CB-3

Automated Concrete Batching System
Version 1

Technical Manual

Revision History

This section tracks and describes the current and previous manual revisions for awareness of major updates and when the updates took place.

Revision	Date	Description
–	November 04, 2016	Initial manual release
D	June 09, 2022	Revision history established after Rev C; updates to relay information
E	January 11, 2023	Updates to digital I/O pin assignments

Table i. Revision Letter History

Contents

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*Technical training seminars are available through Rice Lake Weighing Systems. Course descriptions and dates can be viewed at **www.ricelake.com/training** or obtained by calling 715-234-9171 and asking for the training department.*

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1.0   Introduction

The CB-3 is a versatile, efficient concrete batching control system ideal for ready-mix, central mix and block plants.

The CB-3 makes it easy and affordable to streamline the plant. From weighing raw material to automatic printing of tickets and reports, the entire operation can be cost-effectively controlled from one controller.

The CB-3 Server offers PC driven setup and operation.

The CB-3 is a stand-alone batch panel which includes Rice Lake Weighing System's 920i® HMI digital weight indicator. It also includes additional hardware for controlling the batch plant through digital I/O and solid-state 120 V/240 V relay modules.

This manual is intended for use by service technicians responsible for installing and servicing the CB-3, and for the end user operating the CB-3 automated concrete batching system.

Manuals and additional resources are available from Rice Lake Weighing Systems at **www.ricelake.com/manuals**
Warranty information is available at **www.ricelake.com/warranties**

1.1   Safety

Safety Definitions:

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. Includes hazards that are exposed when guards are removed.

WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death. Includes hazards that are exposed when guards are removed.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.

IMPORTANT: Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.

General Safety

Do not operate or work on this equipment unless this manual has been read and all instructions are understood. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals.

WARNING

Failure to heed could result in serious injury or death.

Some procedures described in this manual require work inside the indicator enclosure. These procedures are to be performed by qualified service personnel only.

Do not allow minors (children) or inexperienced persons to operate this unit.

Do not use for purposes other than weight taking.

Do not place fingers into slots or possible pinch points.

Do not use any load-bearing component worn beyond 5% of the original dimension.

Do not use this product if any of the components are cracked.

Do not exceed the rated load limit of the unit.

Do not make alterations or modifications to the unit.

Do not remove or obscure warning labels.

Do not use near water.

Before opening the unit, ensure the power cord is disconnected from the outlet.

Keep hands, feet and loose clothing away from moving parts.

1.2   Overview

Standard hardware features of the CB-3 include:

- Panel type 920i HMI digital indicator can control two scales (metered water) or three scales (weighed water)
- Six totalizing counters for plant with admix metering
- One addition totalizing counter for plant with metered water
- Mounted on the front panel are 20 switch board assemblies with associated switches and annunicators. Each switch is configurable for latching and momentary operation
- 4-24 channel relay boards
- Standard manual override controls

Standard software features of the CB-3 embedded PC include the following:

- One aggregate scale, one cement scale, and an optional weighed water scale sampling 60 times per second
- Batch/Load report
- Automatic aeration control for cement silos and weigh hoppers
- Multiple free fall values per material with automatic learning abilities
- Split batching for loads larger than plant capacity with pre-weighing next batch for maximum throughput
- Automatic dust collection outputs
- Precision control of inching gates for aggregate and cement discharge
- Passcode protection
- Imperial or metric units
- Order loading with customer, job site, directions and special instructions
- Full feature batcher display
- Project quote
- Jobs/Orders
- Trucks/Drivers
- Reports
- vPanel
- Mixer controls
- Skip hoist controls
- Automatic water adjustment

1.3   FCC Compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescites dans le Règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada.

Radio Certificate Numbers:

- US: R68WIPORTG
- Canada: 3867A-WIPORTG

1.4 Front Panel

The 920i front panel has a 27-button keypad with a large backlit LCD display. The keys are grouped as five configurable softkeys, five primary scale function keys, four navigation keys and numeric entry keys.

Two scale widgets can be displayed in standard metered water applications. Status areas on the display are used for operator prompts and entering data. The display contrast can be adjusted with the LCD contrast potentiometer.

Figure 1-1. 920i Front Panel

Item No.	Description
1	Display Area
2	Enter Key
3	Navigational Arrows
4	Numeric Keypad
5	Clear Key
6	Decimal Key
7	Tare Key – Disabled
8	Print Key – Disabled
9	Gross/Net Key – Disabled
10	Units Key – Disabled
11	Zero Key

Table 1-1. Front Panel

1.5 Operating Modes

The 920i in the CB-3 automated concrete batching system has two basic modes of operation weigh mode and configuration mode.

1.5.1 Weigh Mode

The CB-3 program weigh mode is used to display weight and run the software program. Once configuration is complete and a legal seal is affixed to the large fillister-head screw on the indicator enclosure, this is the only mode in which the 920i operates.

In weigh mode the CB-3 displays the weight of all scales being used; Aggregate, Cement and Water (if enabled).

1.5.2 Configuration Mode

Some procedures described in this manual require the indicator to be in configuration mode, including calibration of the scales, configuration of filtering and motion band.

The configuration mode is entered by pressing the configuration switch and is used during the initial installation of the CB-3, see Section 3.0 on page 26.

1.6 Indicator Operations

The 920i streams scale data to a PC with proprietary CB-3 software. The 920i does not execute operations and most keys are disabled at all times within the CB-3. The key is an exception and is available during the loading process and when no load is batching.

1.6.1 Zero Scale Process

The CB-3 always has two or more scales connected, making the zeroing of a scale a three-step process.

Scale assignments are always:

- Aggregate Scale is Scale #1
- Cement Scale is Scale #2
- Water Scale is Scale #3

The top weight widget displays the scale number and the weight of the currently selected scale.

- When the aggregate scale is selected, the top weight widget displays **Scale #1** and the current weight
- When the cement scale is selected, **Scale #2** displays
- The selected scale # displays in the upper right hand corner of the display

Use the following steps to zero a scale. The currently selected scale is the one being zeroed. The scale can only be zeroed when at standstill ◣ ◢.

1. Press ▽ until the desired scale displays in the top weight widget and in the upper right-hand corner of the display.

2. Press . The selected scale now reads zero.

3. Press ▽ until the aggregate scale (Scale #1) is back in the top widget.

2.0   Installation

This section explains the main junction box, load cell, digital I/O and serial communications connections within the CB-3. The 920i HMI indicator is housed inside the CB-3 enclosure along with examples of several other key components.

920i Indicator

Switchboards

Under the Cover

On-board Computer

CB-3 Board Set   CB-3 I/O Interface

Agg Conveyor and Air Compressor Latching Relay Circuits

Bottom of the Enclosure – Relay Racks
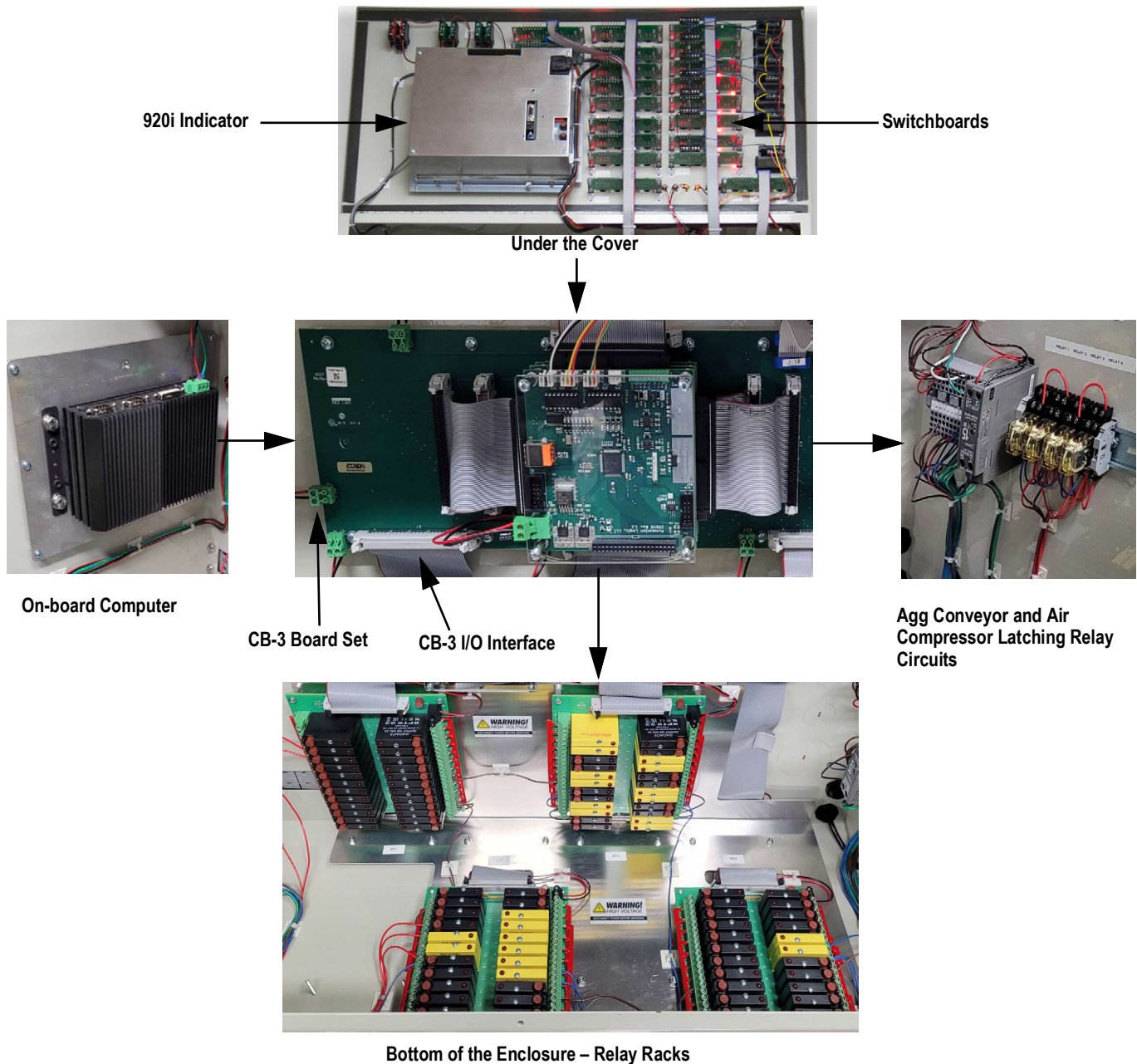
Figure 2-1. CB-3 Enclosure

⚠ **WARNING: Use a wrist strap to ground and protect components from electrostatic discharge (ESD) when working inside the indicator enclosure.**

This unit uses double pole/neutral fusing which could create an electric shock hazard. Procedures requiring work inside the indicator must be performed by qualified service personnel only.

The supply cord serves as the power disconnect for the 920i. The power outlet supplying the indicator must be installed near the unit and be easily accessible.

2.1 Connections

2.1.1 Power Sources

The CB-3 requires two separate power sources. The power cord which comes wired to the CB-3 powers only the electronics. The power should come from a quality uninterruptible power supply (UPS) with power conditioning. This clean power must be separated as far as possible by distance in the electrical circuit from the power source used to power the motion control on the batch plant.

A separate power source must be brought into the CB-3 to power the I/O (output relays) which control the plant. A power cord is not supplied for this, because the power must be brought directly from its own circuit or fed from another manual panel.

2.1.2 I/O Power and Manual Panel Same Phase Power

The CB-3 and manual panel are both wired to the same I/O points for most plant controls; exceptions are air compressors or other equipment the CB-3 does not control in automatic mode. It is critical the 120 V hot used for the CB-3 I/O power, is the same hot phase used by the manual panel.

2.1.3 Unused Inputs Must be Jumpered to 120 V

The following inputs must be jumpered to 120 V when being used. The CB-3 uses 120 V input signals from various sensors for positive and negative feedback. At a minimum, the CB-3 requires the following signals:

- Cement discharge gate closed (Terminal 4-13 - Rack 2, Point 7)
- Aggregate discharge gate closed (Terminal 4-15 - Rack 2, Point 13)
- Aggregate conveyor running (Terminal 4-9 - Rack 2, Point 13)
- E-Stop not pressed. Wired internally from iDEC Rely 2 position 8 to Rack 2, point 9 during assembly; this always needs to be jumpered during an installation

There must be 120 VAC to these inputs to satisfy the CB-3 interlocks even when the plant is not equipped with these sensors. Terminal four is the best location to get 120 VAC.

2.2 CB-3 Main Junction Block Terminal 4

The CB-3 main junction box provides access for outside power to be brought into the enclosure using two sets of customer supplied 120 V power - one for the *920i* indicator and the other for the relays/plant control.
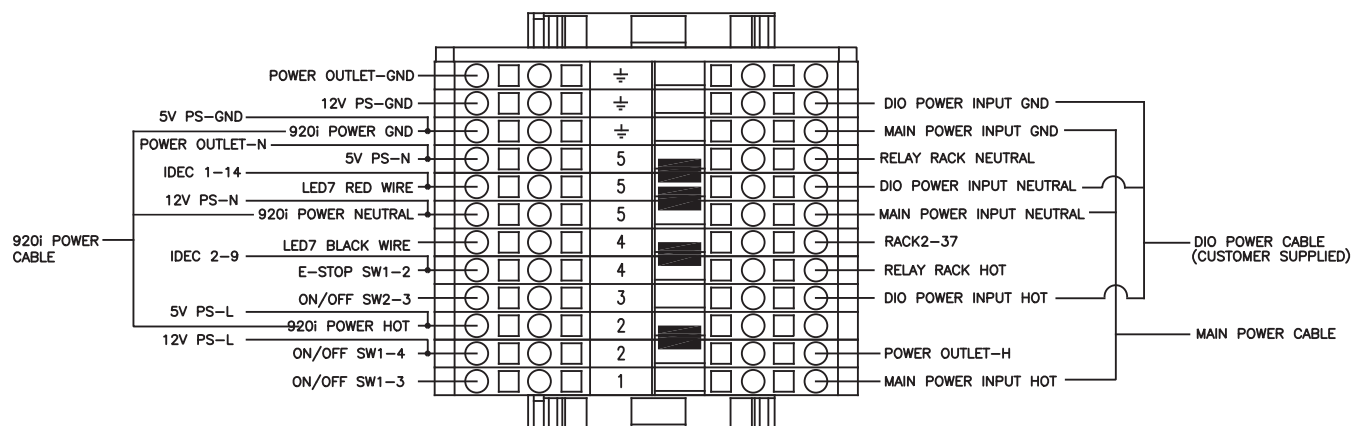
Figure 2-2. CB-3 Main Junction Block Terminal 4 (AC Power)

Figure 2-3. CB-3 Control Wiring
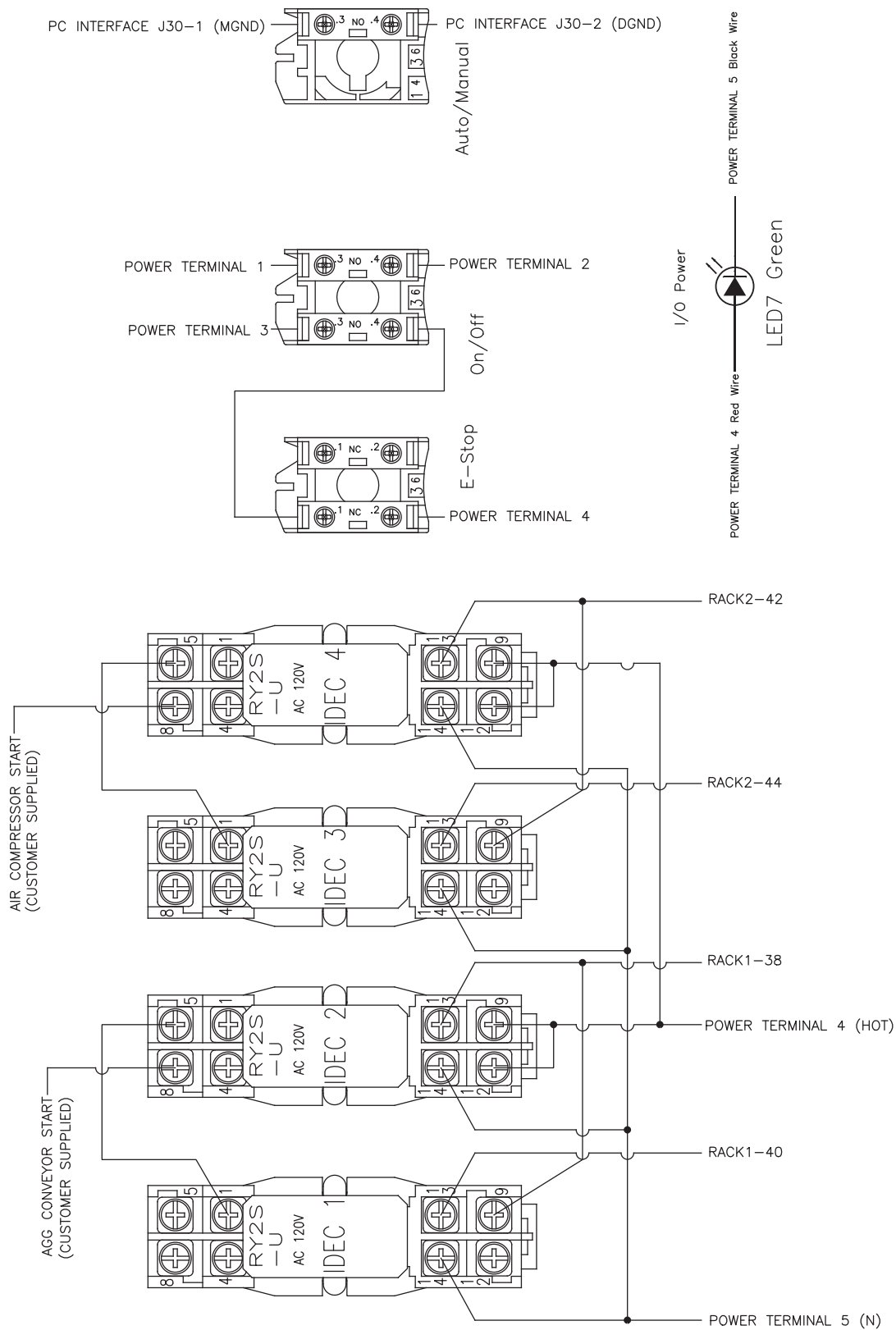
NOTE: Install the supplied AGG Conveyor Start wire to relay rack 2, position 9.

2.3   Load Cells

The load cell connections are provided in the figure below:
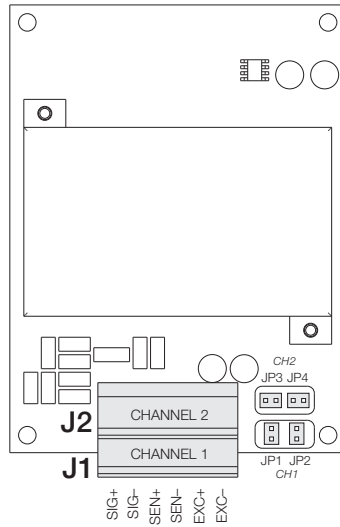
Figure 2-4. Terminal Blocks Load Cell Connection (Metered Water)

J1/J2 Connector Pin	Function
1	+SIG
2	–SIG
3	+SENSE
4	–SENSE
5	+EXC
6	–EXC
• For 6-wire load cell connections to connector J1, remove jumpers JP1 and JP2 • For 6-wire load cell connections to connector J2, remove jumpers JP3 and JP4	

Table 2-1. Load Cell Connections

2.3.1 Serial Communications From 920i to Embedded PC

The communication ports used to communicate to the embedded PC are one, three, and four, via RS-232 configured to 9600 baud, 8 bits, none parity and 2 stop bits.

The pin assignments for ports 1, 3, and 4 are found within Table 2-2. Port 2 provides DIN-8 and DB-9 connectors to be used for a service port. The DB-9 connector pin assignments for Port 2 are provided in Figure 2-5.

Connector	Pin	Signal	Port	Scale
J11	1	GND	1	1
	2	RS-232 RxD		
	3	RS-232 TxD		
J9	1	GND / –20mA OUT	3	2
	2	RS-232 RxD		
	3	RS-232 TxD		
	4	Not Used		
J10	1	GND / –20mA OUT	4	3
	2	RS-232 RxD		
	3	RS-232 TxD		
	4	Not Used		
	5	Not Used		
	6	Not Used		

Table 2-2. Serial Port Pin Assignments

Serial ports are configured using the **SERIAL** menu, See Section 3.3.2 on page 35 for configuration information.

An optional dual-channel serial communications expansion card, PN 67604, is available. Each serial expansion card provides two additional serial ports, including one port supporting RS-485 communications. The two ports on the expansion card support both RS-232 or 20mA connections.
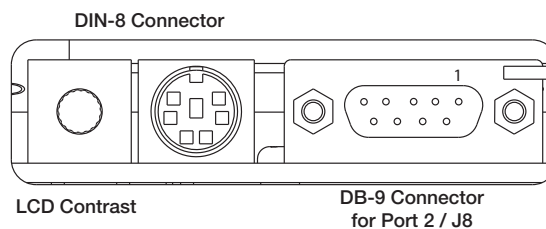
Figure 2-5. Serial Interface Board Connections

DB-9 Pin	Signal
2	TxD
3	RxD
5	GND
7	CTS
8	RTS

Table 2-3. DB-9 Connector Pin Assignments
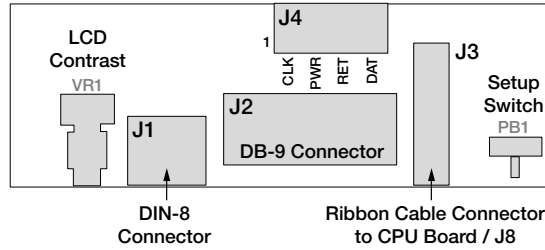
Figure 2-6. Serial Interface Top View

J4 Pin	Color	Signal
1	Brown	Clock
2	Clear	+5v
3	Yellow	GND
4	Red	Data

Table 2-4. J4 Pin Assignments
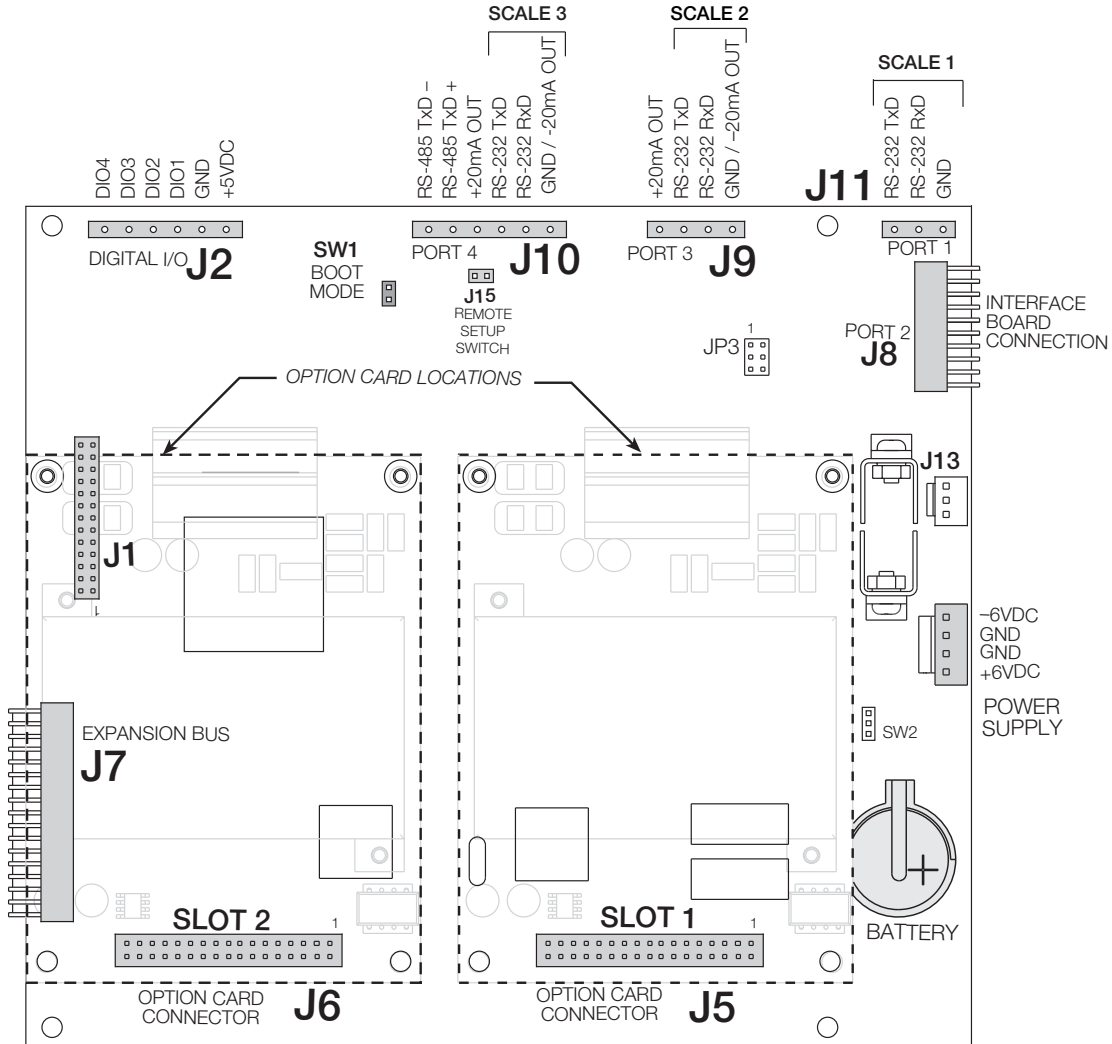
Figure 2-7. Option Card Locations on CPU Board

2.4   Digital I/O
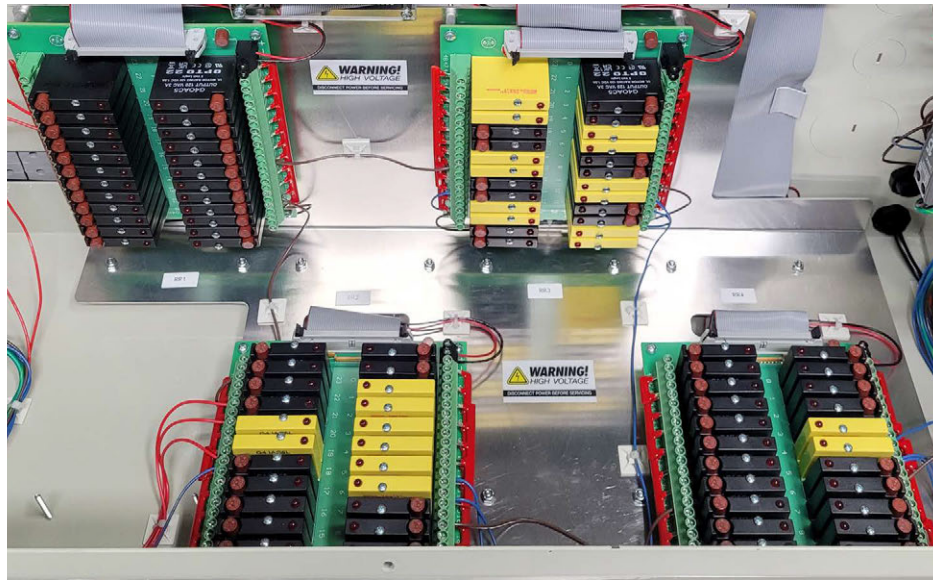
Figure 2-8. Digital I/O Relay Racks

Digital I/O	Location Bit	Type	Description	Grayhill Terminal #	Opto 22 Terminal #
Rack 1	1	Digital Output	Aggregate 1 Batch	1-1	1-2
	2		Aggregate 2 Batch	1-3	1-4
	3		Aggregate 3 Batch	1-5	1-6
	4		Aggregate 4 Batch	1-7	1-8
	5		Aggregate 5 Batch - Option	1-9	1-10
	6		Aggregate 6 Batch - Option	1-11	1-12
	7		Aggregate 7 Batch - Option	1-13	1-14
	8		Aggregate 8 Batch - Option	1-15	1-16
	9		Aggregate Discharge Open	1-17	1-18
	10		Aggregate Discharge Closed	1-19	1-20
	11		Aggregate Vibrator	1-21	1-22
	12		Sand Bin Vibrator	1-23	1-24
	13		Cement 1 Batch	1-25	1-26
	14		Cement 2 Batch	1-27	1-28
	15		Cement 3 Batch	1-29	1-30
	16		Cement 4 Batch	1-31	1-32
	17		Dust Collection	1-33	1-34
	18		Alarm/Horn	1-35	1-36
	19		Aggregate Conveyor Start	1-37	1-38
	20		Aggregate Conveyor Stop	1-39	1-40
	21		Cement Discharge Open	1-41	1-42
	22		Cement Discharge Closed	1-43	1-44
	23		Cement Vibrator	1-45	1-46
	24		Weigh Hopper Aeration	1-47	1-48

Table 2-5. Digital I/O Pin Assignments

Digital I/O	Location Bit	Type	Description	Grayhill Terminal #	Opto 22 Terminal #
Rack 2	1	Digital Output	Reservoir Discharge	2-1	2-2
	2		Tailwater Discharge	2-3	2-4
	3	Digital Input	Reservoir Gate Closed	2-5	2-6
	4		Water Reservoir Empty	2-7	2-8
	5		Aggregate Conveyor is Running	2-9	2-10
	6		Air Pressure OK	2-11	2-12
	7		Cement Gate is Closed	2-13	2-14
	8		Aggregate Gate is Closed	2-15	2-16
	9	Digital Output	Out of Tolerance Signal	2-17	2-18
	10		Load Complete	2-19	2-20
	11		Reset Water Counters	2-21	2-22
	12		Reset Admixtures Counters	2-23	2-24
	13		Cement 1 Aeration	2-25	2-26
	14		Cement 2 Aeration	2-27	2-28
	15		Cement 3 Aeration	2-29	2-30
	16		Cement 4 Aeration	2-31	2-32
	17		Cold Water	2-33	2-34
	18		Hot Water	2-35	2-36
	19	Digital Input	Emergency Stop	2-37	2-38
	20		Water Meter Pulse Input	2-39	2-40
	21	Digital Output	Air Compressor Start	2-41	2-42
	22		Air Compressor Stop	2-43	2-44
	23		Lower Boot	2-45	2-46
	24		Raise Boot	2-47	2-48
Rack 3	1	Digital Output	Admixture 1 Fill/Feed	3-1	3-2
	2		Admixture 1 Discharge	3-3	3-4
	3	Digital Input	Admixture 1 Bottle Empty Light	3-5	3-6
	4		Admixture 1 Pulse Light/Counter	3-7	3-8
	5	Digital Output	Admixture 2 Fill/Feed	3-9	3-10
	6		Admixture 2 Discharge	3-11	3-12
	7	Digital Input	Admixture 2 Bottle Empty Light	3-13	3-14
	8		Admixture 2 Pulse Light/Counter	3-15	3-16
	9	Digital Output	Admixture 3 Fill/Feed	3-17	3-18
	10		Admixture 3 Discharge	3-19	3-20
	11	Digital Input	Admixture 3 Bottle Empty Light	3-21	3-22
	12		Admixture 3 Pulse Light/Counter	3-23	3-24
	13	Digital Output	Admixture 4 Fill/Feed	3-25	3-26
	14		Admixture 4 Discharge	3-27	3-28
	15	Digital Input	Admixture 4 Bottle Empty Light	3-29	3-30
	16		Admixture 4 Pulse Light/Counter	3-31	3-32
	17	Digital Output	Admixture 5 Fill/Feed	3-33	3-34
	18		Admixture 5 Discharge	3-35	3-36
	19	Digital Input	Admixture 5 Bottle Empty Light	3-37	3-38
	20		Admixture 5 Pulse Light/Counter	3-39	3-40
	21	Digital Output	Admixture 6 Fill/Feed	3-41	3-42
	22		Admixture 6 Discharge	3-43	3-44
	23	Digital Input	Admixture 6 Bottle Empty Light	3-45	3-46
	24		Admixture 6 Pulse Light/Counter	3-47	3-48

Table 2-5. Digital I/O Pin Assignments (Continued)

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Digital I/O	Location Bit	Type	Description	Grayhill Terminal #	Opto 22 Terminal #
Rack 4	1	Digital Output	Mixer Start	4-1	4-2
	2		Mixer Stop	4-3	4-4
	3		Mixer Discharge Gate Open	4-5	4-6
	4		Mixer Discharge Gate Closed	4-7	4-8
	5	Digital Input	Mixer Gate is Closed	4-9	4-10
	6		Truck/Mixer in Position	4-11	4-12
	7	Digital Output	Watchdog Pat	4-13	4-14
	8		Not Used	4-15	4-16
	9		Cement 5	4-17	4-18
	10		Cement 6	4-19	4-20
	11		Cement 7	4-21	4-22
	12		Cement 8	4-23	4-24
	13		Aux Output #1	4-25	4-26
	14		Aux Output #2	4-27	4-28
	15		Aux Output #3	4-29	4-30
	16		Aux Output #4	4-31	4-32
	17		Aux Output #5	4-33	4-34
	18		Aux Output #6	4-35	4-36
	19		Aux Output #7	4-37	4-38
	20		Aux Output #8	4-39	4-40
	21		Aux Output #9	4-41	4-42
	22		Aux Output #10	4-43	4-44
	23		Aux Output #11	4-45	4-46
	24		Aux Output #12	4-47	4-48

Table 2-5. Digital I/O Pin Assignments (Continued)

2.5   Battery Replacement

The 3 V, coin type lithium battery (PN 69290) on the CPU board maintains the real-time clock and protects data stored in the system RAM when the indicator is not connected to AC power. Protected data includes time and date, truck and tare memory, onboard database information and setpoint configuration.

Use iRev™ to store a copy of the indicator configuration on a PC before attempting battery replacement. If data is lost, the indicator configuration can be restored from the PC.

A warning displays when the battery voltage is low, indicating the battery should be changed. Periodically check the battery voltage and if it falls below 2.2 VDC, the battery must be changed. The life expectancy of the battery is approximately ten years.

See Figure 2-7 on page 16 for CPU board battery location and orientation (positive side up).

⚠️ **WARNING: Risk of explosion if battery is replaced with the incorrect type. Dispose of the battery per manufacturer instructions.**

2.6   Replacement Parts

The following table lists replacement parts for the CB-3 automated concrete batching system.

Description	Part No.
Power supply, 12 V	88792
Power supply, 5 V	175660
Board assembly, CPU for 920i	67612
Totalizing counters	93536
Relays, 120 V models	42467
Relays, 220 V models	96008
CB-3 switch board assembly	89198
CB-3 switch board assembly	93540
CB-3 interface board	174857
CB-3 board set	177421
Assembly, CB-3 PC	176065
Relay mounting board	33205
LCD, fluorescent display	67614
920i interface board	67869
Relay, input module, 12 V	15972
Relay, Input module, 220 V model	36631
Relay, output module, 12 V	15971
Relay, output module, 220 V model	36632
iRev CD	69781
920i Main Board	117930

Table 2-6. Replacement Parts List

2.6.1   Option Cards

The below table lists the option cards for the CB-3 automated concrete batching system. Option cards can be installed in Slot 1 or Slot 2 of the CPU board or in an available slot of an attached expansion board.

Option Card	Part No.
Single Channel A/D Card	68532
Dual Channel A/D Card	67611

Table 2-7. Available Option Cards

2.7   Moisture Probe Interface

📝 *NOTE: The CB-3 interfaces with moisture probes by other manufactures. Please consult the specific manufacturer for installation and calibration instructions.*

The Hydronix® Hydro-Probes require their own 24 VDC power supply. This power source is used to source the 4-20 mA current loop, simplifying the connections between the PLC and probe, requiring only two wires between them.

2.7.1   Installing the Probes

Use the Hydronix installation and documentation guides to install and wire the Hydro-Probes. Download Hydronix documentation from: https://www.hydronix.com/downloads/products.php

Wire the Probes

Wire the probes to the PLC CPU Analog section. This board has a 9-pin header for analog inputs.
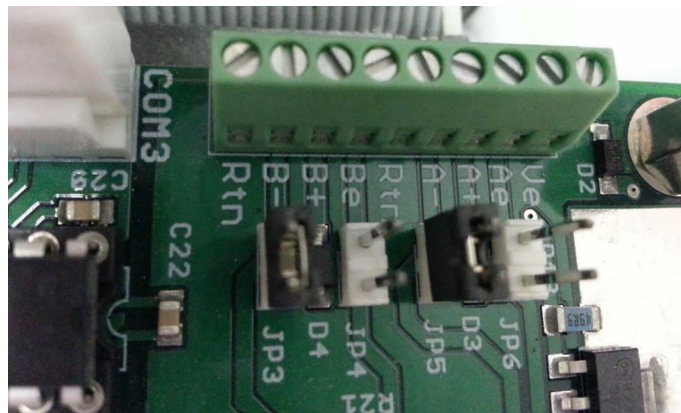

Figure 2-9. PLC CPU Analog Section

Hydro-Probe 1

1.   Connect wire E (black) to terminal ***A-***.
2.   Connect wire D (blue) to terminal ***A+***.
3.   Connect the shorting jumper to ***JP5***.

Hydro-Probe 2

1.   Connect wire E (black) to terminal ***B-***.
2.   Connect wire D (blue to terminal ***B+***.
3.   Connect the shorting jumper to ***JP3***.

📝 *NOTE: A+ is Current +, A- is Current -*

B+ is Current +, B- is Current -

2.7.2 *CB-3* Configuration

1. Select *Vpanel* → **Settings** → **Features**.
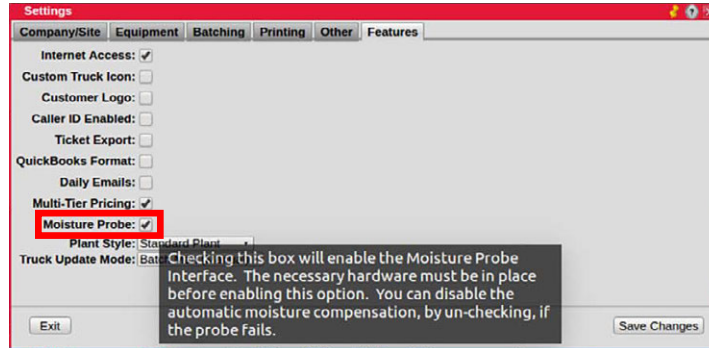2. Enable the Moisture Probe checkbox.

Figure 2-10. Moister Probe Checkbox Selection

3. Press [Save Changes] .
4. Press [Exit] .
5. Open the *Materials* menu.
6. Press [Bins] .
7. Select the bin the probe is on.
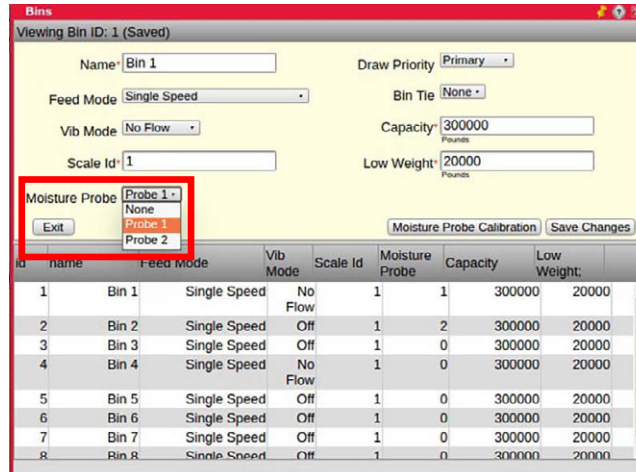8. Select the probe from the drop-down menu.

Figure 2-11. Bins Menu - Select Probe

9. Press [Save Changes] .

10. Move the **Materials** menu and the **Bins** menu to the right of the display to view the **Raw Counts** in the **vPanel**.
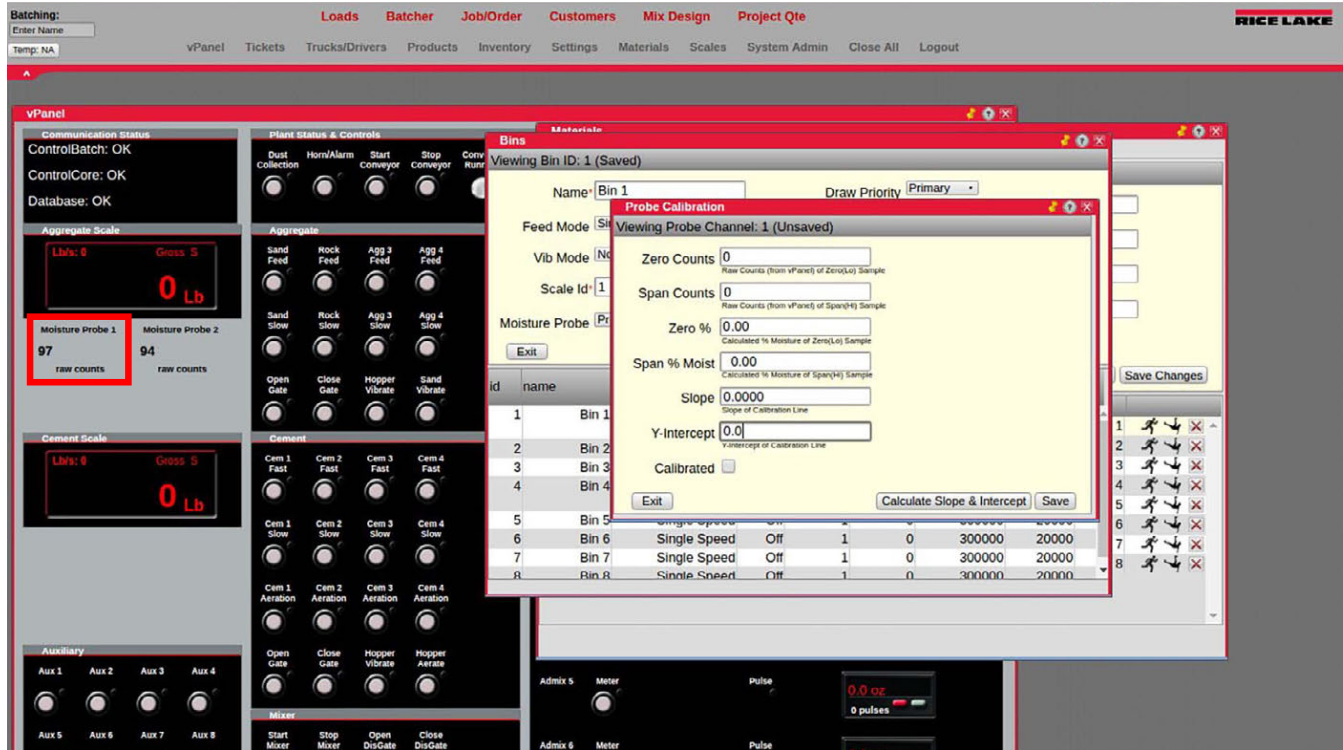

Figure 2-12. vPanel Raw Counts

11. To calculate the zero, apply the desired zero or low reference to the moisture probe.

12. Review the **Raw Counts** on the **vPanel** and enter the value in the **Zero Counts** field of the **Probe Calibration** menu.

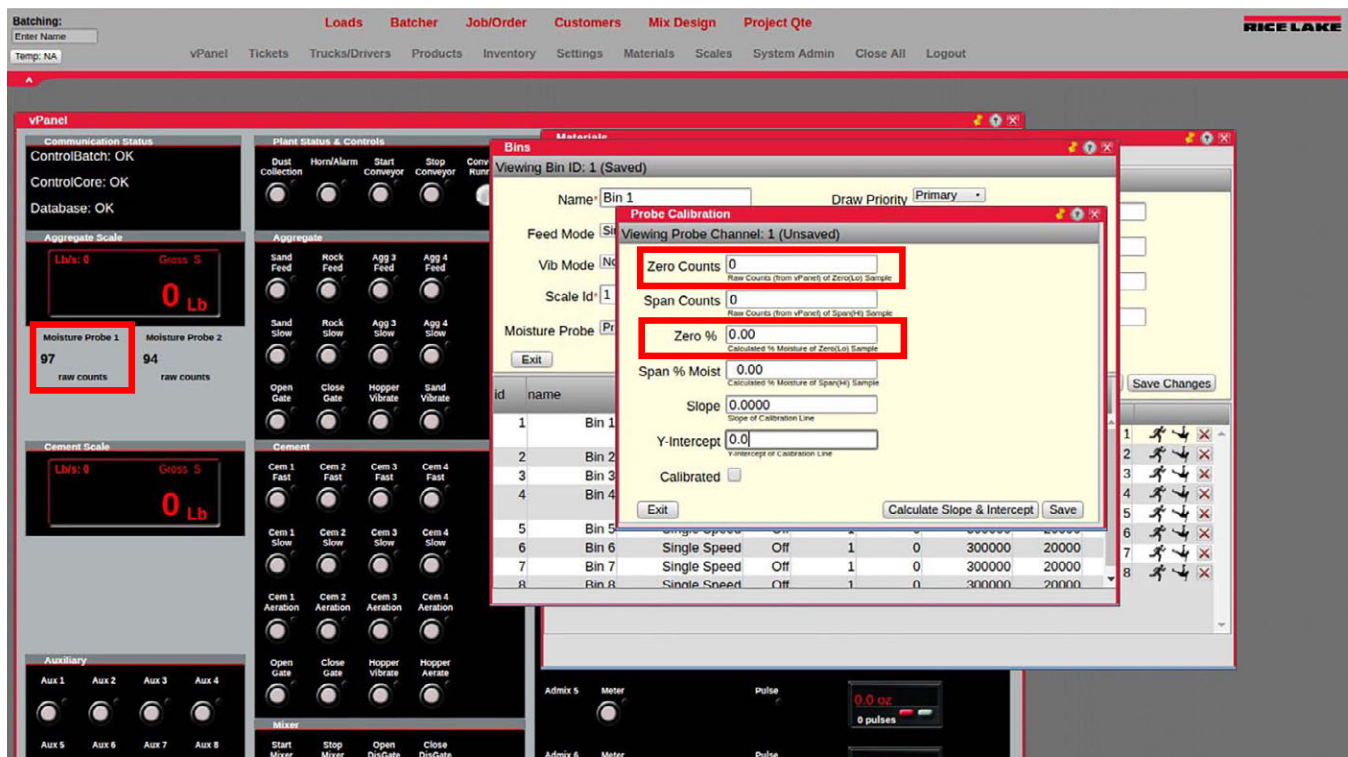13. Enter the actual moisture percentage of the zero reference in the **Zero%** field.

Figure 2-13. Probe Calibration - Zero Count

14. To calculate the span, apply the desired span or high reference to the moisture probe.
15. Review the **Raw Counts** on the **vPanel** and enter the value in the **Span Counts** field of the **Probe Calibration** menu.
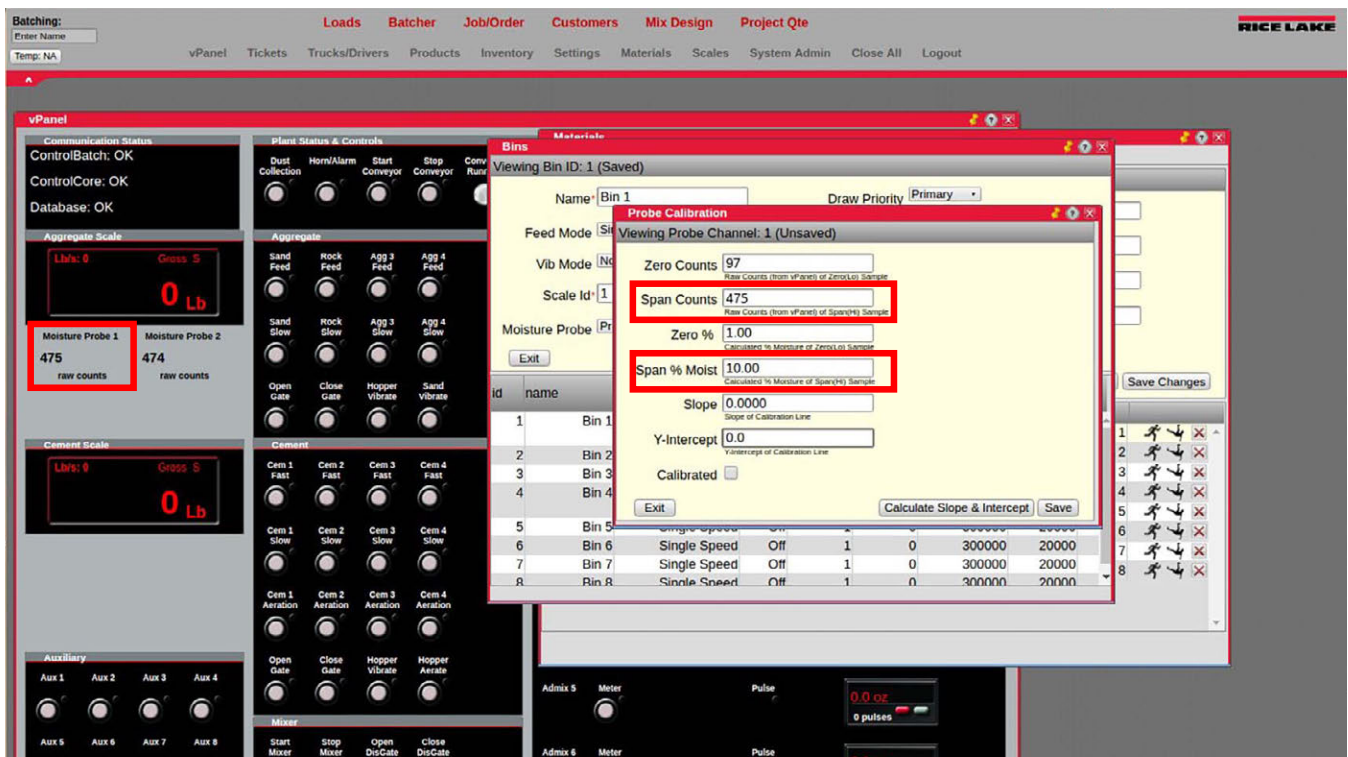

Figure 2-14. Probe Calibration - Span Count

16. Enter the actual moisture percentage of the span reference in the **Span % Moist** field.

17. Press [Calculate Slope and Intercept]. The **Slope** and **Y-Intercept** fields autofill and the **Calibrated** box is checked.
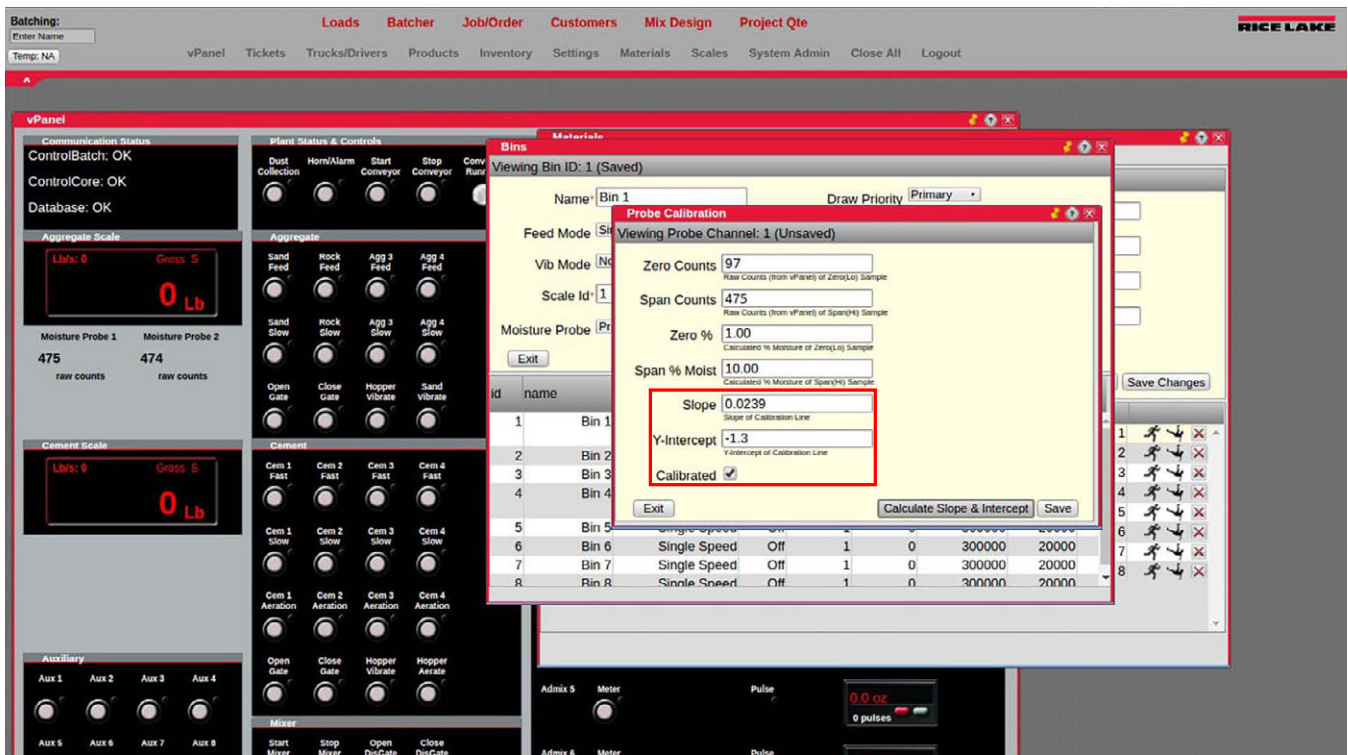

Figure 2-15. Probe Calibration Complete

18. Press [Save].

19. Close the **Probe Calibration**, **Bins** and **Materials** menus.

20. Open the **Batcher** menu and the span moisture percentage are displayed (if the probe is in the span material).
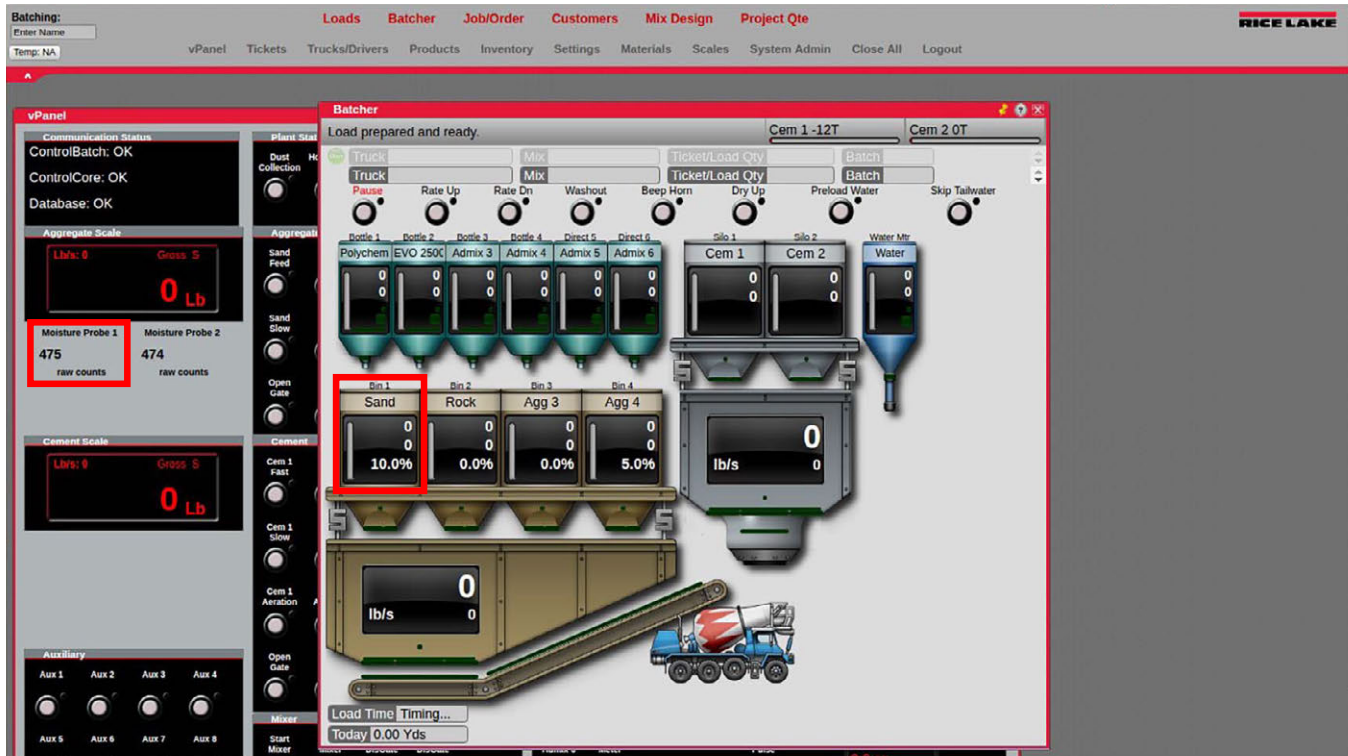

Figure 2-16. Batcher Menu

3.0   Configuration of Scale Parameters

The CB-3 is designed as a universal controller for all types of automated concrete production with many settings and features used only by special applications. The factory default settings assume a two-scale transit mix application and most default values do not need to be changed for this type of application. In addition, system software is preloaded along with a default database.

Certain critical parameters must be determined and the plant must be tuned to batch accurately. As part of the default configuration, a minimum number of materials, physical locations and mix designs have been added. Mapping of the actual physical plant controls to the I/O points in the software are also set up in the initial configuration. The unit can be sealed for Legal For Trade units once the configuration is complete.

> *NOTE: Some configuration parameters, such as those used to configure the 920i display and widgets, cannot be accessed through the configuration menus. iRev provides the most complete and efficient configuration interface for the 920i. See Section 3.3 on page 28.*

3.1   920i Front Panel Configuration

The 920i indicator is configured by using the front panel keys to navigate through a series of configuration menus or by sending commands or configuration data to an indicator serial port. For 920i menu configuration, See Section 3.3 on page 28.

The indicator must be placed in configuration mode to set up a standard configuration on the 920i indicator.

1.   Open the front panel of the CB-3.

2.   The configuration switch is accessed by removing the large fillister head screw on the back of the enclosure. Insert a non-conductive tool to press the configuration switch.
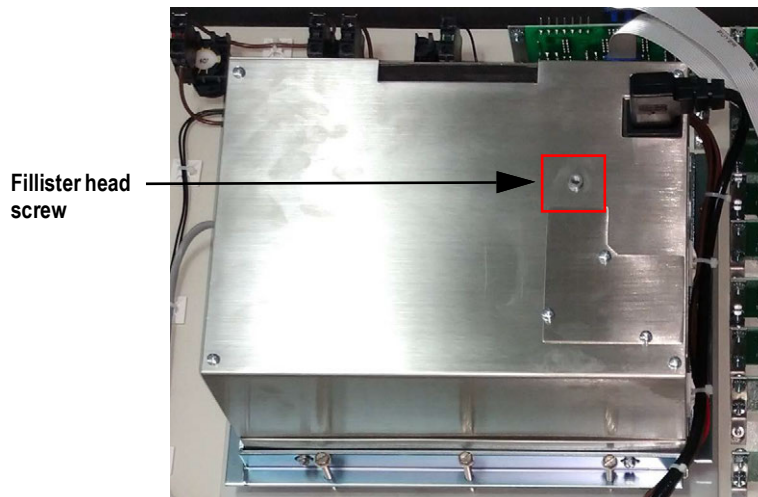

Figure 3-1. Access to Configuration Switch

When indicator is placed in configuration mode, a series of menus are displayed, along with **Scale Configuration**.

When the configuration is complete:

- Press the **Save and Exit** softkey to write parameter changes to NV RAM before returning to weigh mode; replace the configuration switch access screw
- Press the **Exit** softkey to exit configuration mode without saving parameter changes to NV RAM; changes made to the configuration remain in the system until indicator power is cycled

> *NOTE: Once CB-3 has been installed and calibrated, the configuration is needed only for annual service calibration of scales.*

Configuration using the serial port is accomplished by using the serial command set described in the iRev configuration utility.

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3.2   iRev™ Configuration

The iRev configuration utility is the preferred method for configuring the 920i indicator. iRev runs on a personal computer and is used to set configuration parameters for the indicator. Configuration data is downloaded to the 920i indicator once the iRev configuration is complete.

iRev supports both uploading and downloading of indicator configuration data. This capability allows configuration data to be retrieved from one indicator, edited and then downloaded to another indicator with an identical hardware configuration.
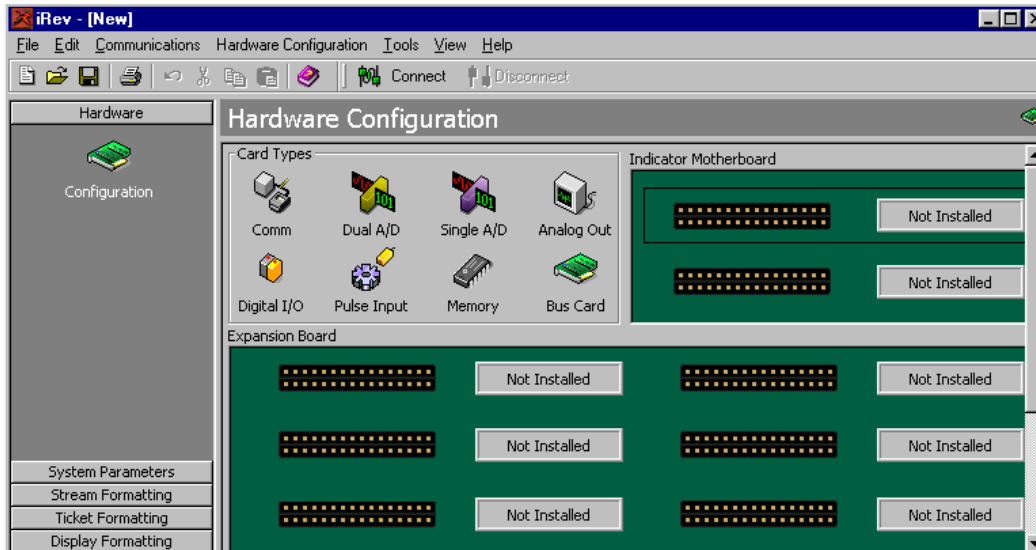

Figure 3-2. iRev Hardware Configuration Display

3.2.1   Using iRev

1. Install iRev on an IBM-compatible personal computer.
2. With both the indicator and PC powered off, connect the PC serial port to the RS-232 DB9 service port (port 2) on the indicator serial port.
3. Power on the PC and the indicator.
4. Press the configuration switch to place the indicator in configuration mode.
5. Start the iRev program.

iRev provides assistance online for each of its displays. Parameter descriptions provided in this manual for front panel configuration can also be used when configuring the indicator using iRev. The interface is different, but the parameters settings are the same.

See the 920i Installation Manual, PN 67887 for more information about using iRev to configure the 920i. Minimum System Requirements

- 1.0 GHz Intel compatible processor
- 1 GB of RAM
- 850 MB hard drive space (32 bit)
  2 GB hard drive space (64 bit)
- Microsoft Windows® 7 SP1 (32 bit, 64 bit)
- A RS-232 port, RS-485 port, USB Port, or TCP/IP connection for communications to the indicator

3.2.2   Recommended System Requirements:

- 1.0+ GHz Intel compatible processor
- 2+ GB of RAM
- 4+ GB hard drive space
- Windows 10

3.3   920i Menu Structures and Parameter Descriptions

The 920i indicator can be configured using a series of menus accessed through the indicator front panel when the indicator is in the configuration mode. The table below summarizes the functions of each of the main menus.

Menu	Menu Function
SCALES	Configure and calibrate scales
SERIAL	Configure communications ports
FEATURE	Set date and time formats, truck mode, passwords, keyboard locks, regulatory mode, and initial consecutive number value, define softkeys and setpoint prompts
PFORMT	Set print format used for header, gross, net, truck in/out, setpoint, and auxiliary ticket formats, See Section 7.0 on page 91 for more information
SETPTS	Configure setpoints and batching mode
DIG I/O	Assign digital input/output functions
ALGOUT	Configure analog output module; displays only if analog output option is installed
FLDBUS	Configure fieldbus parameters for Profibus, DeviceNet, EtherNet/IP, and ControlNet communications; displays only if one of the listed fieldbus cards is installed
VERS	Display installed software version number; the **Reset Config** softkey on the version menu can be used to restore all configuration parameters to their default values

Table 3-1. 920i Menu Summary

The following sections provide graphic representations of the 920i menu structures and tables describing the menu parameters. Default and recommended values are in **bold** type; numeric ranges and string values are in *italic* type.
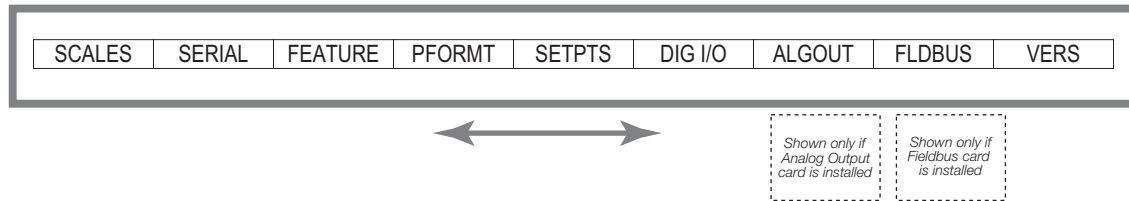

Figure 3-3. Configuration Menu Flow

3.3.1 SCALES Menu

The *SCALES* menu is provided in Figure 3-4. The *SCALES* menu is used to set parameters for each scale.
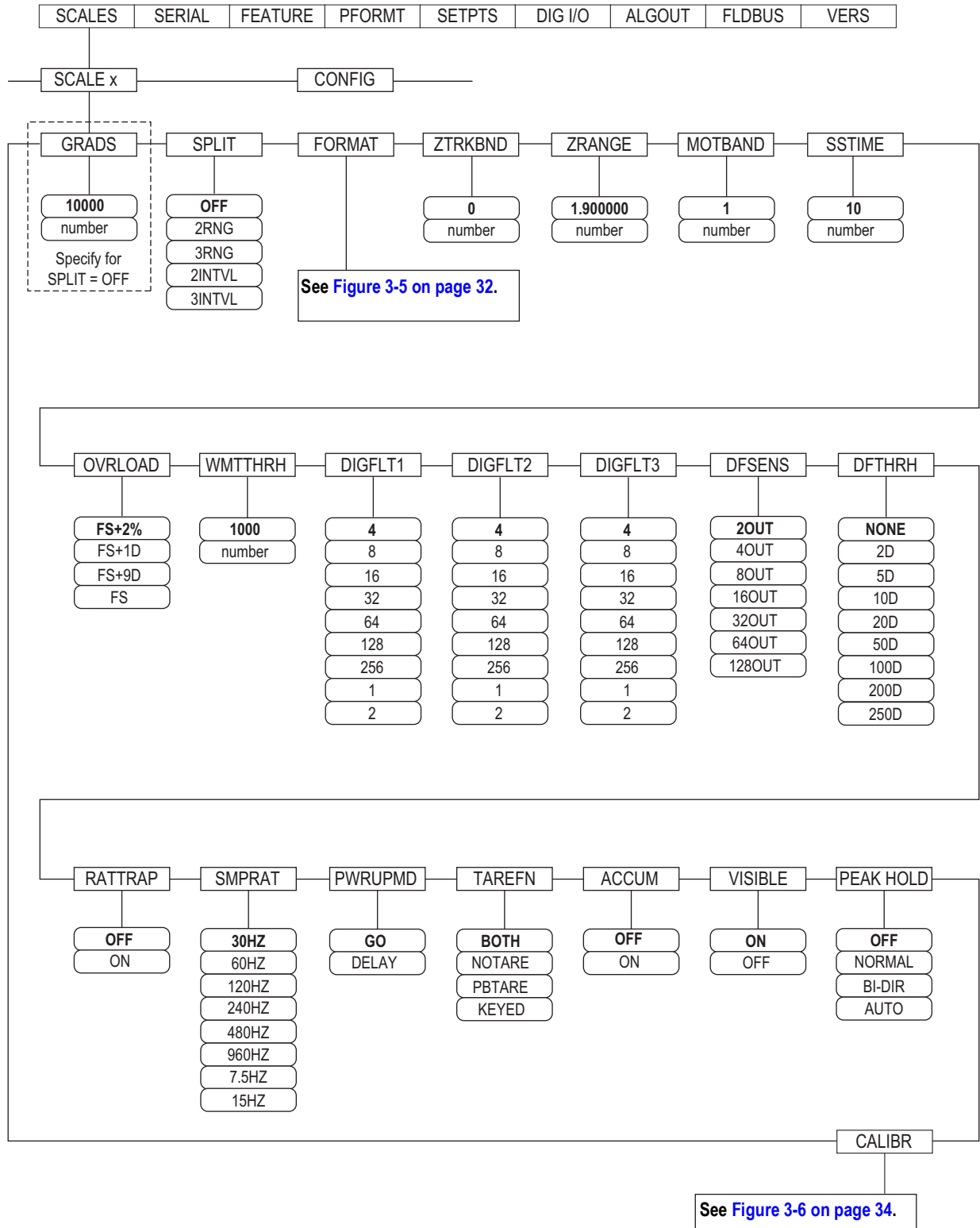

Figure 3-4. Scales Menu

Parameter	Settings	Description
SCALEx	—	Allows configuration and calibration of each scale
CONFIG	—	Lists available and associated A/Ds
SCALEx Parameters		
GRADS	10000 1–9999999	Specifies the number of full scale graduations if **SPLIT** is set to **OFF**; for multi-range and multi-interval scales (**SPLIT** is not **OFF**), the **GRADS** value is derived from the capacity and display divisions specified for the range or interval; the value entered must be in the range 1–9999999 and should be consistent with legal requirements and environmental limits on system resolution; to calculate **GRADS**, use the formula: **GRADS** = **Capacity** / **Display Divisions**; display divisions are specified under the **FORMAT** submenu
SPLIT	OFF 2RNG 3RNG 2INTVL 3INTVL	Specifies whether the scale is full-range (**OFF**), multi-range (**2RNG**, **3RNG**), or multi-interval (**2INTVL**, **3INTVL**); for multi-range and multi-interval scales, see the sub-menu in Figure 3-5 on page 32 and parameter descriptions in Table 3-3 on page 33
FORMAT	PRIMAR SECNDR TERTIA ROC	For standard scales (**SPLIT** is set to **OFF**), See level 4 sub-menu descriptions in Table 3-3 on page 33; for multi-range and multi-interval scales, See Table 3-3 on page 33
ZTRKBND	0 number	Automatically zeros the scale when within the specified range, as long as the input is within the **ZRANGE** and the scale is at standstill; specify the zero tracking band in ± display divisions; maximum legal value varies depending on local regulations; for scales using linear calibration, do not set the zero tracking band greater than the value specified for the first linearization point
ZRANGE	1.900000 number	Selects the range within which the scale can be zeroed; the 1.900000 default value is ± 1.9% around the calibrated zero point, for a total range of 3.8%; the indicator must be at standstill to zero the scale; use the default value for Legal For Trade applications
MOTBAND	1 number	Sets the level, in display divisions, at which scale motion is detected; if motion is not detected for the **SSTIME** (default of 1 second) or more, the standstill symbol illuminates; some operations, including print, tare, and zero require the scale to be at standstill; the value entered must be in the range of 0-100; the maximum legal value varies depending on local regulations; if this parameter is set to 0, the standstill annunciator is set continuously on, and operations including zero, print and tare are performed regardless of scale motion; if 0 is selected, **ZTRKBND** must also be set to 0
SSTIME	10 number	Specifies the length of time the scale must be out of motion, in 0.1-second intervals, before the scale is considered to be at standstill; values greater than 10 (1 second) are not recommended
OVRLOAD	FS+2% FS+1D FS+9D FS	Determines the point at which the display blinks and an out-of-range error message displays; maximum legal value varies depending on local regulations
WMTTHRH	1000 number	Specifies the minimum number of grads required for a weighment to be added to the recorded number of weighments
DIGFLT1 DIGFLT2 DIGFLT3	4 8 16 32 64 128 256 1 2	Selects the digital filtering rate used to reduce the effects of mechanical vibration from the immediate area of the scale; settings indicate the number of A/D conversions averaged per update to obtain the displayed reading; a higher number gives a more accurate display by minimizing the effect of a few noisy readings, but slows down the settling rate of the indicator; when configuring non-A/D scales, set the **DIGFLTx** parameters to **1** to disable filtering
DFSENS	2OUT 4OUT 8OUT 16OUT 32OUT 64OUT 128OUT	Digital filter cutout sensitivity specifies the number of consecutive readings falling outside the filter threshold (**DFTHRH** parameter) before digital filtering is suspended

Table 3-2. Scales Menu Parameters

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W E I G H I N G   S Y S T E M S

Parameter	Settings	Description
DFTHRH	NONE 2D 5D 10D 20D 50D 100D 200D 250D	Digital filter cutout threshold specifies the filter threshold, in display divisions; when a specified number of consecutive scale readings (**DFSENS**) fall outside of this threshold, digital filtering is suspended; if **NONE** is selected, the filter is always enabled
RATTRAP	OFF ON	Enables RATTLETRAP® digital filtering. RATTLETRAP is most effective at filtering repeating vibrations caused by mechanical noise from nearby machines but may increase settling times over standard digital filter selections
SMPRAT	30HZ 60HZ 120HZ 240HZ 480HZ 960HZ 7.5HZ 15HZ	Selects a measurement rate, in samples per second, of the analog-to-digital converter. Lower sample rate values provide greater signal noise immunity; the maximum total sample rate for all configured A/D channels—the sum of the sample rates for all scales—is 1200 Hz; for example, up to ten scales can be configured with 120 Hz sample rates, or up to twenty scales with 60 Hz sample rates
PWRUPMD	GO DELAY	Power up mode; in **GO** mode, the indicator goes into operation immediately after a brief power up display test; in **DELAY** mode, the indicator performs a power up display test then enters a 30-second warm up period; if no motion is detected during the warm up period, the indicator becomes operational when the warm up period ends; if motion is detected, the delay timer is reset and the warm up period repeated
TAREFN	—	Enables or disables push-button and keyed tares
	BOTH	Both push-button and keyed tares are enabled
	NOTARE	No tare allowed (gross mode only)
	PBTARE	Push-button tares enabled
	KEYED	Keyed tare enabled
ACCUM	OFF ON	Specifies whether the scale accumulator is enabled; if enabled, accumulation occurs whenever a print operation is performed
VISIBL	ON OFF	Scale visibility specifies whether scale data displays
PEAK HOLD	—	Peak hold is used to determine, display and print the greatest net weight read during a weighing cycle; the weighing cycle ends when a print command is executed (AUTO setting) or when the peak weight is cleared by pressing **Zero** or **Print**; press **Gross/Net** to display gross weight data when using the peak hold function
	OFF	Peak hold function is off
	NORMAL	Positive peak, manual reset; greatest net weight is held in memory until the weight is removed from the scale and either the **Zero** or **Print** key is pressed
	BI-DIR	Bi-directional peak, manual reset; same as **NORMAL**, but peak value can be either positive or negative, determined by absolute value
	AUTO	Positive peak, auto print, auto reset; automatic print occurs when scale load is 0 ± 10 display divisions and at standstill; following the print command, the peak value is cleared and reset automatically
CALIBR	WZERO WVAL WSPAN WLIN REZERO	See Table 3-6 on page 34 for calibration parameters

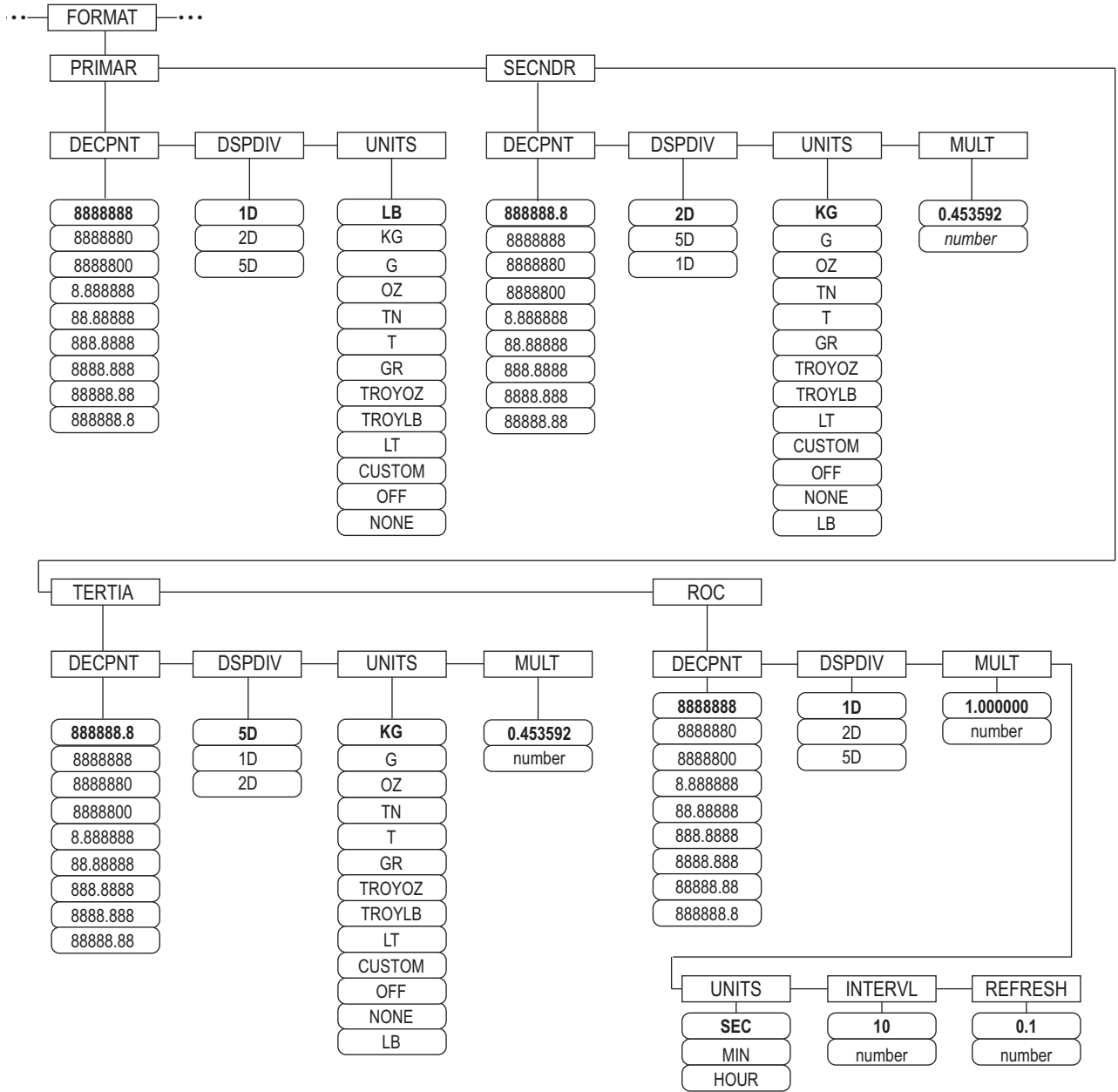*Table 3-2. Scales Menu Parameters (Continued)*

··•·· FORMAT ··•···

PRIMAR — **SECNDR**

PRIMAR
- DECPNT
  - **8888888**
  - 8888880
  - 8888800
  - 8.888888
  - 88.88888
  - 888.8888
  - 8888.888
  - 88888.88
  - 888888.8
- DSPDIV
  - **1D**
  - 2D
  - 5D
- UNITS
  - **LB**
  - KG
  - G
  - OZ
  - TN
  - T
  - GR
  - TROYOZ
  - TROYLB
  - LT
  - CUSTOM
  - OFF
  - NONE

SECNDR
- DECPNT
  - **888888.8**
  - 8888888
  - 8888880
  - 8888800
  - 8.888888
  - 88.88888
  - 888.8888
  - 8888.88
- DSPDIV
  - **2D**
  - 5D
  - 1D
- UNITS
  - **KG**
  - G
  - OZ
  - TN
  - T
  - GR
  - TROYOZ
  - TROYLB
  - LT
  - CUSTOM
  - OFF
  - NONE
  - LB
- MULT
  - **0.453592**
  - *number*

TERTIA — **ROC**

TERTIA
- DECPNT
  - **888888.8**
  - 8888888
  - 8888880
  - 8888800
  - 8.888888
  - 88.88888
  - 888.8888
  - 8888.888
  - 88888.88
- DSPDIV
  - **5D**
  - 1D
  - 2D
- UNITS
  - **KG**
  - G
  - OZ
  - TN
  - T
  - GR
  - TROYOZ
  - TROYLB
  - LT
  - CUSTOM
  - OFF
  - NONE
  - LB
- MULT
  - **0.453592**
  - number

ROC
- DECPNT
  - **8888888**
  - 8888880
  - 8888800
  - 8.888888
  - 88.88888
  - 888.8888
  - 8888.888
  - 88888.88
  - 888888.8
- DSPDIV
  - **1D**
  - 2D
  - 5D
- MULT
  - **1.000000**
  - number
- UNITS
  - **SEC**
  - MIN
  - HOUR
- INTERVL
  - **10**
  - number
- REFRESH
  - **0.1**
  - number

Figure 3-5. Format Menu, SPLIT Set to OFF

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Parameter	Settings	Description
DECPT1	8888888 8888880 8888800 8.888888 88.88888 888.8888 8888.888 88888.88 888888.8	Decimal point location for first range or interval; specifies the location of the decimal point or dummy zeros in the primary unit display; value should be consistent with local legal requirements
DDIV1	1D 2D 5D	Display divisions for first range or interval; selects the minimum division size for the primary units displayed weight
MAX1	**50.00000**	Maximum weight for first range or interval
DECPT2	888888.8 8888888 8888880 8888800 8.888888 88.88888 888.8888 8888.888 88888.88	Decimal point location for second range or interval; specifies the location of the decimal point or dummy zeros in the primary unit display; value should be consistent with local legal requirements
DDIV2	2D 5D 1D	Display divisions for second range or interval; selects the minimum division size for the primary units displayed weight
MAX2	**50.00000**	Maximum weight for second range or interval
DECPT3	888888.8 8888888 8888880 8888800 8.888888 88.88888 888.8888 8888.888 88888.88	Decimal point location for third range or interval (**SPLIT** is set to **3RNG** or **3INTVL** only); specifies the location of the decimal point or dummy zeros in the primary unit display; value should be consistent with local legal requirements
DDIV3	5D 1D 2D	Display divisions for third range or interval (**SPLIT** is set to **3RNG** or **3INTVL** only); selects the minimum division size for the primary units displayed weight
MAX3	**50.00000** weight	Maximum weight for third range or interval (**SPLIT** is set to **3RNG** or **3INTVL** only)
UNITS	LB KG G OZ TN T GN TROYOZ TROYLB LT CUSTOM NONE OFF	Specifies primary units for displayed and printed weight; values are: **LB** = pound; **KG** = kilogram; **G** = gram; **OZ** = ounce; **TN** = short ton; **T** = metric ton; **GN** = grain; **TROYOZ** = troy ounce; **TROYLB** = troy pound; **LT**=long ton

Table 3-3. Format Menu Parameters, SPLIT Set to OFF
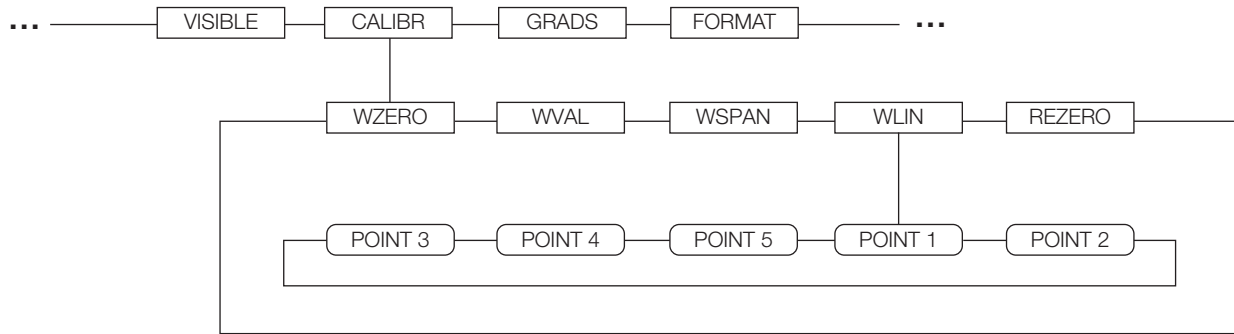
Figure 3-6. Calibration Menu

See the iQUBE<Super> 2 Installation Manual, PN 106113, for information about configuring iQUBE<Super> 2 scales.

Parameter	Settings	Description
WZERO	—	Press **Enter** to display and edit the zero calibration A/D count or millivolts value
WVAL	—	Press **Enter** to display and edit the test weight value
WSPAN	—	Press **Enter** to display and edit the span calibration A/D count or millivolts value
WLIN	POINT 1 — POINT 5	Press **Enter** to display and edit test weight and calibration values for up to five linearization points; perform linear calibration only after ***WZERO*** and ***WSPAN*** have been set
REZERO	—	Press **Enter** to remove an offset value from the zero and span calibrations; use this parameter only after ***WZERO*** and ***WSPAN*** have been set; See Section 5.2.2 on page 71 for more information about using this parameter

Table 3-4. Calibration Menu Parameters

3.3.2 SERIAL Menu
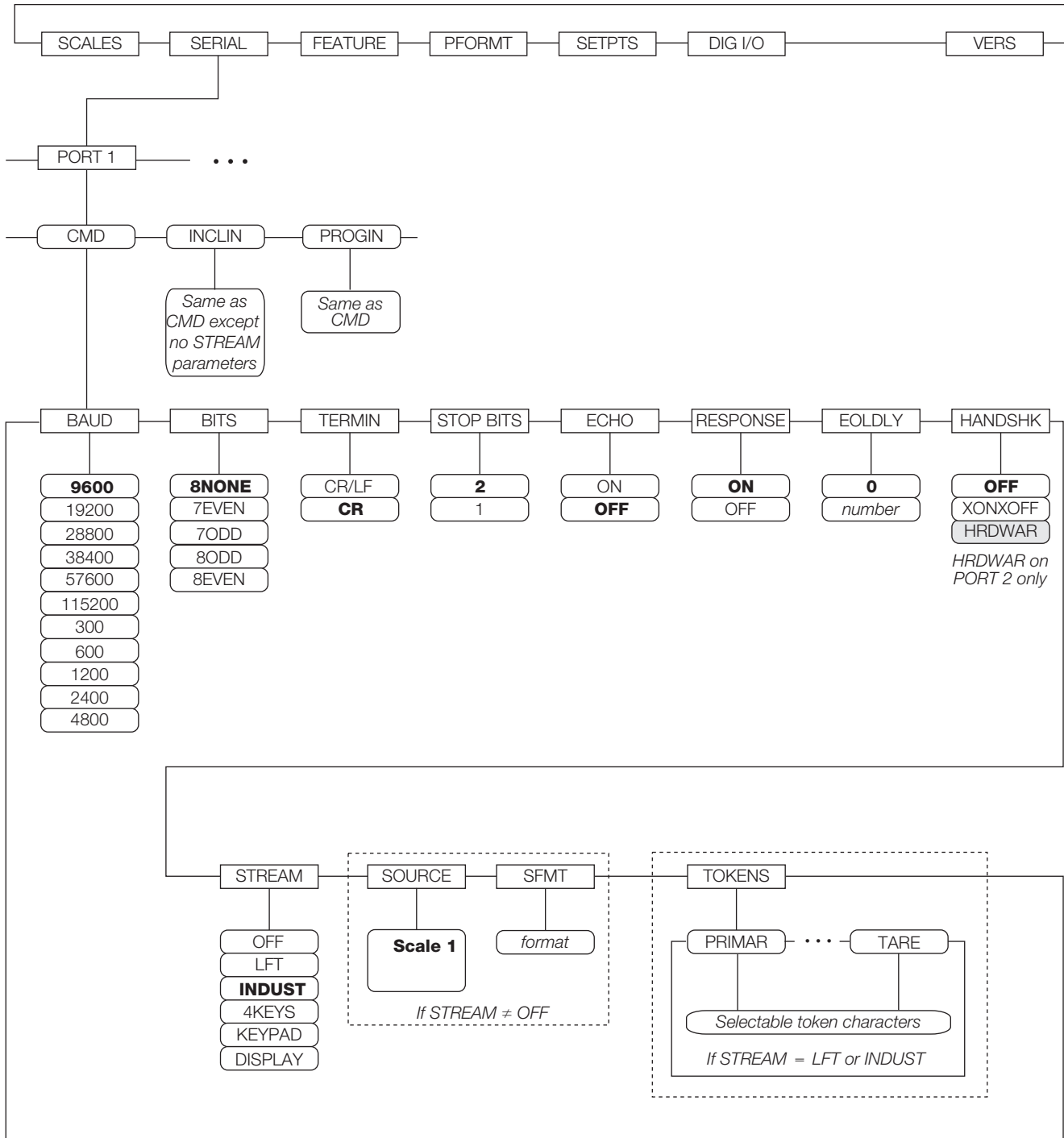
Figure 3-7. Serial Menu, Port 1

NOTE: Recommended settings for CB-3 configuration are in bold.

SCALES — SERIAL — FEATURE — PFORMT — SETPTS — DIG I/O — VERS

PORT 2 — . . .

CMD — INCLIN — PROGIN

Same as CMD except no STREAM parameters

Same as CMD

BAUD — BITS — TERMIN — STOP BITS — ECHO — RESPONSE — EOLDLY — HANDSHK

BAUD	BITS	TERMIN	STOP BITS	ECHO	RESPONSE	EOLDLY	HANDSHK
9600	**8NONE**	**CR/LF**	**2**	**ON**	**ON**	**0**	**OFF**
19200	7EVEN	CR	1	OFF	OFF	*number*	XONXOFF
28800	7ODD						HRDWAR
38400	8ODD						
57600	8EVEN						*HRDWAR on PORT 2 only*
115200							
300							
600							
1200							
2400							
4800							

STREAM — SOURCE — SFMT — TOKENS

STREAM
OFF
LFT
INDUST
4KEYS
KEYPAD
DISPLAY

Figure 3-8. Serial Menu, Port 2

NOTE: Recommended settings for CB-3 configuration are in bold.

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| SCALES | SERIAL | FEATURE | PFORMT | SETPTS | DIG I/O | | VERS |

PORT 3 • • •

| PROGIN | CMD | SCALE | IND SC | DISPLAY | IQUBE2 | ICELL |

See PROGIN Selections

See iQUBE2 Installation Manual PN 106113

See RL9000TWM Installation Manual, PN 89284

| BAUD | BITS | TERMIN | STOP BITS | ECHO | RESPONSE | EOLDLY | HANDSHK |

9600	**8NONE**	CR/LF	**2**	ON	**ON**	**0**	**OFF**
19200	7EVEN	**CR**	1	**OFF**	OFF	*number*	XONXOFF
28800	7ODD
38400	8ODD
57600	8EVEN
115200
300
600
1200
2400
4800

| STREAM | SOURCE | SFMT | SFMT | TOKENS |

| OFF |
| LFT |
| **INDUST** |
| 4KEYS |
| KEYPAD |
| DISPLAY |

Scale 2

format

format

If PORT = SCALE or IND SC

PRIMAR • • • TARE

Selectable token characters

If STREAM = LFT or INDUST

If STREAM ≠ OFF

If PORT = CMD or PROGIN

Figure 3-9. Serial Menu, Port 3

NOTE: Recommended settings Port 3 or Cement Scale for CB-3 configuration are in bold.
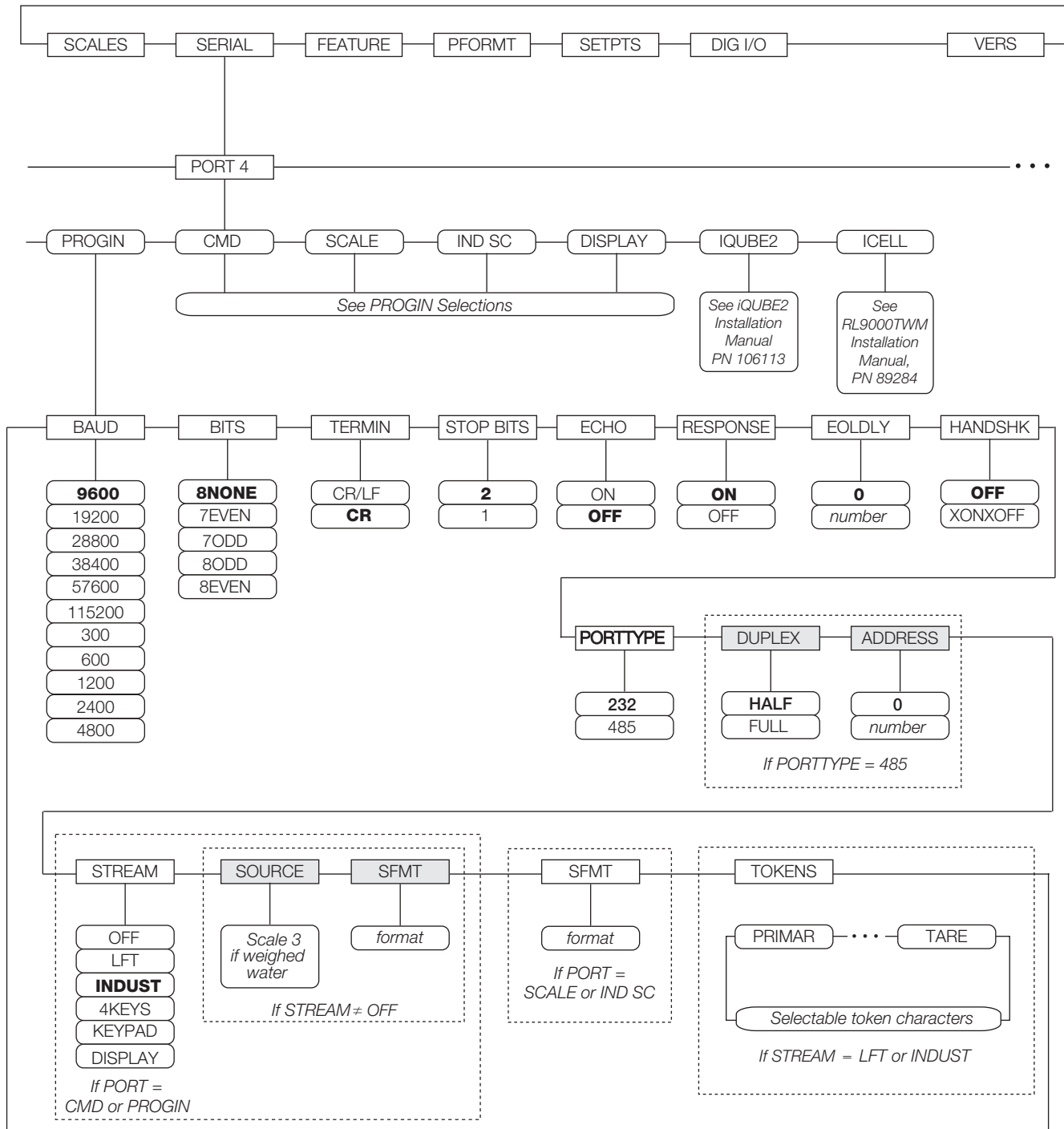
Figure 3-10. Serial Menu, Port 4 and Expansion Ports

NOTE: Port 4 is used only for weighed water and would be Scale 3. Recommended settings are in bold.

RICE LAKE
W E I G H I N G   S Y S T E M S

Parameter	Settings	Description
PORT 1 PORT 2 PORT 3 PORT 4 PORT x	—	Specifies the type of data received by the port
	CMD	Remote command input
	INCLIN	Special mode for use with Rice Lake inclinometer (port 1 only)
	PROGIN	Input routed to user program instead of core
	KEYBD	Remote keyboard input (PS/2) (port 2 only)
	KDBPRG	Remote keyboard input for user programs (PS/2) (port 2 only)
	SCALE	Legal For Trade serial scale input (ports 3 and higher only)
	IND SC	Industrial (non-legal-for-trade) scale input (ports 3 and higher only)
	DISPLAY	Display data input for remote units in local/remote configurations (ports 3 and higher only)
	IQUBE2	iQUBE<Super> 2 serial scale input (ports 3 and higher only
	ICELL	ICELL serial scale input (see ICELL manual for further information)
PORT 2 USB	—	Specifies the type of data received by the port; these selections for port 2 are available only if the USB interface card is installed
	DEVICE	Selects USB device to be used: ***AUTO***, ***NODEVICE***, ***HOSTPC***, ***PRINTER1***, ***PRINTER2***, ***KEYBOARD*** or ***DRIVE***
	TERMIN	Indicates whether files have ***CR/LF*** (Windows) or ***CR*** (Macintosh previous to OS X) as the line terminator
	ECHO	Specifies whether characters received by the port are echoed back to the sending unit
	RESPONSE	Specifies whether the port transmits replies to serial commands
	EOLDLY	End-of-line delay; sets the delay period, in 0.1-second intervals, from when a formatted line is terminated to the beginning of the next formatted serial output
	STREAM	Specifies what data is streamed from the port
	INPUT	Determines whether the input is handled by the core or routed to a user program (if present)
Port 1–Port 32 Submenu		
BAUD	9600 19200 28800 38400 57600 115200 300 600 1200 2400 4800	Selects the transmission speed for the port; the maximum baud rate for ports on serial expansion cards (port number greater than 4) is 19200
BITS	8NONE 7EVEN 7ODD 8ODD 8EVEN	Selects number of data bits and parity of data transmitted or received by the port
DEVICE (Port 2 - only if USB is installed)	—	Selects the target USB device to be used
	AUTO	Automatically detects the device
	NODEVICE	Used for iRite programming and for safely removing a flash drive
	HOSTPC	Used when connecting directly to a PC; the PC automatically assigns a virtual comm port; check the PC settings to determine which port is assigned
	PRINTER1 PRINTER2	***PRINTER1*** is used if one printer is connected; ***PRINTER2*** is used only if a USB hub is connected, allowing for more than one Type-B connection; in this scenario, the lowest printer ID# is ***PRINTER1***
	KEYBOARD	Supports USB keyboards
	DRIVE	Supports USB 2.0 flash drives formatted to the FAT-32 or FAT-16 file system up to 4 Gig maximum
ECHO	ON OFF	Specifies whether characters received by the port are echoed back to the sending unit

Table 3-5. Serial Menu Parameters

Parameter	Settings	Description
EOLDLY	0 0–255	End-of-line delay; sets the delay period, in 0.1-second intervals, from when a formatted line is terminated to the beginning of the next formatted serial output; value specified must be in the range 0-255, in tenths of a second (10 = 1 second)
HANDSHK	OFF XONOFF HRDWAR	Specifies whether *XON*/*XOFF* flow control characters or hardware handshaking is used; hardware handshaking is available only on Port 2
PORTTYPE	232 485 422	Specifies whether Port 4 is used for RS-232, RS-485 or RS-422 communications; if RS-485 is selected, additional prompts display to specify half- or full-duplex operation and RS-485 address; RS-485 communications is compatible with iQUBE<Super> 2; can be specified for Port 4, and for odd numbered expansion ports 5 and higher
RESPONSE	ON OFF	Specifies whether the port transmits replies to serial commands
SFMT	format	Specifies the stream format used for the streamed data (*SCALE* or *IND* SC scale types); the default format is the Consolidated Controls format
SOURCE	source_scale	*SOURCE* specifies the source scale for data streamed from the port, if *STREAM* is set to a value other than *OFF*
STOP BITS	2 1	Selects number of stop bits transmitted or received by the port
STREAM	OFF LFT INDUST	Specifies what data is streamed from the port; *LFT* streams data at the display rate specified by the DSPRATE parameter on the FEATURE menu; *INDUST* streams data at the A/D update rate specified by the *SMPRATE* parameter on the *SCALES* menu; See *SMPRAT* in Table 3-2 on page 30; streaming is not supported for RS-485 connections
TERMIN	CR/LF CR	Termination character; selects termination character for data sent from the port
TOKENS	PRIMAR SECNDR TERTIA GROSS INVALID MOTION ZERO NET OK RANGE TARE	The *TOKENS* parameter can be used to replace tokens used in the data stream from the indicator front panel, when *STREAM* is set to *LFT* or I*NDUST*
RS-485 Port Submenu		
DUPLEX	HALF FULL	Specifies whether the RS-485 communications is half- or full-duplex
ADDRESS	0 0–255	Specifies the decimal indicator address for RS-485 connections; RS-232 communications is disabled if an address other than zero is specified for this parameter; RS-485 addresses must be in the range 01–255

Table 3-5. Serial Menu Parameters (Continued)

4.0 Configuration of User Parameters

The CB-3 has parameters which must be configured in order for the unit to batch properly. Use the CB-3 program to set values for the parameters controlling system operation. This section covers the parameters for the **Batching** menu: **Loads**, **Batcher**, **Job/Order**, **Customers**, **Mix Design** and **Project Quote** setup (Section 7.0 on page 91).
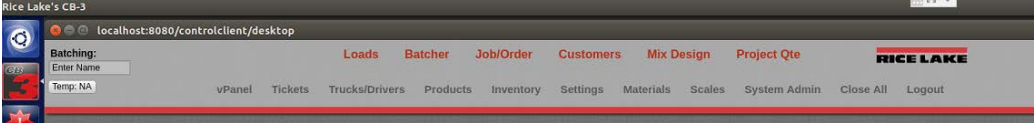
Figure 4-1. Program Home Menu

Select the parameter from the menu bar to be configured.

Parameter	Description
Batching	The batching menu displays the current batching operator
Temp	Displays the current temperature; select **Temp** display to display local radar
vPanel	Front panel controls – used for manual batching
Tickets	Setup tickets, export or print tickets, enter date, list of tickets, See Section 4.2 on page 42
Trucks/Drivers	Enter or select truck number and driver, See Section 4.3 on page 43
Products	Select products to be loaded, See Section 4.4 on page 45
Inventory	Inventory of material on hand and usage, See Section 4.5 on page 46
Settings	Configure loads, See Section 4.6 on page 48
Materials	Configure materials
Scales	Aggregate, Cement and optional Weighed Water, See Section 4.8 on page 65
System Admin	System Administrator Settings, See Section 4.9 on page 68
Close All	Close all menus
Logout	Logout of the system

Table 4-1. Home Menu Setup Selections

4.1 vPanel

The **vPanel** display is a duplicate of the front panel of the CB-3.

Figure 4-2. vPanel

4.1.1 Application Parameters

Parameter	Description
Communication Status	Verification status of the CB-3 components
Plant Status and controls	Non-material plant controls and feedback lights
Aggregate Scale	Scale 1 from the 920i
Aggregate Controls	Agg gate controls, hopper vibrator and sand vibrator
Metered Water	Metered water fill and reservoir controls
Cement Scale	Scale 2 from the 920i
Cement Controls	Cement gate controls, aerations and vibrator
Admixtures	Fill, discharge and empty status
Auxiliary	Configurable miscellaneous plant controls
Mixer	Start, stop, open and close

Table 4-2. Application Parameters

4.2 Tickets

The *Tickets* menu allows for the setup of the format for printing.
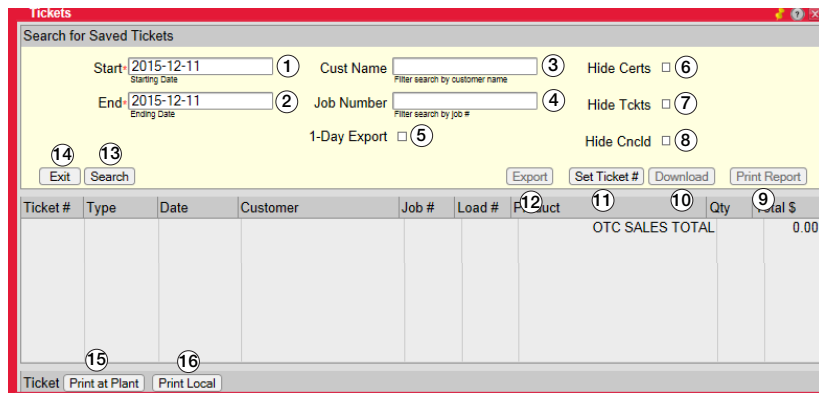
Figure 4-3. Tickets Menu

Item No.	Description
1	Enter the start date for ticket, starting time is midnight
2	Enter the end date for ticket, ending time is one second before midnight of the same day
3	Filter results by customer
4	Filter results by specific jobs
5	Check to export a single day of tickets
6	Check to hide certificates
7	Check to hide tickets
8	Check to hide canceled jobs from the list
9	Print a report of all tickets in the search results
10	Download the file to a USB, ensure there is a USB thumb drive in a USB port; an export must be done prior to downloading
11	Edit or set the ticket number
12	Export on a single day basis and only exports for the start day
13	View existing tickets with the information entered
14	Exit the *Ticket* menu
15	Print the selected ticket to the plant using default printer connected to the batch computer; when printing a batch ticket on a preprinted form, use this option to ensure the proper line spacing, character spacing and font
16	Select a printer and setup preferences

Table 4-3. Tickets Menu Descriptions

4.3   Trucks/Drivers

The *Trucks/Drivers* menu allows for setup of individual trucks and drivers.

4.3.1   Trucks
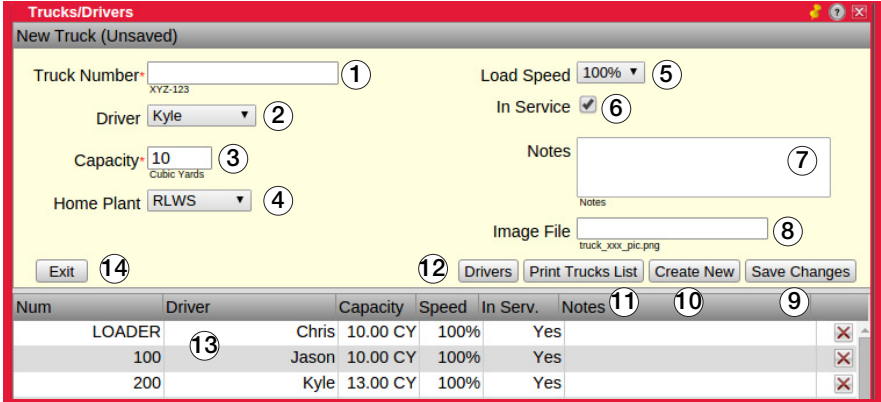
Figure 4-4. Trucks/Drivers Menu

Item No.	Description
1	Enter truck number to be used, when creating a new truck a unique truck number must be entered
2	Select driver from the list or enter new driver name
3	Enter capacity of truck in cubic yards/meters, this may need to be revised for road weight restrictions
4	Primary plant location where job is to be batched
5	Select load speed from the list, 100% indicates the default Aggregate and Cement load rates are used
6	Check to remove truck from the load scheduler and truck demand, if it is at another plant or broken down
7	Enter relevant information about the truck
8	Enter file name of truck image, file size must be 210 px width x 120 px height; this should be done at the time of installation or when new trucks are acquired
9	Select to save changes to displayed truck
10	Select to create a new truck
11	Display or print a summary list of all trucks
12	Select this option to open a menu and enter new drivers
13	Display area for existing trucks
14	Exit the *Trucks/Drivers* menu

Table 4-4. Trucks/Drivers Menu Descriptions
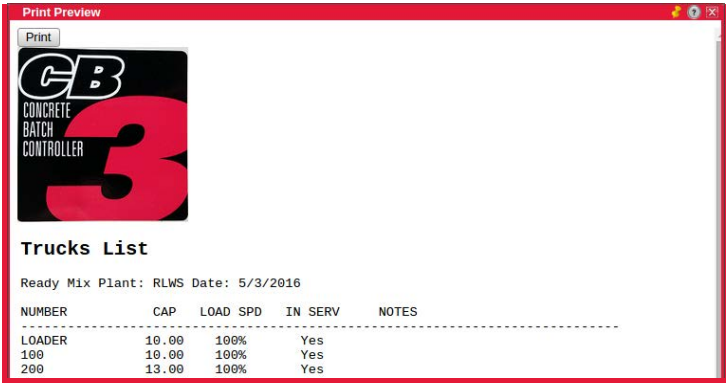
Figure 4-5. Trucks List Printout

4.3.2   Drivers
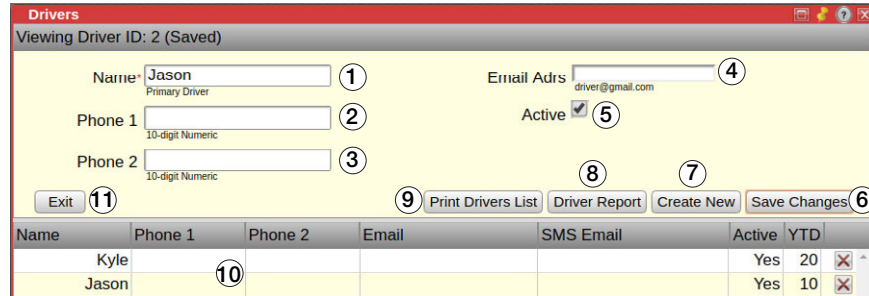
Figure 4-6. Drivers Menu

Item No.	Description
1	Enter drivers name, must be a unique name (not used previously) and can be up to 15 characters
2	Enter primary 10 digit phone number, no punctuation or spaces may be used (AAAPPPNNNN)
3	Enter secondary 10 digit phone number, no punctuation or spaces may be used (AAAPPPNNNN)
4	Enter drivers email address (driver@email.com)
5	Check to remove driver from drop-down list of available drivers
6	Save changes to currently selected driver
7	Create a new driver with current input
8	Create a driver report of drivers recent loads and comparison to other drivers, see Figure 4-8 on page 44
9	Display or print a summary list of all drivers
10	Existing driver display area
11	Exit the *Driver* menu

Table 4-5. Driver Menu Descriptions
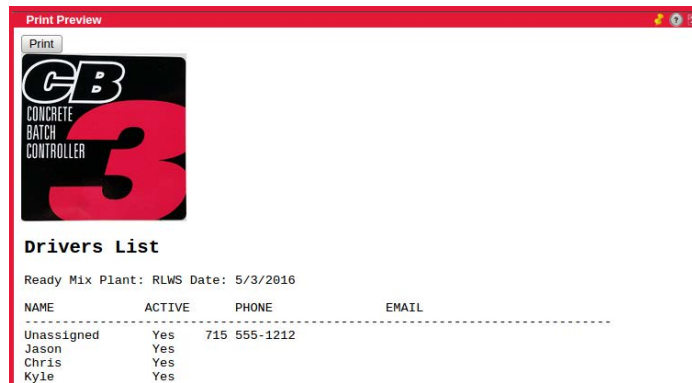
Figure 4-7. Drivers List Printout
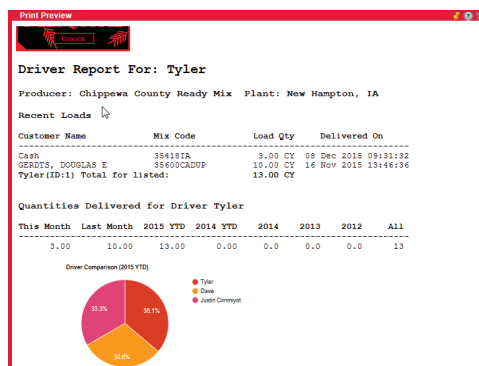
Figure 4-8. Driver Report and Comparison

4.4   Products
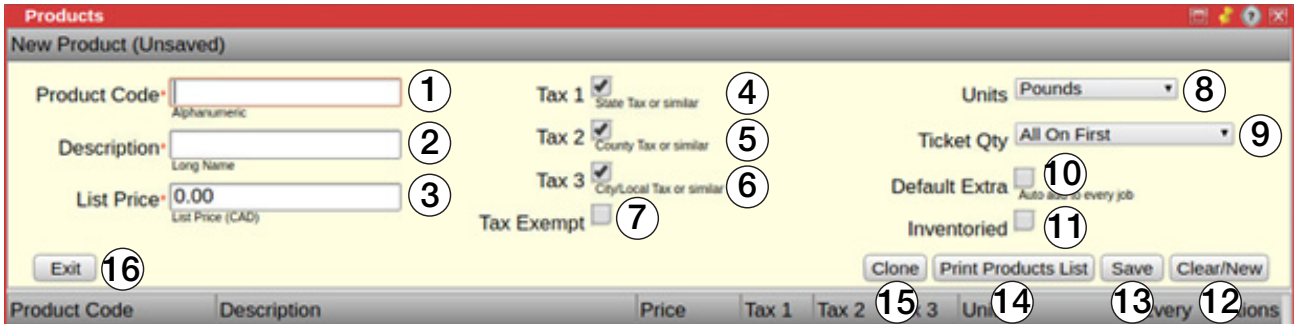
Figure 4-9. Products Menu

Item No.	Description
1	Unique code (alphanumeric 16-char max length)
2	Long description of this product (63-char max length)
3	List price per unit of this product
The system can apply 3 levels of tax: State, County, and Local	
4	Tax 1 - usually state tax; some products or services may not be taxable at this level
5	Tax 2 - usually a county/region tax; some products or services may not be taxable at this level
6	Tax 3 - usually a city/local tax; some products or services may not be taxable at this level
7	Check to make this product tax exempt; tax exempt status can be overridden in the **Project** or **Job/Order** menus
8	Unit by which this product is sold
9	This field determines how this product is distributed on the load tickets
10	Check for this product to display on every job (template) by default; examples – Fuel Surcharge or Winter Hot Water
11	Check keep track of this product's inventory
12	Clear the menu and allow setup of new product
13	Save the current product
14	Display or print a summary list of products/items
15	Create a clone of an existing product
16	Exit the **Products** menu

Table 4-6. Products Menu Descriptions

Figure 4-10. Sample Printout of Products List

4.5   Inventory

A list of all inventory on hand as well as, weekly, monthly, yearly and all time totals.

Figure 4-11. Inventory Menu

Select the pencil icon at the end of the item to edit the item. The following menu displays:

Figure 4-12. Edit Inventory Menu

Item No.	Description
1	Product to be edited (read only)
2	Product location
3	Select an action type (Receive, Manual Adjust or Set New Total)
4	Amount for item 2 action
5	Enter an invoice number, receive action type only
6	Notes pertaining to the product
7	Save settings
8	Exit the *Edit Inventory* menu

Table 4-7. Edit Inventory Menu Descriptions

Inventory actions are quantity adjustments for the material selected.

Figure 4-13. Sample Printout Inventory Actions

Figure 4-14. Sample Printout Inventory Report

Figure 4-15. Mix Usage By Date Range

4.6   User Settings

Select **Settings** to setup the parameters displayed in Figure 4-16.

Figure 4-16. Setting Main Menu

Item No.	Description
1	Enter company information, see Section 4.6.1
2	Select equipment parameters, Section 4.6.2 on page 49
3	Setup batching parameters, see Section 4.6.3 on page 50
4	Select what is to be printed on the tickets, see Section 4.6.4 on page 52
5	Other miscellaneous settings, see Section 4.6.5 on page 53
6	Other features which can be set, see Section 4.6.6 on page 54

Table 4-8. Settings Menu Descriptions

4.6.1   Company/Site

Enter information pertaining to a company or site.
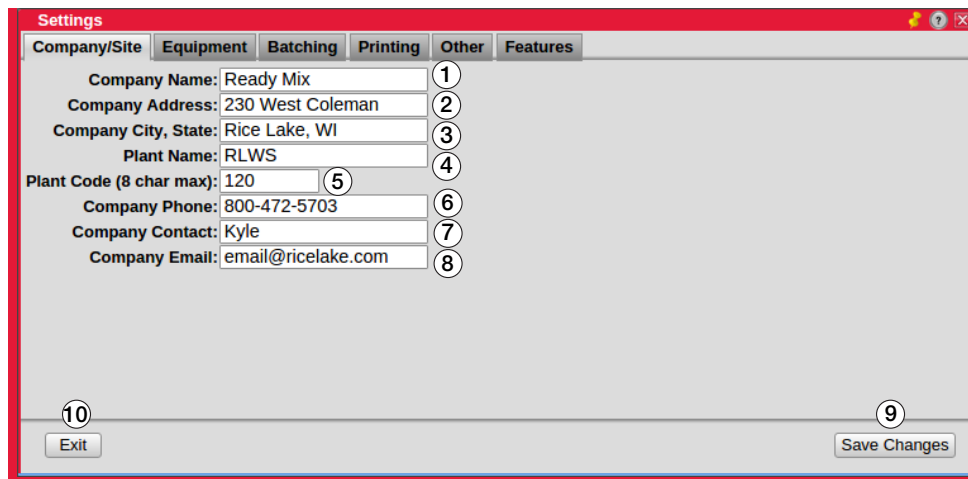
Figure 4-17. Company/Site Menu

Item No.	Description
1	Enter company name (48 character maximum)
2	Enter address (32 character maximum)
3	Enter city and state (32 character maximum)
4	Contains the plant name, read only
5	Contains the plant code, read only
6	Enter 10 digit phone number – format (555) 236-1515
7	Enter name of primary contact (32 character maximum)
8	Primary company contact email address; multiple emails must be separated by a comma and no space: seve@readymix.com,suzi@readymix.com (48 characters max)
9	Save settings
10	Exit the **Company/Site** menu

Table 4-9. Company/Site Menu Descriptions

4.6.2   Equipment
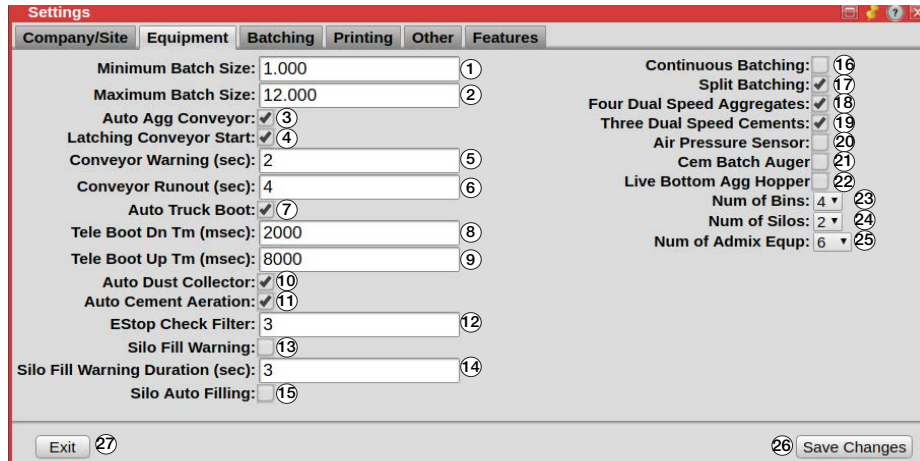
Figure 4-18. Equipment Menu

Item No.	Description
1	Smallest batch size allowed, smaller batches must be manually batched
2	Largest batch plant can run in normal circumstances; when the value is changed, it may need to be changed in mix, as well
3	The computer starts and stops the aggregate incline conveyor
4	The conveyor circuit requires a momentary input to start and a momentary input to stop; when a 120 V signal is required the entire time the conveyor is running, uncheck this option
5	If the incline conveyor system does not have a built-in safety alarm or start delay, check this option; the computer energizes the system alarm for this duration before turning on the conveyor
6	The amount of time the system keeps the conveyor running, when conveyor is in automatic control, after the aggregate scale has reached the zero tolerance; allows all material on the belt to be run into the truck before shutting off when conveyor is in automatic control
7	Causes the system to automatically lower the boot just before the start of discharge and raise it after a loading is done
8	With a telescopic boot, this is the number of ms the system powers the boot down output
9	With a telescopic boot, this is the number of ms the system powers the boot up output
10	When checked, the system runs the output assigned to the Cement Dust Collection function; output is energized throughout weighing
11	When checked, the system runs the output assigned to the Cement Weigh Hopper Aeration function; this output is energized while the cement is discharging
12	This is the number of consecutive cycles/times the system checks when sensing if the Emergency Stop is pressed; a number greater than 1 is necessary to prevent a momentary power drop to cause the system to immediately stop batching; DEFAULT=3
13	When checked, the system sends a warning signal when a silo is filled past a given percent of capacity; changing this value requires a system reboot to take effect
14	This is the number of seconds a warning signal takes to send a silo capacity exceeds a specified amount; DEFAULT=3; for portable plants only
15	Continuously batches concrete while input is active (Precast and Block plants only); fills until silo reaches warning capacity; changing this value requires a system reboot to take effect
16	Allows smaller plants to batch two or more smaller batches to make one larger load
17	Option of either eight single-speed aggregates or four dual-speed (both fast and slow feed outputs) aggregates
18	Disable this box when using more than three cements
19	When checked, this monitors the air pressure sensor
20	The output is energized from the start of weighing until the cement is fully discharged
21	The system runs the flat belt for a live bottom aggregate weigh hopper during the aggregate discharge; fast and slow controls use the gate open and close outputs similar to an inching gate
22	For display purposes when drawing the dynamic Batching
23	For display purposes when drawing the dynamic Batching
24	For display purposes when drawing the dynamic Batching
25	Save settings
26	Exit to *Settings* menu

Table 4-10. Equipment Menu Descriptions

4.6.3 Batching
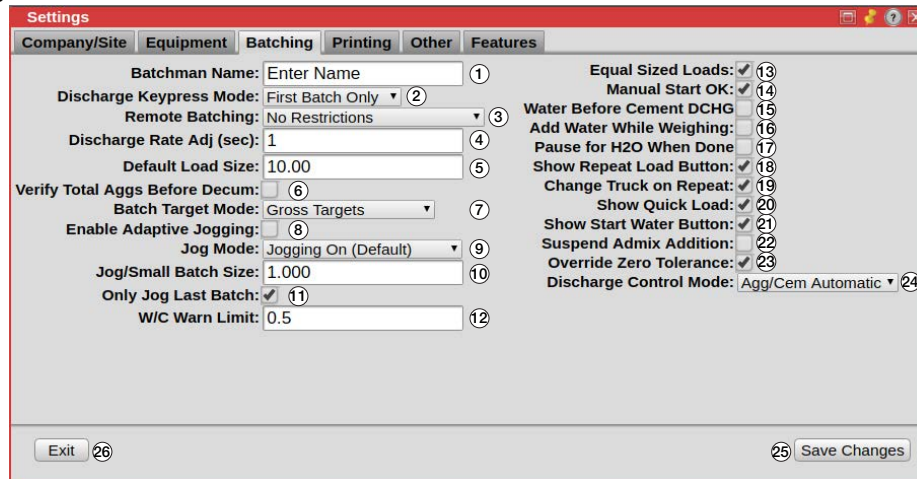
Figure 4-19. Batching Menu

Item No.	Description
1	Name prints on the batch ticket and Certificate of Compliance
2	The system has different schemes to control the loading of each material to the truck; agg/cem automatic mode automatically adjusts discharge rates to allow the cement finishes before the agg; in the User Controlled mode, discharge rate and the discharge order is controlled by what the user has put in the scales menu, See Section 4.8 on page 65
3	If remote batching has been enabled, set to 'Require Authorization Button' to have the batch pause after the batchman starts it, and only to continue after a driver confirms (by pressing a remote button) the truck is in position and everything at the plant is safe to begin batching. Requires Remote Batch Box
4	How often the discharge gates are adjusted to achieve or hold the desired discharge rate (in seconds)
5	Default load size the system selects, for new loads created, when the Job size exceeds a single load (may be changed by the operator)
6	If remote batching has been enabled, set to 'Require Authorization Button' to have the batch pause after the batchman starts it, and only to continue after a driver confirms (by pressing a remote button) the truck is in position and everything at the plant is safe to begin batching; requires Remote Batch Box
7	Determines if the system should deliver each material to preserve the total material type quantity (gross) or the individual materials quantity (net): target by gross- targets the value of the scale for total aggs or cement; example: gross – agg1 is over by 200 lb, the CB-3 compensates agg2 to make it 200 lb less than agg1 + agg2 = total agg target weight; target by net- targets the value of the individual material; example: net – agg1 is over by 200 lb, the CB-3 does not compensate agg2, but aims for agg2 target weight; net Cementitious – net scenario applies only to the cements
8	Enable an aggressive learning of the jog times for aggregates and cements for specific small amounts; once the plant is tuned, this should be turned off
9	The system has different modes of jogging of dry batch materials. This is a system wide setting and applies to all dry materials: Jogging Off - Does not jog; If the run is short or has a 'safety wt' (safety wt value is found in the freefall menu for each of the aggs and cements) in the system you will get the under tolerance and have to jog manually; this would be the same as setting all the 'Max Jogs' to 0 for all the materials, but this would be easier to set and change back; this mode is telling the system to job manually; Jogging On (Default) - Jogs and uses the 'Max Jogs' values to determine how many times it will jog; the 'Jog Only Weight' in the Scales menu determines when something should jog the whole way, on small loads when the material target weight value is under the 'Jog Only Weight', the material will be jogged the whole way (does not freefall); this is the current mode Jog Only On Small Loads– Uses the 'Jog/Small Batch Size' value (in cubic yards); this setting overrides the jog only weights and forces the system to jog the entire amount for all dry materials for loads equal to or smaller than the size set in 'Jog/Small Batch Size'; load sizes larger than the 'Jog/Small Batch Size' value will behave like the 'Jogging On' option; Manual Jog On Small Loads - Uses the 'Jog/Small Batch Size' value (in cubic yards); this setting overrides the 'Jog Only Weights' and forces the user to manually jog the entire amount for all dry materials for loads equal to or smaller than the size set in 'Jog/Small Batch Size'; this mode is just about the same as "manually batching", but the water and admixtures are still automatic; load sizes larger than the 'Jog/Small Batch Size' value will behave like the 'Jogging On' option
10	Configure a small batch size
11	For split-batching plants (multiple batches per load), it is faster to only jog on the last batch of the load, since the system corrects for over/under on each previous batch

Table 4-11. Batching Menu Descriptions

Item No.	Description
12	This is the water/cement ratio warning limit when creating a load. Set to a high number to disable
13	For new load creation, a default load size is selected and often is the maximum load size as configured in the system which allows operators to even out the load sizes to prevent the last load being a very small load; example: when unchecked, a 21 yard Job with 10 yard trucks would result in two 10-yard loads and one 1-yard load; when checked, the system would default the 1st load as 10 yards, and the 2nd and 3rd loads as 5.5 yards; operator can override these initial load quantities
14	Some regulatory jurisdictions do not allow batching while a manual panel is active/enabled; this option allows automatic batching regardless of whether the manual panel is enabled
15	Ensures the front/early water is completely loaded before the cement discharge to truck is started
16	Start the water at the beginning of the weigh-up cycle, do not use when weighing is started before truck is in position
17	Causes system to prompt the user to add more water at the end of the load; water manually added before clearing the message box, is reported on the load ticket
18	When checked, a repeat load icon/button is visible on each load line
19	When checked, allows for different trucks to be used while repeating the load
20	When checked, a small truck icon will appear on top of the Load app, used for creating a load without creating a jo/order first
21	Display and enable a **Preload Water** key on the batch menu
22	Skip the entire admix metering and discharge processes, when computer is to calculate and print the admix amounts, but amounts need to be metered and added manually or with another system
23	User is allowed to acknowledge a zero tolerance error and continue batching; otherwise the scale weight must return to within the zero tolerance
24	Pre-weigh the materials before a truck is in position, for systems forced to pause after the weigh-up stage and wait for user input before the discharge stage is started
25	Save settings
26	Exit the *Batching* menu

Table 4-11. Batching Menu Descriptions (Continued)

4.6.4   Printing
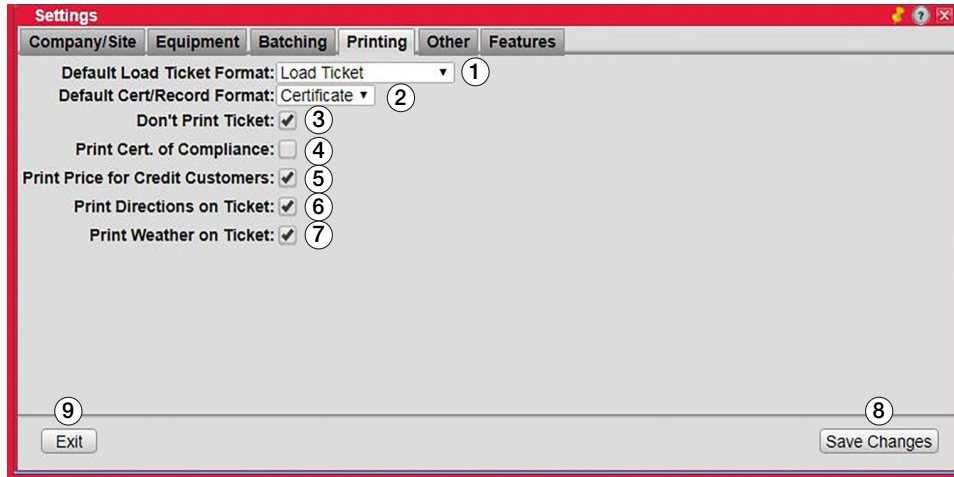
Figure 4-20. Print Menu

Item No.	Description
1	This is the default load ticket format; the format can be changed for individual Projects or Jobs
2	This is the default certificate/record format; the format can be changed for individual Projects or Jobs
3	Suspend automatic printing of the load ticket; the ticket is created in the database and can be printed manually
4	Control the automatic printing of the Certificate of Compliance at the end of batching a load; Certificate of Compliance (batch weights) is created for each load and may be printed from the **Tickets** application, See Section 4.2 on page 42
5	Print the prices for credit customers, default is to print the price for COD customers
6	Driving directions are printed on each load ticket, provided the driving directions are found using the **Map It** key and saved to the Job
7	Print current weather summary at the bottom of batch ticket
8	Save settings
9	Exit the **Printing** menu

Table 4-12. Print Settings

4.6.5 Other
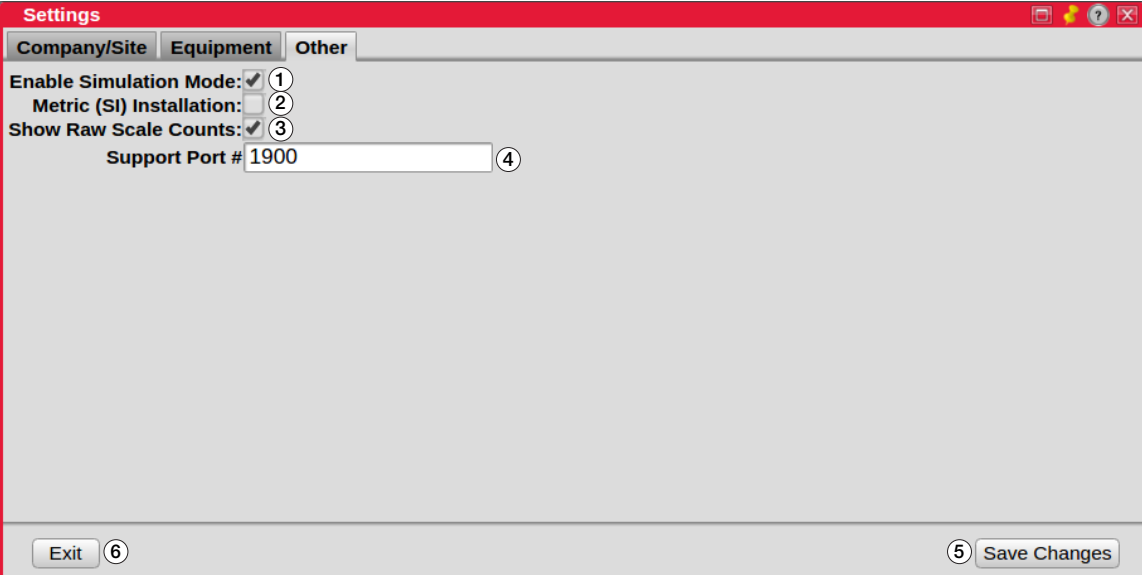
Figure 4-21. Other Menu

Item No.	Description
1	If checked, certain interlocks are not be enforced; this must be checked when running on a simulator ***NOTE: Do not use for a production installation.***
2	Displays as checked when unit of measure is in metric units
3	Show raw scale count
4	This is for reference only, do not change
5	Save settings
6	Exit the ***Other*** menu

Table 4-13. Other Settings

4.6.6 Features
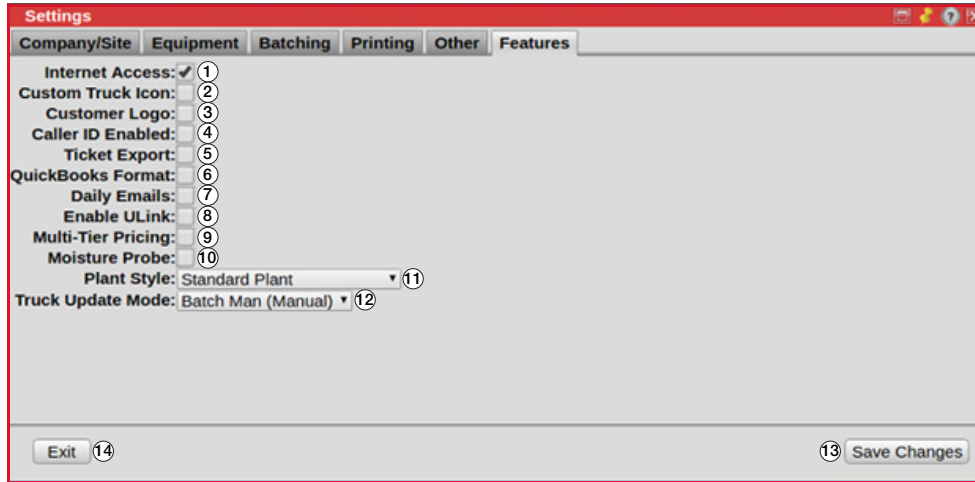
Figure 4-22. Features Menu

Item No.	Description
1	Some features require Internet access, check only when the computer is on a network with Internet access
2	Display a custom truck image instead of the default image, image must be provided to the system setup technician
3	Display the company logo instead of the Rice Lake logo, company logo image must be provided to the system setup technician
4	Future version
5	An export file of the daily loads is available, check if an export file should be emailed to the company contact
6	Cause the export file to use the QuickBooks.if file format
7	Create an email with a daily production report and loads/tickets export file attached
7	Enable ulink
9	Enable *Multi-Tier Pricing* for mixes and products; when enabled, each product can have a Contractor, Builder, FOB or COD price; when not enabled, each customer can have a per yard discount applied
10	Enable the *Moisture Probe* interface, the necessary hardware must be in place before enabling this option; disable if the probe fails
11	Indicate the style of plant, preconfigured at the factory, informational purposes only
12	The truck's status on the loads display is updated *NOTE: Only Manual is supported.*
13	Save settings
14	Exit the *Features* menu

Table 4-14. Features Menu Settings

RICE LAKE
WEIGHING SYSTEMS

4.7 Materials

Selecting *Materials* allows the user to view and edit materials in the database.

4.7.1 Aggregate
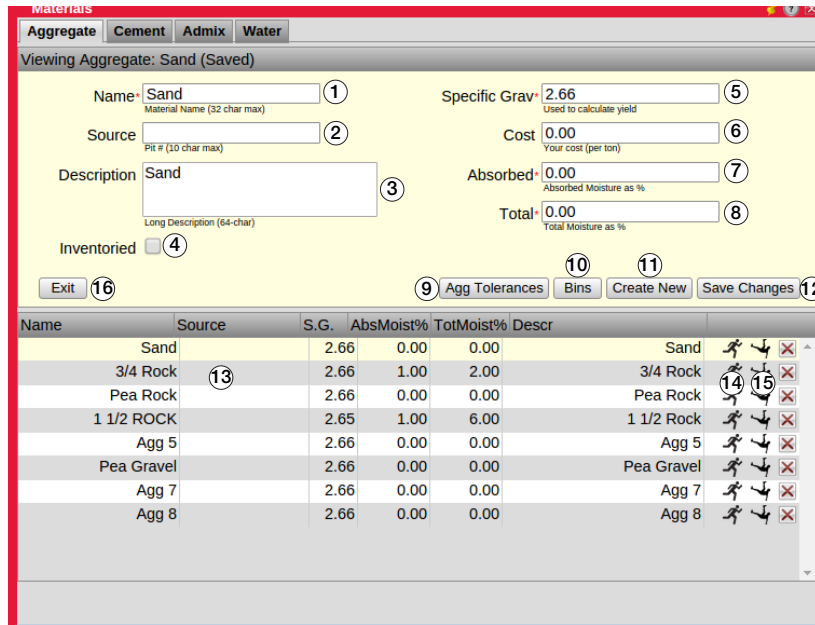
Figure 4-23. Aggregate Menu

Item No.	Description
1	Short name for this material (32-char max length), used on widgets and keys
2	Some states require the material source to be printed on the certificate, enter the Pit # here (nine-char max length)
3	Long description (63-char max length), used on some reports
4	Used to keep track of materials inventory
5	Specific gravity of material is unit-less and is the ratio of its density compared to water; water has a S.G. of 1.000; this value is critical to the yield calculations, for aggregates this should be the SSD S.G.
6	Cost of this material (per ton); used to calculate cost basis for mix designs
7	Lab measured value of moisture trapped in the aggregate which does not contribute to the water in the mix
8	Measured value (from a probe) of total moisture in this aggregate; free moisture used in the water contribution calculations is (total - absorbed = free)
9	Open the aggregate tolerance menu where values related to over and under tolerances can be edited
10	Open the **Bins** menu where values related to the aggregate bins and associated equipment can be edited
11	Create new clears the text boxes in this form and allows for the entry of a new material
12	Save settings
13	Display area for saved aggregate
14	Edit jog table for selected material, See Figure 4-25 on page 57
15	Edit freefall table for selected material, See Figure 4-26 on page 58
16	Exit the **Aggregate** settings menu

Table 4-15. Aggregate Settings

Bins Menu
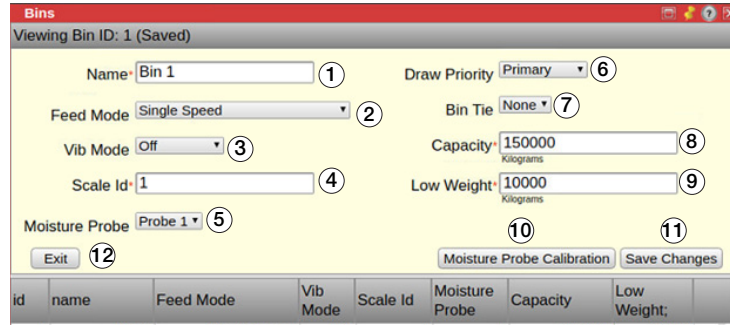
Figure 4-24. Bins Menu

Item No.	Description
1	Short name for this bin (15-char max length)
2	Select the type of feed gate the plant is equipped with; **Single Speed** is the default
3	Choose the desired mode to run the vibrator (if equipped); **No Flow** runs the vibrator only when the material stops flowing
4	Scale Id value
5	Moisture probe selection
6	Select the draw priority for this bin; **Primary** is the default; if the same material is in two different bins, set one as **Secondary** to draw from it when the primary bin is empty; set to **Disabled** to prevent this bin from being used
7	Equipment tie allows the same material to be assigned to two bins and then both bins are used simultaneously to deliver the material; the **Draw Priority** field determines which bin is considered the Fast/**Primary** and the Slow/**Secondary;** the other bin must be reciprocally tied back to this bin; select **None** to turn off the equipment tie; example: if bins 1 and 2 are tied together, bin 1 must be tied to bin 2 and bin 2 must be tied to bin 1
8	Enter the capacity of this bin
9	Enter the minimum weight remaining when it is time to refill this bin
10	Opens the Moisture Probe Calibration window
11	Save settings
12	Exit the **Bins** settings menu

Table 4-16. Bins Settings

Jog Settings
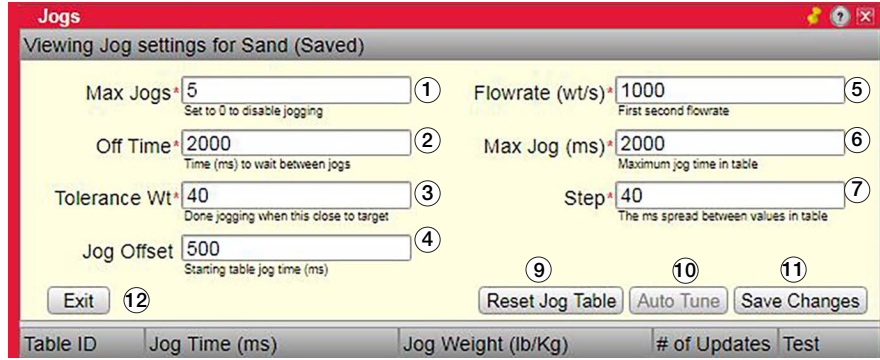
Figure 4-25. Jogs Settings

Item No.	Description
1	Maximum jogs, set to 0 to disable
2	Time between jogs (ms)
3	Weight at which jogging stops
4	Starting jog time (ms)
5	First second flowrate
6	Maximum jog time in table (ms)
7	Spread between values in table (ms)
8	Drop a test fog of exactly 100 ms; this opens the gate or run the auger and drop material; when clicking on the drop icon, the gate opens for the amount of time entered for the Jog Time; the Jog Time can be changed by clicking on the desired time and entering a new value; after the material has dropped into the scale, check the material weight fallen into the scale; the weight value associated with Jog Time can be entered into the Jog Weight column by clicking on the desired value to change, and entering a new value;
9	Reset jog table
10	Auto tune
11	Save settings
12	Exit *Jogs* settings menu

Table 4-17. Jog Settings

Freefall Settings

Figure 4-26. Freefall Settings Menu

Item No.	Description
1	Initial freefall value of entries in the table
2	% to correct by, set to 0 to disable learn
3	Lower bounds for corrected values
4	Upper bounds for corrected values
5	Enter additional weight added to freefall to not overbatch
6	Disables learning when within deadband value
7	Does not correct if flow is less then value entered
8	Weight spread between values in table
9	Maximum gross target weight
10	Reset freefall table
11	Auto Tune
12	Save settings
13	Exit *Freefall* settings menu

Table 4-18. Freefall Settings

4.7.2 Cement
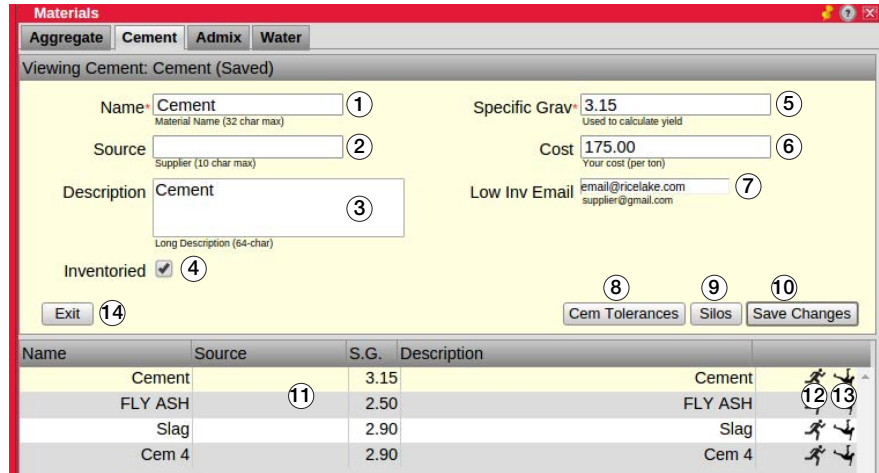
Figure 4-27. Cement Settings

Item No.	Description
1	Short name for this material (32-char max length), used on widgets and keys
2	Some states require the material source to be printed on the Certificate, enter the Pit # here (nine-char max length)
3	Long description (63-char max length), used on some reports
4	Used to keep track of materials inventory
5	Specific gravity is unit less and is the ratio of its density compared to water, water has a S.G. of 1.000; this value is critical to the yield calculations
6	Cost of this material (per ton); used to calculate cost basis for mix designs
7	Email address to send low inventory alert
8	Open the cement tolerance menu where values related to over and under tolerances can be edited
9	Open the **Silos** menu where values related to the cement bins and associated equipment can be edited
10	Save settings
11	Display area for saved cement
12	Edit jog table for selected material, See Figure 4-25 on page 57
13	Edit freefall table for selected material, See Figure 4-26 on page 58
14	Exit the **Cement** settings menu

Table 4-19. Cement Settings

Silos Menu
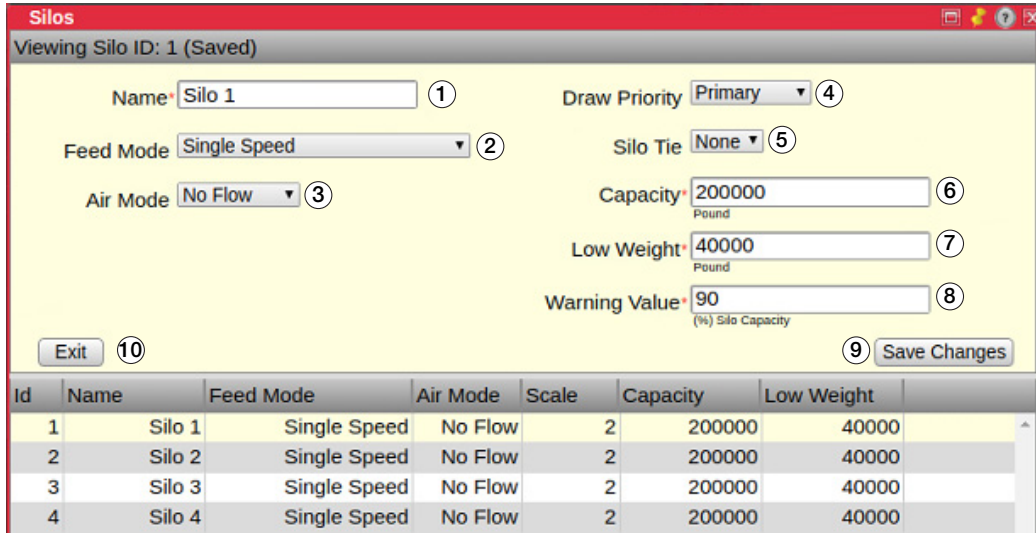
Figure 4-28. Silos Menu

Item No.	Description
1	Short name for this silo (15-char max length)
2	Select the type of feed gate the plant is equipped with; **Single Speed** is the default
3	Choose the desired mode to run the aeration (if equipped); **No Flow** runs the aerator only when the material stops flowing
4	Select the draw priority for this silo; **Primary** is the default; if the same material is in two different silos, set one as **Secondary** to draw from it when the primary silo is empty; set to **Disabled** to prevent this silo from being used
5	Equipment tie allows the same material to be assigned to two silos and then both silos are used simultaneously to deliver the material; the **Draw Priority** field determines which silo is considered the Fast/**Primary** and the Slow/**Secondary**; the other silo must be reciprocally tied back to this silo; select **None** to turn off the equipment tie; example: if silos 1 and 2 are tied together, silo 1 must be tied to silo 2 and silo 2 must be tied to silo 1
6	Enter the capacity of this silo
7	Enter the minimum weight remaining when it is time to refill this silo; a reminder email can be sent; for portable plants with optional filling silo this is the value at which the filling wilo will start to fill this silo
8	For portable plants only; if silo fill warning is enabled in settings, this is the percent of capacity where the silo's warning alarm will be triggered; if silo auto fill is enabled in settings this is the percent of capacity where the auto fill will stop
9	Save settings
10	Exit the **Silos** settings menu

Table 4-20. Silos Settings

4.7.3 Admix
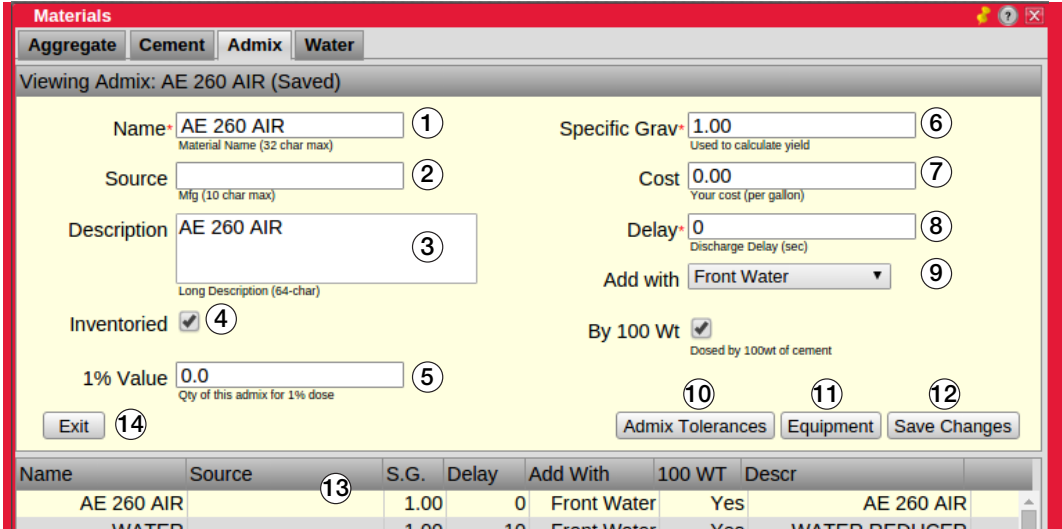
Figure 4-29. Admix Settings Menu

Item No.	Description
1	Short name for this material (32-char max length), used on widgets and keys
2	Some states require the material source to be printed on the Certificate, enter the Pit # here (9-char max length)
3	Long description (63-char max length), used on some reports
4	Use to keep track of materials inventory
5	Quantity of admix for 1% dose
6	Specific gravity is unit less and is the ratio of its density compared to water, water has a S.G. of 1.000; this value is critical to the yield calculations
7	Cost of this material (per gallon). Used to calculate cost basis for mix designs
8	Discharge delay in seconds
9	Dosed by 100 wt of cement
10	Open the admix tolerance menu where values related to over and under tolerances can be edited
11	Open the *Equipment* menu where values related to admixture bottles and direct feed equipment can be edited
12	Save settings
13	Display area for saved cement
14	Exit the *Admix* settings menu

Table 4-21. Admix Material Settings

Admix Equipment

Figure 4-30. Admix Equipment Menu

Item No.	Description
1	Short name for this equipment (15-char max length)
2	Check to use bottle or weigh hopper, uncheck to use direct feed
3	Check if hot 120 V signal means not empty
4	If metered, this is a pulse value
5	Time to wait for coast in seconds
6	Counts (ounces) per pulse
7	Seconds to blow out line
8	Material assigned to this equipment
9	Check to enable this equipment, uncheck to disable
10	Bulk storage capacity in gallons
11	Order in which to use material
12	Check if weighed admix, uncheck if not weighed; default is metered, not weighed
13	Which scale is used if the admix is weighed
14	Save settings
14	Exit the **Admix Equipment** settings menu

Table 4-22. Admix Equipment Menu Settings

4.7.4 Water
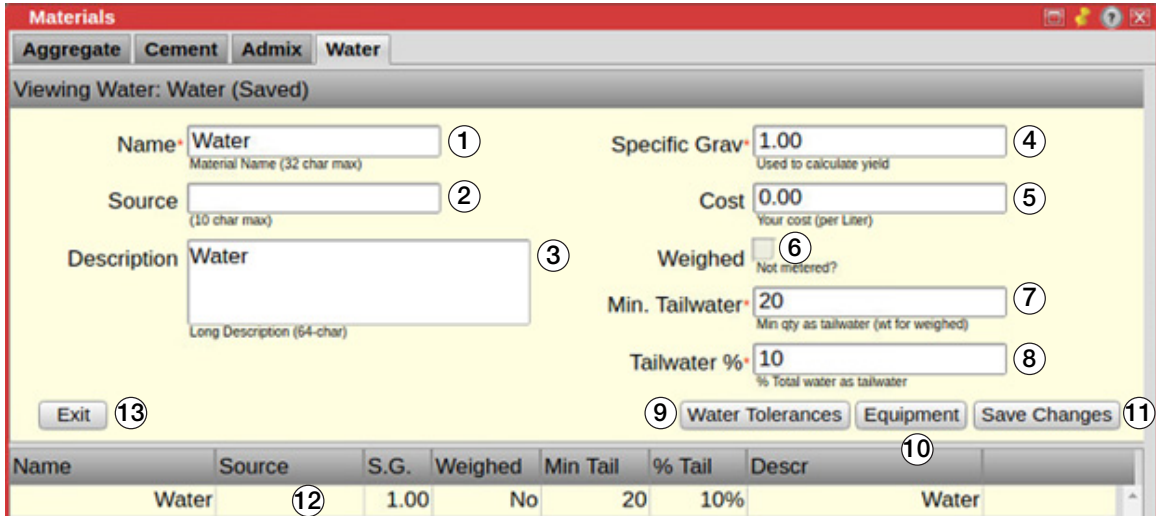
Figure 4-31. Water Settings Menu

Item No.	Description
1	Short name for this material (32-char max length), used on widgets and keys
2	Some states require the material source to be printed on the Certificate, enter the Pit # here (9-char max length)
3	Long description (63-char max length), used on some reports
4	Specific gravity is unit less and is the ratio of its density compared to water, water has a S.G. of 1.000; this value is critical to the yield calculations
5	Cost of this material (per gallon); used to calculate cost basis for mix designs
6	When weighed water is enabled, this box displays as checked
7	Minimum quantity as tailwater (wt for weighed)
8	Total water % as tailwater
9	Open the water tolerance menu where values related to over and under tolerances can be edited
10	Open the *Equipment* menu where values related to the water meters or weighed water equipment can be edited
11	Save settings
12	Display area for saved cement
13	Exit the *Water* settings menu

Table 4-23. Water Settings

4.7.4.1 Water Equipment

Figure 4-32. Water Equipment Menu

Item No.	Description
1	Short name for this equipment (15-char max length)
2	Check to use bottle or weigh hopper, uncheck to use direct feed
3	Check if hot 120 V signal means not empty
4	If metered, this is a pulse value
5	Time to wait for coast in seconds
6	Counts (gallons) per pulse
7	Seconds to blow out line
8	Material assigned to this equipment
9	Check to enable this equipment, uncheck to disable
10	Bulk storage capacity in gallons
11	Order in which to use material
12	Check if weighed water, uncheck if not weighed; default is metered, not weighed ***NOTE: Informational only. Checking does not change to weighed water.***
13	Which scale is used if the water is weighed
14	Save settings
14	Exit the ***Water Equipment*** settings menu

Table 4-24. Water Equipment Menu Settings

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4.8   Scales

Select a scale from the display list (29), edit settings as needed.

Figure 4-33. Scales Menu

NOTE: The scale menu is the same for both Scale 1 and Scale 2. Scale 1 is provided as an example.

Item No.	Description
1	Name of the scale
2	Maximum capacity
3	Maximum settle time in seconds
4	Weight at which vibrator is energized; if the scale is decumulative, the vibrator starts at the weight specified in Start Vib Wt to use the vibrator auxiliary settings, set the value to: 1= vibrator is off; 2= vibrator runs on a no flow scenario; the no flow condition is triggered when the flow is 40% or less than the value specified in the Target Rate text box; 3= vibrator runs continuously
5	Weight when gate goes WideFullOpen
6	The amount of weight to hold in the Agg weigh hopper until the Cement hopper is empty; this value MUST be larger than the WFO Wt; only applies to aggregate scale when Discharge Control Mode is set to 'Agg/Cem Automatic'
7	Time to keep discharge gates open
8	Weight considered close enough to 0
9	Rates smaller are a no-flow (lb/s)
10	Amounts less than this value is jogged
11	The amount of weight on slow speed
12	Using multiple SmartIO boards (1-4)
13	Serial port receiving the weight stream
14	Baud rate (default is 9600)
15	Streamed weight string end token
16	Streamed weight format
17	Type of material weighed on this scale
18	Unused
19	Order to discharge
20	Desired discharge rate (lb/s)
21	Discharge after this scale
22	Weight remaining of the selected scale when discharge starts (**Discharge Mode** must be set to **Scale Weight Remaining**)
23	Percent scale of the selected remaining when discharge starts (**Discharge Mode** must be set to **Scale Weight Remaining**)
24	Discharge delay (**Discharge Mode** must be set to **Time Delay Only**)

Table 4-25. Scale Settings

Item No.	Description
25	Flash Comm Settings, could disrupt communication with the indicator; requires power cycle after the new settings are written to FLASH on the Smart IO board; a verification code is required
26	Edit the discharge *Gates*
27	Display area for saved cement
28	Save settings
29	Exit the *Scales* settings menu

Table 4-25. Scale Settings (Continued)

4.8.1   Gates Menu
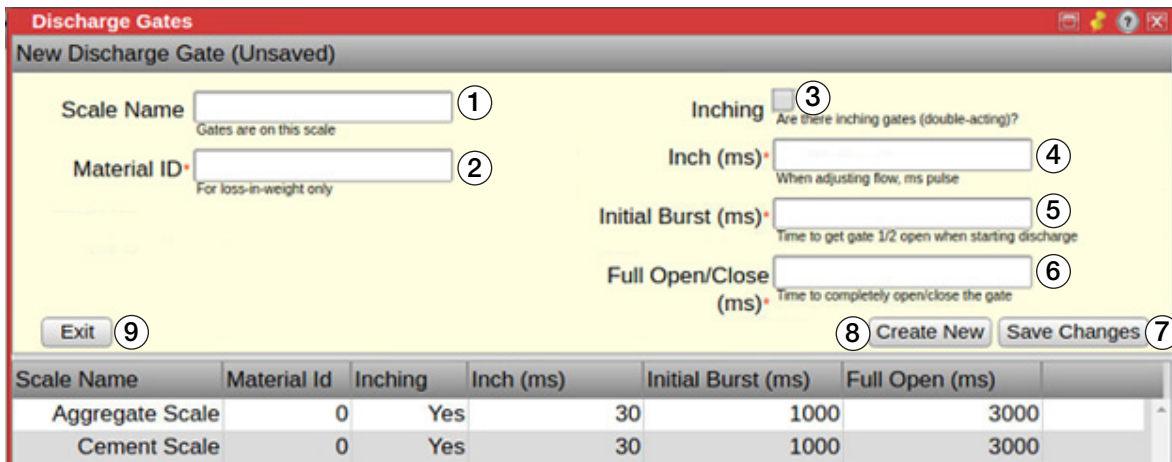
Figure 4-34. Gates Menu

Item No.	Description
1	Name of this scale
2	For loss-in-weight system only
3	Check if inching gates are being used
4	Inching time in milliseconds
5	Initial burst opening of the gate in milliseconds (time in which to get the gate half open)
6	Full open and close of the gate in milliseconds (time in which to get the gate fully open)
7	Save settings
8	Clears the *Gates Menu*; non functioning in a standard two-scale set up
9	Exit the *Gates* settings menu

Table 4-26. Gates Menu Settings

4.8.2 Scale Discharge Sequence Scenarios

Typical Scenario

In this discharge sequence scenario the aggregate scale starts to discharge after the frontwater is complete. The cement scale starts to discharge when 80% of the aggregate scale is remaining. The aggregate scale discharges at a rate of 200 lb/sec and the cement scale discharges at a rate of 80 lb/sec. With **Agg/Cem Automatic** selected in the batching settings, the computer adjusts these flow rates allowing the cement to always finish before the aggregate. To have the aggregate scale discharge after weigh up, uncheck the water before cem discharge box in the batching settings.

Figure 4-35. Scale Settings - Typical Scenario

Slurry Scenario

In this scenario the cement scale discharges when the frontwater is done and the aggregate scale starts to discharge when there is 250 lb left in the cement scale. For this scenario the **Discharge Control Mode** must be set to **User Controlled** in the batching settings. The **Water Before Cement DCHG** (discharge) box is unchecked because it is already specified in **Scales**; the cement scale discharges when the frontwater is done. With the **Discharge Control Mode** set to **User Controlled**, the computer does not automatically adjust the discharge flow rates and it maintains the value entered for the flow rate.

Figure 4-36. Scale Settings - Slurry Scenario

Water Percent Remaining Scenario

In this scenario the intention is to start the aggregate scale discharge when the frontwater is 50% complete and then the cement scale to start discharge when the aggregate scale is 80% complete. However, this scenario does not work with the settings provided because the *Water Before Cement DCHG* (discharge) box is checked in the batching settings. With this box checked, the aggregate scale does not discharge until the frontwater is done. To start the aggregate scale discharge when the frontwater is 50% complete, uncheck the *Water Before Cement DCHG* box in the batching settings.

Figure 4-37. Scale Settings - Water Percent Remaining Scenario

4.9   System Admin

See Section 6.0 on page 75 for detailed information on the *System Administration Utilities* menu.

5.0   Calibration

The 920i can be calibrated using the front panel, serial commands or iRev. Each method consists of the following steps:

- Zero calibration
- Entering the test weight value
- Span calibration
- Optional five-point linearization
- Optional rezero calibration for test weights using hooks or chains

The following sections describe the calibration procedure for each of the calibration methods.

5.1   Gravity Compensation

Gravity compensation for latitude and elevation is available for the 920i. To calibrate with gravity compensation, the *LOCALE* parameter under the *FEATURE* menu must be set *ON*, and the *LATUDE* (latitude) and *ELEVAT* (elevation, in meters) parameters set before calibrating the indicator.

If the indicator is later installed at a different location, gravity compensation can be applied to a pre-calibrated indicator by adjusting the *LATUDE* and *ELEVAT* parameters.

> 📝 *NOTE: See 920i Installation Manual (PN 67887) for more information regarding gravity compensation.*

5.2   Front Panel Calibration

The *CALIBR* menu (under the *SCALES* menu) is used to calibrate the 920i.
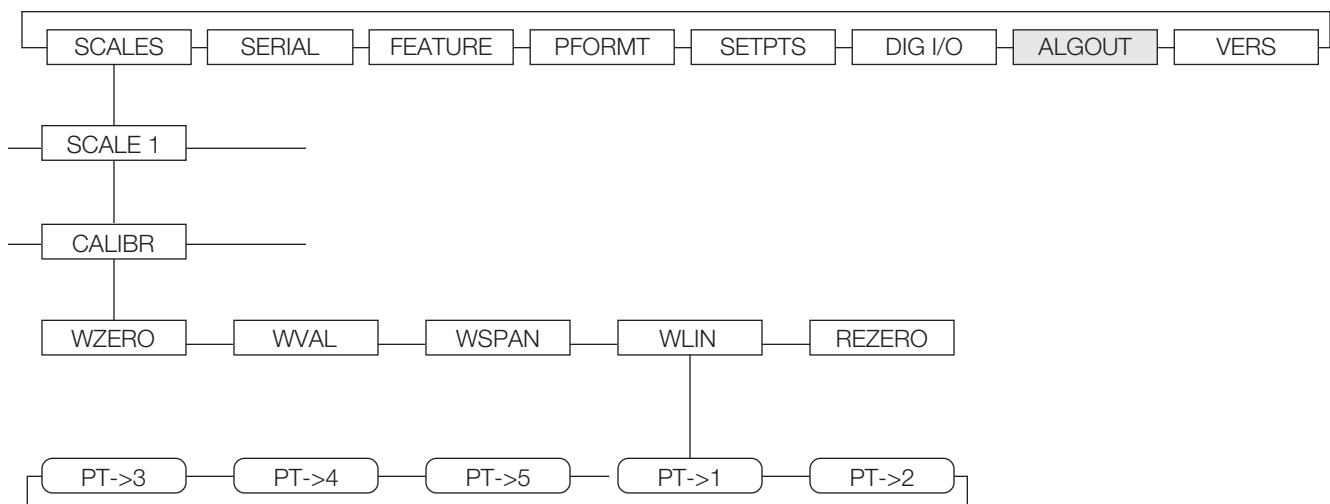
Figure 5-1. Calibration Sub menu

The zero, span, and linear calibration point displays provide a set of softkeys used specifically for calibration procedures.

Softkey	Description
Default	Restores the value to its default
+/–	Toggles to allow entry of negative or positive values
Calibrate	Performs calibration for the selected point
Millivolts/Counts	Toggles between display of captured A/D counts and captured millivolts values; this allows entry of calibration values in mV or counts
Restore	Restores the value to the previously saved value

Table 5-1. Calibration Softkeys

To calibrate the indicator using the front panel:

1. Place the indicator in configuration mode (display reads *Scale Configuration*) and remove all weight from the scale platform. If the test weights require hooks or chains, place the hooks or chains on the scale for zero calibration.

2. Select *SCALES* and press ▽ .

3. Select the scale to be calibrated and press ▽ . *GRADS* displays.

4. Press ◁ to highlight *CALIBR*.

5. Press ▽ . *WZERO* displays.

6. Remove all weight from the scale and press ▽ . The current *WZERO* value displays.

7. Press the **Calibrate** softkey to calibrate zero. When complete, the new A/D count for the zero calibration displays.

8. Press (ENTER) to save the zero calibration value. *WVAL* displays.

9. Press ▽ the stored calibration weight value displays.

10. Use the numeric keypad to enter the actual value of the calibration test weights.

11. Press (ENTER) to save the value. *WSPAN* displays.

12. Place test weights on scale.

13. Press ▽ . The current *WSPAN* value displays.

14. Press the **Calibrate** softkey to calibrate span. When complete, the new A/D count for the span calibration displays.

15. Press (ENTER) to save the span calibration value. *WLIN* displays. Linearization is optional, see Section 5.2.1 to perform linearization. If linearization values have previously been entered, these values are reset to zero during calibration.

> 📝 NOTE: See *Section 5.2.2 on page 71 to use the optional Rezero function.*

16. Press △ to return to the *SCALES* menu or press the **Save and Exit** softkey to exit configuration mode.

5.2.1 Five-Point Linearization

Five-point linearization provides increased scale accuracy by calibrating the indicator at up to five additional points between the zero and span calibrations.

> 📝 NOTE: The rezero function cannot be used with five-point linear calibration.

1. With *WLIN* displayed, press ▽ . The first linearization point, *POINT 1* displays.

2. Press ▽ to display the weight value prompt (*WGT 1*).

3. Press ▽ to display the weight value.

4. Place test weights on the scale then use the numeric keypad to enter the actual test weight value.

5. Press (ENTER) to save the value. *CAL 1* displays.

6. Press ▽ to display the current calibration value.

7. Press **Calibrate** softkey to calibrate the linearization point. When complete, A/D count for linear calibration displays.

8. Press (ENTER) to save the calibration value. *POINT 2* displays.

9. Repeat for up to five linearization points.

10. Press △ to exit the linearization parameters and return to *WLIN*.

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5.2.2   Rezero Function – Optional

The optional rezero function is used to remove a calibration offset when hooks or chains are used to hang the test weights.

- If no other apparatus was used to hang the test weights during calibration, remove the test weights and press ⬆ to return to the *CALIBR* sub-menu
- If hooks or chains were used during calibration, remove these and the test weights from the scale

With all weight removed:

1. Navigate to the *REZERO* parameter.

2. Press ⬇ to display the current zero value.

3. Press the softkey to adjust the zero and span calibration values.

4. Press (ENTER) or ⬆ to return to the *CALIBR* sub-menu.

5.3   Serial Command Calibration

To calibrate the indicator using serial commands, the indicator serial port must be connected to a terminal or computer, See for serial port pin assignments.

Once the indicator is connected to the sending device, do the following:

1. Place the indicator in configuration mode and remove all weight from the scale platform. If the test weights require hooks or chains, place the hooks or chains on the scale for zero calibration.

2. Send the SC.WZERO#**n** serial command (where **n** is the number of the scale) to calibrate zero.

3. Place test weights on the scale and use the SC.WVAL command to enter the test weight value in the following format:

   SC.WVAL#n=**vvvvv**<CR>

4. Send the SC.WSPAN#**n** serial command to calibrate span.

5. Up to five linearization points can be calibrated between the zero and span calibration values. Use the following commands to set and calibrate a single linearization point:

   SC.WLIN#n.V1=**vvvvv**<CR>

   SC.WLIN#n.C1<CR>

   The SC.WLIN#**n**.V1 command sets the test weight value (**vvvvv**) for linearization point 1. The SC.WLIN#**n**.C1 command calibrates the point. Repeat using the SC.WLIN#**n**.V**x** and SC.WLIN#**n**.C**x** commands as required for additional linearization points.

6. To remove an offset value, clear all weight from the scale, including hooks or chains used to hang test weights then send the SC.REZERO#**n** serial command.

7. Send the KSAVE serial command to save the calibration changes; send KEXIT to exit configuration mode.

5.4 iRev Calibration

The iRev Calibration Wizard provides step-by-step scale calibration. With the 920i connected to the PC, select the Calibration Wizard from the Tools menu on the iRev Scales display then follow the steps listed below to calibrate the scale. See for a general overview of the iRev utility.

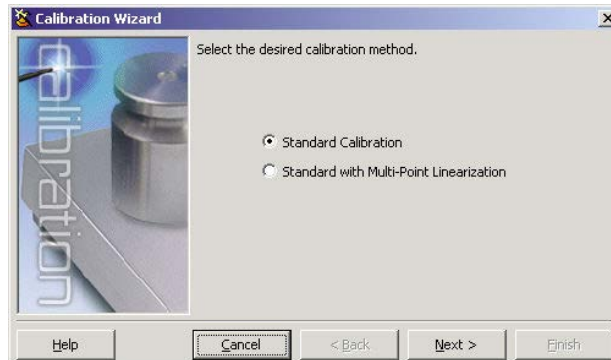1. Select the option desired from the calibration wizard to perform a calibration. Select **Next**.

Figure 5-2. iRev Calibration Wizard

2. Select the scale to calibrate. Select **Next**.

Figure 5-3. iRev Scale Selection Display

3. Enter the test weight used to calibrate the scale. If chains or hooks are used to hold the weights, check the box below the test weight value entry. This adds a rezero step to the calibration sequence. Select **Next**.
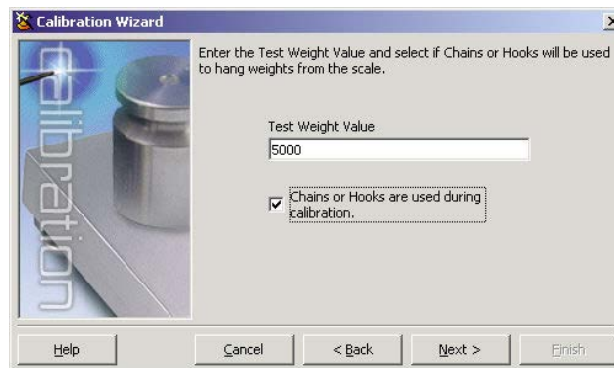
Figure 5-4. iRev Test Weight Value Display

4. Remove all weights from the scale. If chains or hooks are used, place them on the scale.

5. Select **Calibrate Zero** to perform the zero calibration. A message box displays when the process is complete.
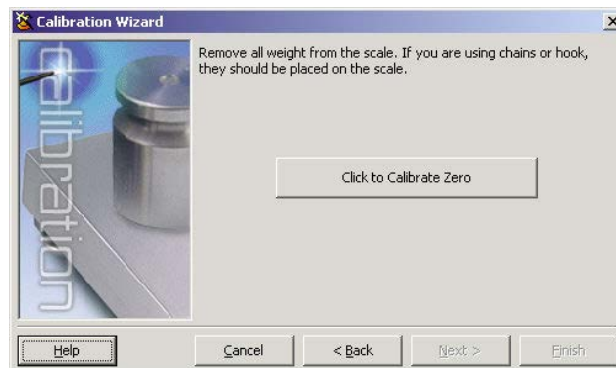
Figure 5-5. iRev Zero Calibration Display

6. Apply the test weights to the scale. Select **Calibrate Span** to perform the span calibration. A message box displays when the process is complete.

Figure 5-6. iRev Span Calibration Display

7. If the option for chains or hooks was selected in Step 3 on page 72, **Click to Re-Zero** displays. Remove all weights from the scale, including chains or hooks.

8. Select **Click to Re-Zero** to calibrate the zero offset.

Figure 5-7. iRev Rezero Display

9. When performing a multi-point linear calibration, up to five other calibration weight values can be entered on the display in Figure 5-8. The weights must be in ascending order and must not include zero or the span weight. Enter the weight values and select **Go** to calibrate each point.
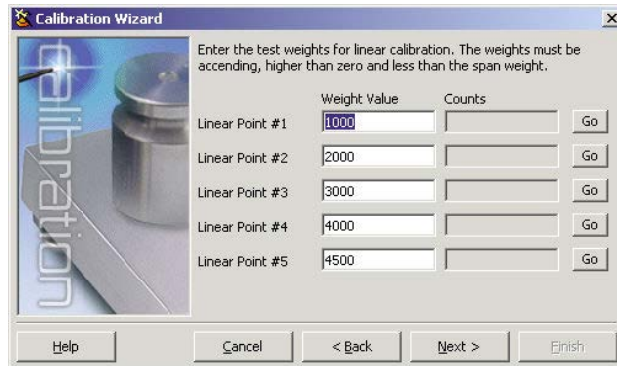
Figure 5-8. iRev Linear Calibration Display

10. Review the new calibration values then select **Finish** to close the Calibration Wizard.

NOTE: To restore the current calibration values, select Cancel.

Figure 5-9. iRev Calibration Values Display

6.0   System Administration Utilities

The System Administration Utilities is used to access additional functions relating to the system. This section supplies information for each area of this menu. To import CB-2 data, select Import CB-2 Data . A series of pop-up warnings walk through the import procedure.
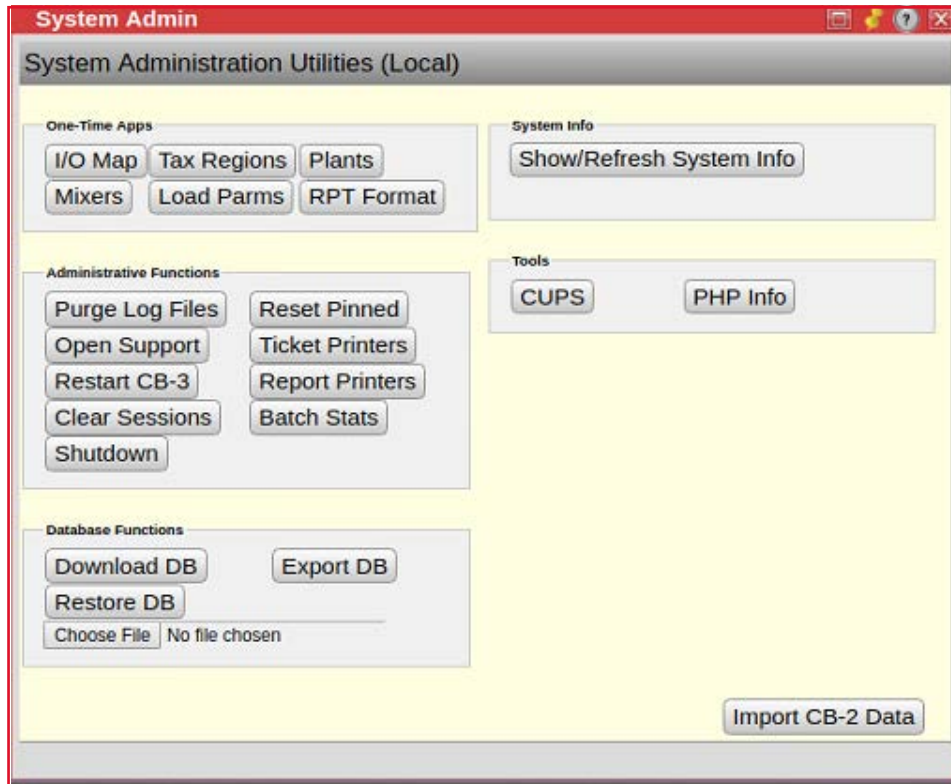
Figure 6-1. System Admin Menu

6.1   One-Time Applications

One-Time Applications allow for the setup of I/O Mapping, Tax Regions, Plants, Mixers, Load Parameters and Report Format.

6.1.1   I/O Map

IMPORTANT: Changing the I/O mapping could have serious consequences and result in unexpected equipment action. Only trained support personnel should use this function.

Select the output from the accumulated list to view/edit/print a digital I/O assignment related to plant functions.
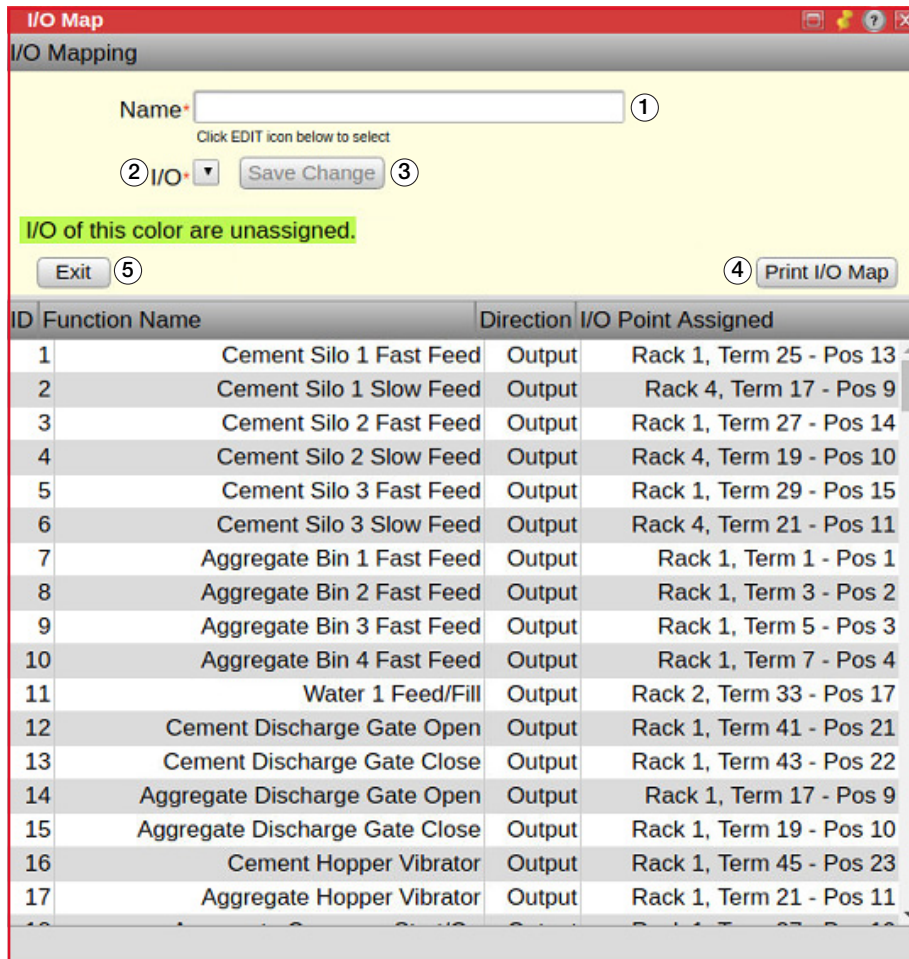
Figure 6-2. I/O Map Menu

NOTE: I/O Mapping cannot be used during remote sessions.

Item No.	Description
1	Function name for current output
2	Select I/O from the drop-down list
3	Save settings
4	Click to print the I/O map
5	Exit *I/O Map* menu

Table 6-1. I/O Map Menu Settings

6.1.2 Tax Regions

Tax regions are determined by a delivery address. Select to view/edit/create tax regions by state or county and set their individual tax rate percentages.

Figure 6-3. Tax Region Menu

Item No.	Description
1	Enter a two-letter state abbreviation or the county name
2	The name in the accounting software importing the export file
3	Abbreviation is exported as an additional field, for importing into accounting software, when this region is delivered to (10 characters or less)
4	Check to assign default tax region loaded for new orders, there can only be one default tax region
5	The system can apply three levels of tax, usually State, County, and Local:
6	• Tax rate 1 is usually the state tax entered as a decimal
7	• Tax rate 2 is usually the county tax entered as a decimal
	• Tax rate 3 is usually the local/city tax entered as a decimal
8	Saves settings
9	Create a new tax region
10	Creates a copy of the selected tax region with a unique ID and the text (copy) appended to the description
11	Exit **Tax Region** menu

Table 6-2. Tax Region Settings

6.1.3 Plants

Select to edit plant numbers and addresses. The mapping tool uses this address as the starting locations when determining travel time and driving directions.
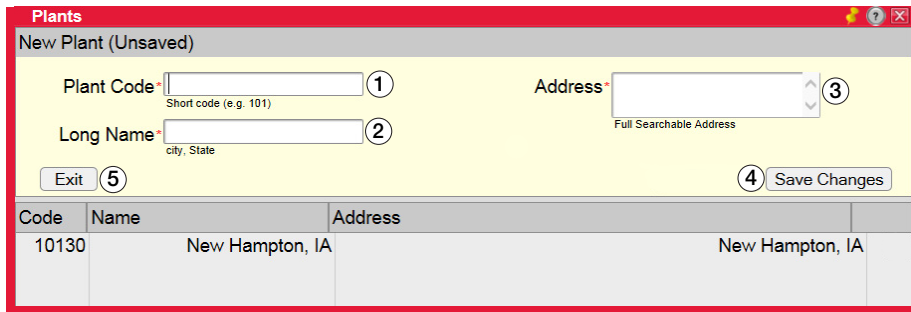
Figure 6-4. Plants Menu

Item No.	Description
1	Plant code
2	Plant city and state
3	Plant address
4	Save settings
5	Create a new plant
6	Exit *Plants* menu

Table 6-3. Plant Menu Settings

6.1.4 Mixers

Only refer to the information in this section if mixer is enabled.

Select to view/edit the mixer settings for a wet-batch or pre-cast plant.

Figure 6-5. Mixers Menu

Item No.	Description
1	Name identifying the mixer
2	Inching Gate
3	Latching Start
4	Auto Discharge
5	Discharge time, not including full open in seconds
6	Wide open time at the end of the mixer discharge in seconds
7	Holding hopper discharge time in seconds
8	Default mix time in seconds
9	Nitrogen Cool
10	Identifier of the A/D input, select from drop-down list
11	Identifier of the A/D input, select from drop-down list
12	Identifier of the A/D input, select from drop-down list
13	Discharge gate limit time, select from drop-down list
14	Holding hopper
15	Skip hoist
16	Saves settings
17	Exit **Mixers** menu

Table 6-4. Mixers Menu Settings

6.1.5 Hot Keys

Enter the Hot Keys menu to add/view/edit the Hot Keys that appear within the Batcher application (Batcher will only displays up to two Hot Keys.)
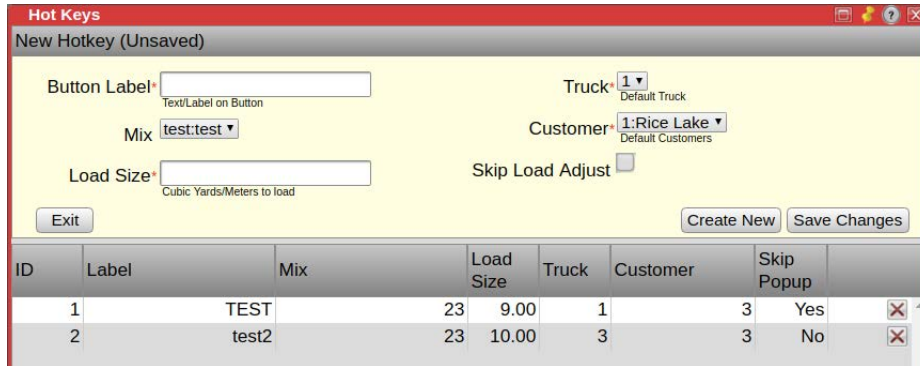
Figure 6-6. Hot Keys Menu

6.1.6 Load Params

Select to edit load scheduling times. Determine the load start times and the estimated time on each job. Default batching time, unloading and washout times are also set here.
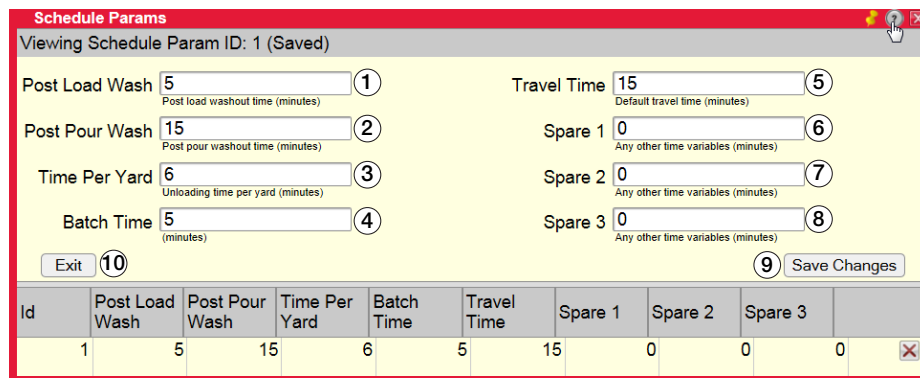
Figure 6-7. Schedule Params Menu

Item No.	Description
1	Post load washout time in minutes
2	Post pour washout time in minutes
3	Unloading time per yard in minutes
4	Batch time in minutes
5	Default travel time in minutes
6	Batch time in minutes
7	Default travel time in minutes
8	Other time variables in minutes
9	Saves settings
10	Exit *Schedule Params* menu

Table 6-5. Load Scheduling Menu Settings

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6.1.7 Reports

Select to set up report formats.
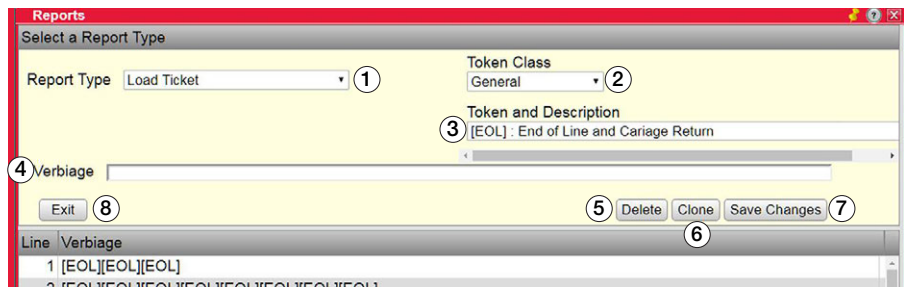
Figure 6-8. Reports Menu

Item No.	Description
1	Select report type from drop-down list
2	Select the token class
3	Select the token
4	Tokens are added, taken out or moved to format the ticket
5	Deletes report
6	Makes a copy of the report
7	Save settings
8	Exit **Reports** menu

Table 6-6. Reports Menu Setup

6.1.8 Weather Station

Click here to change the weather station (four-letter abbreviation) which displays the current temperature and weather information.
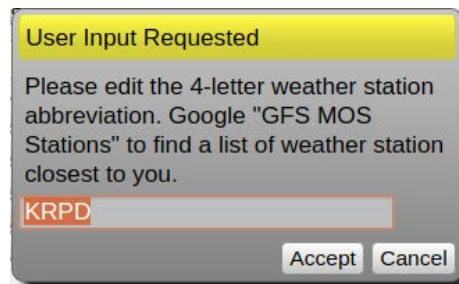
Figure 6-9. Weather Station Information

6.2   Administrative Functions

Administrative functions allow the setup of printer and the ability to clear files and sessions. It is also a link to support.

6.2.1   Purge Log Files

Purge Log Files is used to truncate the log files and should not be necessary unless disk storage space is running low. Select Yes to purge the log files. Select No to close the pop-up without purging log files.
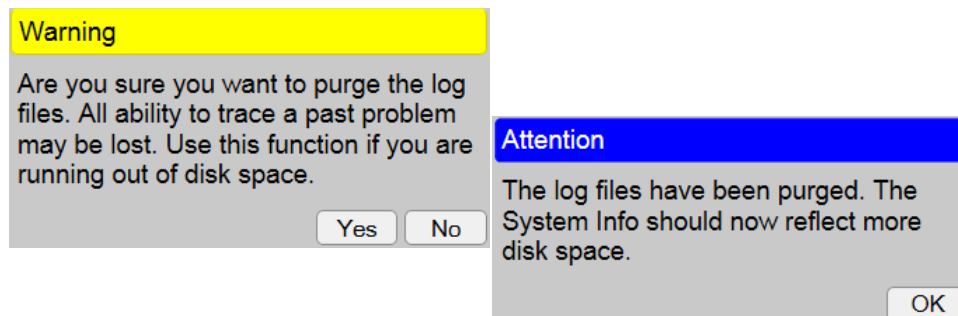
Figure 6-10. Purge Log File Pop-ups

> **IMPORTANT: All ability to trace past issues may be lost after purging file logs.**

6.2.2   Open Support

Open Support opens a support tunnel and allows the user to send an email to technical support. Technical support personnel are then able to access to the server for troubleshooting and software upgrade. Select Yes to open the support tunnel. Select No to close the pop-up without opening the support tunnel.
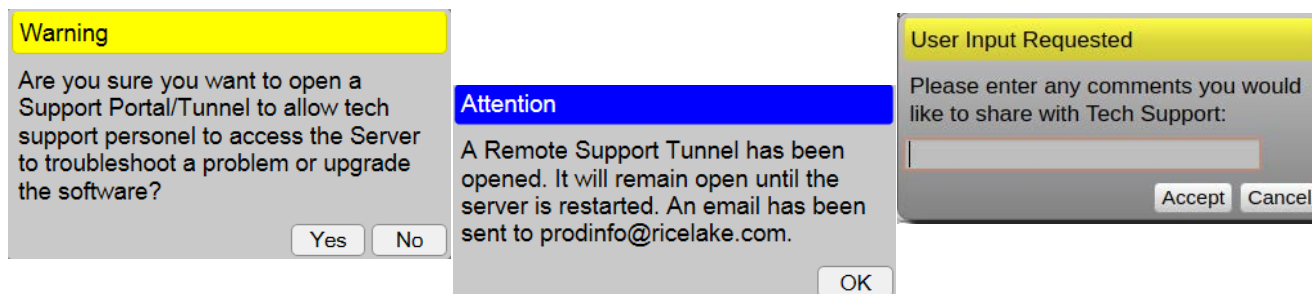
Figure 6-11. Open Support Pop-ups

6.2.3   Restart *CB-3*

Restart CB-3 causes the Concrete CB-3 suite of programs (including this one) to restart. Select Yes to close the session. It then must reload or the application can be reopened. Select No to close the pop-up without restarting.
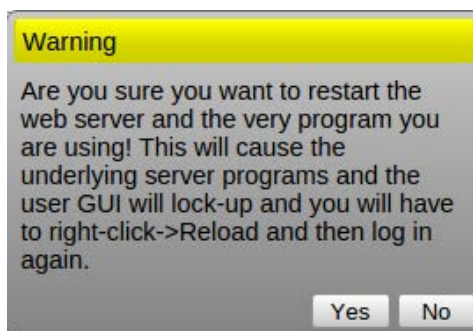
Figure 6-12. Restart CB-3 Pop-up

6.2.4 Clear Sessions

Clear Sessions clears all session applications. If an error pop-up displays while opening a specific application, select [Yes] to reset the session application counts. Select [No] to close the pop-up without closing the session.
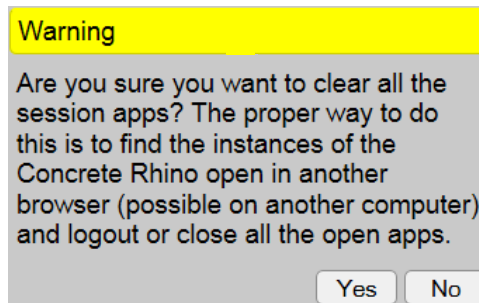
Figure 6-13. Clear Sessions Pop-up

6.2.5 Shutdown

Used only in portable CB-3 units. Shuts down the batch computer.

6.2.6 Reset Pinned

Reset Pinned resets the docking (pinned) location of all application windows. Select [Yes] to reset the docking location of all application windows. Select [No] to close the pop-up without resetting the docking.
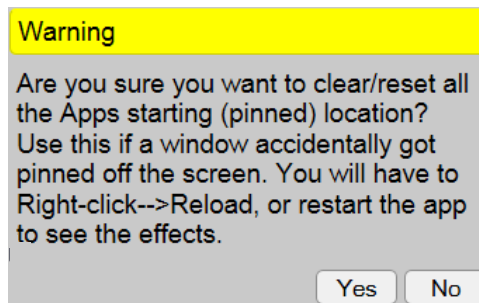
Figure 6-14. Reset Pinned Pop-up

6.2.7   Batch Stats

Allows for viewing batch statistics, such as targets, actuals, percent difference, number of freefalls and number of jogs.
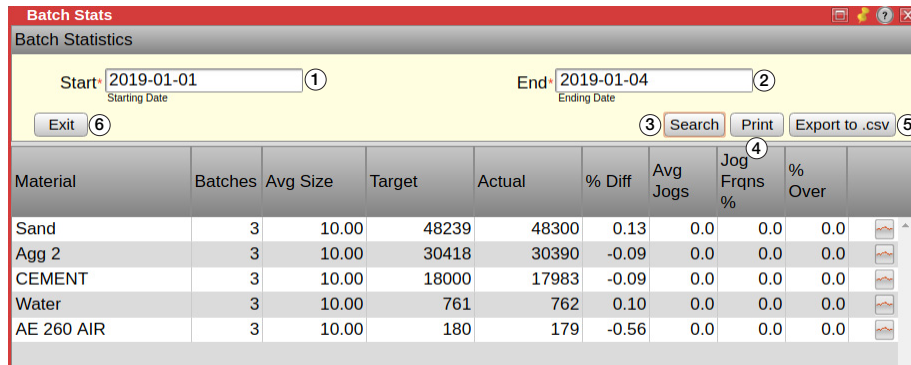
Figure 6-15. Batch Stats Menu

Item No.	Description
1	Enter starting date
2	Enter ending date
3	Search batch stats
4	Feature currently N/A; click to print a report
5	Click to export (as a tab delimited .csv file) batch statistics for all loads within the selected date range; will allow entering an email address to email the export
6	Exit **Batch Stats** menu

Table 6-7. Batch Stats Setup

6.2.8 Report and Ticket Printers

A printer can be added to the on-board computer of the CB-3. The printer should automatically install; if not, it may be necessary to find a Linux driver for the printer.

To view a list of compatible printers or to see what driver may be needed see: http://www.openprinting.org/printers

📝 *NOTE: HP printers are strongly recommended.*

1. Log into the on-board computer under admin.

2. Connect the printer to the computer via a USB cable.

3. Select 🖨 to the left side of the display to view the printer which was added or select 🔍 to type in printer and then select the printer icon. The printer should be displayed; if not, select **Show/Refresh System Info**.
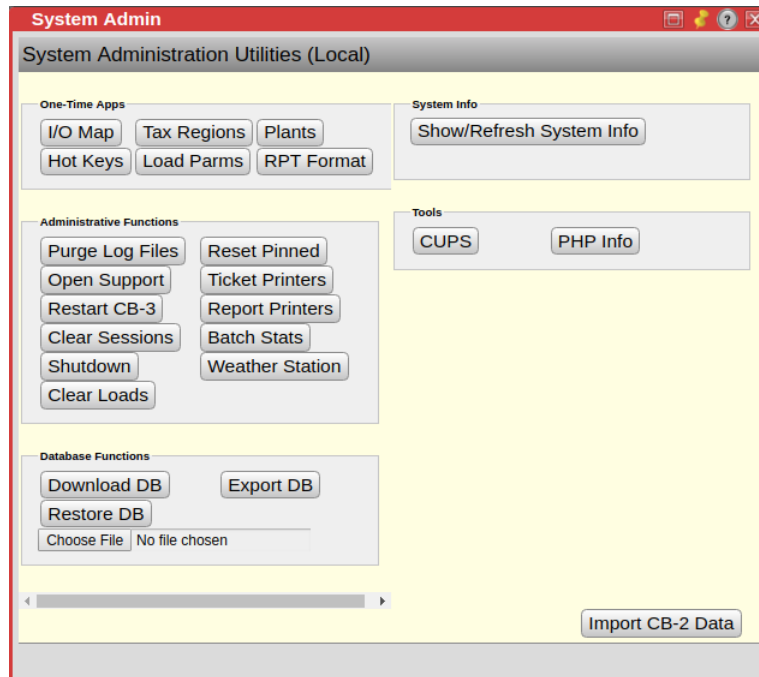
Figure 6-16. Printers Menu

4. Right click on the printer and ensure *Enabled* and *Shared* are checked and then select **Set as Default**. A green check mark displays on the printer.
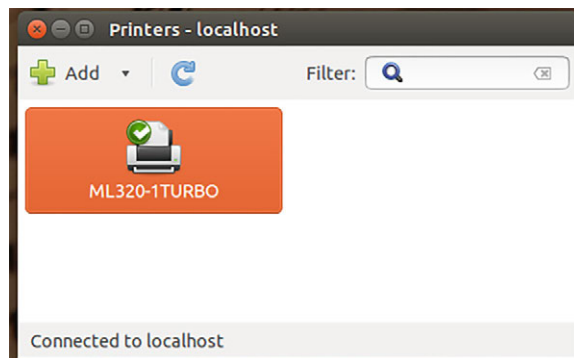
Figure 6-17. Printer Set as Default

5. Log into the CB-3 program.

6. Select the *System Admin* menu.

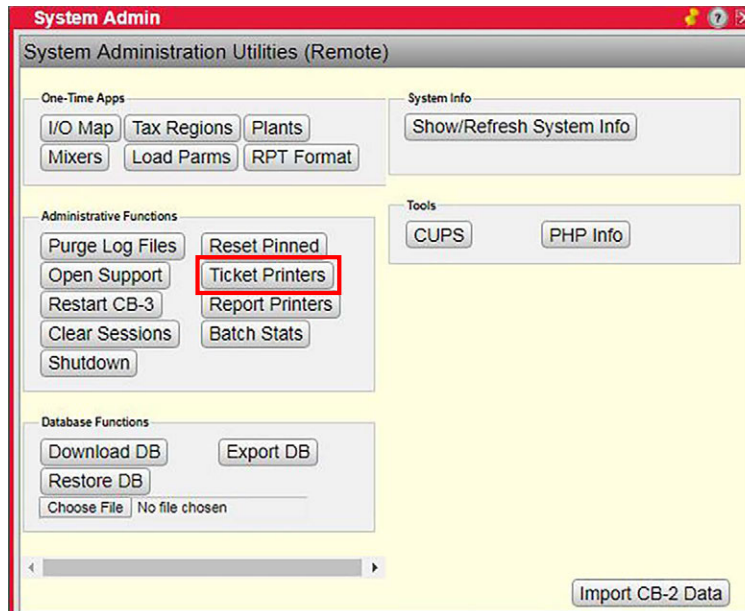7.   Select Ticket Printers .

Figure 6-18. System Admin Menu

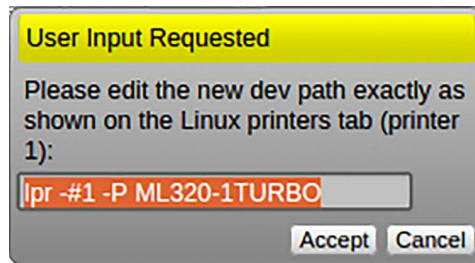8.   A pop-up displays for input of printer name.

Figure 6-19. User Input Pop-up Menu

9.   Ensure the name listed in the pop-up menu matches the printer name. After the **lpr - #1-P** command, there is a space, and the text must match the name of the printer in the printers menu.
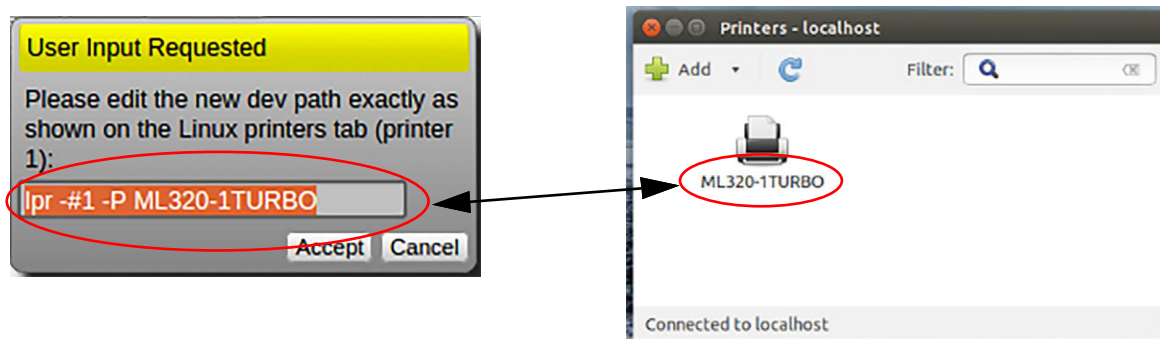

Figure 6-20. Printer Name Match

IMPORTANT: The name of the printer on the computer and the name of the printer in the CB-3 program must match exactly or the printer does not work with the CB-3 program.

10. If the name of the printer must be changed in the CB-3 program, click inside the printer text box. Use arrows on the keyboard to move the cursor within the text. The right and down arrows move the cursor to the end of the text. Change the name within the text box to match the name on the computer printers menu. Ensure there is one space after ***lpr - #1-P*** as in Figure 6-20 on page 86.

11. Select Accept . A pop-up for printer 2 displays. The printer name can also be changed here, but it is not necessary.

12. Select Accept . A pop-up with the name of the entered printer displays.

Attention

You entered: lpr -#1 -P ML320-1TURBO

OK
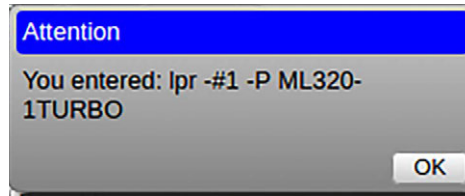
Figure 6-21. Entered Printer Name

13. Select OK .
14. Select Report Printers in the ***System Admin*** menu.
15. Repeat Step 9 on page 86 to Step 14 for the report printer.
16. Exit the ***System Admin*** menu.
17. To automatically print a ticket and/or certificate see the ***Printing*** tab in the ***Settings*** menu, See Section 4.6.4 on page 52.
18. Log out of the CB-3 program. Log out of the Admin user on the computer and log in as Batch user or reboot the computer to return the Batch user log in.

6.3   Database Functions

Allows databases to be downloaded, exported and restored. The CB-3 periodically saves the database to the hard drive. It is recommended to periodically save the database to another platform, such as a flash drive.

6.3.1   Download DB

Download DB saves a local copy of the database. Once a local copy is saved it can be placed on a flash drive. Select [Yes] to download a copy of the database. Enter the path for the database to be saved and select [Accept]. Select [No] to close the pop-up without saving a copy of the database.
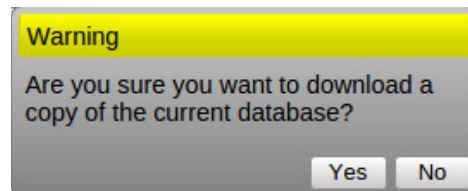
Figure 6-22. Database Download Pop-up

NOTE: A verification code is required to download the file when accessing through a remote computer.

6.3.2   Restore DB

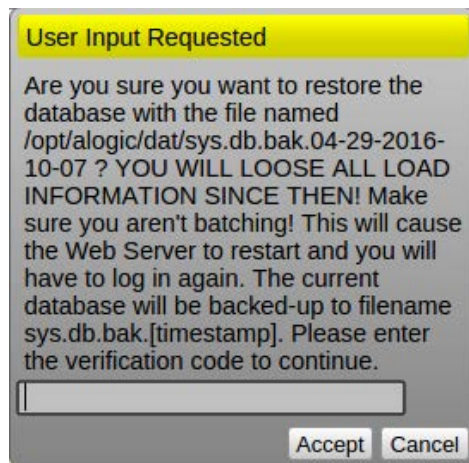Restore DB replaces the current database with a saved version of a database.

Figure 6-23. Restore Database

1. Select [Choose File] and navigate to the saved database file.
2. Select [Restore DB].
3. Enter the verification code.
4. Select [Accept] to restore the file.

6.3.3 Export DB

Export DB exports the database to a readable SQL file and can save it to a flash drive for use on a different PC. It may take some time to export depending on the size of the database. Select Yes to export the database. A verification code is required to export the file. Select No to close the pop-up without exporting the database.
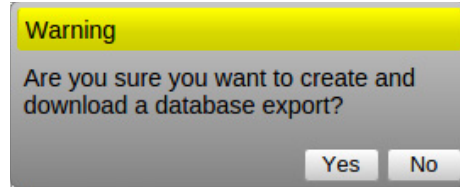

Figure 6-24. Export Database

NOTE: A verification code is required to export the file when accessing through a remote computer.

6.3.4 System Info

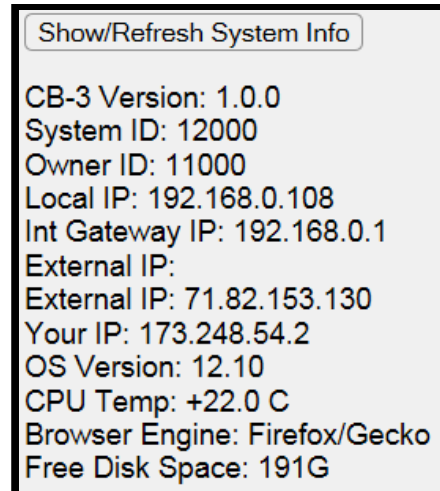System Info displays or refreshes the system information.

Figure 6-25. System Information

6.4 Tools

6.4.1 CUPS

CUPS launches the Common Unix Printing System (CUPS) application.

6.4.2 PHP Info

PHP Info displays the PHP version and other info. Figure 6-26 is a partial PHP report. The actual report is several pages long.

PHP Version 5.4.6-1ubuntu1.5

System	Linux kenyon-01 3.5.0-45-generic #68-Ubuntu SMP Mon Dec 2 22:02:00 UTC 2013 i686
Build Date	Dec 12 2013 04:36:18
Server API	CGI/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php5/cgi
Loaded Configuration File	/etc/php5/cgi/php.ini
Scan this dir for additional .ini files	/etc/php5/cgi/conf.d
Additional .ini files parsed	/etc/php5/cgi/conf.d/10-pdo.ini
PHP API	20100412
PHP Extension	20100525
Zend Extension	220100525
Zend Extension Build	API220100525,NTS
PHP Extension Build	API20100525,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	disabled
Zend Memory Manager	enabled
Zend Multibyte Support	provided by mbstring
IPv6 Support	enabled
DTrace Support	disabled
Registered PHP Streams	https, ftps, compress.zlib, compress.bzip2, php, file, glob, data, http, ftp, phar, zip

Figure 6-26. PHP Information

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7.0   Batching

The **Batching** menu gives the operator access to the day-to-day operational processes of Loads, the Batcher, Job/Orders, Customer information, Mix Designs and Project Quotes.
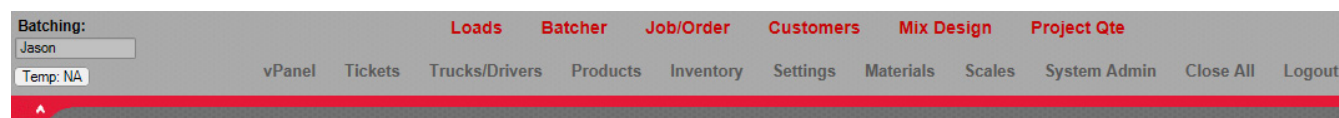

Figure 7-1. Batching Menu

Option	Description
Batching	Batching menu displays the current batching operator
Loads	View all pending job orders and batch them
Batcher	View current status of the batch plant
Job/Order	Add/edit job orders
Customer	Edit/add to customer database
Mix Design	Setup mix designs
Project Qte	Prepare quotes for customer loads

Table 7-1. Batching Menu Options

7.1   Loads
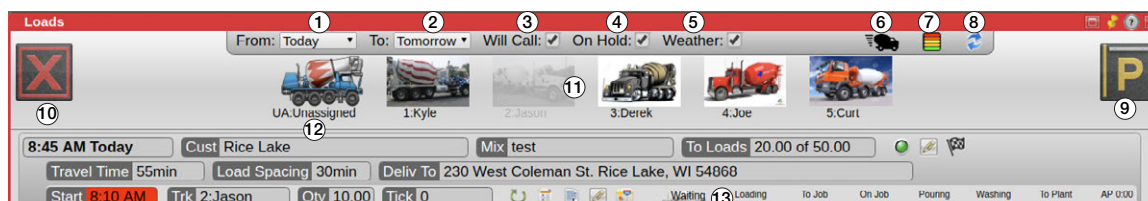
Figure 7-2. Loads Menu

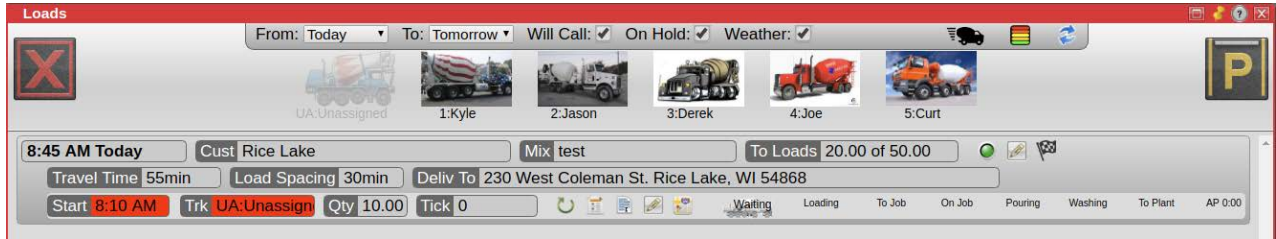| Item No.	Description
1	Filter loads scheduled for after this date
2	Filter loads scheduled for before this date
3	Display/Hide **Will Call** loads
4	Display/Hide **On Hold** loads
5	Display/Hide **Weather** type loads
6	Quick Load asks for a truck, mix design and quantity; all quick loads will have the batching information be saved under the default COD customer, See Section 4.6.3 on page 50
7	Display/Hide load demand schedule
8	Refresh load menu
9	Drag load here to finish, double click to park all trucks
10	Drag load here to delete
11	Available trucks
12	Unavailable trucks; when batching if the batch operator is not sure what truck is going to be available for the next load but wishes to pre-weigh the batch, the operator can name a truck UA; the program uses this truck as a place holder; the batch can be started without assigning a truck to the job but before the batch is discharged a truck must be selected; the truck can be assigned to the load by clicking on the red area by TRK
13	Loads in process

Table 7-2. Load Settings
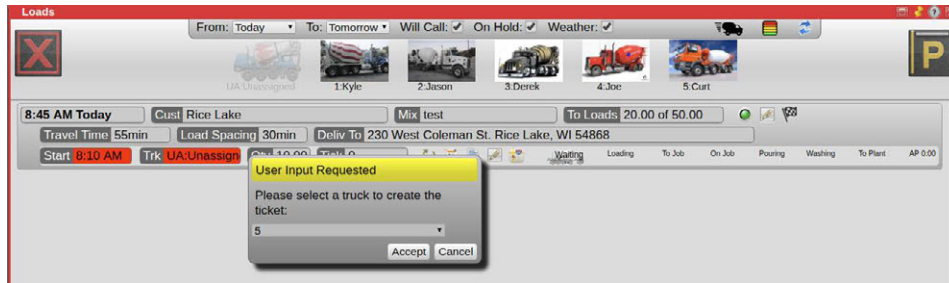
Figure 7-3. Truck Assignment

Figure 7-4. Truck Selection
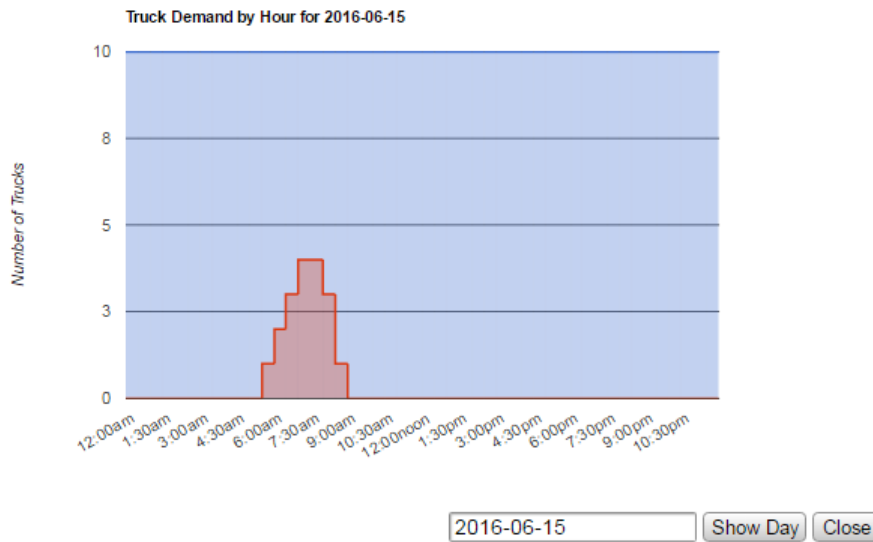
7.1.1 Truck Demand

Figure 7-5. Truck Demand By Hour Display

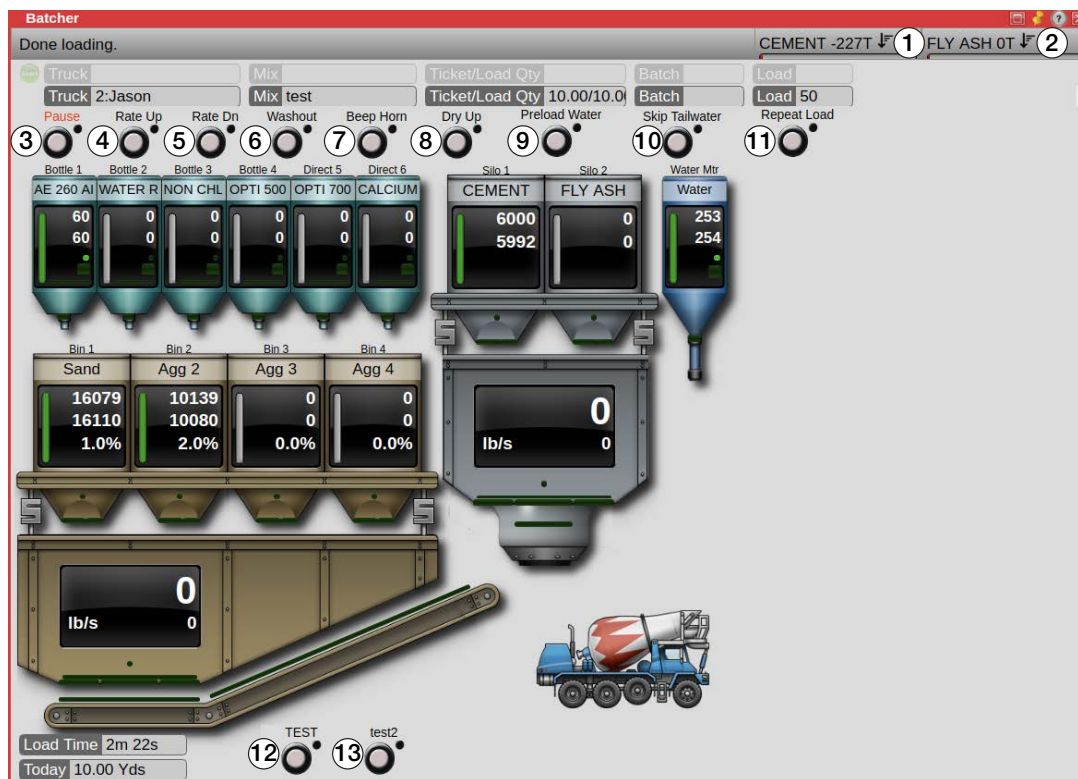## 7.2 Batcher

The batching process displays in real time.

Figure 7-6. Batcher Menu

Item No.	Description
1	Edit Inventory of product in use ⬇; select to change the draw priority
2	Edit Inventory of product in use ⬇; select to change the draw priority
3	Pause system
4	Increase discharge rate
5	Decrease discharge rate
6	Washout truck
7	Causes horn to beep to alert the driver
8	Dry up load with a small batch without water
9	Start the water addition
10	Skip addition of *Tailwater* for current load only. Use when concerned the load may be too wet
11	Repeats load
12	Hotkey 1, See Section 6.1.5 on page 80 for hotkey configuration
13	Hotkey 2, See Section 6.1.5 on page 80 for hotkey configuration

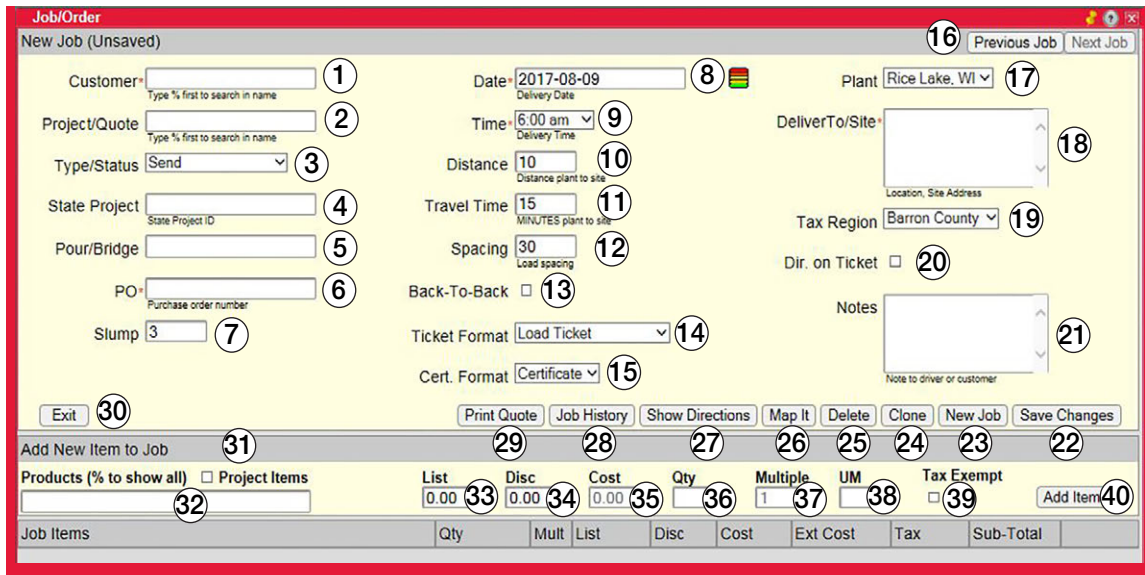*Table 7-3. Batcher Settings*

7.3 Job/Order

Figure 7-7. Job/Order Menu

Item No.	Description
1	Start typing customer name and a list displays of customers matching the letters of the name entered; enter % to list all customers or % and selected letters to display all customers with the entered letters in the name
2	Start typing project name/id and a list displays of projects matching the letters of the name entered; type '%' to list all project or % and selected letters to display all projects with the entered letters in the name
3	Select type or status of the project; default is **Send**, other selections are **Will Call**, **Weather Permitting** or **On Hold**, when using Load Scheduler; the status may be changed to **Send** after the customer confirms; do not Complete jobs with this field; use the Finish/Complete icon in the Load Scheduler instead
4	For reference only, required for DOT work
5	For reference only, required for DOT work
6	For reference only
7	For reference only, does not affect batch water
8	Delivery date
9	When the customer expects the first load to arrive, the time to start loading must be sometime before this based on batching, travel and load spacing times
10	Distance in miles from plant to delivery site, may be calculated automatically by using the **Map It** function with a detailed address
11	Travel time, in minutes, to the delivery site, may be calculated automatically by using the **Map It** function with a detailed address
12	Spacing for trucks on this job, default truck spacing is 30 minutes
13	Force all the loads for this order to be loaded back-to-back, no other orders can be loaded
14	Select load ticket format for this job/order
15	Select the certificate record format for this job/order
16	Scroll to previous or next job
17	Select the primary plant location where this job is batched from
18	Enter the complete address for load delivery, used to geolocate the job site and for driving directions (96 char max)
19	Select a different tax region if delivering outside the plants default tax region or if customer has tax exempt status
20	Prints driving directions on load ticket
21	Enter additional notes to the driver about this job (255 char max)
22	Save changes for job
23	Clear form and allow the entry of a new job
24	Clone creates a copy of current job with a unique ID and the current time/date

Table 7-4. Job/Order Settings

Item No.	Description
25	Delete this job if allowed (job is currently not used)
26	Open a map for the destination plotted with driving directions
27	Displays the driving directions
28	Display job reports; see
29	Print a ticket for OTC sales which do not get loaded, or the job has concrete on it; an estimate is printed
30	Exit *Job/Order* menu
31	Display project items quoted
32	Start typing product name, a list of projects matching the letters entered displays, type % to list all project; if *Show Project* is checked, a drop-down list of the items quoted on the project is available
33	Price entered in the product/mix form, for the customers price tier
34	Customer specific dollar discount per yard applied to this product
35	Calculated cost (Price less Discount)
36	Enter quantity required
37	This field is used for products to be distributed on the ticket as a multiple of load quantity of multiple per load/ticket; the load quantity must be 1 in all other cases
38	Displays the unit of measure for the product selected
39	Check to exempt this item from all taxes
40	Select to add the entered quantity of item to the job

Table 7-4. Job/Order Settings (Continued)

7.3.1 Job History

The Job History menu allows for access to several types of information, including overdue jobs, today's jobs, tomorrow/future jobs, completed jobs, and job reports.

Figure 7-8. Job History Menu
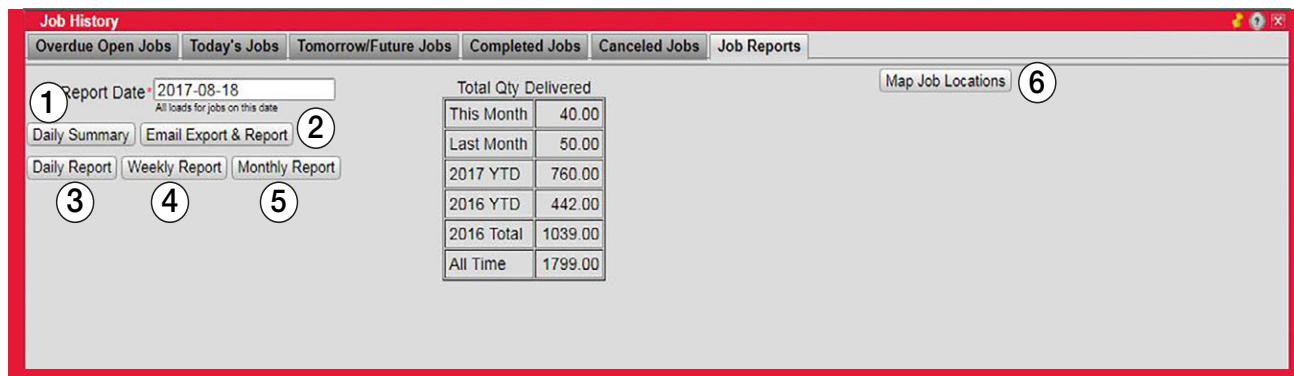
Figure 7-9. Job Reports Menu

Item No.	Description
1	Generate the daily production report for selected date
2	Email the daily production report; if transaction exporting is enabled a daily export file is created and emailed
3	Generate a daily production report with load and item details
4	Generate a weekly production report with yardage totals by day
5	Generate a monthly production report with yardage totals by week
6	Displays a mapping of all jobs previously mapped

Table 7-5. Job Reports Settings

7.4   Customers

Figure 7-10. Customer Menu

Item No.	Description
1	Enter a unique customer ID for a credit customer or leave 0 for a COD customer, the system assigns a unique ID
2	To add a new customer, enter the name (must be unique to customer), or start typing a customer name to search database or enter % and a word to match; example: % masonry matches all customers with masonry in the name
3	Enter a contact name, add additional contacts by selecting [icon] under **Actions**, from the customer list
4	Enter customer's office phone number
5	Enter cell phone contact number
6	Enter customer's fax number
7	Enter customer email
8	Enter billing address
9	Enter physical address
10	Select credit type: Credit/Charge, COD or Bad Credit
11	Select price tier for this customer; displays when multi-tier pricing is selected in settings; if multi-tier pricing is not selected, a discount value per yard/meter can be entered
12	Check to exempt this customer from all taxes; tax exempt status can be overridden in the **Project** or **Job/Order** menus
13	Save customer settings
14	Clicking clears the form and allows for a new customer to be entered
15	Display a customer report after a date range is selected
16	Exit **Customer** menu

Table 7-6. Customer Settings

7.5 Mix Design

Figure 7-11. Mix Design Menu

Item No.	Description
1	Enter a unique mix code (16 character maximum length)
2	Enter a long description for this mix (63 character maximum length)
3	Enter miscellaneous information about this mix
4	Enter mix time in seconds
5	Check if entering this mix design with metric (S.I.) units (kg, ml, cubic meter)
6	Enter maximum batch size in cubic yards/meters; for special mixes with lots of one material, the maximum may be different than the default plant maximum batch size
7	Enter slump in inches; for informational purposes only
8	Calculated yield in cubic yards (or cubic meters if metric measurements were used); the system calculates this value in the mix materials menu
9	Enter the % air for this mix; the system does not calculate this, but it uses the this value in the yield calculations
10	Check if this mix is designed with oven dry weights; default is unchecked for saturated surface dry (SSD) weights
11	Check if this mix is to be sold with returned concrete from a previous load of a mix
12	Tax 1 - usually state tax; some products or services may not be taxable at this level; Tax 2 - usually a county/region tax; some products or services may not be taxable at this level; Tax 3 - usually a city/local tax; some products or services may not be taxable at this level
13	List price per unit of this mix; displays when multi-tier pricing is selected in settings; if multi-tier pricing is not selected price displays
14	Second tier price per unit of this mix; displays when multi-tier pricing is selected in settings; if multi-tier pricing is not selected this does not display
15	Third tier price per unit of this mix; displays when multi-tier pricing is selected in settings; if multi-tier pricing is not selected this does not display
16	Make a copy of this mix design with a unique ID and the test (copy) appended to the code and description
17	Select to display the selected mix recent usage
18	Select to display the selected mix design values
19	Select to display/print a summary list of all mix designs
20	Select to display/print all mix designs and materials
21	Save the entered mix design; when entering a new mix design, select **Save** displays the **Mix Materials** menu
22	Clear/New clears the text boxes in this form and allows for the entry of a new mix
23	Select ![edit icon] to edit an existing design mix, the **Mix Materials** menu displays; select ![delete icon] to delete the mix design; deleting a mix design cannot be undone
24	Exit the **Mix Design** menu

Table 7-7. Design Mix Settings

7.6   Project Quote

Figure 7-12. Project Quote Menu

Item No.	Description
1	Enter a project code
2	Start typing a customer name to search database; type % to list all customers or '% with a few letters to display all customers with those letters in their name
3	Enter additional notes to the driver about this project (255 character max)
4	For reference only; required for DOT work
5	For reference only; required for DOT work
6	For reference only
7	Toggle between project
8	Enter desired delivery date
9	Enter quote expiration: 30, 60 or 90, 120, 180, 365 days or End of Year
10	Expiration date; auto populates
11	Enter the delivery address
12	Select a different tax region if delivering outside default tax region or if this customer has a tax exempt status
13	Select the ticket format for this project
14	Select the certificate/recordation format for this project
15	Print a quote
16	Print a summary
17	Clear form and allows the entry of a new Project
18	Save changes to quote
19	Exit the **Project Quote** menu

Table 7-8. Project Quote Settings

7.7   Batching Procedure

This section describes how to perform a batching procedure. All installation, configuration, calibration and administrative utilities must be setup and complete prior to performing a batching procedure.

1. Open the *Job/Order* menu and complete the required fields. Required fields are indicated by a red asterisk (*) near the field title.

2. Select **Save Changes**. The cursor automatically moves to the *Products* field.

Figure 7-13. Job/Order Menu

3. Type the desired product or mix code. Products and mixes matching what is typed are displayed. Type % to list all products and mixes, or % and letters/numbers to display products with the selected letters/numbers in the product or mix code.

Figure 7-14. Job/Order Menu - Product Selection

4. Select the desired mix or product.

5. Adjust the discount, cost, enter a quantity and select the tax status.

6. Select **Add Item**.
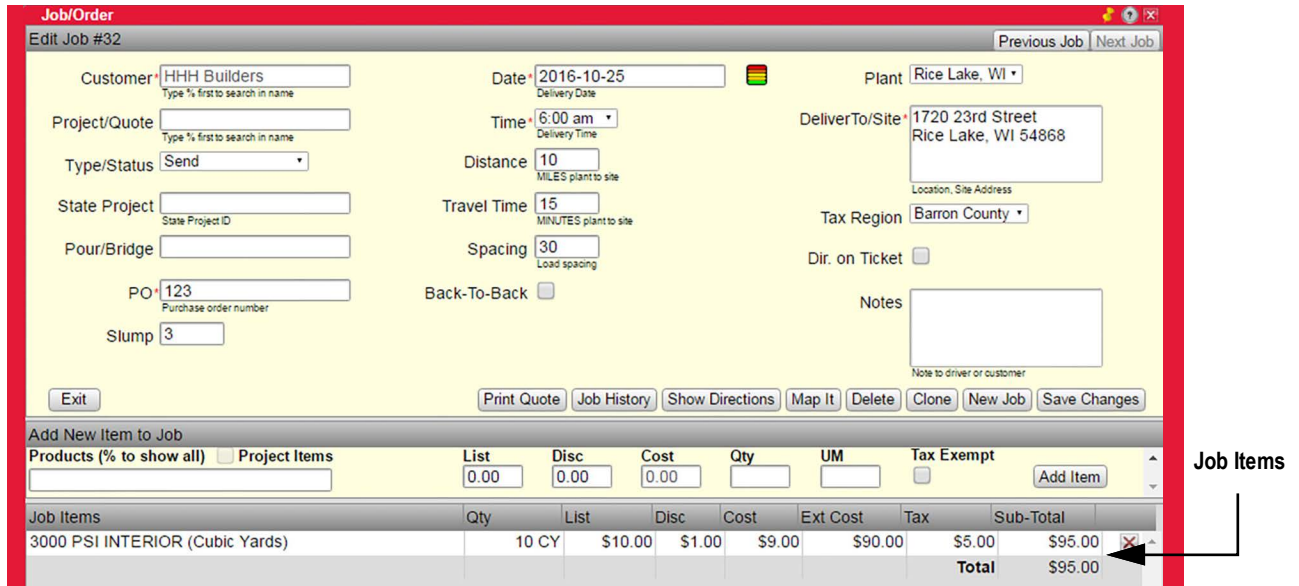
Figure 7-15. Item Added to Job

7. Open the **Loads** menu. The newly created order is displayed.
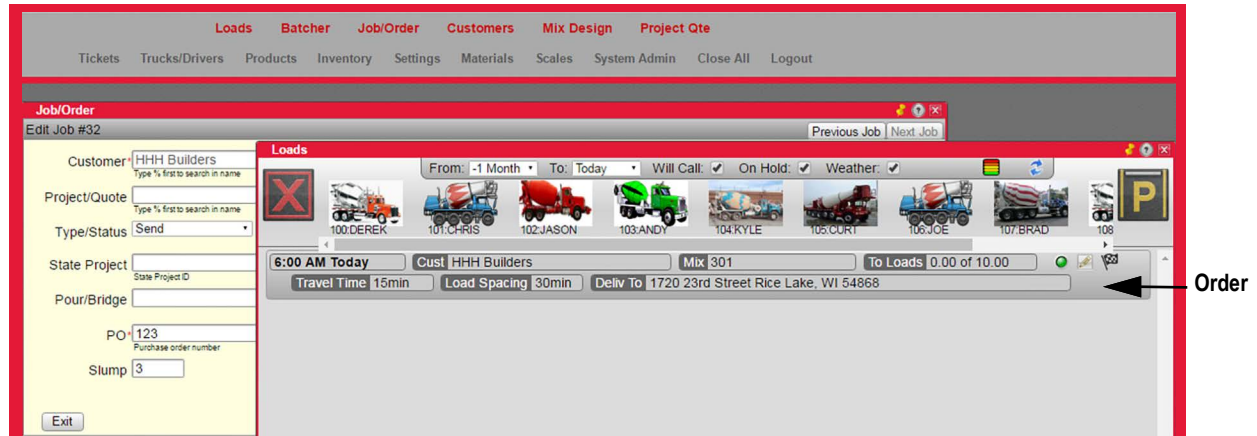
Figure 7-16. Loads Menu with Order

8. Click and hold the left mouse button on a truck to drag it to the order. The order is outlined in red once the truck is moved over it.
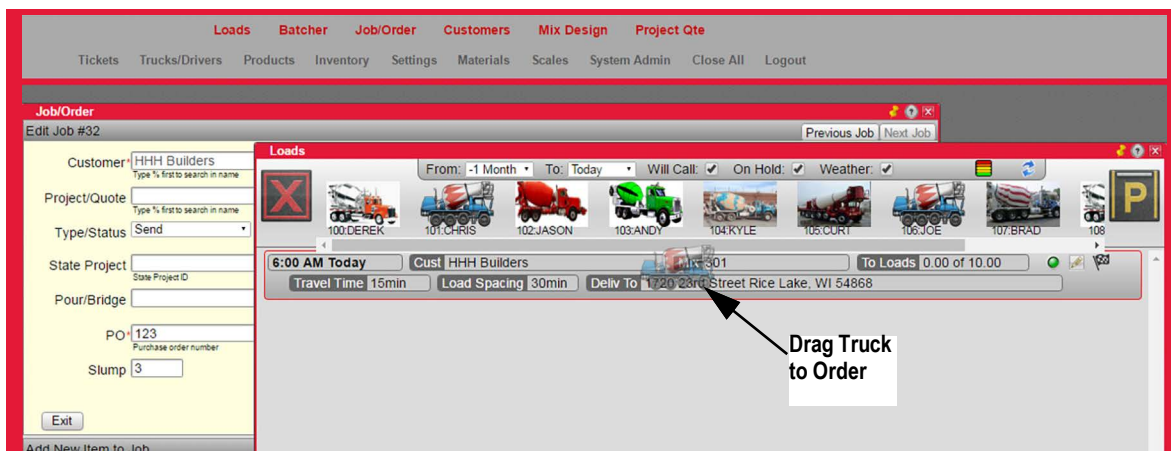
Figure 7-17. Assign Truck to Order

9. Release the left mouse button and a **Load Info** menu displays.
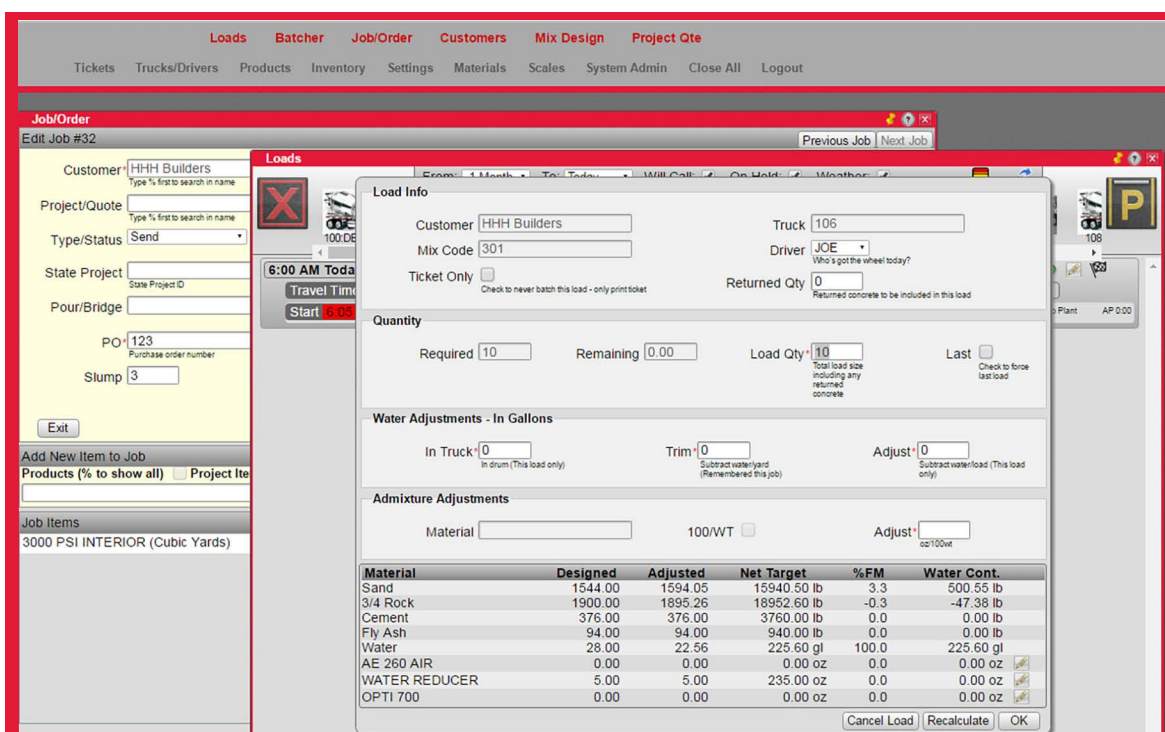
Figure 7-18. Load Info Menu

10. Edit **Quantity**, **Water Adjustments** or **Admixture Adjustments** as desired in the **Load Info** menu.

11. Select **OK**. An additional status line displays in the order.
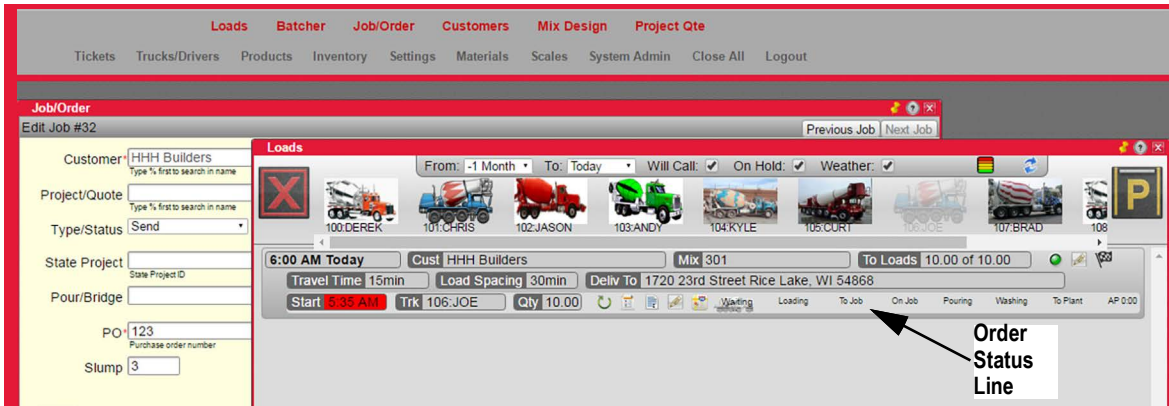
Figure 7-19. Order Status

12. Start the load:
    - Double click **Loading** or click and drag the truck in *Waiting* to **Loading** if the *Batcher* menu is not open
    - Click on the green start button in the upper left corner of the *Batcher* menu if open
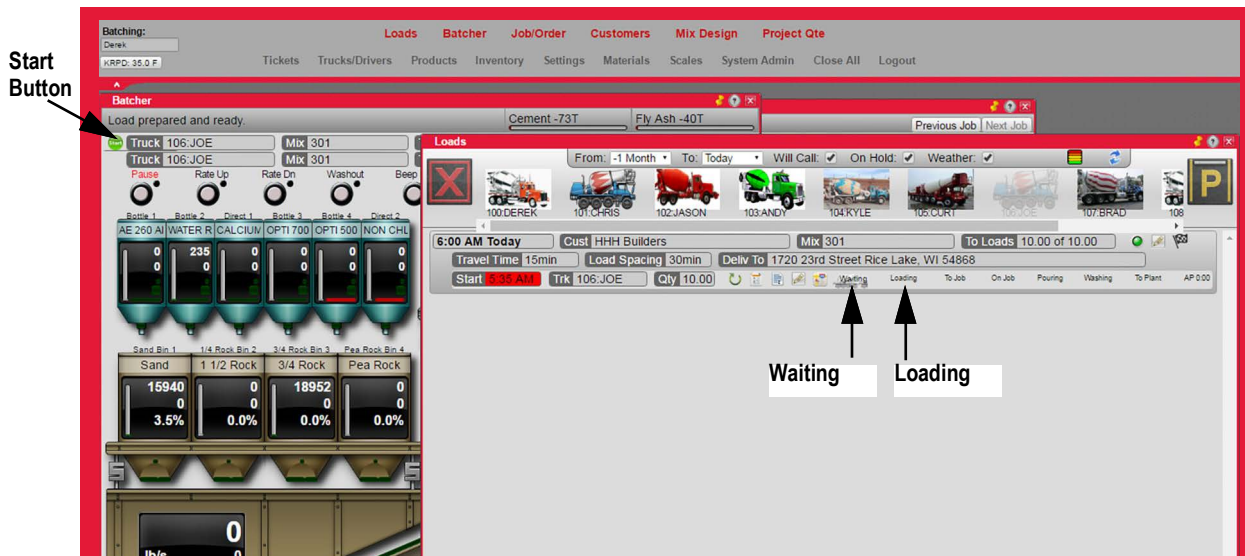
Figure 7-20. Start the Load

8.0   Remote Batching

The CB-3 supports remote batching which increases productivity by eliminating the need for an operator in the batch house during the batching operation. Concrete loads intended for remote batching can be created and scheduled by an authorized device which has Internet access to the CB-3.

After a load is scheduled for remote batching, drivers can batch and load trucks with the push of a button.

The purpose of the following information is to describe the hardware and software requirements to enable remote batching on the CB-3. In addition, basic automated remote batching features are described where:

- An operator sets up all batch related information from order to truck/driver dispatch
- The operator can sequence (stage) only one batch at a time; previous batches must be complete before staging another
- The driver starts the automated batching and, if necessary, emergency stops the batch

8.1   Safety Information

DANGER: Remote batching is inherently more dangerous than local batching and has the following risks:

The operator is not close to the plant and cannot do routine visual inspections of plant equipment and truck positioning before starting a load. The operator may not be aware of a problem should one arise.

Internet connectivity to the batch computer is necessary to allow the operator to have access to operate the software. Although the software is password protected, there are always opportunities for network vulnerability.

There is a risk a load or job gets uploaded to the wrong plant location if the operator is responsible for numerous plants.

8.1.1   Safety Features

Automated remote batching must have safety interlocks. The CB-3 remote batching feature is equipped with two safety interlocks:

- E-stop – which is located on the remote batching control panel
- Authorization indicator – which is located on the remote batching control panel and insures not automatic batching can be performed by a driver unless the operator enables authorization

8.1.2   Environmental Rating

The remote controller enclosure is IP66 (dust tight and high pressure water jet resistant). The button is IP65 (dust tight and low pressure water jet resistant). The remote control can be protected when used in an extremely wet environment.

8.2   Implementation

To implement remote batching the following items are required:

- Remote controller A-L P/N XXXXX
- CB-3 version 1.2.5.2 or higher
- Wiring from CB-3 PLC to the remote controller using a minimum of 18 gauge and 6 conduction wire
- PC or Smart device with Internet connectivity

8.2.1   Wiring Diagram

The following figure describes wiring from the remote controller to the CB-3 PLC:
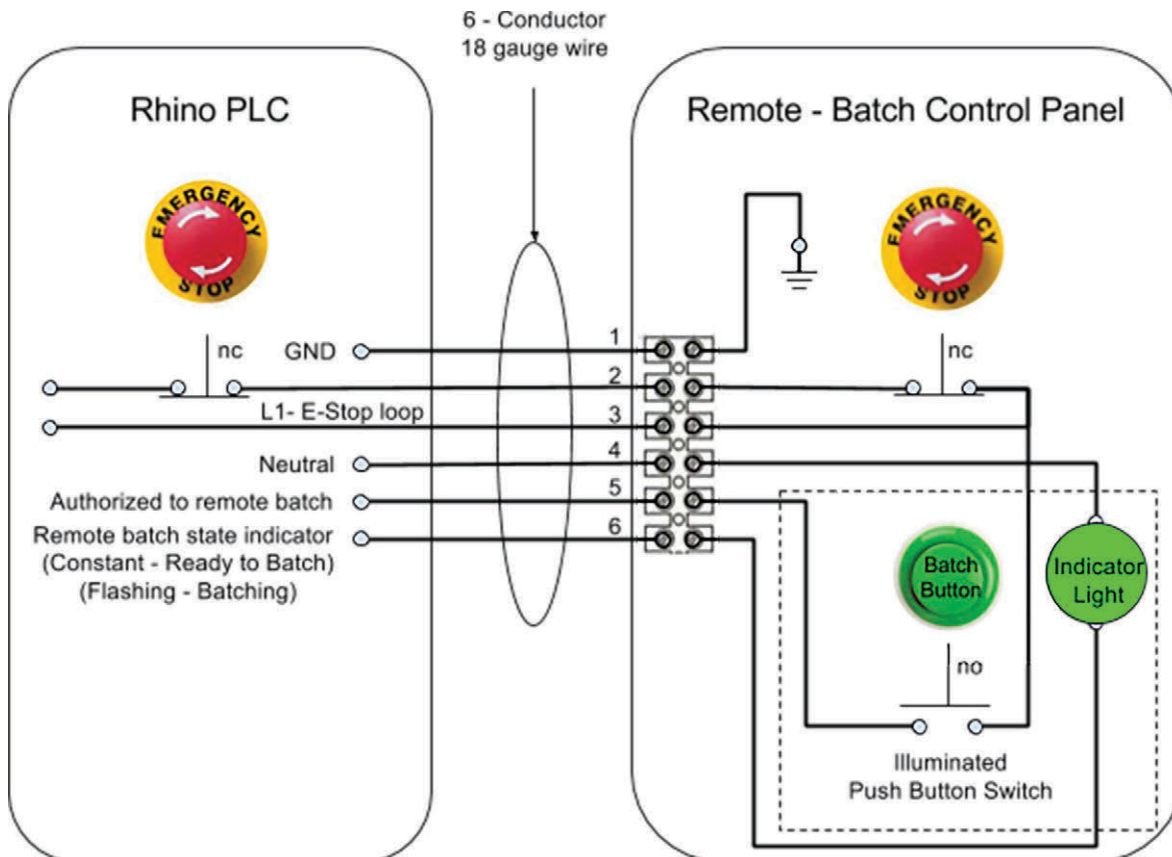
Figure 8-1. Wiring Diagram

8.3   System Configuration

The following must be configured for the CB-3 and the network prior to remote batching:

- User permissions – in the CB-3 user permissions must be configured to allow a specific user the ability to create and schedule remote batching; needs process
- Network permissions – the network the CB-3 is connected to must have Port Forwarding enabled
- Bookmark CB-3 – it is recommended the batching operator bookmark the website of the mobile device home

8.4   Setting User and Remote Access Levels

This section describes the desktop applications each user has access to and how to enable or disable remote access for the applications. Changes to application access can be made only when signed in as the system admin user.

8.4.1   User Access

1. Access the desktop_profile in the database. The no_perm_apps column dictates what each user can access.
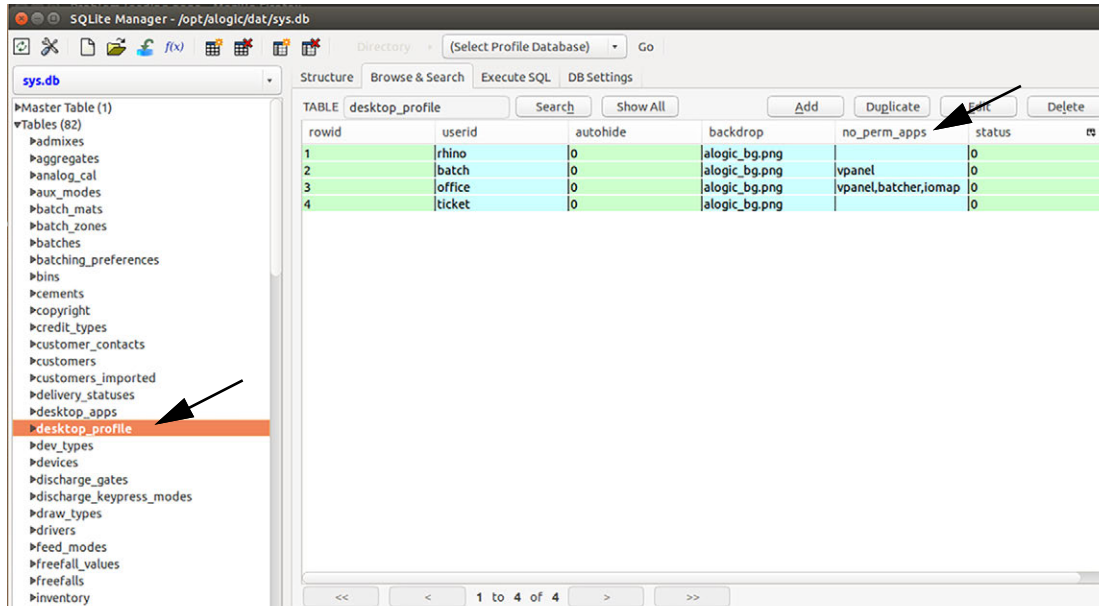
Figure 8-2. Access Desktop Profile

2. Double click on a userid to edit the user access.

3. Type the name of the application to hide for user in the no_perm_apps field.

4. Select **OK** twice to save.

5. Exit the database.

The example in Figure 8-3 is for the batch user and vpanel, tickets, batcher have been added to the no_perm_apps section.
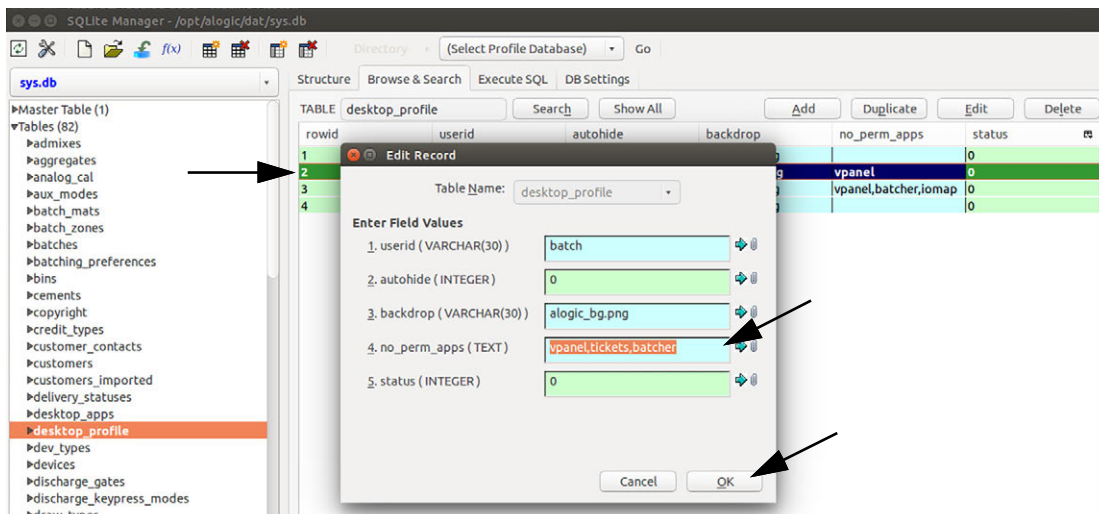
Figure 8-3. User ID Edit

Logging in using the batch credentials set in the previous example now displays the vpanel with tickets and batcher not available for this user.

Figure 8-4. Edited VPanel Display

8.4.2 Remote Access

1. Access the desktop_apps in the database. The remote column dictates what can or cannot be seen in a remote session.
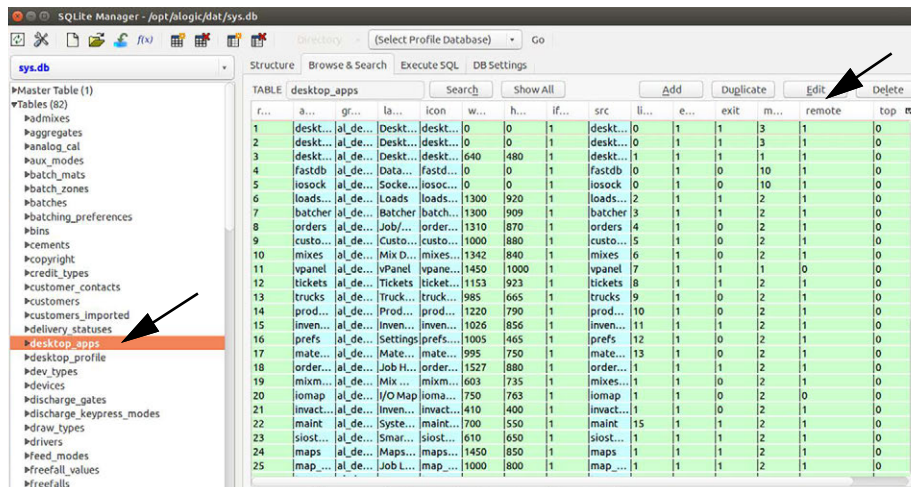
Figure 8-5. Access Desktop Apps

NOTE: By default, vPanel and iomap are not remotely accessible. However, these can be made accessible by changing the remote setting to 1.

2. Double click on the application to be edited.

3. Set the remote to 1 to enable an application or 0 to disable the application for remote display. Do this for each app as desired.

4. Select **OK** twice to save.

5. Exit the database.

The example in Figure 8-6 displays the Edit Record for tickets. A 1 enables remote access and 0 disables remote access.
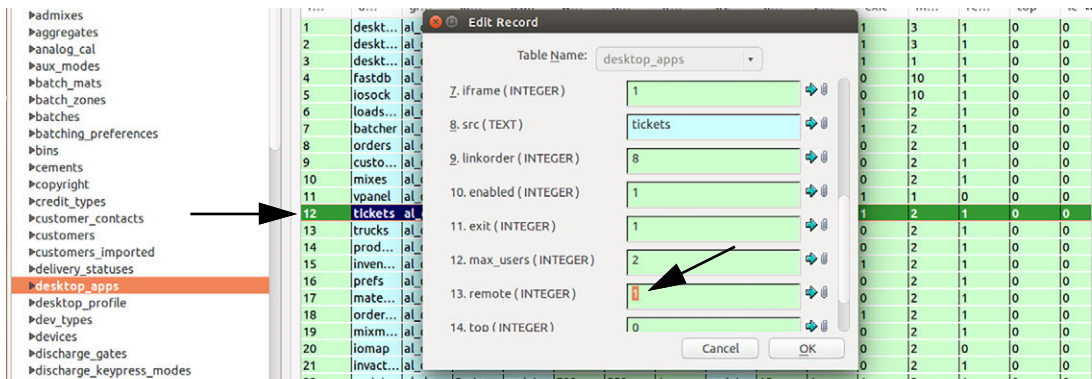
Figure 8-6. Enable or Disable Applications

8.5   Sequence of Operation

The following describes the remote batching operation:

1.   Create load – the load is created by the plant operator.

2.   Staging – the load is staged and moved to loading in *CB-3* for batching by the plant operator.

3.   Ready to batch – the green batch indicator on the remote batching controller flashes.

Figure 8-7. Remote Batching Controller

4.   Truck enters the plant – the driver enters the plant and positions the truck under the shoot only when the green batch indicator is flashing.

5.   Safety check – the driver exits the truck and performs a safety check of the plant.

6.   Begin batching – once the driver determines the plant is safe, the driver pushes the flashing green batch butting to begin batching.

7.   Batching active – the green batch button is continuously illuminated while batching.

8.   Batching complete – the green batch button turns off when the batching is complete.

9.   Truck leaves plant – driver exits the plant.

10. Staging – the plant operator can now create another remote batch.

9.0   Front Panel

9.1   Front Panel Description

The CB-3 delivers real-time statistical data through various network options. The CB-3 can easily communicate with printers, PCs, and other peripheral equipment.

There are numerous front panel key functions and displays which are described in the following sections and illustrated in Figure 9-1.
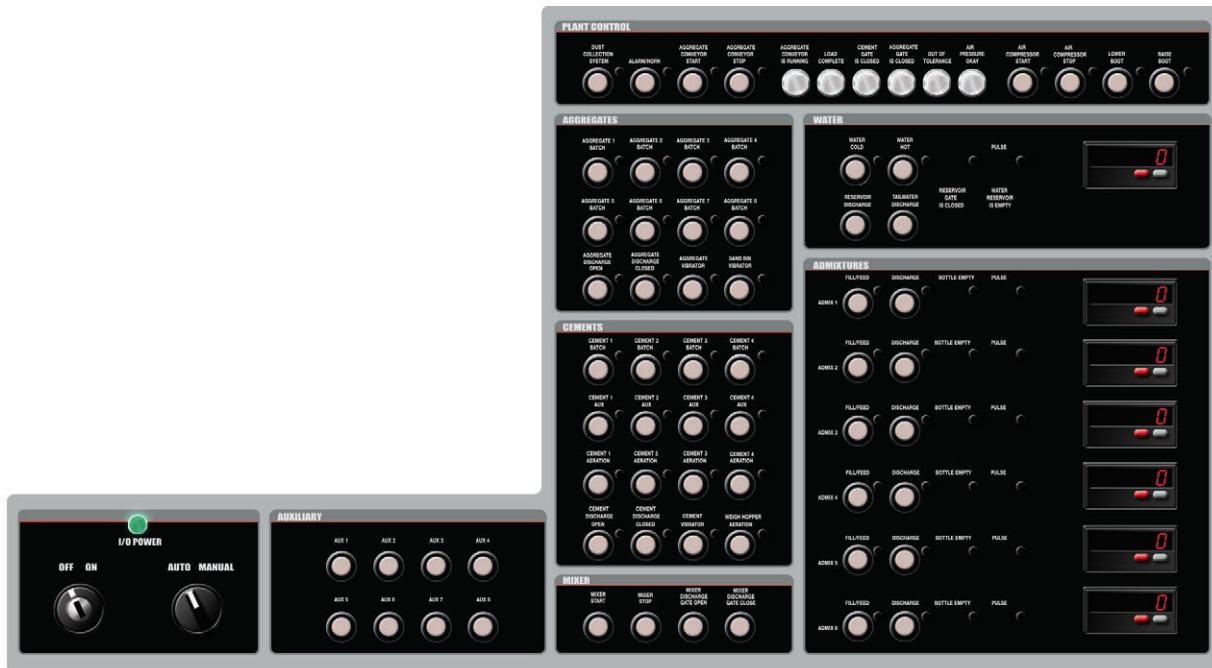
Figure 9-1. CB-3 Front Panel Overlay

9.1.1   Power Control

The CB-3 power control panel includes:

- • A keyed power switch with an internal circuit breaker
- • A keyed auto/manual control

9.1.2   Auxiliary Control

The CB-3 has an auxiliary control which includes:

- • Up to eight auxiliary controls
- • Each control includes status lights

9.1.3   Aggregate Control

The CB-3 has an aggregate control panel which includes:

- • Eight single speed or four dual speed fills or up to eight single speed controls
- • Status light on each gate
- • Weigh hopper discharge gate control
- • Aggregate vibrator control
- • Sand bin vibrator control

9.1.4   Cement Control

The CB-3 has a cement control panel which includes:

- A selection of four cements with dual speed fill or up to eight single speed controls
- Status lights on each gate
- Cement bin aeration on four bins
- Weigh hopper discharge gate control
- Weigh hopper vibrator control
- Weigh hopper aeration control

9.1.5   Mixer Control

The CB-3 has a cement control panel which includes:

- Fully integrated mixer controls
- Mixer start control
- Mixer stop control
- Mixer discharge control

9.1.6   Plant Control

The CB-3 has a plant control panel which includes:

- Manual override control
- Status lights

9.1.7   Water Control

The CB-3 has a water control panel which includes:

- Hot and cold controls with status lights
- Metered water pulse status light
- Reservoir discharge control and empty status light
- Adjustable tail water discharge in either manual or automatic mode

9.1.8   Admixture Control

The CB-3 has a water control panel which includes:

- Automated and manual control of admixtures
- Pulse meters including eliminating outboard control
- Up to six admixtures or colors
- Fill/feed control and status lights
- Discharge control and status lights
- Bottle empty status lights

10.0   Appendix

This section describes additional parameters associated with the CB-3 and its functionality.

10.1   Moisture Specifications

10.1.1   Cement/Water/Aggregate Mix Specifications

When defining a mix, specify the amount of cement, water and aggregates per yard of delivered product. The specified amount of water is the amount needed to react with the cement (free water).

Aggregates are most likely contain moisture (the moisture content of the cement and admixtures are ignored). Aggregates can contain both absorbed and free water. Absorbed water is not available to react with the cement, but free water is able to react.

Each material has an associated absorption factor. This is the maximum moisture level at which there is no free water. If a material is below its absorption factor, some of the added water is absorbed by the material and is not available to react with the cement. If it is above its absorption factor, some of the water in the aggregate is available.

The CB-3 automatically adjusts added water based on the current moisture levels in the aggregates, either adding or subtracting, as needed.

10.1.2   Oven Dry vs. Saturated Surface Dry Mix Designs

When specifying a mix design, the amount (by weight) of an aggregate per yard of delivered product is specified. For a particular batch, the amount by weight is dependent on how much moisture is present, this may change from day to day, but we don't want to have to continuously change our mix designs to account for these differences.

To solve this problem, specify mix designs in terms of material with a specified moisture content and then adjust the weight based on the current moisture content when producing product.

There are two recognized standard moisture levels – Oven Dry (OD) and Saturated Surface Dry (SSD). Oven Dry contains no moisture at all. Saturated Surface Dry Contains moisture at the material's Absorption Level. Mix designs may specify the amount of aggregate per yard in either Oven Dry or Saturated Surface Dry weights (the only way to use Oven Dry weights is to specify Minnesota DOT as the regulatory agency).

Example of Weight Adjustments Based on a Saturated Surface Dry Mix Design:

This example is of how the CB-3 adjusts the designed aggregate and water amounts based on actual moisture content for a mix design using SSD aggregate weights.

A design calls for 1000 lb of gravel, 500 lb of cement, and 400 lb of water per yard of concrete. The gravel has an absorption factor of 6% and a current moisture content of 4%.

As the design is based on SSD weights, the specified weights could be used, if the current moisture level was 6% - the same as the absorption factor. However, it is not, it is 2% short. How much gravel would need to be added at 4% moisture content to get the same amount of oven dry gravel as 1000 lb of SSD gravel?

1000 pounds of SSD gravel contains 943 pounds of OD gravel (1000 / (1 + 0.06)). 943 pounds of OD gravel at 4% moisture is 981 lb. (943 x 1.04). To get the same amount of gravel, it is necessary to reduce the 1000 lb per yard to 981 lb/yd.

However, when water is added to the mix, the aggregate absorbs enough of it to bring its moisture content up to the SSD level. This water is not available to chemically react with the cement, but, because the mix design is SSD based, the amount of water specified to be added is what is needed for this reaction. The amount of water to be added must be adjusted to account for this.

At SSD, the aggregate is 1000 lb/yd and aggregate, at 981 lb/yd is being added. How much extra water is needed to bring it up to its 1000 lb/yd? 19 lb/yd (1000 – 981).

So, in this example, the actual batch calls for 981 lb/yd of gravel, 500 of cement, and 419 of water.

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10.1.3   Calculating Aggregate Moisture Content

Moisture content is specified as the percentage by weight of moisture in a sample relative to the totally dry weight of the same sample. To determine this percentage, weigh the sample (Mw), totally dry it and weigh it again (Md). The moisture content in percent is then:

((Mw – Md) x 100)/Md

10.1.4   Specifying Moisture Content and Absorption Factors

The absorption factor for an aggregate is a constant for the material and is specified in the material definition process for the aggregate. The value is specified in percent using the ***Absorbed Moisture*** parameter in the ***Materials*** menu (***Aggregate*** tab). See Section 4.7.1 on page 55.

The moisture content for a particular aggregate may change from day to day. The value is specified in percent using the ***Total Moisture*** parameter in the ***Materials*** menu (***Aggregate*** tab). See Section 4.7.1 on page 55.

The current moisture content for an aggregate may be changed before batching a load or order by clicking on ***% Moisture*** in the aggregate bin on the ***Batching*** menu. See Section 7.2 on page 93.

10.1.5   Calibrating a Moisture Probe

Moisture probes should be calibrated to the material being monitored. Two samples of the material are needed, both at known moisture contents. For accuracy, they should be as far apart as possible (oven dry and saturated surface would be ideal). Specify the low end content level in percent (8.6% = 8.6), place the probe in the material, wait for the reading to stabilize, and calibrate the reading. Repeat at the high end.

Specify the high end moisture content, place the probe in the second sample, wait for the reading to stabilize and calibrate the reading.

10.2 Adding Counter and Position Indicators

521 Series

Adding counter and position indicator

Type series 521

1. Description

- 6digit adding counter, resetable
- LED-Display with 8 mm high characters and very high luminosity
- Display range -199999..999999 (overflow condition will be indicated by flashing of the display)
- Programming of count functions and operating parameters via the setting keys. During programming the display guides the user with text prompts.
- Optocoupler output (as option). Active at count values $\leq$ 0.
- Programmable features:
  Input polarity (npn or pnp)
  Max. count frequency (30 Hz or 10 kHz)
  Input mode
  Decimal point
  Scaling factor
  Reset mode:
       electrical
       manual
       manual and electrical
       no reset
      Set value (Goes to selected value at reset.)

2. Inputs

INP A
Dynamic count input. Max. count frequency 30 Hz or 10 kHz programmable via set up
INP B
Dynamic count input. Max. count frequency 30 Hz or 10 kHz programmable via set up

RESET
Dynamic reset input. Linked to the red reset key.

3. Optocoupler Output

Active if count value $\leq$ 0. Simple preset counter can be realized, when using subtract mode.

3. Setting of the operatingparameters

a. Hold down keys on front panel and switch on the supply voltage.
b. The display shows

ProG

c. After releasing the keys the display alternates between menu title and corresponding menu item at a frequency of 0.5 Hz. After any key is pressed down, only the menu item is displayed.
d. Pressing the right key, the menu item will be switched to next value.
e. Hold down the left key and press the right key to enter and switch to the next menu title.
f. After programming the last menu item, the programming routine will be left and the new values will be stored by switching the menu item to „YES". If you chose „NO", the programming routine will be passed through once again.

4. Programming routine

Programmable parameters are shown in succession. After one pass, the device is fully programmed.
In each case the first shown item is the factory preset.

4.1 Input polarity

InPoL

nPn
npn: switching to 0 V

PnP
pnp: switching to +V(4-30)

4.2 Activating the 30 Hz filter

FiLtEr

hi
max. count frequency 10 kHz

Lo
max. count frequency 30 Hz

4.3 Input mode

InPut

Cnt.dir
Count input and count direction input
INP A: count input
INP B: count direction input

uP .dn
Differential input
INP A: count input adding
INP B: count input subtracting

quAd
Quadrature input
INP A: count input 0°
INP B: count input 90°

quAd 2
Quadrature input with pulse doubling
INP A: count input 0°
INP B: count input 90°
Each pulse edge of INP A will be counted

4.4 Scaling factor (Multiplier)

FActor

00.0001

99.9999
Factor can be set from 00.0001 up to 99.9999. The decimal point is fixed "0" won't be accepted!

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4.5 Decimal point (Display only)

d P

The decimal point indicates the number of decimal places.

0

0.000

0   no decimal place
0.0   one decimal place
0.00   two decimal places
0.000   three decimal places

4.6 Set mode

r E 5 n ꞁ d

ꟽ ꟽ A n . E L

manual set (red key) and electrical set

n o   r E 5

no set
(red key and set input locked)

E L   r E 5

electrical set only

ꟽ ꟽ A n r E

manual set only

4.7 Set value (Allows user to preset start number)

5 E t P t

-1 9 9 9 9 9

521K.2 (Opto output activates at "0" or less. Can be used as subtracting preset counter)

9 9 9 9 9 9

Use 2 keys to set value
-199999... 999999
(number of decimal places depends on the decimal point option)

4.8 End of programming

E n d P r o

n o

Programming routine will be passed through once again. All parameters can be checked.
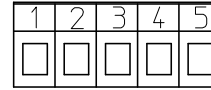
y E 5

Programming routine will be left and the new parameters will be stored. Afterwards the device is ready to use.
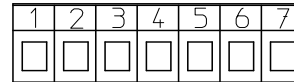
5. Connections

5.1 Without optocoupler output

1   10-30 VDC
2   0 V (GND)
3   INP A
4   INP B
5   SET

1	2	3	4	5

5.2 With optocoupler output (npn)

1   10-30 VDC
2   0 V (GND)
3   INP A
4   INP B
5   SET
6   Emitter
7   Collector

1	2	3	4	5	6	7

6. Technical data

Supply voltage:
10...30 VDC
Max. current consumption:
50 mA
Display:
6 digit LED-Display, 8 mm high characters
Polarity of input signals:
programmable for both common inputs (npn or pnp)
Input resistance: appr. 10 kohm
Count frequency: 10 kHz can be damped to 30 Hz
Min. pulse length of the control inputs: 5 ms
Input sensitivity:
Low: 0 to 1 VDC
High: 4 to 30 VDC
Pulse shape: variable (Schmitt Trigger characteristic)
Optocoupler output:
Max.30V(off), 10mA 1volt drop @10mA
Data retention:
via EEPROM 1×10^6 memory cycles or 10 years
Noise immunity:
EN 50081-2; EN 55011 class B; EN 50082-2
Ambient temperature: +14°F...+122°F (-10 °C...+50 °C)
Storage temperature: -13°F...+158°F (-25 °C...+70 °C)
Weight: appr. 1.76 oz.(50 g)
Protection: IP 65 (front)
Cleaning:
The front of the unit is only to be cleaned with a soft wet (water !) cloth.