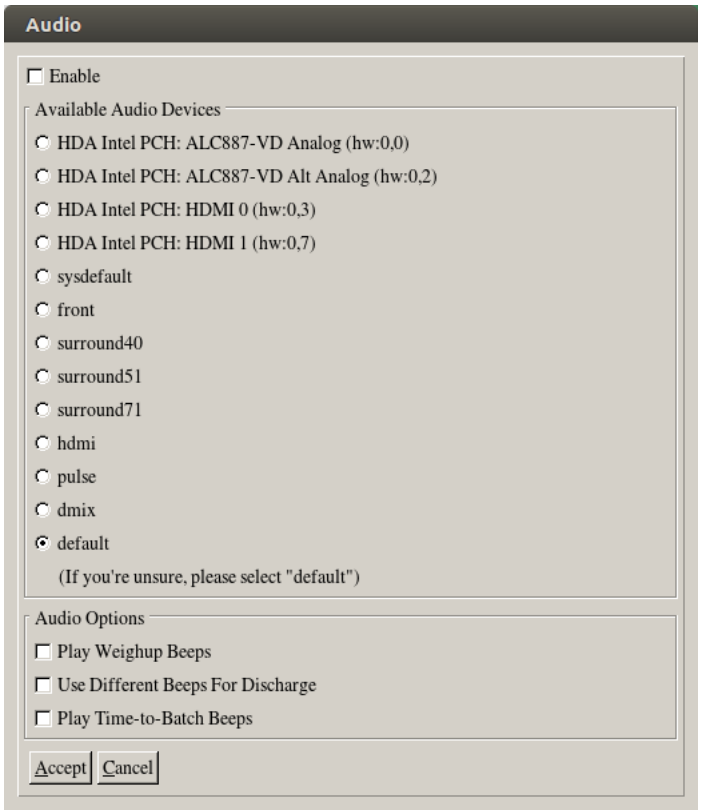
Update Speed: Select the desired update speed from the available options.

Character Set: The Character set is the font type displayed on your sign. You can choose between different styles and sizes. Keep in mind that a larger font will leave less room for text on your sign. Consider using a different display format if your text no longer fits after changing your character set. if you have extra space, consider changer the number of trucks to display on your sign at once(FUTURE).

Style: See *Style* above.

Application Shutdown Textbox: Type the desired Empty Queue message you'd like the LED Sign to display.

1.1.7 Audio Settings



Enable: Clicking the checkbox for this option will turn the sound setting on.

Available Audio Devices: Select Default unless you see your specific device.

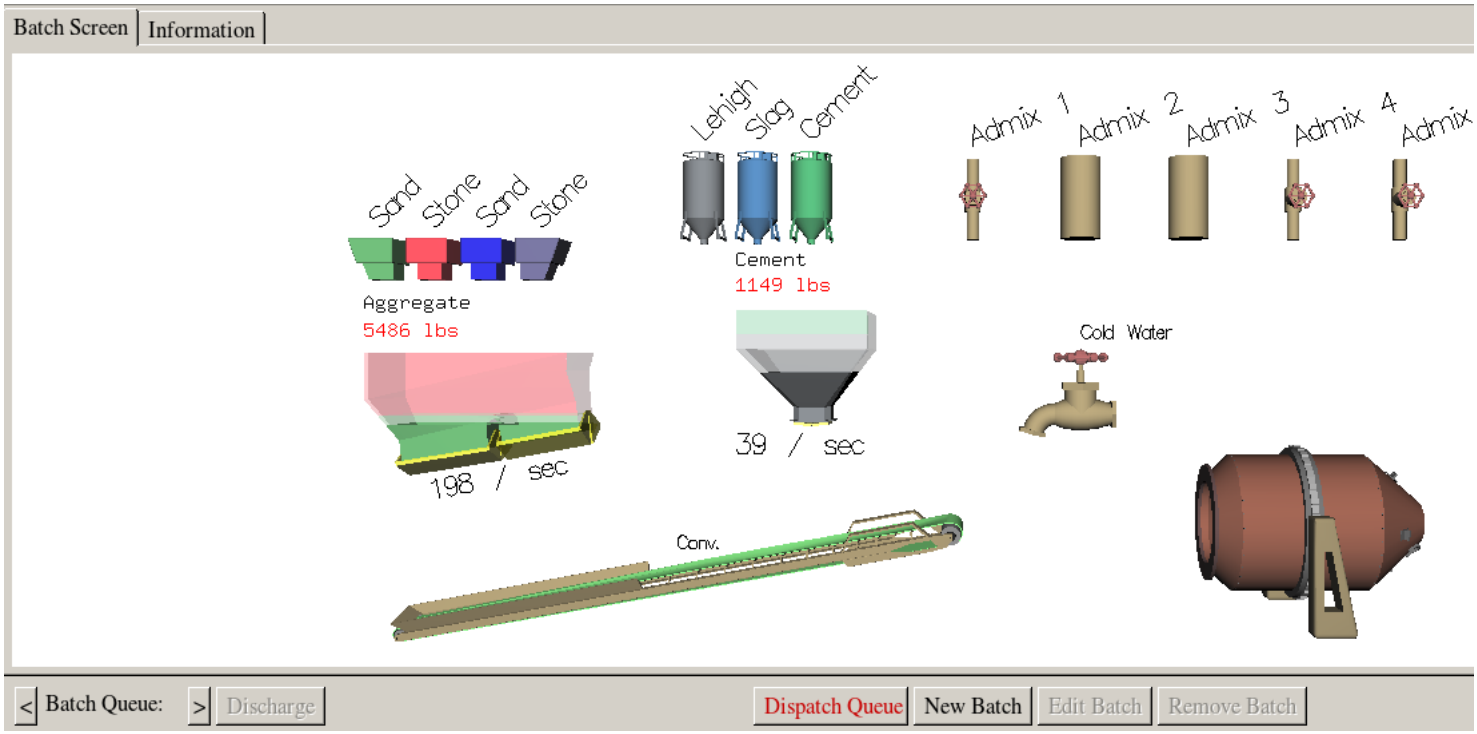
Audio Options:

Play Weighup Beeps: Selecting this option will enable the system to play a sound alerting the user the system is ready to weighup.

Play Time-to-Batch Beeps: If using the Cycle Delay option and this option is selected, the system will play an alarm letting the user know it is time to batch.

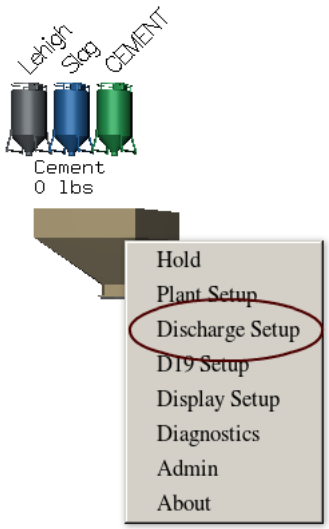
1.2 The 3D Batch Screen

The 3D batch screen contains all of the visuals and 3D models for the software. During the batching process, this screen performs basic animations to showcase how much of the batch has been completed. It is also the best place to access many of the setup menus for each control.



1.2.1 Discharge Setup

Before batching with the computer control system, discharge settings must be configured in the Discharge Setup menus. The discharge settings can be accessed for any given control by right-clicking on the 3D model and selecting *Discharge Setup* from the dropdown. If the text for that option is grey, there are no setup options available for that control.



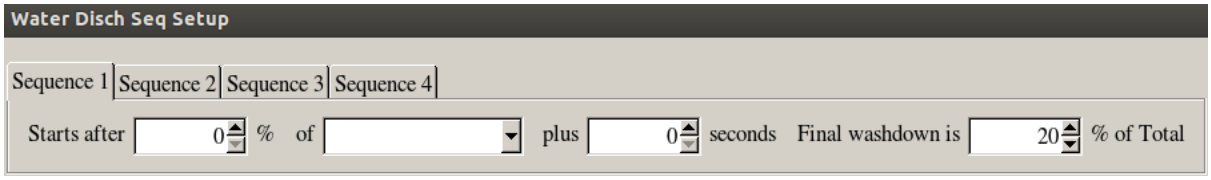
The Discharge Sequence menus display the start times for each material, rates of discharge for the aggregate and cement, and water hold back. When properly set, the Discharge Sequence will accurately control the blend of ingredients during the Discharge Cycle using any Mix Design. Each control with discharge setup options has a main setup tab and four sequence tabs. Sequences can be the same or different and are used by trucks so that different trucks can have different discharge sequences.

Note: The settings shown in this manual are intended as a reference in understanding the operation of this system. They should not be taken as the final settings that will achieve optimum performance of the system. In practice, a thorough understanding of the functions of these settings will allow the operator to make the proper adjustments.

1.2.1.1 Water Discharge Setup

The Discharge Sequence displays the start times for each material, rates of discharge. When properly set, the Discharge Sequence will accurately control the blend of ingredients during the Discharge Cycle using any Formula. There are four available Discharge Sequences. Each Discharge sequence can be set differently. Which Discharge Sequence to be used is determined by the Truck assigned to the current batch. If no Truck is assigned the system will default to using Sequence 1.

The same sequence is used for all water module types.



Starts After: Starts After is set as a percentage.

of: This dropdown field is used to determine the material used to set as the guideline for the current material to discharge. If no material is selected, the admix will begin to discharge as soon as the current discharge cycle begins.

Plus: Plus is set in seconds. The value entered in this field is used as a time delay to begin discharging.

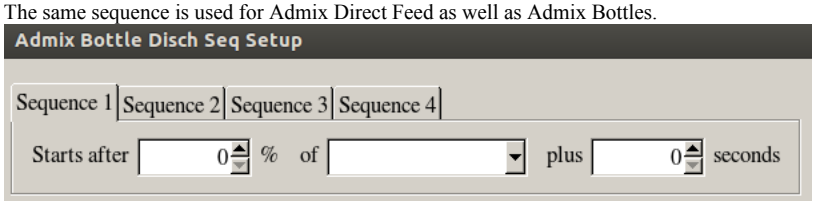
Final washdown is: Final washdown is set as a percentage. The value set in this field determines the percentage of water that is held back for Final Water Washdown. The system displays Final Water Washdown in a % of the Total Water. This percentage of water is discharged after all the other materials have finished discharging. This setting is normally used with a Transit Mix or Dry Batch plant. This hold back water is used to wash off the fins in the charging area of the truck after the aggregate and cement are already in the truck.

EXAMPLE: 25 has been entered for Pct. The Formula used, weighs up 2000 lbs of water. 25% of 2000 is 500. During the Discharge Cycle, the system discharges 1500 lbs of water and closes the discharge valve. Then the rest of the materials discharge. The system then opens the water discharge valve to complete the discharge of the final 500 lbs of water.

1.2.1.2 Admix Discharge Setup

The Discharge Sequence displays the start times for each material, rates of discharge. When properly set, the Discharge Sequence will accurately control the blend of ingredients during the Discharge Cycle using any Formula. There are four available Discharge Sequences. Each Discharge sequence can be set differently. Which Discharge Sequence to be used is determined by the Truck assigned to the current batch. If no Truck is assigned the system will default to using Sequence 1.

The same sequence is used for Admix Direct Feed as well as Admix Bottles.



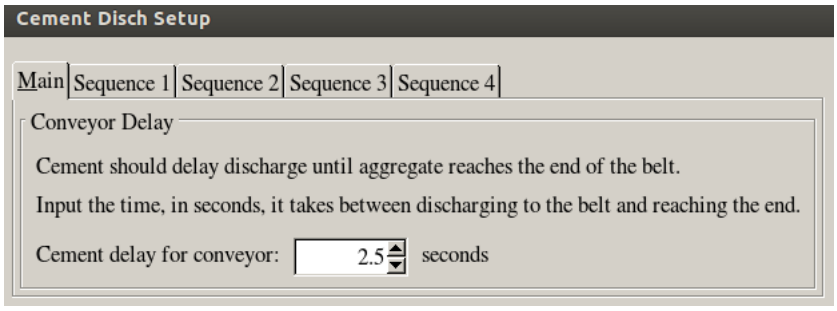
Starts After: Starts After is set as a percentage.

of: This dropdown field is used to determine the material used to set as the guideline for the current material to discharge.If no material is selected, the admix will begin to discharge as soon as the current discharge cycle begins.

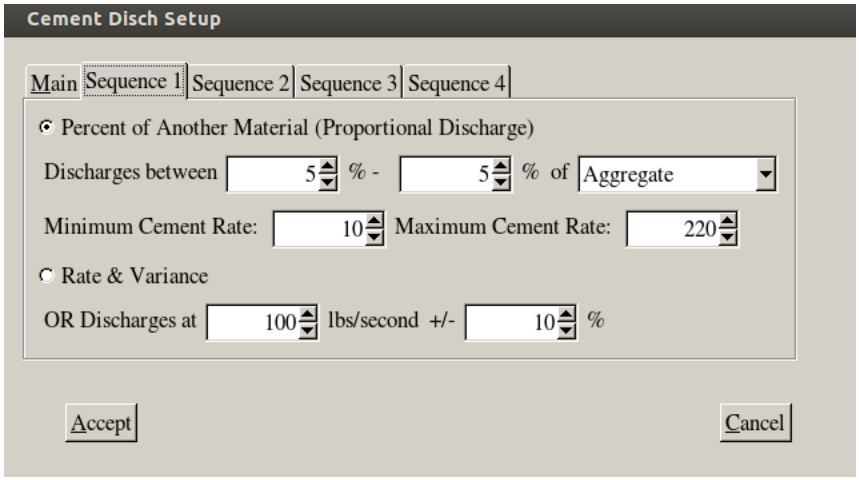
Plus: Plus is set in seconds. The value entered in this field is used as a time delay to begin discharging.

1.2.1.3 Cement Discharge Setup

The Discharge Sequence displays the start times for each material, rates of discharge. When properly set, the Discharge Sequence will accurately control the blend of ingredients during the Discharge Cycle using any Formula. There are four available Discharge Sequences. Each Discharge sequence can be set differently. Which Discharge Sequence to be used is determined by the Truck assigned to the current batch. If no Truck is assigned the system will default to using Sequence 1.



Main Tab: The Main Tab is used to set a delay in the discharge of Cement. This delay is used to set the amount of time it takes the Aggregate to discharge onto the Batch Transfer Conveyor and make it to the top of the head pulley and into the Mixer or Truck. Once the delay is set properly Cement will begin discharging once that time has completed.



Setup Sequence Tabs

Percent of Another Material(Proportional Discharge): Percent of Another Material(Proportional Discharge) is a radio (On/Off) option.

Discharges between: Set as a percentage. The first percentage field determines how long of a delay before starting to discharge. The second percentage field determine when the material should be finished discharging.

of: This dropdown field is used to determine the material used to set as the guideline for the current material in this batcher to discharge. If no material is selected, the batcher will begin to discharge as soon as the current discharge cycle begins.

Minimum Cement Rate: Minimum Cement Rate is set in pounds per second. The value entered in this field will determine the minimum discharge rate. Even if proportionally the system is calling for the rate to be lower, it will use this value to keep the material flowing.

Maximum Cement Rate: Set in pounds per second. The value entered in this field will determine the maximum discharge rate. Even if proportionally the system is calling for a higher rate, it will use this value to keep the material from over-discharging.

Rate & Variance: Rate & Variance is a radio (On/Off) option. When this option is selected the system will use these settings to start discharging and then follow the rate and amount of variance allowed over and under the selected rate.

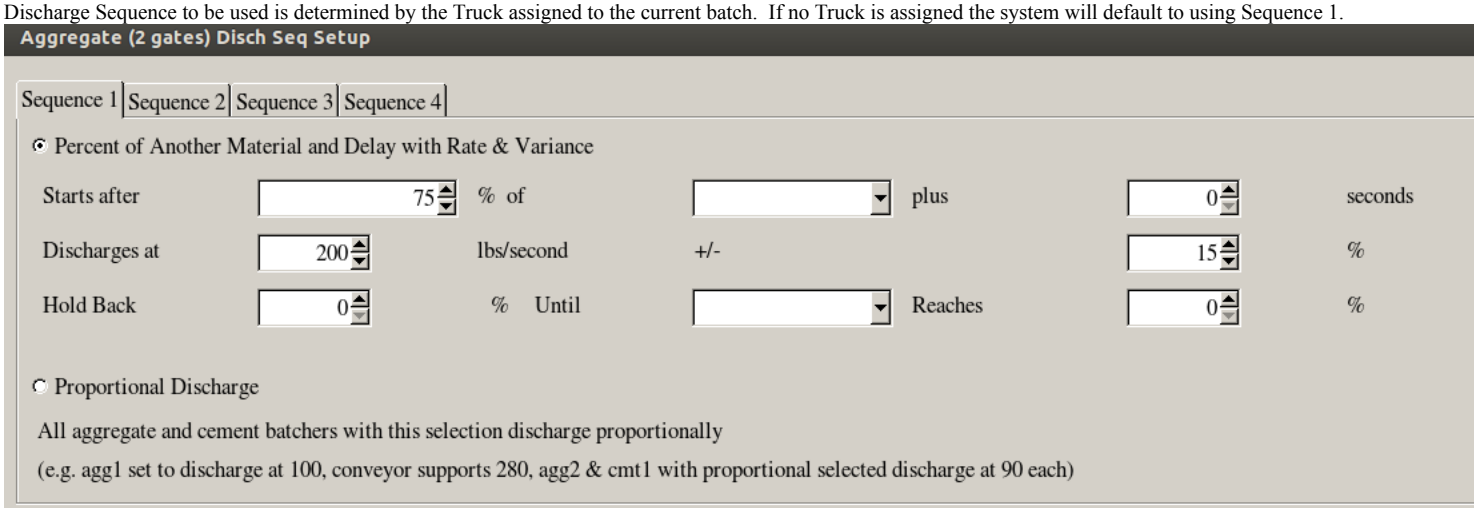
Minimum Cement Rate: Set in pounds per second. The value entered in this field will determine the minimum discharge rate.

Or Discharges at: Set as pounds per second. The value entered in this field sets the target discharge rate.

+/-%: Set as a percentage. The value set in this field will provide the system with a guideline of how far over and under the Discharge Rate the material can flow before performing the next gate adjustment. As an example if the Discharge Rate is set at 100 lbs/sec and the +/-% is set to 10%, the system will allow the Discharge Rate to Reach 110 lbs/sec before closing the discharge gate to reduce the amount of material being discharged and the system will allow the Discharge Rate to Reach 90 lbs/sec before opening the discharge gate to increase the amount of material being discharged.

1.2.1.4 Aggregate Discharge Setup

The Discharge Sequence displays the start times for each material, rates of discharge. When properly set, the Discharge Sequence will accurately control the blend of ingredients during the Discharge Cycle using any Formula. There are four available Discharge Sequences. Each Discharge sequence can be set differently. Which Discharge Sequence to be used is determined by the Truck assigned to the current batch. If no Truck is assigned the system will default to using Sequence 1.



Percent of Another Material and Delay with Rate & Variance: Percent of Another Material and Delay with Rate & Variance is a radio (On/Off) option. When this option is selected the system will use the settings to start discharging and then follow the rate and amount of variance allowed over and under the selected rate.

Starts After: Set as a percentage.

of: This dropdown field is used to determine the material used to set as the guideline for the current material in this batcher to discharge. If no material is selected, the batcher will begin to discharge as soon as the current discharge cycle begins.

Plus: Set in seconds. The value entered in this field is used as a time delay to begin discharging.

Discharges at: Set in pounds per second. The value entered will provide the system with a rate to control the amount of material being discharged.

Hold Back: Set as a percentage.

Until: This dropdown is used to select which material this aggregate will wait for until the set percentage of the specified material reaches the specified percentage.

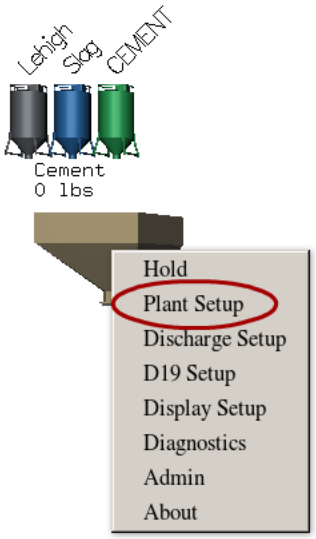
Reaches: Set as a percentage.

Porportional Discharge: Proportional Discharge is a radio (On/Off) option. This option is only available when the batch plant is equipped with multiple batchers. When this option is selected all aggregate batchers will discharge proportionally based on the Belt Capacity set in the Conveyor Setup.

As an example the Belt Capacity is set at 300 lbs/sec. Aggregate 1 is set to discharge at 150 lbs/sec. Aggregate 2 and Aggregate 3 are set to use Proportional Discharge. Aggregate 2 and Aggregate 3 will discharge at 75 lbs/sec each.

1.2.2 Plant Setup

Before batching with the computer control system, the plant settings must be configured in the Plant Setup menus. The plant settings can be accessed for any given control by right-clicking on the 3D model and selecting *Plant Setup* from the dropdown. If the text for that option is grey, there are no setup options available for that control.



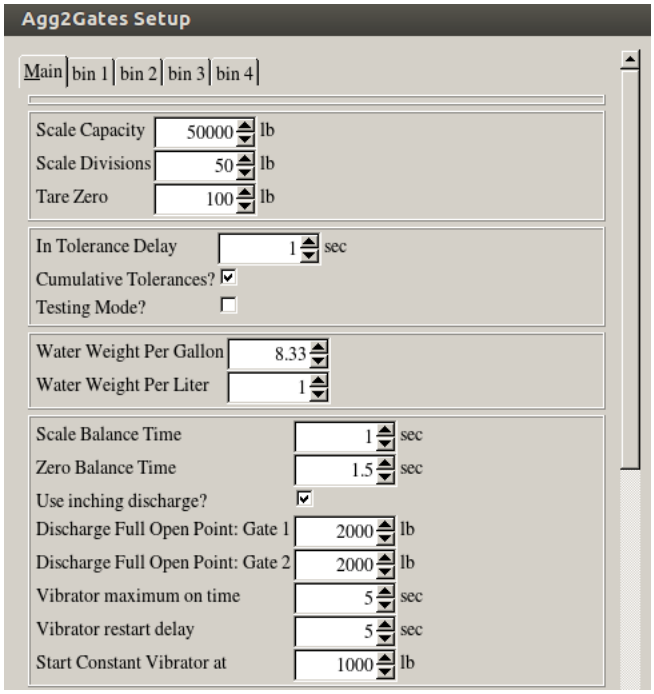
The Plant Setup menus display the various sections of the batch plant that can be adjusted. These menus may vary from plant to plant based on the specific features associated with the needs of the batching process. From these menus, the parameters that determine the accuracy and consistency of the system are made.

Note: The settings shown in this manual are intended as a reference in understanding the operation of this system. They should not be taken as the final settings that will achieve optimum performance of the system. In practice, a thorough understanding of the functions of these settings will allow the operator to make the proper adjustments.

1.2.2.1 Aggregate Plant Setup

This menu is accessed by right-clicking on the 3D model of the aggregate batcher and selecting *Plant Setup*. All of the settings made here will determine the operation of the Aggregate Weigh Batcher. If this system is being used on a plant with individual batchers, each batcher will have its own setup menu.

The menu contains multiple tabs, the first being for general settings and the rest being for settings on individual bins.



Scale Capacity: Set in pounds. It tells the computer the maximum amount of material that can be weighed into the batcher. The value of this setting is determined by the maximum setting on the corresponding Dial Head or by the Rating Plate located on the corresponding batcher. The control system will not allow for batching of any material weight that exceeds the scale capacity setting.

Scale Divisions: Smallest increment indicated by the scale.

Tare Zero: Set in pounds. It sets a value above and below zero which the computer will accept the batcher as being empty or at zero. This is normally set to one (1) scale graduation or 0.1% of the scale capacity.

In Tolerance Delay: Set in seconds. Once the material has reached the set tolerance amount, the system will then use the delay time to balance the scale.

Cumulative Tolerances?: Cumulative Tolerance is a checkbox (Y/N) option. When this option is selected the system will compensate the weighing tolerances for products using same material type. Using this option will allow the system to batch the products within the formula using an overall tolerance.

Testing Mode?: Use this checkbox when testing/calibrating the system with the Load Cell Indicators. This will allow the user to adjust the scale values in and out of tolerance without putting the system into a state that requires the tolerances to be accepted.

Water Weight Per Gallon: Water Weight Per Gallon is a setting normally set to 8.33 lbs. Certain specifications will dictate that this be set to 8.34 lbs. Check local regulations to determine what the correct setting is for your location.

Water Weight Per Liter: Water Weight Per Liter is a setting normally set to 1 kg. Check local regulations to determine what the correct setting is for your location.

Scale Balance Time: Scale Balance Time is set in seconds. It allows the weigh batcher to settle out between the Fast Feed operation, the Jog operation, and between each successive Jog, before the computer will take a reading of the scale weight. This setting is determined by the physical movement of the scale during weigh-up. Start with an arbitrary setting of 02.00 seconds. In general, it is desirable to have this time set as low as possible.

Zero Balance Time: Zero Balance Time is set in seconds. It tells the computer to wait a certain period of time after sensing Tare Zero before closing the gate(s) and taking a final reading of the scale. This setting is used to ensure that the batcher scale is at or below Tare Zero after the Discharge Cycle is complete. Start with an arbitrary setting of 01.00 seconds. In general, it is desirable to have this time set as low as possible.

Use Inching Discharge?: Use Inching Discharge is a checkbox (Y/N) option. The system offers two methods of discharging aggregate from the batcher. An unchecked(N) response tells the computer to open the batcher discharge gate(s) wide during the entire Discharge Cycle. A checked(Y) response tells the computer to control the rate of discharge from the batcher on a pounds per second basis. In general, a checked(Y) response is used when the discharge gate is controlled by a double action solenoid valve. An unchecked(N) response is used when the discharge gate is controlled by a single action solenoid valve or a high capacity Batch Transfer Conveyor.

Discharge Full Open Point: Discharge Full Open Point is set in pounds. For two-gate batchers, this option is set per gate. It gives the computer a point in the Discharge Cycle to open the gate(s) wide in order to get the last of the aggregate out of the scale. As a general rule it is set to the Aggregate Discharge Rate which is set in the Discharge Sequence. If this setting causes either the belt to flood or the aggregate to overflow the charging chute, then the setting should be set to a lower value.

Vibrator Maximum On Time: Vibrator Maximum On Time is set in seconds. It represents the length of time the vibrator will stay on. In general this setting will be 1 to 3 seconds. You want the vibrator to stay on only long enough to start the aggregate flowing again.

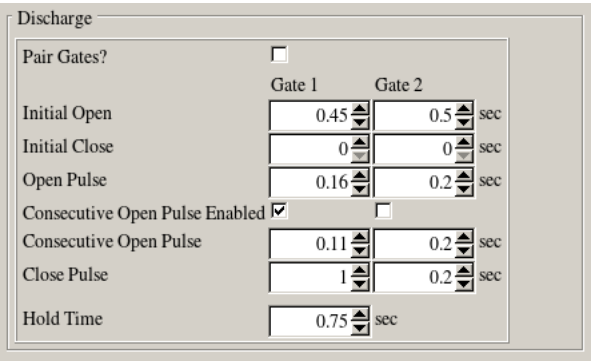
Vibrator Restart Delay: Vibrator Restart Delay is set in seconds. Once the vibrator has been turned on, it must wait a specified amount of time before it turns back on to minimize wear on the motors. This value specifies the amount of time to wait.

Start Constant Vibrator At: Start Constant Vibrator At is set in pounds. Once the scale for the aggregate batcher drops to or below this target, the vibrator will turn on for the remainder of the batch. Typically this is set to match the Discharge Full Open Point.

Discharge

The settings of Discharge Initial Open, Initial Close, Open Time and Close Time work together to control the rate of discharge from the batcher. The setting for Open Time and Close Time are referred to as the Inching Controls. Before any of these settings are made, it is important that the speed of action of the batcher gate(s) be correctly adjusted so that optimum control from the computer can be achieved. Set the air pressure regulator to the solenoid valves to 120 PSIG. Locate the double acting solenoid air valve corresponding to the batcher gate that needs adjusted. It will be located on a manifold assembly with other solenoid air valves near the batcher. There are two solenoid coils, each with a manual override adjustment used to open and close the batcher gate. On each side, sandwiched between the solenoid and the manifold base of the air valve is an adjustment screw used to control the speed of action of the gate. Clockwise adjustment slows down the speed of action and counterclockwise adjustment increases the speed of action. Adjustments should be made on an empty batcher. Set the speed of opening to approximately 2.0 - 3.0 seconds and the speed of closing to approximately 2.0 - 3.0 seconds. Repeated opening and closing of the batcher gate using the manual override buttons will be necessary to achieve this setting.

For two-gate batchers, Hold Time is shared by both gates. All other timings have two entries--one for each gate. They also have a special option to pair the gates. This causes both gates to take action each time, as opposed to each gate checking the rate individually to determine if an open, close, or hold is necessary.



Pair Gates?: Pair Gates is a checkbox (Y/N) option used for two-gate batchers only.

Initial Open: Discharge Initial Open is set in seconds. It determines how far the batcher gate(s) will open at the start of the Discharge Cycle. The setting of this value depends upon the ability of the aggregates to flow through the gate(s). In general, a setting of 0.50 seconds is a good initial setting to start with. Further adjustments will be required based upon observations by the operator.

Initial Close: Discharge Initial Close is set in seconds. It determines how far the batcher gate(s) will close immediately after Initial Open. Initial Close returns the gates to a controlled position. In general, a setting of 0.20 seconds is a good initial setting to start with. Further adjustments will be required based upon observations by the operator.

Open Time: Open Time is set in seconds. It determines how far the batcher gate(s) will open when adjustments to the Discharge Rate are made by the computer. The setting should cause movement not greater than 1 to 2 inches with each Open pulse sent by the computer. In general, start with a setting of 0.10 seconds.

Consecutive Open Timing Enabled: Consecutive Open Timing Enabled is a checkbox (Y/N) option. When this option is selected the system will use Consecutive Open Time to open the feed gate at any time the system needs to perform multiple open times in a row to reach the correct discharge rate. Typically using this option will help the system micro-adjust the correct discharge rate by using a shorter open time.

Consecutive Open Time Set in seconds. It determines how far the batcher valve will open when adjustments to the Discharge Rate are made by the computer.

Close Time: Close Time is set in seconds. It determines how far the batcher gate(s) will close when adjustments to the Discharge Rate are made by the computer. As in the case with the Open Time setting, movement not greater than 1 to 2 inches should occur with each Close pulse sent by the computer. Start with a setting of 0.10 seconds.

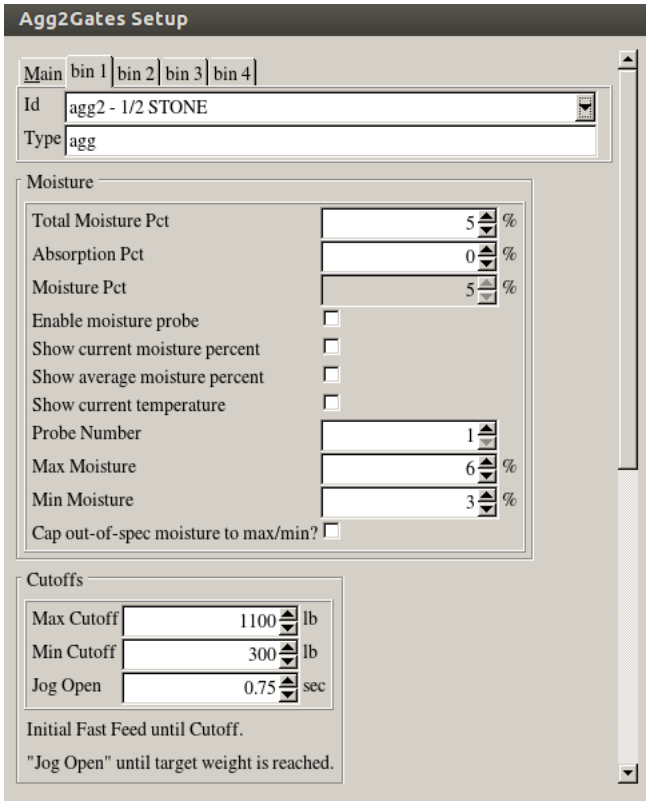
Hold Time: The Hold Time gives the computer control system a set value to give the material in the scale time to settle before the computer reacts by opening or closing the scale gates to maintain the discharge rate out of the scale. 1.5 seconds is a good number to start out with.

How Inching Controls Work: The Open Time and Close Time settings are referred to as the Inching Controls. They derive this name by the fact that when properly set they will cause the gate(s) to open or close a distance not greater than 1 to 2 inches with each Open or Close adjustment from the computer. For this reason, it is very important that these settings are correctly made. Too high a setting will result in movement of the gate(s) greater than the desired 1 to 2 inches. This will result in over compensation of the discharge rate and cause erratic discharge of the aggregate(s). Too low a setting will result in movement of the gate(s) less than the desired 1 to 2 inches. This will result in under compensation of the discharge rate and cause excessive adjustments to the flow rate. Normal settings of approximately 0.10 to 0.20 seconds will achieve the desired results. Visual observation of the action of the gate(s) will be required to determine the exact setting.

1.2.2.1.1 Aggregate Bin Plant Setup

Each bin assigned to an aggregate batcher has its own sub-section of plant settings. This setup menu is used to make the adjustments or settings that allow the computer to control the feed of aggregates during the weighing cycle.

Note: Prior to making the settings for Aggregate Setup, set the air pressure regulator to the solenoids to 120 PSIG.



ID: ID can be selected from a dropdown menu. In order for a material to appear in this menu, it first must be created on the product page on the website and given a type of *agg*. Once an ID is selected, the computer will assume that is the content of this bin and will call this bin any time the associated material is used in the mix design.

Type: Setting a value in this field will set the material type. If there are other bins on this batcher with the same material type, these materials can compensate for each other using cumulative tolerances(when selected). If left blank, this feature is disabled.

Moisture Section

Total Moisture Percent: Set as a percentage. The value entered is used as the default moisture value for the aggregate assigned.

Absorption Percent: Set as a percentage. The value entered is the absorption value of the material in the bin, also known as SSD.

Moisture Percent: Set as a percentage. This percentage, also known as Free Moisture, is the result of subtracting the Absorption Percent from the Total Moisture Percent.

Enable Moisture Probe: Enable Moisture Probe is a checkbox (Y/N) option. When this option is selected the system will read the live moisture percentage from the moisture probe.

Show Current Moisture Percent: Show Current Moisture Percent is a checkbox (Y/N) option. When this option is selected the system will display the live moisture value from the probe.

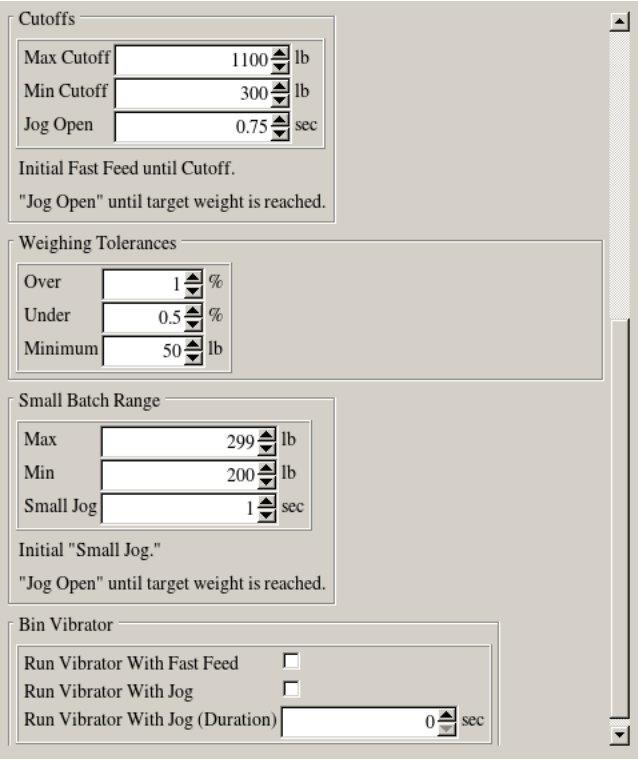
Show Average Moisture Percent: Show Average Moisture Percent is a checkbox (Y/N) option. When this option is selected the system will display the the last average moisture value from the probe that the system recorded.

Show Current Temperature(when the Polarmatic temperature sensor is used): Show Current Temperature is a checkbox (Y/N) option. When this option is selected the system will display the the temperature of the material that passes in front of the sensor.

Probe Number: The probe Number number is typically the same as the bin number that the probe is in. **EXAMPLE:** If the moisture probe is in Agg Bin #1, then Probe Number should be set to 1. If the moisture probe is in Agg Bin #3, then Probe Number should be 3.
Max Moisture: Max Moisture is set as a percentage. The operator can enter a default moisture percent to be used as a maximum moisture percent allowed. If the moisture rises above this setting, the computer will not recognize it and will use the default moisture value.

Min Moisture: Min Moisture is set as a percentage. The operator can enter a default moisture percent to be used as a minimum moisture percent allowed. If the moisture falls below this setting, the computer will not recognize it and will use the default setting.

Cap out-of-spec moisture to max/min? Enable to cap out-of-spec moisture values to default to whichever is closer; max or min moisture.



Cutoffs Section

Max Cutoff: Set in lbs. It allows for the aggregate amount in Free Fall during the Weighing Cycle to be seen by the computer. Free Fall is the aggregate suspended between the feed gate(s) and the heap of aggregate located in in the batcher. Since the aggregate is not felt by the scale system, the computer has not registered this weight in the batcher. Maximum Cutoff gives the computer a false target "X" number of lbs under the actual target. When the computer reads the false target, it closes the feed gate(s). The aggregate inFree Fall drops into the batcher. The computer waits for the Scale Balance Delay and if necessary, jogs the feed gate to bring the weight up to the target.

Maximum Cutoff is based on the smallest batch size (1yd or less). There is a "Maximum" possible amount of material in free fall with a small batch. To determine the correct setting, put the settings of Maximum Cutoff and Minimum Cutoff at zero. Create a Mix Design using the aggregate to be calculated. The amount entered should be the lowest amount of 1 yard of that aggregate.

Warning: In all cases, the setting for Maximum Cutoff must be a larger number than Minimum Cutoff. If not, the computer will weigh incorrectly.

Min Cutoff: Set in lbs. It serves the same function as Maximum Cutoff with the exception that it is used for a full size load. There is a "Minimum" amount of material in free fall with a large batch. Its value can be determined by weighing up, in Automatic, a full size load of aggregate.

The plant capacity determines what the full size load is. Batch a full size load of the mix design used in setting the Maximum Cutoff. Ensure that the Maximum Cuttof and Minimum Cutoff are set to zero. Take the difference between the amount of aggregate weighed and the target amount. Add 10% to this figure. This will be the setting for Minimum Cutoff.

Jog Open: Jog Open is set in seconds. It determines the amount of aggregate that drops with each Jog of the feed gate(s). Jogs occur during the Weighing Cycle immediately following the Fast Feed. The aggregate being batched is weighed up to a preliminary cutoff "X" number of pounds under the target. The computer closes the feed gate(s) and waits the Scale Balance Delay. The computer then Jogs the feed gate(s). During each Jog an amount of aggregate equivalent to the weight of approximately 1 scale graduation should drop into the batcher. The setting of Jog Open determines the amount of aggregate that drops with each Jog. If the Jog results in too small an amount, Jog Open must be increased. If the Jog results in too large an amount of aggregate, Jog Open must be decreased. In both cases the adjustment should be made in 0.05 second intervals.

Weighing Tolerances Section

Weighing Tolerances: Weighing Tolerances (Over, Under, Minimum) are set in percent for Over/Under and pounds for Minimum. The settings of Over and Under represent the maximum and minimum weight in the batcher that the computer will accept as being within the target weight window during the weigh up.

Note: Local regulations may apply for the settings of these tolerances. As a general rule though, these settings are normally set at 01.00.

The Minimum is set in pounds. It represents the lowest tolerance that the computer will accept for either an Over or Under condition. The value set for the Minimum is normally calculated by using .05% of the scale capacity. It will normally come into play when batching less than 1 yard of concrete.

Small Batch Range Section

Max: Set in lbs. This is the upper weight limit of the Small Batch Range for the material assigned to the bin.

Min: Set in lbs. This is the lower weight limit of the Small Batch Range for the material assigned to the bin.

Small Jog: Set in seconds. It is used any time a batch has a target weight less than the setting of Maximum Cutoff. This is normally set as twice the setting for Jog Open time. It allows approximately half the target weight to drop into the batcher. The rest of the target amount is jogged.

Bin Vibrator Section

Run Vibrator with Fast Feed: Set the ability to run the batcher's vibrator with fast feed.

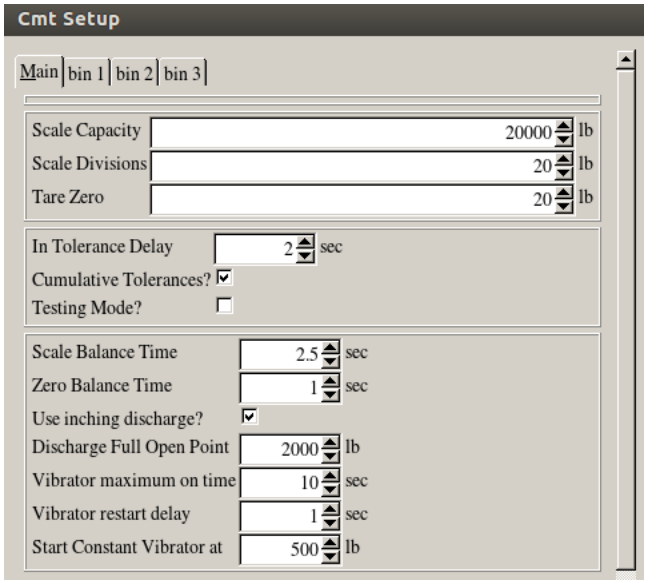
Run Vibrator with Jog: Set the ability to run the batcher's vibrator with jog.

Run Vibrator with Jog (Duration): Set the duration time, in seconds, to run the batcher's vibrator with jog.

1.2.2.2 Cement Plant Setup

This menu is accessed by right-clicking on the 3D model of the cement batcher and selecting *Plant Setup*. All of the settings made here will determine the operation of the Cement Weigh Batcher. If this system is being used on a plant with individual batchers, each batcher will have its own setup menu.

The menu contains multiple tabs, the first being for general settings and the rest being for settings on individual bins.



Scale Capacity: Set in pounds. It tells the computer the maximum amount of material that can be weighed into the batcher. The value of this setting is determined by the maximum setting on the corresponding Dial Head or by the Rating Plate located on the corresponding batcher. The control system will not allow for batching of any material weight that exceeds the scale capacity setting.

Scale Divisions: The smallest increment indicated by the scale.

Tare Zero: Set in pounds. It sets a value above and below zero which the computer will accept the batcher as being empty or at zero. This is normally set to one (1) scale graduation or 0.1% of the scale capacity.

In Tolerance Delay: Set in seconds. Once the material has reached the set tolerance amount, the system will then use the delay time to balance the scale.

Cumulative Tolerances?: Cumulative Tolerance is a checkbox (Y/N) option. When this option is selected the system will compensate the weighing tolerances for products using same material type. Using this option will allow the system to batch the products within the formula using an overall tolerance.

Testing Mode?: Use this checkbox when testing/calibrating the system with the Load Cell Indicators. This will allow the user to adjust the scale values in and out of tolerance without putting the system into a state that requires the tolerances to be accepted.

Scale Balance Time: Scale Balance Time is set in seconds. It allows the weigh batcher to settle out between the Fast Feed operation, the Jog operation, and between each successive Jog, before the computer will take a reading of the scale weight. This setting is determined by the physical movement of the scale during weigh-up. Start with an arbitrary setting of 02.00 seconds. In general, it is desirable to have this time set as low as possible.

Zero Balance Time: Zero Balance Time is set in seconds. It tells the computer to wait a certain period of time after sensing Tare Zero before closing the cement valve(s) and taking a final reading of the scale. This setting is used to ensure that the batcher scale is at or below Tare Zero after the Discharge Cycle is complete. Start with an arbitrary setting of 01.00 second. In general, it is desirable to have this time set as low as possible.

Use Inching Discharge?: Use Inching Discharge is a checkbox (Y/N) option. The system offers two methods of discharging cement from the batcher. An unchecked(N) response tells the computer to open the batcher discharge valve(s) wide during the Discharge Cycle until the scale comes to tare zero. A checked(Y) response tells the

computer to control the rate of discharge from the batcher on a pounds per second basis. In general, a chcked(Y) response is used when the discharge valve is controlled by a double action solenoid valve. An unchecked(N) response is used when the discharge valve is controlled by a single action solenoid valve.

Discharge Full Open Point: Discharge Full Open Point is set in pounds. It gives the computer a point in the Discharge Cycle when it should open the valve wide in order to get the last of the cement out of the scale. As a general rule it is set to the cement discharge rate calculated in the Discharge Sequence. If this setting causes the cement to overfill the truck charging chute/cement discharge tube, then the setting should be set to a lower value.

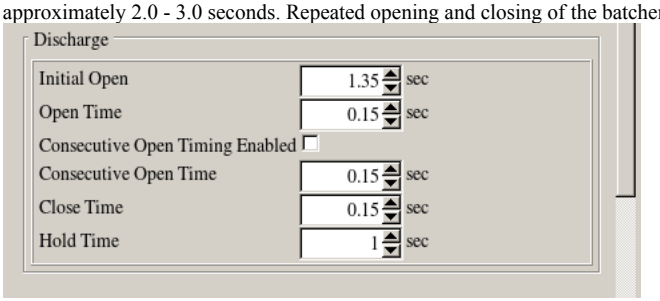
Vibrator Maximum On Time: Vibrator Maximum On Time is set in seconds. It works in conjunction with the Vibrator Turn On Delay and represents the length of time the vibrator will stay on. In general this setting will be 1 to 3 seconds. You want the vibrator to stay on only long enough to start the cement flowing again.

Vibrator Restart Delay: Vibrator Restart Delay is set in seconds. Once the vibrator has been turned on, it must wait a specified amount of time before it turns back on to minimize wear on the motors. This value specifies the amount of time to wait.

Start Constant Vibrator At: Start Constant Vibrator At is set in pounds. Once the scale for the cement batcher drops to or below this target, the vibrator will turn on for the remainder of the batch. Typically this is set to match the Discharge Full Open Point.

Discharge

The settings of Discharge Initial Open, Open Time and Close Time work together to control the rate of discharge from the batcher. The settings for Open Time and Close Time are referred to as the Inching Controls. Before any of these settings are made, it is important that the speed of action of the batcher valve be correctly adjusted so that optimum control from the computer can be achieved. Set the air pressure regulator to the solenoid valves to 80 PSIG. Locate the double acting solenoid air valve corresponding to the batcher valve that needs adjustment. It will be located on a manifold assembly with other solenoid air valves near the batcher. There are two solenoid coils, each with a manual slotted override button used to open and close the batcher valve. On each side, sandwiched between the solenoid and the manifold base of the air valve is an adjustment screw used to control the speed of action of the valve. Clockwise adjustment slows down the speed of action and counterclockwise adjustment increases the speed of action. Adjustments should be made on an empty batcher. Set the speed of opening to approximately 2.0 - 3.0 seconds and the speed of closing to approximately 2.0 - 3.0 seconds. Repeated opening and closing of the batcher gate using the manual override buttons will be necessary to achieve this setting.



Initial Open: Set in seconds. It determines how far the batcher valve will open at the start of the Discharge Cycle. The setting of this value depends upon the ability of the cement to flow through the valve. In general, a setting of 0.50 seconds is a good initial setting to start with. Further adjustments will be required based upon observations by the operator.

Open Time: Set in seconds. It determines how far the batcher valve will open when adjustments to the Discharge Rate are made by the computer. The setting should cause movement not greater than 1 to 2 inches with each Open pulse sent by the computer. In general, start with a setting of 0.10 seconds.

Consecutive Open Timing Enabled: Consecutive Open Timing Enabled is a checkbox (Y/N) option. When this option is selected the system will use Consecutive Open Time to open the feed gate any time the system needs to perform multiple open times in a row to reach the correct discharge rate. Typically using this option will help the system micro-adjust to the correct discharge rate by using a shorter open time.

Consecutive Open Time: Set in seconds. It determines how far the batcher valve will open when adjustments to the Discharge Rate are made by the computer.

Close Time: Close Time is set in seconds. It determines how far the batcher valve will close when adjustments to the Discharge Rate are made by the computer. As in the case with the Open Time setting, movement not greater than 1 to 2 inches should occur with each Close pulse sent by the computer. Start with a setting of 0.10 seconds.

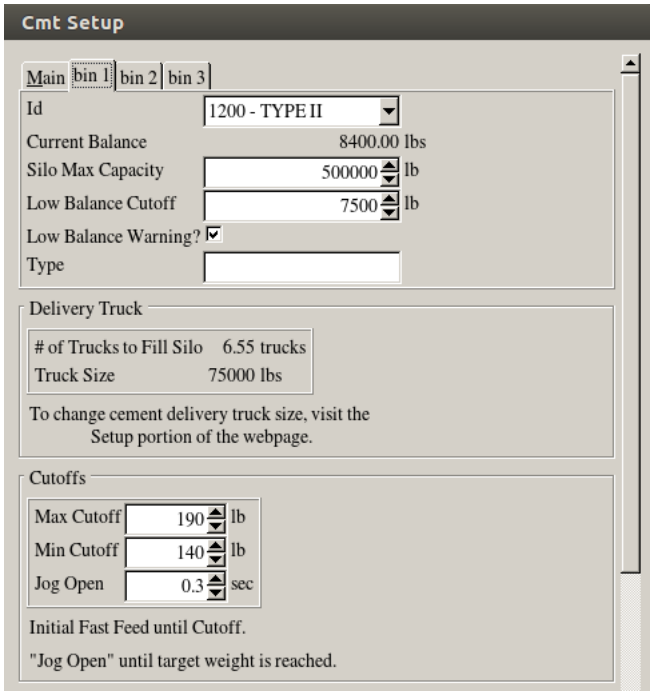
Hold Time: The Hold Time gives the computer control system a set value to give the material in the scale time to settle before the computer reacts by opening or closing the scale gates to maintain the discharge rate out of the scale. 1.5 seconds is a good number to start out with.

How Inching Controls Work: The Open Time and Close Time settings are referred to as the Inching Controls. They derive this name by the fact that when properly set they will cause the valve to open or close a distance not greater than 1 to 2 inches with each Open or Close adjustment from the computer. For this reason, it is very important that these settings are correctly made. Too high a setting will result in movement of the valve greater than the desired 1 to 2 inches. This will result in over compensation of the discharge rate and cause erratic discharge of the cement. Too low a setting will result in movement of the valve less than the desired 1 to 2 inches. This will result in under compensation of the discharge rate and cause excessive adjustments to the flow rate. Normally settings of approximately 0.05 to 0.10 seconds will achieve the desired results. Visual observation of the action of the valve will be required to determine the exact setting.

1.2.2.2.1 Cement Bin Plant Setup

Each bin assigned to a cement batcher has its own sub-section of plant settings. The Cement Setup menu is used to set the parameters that will allow the computer to control the weighing of Cement during the weighing cycle.

Note: Prior to making the settings for the Cement Setup, set the air pressure regulator to the solenoids to 80 PSIG.



ID: ID can be selected from a dropdown menu. In order for a material to appear in this menu, it first must be created on the product page on the website and given a type of *cmt*. Once an ID is selected, the computer will assume that is the content of this bin and will call this bin any time the associated material is used in the mix design.

Current Balance: The balance is a numerical display showing how much of that particular material is stored in that bin/silo. To make changes or adjustments to this value, a product transaction can be made.

Silo Max Capacity: Maximum amount of product the selected bin/silo can hold. Setting this value correctly will allow the Low Balance Warning to work correctly, along with the correct calculation for number of Delivery Trucks to fill the silo/bin.

Low Balance Cutoff: Cutoff value for the low balance warning.

Low Balance Warning: Low balance warning is a (Y/N) checkbox that will alert if the balance of the bin/silo is below the low balance cutoff.

Type: Setting a value in this field will set the material type. If there are other bins on this batcher with the same material type, these materials can compensate for each other using cumulative tolerances(when selected). If left blank, this feature is disabled.

Delivery Truck Section

This section is a visual aid for the user to determine how many trucks needed in order to fill the selected silo/bin to its max capacity. Calculations here will only work correctly if the *Silo Max Capacity*, *Current Balance*, and *Delivery Truck Size* values are set correctly and accurately. *Delivery Truck Size* can be set in the Setup portion of the Liberty Series companion webpage.

Cutoffs Section

Cutoff values represent the amount of material in free fall that is expected to land in the batcher after the gates are closed. There is a helpful tool available to help get you started with finding the best fit for your plant.

Warning: In all cases, the setting for Maximum Cutoff must be a larger number than Minimum Cutoff. If not, the computer will weigh incorrectly.

Maximum Cutoff: Maximum Cutoff is a value set in pounds. "Maximum" refers to the amount of material in free fall. Its purpose is to allow for the cement in Free Fall during the Weighing Cycle. Free Fall is the cement physically suspended between the feed valve and the heap of cement located in the batcher. Since this cement is not yet registered by the scale system, the computer has not yet registered this weight as being in the batcher. The Maximum Cutoff gives the computer a false target "X" number of pounds under the actual target weight. When the computer registers the false target weight in the batcher, it will close the feed gate. The cement that is in Free Fall will then settle into the batcher for the actual weight. The computer will then wait the Scale Balance Time and then Jog the feed gate to bring the weight up to the target weight within the tolerances set.

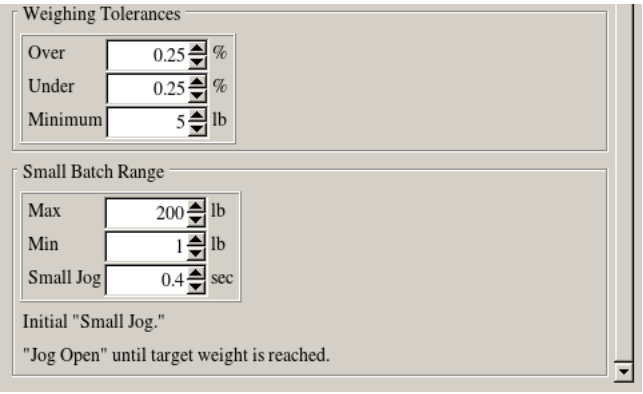
The Maximum Cutoff is set based on a 1 yard batch. To determine the correct setting, first put the settings of Maximum Cutoff and Minimum Cutoff at zero. Next create a Mix Design using the cement to be calculated. The amount entered should be the lowest amount for 1 yard of that cement.

Minimum Cutoff: Minimum Cutoff is a value set in pounds. Its purpose is the same as the Maximum Cutoff with the exception that it is used for a full size load instead of a 1 yard load. "Minimum" refers to the minimum amount of material in free fall. Its value can be determined by weighing up in automatic mode a full size load of the

cement to be tested. The Plant Capacity will determine what a full size load will be. To determine the Minimum Cutoff, batch a full size load of the test Mix Design used in setting the Maximum Cutoff. Insure that both the Maximum Cutoff and the Minimum Cutoff are set to zero. Take the difference between the amount of cement actually weighed and the target amount. Add 10% to this figure and it will become the Minimum Cutoff.

Note: While the following methods for calculating the Maximum Cutoff and the Minimum Cutoff will provide accurate results, it is usually not practical to weigh up cement as it can not be easily recycled back into the plant. As such, a shortcut method can be used to obtain these settings. Set the Maximum Cutoff to 500 and the Minimum Cutoff to 300. During the batching process make observations of where the Fast Feed ends and the Jog begins. Adjust the settings downward until the weigh-up can be achieved consistently with no more than 3 Jogs.

Jog Open: Jog Open is set in seconds. It determines the amount of cement that drops with each Jog of the feed valve. Jogs occur during the Weighing Cycle immediately following the Fast Feed. The cement being batched is weighed up to a preliminary cutoff "X" number of lbs under the target.The computer closes the feed valve and waits the Scale Balance Delay. If the weight of cement is under the minimum target weight as determined by the low tolerance setting, the computer Jogs the feed valve. During each Jog an amount of cement equivalent to the weight of approximately 1 scale graduation should drop into the batcher. The setting of Jog Open determines the amount of cement that drops with each Jog. If the Jog results in too small an amount of cement, Jog Open must be increased. If the Jog results in too large an amount of cement, Jog Open must be decreased. In both cases, the adjustment should be made in 0.05 second intervals.



Weighing Tolerances Section

Weighing Tolerances: Weighing Tolerances (Over, Under, Minimum) are set in percent for Over/Under and pounds for Minimum. The settings of Over and Under represent the maximum and minimum weight in the batcher that the computer will accept as being within the target weight window during the weigh up.

Note: Local regulations may apply for the settings of these tolerances. As a general rule though, these settings are normally set at 01.00.

The Minimum is set in pounds. It represents the lowest tolerance that the computer will accept for either an Over or Under condition. The value set for the Minimum is normally calculated by using .05% of the scale capacity. It will normally come into play when batching less than 1 yard of concrete.

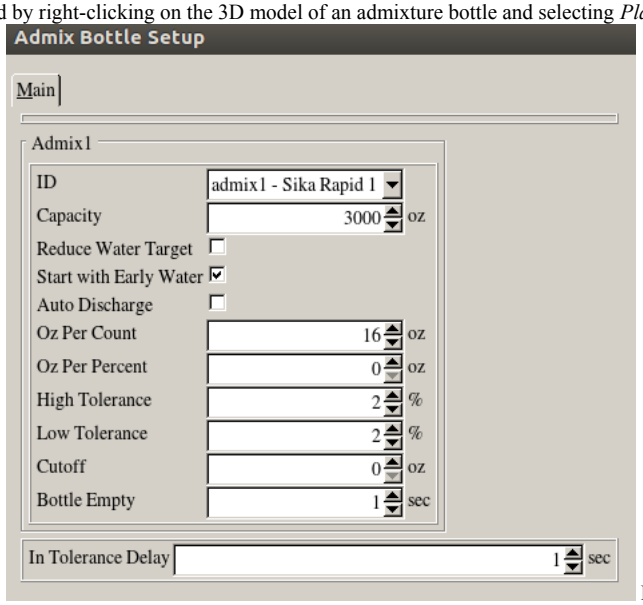
Small Batch Range Section

Small Batch Range: Setting this range will provide lower and upper weight limits for the system to use during weighup of the material assigned to the bin. If the target weight of the material is within the Small Batch Range the system will initially Small Jog for the set time provided and then jog to the target. This is done to prevent from Fast Feeding over the intended target and is typically set at or slightly above your Maximum Cutoff.

Small Jog: Small Batch Jog is set in seconds. It is used any time a batch has a target weight less than the setting of Maximum Cutoff. This is normally set 0.25 seconds greater than Jog Open. It allows approximately half the target weight to drop into the batcher. The rest of the target amount is Jogged.

1.2.2.3 Admix (Bottle) Plant Setup

This menu is accessed by right-clicking on the 3D model of an admixture bottle and selecting *Plant Setup*. All the settings here will setup the admix bottle system for use in the control system.



ID: ID can be selected from a dropdown menu. In order for a material to appear in this menu, it first must be created on the product page on the website and given a type of *admix*. Once an ID is selected, the computer will assume that is the content of this admixture bottle and will call this feed any time the associated material is used in the mix design.

Capacity: Capacity is specified in ounces. This value represents the total amount of admix that this bottle can hold.

Reduce Water Target: Checking this option will reduce the amount of batch-able water in the active batch by the dosage amount within the formula.

Start with Early Water: Checking this option will enable this admixture to be fed once Early Water has been started.

Auto Discharge: When Early Water has been selected, this material will begin to discharge automatically once the weigh-up process has been completed.

Oz Per Count: Oz Per Count is a digit input. It tells the computer how many ounces passed through the meter with each electrical pulse the meter sent to the computer. This number can be found on the Rating Plate located on the meter or by checking with the Admix Representative. It is important that the correct number be entered. An incorrect setting will cause either to much or too little admix to be metered into the batch.

Oz Per Percent: Oz Per 1% is a digit input. This setting is used to calculate admix dosage on a per hundred weight of cement basis. A setting of 1 would be used when calculating by ounces per hundred weight; 32 would be used when calculating quarts per hundred weight and so on for any amount per hundred weight desired.

High Tolerance: This value represents the maximum percentage that the computer will accept as being within the target amount during the feeding of material.

Low Tolerance: This value represents the minimum percentage that the computer will accept as being within the target amount during the feeding of material.

Cutoff: The system will stop feeding the material by this amount less from the target.

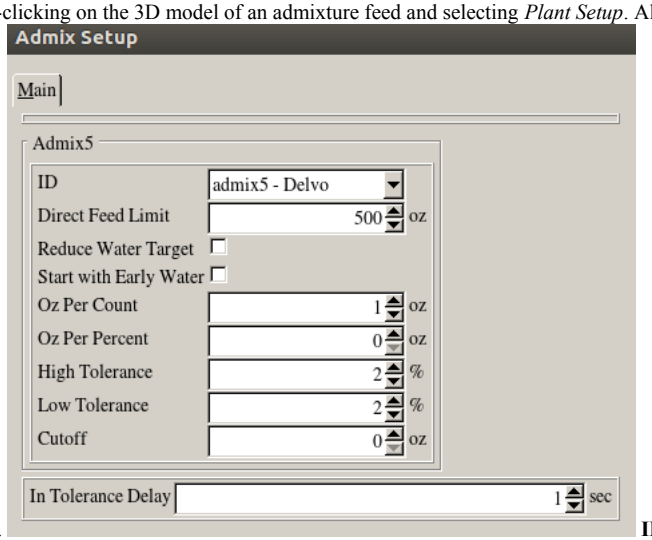
Bottle Empty: Bottle Empty is set in seconds. It tells the computer to wait a set period of time after it senses the Bottle Empty indication before turning off the discharge signal to the admix system. This is normally used when you want to purge the admix line after each discharge.

Note: In many admix systems supplied today a time delay is adjustable in the controls supplied with that system. The use of this setting is only applicable where the ERIE Strayer system is used to directly control the admix system and not where the control signals are being used by an Admix Systems controls.

In Tolerance Delay: In Tolerance Delay is set in seconds. Once the material has reached the set tolerance amount, the system will then use the delay time to balance the scale.

1.2.2.4 Admix (Direct Feed) Plant Setup

This menu is accessed by right-clicking on the 3D model of an admixture feed and selecting *Plant Setup*. All the settings here will setup the admix direct feed system for operating in the control system.



ID: ID can be selected from a dropdown menu. In order for a material to appear in this menu, it first must be created on the product page on the website and given a type of *admix*. Once an ID is selected, the computer will assume that is the content of this admixture feed and will call this feed any time the associated material is used in the mix design.

Direct Feed Limit: Direct Feed Limit is given in ounces.

Reduce Water Target: Checking this option will reduce the amount of batch-able water in the active batch by the dosage amount within the formula.

Start with Early Water: Checking this option will enable this admixture to be fed once Early Water has been started.

Oz Per Count: Oz Per Count is a digit input. It tells the computer how many ounces passed through the meter with each electrical pulse the meter sent to the computer. This number can be found on the Rating Plate located on the meter or by checking with the Admix Representative. It is important that the correct number be entered. An incorrect setting will cause either to much or too little admix to be metered into the batch.

Oz Per Percent: Oz Per 1% is a digit input. This setting is used to calculate admix dosage on a per hundred weight of cement basis. A setting of 1 would be used when calculating by ounces per hundred weight; 32 would be used when calculating quarts per hundred weight and so on for any amount per hundred weight desired.

High Tolerance: This value represents the maximum percentage that the computer will accept as being within the target amount during the feeding of material.

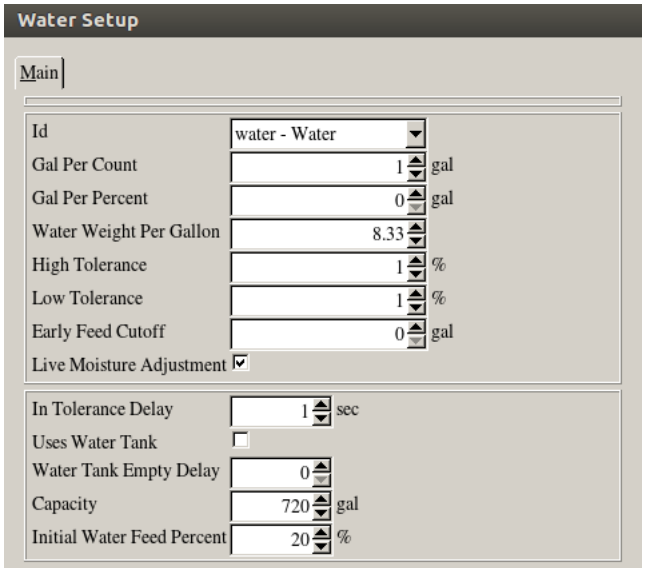
Low Tolerance: This value represents the minimum percentage that the computer will accept as being within the target amount during the feeding of material.

Cutoff: The system will stop feeding the material by this amount less from the target.

In Tolerance Delay: In Tolerance Delay is set in seconds. Once the material has reached the set tolerance amount, the system will then use the delay time to balance the scale.

1.2.2.5 Water Plant Setup

This menu is accessed by right-clicking on the 3D model of the water feed and selecting *Plant Setup*. The Water Setup screen is used to make necessary adjustments for the water to dispense properly.



ID: ID can be selected from a dropdown menu. In order for a material to appear in this menu, it first must be created on the product page on the website and given a type of *water*. Once an ID is selected, the computer will assume that is the content of this water meter and will call this meter any time the associated material is used in the mix design

Gal Per Count: Gal Per Count is a digit input. It tells the computer how many gallons passed through the meter with each electrical pulse the meter sent to the computer.

This number set during initial setup of the water meter. It is important that the correct number be entered. An incorrect setting will cause either to much or too little water to be metered into the batch.

Gal Per Percent: Gal Per Percent is a digit input. This setting is used to calculate water dosage on a per hundred weight of cement basis. A setting of 1 would be used when calculating by gallon per hundred weight.

Water Weight Per Gallon: Water Weight Per Gallon is a setting normally set to 8.33. Certain specifications will dictate that this be set to 8.34 lbs. Check local regulations to determine what the correct setting is for your location.

High Tolerance: This value represents the maximum percentage that the computer will accept as being within the target amount during the feeding of material.

Low Tolerance: This value represents the minimum percentage that the computer will accept as being within the target amount during the feeding of material.

Early Feed Cutoff: The system will stop feeding the material by this amount less from the target.

Live Moisture Adjustment: When this option is selected, the system will automatically adjust the moisture compensation values from the aggregates. If the plant is using moisture probes in the aggregates the system will adjust the water based off of the live moisture readings from the probes. If moisture probes are not being used, the system will adjust the water based off of the default moisture values entered within Aggregate Setup.

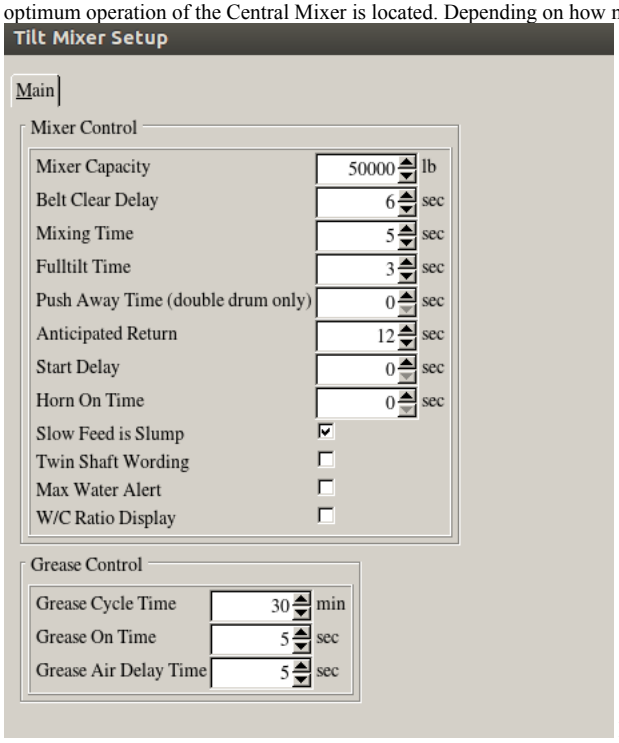
In Tolerance Delay: In Tolerance Delay is set in seconds. Once the material has reached the set tolerance amount, the system will then use the delay time to receive all the counts from the water meter after turning off the water feed.

Uses Water Tank: **Transit Mix application:** Selecting this option will enable water feed into the water holding tank during the weighup procedure. When Early Water is selected the water will continue to feed to target and the water holding tank will open. Otherwise, during the discharge sequence the water tank will then open until the system receives a signal that the water tank is empty.
Central Mix application: Selecting this option will enable water feed into the water holding tank during the weighup procedure. During the discharge sequence the water tank will then open until the system receives a signal that the water tank is empty.
Capacity: Capacity is set in gallons. It tells the computer the maximum amount of water that can be metered. The value for a Water Meter is determined by the maximum amount of water that you anticipate being used in a full load of concrete.

Initial Water Feed Percent: Initial Water Feed Percent is set as a percentage of the overall water target. Setting this percent will allow that amount of water to be fed. The system then holds the remaining water until all the moisture calculations are complete. At this time the system resumes feeding water. This is done to prohibit the system from feeding too much batched water into the load.

1.2.2.6 Tilt Mixer Plant Setup

This menu is accessed by right-clicking on the 3D model of the mixer and selecting *Plant Setup*. The Mixer Controls screen is where the necessary Mixer parameters for optimum operation of the Central Mixer is located. Depending on how many mixers there are, there will be separate menus for each mixer.



Mixer Capacity: Mixer Capacity is set in pounds. The correct value of this setting can be found either by the Rating Plate located on the mixer or in the manual for the mixer.

Belt Clear Delay: Belt Clear Delay is set in seconds. It tells the computer how long it takes the aggregate to clear the belt during discharge. The value of this setting is determined by visual observation.

Mixing Time: Mixing Time is set in seconds.

NOTE: Local regulations may govern the setting of this value. It is the operators responsibility to determine what regulations do exist. Per ASTM C94 standards: A minimum of 1 minute for the first cubic yard and an additional 15 sec for each additional cubic yard is required. This minimum can be reduced if mixing uniformity criteria are met after shorter periods. Shrink mixing may be allowed.

Fulltilt Time: Fulltilt Time is set in seconds. It tells the system how long it takes the mixer to discharge after it reaches Full Tilt. The system uses this setting during full automatic operation to determine when the mixer is empty and ready to return to the Home position.

Push Away Time: Push Away Time is set in seconds. This setting is only used for double drum batch plants that support a moving conveyor. It is the amount of time spent sending the conveyor toward the opposite mixer after discharge. This is used when there is no signal for the conveyor in the "middle" position between mixers.

Anticipated Return: Anticipated Return Time is set in seconds. It tells the computer how long it takes the mixer to return from a Full Tilt to a Home position. The computer uses this setting to determine when the mixer is ready to receive another load.

Start Delay: Start Delay is set in seconds. Once the Mixer has been set to be turned on, the system will delay by this amount of time before sending this signal to run the mixer.

Horn On Time: If the plant has a horn for the Mixer, this option can be used to set a time for the horn to be energized. The horn option must be known at the time of system setup, otherwise there will not be an input to the computer for horn use.

Slow Feed is Slump: When this option is selected, after the discharge sequence has been completed, the slow feed counter is reset. Any water that is fed through the slow feed will be counted as slump water. This option is only available on Water(2Feeds) systems.

Twin Shaft Wording: Changes visual text for twin shaft mixers.

Max Water Alert: Alert for if a batch is reaching it's maximum water amount.

W/C Ratio Display: Shows a text display of the water/cement ratio during discharge and mixing of a batch.

Grease Control Section

When the batch plant is outfitted, Grease Control is automated through the Liberty Series software to maintain proper mixer lubrication.

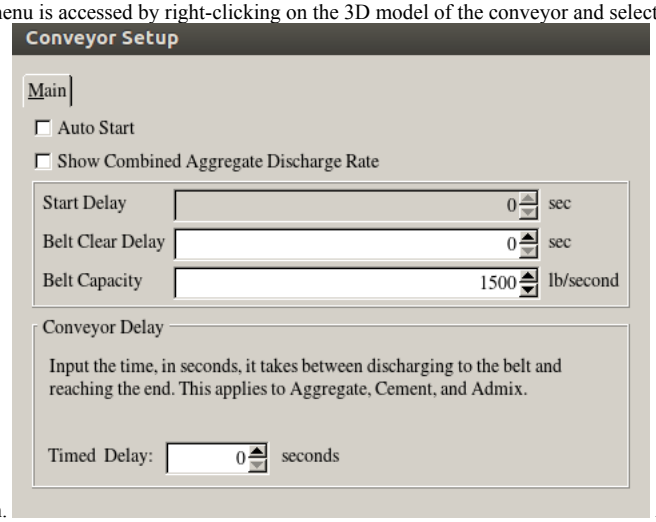
Grease Cycle Time: Grease Cycle Time is set in minutes. This is the time interval delay for Grease On Time

Grease On Time: Grease On Time is set in seconds. Once the Grease Cycle Time has expired, the system will run the Grease Control for this amount of time.

Grease Air Delay Time: Grease Air Delay Time is set in seconds. This is the amount of additional time the air valve will continue after Grease On Time runs.

1.2.2.7 Conveyor Plant Setup

This menu is accessed by right-clicking on the 3D model of the conveyor and selecting *Plant Setup*. All the settings here will setup the conveyor for use in the control system.



Auto Start: If the plant is properly configured for auto-starting the batch transfer conveyor and this option is selected, the system will start the conveyor at the beginning of the discharge sequence and stop the conveyor once the discharge sequence is complete.

Show Combined Aggregate Discharge Rate: Check this box to enable text below the conveyor that shows the combined aggregate discharge rate.

Start Delay: Start Delay is set in seconds. Once the conveyor has been set to be turned on, the system will delay by this amount of time before sending this signal to run the conveyor.

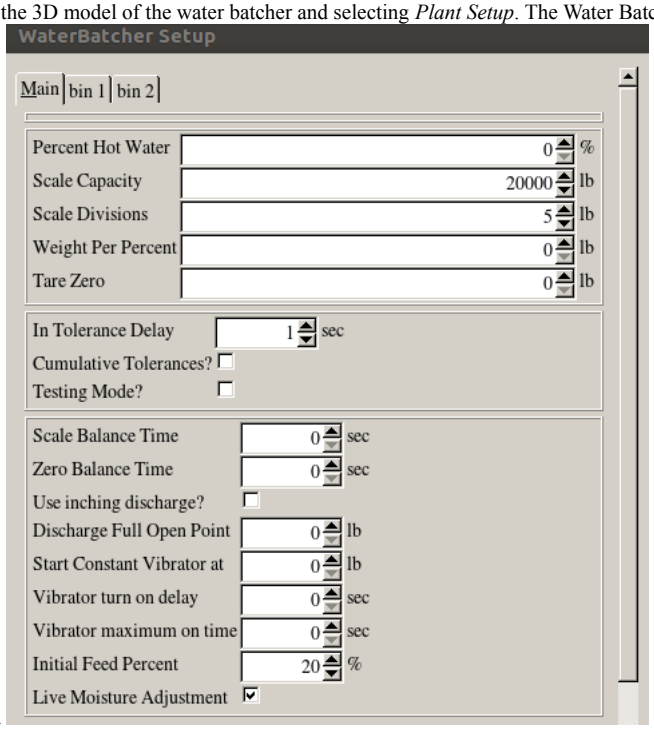
Belt Clear Delay: Belt Clear Delay is set in seconds. Once all of the materials have been completely discharged, this is the amount of time the system will delay turning the conveyor off to ensure all of the materials have cleared the conveyor.

Belt Capacity: Belt Capacity is set in pound(per second). This will set the maximum amount of pounds per second the system will be able to discharge materials onto the conveyor. If the discharge sequence is set at a rate over the Belt Capacity the system will display a notification stating the rate is higher than the conveyor is set to handle. If Aggregate Batchers are set to proportional discharge, the Belt Capacity is also used as the target discharge rate.+

Conveyor Delay: Input the time, in seconds, it takes between discharging to the belt and reaching the end. This applies to *Aggregate*, *Cement*, and *Admix*.

1.2.2.8 Water (Batcher) Plant Setup

This menu is accessed by right-clicking on the 3D model of the water batcher and selecting *Plant Setup*. The Water Batcher Setup screen is used to make necessary adjustments for the water to batch properly.



Percent Hot Water: If there are two bins on the water batcher, percent hot water will be available to adjust. This sets what percent of water batched is hot water.

Percent Ice: If there is only one bin on the water batcher, percent ice will be available to adjust. This sets what percentage of water batched is ice.

Scale Capacity: Scale Capacity is set in pounds. It tells the computer the maximum amount of material that can be weighed into the batcher. The value of this setting is determined by the maximum setting on the corresponding Dial Head or by the Rating Plate located on the corresponding batcher. The control system will not allow for batching of any material that exceeds the scale capacity setting.

Scale Divisions: The smallest increment indicated by the scale.

Weight Per Percent: Weight of water per percent of batching amount.

Tare Zero: Tare Zero is set in pounds. It sets a value above and below zero which the computer will accept the batcher as being empty or at zero. This is normally set to one (1) scale graduation or 0.1% of the scale capacity.

In Tolerance Delay: In Tolerance Delay is set in seconds. Once the material has reached the set tolerance amount, the system will then use the delay time to balance the scale.

Cumulative Tolerances?: Cumulative Tolerance is a checkbox (Y/N) option. When this option is selected the system will compensate the weighing tolerances for products using same material type. Using this option will allow the system to batch the products within the formula using an overall tolerance.

Testing Mode?: Use this checkbox when testing/calibrating the system with the Load Cell Indicators. This will allow the user to adjust the scale values in and out of tolerance without putting the system into a state that requires the tolerances to be accepted.

Scale Balance Time: Scale Balance Time is set in seconds. It allows the weigh batcher to settle out between the Fast Feed operation, the Jog operation, and between each successive Jogs, before the computer will take a reading of the scale weight. This setting is determined by the physical movement of the scale during weigh-up. Start with an arbitrary setting of 02.00 seconds. In general, it is desirable to have this time set as low as possible.

Zero Balance Time: Zero Balance Time is set in seconds. It tells the computer to wait a certain period of time after sensing Tare Zero before closing the gate(s) and taking a final reading of the scale. This setting is used to ensure that the batcher scale is at or below Tare Zero after the Discharge Cycle is complete. Start with an arbitrary setting of 01.00 seconds. In general, it is desirable to have this time set as low as possible.

Use Inching Discharge?: Use Inching Discharge is a checkbox (Y/N) option. The system offers two methods of discharging aggregate from the batcher. An unchecked(N) response tells the computer to open the batcher discharge gate(s) wide during the entire Discharge Cycle. A checked(Y) response tells the computer to control the rate of discharge from the batcher on a pounds per second basis. In general, a checked(Y) response is used when the discharge gate is controlled by a double action solenoid valve. An unchecked(N) response is used when the discharge gate is controlled by a single action solenoid valve or a high capacity Batch Transfer Conveyor.

Discharge Full Open Point: Discharge Full Open Point is set in pounds. For two-gate batchers, this option is set per gate. It gives the computer a point in the Discharge Cycle to open the gate(s) wide and turn on the vibrator in order to get the last of the aggregate out of the scale. As a general rule it is set to the Aggregate Discharge Rate which is set in the Discharge Sequence. If this setting causes either the belt to flood or the aggregate to overflow the charging chute, then the setting should be set to a lower value.

Start Constant Vibrator At: Start Constant Vibrator At is set in pounds. Once the scale for the aggregate batcher drops to or below this target, the vibrator will turn on for the remainder of the batch.

Vibrator turn on Delay: Vibrator turn on Delay is set in seconds. Once the vibrator has been turned on, it must wait a specified amount of time before it turns back on to minimize wear on the motors. This value specifies the amount of time to wait.

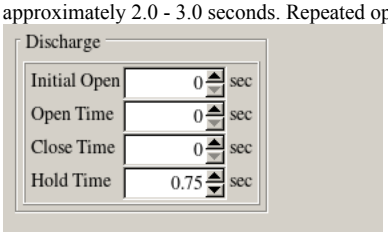
Vibrator Maximum On Time: Vibrator Maximum On Time is set in seconds. It works in conjunction with the Vibrator Turn On Delay and represents the length of time the vibrator will stay on. In general this setting will be 1 to 3 seconds. You want the vibrator to stay on only long enough to start the water flowing again.

Initial Feed Percent: Initial Water Feed Percent is set as a percentage of the overall water target. Setting this percent will allow that amount of water to be fed. The system then holds the remaining water until all the moisture calculations are complete. At this time the system resumes feeding water. This is done to prohibit the system from feeding too much batched water into the load.

Live Moisture Adjustment: When this option is selected, the system will automatically adjust the moisture compensation values from the aggregates. If the plant is using moisture probes in the aggregates the system will adjust the water based off of the live moisture readings from the probes. If moisture probes are not being used, the system will adjust the water based off of the default moisture values entered within Aggregate Setup.

Discharge

The settings of Discharge Initial Open, Open Time and Close Time work together to control the rate of discharge from the batcher. The settings for Open Time and Close Time are referred to as the Inching Controls. Before any of these settings are made, it is important that the speed of action of the batcher valve be correctly adjusted so that optimum control from the computer can be achieved. Set the air pressure regulator to the solenoid valves to 80 PSIG. Locate the double acting solenoid air valve corresponding to the batcher valve that needs adjustment. It will be located on a manifold assembly with other solenoid air valves near the batcher. There are two solenoid coils, each with a manual slotted override button used to open and close the batcher valve. On each side, sandwiched between the solenoid and the manifold base of the air valve is an adjustment screw used to control the speed of action of the valve. Clockwise adjustment slows down the speed of action and counterclockwise adjustment increases the speed of action. Adjustments should be made on an empty batcher. Set the speed of opening to approximately 2.0 - 3.0 seconds and the speed of closing to approximately 2.0 - 3.0 seconds. Repeated opening and closing of the batcher gate using the manual override buttons will be necessary to achieve this setting.



Initial Open: Set in seconds. It determines how far the batcher valve will open at the start of the Discharge Cycle. The setting of this value depends upon the ability of the cement to flow through the valve. In general, a setting of 0.50 seconds is a good initial setting to start with. Further adjustments will be required based upon observations by the operator.

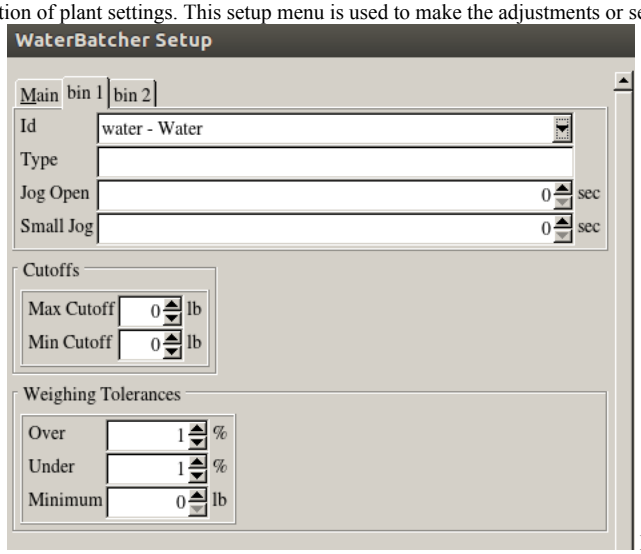
Open Time: Set in seconds. It determines how far the batcher valve will open when adjustments to the Discharge Rate are made by the computer. The setting should cause movement not greater than 1 to 2 inches with each Open pulse sent by the computer. In general, start with a setting of 0.10 seconds.

Close Time: Close Time is set in seconds. It determines how far the batcher valve will close when adjustments to the Discharge Rate are made by the computer. As in the case with the Open Time setting, movement not greater than 1 to 2 inches should occur with each Close pulse sent by the computer. Start with a setting of 0.10 seconds.

Hold Time: The Hold Time gives the computer control system a set value to give the material in the scale time to settle before the computer reacts by opening or closing the scale gates to maintain the discharge rate out of the scale. 1.5 seconds is a good number to start out with.

1.2.2.8.1 Water Bin Plant Setup

Each feed assigned to a water batcher has its own sub-section of plant settings. This setup menu is used to make the adjustments or settings that allow the computer to control the feed of aggregates during the Weighing Cycle.



ID: ID can be selected from a dropdown menu. In order for a material to apepar in this menu, it first must be created on the product page and given a type of *water*. Once an ID is selected, the computer will assume that is the content of this feed and will call this feed any time the associated material is used in the mix design.

Type: This is a visual field for the user to specify what type of water is in the specified bin.

Jog Open: Jog Open is set in seconds. It determines the amount of water that drops with each Jog of the feed valve. Jogs occur during the Weighing Cycle immediately following the Fast Feed. The water being batched is weighed up to a preliminary cutoff "X" number of lbs under the target.The computer closes the feed valve and waits the Scale Balance Delay. If the weight of water is under the minimum target weight as determined by the low tolerance setting, the computer Jogs the feed valve. During each Jog an amount of water equivalent to the weight of approximately 1 scale graduation should drop into the batcher. The setting of Jog Open determines the amount of water that drops with each Jog. If the Jog results in too small an amount of water, Jog Open must be increased. If the Jog results in too large an amount of water, Jog Open must be decreased. In both cases, the adjustment should be made in 0.05 second intervals.

Small Jog: Small Batch Jog is set in seconds. It is used any time a batch has a target weight less than the setting of Maximum Cutoff. This is normally set 0.25 seconds

greater than Jog Open. It allows approximately half the target weight to drop into the batcher. The rest of the target amount is Jogged.

Cutoffs

Cutoff values represent the amount of water in free fall that is expected to land in the batcher after the valve is closed. There is a helpful tool available to help get you started with finding the best fit for your plant.

Warning: In all cases, the setting for Maximum Cutoff must be a larger number than Minimum Cutoff. If not, the computer will weigh incorrectly.

Maximum Cutoff: Maximum Cutoff is a value set in pounds. "Maximum" refers to the amount of material in free fall. Its purpose is to allow for the water in Free Fall during the Weighing Cycle. Free Fall is the water physically suspended between the feed valve and the water located in the batcher. Since this water is not yet registered by the scale system, the computer has not yet registered this weight as being in the batcher. The Maximum Cutoff gives the computer a false target "X" number of pounds under the actual target weight. When the computer registers the false target weight in the batcher, it will close the feed gate. The water that is in Free Fall will then settle into the batcher for the actual weight. The computer will then wait the Scale Balance Time and then Jog the feed gate to bring the weight up to the target weight within the tolerances set.

The Maximum Cutoff is set based on a 1 yard batch. To determine the correct setting, first put the settings of Maximum Cutoff and Minimum Cutoff at zero. Next create a Mix Design using the water to be calculated. The amount entered should be the lowest amount for 1 yard of that water.

Minimum Cutoff: Minimum Cutoff is a value set in pounds. Its purpose is the same as the Maximum Cutoff with the exception that it is used for a full size load instead of a 1 yard load. "Minimum" refers to the minimum amount of material in free fall. Its value can be determined by weighing up in automatic mode a full size load of the water to be tested. The Plant Capacity will determine what a full size load will be. To determine the Minimum Cutoff, batch a full size load of the test Mix Design used in setting the Maximum Cutoff. Insure that both the Maximum Cutoff and the Minimum Cutoff are set to zero. Take the difference between the amount of water actually weighed and the target amount. Add 10% to this figure and it will become the Minimum Cutoff.

Weighing Tolerances

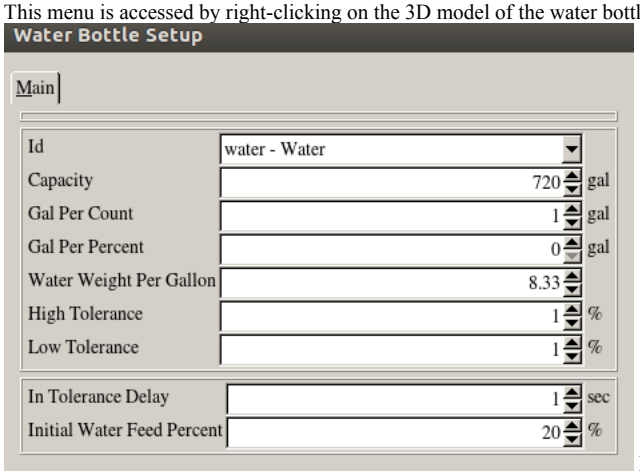
Weighing Tolerances: Weighing Tolerances **(Over, Under, Minimum)** are set in percent for Over/Under and pounds for Minimum. The settings of Over and Under represent the maximum and minimum weight in the batcher that the computer will accept as being within the target weight window during the weigh up.

Note: Local regulations may apply for the settings of these tolerances. As a general rule though, these settings are normally set at 01.00.

Minimum: The Minimum is set in pounds. It represents the lowest tolerance that the computer will accept for either an Over or Under condition. The value set for the Minimum is normally calculated by using .05% of the scale capacity. It will normally come into play when batching less than 1 yard of concrete.

1.2.2.9 Water (Bottle) Plant Setup

This menu is accessed by right-clicking on the 3D model of the water bottle and selecting *Plant Setup*.



Id: ID can be selected from a dropdown menu. In order for a material to appear in this menu, it first must be created on the product page on the website and given a type of *water*. Once an ID is selected, the computer will assume that is the content of this water meter and will call this meter any time the associated material is used in the mix design.

Capacity: Capacity is set in gallons. It tells the computer the maximum amount of water that can be metered. The value for a Water Meter is determined by the maximum amount of water that you anticipate being used in a full load of concrete.

Gal Per Count: Gal Per Count is a digit input. It tells the computer how many gallons passed through the meter with each electrical pulse the meter sent to the computer. This number set during initial setup of the water meter. It is important that the correct number be entered. An incorrect setting will cause either to much or too little water to be metered into the batch.

Gal Per Percent: Gal Per Percent is a digit input. This setting is used to calculate water dosage on a per hundred weight of cement basis. A setting of 1 would be used when calculating by gallon per hundred weight.

Water Weight Per Gallon: Water Weight Per Gallon is a setting normally set to 8.33. Certain specifications will dictate that this be set to 8.34 lbs. Check local regulations to determine what the correct setting is for your location.

High Tolerance: This value represents the maximum percentage that the computer will accept as being within the target amount during the feeding of material.

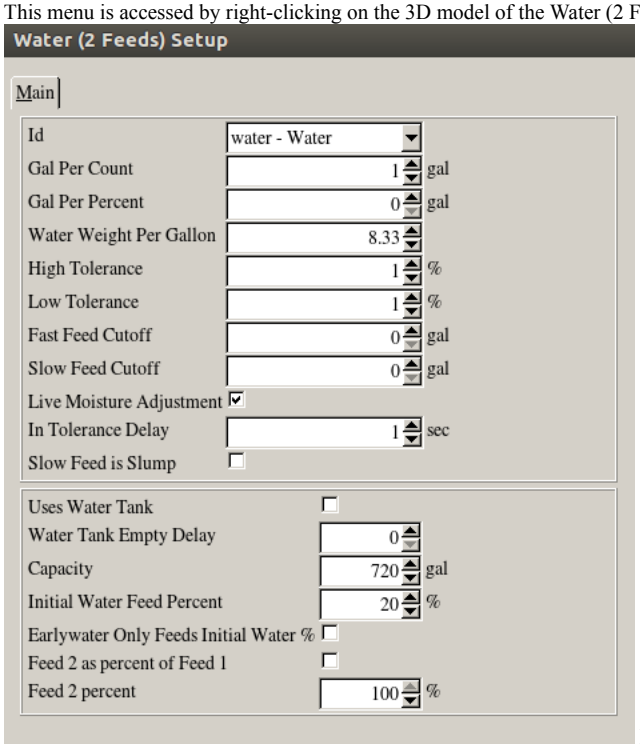
Low Tolerance: This value represents the minimum percentage that the computer will accept as being within the target amount during the feeding of material.

In Tolerance Delay: In Tolerance Delay is set in seconds. Once the material has reached the set tolerance amount, the system will then use the delay time to receive all the counts from the water meter after turning off the water feed.

Initial Water Feed Percent: Initial Water Feed Percent is set as a percentage of the overall water target. Setting this percent will allow that amount of water to be fed. The system then holds the remaining water until all the moisture calculations are complete. At this time the system resumes feeding water. This is done to prohibit the system from feeding too much batched water into the load.

1.2.2.10 Water (2 Feeds) Plant Setup

This menu is accessed by right-clicking on the 3D model of the Water (2 Feeds) and selecting *Plant Setup*.



ID: ID can be selected from a dropdown menu. In order for a material to appear in this menu, it first must be created on the product page on the website and given a type of *water*. Once an ID is selected, the computer will assume that is the content of this water meter and will call this meter any time the associated material is used in the mix design.

Gal Per Count: Gal Per Count is a digit input. It tells the computer how many gallons passed through the meter with each electrical pulse the meter sent to the computer. This number set during initial setup of the water meter. It is important that the correct number be entered. An incorrect setting will cause either to much or too little water to be metered into the batch.

Gal Per Percent: Gal Per Percent is a digit input. This setting is used to calculate water dosage on a per hundred weight of cement basis. A setting of 1 would be used when calculating by gallon per hundred weight.

Water Weight Per Gallon: Water Weight Per Gallon is a setting normally set to 8.33. Certain specifications will dictate that this be set to 8.34 lbs. Check local regulations to determine what the correct setting is for your location.

High Tolerance: This value represents the maximum percentage that the computer will accept as being within the target amount during the feeding of material.

Low Tolerance: This value represents the minimum percentage that the computer will accept as being within the target amount during the feeding of material.

Fast Feed Cutoff: The system will stop feeding the material by this amount less from the target.

Slow Feed Cutoff: The system will stop feeding the material by this amount less from the target during slow feed.

Live Moisture Adjustment: When this option is selected, the system will automatically adjust the moisture compensation values from the aggregates. If the plant is using moisture probes in the aggregates the system will adjust the water based off of the live moisture readings from the probes. If moisture probes are not being used, the system will adjust the water based off of the default moisture values entered within Aggregate Setup.

In Tolerance Delay: In Tolerance Delay is set in seconds. Once the material has reached the set tolerance amount, the system will then use the delay time to receive all the counts from the water meter after turning off the water feed.

Slow Feed is Slump: When this option is selected, after the discharge sequence has been completed, the slow feed counter is reset. Any water that is fed through the slow feed will be counted as slump water. This option is only available on Tilt Mixer Plant Setup.

Uses Water Tank:

Transit Mix application: Selecting this option will enable water feed into the water holding tank during the weighup procedure. When Early Water is selected the wate will continue to feed to target and the water holding tank will open. Otherwise, during the discharge sequence the water tank will then open until the system receives a signal that the water tank is empty.

Central Mix application: Selecting this option will enable water feed into the water holding tank during the weighup procedure. During the discharge sequence the water tank will then open until the system receives a signal that the water tank is empty.
Capacity: Capacity is set in gallons. It tells the computer the maximum amount of water that can be metered. The value for a Water Meter is determined by the maximum amount of water that you anticipate being used in a full load of concrete.

Initial Water Feed Percent: Initial Water Feed Percent is set as a percentage of the overall water target. Setting this percent will allow that amount of water to be fed. The system then holds the remaining water until all the moisture calculations are complete. At this time the system resumes feeding water. This is done to prohibit the system from feeding too much batched water into the load.

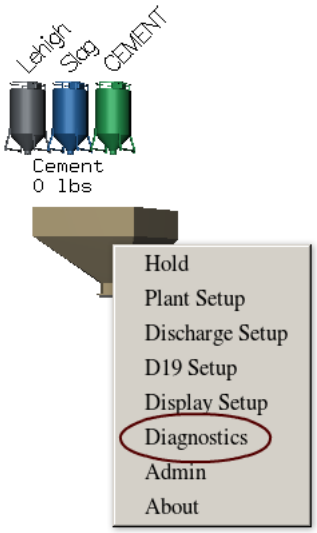
Earlywater Only Feeds Initial Water %: Check this box if early water only feeds the the amount set in *Initial Water Feed Percent*.

Feed 2 as percent of Feed 1: Check this if Feed 2 is a percent of Feed 1.

Feed 2 percent: Set Feed 2's percentage here.

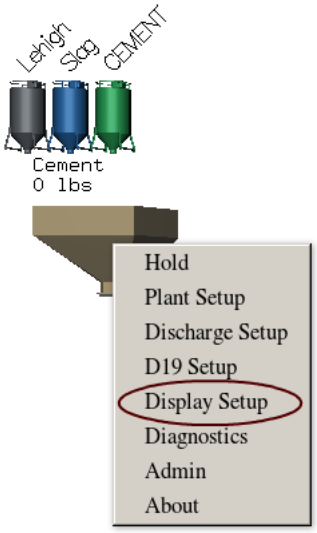
1.2.3 Diagnostics

The purpose of the Diagnostics for each component of the plant is to have a detailed history of every action that occurs during each load ran through the plant. We can use these details to evaluate how each component of the plant is operating. From these details we can determine if any settings can be modified to increase efficiency and production. Each diagnostic record is saved to the computer for one week.



1.2.4 Display Setup

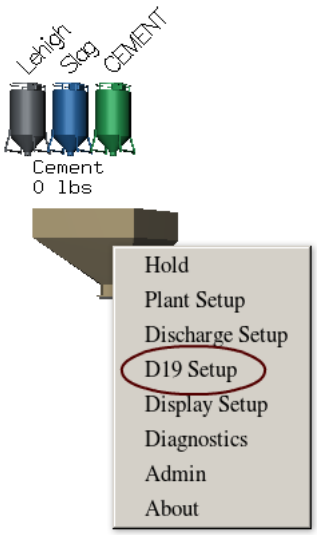
Each control located in the 3D Batch Screen has its own set of coordinates that tell the software where to display the 3D model. These coordinates can be customized and the controls can be organized however the user would like using the display settings. The display settings can be accessed for any given control by right-clicking on the 3D model and selecting *Display Setup*. This option will be grey and unavailable in simulation and real mode. This menu is only accessible if the software is opened in **Setup Mode**. Once in setup mode, all controls have a display menu.



The display setup menus show the position, rotation, and scale of each control. They also show the position and rotation of bins that belong with each control and also the display text shown near that control. Any of these can be customized in setup mode and the changes will be applied to all other modes.

1.2.5 D19 Setup

Description of what D19 actually is. The D19 settings can be accessed for any given control by right-clicking on the 3D model and selecting *D19 Setup* from the dropdown. If the text for that option is grey, there are no setup options available for that control.

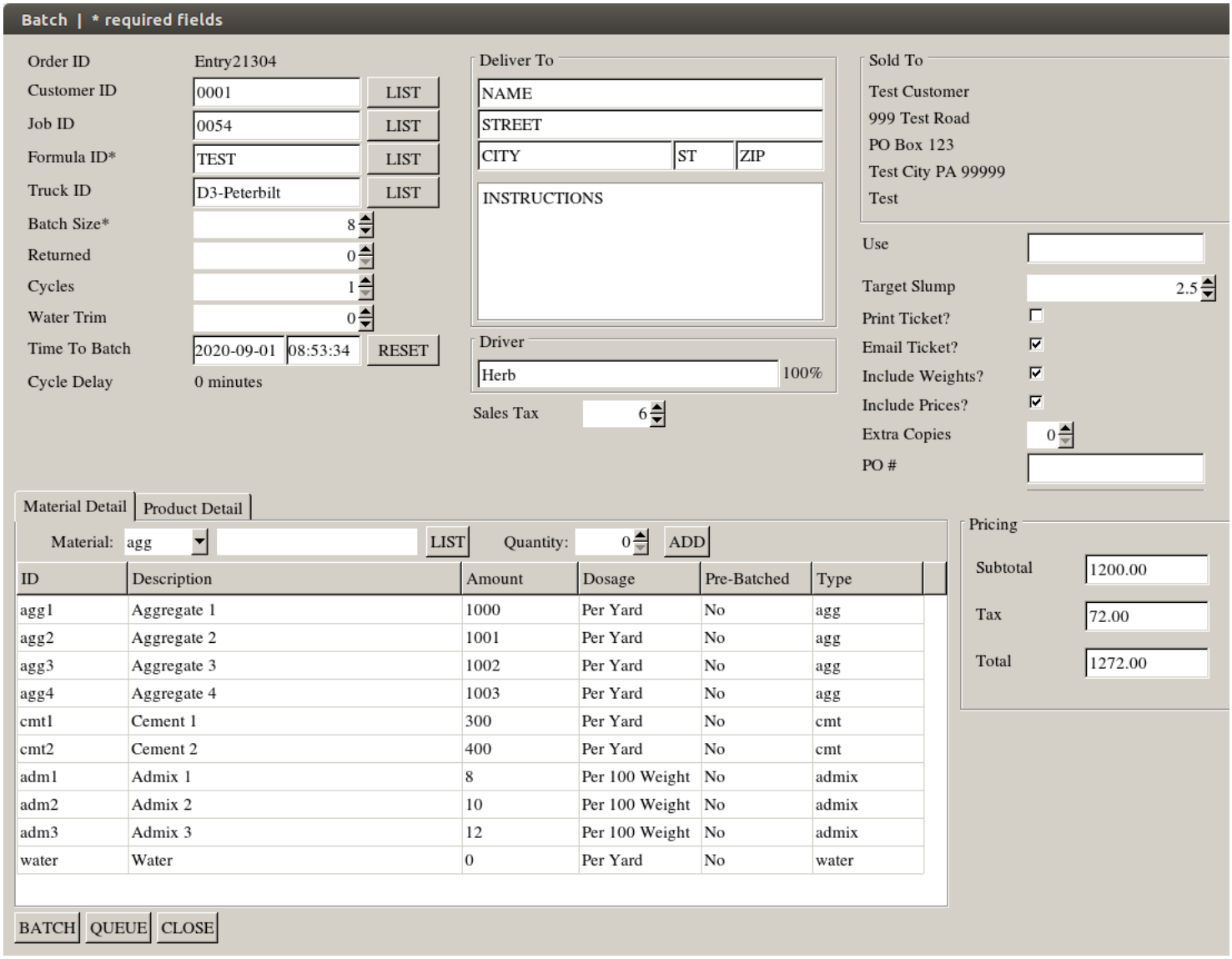


The Values within the D19 Setup are used to control the Input and Output signals between the Computer and Manual Control Panel. The On/Off radio buttons are used to set the "Safe State" settings of each control.

These settings are configured and tested prior at Erie Strayer Company prior to the Control System shipping to the customer. If changes are to be made to these controls, it is strongly recommended that an Erie Strayer Company representative is contacted to guide you through this process.

1.3 Create/Edit a Batch

The New Batch creation dialog within the software is similar to the New Order creation page in the Liberty Series website. This page allows creation or last-minute editing of a batch before producing it on the plant.



Input all necessary changes and then click *BATCH* to send the order directly to the batch screen. Click *QUEUE* to save it to the Queue instead. *CLOSE* will close the dialog without saving changes.

Order ID: Order ID is a unique identifier automatically assigned to each order upon creation. It cannot be edited.

Customer ID: The ID of the customer in which this batch is for. Can be typed in manually or the user can click *LIST* to bring up a list of all customers to select from.

Job ID: The ID of the job in which this batch is for. Can be typed in manually or the user can click *LIST* to bring up a list of all jobs to select from. If a customer has already been selected, only jobs associated with that customer will appear in the list. When the job is changed, it also changed various other fields on the screen to match those assigned to the job.

Formula ID: The ID of the formula to use in this batch. This field will change if the job is changed. Formula can be edited in the material detail at the bottom of the dialog.

Truck ID: The ID of the truck to deliver the batch. This field will change if the job is changed.

Batch Size: The size of the batch. This field will change if the job is changed.
Returned: This represents the amount of concrete that was returned to the plant in the truck to be batched into next.

Cycles: The number of times to repeat this batch if it needs to be produced more than once. Each successive batch will appear when the last one has finished as a new ticket that goes directly to the batch screen.

Water Trim: The amount of water(in gallons) to be added or removed from the formula per yard for the batch being setup.

Time To Batch: The time this batch is supposed to start. Should be in the form YYYY-MM-DD HH:MM:SS. The *RESET* button can be used to reset the batch to the current date and time.

Cycle Delay: Cycle delay is read-only on the batch creation screen. This value represents the time automatically assigned between each batch when multiple cycles are used. Cycles are set either on a per-job basis or for the whole plant. If the job assigned to this batch has a cycle delay set, that value will take precedence over the plant-wide setting.

Deliver To: The address this batch should be delivered to. There is additional space under the address for delivery instructions.

Driver: The name of the driver. This field will update if the driver or job is changed.

Mixer: The ID of the mixer to be used for this batch.

Sales Tax: Percentage sales tax.

Sold To: This box contains information about the customer that is automatically generated when a customer or job is selected. It is read-only.

Use: Informational ONLY. Use this field to describe the purpose of the concrete or an informative description for reporting use.

Target Slump: Informational ONLY. Use this field to display the desired slump of the batch to be created.

Include Weights?: Check yes to include weights on the tickets for this order.

Include Prices?: Check yes to include prices on the tickets for this order.

Print Ticket?: Check yes to print tickets for this order.

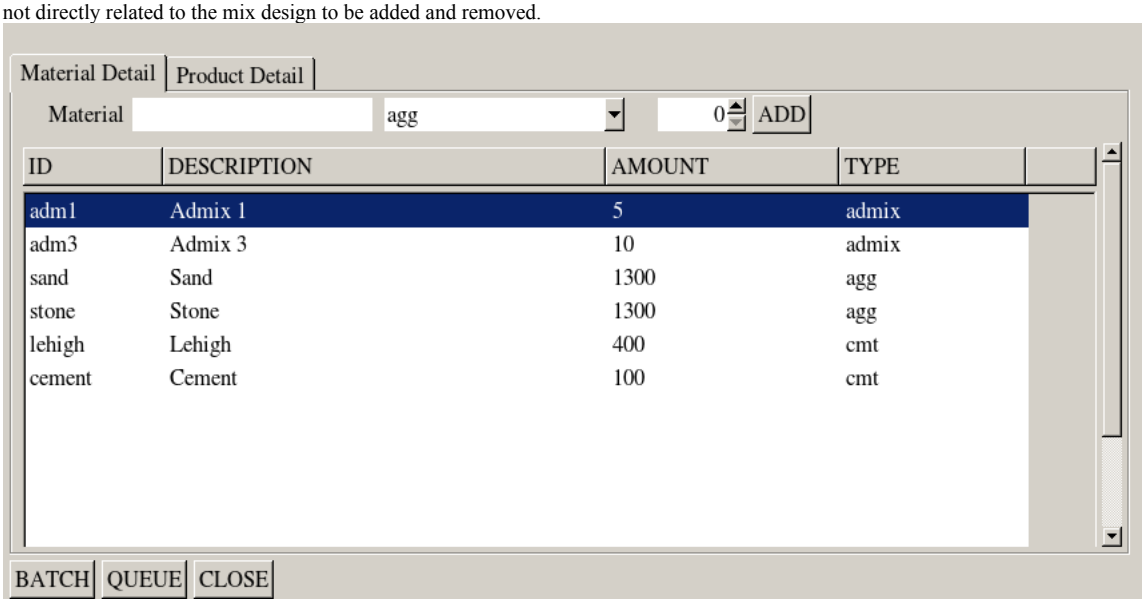
PO#: Use this field to enter the customers purchase order number.

Discount: Amount of discount to apply to this order. This value is read-only and is updated when a customer is changed or selected. To change this value, it must be changed per customer.

Pricing: Read-only fields that tally the price of the formula, all additional products, the customer's discount (if applicable), and sales tax. These fields will automatically update as the batch is changed.

Material and Product Detail

The material and product detail sections allow a formula to be modified before the batch begins. Additional products and materials can be added and/or removed from the formula as necessary. Both tabs have the same interface, but the **Material Detail** tab allows a mix design to be edited while the **Product Detail** tab allows extra products not directly related to the mix design to be added and removed.



To **add** a product or material, use the inputs at the very top of the detail tabs. Click the drop down menu and select a *type*. Once the type is selected, a list of all available materials of that type will appear. Click on the one to add, type an amount into the third input at the top of the tab, and then click *ADD* to add it.

To **delete** a product or material, double click its name in the list.

1.4 The Batching Process

Buttons

This section gives information on the various buttons on the batching software.

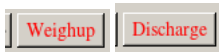
Dispatch Queue: The Dispatch Queue is where all new orders are stored until it is time to batch. The operator can open the Dispatch Queue, select the desired order and select BATCH. The order will then appear on the Liberty Series Batch Queue.

New Batch: See Create/Edit a Batch

Edit Batch: See Create/Edit a Batch

Remove Batch: Selecting Remove Batch will remove the batch selected from the Batch Queue and place it into the Dispatch Queue.

Batch Queue: There can be up to five tabs in the Batch Queue at one time. The tabs are in order from left-to-right. The leftmost tab will be able to be ran through the plant. If you need to change the order of the tabs to be batched, select which tab to move and use the left/right arrows on either side of "Batch Queue:" to the desired sequence of tabs.



Weighup: Weighup will enabled when the leftmost tab is selected and all of the required elements of the plant are operational. Weighup will flash red as well as an audible alarm will sound to notify the operator. See Weighing Cycle for more information.

Early Water(Transit Mix ONLY): Early Water is an option for transit mix operations. After Weighup has begun, the Early Water button will become enabled. Selecting Early Water will begin the water discharge sequence. Early Water should only be selected if there is a truck ready under the batch plant.

Discharge: Once Weighup has completed, the Discharge will then become enabled. Discharge will flash red as well as an audible alarm will sound to notify the operator. See Discharging Cycle for more information.

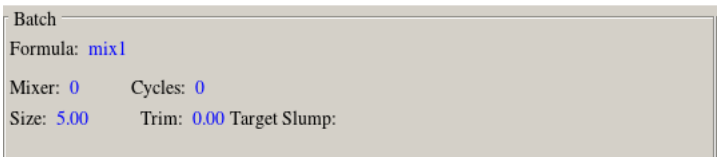
ADJUST: Clicking ADJUST while having an active tab in the Batch Queue will open the Adjust dialog. If the batch has been started, there will be a message displayed indicating any adjustments made are only for the current batch. See Adjusting a Batch for more information.

RESUME: If the Liberty Series batching system displays a notification which puts the plant into cycle stop, the operator will have to correct the problem, clear the notification and click on RESUME to continue batching the current load.

Information Section

On the bottom right half of the batching software, there is a section with a ton of information pertaining to the batch.

Batch Information:



Formula: The name of the formula being batched.

Mixer: The mixer number being used.

Cycles: The amount of remaining cycles to be batched.

Size: Batch size of the current cycle.

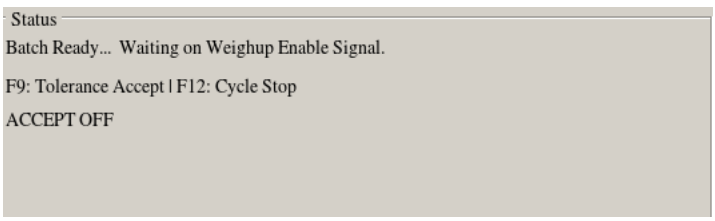
Trim: The amount of water adjusted(+/-) per yard.

Target Slump: Informational only. This represents what the desired slump value should be.

Customer Information:

The information in this section pertains to the Customer data. It shows the customer's name, address, and phone number.

Status Information:

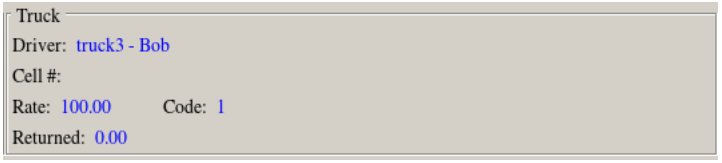


The first line of the Status information section is the current status of the batch process.

F9: Tolerance Accept: Pressing the F9 key will send the tolerance accept signal through the system and flag the batching constituent on the ticket as reviewed and approved by the batch operator.

F12: Cycle Stop: Pressing F12 will put the entire system in Cycle Stop, which is closing all gates and stopping all materials. The Batch Transfer Conveyor and Mixer will continue to run unless turned off manually.

Truck Information:



Driver: Driver name. This information is populated when the user selects a Truck ID while creating a new batch.

Cell#: This is the truck driver's cell phone number associated with this batch.

Rate: The discharge rate assigned to the specific truck selected on the current batch.

Code: The code references which discharge sequence plant will use to load into the assigned truck.

Returned: The amount of concrete the current truck brought back to the plant.

Job Information:

Ord: Displays how many yards were originally ordered for this specific job.

Del: Displays how many yards have been delivered for this specific job.

Ticket Information:

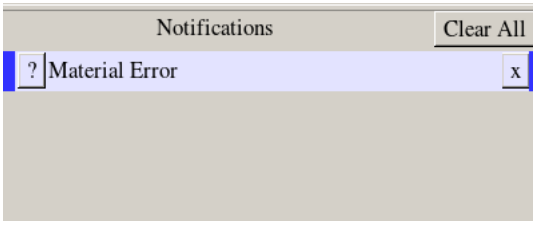
Pending invoice number: Once this batch completes, this will be the next ticket number outputted.

Ticket Checkboxes: Check the boxes to print ticket, include weights, and include prices after the batch is complete. The inspector copies/extra copies number box is used to specify how many extra tickets to print.

1.4.1 Batch Notifications

The notifications panel displays any errors in the current batch or problems on the plant that are detected by the software. Notifications can have one of four priority levels and are color-coded accordingly: Low(gray), Medium(blue), High(orange), and Critical(red). Low and Medium priority errors will not stop the batch but need to be resolved before proceeding on the the next step in the batching cycle. High and Critical priority errors will stop the batch and require immediate attention before proceeding. Clicking the *?* next to any error will display more information.

When an error has been resolved, either click the *X* next to the error or *Clear All* at the top of the list. You must wait 2 seconds after an error appears to be able to clear it.



The following is a list of all possible errors, along with troubleshooting tips. If the error persists, contact the software department at **(814) 456-7001**.

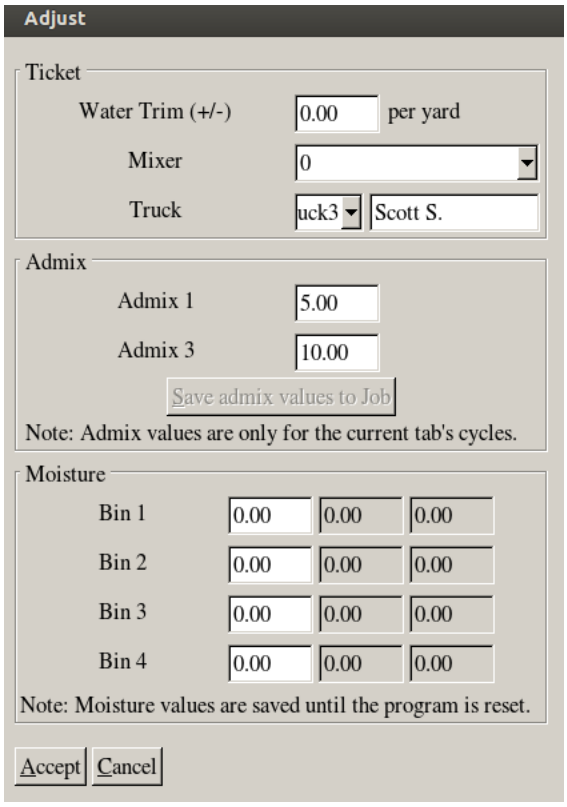
Priority	Error Name	Error Description	Troubleshooting
CRIT	Agg Bin Still Feeding	An aggregate bin is still feeding and can't be stopped.	Troubleshoot
CRIT	Cmt Bin Still Feeding	A cement bin is still feeding and can't be stopped.	Troubleshoot
CRIT	Missing	Missing conveyor controls. After clicking resume you'll likely go straight to discharge. MANUALLY ENABLE ALL	Troubleshoot

	Conveyor Controls	CONVEYORS NOW!	
CRIT	Missing Mixer Controls	Missing mixer controls. After clicking OK you'll likely go straight to discharge. MANUALLY ENABLE AND POSITION YOUR SELECTED MIXER NOW!	Troubleshoot
CRIT	Need to Be in Mixer or Truck Position	Since you began discharge in X position, you must complete discharge in X position.	Troubleshoot
CRIT	Undefined or Extra Conveyors	Missing conveyor controls. After clicking resume you'll likely go straight to discharge. MANUALLY ENABLE ALL CONVEYORS NOW!	Troubleshoot
CRIT	Undefined or Extra Mixers	Missing conveyor controls. After clicking resume you'll likely go straight to discharge. MANUALLY ENABLE ALL CONVEYORS NOW!	Troubleshoot
HIGH	Admix Discharging	Admix Bottle is currently discharging. Waiting for discharge off signal before feeding.	Troubleshoot
HIGH	Admix Feed On	Admix Bottle Feed signal is on. Cannot discharge.	Troubleshoot
HIGH	Admix Not Empty	Admix Bottle is not empty. Cannot feed until bottle is empty.	Troubleshoot
HIGH	Admix Target > Capacity	Admix target exceeds bottle capacity.	Troubleshoot
HIGH	Admix Target > Limit	Admix target exceeds direct feed limit.	Troubleshoot
HIGH	Agg Not Tare Zero	Aggregate scale is not at tare zero. Cannot start weighup.	Troubleshoot
HIGH	Agg Target > Capacity	Aggregate Cumulative Target exceeds scale capacity.	Troubleshoot
HIGH	Cmt Not Tare Zero	Cement scale is not at tare zero. Cannot start weighup.	Troubleshoot
HIGH	Cmt Target > Capacity	Cement Cumulative target exceeds scale capacity.	Troubleshoot
HIGH	Concrete Controls Not Started	None	Troubleshoot
HIGH	Conveyor Not Running	The conveyor is not running. You cannot discharge without a running conveyor.	Troubleshoot
HIGH	Conveyor Won't Start	Waiting for all conveyors to start prior to entering the discharge sequence.	Troubleshoot
HIGH	Door Not Closed	Door closed signal not on, cannot continue.	Troubleshoot
HIGH	Holding Tank Not Closed	Holding tank discharge valve is not closed.	Troubleshoot
HIGH	Holding Tank Not Empty	Holding tank not empty.	Troubleshoot
HIGH	Mixer Not Home	Mixer not in the home position.	Troubleshoot
HIGH	Mixer Not In Position	Mixer is not in position.	Troubleshoot
HIGH	Mixer Not Running	Mixer is not currently running.	Troubleshoot
HIGH	Mixer Screw Not Running	The mixer screw (IO D19 #90) is not running. The mixer screw must run throughout discharge when in mixer position.	Troubleshoot
HIGH	Scale Capacity Reached	Cannot continue as the capacity of the scale has been reached.	Troubleshoot
HIGH	Scale Reading < -500	Scale reading below -500 (possibly a scale communcations error), cannot continue.	Troubleshoot
HIGH	Water C-Target > Capacity	Water cumulative target exceeds scale capacity.	Troubleshoot
HIGH	Water Discharging	Water discharge signal is on, cannot feed.	Troubleshoot
HIGH	Water Feeding	Water feed signal is on, cannot discharge.	Troubleshoot
HIGH	Water Scale Negative	Water scale negative, cannot start weighup.	Troubleshoot
HIGH	Water Scale Not Tare Zero	Water Scale not at tare zero, cannot start weighup.	Troubleshoot
HIGH	Water Target > Capacity	Water target exceeds holding tank capacity.	Troubleshoot
MED	Agg Belt Stopped	The aggregate discharge belt is not running.	Troubleshoot
MED	Agg Belt Won't Start	The aggregate discharge belt is not running.	Troubleshoot
MED	Agg Can't See Conveyor	In order for the proportional discharge to function properly, aggregate gates need to get their maximum discharge rate from the conveyor. Please rename your conveyor to "Conveyor". The ability to use propertional discharge with any conveyor name will be added in the future.	Troubleshoot
MED	Agg Disch Rate <= 0	Aggregate discharge rate <= 0, check truck discharge rate.	Troubleshoot
MED	Agg Gate Open	The aggregate gate will not fully close after discharge.	Troubleshoot
MED	Agg Scale	Aggregate scale timed out. Check the physical connection to the scale indicator.	Troubleshoot

	Timeout		
MED	Batchsize > Plant Max	Cannot start batch. Batch size greater than the plant's max load.	Troubleshoot
MED	Batchsize > Truck Max	Cannot start batch. Batch size greater than the truck's max load.	Troubleshoot
MED	Cement Disch Rate <= 0	Cement discharge rate <=0, check truck discharge rate.	Troubleshoot
MED	Cmt Gate Open	The cement gate will not fully close after discharge.	Troubleshoot
MED	Cmt Scale Timeout	Cement scale timed out. Check the physical connection to the scale indicator.	Troubleshoot
MED	Disch Rate > Capacity	Cannot start batch, combined discharge rate greater than capacity.	Troubleshoot
MED	Material Error	Cannot start batch, material error.	Troubleshoot
MED	Mixer Greasing	The mixer is currently greasing. Please wait.	Troubleshoot
MED	Need to be in Mixer or Truck Position	In order to discharge you must be in mixer or truck position.	Troubleshoot
MED	Negative Value Error	Cannot start batch. Materials with negative target or moisture percentage.	Troubleshoot
MED	Water Disch Rate <= 0	Water discharge rate is less than or equal to zero. Check truck discharge rate setting.	Troubleshoot
MED	WaterBatcher Scale Timeout	WaterBatcher scale timed out. Check the physical connection to the scale indicator.	Troubleshoot

1.4.2 Adjusting a Batch

The batch adjustment page is used to make last-minute changes to a batch that may have already started. It can be accesed by clicking the *ADJUST* button underneath the 3D batch screen.



After the batch has been started but before it enters its discharge cycle, certain changes to the batch can be applied. After it has reached its discharge cycle, only the truck number and driver can be changed.

The **Ticket** section allows water trim, mixer number, and truck to be changed. Truck number and driver can be changed after the discharge cycle begins, but all others can only be changed before.

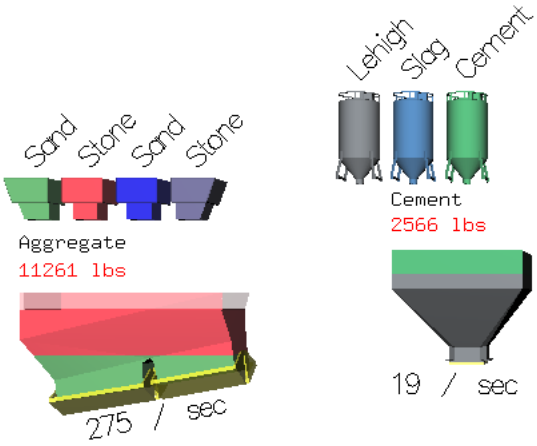
The **Admix** section allows the amount of admix in the current formula to be changed. Only those admixtures that are already included in the formula will be displayed here. Changes are not applied to any other order *unless* the *Save admix values to Job* button is clicked. In that case, the changes will be applied to all other orders which share the same job.

The **Moisture** section allows the user to manually set moisture values for aggregate bins. The first column is editable and is where you may enter the new values. The second column shows live moisture values from the moisture probe, if the plant has them. The third column shows the current manual moisture values. Once these values are set, they will stay there until the program is closed and reopened.

1.4.3 Discharge Cycle

When the weighing cycle is complete and and the *Discharge* button appears below the 3D batch screen, the discharge cycle is ready to begin. The operator may either press the discharge button or *F2* to begin the cycle.

When the discharge cycle starts, the computer will look at the Discharge Sequence in the discharge setup menus to determine what order and at what time the materials are to be discharged. At the same time, the computer will display the Dump Time next to the Fill Time just above the ticket information panel. In the 3D batch screen, the rate of discharge for each batcher will be displayed next to the 3D model of the control. Each of these values will constantly be updated.



1.4.4 Weighing Cycle

When there is a batch available in the batch queue, the computer will determine whether the load is within the parameters of the formula, plant settings, job, and customer files that were previously set. If any condition exists which falls outside of the set parameters, a notification will be displayed in the notifications center.

The computer then determines if all the interlocks from the plant are satisfied. If any condition exists where an interlock is not set correctly, the computer will display an error message is the notifications panel.

If all conditions are met, the *WEIGHUP* button below the 3D batch page will turn red and will be clickable. To start the batch, either click that button or press *F2*.

When the weighup cycle begins, information regarding the weights of all materials will be displayed in the table in the batch queue. The table displays a type, description, moisture percent, target, and status of each material.

Job: erie | Mix: mix1

Type	Description	M %	Target	Actual	Accum Tar	Accum Act	Status
agg	Sand		6500	6744	6500	6744	Accept
	Stone		6500	6534	13000	13278	Complete
cmt	Lehigh		2000	2069	2000	2069	Accept
	Cement		500	587	2500	2656	Over
admix	Admix 1		25	0			
	Admix 3		50	50			Complete

Fast Feed: Used during full-size loads. The system will open the feed gates to fill the batcher until the cutoff value is reached.

Under: The minimum target weight or amount has not yet been reached as determined by the tolerance settings.

Balance: Indicates a pause between a fast feed and jog, and between successive jogs. The length of this pause is determined by the setting of the Scale Balance Time.

Jog: Indicates opening the feed gate based on the prescribed Jog Time to reach the target weight.

Over: Indicates that the weight or amount of material has exceeded the maximum allowed for that material. When an **Over** is displayed, the operator must note how far over the target weight the material is and make a decision to accept the amount or not. If the operator feels the additional amount of material will not hurt the concrete, they can press *F9* to accept the extra material. If the operator feels that the additional material will hurt the concrete, the additional material must be removed before continuing. In all cases, the batching process will not continue in Automatic if **Over** is displayed on the screen.

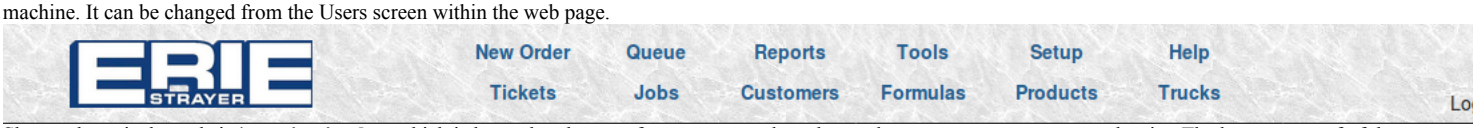
At the start of the weighup cycle, the computer will display the **Fill Time** on the right of the screen. The computer will keep track of how long it takes the weigh up the load. In this manner the operator can monitor the Fill Time to notice changes that may cause loss of production time.

When all of the materials for the load have beenweighed up and any high tolerances have been accepted, the same button that once displayed Weighup should now be displaying *Discharge*. The materials have now been measured and the discharge cycle can begin.

2. Liberty Series Web Page

The Liberty Series Web Page is a companion to the Batching Software and is used for data entry and bookkeeping. This is the place where tasks such as creating new jobs, editing orders, and report printing take place. It is recommended to use **Firefox** to view the web page.

To enter the Liberty Series Web Page, a username and password must be entered. This name/password combination is set when the software is initially installed on the machine. It can be changed from the Users screen within the web page.

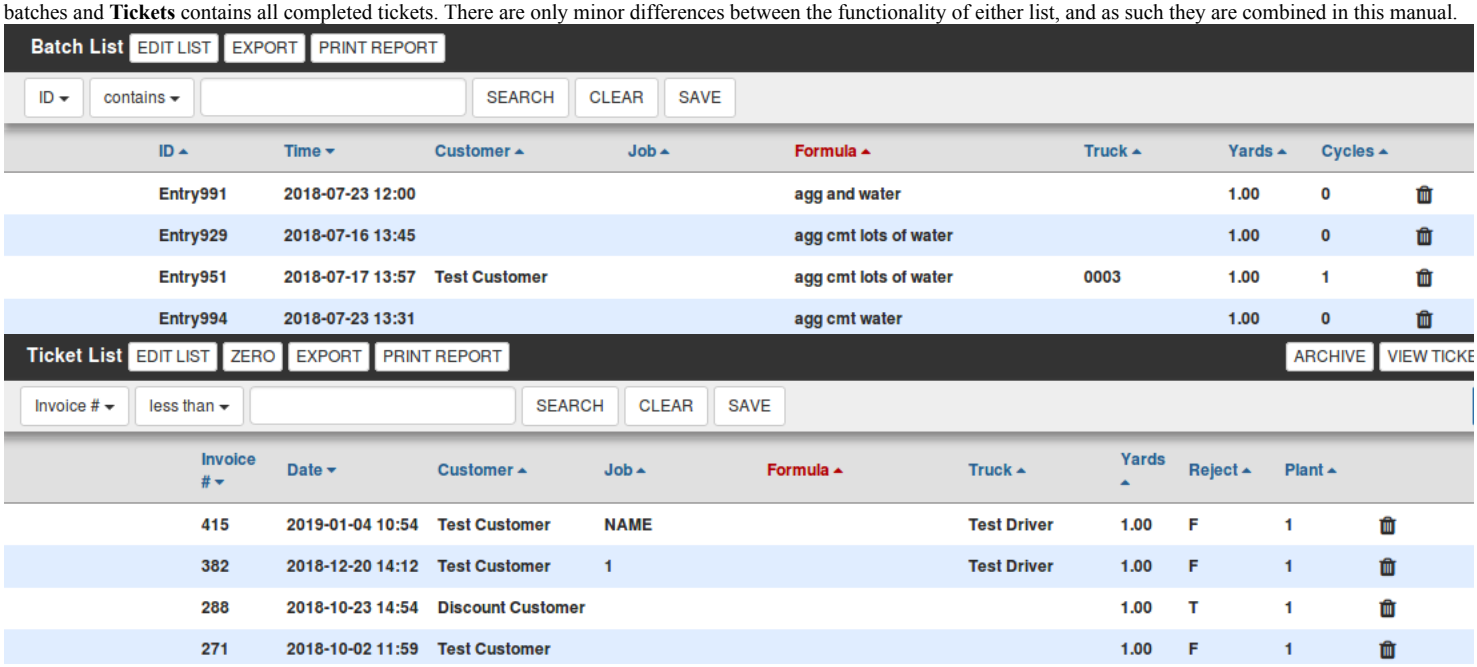


Shown above is the website's **navigation bar** which is located at the top of every page and can be used to access most content on the site. The bottom row of of the navigation bar contains links to the six major data pages, also called *list pages*: tickets, jobs, customers, formulas, products, and trucks. The top row contains links to auxiliary features: a quick link to creating a New Order, a link to the Batch Queue, Reports, Tools, and Setup menus, and a link to open this manual.

2.1 Batches & Tickets

The Batch and Ticket list pages have a very similar functionality: they both deal with the processing of orders for the plant. Orders utilize every other component of the website (customers, formulas, jobs, etc.) and are a key part of producing a batch.

All orders have two parts to their life cycle: **Batch** and **Ticket**. An order is called a **batch** when it is first created and has not yet been batched on the plant. It becomes a **ticket** when the batch is completed or someone chooses to convert it to a ticket. There are two list pages associated with orders: *Queue* and *Tickets*. **Queue** contains all batches and **Tickets** contains all completed tickets. There are only minor differences between the functionality of either list, and as such they are combined in this manual.



Tools:

All generic utilities are available to use on both the **Queue** and **Ticket** list page. Search allows the user to search for a specific orders using certain criteria, Edit List allows the user to change the way the queue or ticket list page is viewed, and Export allows the user to export a copy of the list for use in records and accounting.

There are three additional buttons available on the **Ticket List Page**. The first is the *ZERO* button which zeroes all batch usage reports. The *PRINT REPORT* button opens the ticket list report dialog. The *ARCHIVE* button allows you to archive tickets created within a certain date range.

Accessing Data:

The **Add Batch** menu can be accessed from one of three places: the *ADD NEW* button on both the queue page and ticket page as well as the *New Order* button on the website's navigation bar. When an order is added it can either be added to the queue or bypass the batching process and be saved directly as a ticket.

Modifying an order is different depending on whether it is a batch or a ticket. Batches can be edited freely and all values can be changed. Completed tickets are limited in what can be changed, but also feature a section of truck info that does not exist before the ticket is completed.

To delete an order from either page, click the trash icon to the far right of its entry in the list or click *DELETE* from the order's modify page.

Both the queue and ticket page have an **Auto-Refresh** feature, meaning it updates all entries every ten seconds with any changes that may have resulted from batching or changing data. To turn off this feature, uncheck the box in the bottom right corner of the screen.

2.1.1 Editing a Ticket

Editing a ticket is very similar to **editing a batch** with minor differences. Many parts of the ticket are no longer editable after the batch is completed and a new section of information become available.

* required fields

Ticket - MODIFY #132125

Order ID	Entry46087	**Deliver to**			
Customer ID	0001 LIST	NAME			
Job ID	0054	STREET			
Formula ID *	TEST	CITY	ST	ZIP	
Truck ID	TRUCK LIST	INSTRUCTIONS			
Batch Size *	8.0				
Returned	0.0	**Driver Name**	Truck truck		
Cycles	1	**Mixer**	0		
Water Trim	0.0	**Target Slump**	2.5		
Created	2020-09-01 08:56:19	**Use**			
		PO #			

Product Detail — Product prod LIST — Quantity ADD

ID	DESCRIPTION	AMOUNT	PR
TEST	TEST	8.00	1

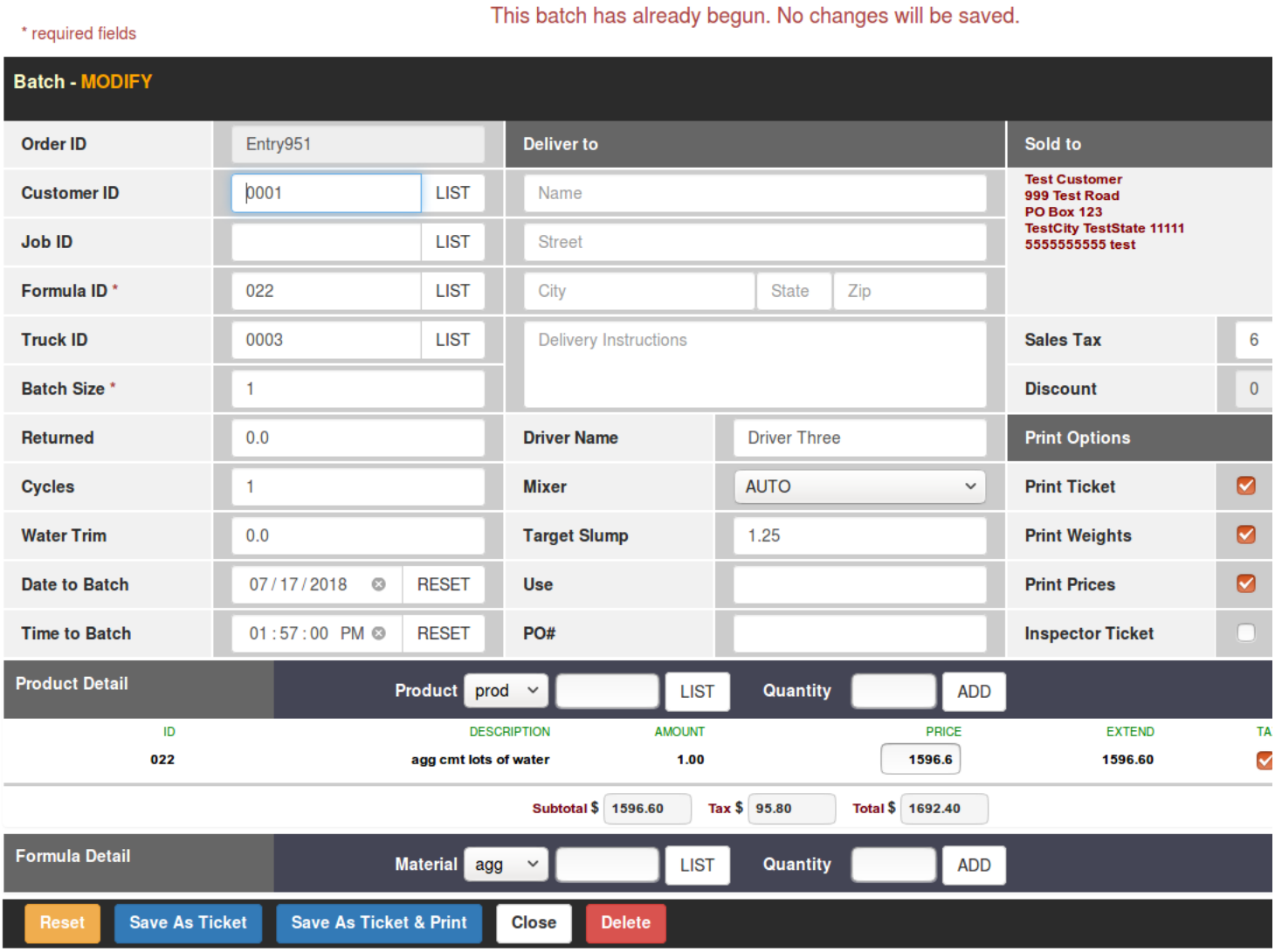
Subtotal $ 1200.00 Tax $ 72.00 Total $ 1272.00

Formula Detail — Material agg LIST — Quantity ADD

Batch Detail

Truck Detail

Save | Email | Print | View Print Version | View Email Version | Re-Batch | Reject | Delete | Close



Last Modified by "admin" on 2018-07-17 14:01:23.658994

Some fields have become **read-only** and cannot be changed now that the ticket is complete. These fields include **Returned**, **Cycles**, and **Water Trim**. Time to Batch is now labelled **Created** and is also read-only. This value represents the time the ticket was originally created.

The product detail tool can still be used to adjust products that might still need to be attached to this order, but Formula Detail can no longer be changed.

On a ticket, the *Truck Detail* field appears, and can only be edited if a truck had been attached to the ticket.

Buttons

At the bottom of the **Ticket Modify** page, there is a footer full of buttons.

Save: Save any changes made to the ticket.

Email: Opens the email modal and allows the user to email the specified ticket to whomever they chose, as long as email is setup on the Setup page.

Print: Print the ticket to the selected printer.

View Print Version: View the printed version of the ticket on the computer

View Email Version: View the emailed version of the ticket on the computer

Re-Batch: Send this same ticket to the batch queue for so it can be batched again.

Reject: Mark this ticket as REJECTED.

Delete: Delete this ticket.

Close: Close the page.

At the bottom of the **Batch Modify** page, there is a footer full of buttons.

Reset: Reset the batch if it has been marked as "Already Begun".

Save Changes: Save any changes made.

Save as Ticket: Used to bypass the batch queue and save it directly as a completed ticket in the ticket list.

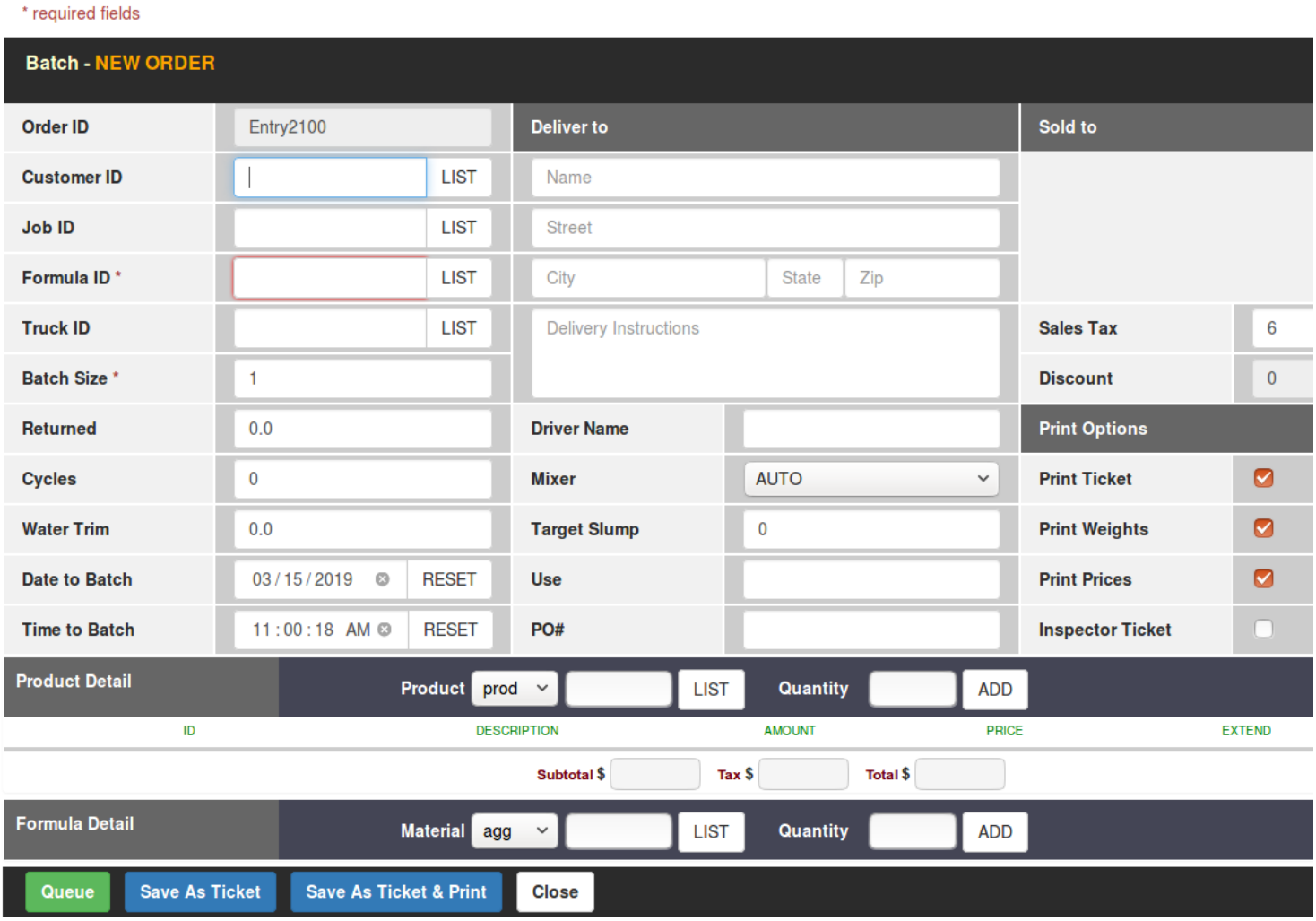
Save as Ticket & Print: Does the same as **Save as Ticket**, but prints it as well.

Close: Close the page.

Delete: Delete this batch from the queue.

2.1.2 Creating/Modifying an Order

The same page is used for both adding and modifying a batch. The batch creation page can be accessed from various places across the site. The easiest is the *New Order* button located in the nav bar. Clicking on this button will open a pop-up that allows the user to fill in information to create a new batch. This page can also be accessed by clicking the *ADD NEW* buttons in the top right-hand corner of the Queue and Ticket pages. The Batch Modify page can be accessed by clicking the batch's entry in the Queue page.



Order ID: The Order ID is a unique identifier automatically assigned to each order upon creation. It cannot be edited.

Customer ID: The ID of the customer in which this batch is for. Can be typed in manually or the user can click *LIST* to bring up a list of all customers.

Job ID: The ID of the Job this batch will be part of. Can be typed in manually or the user can click *LIST* to bring up a list of all jobs. Keep in mind that the list will only show jobs related to the customer that has already been selected. If the customer hasn't been selected, the job will auto-fill the customer name and a formula ID as defined by the job.

Formula ID: The formula to use for this order. Can be typed in manually or the user can click *LIST* to bring up a list of all formulas. If a job has already been selected,

only those formulas associated with the selected job will appear in the list.

Truck ID: The ID of the truck this order will go into. Can be typed in manually or the user can click *LIST* to bring up a list of all trucks.

Batch Size: The size of the batch in yards. This value can be typed in manually or it may automatically be set when the job is selected.

Returned: This is the amount of concrete that returned to the batch plant on the truck. The value entered will subtract from the Batch Size to produce the correct load amount to be delivered.

Cycles: The number of times to repeat this batch.

Water Trim: Water Trim is set in pounds per yard or gallons per yard. The value entered will reduce or add water per yard from the Formula amount.

Date / Time to Batch: The scheduled date and time to start this batch.

Note: The time to batch does not guarantee the batch will begin at that time. The batch man must still manually tell the batch to begin. However, batches that are due or past due will trigger an audible beeping in the software.

Deliver To: The full address to deliver to as well as any delivery instructions will go in these boxes.

Driver Name: Driver is populated when the Truck ID is selected.

Mixer: Select AUTO for automatic mixer selection, or select which mixer or truck you wish to use.

Target Slump: Target slump is an informational field only. The value entered indicates the desired slump value of the load to be batched.

Use: Use is an informational field only. The information entered can be used to inform the operator or staff of how the concrete will be used in the field.

PO#: PO# is an informational field only. This is the customer order number.

Sold To: This section contains information about the customer. Their contact information appears in the first block.

Sales Tax: Percent sales tax.

Discount: Amount of discount to apply to this order. Discounts must be assigned to a customer and cannot be edited from this screen.

Print Ticket: A checkbox for whether or not tickets should be printed upon completion of this batch.

Include Weights: A checkbox for whether or not weights should be included on the tickets for this batch.

Include Prices: A checkbox for whether or not prices should be included on the tickets for this batch.

Inspector Ticket/Print Extra: A checkbox for whether or not an extra ticket should be printed for this batch.

Product and Formula Detail

The product detail section is used to add or remove products from the order, and the formula detail section is for editing the selected formula. More information on these two tools can be found on their respective manual pages.

When all necessary information has been entered or changed, click *QUEUE* (or *SAVE* when modifying) to save the order into the batch queue. Clicking *SAVE AS TICKET* can also be used to bypass the batch queue and save it directly as a completed ticket in the ticket list. *SAVE AS TICKET & PRINT* does the same thing but also sends the ticket to the printer immediately. *CLOSE* closes the page without saving anything.

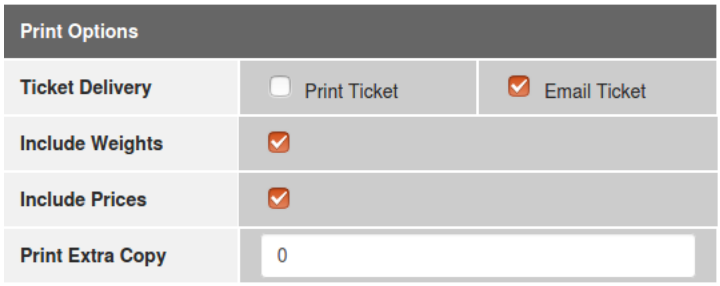
2.1.3 Emailing Tickets

There are a few different ways to **email tickets** in Liberty Series. Emails can be sent directly after batch complete, manually one at a time, or multiples at a time, dubbed mass email.

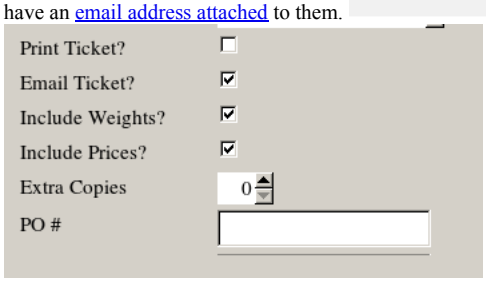
In order for an email to be sent out, the Email Server Settings section on the Setup page must be filled out, , and the batch PC must have an internet connection.

After Batch Complete

The software can email out tickets after each batch is completed, just like it would print out a ticket after each batch. This can be set by selecting the *Email Ticket* checkbox on the New Order page. This can also be done on the New Batch screen in the Liberty Series Batching Software. The selected customer for the new order must

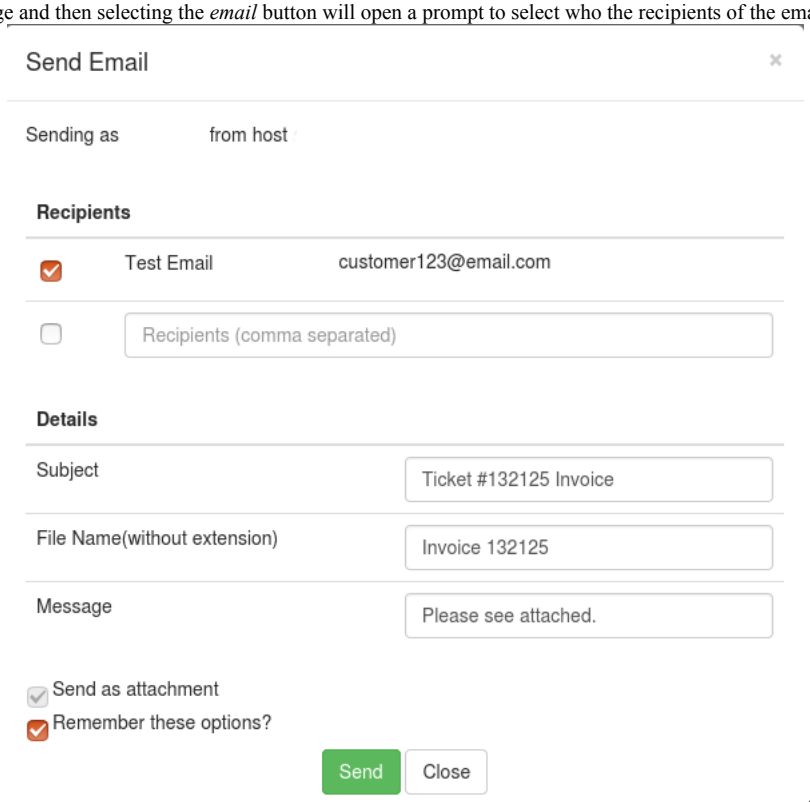


have an email address attached to them.



One At a Time

Opening any ticket from the Ticket List page and then selecting the *email* button will open a prompt to select who the recipients of the email are, and what subject, file

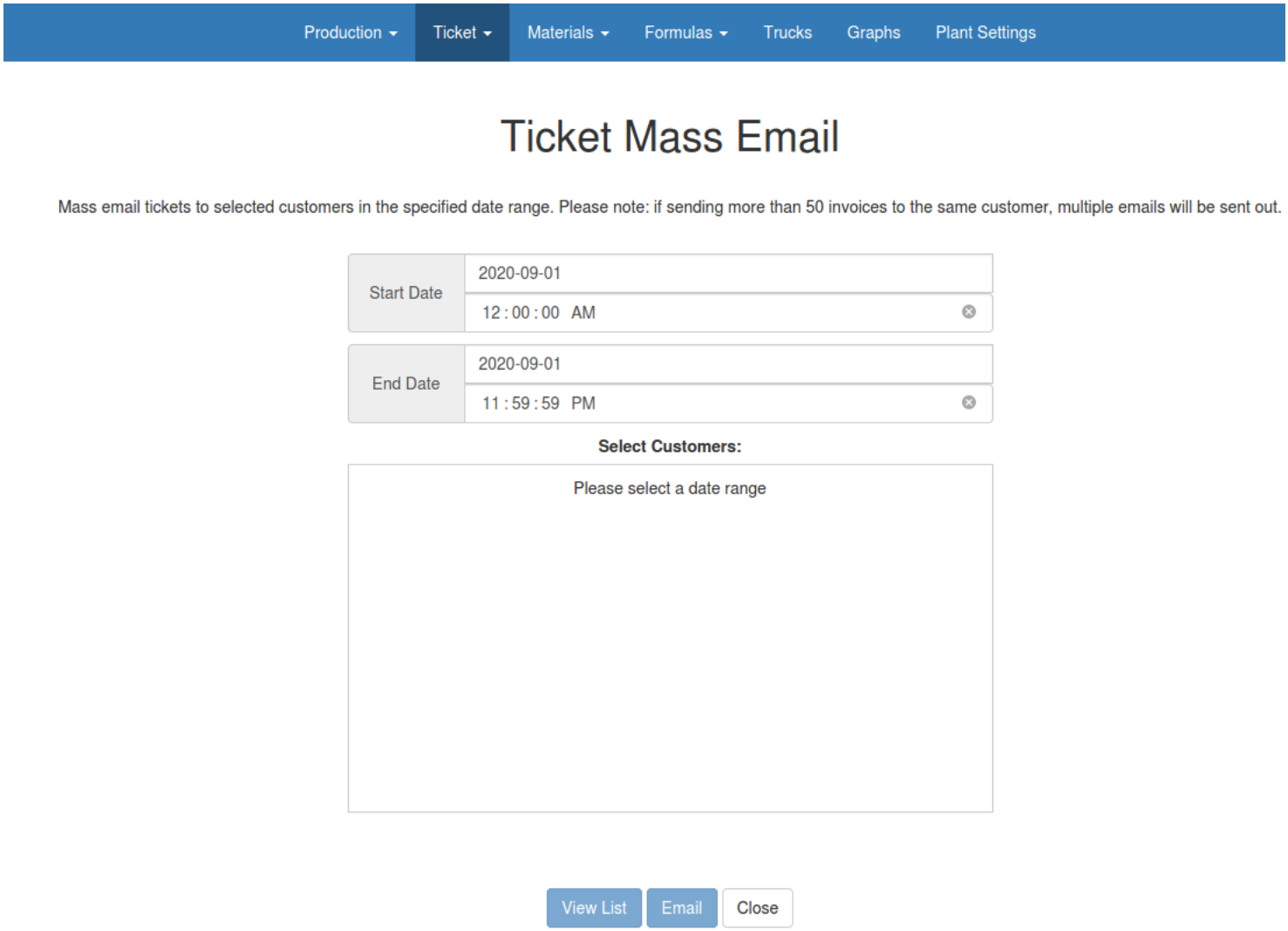


name, and message is attached to the email. The ticket to be emailed can be previewed by clicking the *View Email Version* button at the bottom of the Ticket Page. The style for emailed tickets can be set in the Setup page, and can be different from the printed style if one so chooses.

Mass Email

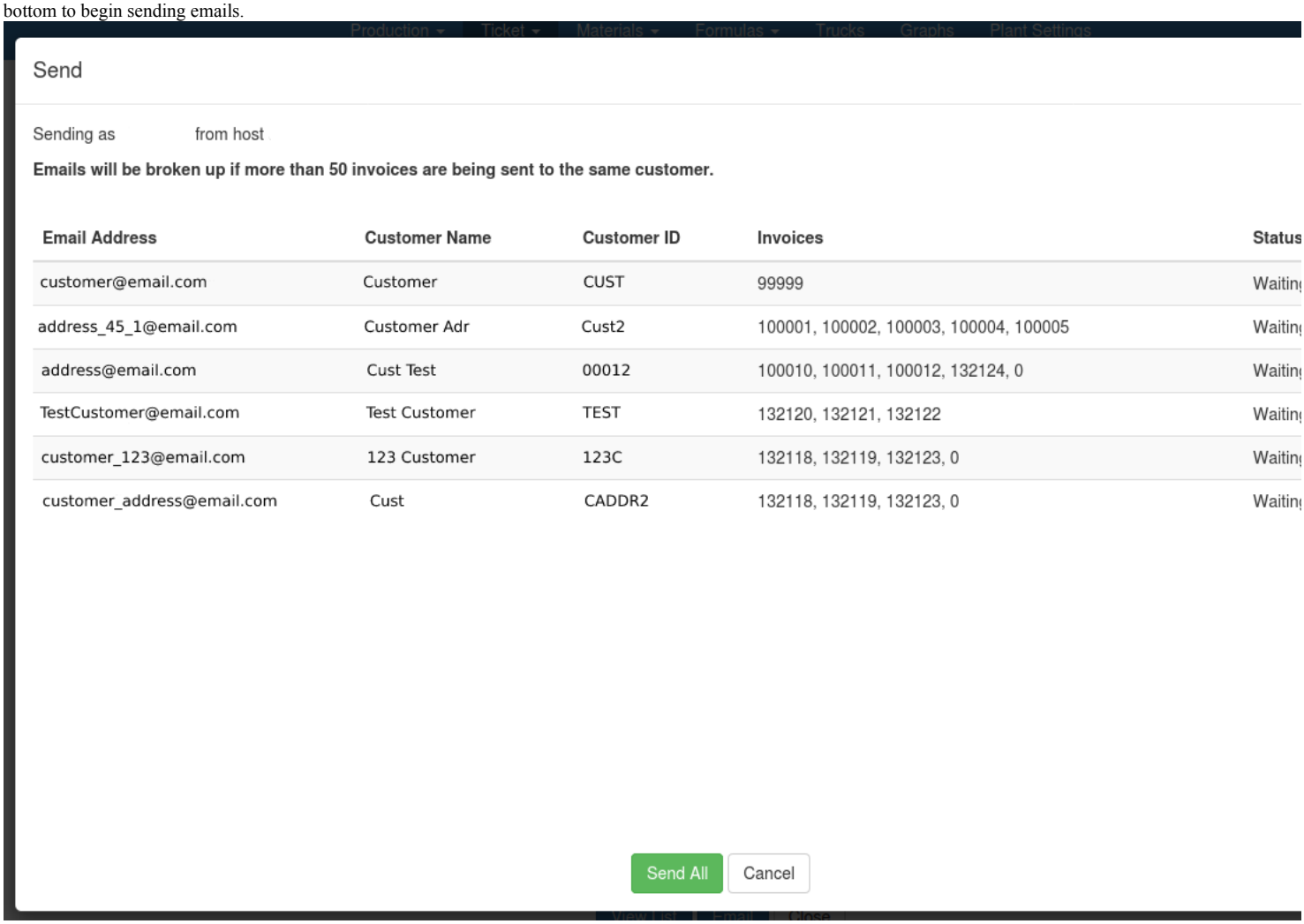
The mass email feature is intended to be used to email tickets to multiple customers over a selected date range. To get to this page, simply click the *Email Tickets* button in the black bar at the top of the Ticket List page. This can also be accessed on the Reports page in the *Tickets* dropdown.

How to use the mass email feature is fairly straight forward. Simply start by selecting a date range of invoices. Then, select which customers are to be included to be emailed. Clicking the *View List* button at the bottom of the page will give a preview of what invoice numbers will be sent to whom.



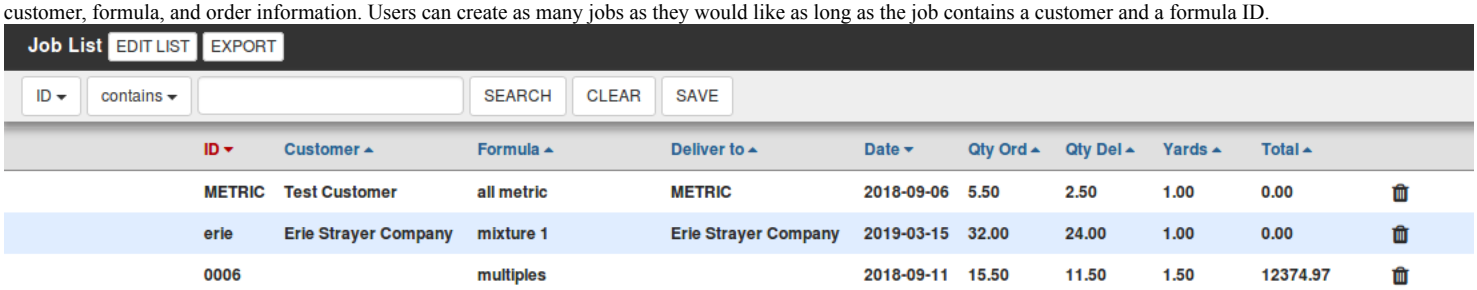
Once customers have been selected, clicking the *Email* button will open a prompt in which to input a subject, file name, and message to be attached to the email. Clicking the *Ready to Send* button will open another dialog which will give the status of each email as it is being sent. When everything looks good, click the *Send All* button at the

bottom to begin sending emails.



2.2 Jobs

The job list page allows the user to view and edit information about each job. Jobs are used in the batching software to decrease the need for repetition by remembering customer, formula, and order information. Users can create as many jobs as they would like as long as the job contains a customer and a formula ID.



Tools

All tools are available to use on the job list page. Search allows the user to search for a specific job using certain criteria, Edit List allows the user to change the way the job list page is viewed, and Export allows the user to export a copy of the list for use in records and accounting.

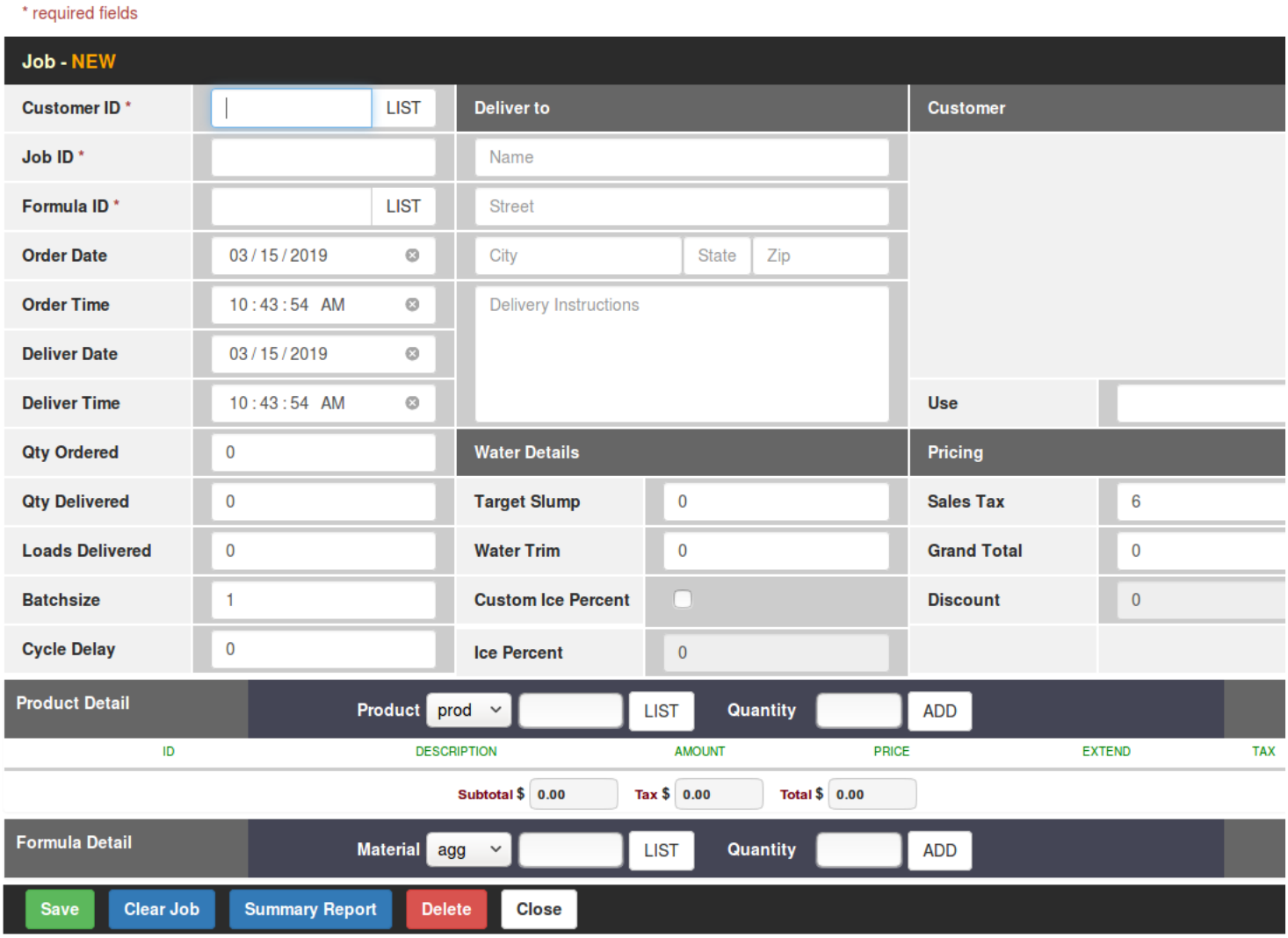
Accessing Data

New jobs can be added by clicking the *ADD NEW* button in the top right-hand corner of the screen, and current jobs can be edited by clicking on the entry in the list. Keep in mind that editing a job will apply the changes to all tickets which use that job.

To delete a job, click the trash can icon to the far right of its entry in the list.

2.2.1 Creating/Modifying a Job

The same page is used for both adding and modifying a job with minor differences. To access the **ADD** page, click the *ADD NEW* button in the top right-hand corner of the job list page. To **MODIFY** a job that already exists, click that job's entry on the job list page.



Customer ID: A unique identifier assigned to a customer. Click *LIST* to select from a list of all customers.

Job ID: A unique identifier for the job.

Formula ID: The mix design that will be used with this job. Click *LIST* to select from a list of all formulas. This formula can then be edited in the formula detail section below.

Order Date / Time: The date/time in which this order was placed. By default, this will be set to today's date and time.

Deliver Date / Time: The date/time in which this order is to be completed and delivered by. By default, this will be set to today's date and time.

Quantity Ordered: Quantity Ordered is set as yards. This is the total amount of concrete ordered for this job.

Quantity Delivered: Quantity Delivered is set as yards. This is the total amount that has been delivered for this job so far.

Loads Delivered: Total number of truck loads that have delivered a load so far. This number is incremented each time a load is produced for this job.

Batch Size: The size of each batch produced.

Cycle Delay: If the batch will have cycles, this value separates each cycle's time to batch by the given number of minutes.

Deliver to: The address to deliver all loads to if it is different from the customer's address. Includes optional instructions for a driver upon delivery of a load.

Target Slump: Target slump is an informational field only. The value entered indicates the desired slump value of the load to be batched.

Water Trim: Water Trim is set in pounds per yard or gallons per yard. The value entered will reduce or add water per yard from the Formula amount.

Custom Ice Percent: Check this if the job uses a custom ice percent.

Ice Percent: If the custom ice percent checkbox is checked, this field can be edited. This is where the user inputs the percent of ice used on the job.

Customer: The customer section automatically fills with the customer's address and telephone number.

Use: Informational field only. The information entered can be used to inform the operator or staff of how the concrete will be used in the field.

Pricing: The pricing section includes boxes for sales tax, total and discount. Sales tax and total can be set per job, but the discount must be set for that particular customer

and cannot be changed in this menu.

Product Detail & Formula Detail

The information within the **Product Detail** is the Formula and any Extra Products selected to be used specifically for this job. More information can be found on the Formula Edit Tool page.
The information within the **Formula Detail** is the Materials to be used to produce the concrete specifically for this job. More information can be found on the Product Edit Tool page.

2.3 Customers

The customer list page allows the user to view and edit information about each customer. Customer information is used in the batching software to remember certain preferences for each person or business as well as keep track of that customer's usage and credit.

ID	Name	Street	City	State	Zipcode	Phone #	Contact	Balance
NEW	New Customer	111 Street Address	City	State	11111	(814)555-5555	CONTACT	1524.51
cust1	Erie Strayer Company	1851 Rudolph Ave	Erie	PA	16512	814-456-7001	Strayer Company	0.00
0502	Some Company	Some Place	City	State	12345	814 111 1111	Contact	0.00
0007	New Customer					(123)456-7899	Customer	0.00

Tools

All tools are available to use on the customer list page. Search allows the user to search for a specific job using certain criteria, Edit List allows the user to change the way the customer list page is viewed, and Export allows the user to export a copy of the list for use in records and accounting.

There is also an option to *ZERO* the usage history for all customers. This clears the tally of how many batches and yards have been completed for that customer, but does not affect previous tickets or product usage reports.

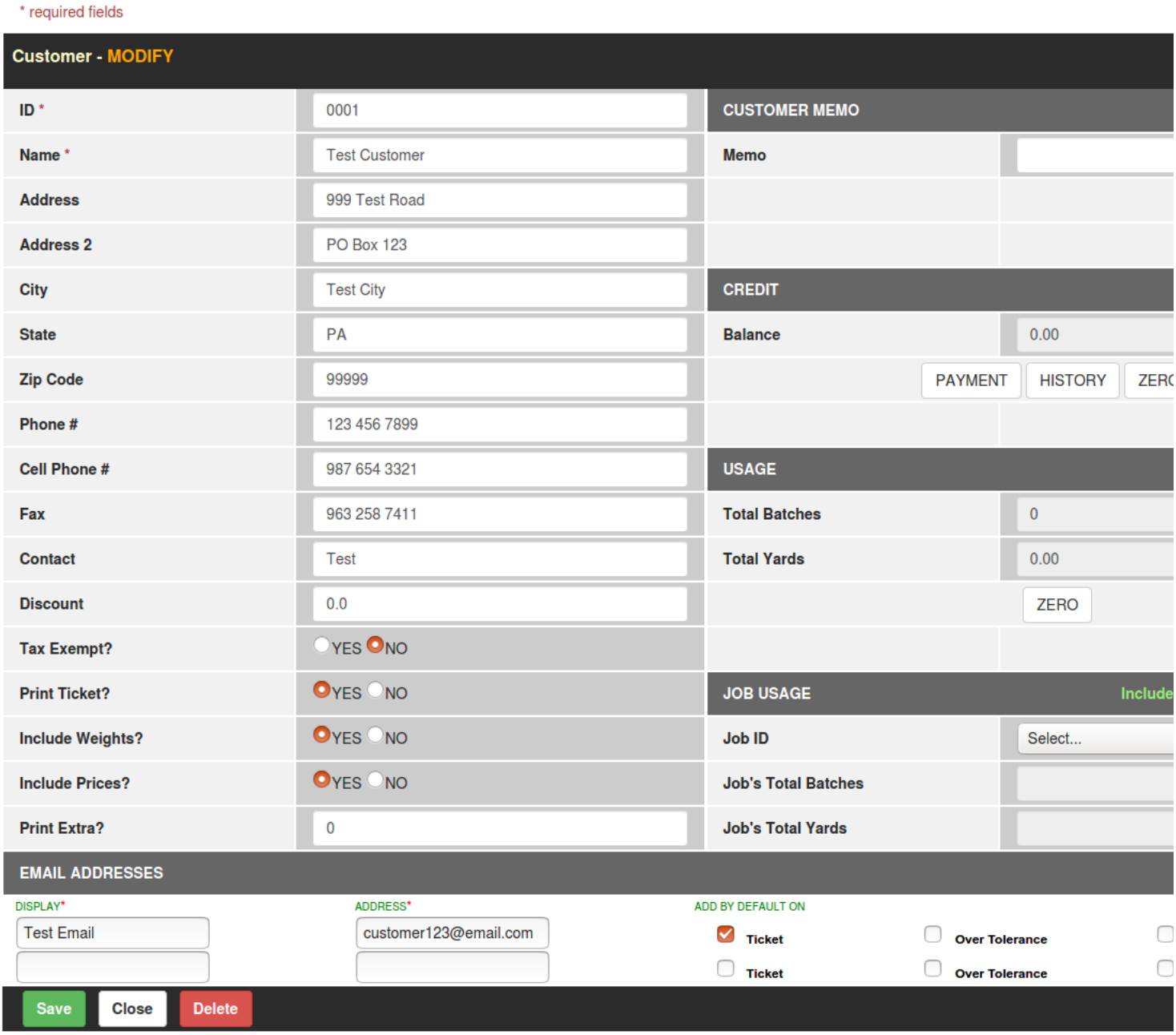
Accessing Data

New customers can be added by clicking the *ADD NEW* button in the top right-hand corner of the screen, and current jobs can be edited by clicking on the entry in the list. Keep in mind that editing a customer will apply the changes to all tickets and jobs which use that customer.

To delete a customer, click the trash can icon to the far right of its entry in the list.

2.3.1 Adding/Modifying a Customer

The same page is used for both adding and modifying a job with minor differences. To access the **ADD** page, click the *ADD NEW* button in the top right-hand corner of the customer list page. To **MODIFY** a job that already exists, click that job's entry on the customer list page.



ID: The ID is a unique identifier used throughout the software that represents this customer. It is best to choose something short and simple to optimize software performance.

Name: The name assigned to a customer is used primarily in reports and tickets.

Contact Information: There are various inputs available for address, phone number, email, and person to contact.

Discount: The amount (in dollars) of discount to apply to this customer. Discounts cannot be set on a per-job or per-batch basis and as such must be set here.

Tax Exempt?: Selection for whether or not this customer is tax exempt.

Print Ticket?: Selection for whether or not tickets are printed for this customer.

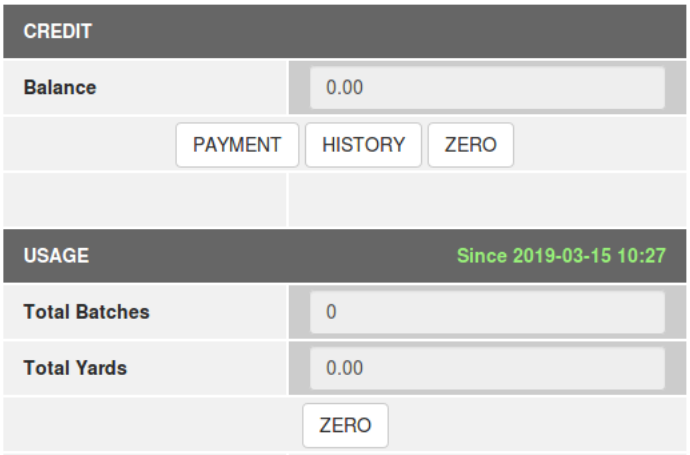
Include Weights?: Selection for whether or not weights should be included on the ticket for this customer.

Include Prices?: Selection for whether or not prices should be included on the ticket for this customer.

Inspector Ticket / Extra Copies?: Input for how many extra tickets should be printed for this customer.

Customer Memo: Contains any additional information about the customer.

Credit and Usage Tables



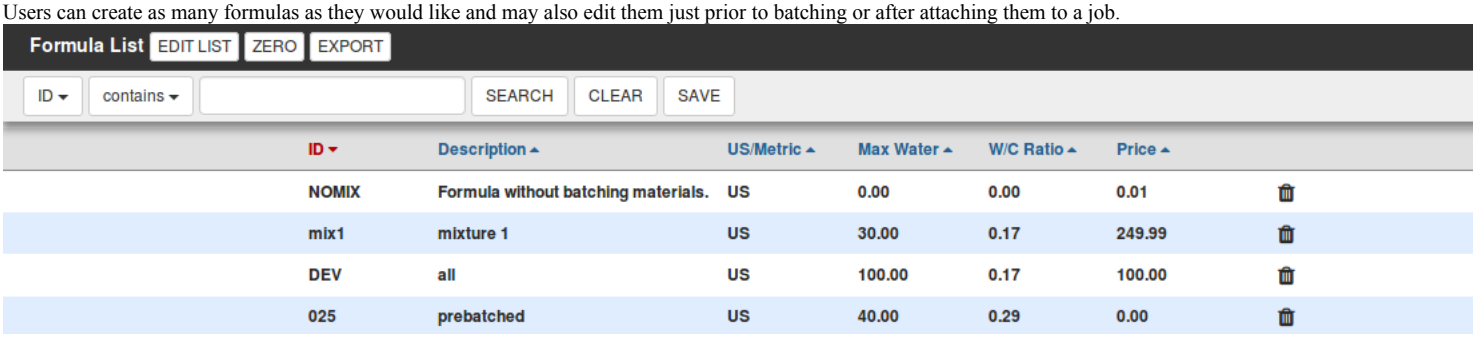
Once a customer has been created and the Modify page is accessed, two additional tables relating to the customer will appear.

The first is a **Credit** table which documents the amount of money still owed by this customer. Within the credit table, there are buttons for *PAYMENT*, *HISTORY*, and *ZERO*. The payment button opens a dialog to record a payment made by the customer or adjust their total due balance. The history button opens a dialog that shows the history of all payments made by the customer, and the Zero button clears the balance for the customer.

The second is a **Usage** table for the customer. This table documents how many batches and yards were produced for the customer since the last time these values were cleared. There is a *ZERO* button available that resets the totals and begins tracking again from zero.

2.4 Formulas

The formula list page allows the user to view and edit information about formulas/mix designs. Formulas are the recipes in which the plant follows to make concrete. Users can create as many formulas as they would like and may also edit them just prior to batching or after attaching them to a job.



Tools

All basic utilities are available to use on the formula list page. Search allows the user to search for a specific formula using certain criteria, Edit List allows the user to change the way the job list page is viewed, and Export allows the user to export a copy of the list for use in records and accounting.

There is also an option to *ZERO* the batch history for all formulas. This clears the tally of how many batches were completed with any given formula, but does not have an affect on previous tickets or product usage reports.

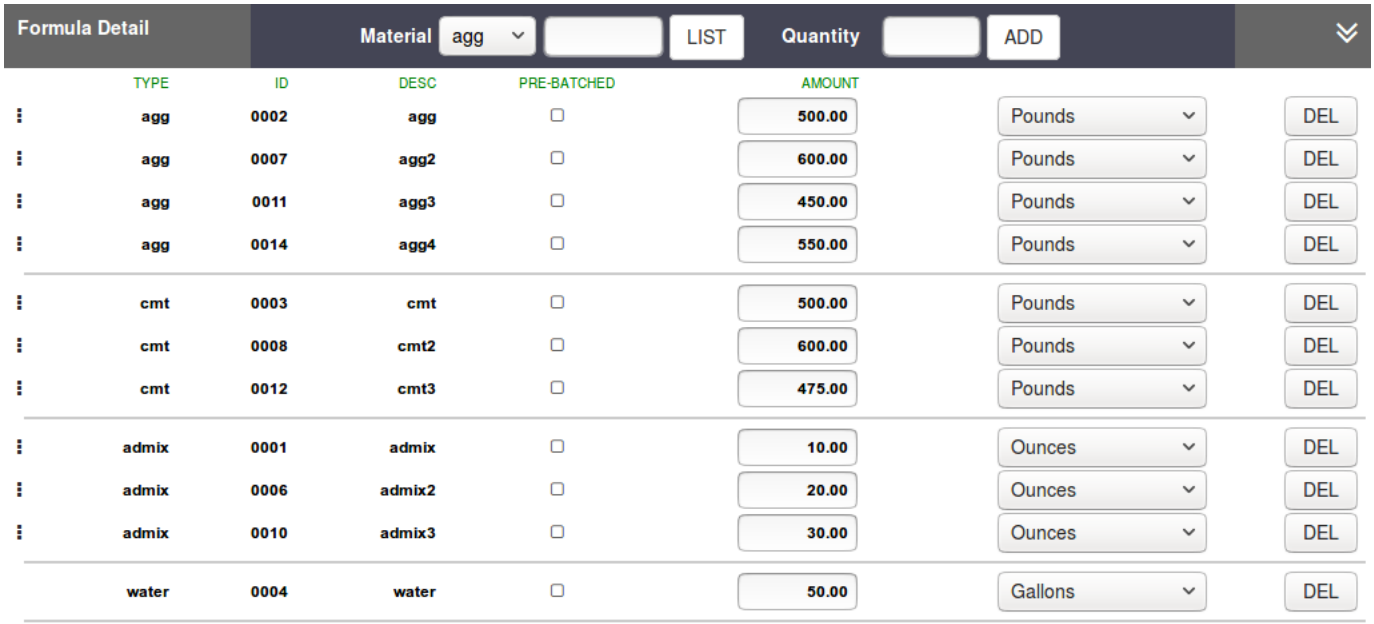
Accessing Data

New formulas can be added by clicking the *ADD NEW* button in the top right-hand corner of the screen, and current formulas can be edited by clicking on the entry in the list. Keep in mind that editing a formula will apply the changes to all tickets and jobs which use that formula.

To delete a formula, click the trash can icon to the far right of its entry in the list.

2.4.1 Formula Edit Tool

The **Formula Detail** box appears on job and batch modify pages. When the page loads, the formula detail box will be collapsed and you must click the double down arrows to the left of the box to expand it. This box allows the user to tweak a formula before use in a batch or job. Materials can be added, edited, or deleted. Changes made in the formula detail box only affect that particular batch or job, not the formula itself.



To add a material that is not already in the formula, select a type from the dropdown at the top of the box. Once a type has been selected, a list of all materials with that type appears. Click on one to select it, then enter a quantity to use and click *ADD*. The material will then be added to the formula.

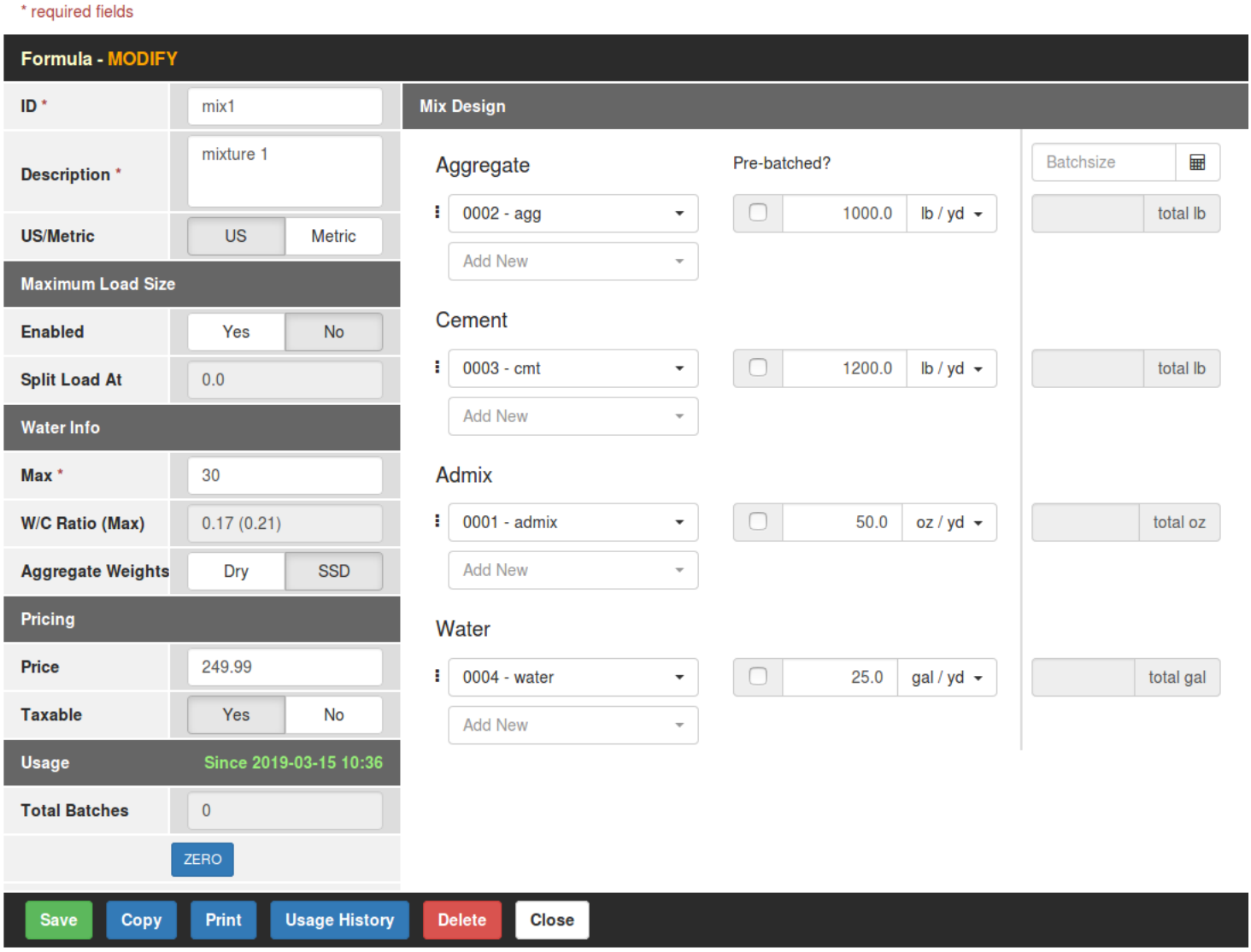
Use the dots to the left of each material to change their order. Ordering can only be changed between materials of the same type, and they will discharge in the order they are listed. The quantity of any material can be changed by typing it into the input box by each material. The unit measure of any material can be changed using the dropdown to the right of the amount.

To delete a material from the mix, click the *DEL* button.

Formula detail also appears on a finished ticket in the ticket list, but nothing can be edited.

2.4.2 Creating/Modifying a Formula

The same page is used for both adding and modifying a formula with minor differences. To access the **ADD** page, click the *ADD NEW* button in the top right-hand corner of the formula list page. To **MODIFY** a job that already exists, click that job's entry in the table on the same page.



ID: The ID is an identifier used throughout the software that is unique to each formula. It is best to choose something short and simple to optimize software performance.

Description: The description is a label given to each product that is used primarily for readability purposes. The description is what the formula will be called in the software display as well as on tickets and reports.

US/Metric: Whether the formula is in US or Metric units.

Maximum Load Size: Use this section to enable split batches, and specify what size to split the load at.

Water Info: Information about water usage. **Max** is the total amount of water that can be added to this mix. The **W/C ratio** is the ratio of water to cement in the mix design, and is updated as values are changed in the mix design editor. Here you can also specify if **Aggregate Weights** are Dry or Saturated Surface-Dry (SSD).

Pricing : Information on the price of this formula. **Price** is the price of this formula per yard and **taxable** is a yes/no checkbox for whether tax is applied to the price of this formula.

Usage: There are two usage tools available for formulas. Both are only available on the **Modify** page after a formula has been created.

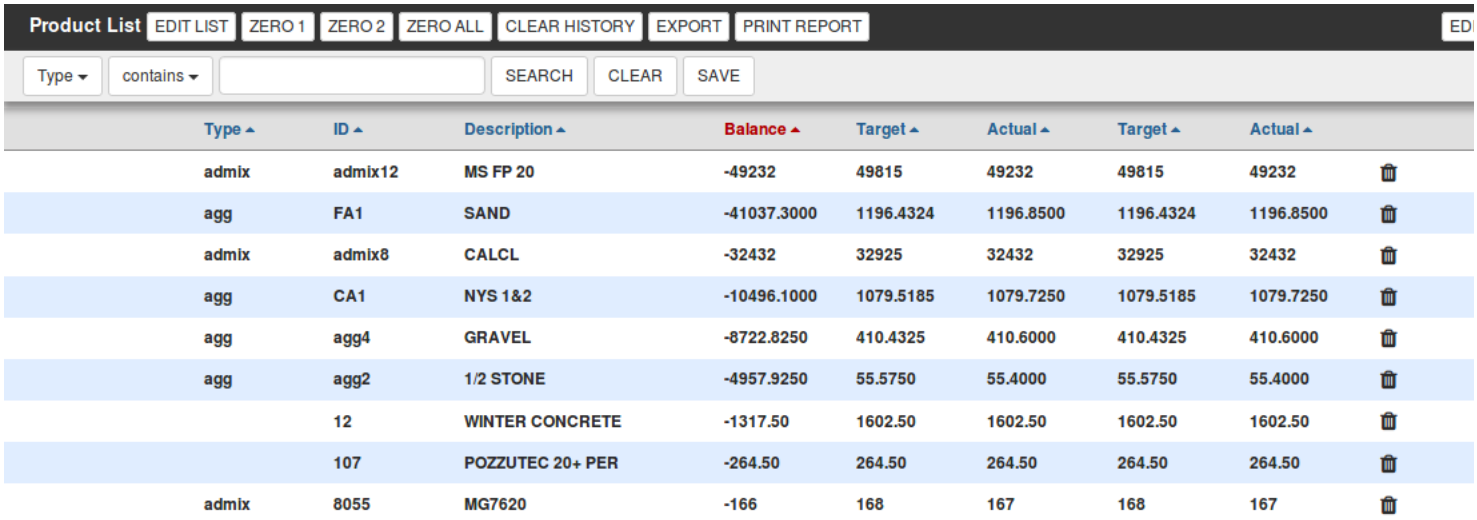
The first is the **Total Batches** table shown in the bottom left-hand corner of the modify screen. This value shows how many times the formula has been used since the last time the value was cleared. To clear this value, click the *ZERO* button in the table. This does not affect past or current tickets.

The other available usage tool is the **Usage History** report. Clicking *USAGE HISTORY* at the bottom of the screen will open a new window with information about the formula. The report shows all orders the formula has been used for since the last time the report was cleared. It includes date and time, customer name, plant it was batched on, size of the batch, name, and a memo. This report can be cleared by clicking the *CLEAR* button, which will reset the report but not affect any other tickets or formulas. The report can also be saved or printed for bookkeeping purposes by clicking *EXPORT* to export the report.

Mix Design: This section is where the user sets their different components for the mix design for this formula.

2.5 Products

The product list page allows the user to view and edit information about products and materials. The term "product" and "material" are often used interchangeably, although the term *material* describes something that goes into a mix design while a *product* does not.



Tools

All generic tools are available to use on the product list page. Search allows the user to search for a specific product using certain criteria, Edit List allows the user to change the way the product list page is viewed, and Export allows the user to export a copy of the list for use in records and accounting.

The two buttons labeled *ZERO 1* and *ZERO 2* will clear either of the two columns for product usage for all products. *ZERO ALL* clears both tables and all balances. *CLEAR HISTORY* clears all usage and inventory history. The *EXPORT* button saves a CSV file of all products. The *PRINT REPORT* button opens the menu for generating a material usage report. The *EDIT UNITS* button lets the user change the units of Aggregates, Cements, Admixes, or Waters.

Accessing Data

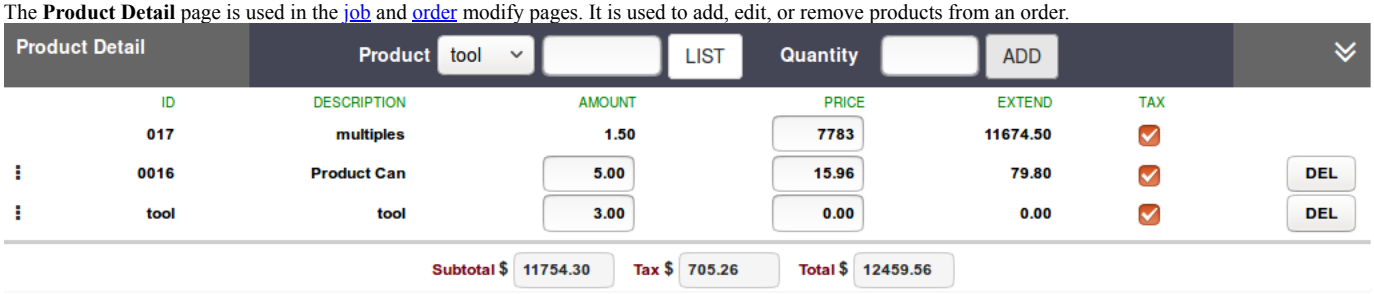
New products can be added by clicking the *ADD NEW* button in the top right-hand corner of the screen. Current products can be edited by clicking on the entry in the list. Keep in mind that editing a product will apply the changes to all jobs and mix designs which use that product.

To delete a product, click the trash can icon to the far right of its entry in the list or click the *DELETE* button from the product's modify page.

The product list page also has an **Auto-Refresh** feature, meaning it updates all entries every ten seconds with any balance changes that may have resulted from batching or transactions. To turn off this feature, uncheck the box in the bottom right corner of the screen.

2.5.1 Product Edit Tool

The **Product Detail** page is used in the job and order modify pages. It is used to add, edit, or remove products from an order.



To add a product, select *prod* from the drop-down menu at the top of the box. A pop up will appear with a list of all available products. Click one to select it, then enter a quantity and click *ADD*. Alternatively, if you know the ID of the product to add it can be typed directly into the input box, given a quantity, and added.

The process is the same if "matl" is selected from the dropdown, but this will bring up a list of materials instead of products. Although extra materials can be added here, they will **NOT** be part of the batch. To add materials to a mix, use the formula edit tool instead.

The dots to the left of each product can be used to reorder the product. The amount, price, and tax of each can be changed in that product's row. Every time a change is made, the **Subtotal**, **Tax**, and **Total** boxes will update with any changes to price.

To delete a product, click *DEL* to the right of that product's row.

2.5.2 Product Inventory and Usage History

Each product has its own history table that contains both *usage* history and *inventory* history. The table can display each by themselves or as a combined table, depending on what is selected in the dropdown in the top-right of the table.

20-1001 - History

Show 15 entries

Date/Time	Customer	Name	Sold	Batched	Shipped	Received	Adjust	Prev Bal	New Bal	Bin	Prev B Bal
2020-03-04 13:21:19			71.0	0.0	0.0	0.0	0.0	29300.0	29229.0	0	0.0
2020-03-04 13:19:00			0.0	0.0	0.0	0.0	0.0	29300.0	29300.0	0	0.0
2020-03-04 13:08:44			700.0	0.0	0.0	0.0	0.0	30000.0	29300.0	0	0.0
2020-03-04 12:00:23			0.0	0.0	0.0	0.0	0.0	30000.0	30000.0	0	0.0
2020-03-04 11:59:02	Perry Construction		0.0	0.0	0.0	0.0	0.0	30000.0	30000.0	0	0.0
2020-02-27 13:39:36	NETWORK CO.		0.0	0.0	0.0	0.0	0.0	30000.0	30000.0	0	0.0
2020-02-27 13:37:24			0.0	0.0	0.0	0.0	0.0	30000.0	30000.0	0	0.0
2020-02-27 09:26:00		zmh	0.0	0.0	0.0	12190.0	0.0	17810.0	30000.0	0	0.0
2020-02-19 08:13:00	BSI		0.0	0.0	0.0	0.0	0.0	17810.0	17810.0	0	0.0
2020-02-19 08:05:00	JACK WATKINS		0.0	0.0	0.0	0.0	0.0	17810.0	17810.0	0	0.0
Totals			**7472.5**	**943895.0**	**0.0**	**748810.0**	**150618.0**				

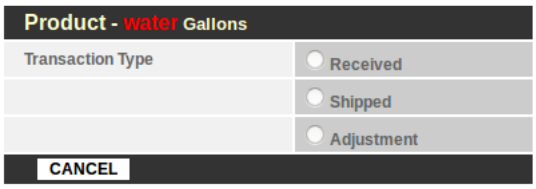
Showing 1 to 15 of 12,115 entries First

Close Clear Export

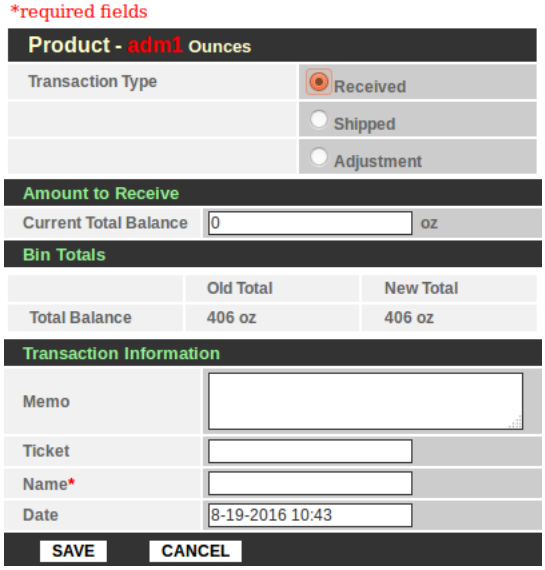
2.5.3 Inventory Transactions

The inventory transaction page is where the user can edit the amount of any product or material on hand. It can be accessed through the modify page for any product by clicking on the button reading *TRANSACTION*. Keep in mind that that units will be different depending on the selection made on the product list page. Current units are always shown at the top of each page.

*required fields



Upon opening the transaction page, you will be prompted to select one of three options: **Received**, **Shipped**, or **Adjustment**. Receiving inventory will add that number to the total, shipping will subtract it, and adjustment will allow the user to type in either positive or negative numbers to adjust by. Although the same results of receiving/shipping can be achieved with the adjustment option, it is best to only use adjustments to correct human or software error. Once a transaction type has been selected, the rest of the form will appear.

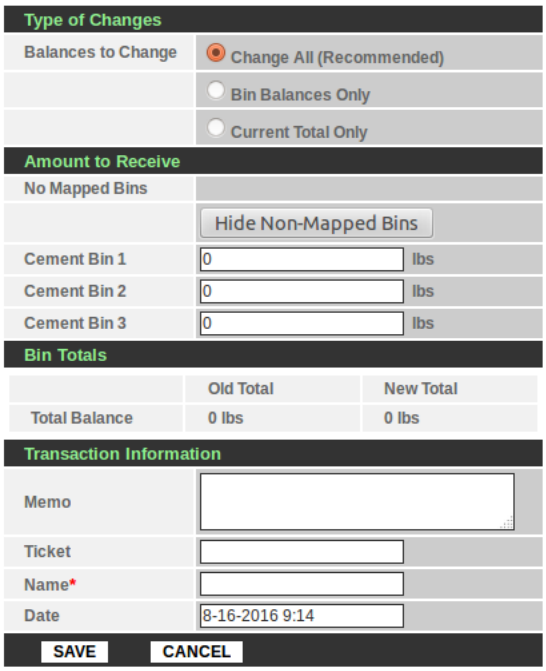


The amount used in the transaction is shown under **Amount to Receive**, which may also read **Amount to Ship** or **Amount of Adjustment** depending on the option selected. For most products, the only option available will be the current balance. In the case of cement, there may be a box available for each bin/silo.

All changes can be previewed in the **Bin Totals** section, which changes as new values are typed into the amount section. This table shows the changes made to both the total amount of product as well as any available bins.

Lastly, the **Transaction Information** section is where you can type in additional information about the transaction. Keep in mind that the ticket number is not required, but if it is included it has to be unique (only one transaction per ticket). Once a new value and a name have been entered, the transaction can be saved and the product's balances will now be updated. Record of the transaction will also appear in your usage and product history reports.

For Cement with Bins Enabled



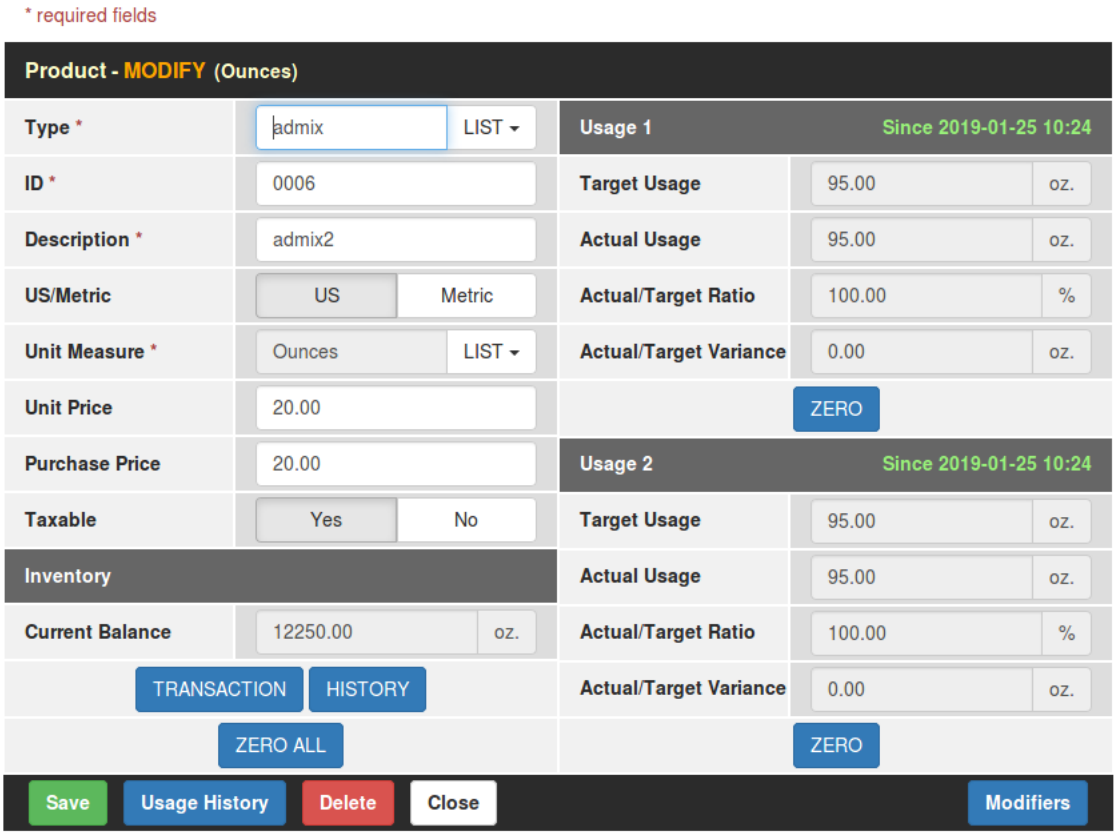
If the product is cement and bin balances are enabled in settings, there will an option for **Type of Changes**. This allows the user to choose whether they would like to change only the overall amount of product, the amount of product in each particular bin/silo, or both. This option is available for any plant that would like to keep track of how much product they have in each bin/silo. If you do not normally care about how much product is in each bin/silo, select the *Current Total Only* option or disable bin balances in settings.

If the user opts to change all or change bin balances only, the Amount to Receive section changes. By default, only *mapped* bins will appear in the list, meaning only those bins that are assigned to the current material through the batching software. However, the user can also change the balances of *non-mapped* bins by clicking the *SHOW NON-MAPPED BINS* button. Any changes to the bins will also show up in the **Bin Totals** section.

2.5.4 Modifying A Product

The modify product page can be accessed by clicking on any row in the product list page.

Note: Any changes made to a material that has already been in use will be applied to ALL previous tickets and reports of which they were associated. Only make changes to a product if you are sure that you are not losing any valuable information.



Type: The type of material, usually *agg*, *cmt*, *admix*, *water*, or *prod*. These values can be typed in manually or selected from the *LIST* button. Although any value can be entered, it is best to choose a type from the list as the software may not work as expected with manually entered values.

ID: The ID is an identifier used throughout the software that is unique to each product.

Description: The description is a label given to each product that is used primarily for readability purposes. The description is what the material will be called in the software display as well as on tickets and reports.

US/Metric: Whether the product has US or Metric units.

Unit Measure: The unit measure for this product. Although any value can be typed in, it is best to select one from the *LIST* menu. Certain functionalities are only available when the correct units are assigned to a product, such as unit changes.

Unit Price: Price per unit of material.

Purchage Price: Purchase price of the material.

Taxable: Whether or not tax is applied to the price of this material.

Inventory

The Inventory section of this menu is not editable, but instead gives an overview of how much of that material is on hand. It displays the current balance for the product, as well as bin balances for cement when bin balances are enabled in settings.

Transaction: The button labeled *TRANSACTION* will bring up a menu that allows a user to change a material's balance. Balances cannot be changed without record of who changed them and why, and as such a transaction must be made.

History: The *HISTORY* button brings up a report for all of the changes made to the balance of that product that can be exported or cleared.

Usage Tables

The usage tables show the target and actual usage of the product. There are two different usage tables that can be utilized. Each shows the target usage, actual usage, ratio,

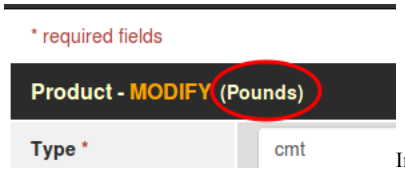
and variance of target to actual. They can be reset at any point to only show the usage from the reset date onward, much like a mileage tracker in a car.

Zero: The *ZERO* buttons will clear the usage table they are associated with and reset the timer to today's date. These buttons will not clear out the product history, tickets, or any other data except usage.

2.5.5 Changing Units

Unit conversions can be applied to any of the website's product pages. This feature allows the products to be viewed and edited using a unit measure different than the one they were assigned.

At any time, the current units are displayed at the top of the modify, transaction, and history pages. Always check to make sure those units are correct before proceeding!



In order for a unit change to be applied to a product, it must have the correct **type** and **standard unit measure**. If the unit changes don't work for a product, open the product's modify page and check that those two fields are correct (and spelled correctly). The table below outlines the necessary types and unit measures needed for unit changes to be applied.

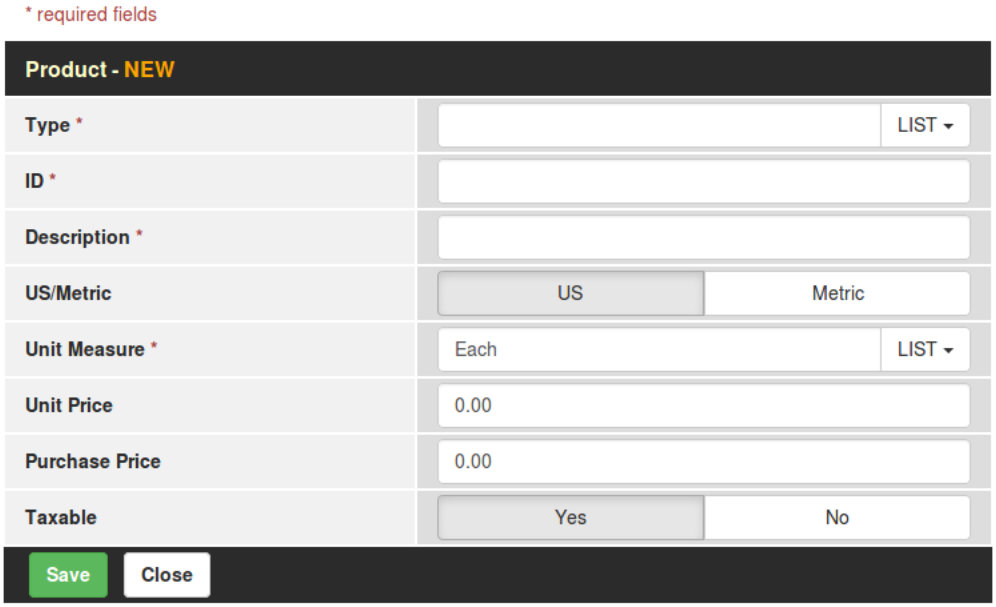
Note: US or Metric units are defined by your contract. If your contract is set to use US units, products with base units in Metric will not be affected by unit changes!

Contract's Units	Product Type	Base Units Supported	Conversion Options
US	admixaggcmt	Pounds Ounces	US Tons Gallons
US	water	Pounds Gallons	US Tons
Metric	admixaggcmt	Milliliters Kilograms	Liters Metric Tons
Metric	water	Kilograms Liters	Metric Tons

Once products are set to the correct type and base units, the two unit change dropdown menus in the product list page can be used. The first menu affects only admixtures, aggregates, and cement and the second affects water. Once units have been selected, all product pages will display products with the new units until the options are changed.

2.5.6 Adding A Product

Products can be added by clicking the *ADD NEW* button in the top-right of the product list screen. The following pop up will display:



Input all information necessary for the product, then click *SAVE* to save the new product into the product list for use in the software. Products will always begin with a balance of zero, and a transaction can be made once the product is added to set an initial balance.

Type: The type of material, usually *agg*, *cmt*, *admix*, *water*, or *prod*. These values can be typed in manually or selected from the *LIST* button. Although any value can be entered, it is best to choose a type from the list as the software may not work as expected with manually entered values.

ID: The ID is an identifier used throughout the software that is unique to each product.

Description: The description is a label given to each product that is used primarily for readability purposes. The description is what the material will be called in the software display as well as on tickets and reports.

US/Metric: Whether the product has US or Metric units.

Unit Measure: The unit measure for this product. Although any value can be typed in, it is best to select one from the *LIST* menu. Certain functionalities are only available when the correct units are assigned to a product, such as unit changes.

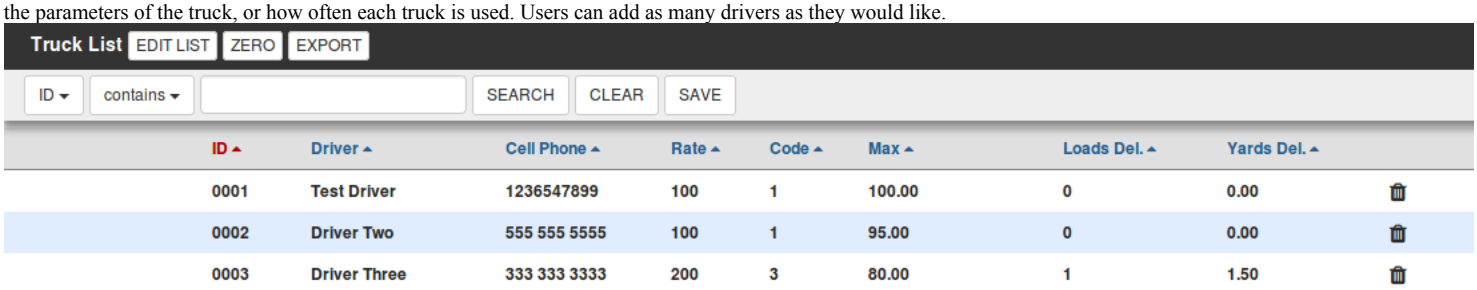
Unit Price: Price per unit of material.

Purchage Price: Purchase price of the material.

Taxable: Whether or not tax is applied to the price of this material.

2.6 Trucks

The truck list page allows the user to view and edit information about trucks and drivers. Trucks can be added to store information such as the driver's contact information, the parameters of the truck, or how often each truck is used. Users can add as many drivers as they would like.



ID	Driver	Cell Phone	Rate	Code	Max	Loads Del.	Yards Del.
0001	Test Driver	1236547899	100	1	100.00	0	0.00
0002	Driver Two	555 555 5555	100	1	95.00	0	0.00
0003	Driver Three	333 333 3333	200	3	80.00	1	1.50

Tools

All generic tools are available to use on the truck list page. Search allows the user to search for a specific truck using certain criteria, Edit List allows the user to change the way the product list page is viewed, and Export allows the user to export a copy of the list for use in records and accounting.

The *ZERO* button can be clicked to clear the tally of how many batches and yards each truck has delivered since the last time the data was cleared.

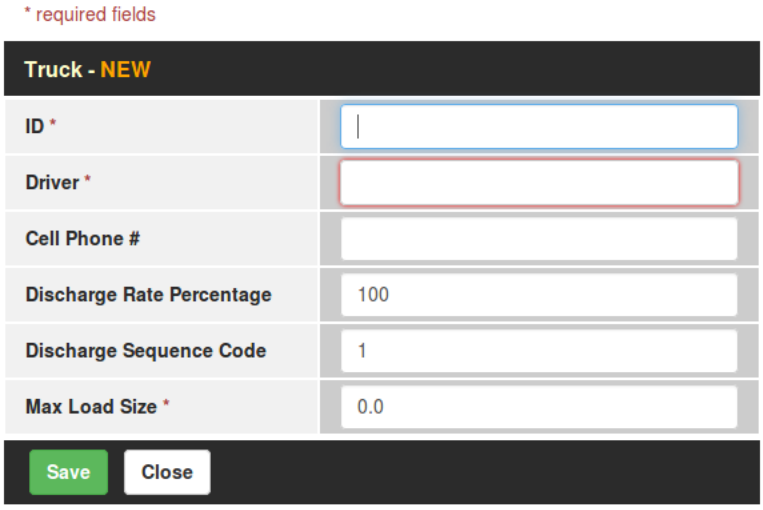
Accessing Data

Trucks can be added by clicking the *ADD NEW* button in the top-right hand corner of the screen. Current trucks can be modified by clicking on the entry in the list. Keep in mind that editing a truck will apply the changes to all jobs and orders that use that truck.

To delete a truck, click the trash can icon to the far right of its entry in the list or click the *DELETE* button from the truck's modify page.

2.6.1 Adding/Modifying a Truck

The same page is used for adding and modifying a truck with minor differences. To access the **ADD** page, click the *ADD NEW* button in the top right-hand corner of the truck list page. To **MODIFY** a truck that already exists, click that truck's entry on the truck list page.



ID: The ID is a unique identifier used throughout the software to represent this truck. It is best to choose something short and simple to optimize software performance.

Driver: The name of the driver for this truck.

Cell Phone #: The driver's cell phone number.

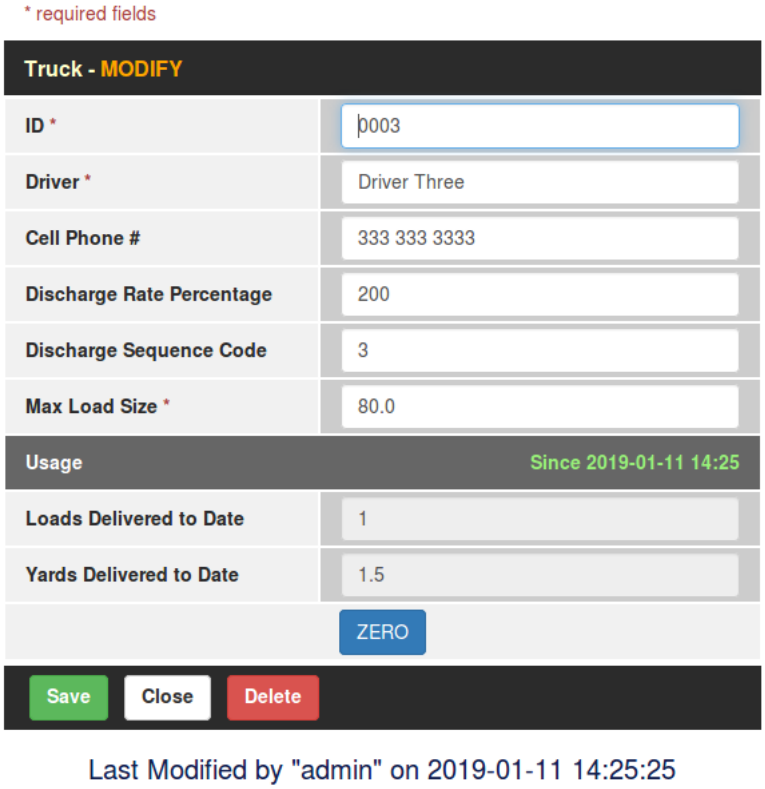
Discharge Rate Percentage: Percent discharge rate is a percentage between 0% and 200%. This value specifies what percentage of the usual batch discharge rate to use for this particular truck.

Discharge Sequence Code: This number represents one of the four discharge sequences that can be adjusted in the plant's discharge setup menus.

Max Load Size: Maximum size of load that this truck can deliver.

Usage

After a truck has been added, a usage table appears on its modify page. This shows the amount of loads or yards this driver or truck has delivered since the last time these values were cleared. These values are tracked automatically when batches are completed as long as the truck is properly assigned to the order when it is created. Pressing

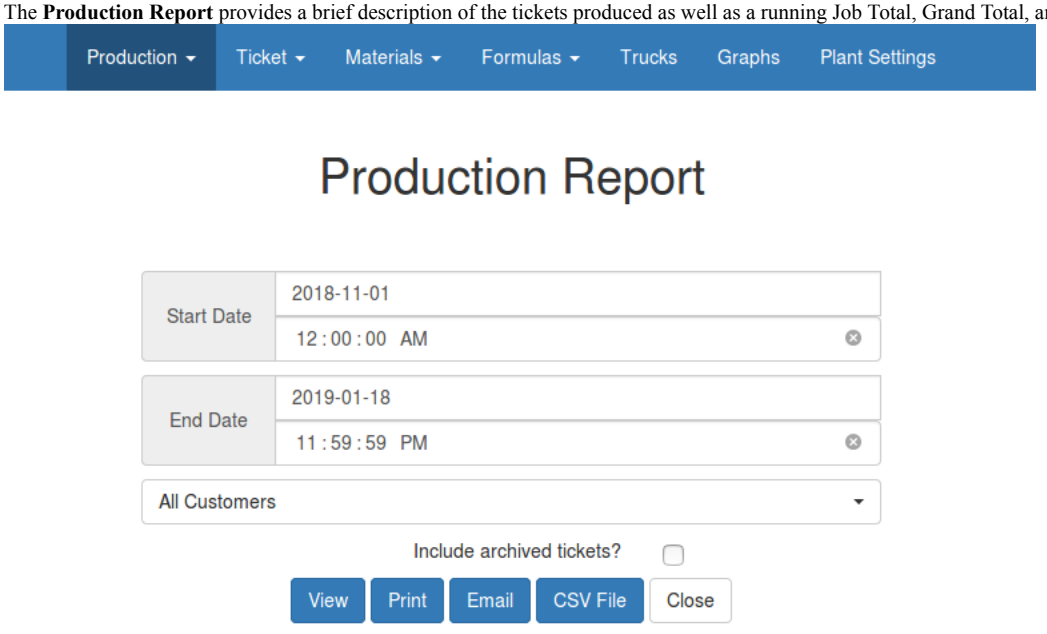


the *ZERO* button will zero the truck's usage data.

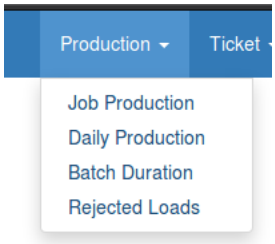
2.7 Reports

Various reports can be accessed by clicking the *Reports* button at the top of any page in the website. A pop-up will appear that displays all available reports.

The **Production Report** provides a brief description of the tickets produced as well as a running Job Total, Grand Total, and Annual Total for the batch plant.

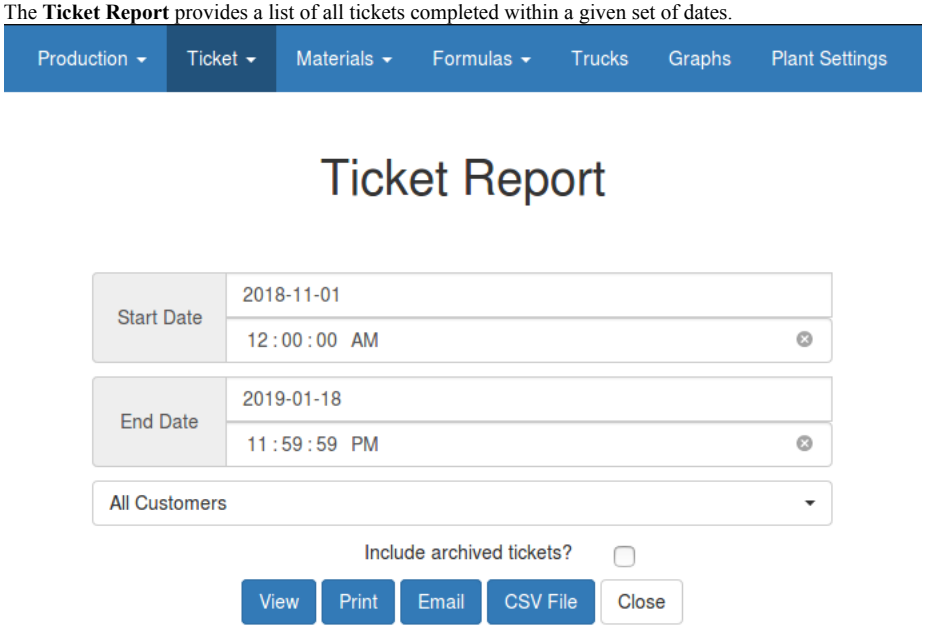


Here you can select which dates to view and

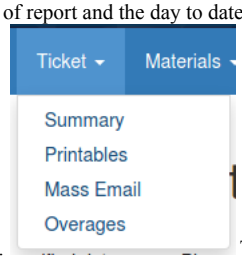


which customer(s) to include. There are buttons on the bottom to *View*, *Print*, *Email*, and *Export* this report. There is also a dropdown for other production viewing options.

The **Ticket Report** provides a list of all tickets completed within a given set of dates.

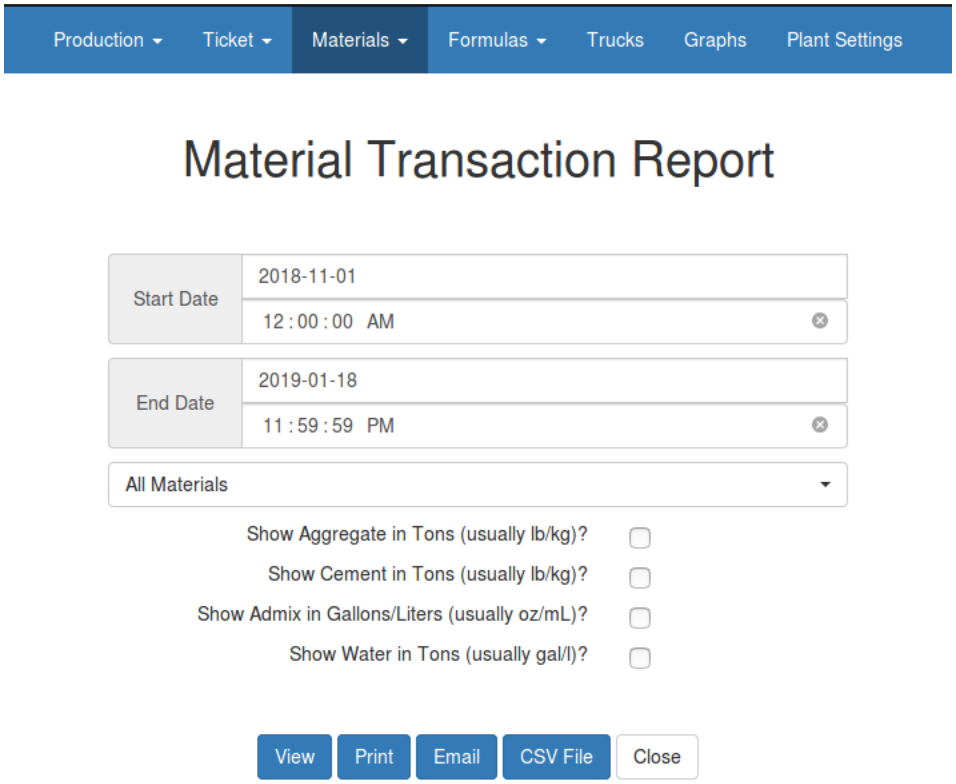


Here you can select which dates to view and which customer(s) to include. There are buttons on the bottom to *View*, *Print*, *Email*, and *Export* this report.

The ticket header shows the type of report and the day to date range of which it covers. Under the header, a list of all ticket information begins. Each ticket gets its onw set of rows, separated by blank lines. 

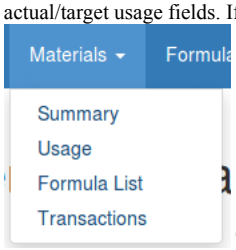
There is also a dropdown for other ticket viewing options.

The **Materials Report** shows how much material has been used in batching over a given time period.

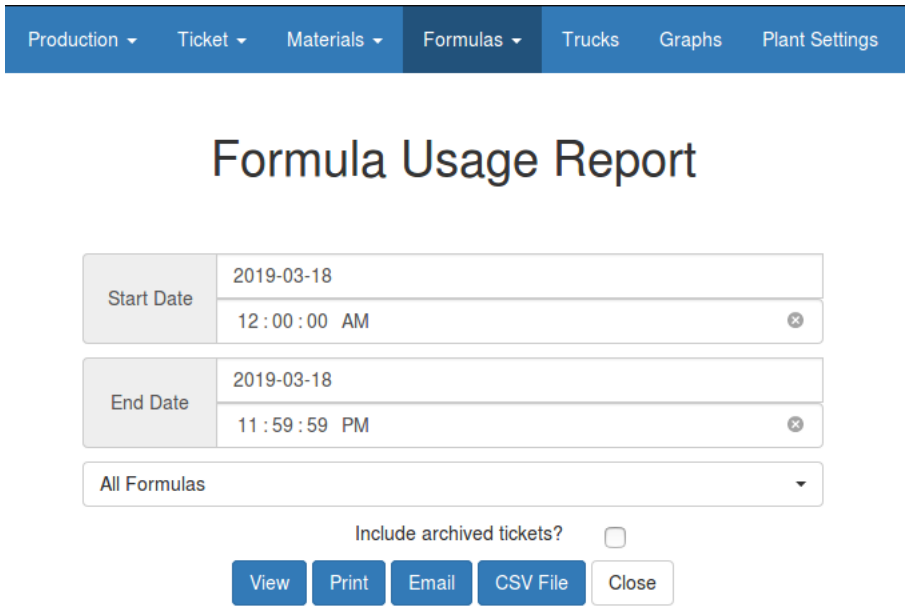


Here you can select which dates to view, what material(s), and specify unit types. There are buttons on the bottom to *View*, *Print*, *Email*, and *Export* this report.

The report header shows the date of print as well as the as units for admix, aggregate, and cement. Each item is listed below it with the balance on hand, and both of its actual/target usage fields. If there are more products that can fit on a single page, the report automatically generates a page break with page numbers at the bottom of each.

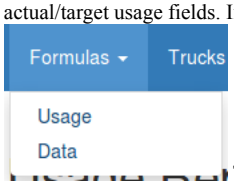


There is also a dropdown for other material viewing options.



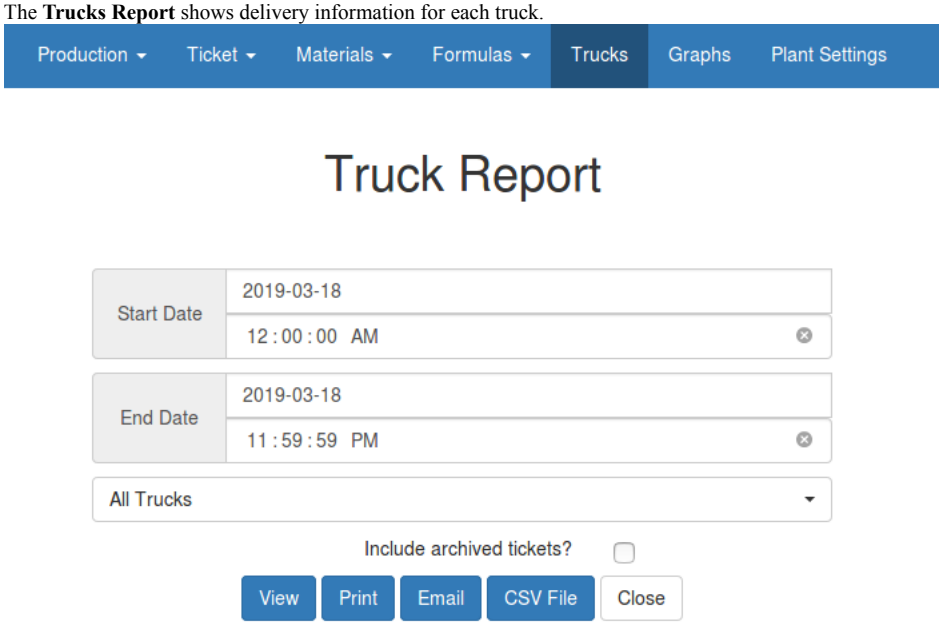
The **Formulas Report** shows usage for each formula. Here you can select which dates to view and which customer(s) to include. There are buttons on the bottom to *View*, *Print*, *Email*, and *Export* this report.

The report header shows the date of print as well as the as units for admix, aggregate, and cement. Each item is listed below it with the balance on hand, and both of its actual/target usage fields. If there are more products that can fit on a single page, the report automatically generates a page break with page numbers at the bottom of each.



There is also a dropdown for other material viewing options.

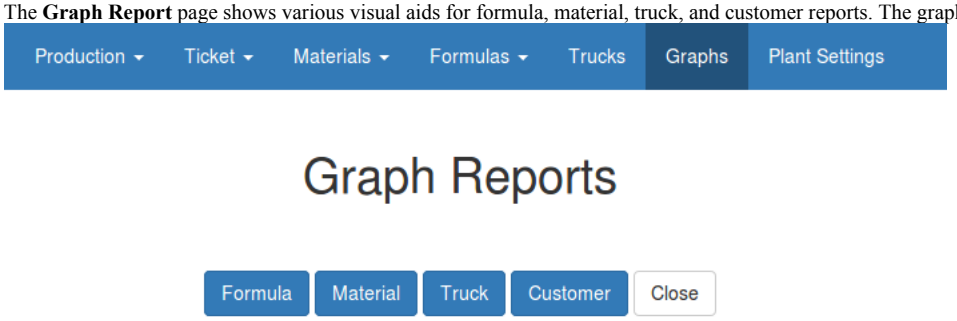
The **Trucks Report** shows delivery information for each truck.



Here you can select which dates to view and which truck(s) to include. There are buttons on the bottom to *View*, *Print*, *Email*, and *Export* this report.

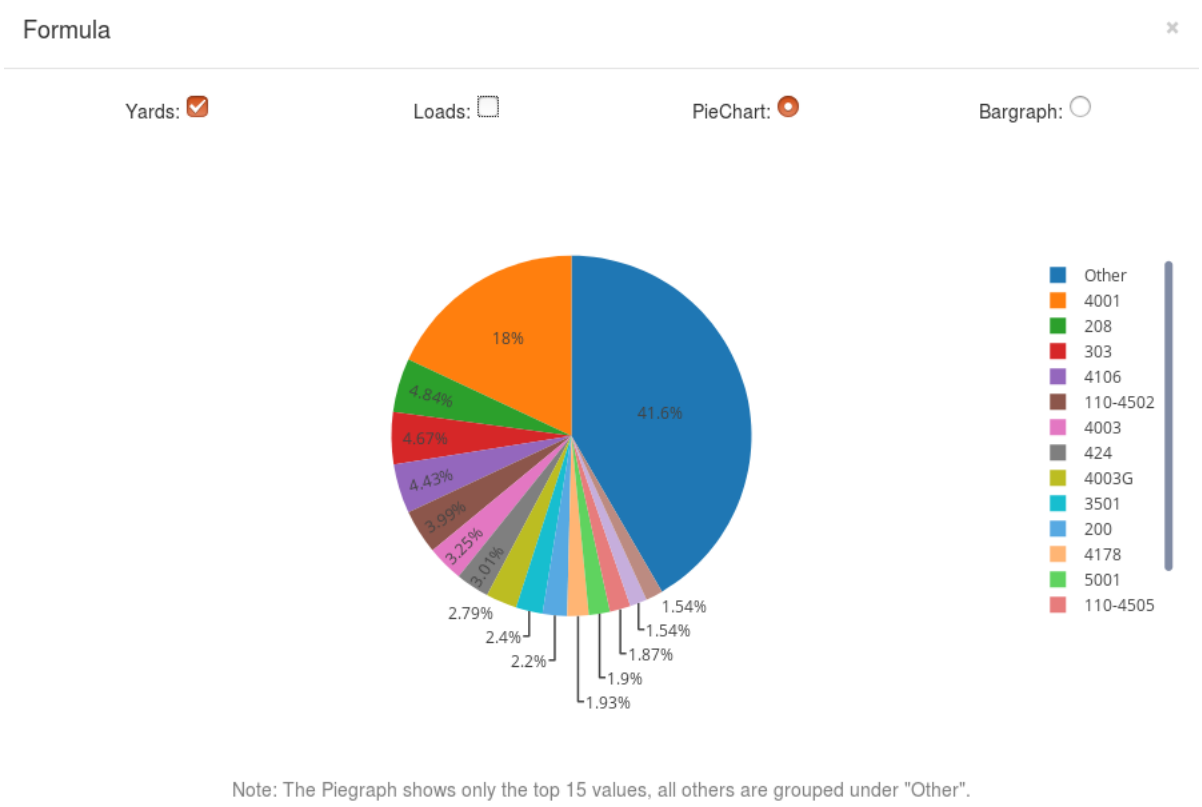
The truck header shows the name of the report and the day or date range for which the report is generated. Under that is a list of all selected trucks as well as the number of batches and yards they delivered and the driver's name. The first row has a blank truck ID input and gives data on all batches without a truck. After all trucks have been listed, the total batches and yards delivered are calculated and displayed. If there are more trucks or drivers than can fit on a single page, the report automatically generates a page break with page numbers at the bottom of each.

The **Graph Report** page shows various visual aids for formula, material, truck, and customer reports. The graphs include pie charts and bar graphs.

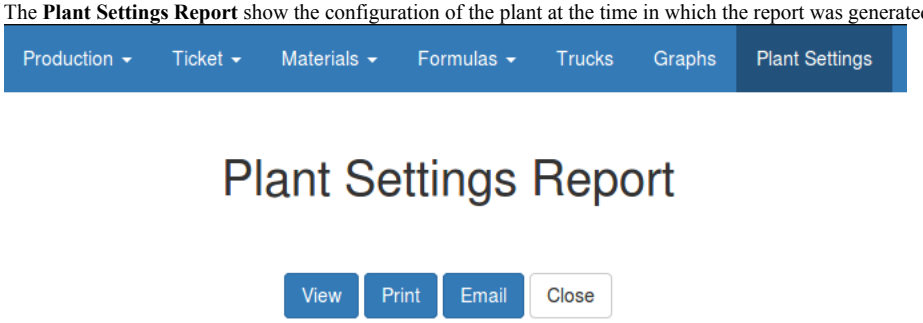


There are buttons on the bottom to select which type of graph to view.

Below is an example of what a pie chart graph for formulas would look like. Hovering over the graph will display a small camera icon in the top right, which can allow you to save the graph as a photo.



The **Plant Settings Report** show the configuration of the plant at the time in which the report was generated.



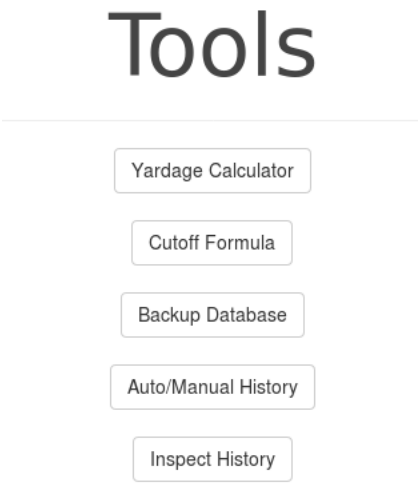
There are buttons on the bottom to *View*, *Print*, and *Email* this report.

The report itself consists of all parameters that can be set in the various plant settings' menus in the batching software. This report prints the settings for all controls in the plant and only prints the settings for the current day.

Once any of thse settings are changed, there is no way to go back in time and print a report of what they used to be.

2.8 Tools

There are various tools available for use on the website which can be found in the *Tools* menu, accessible from the navigation bar.



Yardage Calculator: This feature calculates the total number of cubic yards or cubic meters for a specific style job. The yardage calculator does not interact with the batch program. By inserting the dimensions into the respective fields the computer will calculate the cubic yards or cubic meters needed for that job.

Cutoff Formula: This tool calculates the maximum and minimum cutoffs for a material(aggregate or cement) based on the batch size, scale capacities, and targets for each material. Once the information is entered, this tool produces a good starting point for setting the maximum and minimum cutoff, although minor adjustments will often be necessary.

Backup Database: Clicking this button will produce a backup copy of the database used by the Liberty Series software. This includes all products, formulas, tickets, jobs, trucks, and customers. It is recommended to backup the database often to an external drive to avoid data loss in the case of a hardware or software failure. A thumb drive will suffice for this purpose.

Auto/Manual History: Clicking this button with open a table that contains data from every time the system was switched between Auto and Manual mode. It records the date and time, the number of the order being batched at the time, and the values of all scales. These entries can also be cleared from this table by clicking *CLEAR* at the bottom of the table.

Inspect History: Inspect History generates a table that contains data from every time the Inspect key was switched on and off. It records the date and time, the number of the order being batched at the time, and the values of all scales. These entries can also be cleared from this table by clicking *CLEAR* at the bottom of the table.

2.9 Utilities

List pages within the website share a common set of utilities that can be used for tasks such as searching and organizing.
Common items across the Liberty Series Web page include:

Search: Search functionality can be found on all of the main pages: queue, tickets, jobs, customers, formulas, products, and trucks. It allows you to filter the list based on search criteria you choose.

List Edit Page: Edit List is a feature available to all data pages on the website. It allows the user to edit the fields displayed on the page, as well as set default values to be used by the software. To access this menu, click the *EDIT LIST* button under the search bar on any list page.

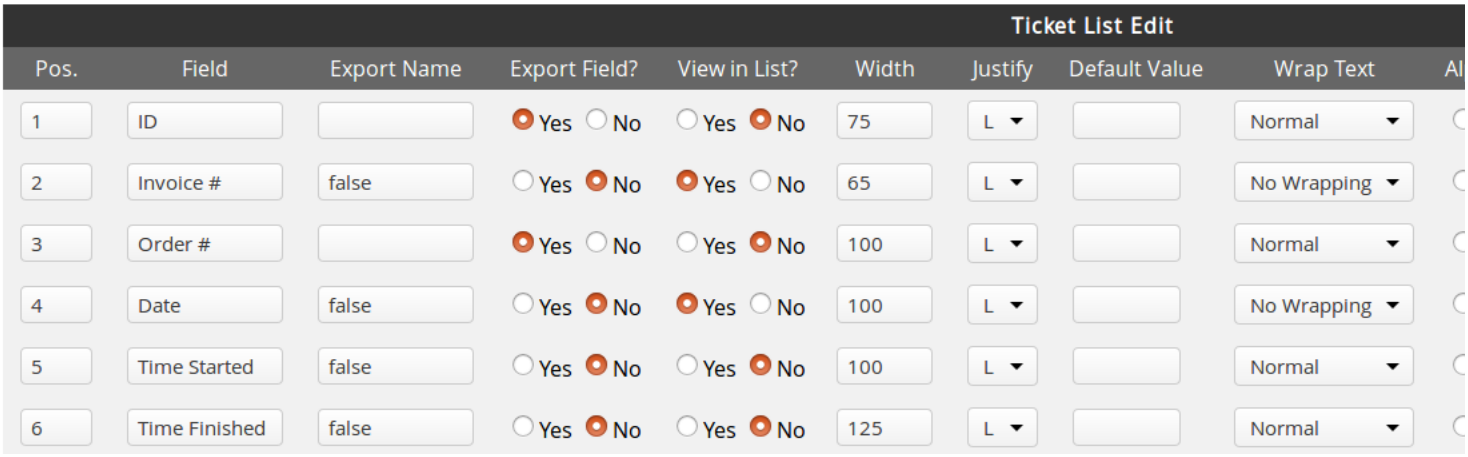
Exporting Entries: Export functionality can be found on all of the main pages: queue, tickets, jobs, customers, formulas, products, and trucks. It allows you to export the list into a CSV file(spreadsheet).

2.9.1 Exporting Entries

Export functionality can be found on all of the main pages: queue, tickets, jobs, customers, formulas, products, and trucks. It allows you to export the list into a CSV file(spreadsheet).

2.9.2 List Edit Page

Edit List is a feature available to all data pages on the website. It allows the user to edit the fields displayed on the page, as well as set default values to be used by the software. To access this menu, click the *EDIT LIST* button under the search bar on any list page.



The edit list menu shows all available fields for that page. In the above example, the ticket page is used.

Position: The position from left to right. Fields with a value closer to zero will show up first, and any fields with the same position will show up in the order they appear on the edit list page.

Field: The name of the field. This value can be changed to display anything for that field. Field name does not have an effect on the values that are displayed in the column.

Export Name: Change the name for this field in your export file. It will be set to *false* if *Export Field?* is set to *no*/

Export Field?: Select *yes* to export this field, *no* to not export it.

View in List?: Select *yes* to view this field on the list page, *no* to hide it.

Width: The width of the field, in pixels. Can be adjusted if words are wrapping or gaps are too large between fields.

Justify: Enter a value of *L* to left-justify the text in this field, *R* for right-justify, or *C* for center.

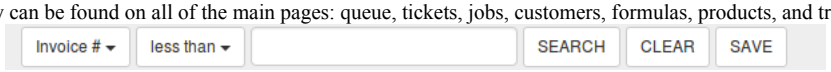
Default Value: The default value that should be given to new items. For example, if I set a type of 'admix' as the default value for products, all new products not assigned a type will automatically become admixtures.

Wrap Text: Select whether or not the text should wrap to the next line if it becomes too big for the cell.

Alphanumeric Sort: Select *yes* to sort alphanumerically, *no* otherwise.

Search Style: Select to search by *any part of word matches* or by *full word match only*.

2.9.3 Search

Search functionality can be found on all of the main pages: queue, tickets, jobs, customers, formulas, products, and trucks. It allows you to filter the list based on search criteria you choose. 

Editable Fields

To use the search functionality you must specify a search column, search comparison type, and a search value. These input fields are located on the top of the page under the Erie Strayer logo.

Search Column: The first dropdown is a list of the available columns you're able to search with. They are in the same order as the columns on the page. Hidden columns are shown at the bottom of the list in alphabetical order.

Search Comparison: The second dropdown is a list of the methods by which you can search the selected Search Column. This list changes based on the data type of the Search Column. Below is a list of all possible search comparisons and their required search formats.

Search Value: The text box is the field you enter the data you'd like to search against. The format of this data must match one of the required formats of the "Search Comparison" as described below in search comparison formats.

Buttons

Button	Action
[Search]	Reloads the list table searching with the data entered into the Editable Fields left of the button. If there is no data entered into the Search Value field, no new search is performed. Saved searches will still be applied when the list is reloaded.

[Clear]	Removes all saved searches and reloads the list table. Clears any data out of the Search Value field.
[Save]	Saves the data entered in the Editable Fields directly below the Editable Fields. Individual saved searches can be removed by clicking them. All saved searches can be removed by clicking the Clear button.
[?]	Opens this help page

Search Comparison Formats

When using the search functionality, you must follow the proper format for the Search Column you're searching against. The following table is a list of all possible Search Comparisons and their required formats.

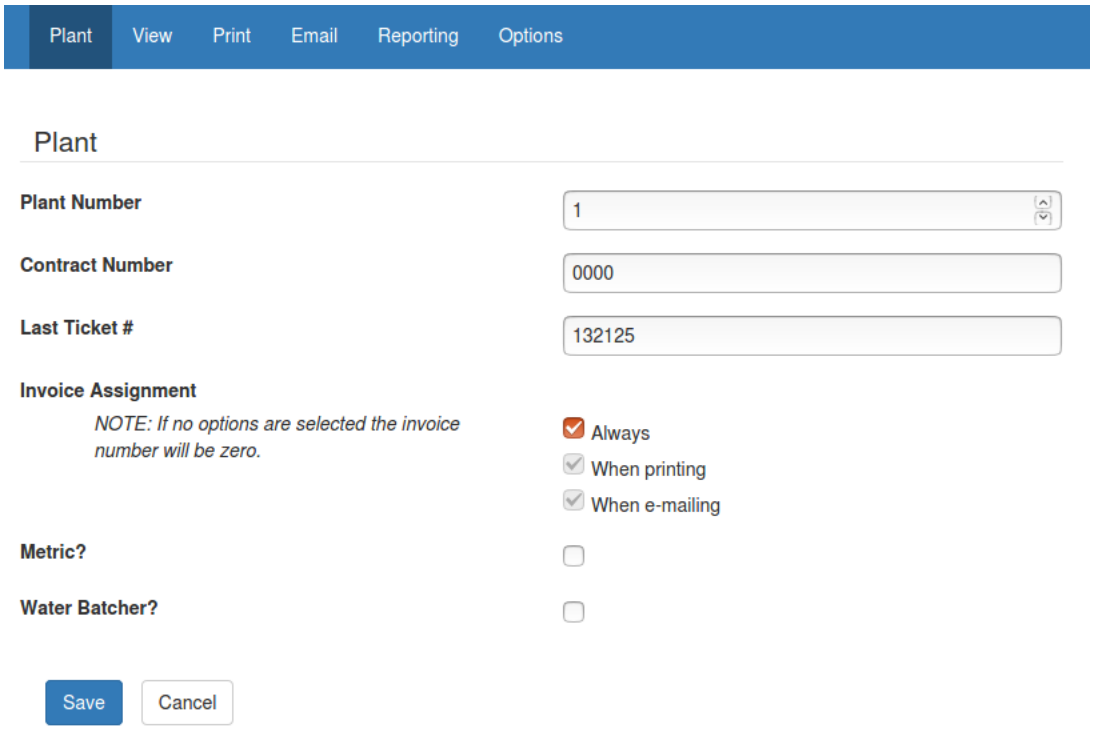
Data Type	Search Comparison	Required Formats	Notes	Examples
Text	contains	*No Restrictions*	Searches any portion of the string for this exact phrase. Not case-sensitive	1043 Company Name Pennsylvania
Text	does not contain	*No Restrictions*	Searches any portion of the string for this exact phrase and excludes them from the result. Not case-sensitive	1043 Company Name Pennsylvania
Text	equal to	*No Restrictions*	Searches for this exact, full phrase. Will not include partial results. Case-sensitive	1043 Company Name Pennsylvania
Text	not equal to	*No Restrictions*	Searches for this exact, full phrase and excludes them from the result. Case-sensitive	1043 Company Name Pennsylvania
integer double precision	less than	Numeric Value negative and decimals allowed No commas.		100 -32.5 55632.10
integer double precision	less than or equal to	Numeric Value negative and decimals allowed No commas.		100 -32.5 55632.10
integer double precision	equal to	Numeric Value negative and decimals allowed No commas.		100 -32.5 55632.10
integer double precision	not equal to	Numeric Value negative and decimals allowed No commas.		100 -32.5 55632.10
integer double precision	greater than or equal to	Numeric Value negative and decimals allowed No commas.		100 -32.5 55632.10
integer double precision	greater than	Numeric Value negative and decimals allowed No commas.		100 -32.5 55632.10
date timestamp	less than	YYYY-MM-DD YYYY-MM-DD HH:MM:SS	HH being 00 through 23 only, for midnight/12am through 11pm	2015-04-23 2014-08-17 14:33:12

date	less than or equal to	YYYY-MM-DD	HH being 00 through 23 only, for midnight/12am through 11pm	2015-04-23
timestamp		YYYY-MM-DD HH:MM:SS		2014-08-17 14:33:12
date	equal to	YYYY-MM-DD	HH being 00 through 23 only, for midnight/12am through 11pm	2015-04-23
timestamp		YYYY-MM-DD HH:MM:SS		2014-08-17 14:33:12
date	not equal to	YYYY-MM-DD	HH being 00 through 23 only, for midnight/12am through 11pm	2015-04-23
timestamp		YYYY-MM-DD HH:MM:SS		2014-08-17 14:33:12
date	greater than or equal to	YYYY-MM-DD	HH being 00 through 23 only, for midnight/12am through 11pm	2015-04-23
timestamp		YYYY-MM-DD HH:MM:SS		2014-08-17 14:33:12
date	greater than	YYYY-MM-DD	HH being 00 through 23 only, for midnight/12am through 11pm	2015-04-23
timestamp		YYYY-MM-DD HH:MM:SS		2014-08-17 14:33:12

2.10 Website Settings

The *Setup* button in the top nav bar of the website contains various options that can be set to customize the user's experience.

Plant Settings



Plant Number: For companies with multiple plants, the plant number can be changed here.

Contract Number: The company's contract number. This value should rarely changed.

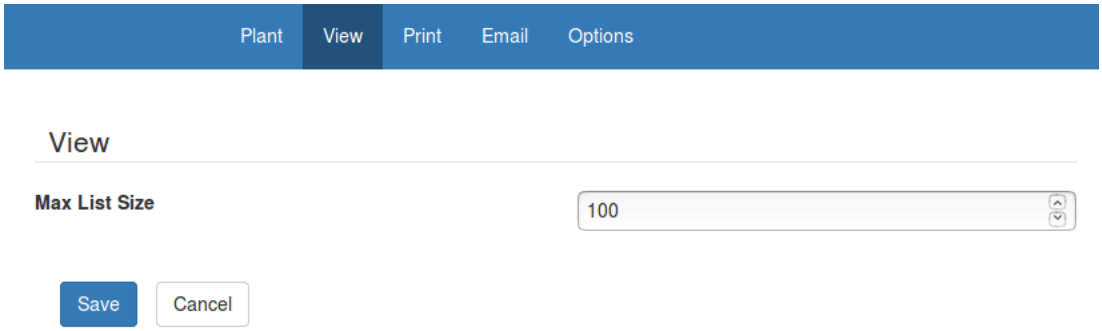
Last Ticket #: The last ticket number assigned to a completed ticket. This value may need to be changed for multiple reasons. If a ticket prints in error or there is a problem that leads to a bad ticket, this number can be reduced by one so that the bad ticket can be deleted and a new ticket will continue on with the correct numbering. This value can also be used to reset the ticket numbers to an earlier value.

Invoice Assignment: Option to choose whether invoices will be assigned when printing only, when emailing only, or both.

Metric? Option to show the webpage in metric.

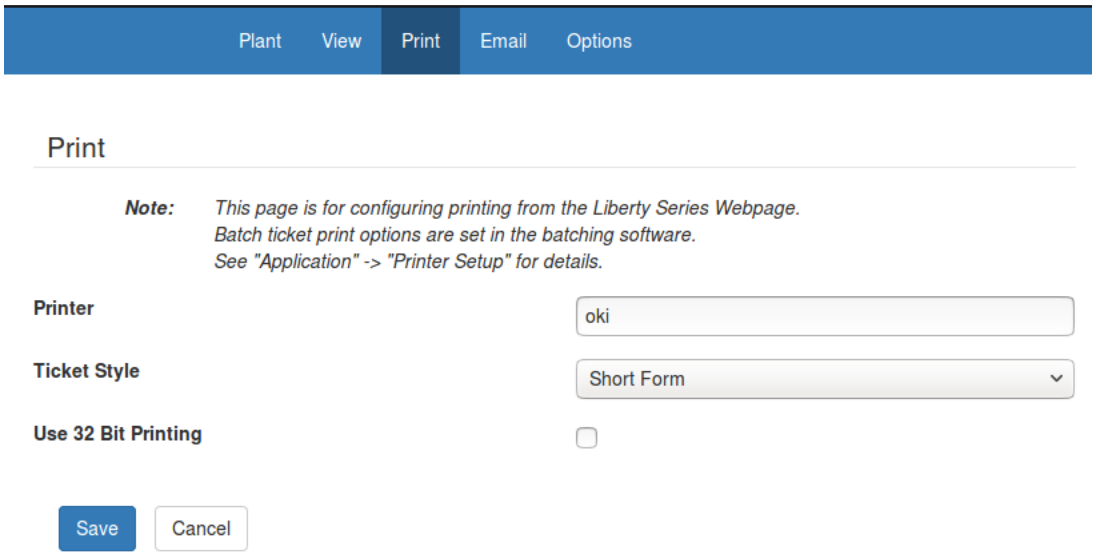
Water Batcher? Option to show water by weight on the webpage.

View Settings



Max List Size: The maximum number of items shown on a single page for any of the list pages: tickets, jobs, customers, formulas, products, and trucks.

Printer Settings

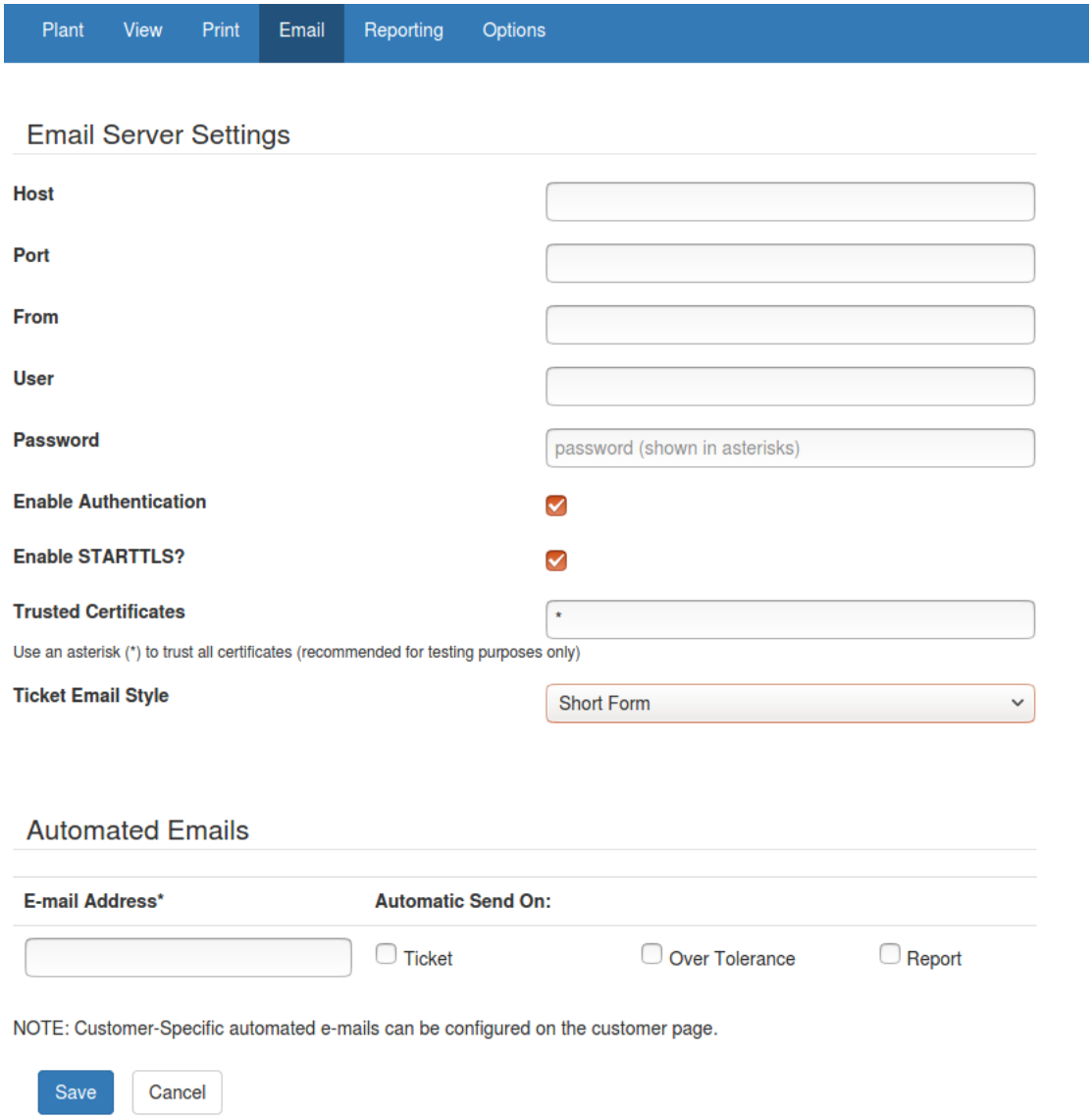


Printer: The name of the printer to use.

Ticket Style: The style of the ticket to use. This is usually rarely changed.

Use 32 Bit Printing: Check this box to use 32-bit printing. This is usually rarely changed.

Email Settings

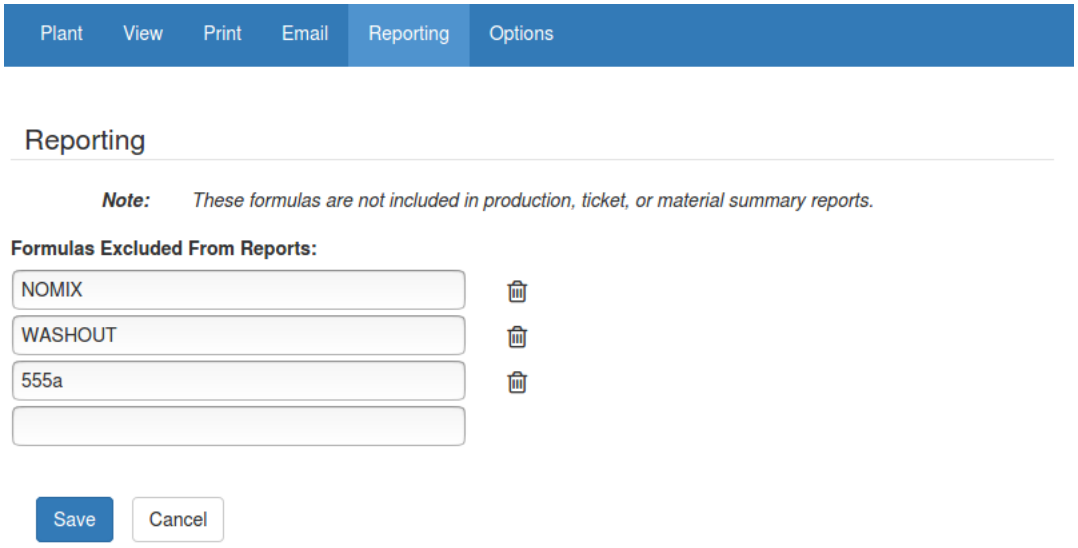


Email Server Settings: This is where you can set your email server settings.

Ticket Email Style: This is where you can set your style for emailed tickets.

Automated Emails: This is where you can setup automated emails, as long as the server settings are filled out correctly.

Reporting



Reporting: This is where you can select which formulas are excluded from reports

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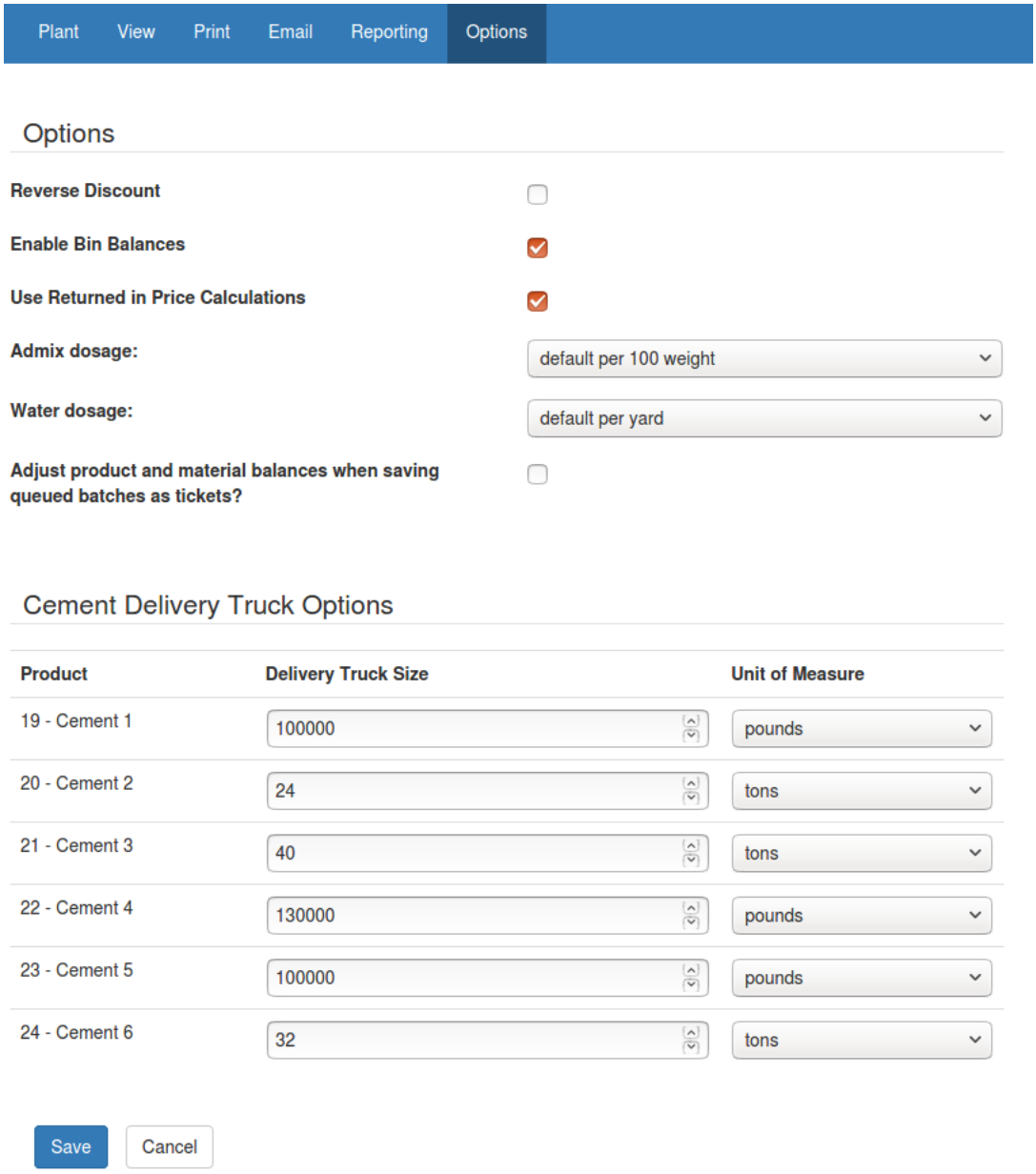
Options



Reverse Discount: There are two options for inputting a discount into customer entries: positive values and negative values. When this feature is toggled off, the user is expected to use a positive value for discount that will be subtracted from the total. When this feature is toggled on, the user is expected to input a negative number (including the minus sign) for discount that will add the negative number to the total. Both options produce the same result.

Enable Bin Balances: Toggles the ability to use bin/silo balances on the cement batcher in the product pages. This option will not affect batching.

Use Returned in Price Calculations: Check this to use returned materials in price calculations.

Admix / Water Dosage: Set a default dosage option for admix and water.

Adjust product balances and material balances when saving queued batches as tickets?: Check this to adjust product and material balances when saving queued batches as tickets.

Cement Delivery Truck Options: Set delivery truck sizes for each type of cement you have. These are used in calculations on the batching software.

3. Calibration Guides

The following pages contain guides for setting up and calibrating the various tools and equipment used with your control system.

3.1 Cardinal Indicators

In order for the Cardinal 205 Scale to communicate with the batching computer, you must configure its general and communications settings. After these settings are configured, you should recalibrate the indicator. For complete, detailed instructions, see page 29 of the “Weight Indicator Installation and Technical Manual.” Parts of this document are copied directly from the manual. This page serves as a guide to configure the Cardinal 205 to communicate with the Liberty Series batching software, not as a complete list of settings and procedures.

Access to the setup menus of the Cardinal 205 is available via the calibration switch on the inside of the indicator. You may gain access to this switch simply by removing the calibration switch access crew on the rear panel. Insert a small screwdriver or other tool through the calibration switch access hole to browse the setup menus at any time.

The buttons on the front of the indicator will perform the following actions during setup mode:

Button	Action
Tare ——— Enter	Data entered or displayed will be saved and the 205 will advance to the next prompt.
* ——— Up Arrow	Changes the blinking character to the next value. Continue pressing this button to toggle between all possible options.
* ——— Up Arrow	Backs up to the previous prompt if no blinking character is displayed.
Units ——— Left Arrow	Advances the blinking character left to the next position.

General Settings Configuration

1. Press the calibration switch to enter Setup Mode
   "*SETUP*" will be displayed on the screen
2. Press **ENTER**
   "*USA=*" will be displayed on the screen
3. Press **ENTER**
   "*YES*" will be displayed on the screen
4. Press **ENTER**
   "*LFT=*" will be displayed on the screen
5. Press **ENTER**
6. Set the value to *YES* by pressing the **UP ARROW**, if necessary
7. Press **ENTER**
   "*Unit 1=*" will be displayed on the screen
8. Press **ENTER**
9. Set the value to *3* for pounds or *5* for kilograms by Pressing the **UP ARROW**, if necessary
10. Press **ENTER**
    "*int=*" will be displayed on the screen
11. Press **ENTER**
12. Set the value to *20* for an Aggregate scale or *5* for a cement scale by Pressing the **UP ARROW**, if necessary
13. Press **ENTER**
    "*dPP=*" will be displayed on the screen
14. Press **ENTER**
15. Press **ENTER** to retain current value"*CAP=*" will be displayed on the screen
16. Press **ENTER**
17. Using the **UP ARROW** to change values and the **LEFT ARROW** to change character positions, set the capacity to *50000* for Aggregate or *10000* for Cement
18. Press **ENTER** until *SETUP* is displayed on the screen
19. Press the **UP ARROW** to exit Setup Mode.

Communications Configuration

1. Press the calibration switch to enter Setup Mode
   "*SETUP*" will be displayed on the screen
2. Continue Pressing the calibration switch until “oPtion” is displayed on the screen
3. Press **ENTER**
   "*Cont4=*" will be displayed on the screen
4. Press **ENTER**
5. Set the value to “YES” by Pressing the **UP ARROW**, if necessary
6. Press **ENTER**
   "*TYPE4=*" will be displayed on the screen
7. Press **ENTER**
8. Set the value to “3” by Pressing the **UP ARROW**, if necessary
9. Press **ENTER**
   "*SETUP*" will be displayed on the screen
10. Press the **UP ARROW** to exit Setup Mode

Calibration

1. Press the calibration switch to enter Setup Mode
   "*SETUP*" will be displayed on the screen
2. Continue Pressing the calibration switch until “CAL” is displayed on the screen
3. Press **ENTER**
   "*CAL1=*" will be displayed on the screen
4. Press **ENTER**
5. Leave the value set at zero and make sure there is nothing in the batcher
6. Press **ENTER** to calibrate the indicator at zero weightDashes will move across the screen during calibrationAfter calibration is complete, "*CAL2=*" will be displayed on the screen
7. Press **ENTER**
8. Add weight to your batcher and set the value to match that weight by Pressing the **UP ARROW** and **LEFT ARROW** keys

9. Press **ENTER** to calibrate the indicator at the weight you enteredDashes will move across the screen during calibrationAfter calibration is complete, "*SStP*" will be displayed on the screen
10. Press **ENTER** until "*SETUP*" is displayed on the screen
11. Press the **UP ARROW** to exit Setup Mode.

Digital Filtering Configuration

1. Press the calibration switch to enter Setup Mode
   "*SETUP*" will be displayed on the screen
2. Press the calibration switch again
   "*A-d*" will be displayed on the screen
3. Press **ENTER**
   "*SErSCL*" will be displayed on the screen
4. Press **ENTER**
   "*no*" will be displayed on the screen
5. Press **ENTER**
   "*dFLt=*" will be displayed on the screen
6. Press **ENTER**
7. Change the number to 3
8. Press **ENTER**
   "*F=*" will be displayed on the screen
9. Press **ENTER**
10. Change the number to 20
11. Press **ENTER**
    "*b=*" will be displayed on the screen
12. Press **ENTER**
13. Change the number to 12
14. Press **ENTER**
    "*h=*" will be displayed on the screen
15. Press **ENTER**
16. Leave the number at 0
17. Press **ENTER**
    "*P=*" will be displayed on the screen
18. Press **ENTER**
19. Leave the number at 0
20. Press **ENTER**
    "*Sr=*" will be displayed on the screen
21. Change the number to 20
22. Press **ENTER**
23. Press the **UP ARROW** until the screen displays "*--BUSY--*" to exit setup mode

4. Manual Operation

The Liberty Series Control System is capable of complete manual mode operation of the batch plant from the Manual Control Panel. The operator can control any and all functions of the Batch Plant. The Manual Control Panel is a color coded push button panel and offers compact ease of operation. The Manual Control Panel comes in two versions: Transit Mix and Central Mix. The Transit Mix Manual Control Panel is used when the system is installed on a Transit Mix (Dry Batch) plant. On the face of the panel are push buttons, key switch(s) and rotary controls that are divided into Feed Controls, Batcher Controls, Motor Controls and Miscellaneous Controls. The Feed Controls control the weigh-up or metering of materials into batchers or holding containers. The Feed Control push buttons will be color coded yellow and are known as momentary push button switches. When the appropriate button is pushed, an electrical signal is sent. When the button is released, the electrical signal stops. This signal is used to control solenoid air valves or motor starters. In the case of air valves, either a gate or valve opens which in turn causes the selected material to pass. In the case of a motor starter, a device such as a screw starts. This is used to convey material from point A to point B. When batching in manual mode, all materials are dependent upon the operator for required weights and measures. The Central Mix Manual Control Panel is essentially the same as the Transit Mix panel with the exception that it also contains controls for the operation of the central mixer. These controls consist of hydraulic start/stop and mixer drive start/stop control. Also included are mixer tilt and return switches, auto/manual mixer control switch, and associated lights to indicate the position of the mixer. The panel contains a speed control dial for controlling the tilt speed of the mixer drum. This chapter will give the operator definitions for the manual push buttons and switches found on the Manual Control Panel. As a reminder, this Manual may give definitions for push buttons and switches that are not found on every Manual Control Panel.

4.1 Main Power & Control Switch Functions

Main Power On Keyswitch: This keyswitch powers the manual control panel. When “on”, the incoming control power wires (labeled 13L1, 14L1, 15L1, and 16L1) will read 115 VAC with respect to neutral (L2) or ground.

Automatic / Manual switch: This two position switch allows manual operation of the batch plant (Manual Mode) or provides computer control of the plant (Automatic Mode). Switching from Automatic Mode to Manual Mode during an automatic batching cycle will interrupt the cycle, disconnecting the computer from the plant control functions.

Tolerance Accept Keyswitch: While batching in Automatic Mode, if an overweight of any weighed or metered material should occur, that overweight condition can be accepted by the operator by turning the Tolerance Accept Keyswitch. After accepting the overweight condition, the system will resume the automatic batching cycle. If the operator does not want to accept the overweight condition, he would have to turn the Inspect keyswitch and adjust his weights manually by removing some of the material to bring the load into tolerance. Switching the Inspect keyswitch back to the normal position will resume automatic batching.

Cycle Stop Pushbutton: The Cycle Stop button is a maintain, lighted pushbutton switch. Pressed in the Automatic mode will stop the system from batching - halting all automated functions. No Manual Panel pushbutton switches (feeds, open or close) will function in Cycle Stop Mode. Cycle Stop does not stop motors!

Inspect Keyswitch: The Inspect Keyswitch allows the operator to halt all automatic batching and perform manual functions and then return to the batch cycle without losing the ticket or recordation. This feature is used for making minor adjustments to a load while batching in Automatic Mode.

Recycle Start switch: If provided, this two position, maintained contact switch is primarily used by Paving Plants for repeated loads of the same mix design. The function of the Recycle Start switch is to automatically start weighing material for another load once all material has discharged - scales are at tare zero and admixture bottles are empty. The system will NOT automatically discharge the material. See Recycle Discharge.

Recycle Discharge switch: If provided, this two position, maintained contact switch is primarily used by Paving Plants for repeated loads of the same mix design. The function of the Recycle Discharge switch is to automatically discharge the load when all the materials are weighed or metered. The system does not automatically discharge the material if the mixer is not ready to receive the load.

4.2 Motor Switch Functions

Batch Transfer Conveyor Start/Stop: This three position switch is a momentary contact with a spring return to center. When turned to the right, the batch transfer conveyor will start; when turned to the left, the conveyor will stop. Always be sure that personnel are clear of the conveyor before starting.

Air Compressor Start/Stop: This three position switch is a momentary contact with a spring return to center. When turned to the right, the air compressor will start; when turned to the left, the compressor will stop Most Air Compressors sold by Erie Strayer Company are set up to run continuously from the unloader valve.

Aeration Blower Start/Stop: If provided, this three position switch is a momentary contact with a spring return to center. When turned to the right, the aeration blower will start running; when turned to the left, the blower will stop. Typical aeration blower pressure is preset from 3 to 5 PSI. Never adjust the pop-off safety relief valve to increase air pressure!

Water Pump Start/Stop: If provided, this three position switch is a momentary contact with a spring return to center. When turned to the right, the water pump will start running; when turned to the left the water pump will stop running. The pump will automatically shut-off (by means of a low level float switch) if the storage tank is empty. Never run the water pump dry!

Mixer Drive Start/Stop: If provided, this three position switch is a momentary contact with a spring return to center. When turned to the right, the mixer drum will start to rotate; when turned to the left, the mixer drum will stop. Before starting the drum, check to make sure all personnel are clear of the mixer. On a new startup, or after power wiring changes, always be sure to phase each motor separately to insure correct rotation of the mixer drum.

Mixer Hydraulic Start/Stop: If provided, this three position switch is a momentary contact with a spring return to center. When turned to the right, the hydraulic pump will start running; when turned to the left , the hydraulic pump will stop. Always insure personnel are clear of the mixer before tilting and returning the mixer drum.

Bin Charging Conveyor(s) Start/Stop: If provided, this three position switch is a momentary contact with a spring return to center. When turned to the right, the Bin Charging Conveyor will start running; when turned to the left, the conveyor will stop. Always be sure personnel are clear of the bin charging conveyor before starting.

Filter Vent(s) Start/Stop: If provided, this three position switch is a momentary contact with a spring return to center. When turned to the right, the Filter Vent will start operating; when turned to the left, the filter vent will stop.

Aeration switch(s): These toggle switches are maintained contact. When turned on, they will aerate the material in the cement or flyash storage compartment. Erie recommends turning on the aeration ½ hour before batching to help "fluff" the material for faster flow.

NOTE
The cement batcher aeration only turns on when the cement discharge valve is opened (an automatic function).

Mixer Automatic/Manual switch: The Mixer Automatic/Manual switch is a two position selector switch. In the Manual position: the Mixer Tilt and Mixer Return pushbuttons can be activated at any time. The Timed Out light will only go out when the mixer reaches the top limit switch position. In the Automatic position: the mixer can only be tilted after the Timed Out light comes on. Once the Mixer Tilt switch is momentarily pressed by the operator, the mixer will raise automatically to the full tilt position. The Timed Out light will turn off. After a programmed full tilt timer expires, the mixer will return automatically to the returned (home) position.

Nose Plug Automatic/Manual switch: The Nose Plug Automatic / Manual control is a maintained contact toggle switch. In the Nose Plug Manual mode, the operator moves the nose plug in or out as needed using the Nose Plug In/Out switch. In the Nose Plug Automatic mode, the nose plug moves out automatically when the mixer Tilt pushbutton is pressed. The mixer will not tilt until the nose plug is fully out. The nose plug will not move back into position until the mixer is being charged with another load. When the aggregate discharge gate opens, the nose plug will move into position automatically.

Nose Plug In/Out switch: The Nose Plug In / Out is a momentary contact, spring return to center toggle switch. In the Nose Plug Manual mode, the nose plug is moved in or out solely by the plant operator. The electrical controls are interlocked so the nose plug must be in the out position prior to mixer tilt.

4.3 Aggregate Section

Aggregate Vibrator Pushbutton: The Aggregate Vibrator switch is a momentary contact pushbutton. Use the vibrator in moderation. It is designed to increase material flow from the scale. Prolonged vibrator use can cause scale weld failures.

Aggregate Feed Pushbutton: This switch is a momentary contact pushbutton. Depressing it will feed aggregate out of the aggregate bin into the aggregate scale. The switch has no "inching control" for cylinder operation. The aggregate feed cylinders are either fully open or fully closed. If material hangs up in the bin, opening and closing the gates several times, by pressing and releasing the aggregate feed switch, can free up the material for normal flow.

Aggregate (1)/(2) Open Pushbutton: This switch is a momentary contact pushbutton. The solenoid valve that it activates is "double acting" for "inching control." When pressed, the aggregate gate will partially open. Continued pressing of the switch will further open the gate. This "inching control" feature helps regulate the discharge flow of the aggregate onto the conveyor belt by adjusting the gate opening. Limit switches, activated by the gate, activate indicator lights on the Manual Panel for gate opened or closed position. The closed position limit switch provides an input to the system for automatic operation. The aggregate gate must be closed for the system to automatically weigh a load.

Aggregate (1)/(2) Close Pushbutton: This switch is a momentary contact pushbutton. The solenoid valve that it activates is "double acting" for "inching control." When pressed, the aggregate gate will partially close. Continued pressing of the switch will further close the gate. This "inching control" feature helps regulate the discharge flow of the aggregate onto the conveyor belt or into the truck or mixer by adjusting the gate closing. Limit switches, mechanically activated by the gate, operate indicator lights on the Manual Panel for gate opened or closed position. The closed position limit switch provides an input to the system for automatic operation. The aggregate gate must be closed for the system to automatically weigh a load.

Aggregate Batcher Open/Closed Lights: These neon lights indicate the open or close status of the aggregate scale gates. The computer will not allow automatic weigh up of aggregate into the scale unless the closed light is on.

4.4 Cement Section

Cement Vibrator Pushbutton: The Cement Vibrator switch is a momentary contact pushbutton. Use the vibrator in moderation. It is designed to increase material flow from the scale. Prolonged vibrator use can cause scale weld failures.

Cement Feed Pushbutton: This switch is a momentary contact pushbutton. Depressing it will feed cement out of the silo or bin into the cement scale. The switch has no "inching control"capability. The cement feed butterfly valves are either fully open or fully closed. If material hangs up in the bin, opening and closing the valves several times, by pressing and releasing the cement feed switch, can free up the material for normal flow.

Cement (1)/(2) Open Pushbutton: This switch is a momentary contact pushbutton. The solenoid valve that it activates is "double acting" for "inching control." When pressed, the cement butterfly discharge valve will partially open. Continued pressing of the switch will further open the valve. This "inching control" feature helps regulate the discharge flow rate of the cement by adjusting the valve opening. A limit switch, mounted on the butterfly valve actuator, activates indicator lights on the Manual Panel for valve opened or closed position. The closed position limit switch provides an input to the system for automatic operation. The cement batcher discharge valve must be closed for the system to automatically weigh a load. When the cement butterfly valve is opened, an electrical signal from the limit switch turns on the aeration solenoid valve to aerate the scale automatically.

Cement (1)/(2) Close Pushbutton: This switch is a momentary contact pushbutton. The solenoid valve that it activates is "double acting" for "inching control." When pressed, the cement butterfly discharge valve will partially close. Continued pressing of the switch will further close the valve. This "inching control" feature helps regulate the discharge flow of the cement into the truck or mixer by adjusting the gate closing. Limit switches, mounted on the butterfly valve actuator, activate indicator lights on the Manual Panel for opened or closed position. The closed position limit switch provides an input to the system for automatic operation. The cement discharge valve must be closed for the system to automatically weigh a load.

Cement Batcher Open/Closed Lights: These neon lights indicate the open and close status of the cement scale butterfly discharge valve. The system will not allow automatic weigh up of cement unless the closed light is on.

4.5 Water Section

Water Feed Pushbutton (Fast Feed): The Fast Water Feed switch is a momentary contactpushbutton. When activated, it feeds water through the larger water line. The counter on the Manual Panel must be turned to the WAT position to indicate the number of water count pulses from the water meter.

Water Feed Pushbutton (Slow Feed): The Slow Water Feed switch is a momentary contact pushbutton. When activated, it feeds water through the smaller water line. The counter on the Manual Panel must be turned to the WAT position to indicate the number of water count pulses from the water meter.

4.6 Admixture Section

Admixture Feed Pushbutton: The Admixture Feed switch is a momentary contact pushbutton. Set the rotary position selector switch to the Admixture bottle number that is to be used - either into a bottle or directly into a truck or mixer. When the feed switch is pressed, that admixture will feed and the meter pulse counts will be reflected on the counter.

Admix Discharge Pushbutton: There are separate maintained pushbuttons for each admixture bottle. Once an admixture is fed into a bottle, the operator can discharge the bottle by pressing its corresponding discharge pushbutton. The pushbutton is lighted to show when it is pressed. The operator must press the discharge button again to release it when the admixture bottle is empty and the bottle empty light comes on.

Admix Empty light: The neon admixture bottle empty light on the manual control panel corresponds to the admixture bottle number that is selected on the selector switch. When the bottle empty probes in the admixture bottle indicate that bottle is empty, the bottle empty light on the manual panel will turn on.

4.7 Mixer Section

Mixer Timed Out light: The neon indicator light is energized after the preselected mix time, set in the computer, has timed out. The Timed Out light goes out after the mixer is raised to the full tilt position.

Mixer Tilt Pushbutton: In the Mixer Manual mode, the momentary contact pushbutton tilts the mixer when pressed. Releasing the pushbutton stops mixer tilt. There are mechanical stops and an electrical interlock that stop the mixer tilt when it reaches the full tilt position.

Mixer Tilt light: The neon light comes on any time the mixer is raised off the bottom (home) limit switch. The light goes out when the mixer is fully returned.

Tilt Speed potentiometer: The tilt speed of the mixer can be regulated by the Tilt Speed potentiometer. In the fully counterclockwise position, the mixer will not tilt in either the automatic or manual mode. In the fully clockwise position, the mixer will tilt at maximum speed. It is the responsibility of the operator to tilt the mixer at a sufficient rate to discharge the concrete from the mixer drum without choking the charging chute of the mixer truck.

Mixer Return Pushbutton: In the Mixer Manual mode, the momentary contact pushbutton returns the mixer when pressed. Releasing the pushbutton stops mixer return. There are mechanical stops and an electrical interlock that stop the mixer return when it reaches the fully returned (home) position.

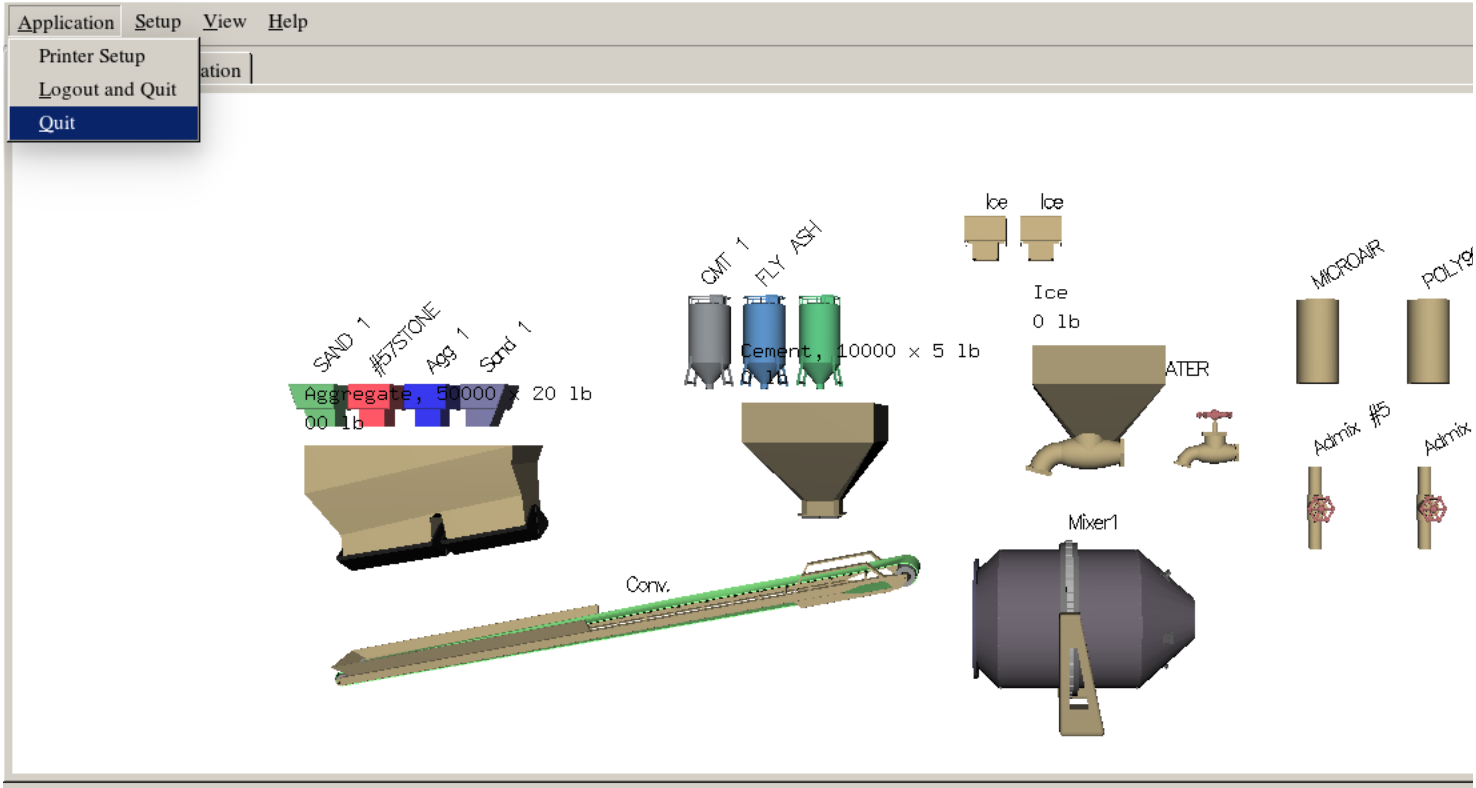
Mixer Return light: The neon light comes on any time the mixer is fully returned or 'home." The light goes out anytime the mixer is tilted.

4.8 Miscellaneous Switches or Pushbuttons

Horn Pushbutton: If provided, this momentary pushbutton switch can be used for any purpose (load complete / truck clear to leave / truck in position / clear personnel away from plant / etc...)

5. System Shutdown

The Liberty Series Control System uses a Linux based operating system. The Linux operating system is a multi-tasking, multi-function system which continuously has multiple programs running, including the Liberty Series Software. Because of the multiple running programs, the system MUST be shutdown properly. To shutdown the Liberty Series Software the operator must select Application from the Menu Bar and then select Quit.



NOTE: The Operator can also close the Liberty Series Software by clicking the red "X" in the upper left-hand corner of the screen.

To Shutdown the computer, click on the Start Button in the upper right-hand corner of the screen and then click "Shut Down". The computer will them prompt the operator to select either restart or shutdown.

The system will begin shutdown procedures.

WARNING: If the Liberty Series Control System is not shutdown properly, data files may become corrupt and cause problems batching and storing information. Please shutdown properly every night.

6. Troubleshooting

The following pages contain guides for troubleshooting various issues with the batching software.

6.1 Notifications

“SYSTEM IS IN MANUAL” - This notification informs the operator that the Auto/Manual button is in the manual position. The system will not batch automatically while in manual mode.

“CYCLE STOP IS ON” - The Cycle Stop flag tells the operator that the Cycle Stop button is on, this places the system in a manual mode. The system will not batch automatically while in a manual mode.

“CONVEYOR NOT RUNNING” - If the Batch Transfer Conveyor (BTC) is not running, the system obviously can not discharge material onto it. This will halt batching until fixed.

“MIXER NOT HOME” - If the mixer is not in it's home position, the system cannot discharge material into it. This will halt batching until fixed.

“BATCH TOO BIG FOR TRUCK” - If the operator is trying to batch a load that is too big than the Maximum Load parameter setting in the Modify Truck Page, the system will not automatically batch.

“BATCH TOO BIG FOR PLANT” - If the operator is trying to batch a load that is too big than the Plant Capacity parameter setting in the Plant Configuration secton, the system will not automatically batch.

“WATER EXCEEDS MAXIMUM” - In the formula, there is an option to set Max Water. If the water being called for is more than the Max Water, this flag appears.

“AGG SCALE NOT AT TARE ZERO” - In Aggregate Plant Setup, the operator sets the Tare Zero for a scale. If the amount on the scale is more than the Tare Zero setting, the flag will appear.

“CEMENT SCALE NOT AT TARE ZERO”- In Cement Plant Setup, the operator can set the Tare Zero for a scale. If the amount reflected on the scale is more than the Tare Zero setting, the flag will appear.

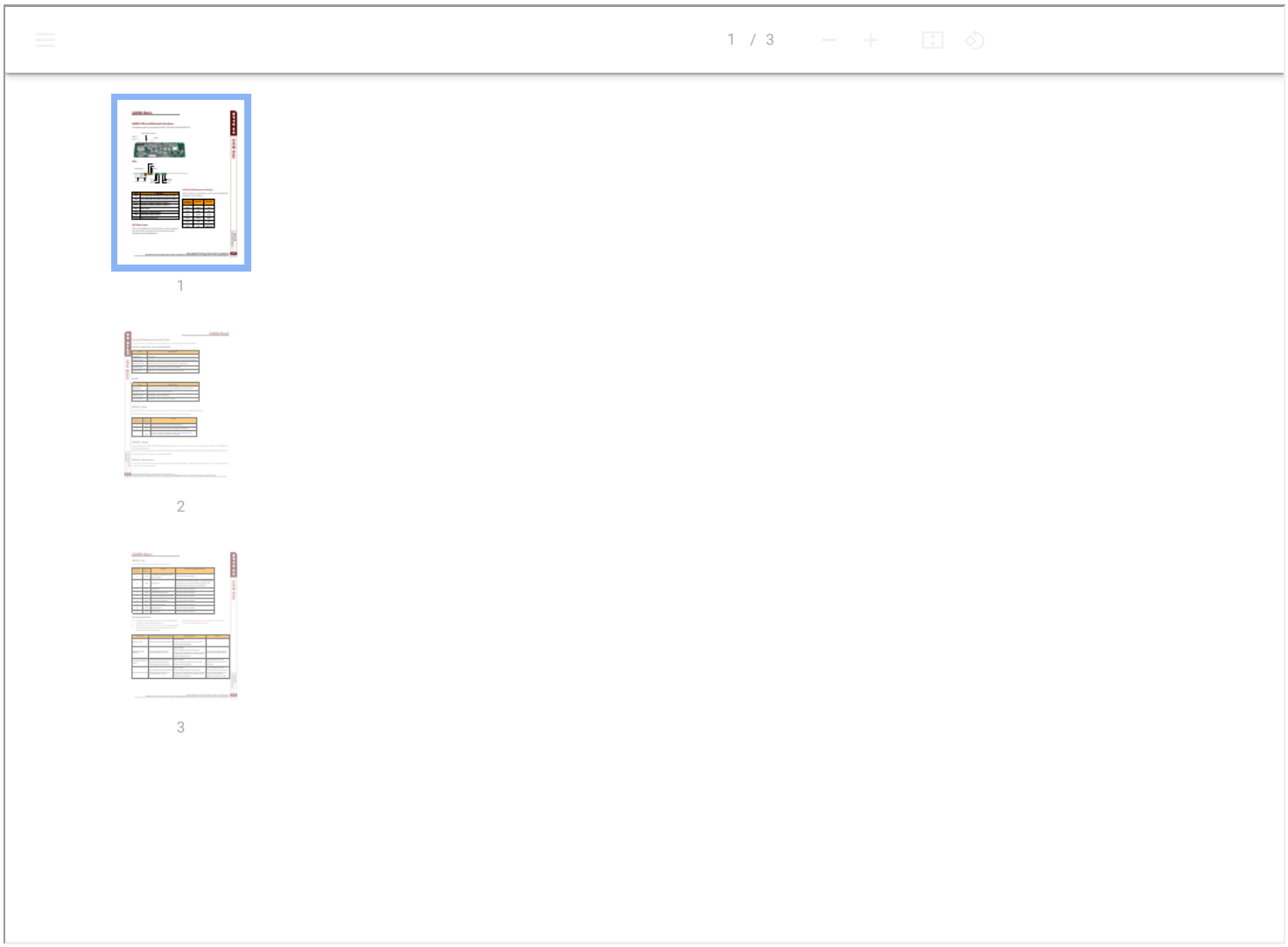
“AGG DISCHARGE GATE OPEN” - If an aggregate scale gate is opened, the computer will not feed material because the material would just fall through the scale. The gate must be closed before automatic batching is allowed.

“CMT DISCHARGE GATE OPEN” - If a cement scale gate is opened, the computer will not feed material because the material would just fall through the scale. The gate must be closed before automatic batching is allowed.

“ADMIX BOTTLE NOT EMPTY” - If an Admix bottle is not empty, the system will not feed material into the bottle. The bottle must be emptied before automatic batching is allowed.

Some of these flags may be the result of something other than it states. The computer receives an input from the plant for some of these flags. For example, the BTC could be running, but the computer displays a “CONVEYOR NOT RUNNING” flag. The Pamux Board receives a signal from the plant when the conveyor is running, if that signal (wire X39) is not there, the system will think the BTC is not running. Check the plant’s specific electrical schematics for troubleshooting. Call Erie Strayer Company for assistance, if needed. 814-456-7001.

6.2 G4EB2 Brain Boards

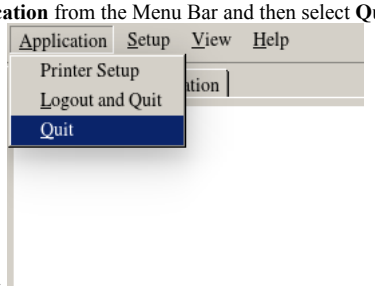


7. Simulation Mode

For training purposes, the control system can be operated in a training mode where the plant is not active. In simulation, only the Liberty Series Control System is operating. When batching in simulation, the computer is not communication with the batch plant. Material usages will NOT be deducted from inventory since the actual material is not removed. Keep all simulated tickets for historical purposes.

To enter into simulation mode, click on the icon labeled "Liberty Series - Sim".

When done with simulation mode, the operator must select **Application** from the Menu Bar and then select **Quit**. The Operator can also close the Liberty Series Software by clicking the red “X” in the upper left-hand corner of the screen.



NOTE: If there is an active batch running,the system will prompt the user that there is an active batch. The operator can choose to Force Quit the program or select cancel to continue the current batch.

If there are any questions, please call Erie Strayer Company at 814-456-7001.

8. Printing

If the printer is offline or not connected to the computer when batching, the system will store the tickets in the print spooler to be printed later when a printer is connected. If the tickets are not required, the ticket spooler can be emptied so the printer will not print the spooled tickets.

Each ticket can be individually reprinted from the Ticket Maintenance page.

9. Cables and Connections

For Plants with Ethernet G4EB2 Brain Boards

Computer to Manual Panel: There is one CAT6 Ethernet cable between the Computer and the Manual Panel. This Ethernet cable is connected to the back of the Manual Panel and into a dual-sided Ethernet port. The other side of the port is inside the manual panel. This port will have one Ethernet cable connecting it to one of the G4EB2 Brain Boards. There will be one daisy-chained Ethernet cable between each G4EB2 Brain Board. Typically, there are two or three Brain Boards in your panel. Troubleshooting for lights on the G4EB2 Brain Boards can be found here.

For Plants with AC51 Cards and Ribbon Cables

Computer to Manual Panel: There is one ribbon cable between the Computer and Manual Panel. This ribbon cable is a “pressed” fit into the back of the computer (to the AC-51 card) and can come loose in time. The other end of this ribbon cable is clamped into the Manual Panel. The ribbon cable can be install backwards. Note the position of the red stripe on the ribbon cable when removing it from the Computer. Typical reactions from a ribbon cable in backwards would be: while in the automatic mode - erratic plant actions, gates opening when not told to, cycle stop shown to be on, multiple things out of the ordinary. To fix this, remove the ribbon cable from the back of the computer and rotate the end connector 180° and then reinstall (Note the red stripe will be on the opposite side now).

Computer to Weigh Indicators: There usually will be at least two CAT6 Ethernet cables from the Indicators to the computer, more are possible. There is one Ethernet cable per Indicator. The weigh indicators are interfaced to the computer via Netgear Ethernet Switch. If the connection to the indicators becomes interrupted, the system will display a notification stating the scale has Timed Out. Check the physical connection to the scale indicator.

Computer to Printer: The connection between the computer and Oki printer is USB cable. If the printer is on but not printing, check the physical connection of the USB cable. Gate printers are connected via CAT6 Ethernet cables. Make sure that one end is connected to the printer and the other end is connected to the Netgear switch.

Computer to Speakers: The connection between the computer and speakers is 3.5mm speaker cable. If the volume controls on both the monitor and the computer are turned up but there is no sound, check the physical connection of the 3.5mm speaker cable. The monitor can also be connected via HDMI and therefore, does not need a 3.5mm speaker wire connected.

Call Erie Strayer Company if problems persist. 814-456-7001.