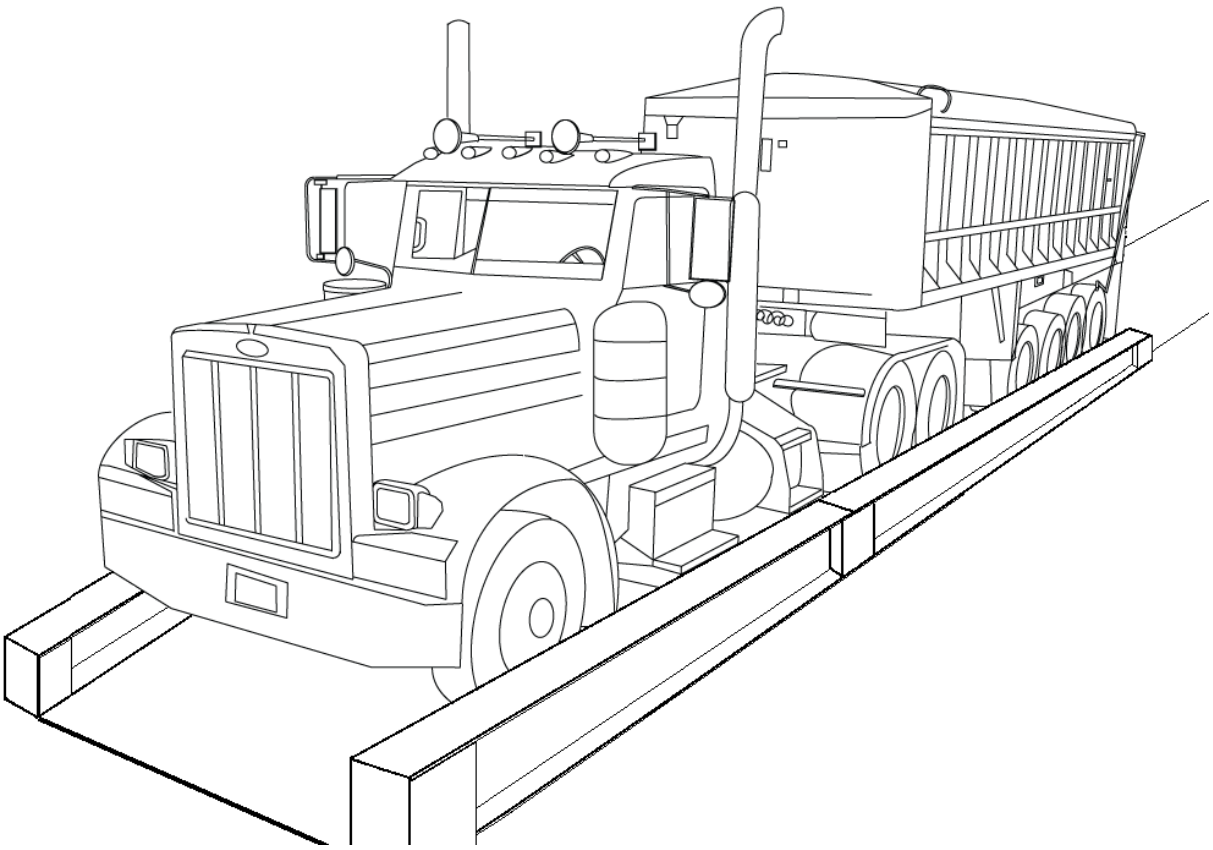
THURMAN SCALE

Installation Manual

FULLY ELECTRONIC SIDE RAIL TRUCK SCALE

MODEL – 8530KD



51174

Rev. 5 10/13

DISCLAIMER

Every effort has been made to provide complete and accurate information in this manual. However, although this manual may include a specifically identified warranty notice for the product, Thurman Scale makes no representations or warranties with respect to the contents of this manual, and reserves the right to make changes to this manual without notice when and as improvements are made.

Thurman Scale shall not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether or not based on express or implied warranty, contract, negligence, or strict liability arising in connection with the design, development, installation, or use of the scale.

Amendment Record

THURMAN TRUCK SCALE 8530KD

Installation Manual
Document 51174

Manufactured by **Thurman Scale, Inc.**
4025 Lakeview Crossing
Groveport, Ohio 43215

Created	10/2007	
Revision 1	10/2007	Document Release
Revision 2	1/2008	Updated Assembly Steps
Revision 3	09/2009	Product update
Revision 4	06/2012	Updated parts list and company address.
Revision 5	10/2013	Updated Installing the Stands and Suspension process .

Table of Contents

SECTION 4: WIRING FOR INTALOGIX™ SYSTEMS, CONTINUED

Section 1: General Information

INTRODUCTION

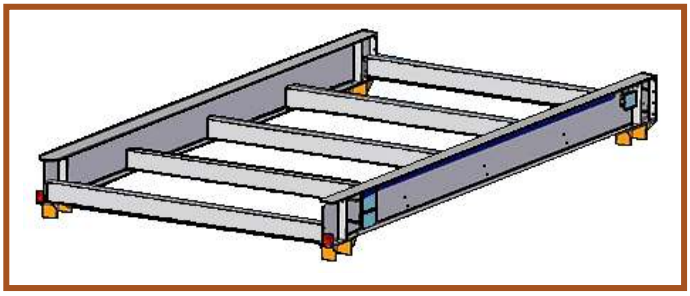
The **Model 8530KD** is a uniquely designed truck scale, combining the proven reliability of an environmentally sealed load cell system with the added benefit of an above grade, low profile, incorporated side rail, concrete deck design. The 8530KD is a **"knock down" style scale** featuring compact shipment and ready for module assembly.

The **8530KD Weighbridge** consists of one or more field assembled modules and a concrete deck.

- Each module connects to the adjoining module through the use of an exclusive connecting step hinge.
- The weighbridge design consists of a pair main girder beams providing longitudinal strength while acting as safety side rails.
- Cross members are bolted between the main girders providing lateral strength and forming up the concrete deck.
- The low profile foundation design offers many benefits over the traditional scale pit design including reduced construction costs and simplified maintenance.
- With the scale installed completely above ground, the load cell system, suspension components and weighbridge are not subject to the harsh corrosive environment found in a scale pit.
- Designed to meet or exceed **National Bureau of Standards Handbook H-44** requirements for **Class IIIL Devices**.

Double Ended Shear Beam Load Cell Systems

- The load cell system incorporates environmentally sealed, double-ended shear beam load cells combined with an exclusive parallel link suspension system.
- Parallel links offer load cell protection by absorbing the motion and shock caused by vehicles stopping and starting on the Weighbridge.
- The Thurman truck scale load cells are electronically nickel plated and internally potted with patented material for superior environmental protection.
- They have welded covers completely enclosing the internal strain gage cavity providing environmental protection and ensuring long life.
- Components within the load cell suspension system are zinc plated for maximum corrosion protection. Each component is field replaceable.



THURMAN SERVICE POLICIES

Prior to installation, ***always*** verify that the equipment satisfies the customer's requirements as supplied, and as described in this manual.

If the equipment cannot satisfy the application and the application cannot be modified to meet the design parameters of the equipment, the installation should *NOT* be attempted.

It is the customer/operator's responsibility to ensure the equipment provided by Thurman is operated within the parameters of the equipment's specifications and protected from accidental or malicious damage.

W A R N I N G !

Absolutely no physical, electrical or program modifications other than selection of standard options and accessories can be made by customers to this equipment

Repairs are performed by Thurman Scales Service Technicians and Authorized Distributor Personnel ONLY!

Failure to comply with this policy voids all implied and/or written warranties

Physical Installation Notes

- Check all devices for proper operation. If any error messages occur, refer to Troubleshooting or the proper manual of that device.
- ***Only those charges which are incurred as a result of the equipment's inability to be adjusted to performance specifications may be charged to warranty.***
- No physical alterations (mounting holes, etc.) are allowed during installation.

Physical Installation Notes, Continued

The installing technician is responsible that all personnel are fully trained and familiar with the equipment's capabilities and limitations before the installation is considered complete.

Electronic Component Care

- Much of the equipment consists of printed circuit assemblies, which ***must be*** installed using **ESD handling procedures**.
- These assemblies must be replaced as assemblies or units.
- Replacement of individual components is not allowed.
- The assemblies must be properly packaged in ESD protective material.
- These components must be returned intact for replacement credit per normal procedures.
- All electronic and mechanical adjustments are considered to be part of the installation, and are included in the installation charge(s).
- Included is any required computer programming or upgrades.
- Included are any accuracy and/or operational specification changes.
- Do not remove power from this unit unless it is performed by the proper shut down method. Failure to comply with the proper shut down procedures can result in damage to the hard disk drives or data.
- The AC receptacle / outlet shall be located near the instrument and easily accessible.
- Electrical connections other than those specified may not be performed.

Conferring with Our Client

Before the installation is considered complete, the equipment is to be programmed to meet or exceed any applicable weights and measures requirements.

- The technician must be prepared to recommend the arrangement of components which provide the most efficient layout, utilizing the equipment to the best possible advantage.
- The warranty policy must be explained and reviewed with the customer.

PHASES OF INSTALLATION

The complete installation consists of the following phases:

A. Pre-Installation Checklist

B. Unpacking

C. Equipment Location

D. Safety

E. User Responsibilities

F. Scale Installation

G. Wiring

H. Calibration

I. Customer training

Pre-Installation Checklist

The following points should be checked and discussed with the **Area Sales Manager and/or customer**, if necessary, before the technician goes to the site and installs the equipment.

- ✓ Check the customer's application to make certain it is within the capabilities and design parameters of the equipment.
- ✓ If the installation process might disrupt normal business operations, tell the customer and ask that they make ample arrangements.
- ✓ Is properly-grounded power available at the installation location?
- ✓ Be sure that the equipment operator(s) are available for training.

- ✓ The Service Technician must thoroughly review the installation procedures.
- ✓ The service technician reviews the recommended setup with the Area Sales Manager or Area Service Manager, and together they identify all necessary variations to satisfy the customer's particular application.

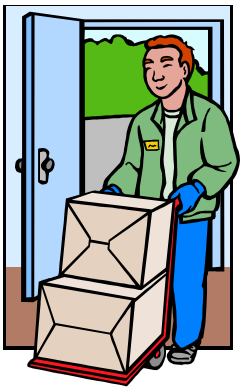
Unpacking

Follow these guidelines when unpacking all equipment:

- ✓ Check in all components and accessories according to the customer's order.

Unpacking, Continued

- ✓ Remove all components from their packing material, checking against the invoice that they are accounted for and not damaged.
  - *Advise the shipper immediately, if damage has occurred.*
  - *Order any parts necessary to replace those which have been damaged.*
  - *Keep the shipping container and packing material for future use.*
  - *Check the packing list.*



- ✓ Collect all necessary installation manuals for the equipment and accessories.
- ✓ Open the equipment and perform an inspection, making certain that all hardware, electrical connections and printed circuit assemblies are secure.
- ✓ Do not reinstall the cover if the final installation is to be performed after the pre-installation checkout.

Equipment Location

Position the equipment with these points in mind:

- ✓ Intense direct sunlight can harm the display.
- ✓ Airborne particles can activate the touch screen.
- ✓ Work areas should be relatively free from drafts and vibrations.
- ✓ Do not locate near magnetic material or equipment/instruments which use magnets in their design.
- ✓ Avoid areas which have extreme variations in room temperatures. Temperatures outside the instrument's specifications will affect the weighing accuracy of this product.
- ✓ A raise-able cover/shield over the touch screen may be necessary for the environmental conditions.

Safety

Follow these safety precautions during operation:

- ✓ Do not load the platform if there is any evidence of damage to the platform or supporting structure.

Use safety chains or other suitable restraining devices if there is any possibility of the load shifting, falling, or rolling from its position on the platform.

Users' Responsibilities

- ✓ All electronic and mechanical calibrations and/or adjustments required for making this equipment perform to accuracy and operational specifications are considered to be part of the installation.
  - — They are included in the installation charge.
  - — Only those charges which are incurred as a result of the equipment's inability to be adjusted or calibrated to performance specifications may be charged to warranty.
- ✓ Absolutely no physical, electrical or program modifications other than selection of standard options and accessories are to be made to this equipment.
  - — Electrical connections other than those specified may not be performed, and physical alterations (holes, etc.) are not allowed.
- ✓ The equipment consists of printed circuit assemblies which must be handled using ESD handling procedures, and must be replaced as units.
  - — Replacement of individual components is not allowed.
  - — The assemblies must be properly packaged in ESD protective material and returned intact for replacement credit per normal procedures.

Section 2: Installation

OVERALL STEPS

A. Foundation check, layout, and load cell setting

B. Preparing tools, materials, documentation and renting a crane.

C. Assembling the modules.

D. Setting the modules on load cells.

E. Pouring the deck.

F. Wiring

G. Calibrating and Testing

Tools, Equipment and Materials

- ***Certified Prints***
- A mobile crane of sufficient lifting capacity to safely lift and place the weighbridge modules.
- Four equal length twenty foot (4-20 ft.) lifting chains or cables *with hooks*.

IMPORTANT NOTE: *The installer **MUST** reserve Crane and Chains/Cables in advance from a local rental service company.*

- Hand tools.
- Hydraulic jacks.
  - Two ten ton (2-10 ton) hydraulic jacks.
- 100' steel tape measure.
- Stringline or chalkline (both)
- Pry bars.

MUST** reserve a Crane **in advance

SITE PREPARATION – ALL FOUNDATION TYPES

1. Assist the customer in selecting a site which allows easy access to and from the scale, ensuring enough area for straight and level approaches, and to meet all **State and Local Weights and Measures Regulations.**
   - — Refer to the ***serial tag located on the weighbridge*** to determine the capacity of the scale
   - — The site needs good drainage away from the scale, elevated enough so the surrounding areas ***drain away from the scale site***.
   - — Obtain all the necessary permits and licenses prior to beginning construction.
2. Using a transit, sight in and mark with stakes the area where the placement is to occur, and where supports, forms, or concrete are to be built.
   - — When constructing forms, make sure they are plumb, square, and level.
   - — Place and compact gravel into the base of the forms, if necessary.

Scale Positioning

- Position the scale so that vehicles can approach and exit it easily.
  - — Smooth and level approaches are required at each end of the platform to reduce loading shock, and to facilitate testing of the scale.
  - — Approaches must conform to the requirements of the law in the state in which the scale is being installed.
  - — In the absence of such laws, the approaches must conform to **Paragraph UR.2.6** of the ***National Institute of Standards and Technology Handbook 44***, which states that the first 10 feet must be level and on the same plane as the scale platform.
- The platform should be visible from the instrument location.
- Surface water must drain easily, and not collect, under the scale.
- The soil must have a **minimum bearing pressure of 3000 PSF**, or as specified on the **Thurman *Certified* Prints**.

NOTE: ***Always… "CALL BEFORE YOU DIG".***

1-888-258-0808

INSTALLATION STEPS

Pouring the Foundation

Cut and position rebar into the form exactly as the schedule details it in the **Thurman *Certified* Foundation Prints.**

1. The scale is designed so the sub-frame is anchored to the foundation, using expansion anchors which are inserted into the concrete after it has cured.
   - — Expansion anchors are recommended because of the flexibility allowed in final positioning of the scale.
   - — Use sub-frames for anchor locations.
2. Pour the foundation concrete in the forms.
   - — ***4000psi minimum compressive strength.***
   - — ***5 to 7% air entrainment is required.***
3. Vibrate concrete into all corners to avoid air pockets and to ensure consistency.
   - — All concrete work ***MUST*** conform to standards set forth by the **American Concrete Institute Code.**
   - — Allow concrete to cure at least seven (7) days before erecting the scale.
4. Remove the forms and backfill for proper drainage.
   - — A slope away from the scale is recommended.

Allow concrete to cure for twenty-eight (28) days, or until a test cylinder indicates the concrete has reached its design strength before allowing traffic on the scale.

MODULE ASSEMBLY

1. Using a chalk line, mark the foundation to determine the center line of the foundation.

The **8530KD Scale** ships in a bundle of steel beams, ready to assemble on the jobsite.

— Each module has two (2) main girders and multiple crossbeams (depending on module length).

2. Lay out the beams in their approximate locations.

— *See these tables to identify the beams.*

Available Scale Sizes

SCALE LENGTH	NO. of MODULES	TYPE of MODULES
10' – 30'	1	One (1) Stand Alone
40' – 60'	2	One (1) Base, One (1) End
70' – 90'	3	One (1) Base, One (1) Int., One (1) End
100' – 120'	4	One (1) Base, Two (2) Int., One (1) End

Main Girder Identification

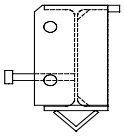
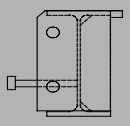
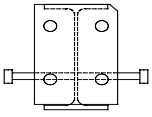
	No. LC Mounts	Mount Bars?	Check Block?
J-Box Base	2	Y	Y
Plain Base	2	N	Y
J-Box Int.	1	Y	N
Plain Int.	1	N	N
J-Box End	1	Y	Y
Plain End	1	N	Y

Module Assembly Steps

1. Place all the **Girders** with the **J-box Mount Bars** on the *same side*, nearest the scale house.
2. Place the pair of **base girders on the left end first** (when facing the scale from the scale house side) *with the check block toward the end wall*.
3. Place the first pair of intermediate girders adjacent to the base girders.
   - If there is more than one pair of intermediate girders, they should be placed next until all intermediate girders are in place.
4. Place the pair of end girders on the right end.
   - The check blocks face toward the other end wall.

Installing the Cross Beams

There are four (4) different types of cross beams. See the following table to identify them.

	Rock Strip?	Cable Angle?	Location
	**Y**	**Y**	**Right End of All Modules and Left End of Base Module**
	**Y**	**N**	**Left End of Interior and End Modules**
	**N**	**N**	**All Interior Locations**

Installing the Cross Beams, Continued

5. **Loosely attach the appropriate crossbeams**.
   — The ***rock strip is on the outside*** of the module, and the ***studs are toward the inside.***
6. Assemble the base module first using 3/4” x 2-1/2” bolts.
   — *See Figure 1.*
7. Cross-square the module, and tighten the bolts.
8. Using the crane, **lift the assembled module** straight up.

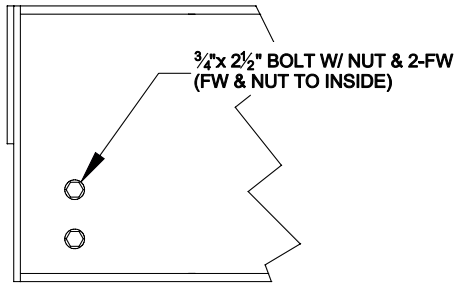


Figure 1 Cross Beam Attachment

Installing Load Cells

1. **Place load cells corner stands** in their approximate locations.
   — Load cell assemblies will be moved into final position following module assembly.
2. **Install dowel pins** into the top of the load cell stands.
3. Open up the shipped part boxes of load cells, load links and load pins for the suspension system
4. Place two (2) load links, one (1) load cell, and one (1) load pin by each load cell corner stand.
5. **Position the load cells** on top of the load cell stands
   — Center the load cells over the dowel pin of the stand.

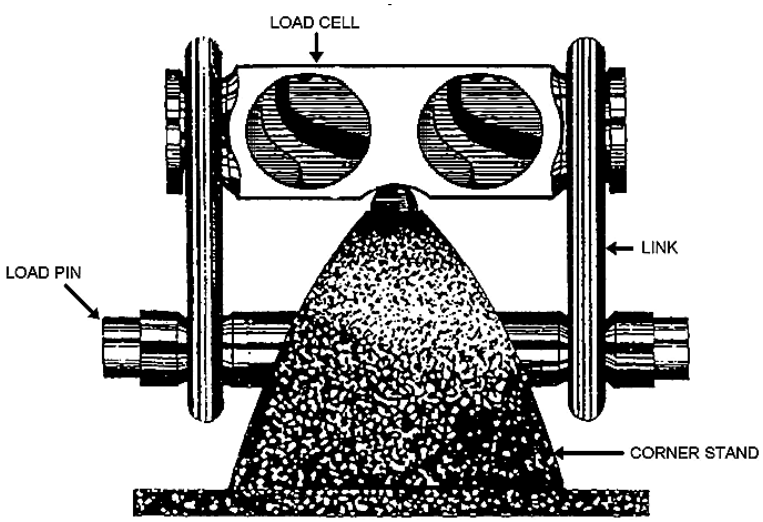


Figure 2 Front View

6. **Place a load link** over each end of the load cell resting the top of the link in the concave section of the load cell.
7. **Position the load pin** through each link and through the opening in the load cell corner stand. See Figure 2.

Fastening Brackets to Beams

1. **Attach top bracket and pin seats** to the bottom flange of the main girders.
2. **Bolt a top bracket** to each group of flange holes. Nut shall be under the bracket with the bolt head on the top part of the flange.
3. **Install the pin seats** to the top bracket.
   - Use a nominal **1/8" pin seat shim** for initial set up.
   - See Figure 3.
4. **Lower the assembled modules** onto the load cell assemblies See **Installing the Stands and Suspension** section for more details..
5. Assemble the remaining modules, fastening the brackets to the beams.

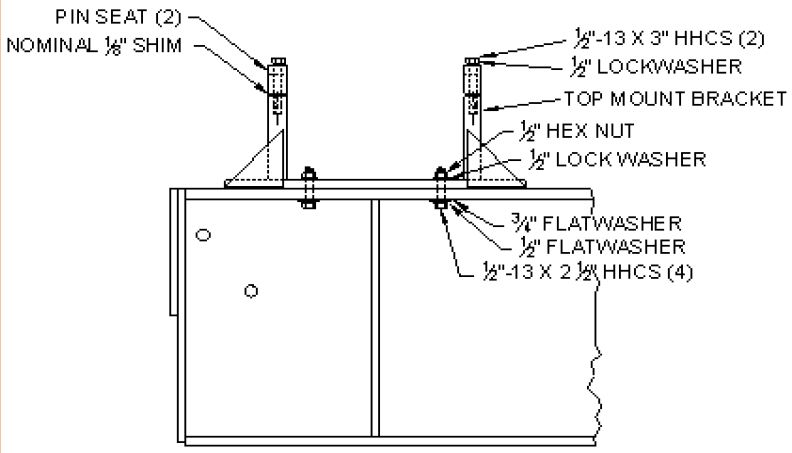


Figure 3 Top Bracket Mounting *(Pictured up-side down)*

Installing the Stands and Suspension

1. Line up the center of the module with the center line on the foundation.
2. **Set the load cell assemblies** under the pin seats of the base module.
3. **Place the intermediate module onto the step plate** of the base module, and also onto the load cell assembly. See Figure 4.

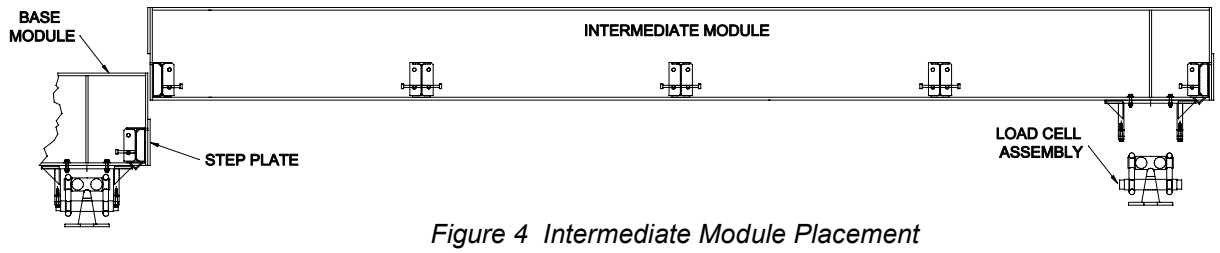


Figure 4 Intermediate Module Placement

4. **Install the connection bolts** through the connection joint.
5. **Use ¾" x 3" bolts with a lock washer and nut.**
6. Check the square of the scale, and if needed, adjust it as necessary to bring it into square.
   - Maintain equal distance to each end wall.
7. **Tighten all crossbeam bolts** to a minimum of **125 ft/lbs**.
8. **Repeat steps 1-7** until all the modules are built.
9. **Set the longitudinal bump check bolts** to a "no-gap" condition while pouring the deck.
   - Leave it at the "no-gap" condition until the deck is completely cured.
10. **Drill and insert anchor bolts** in load cell stands.
11. **Install the clamp bars, retaining washers and nuts** onto the anchor bolts.
12. If necessary**, adjust the load cell stands** until the entire scale's **load cell links hang plumb.**
13. **Tighten down the nuts** after load cell assemblies are plumb.

Deck Construction

1. Place **shoring in** between the crossbeams to prevent corrugate pans from sagging. See Figure 5.
2. Lay the corrugated steel sheeting between the cross beams.
   - Overlap it over the shoring resting on the cross beam flanges.
   - Overlap at the seams at least one full pitch. See Figure 6.
3. **Install the deck rebar** according to the setting plan supplied by **Thurman Scale** for the scale being installed.
4. Pour the deck concrete in the modules.
   - Pour concrete to **4000psi minimum compressive strength.**
   - **5%-7% air entrainment** is required.
   - Follow latest **ACI Requirements** for materials and construction
   - Cast ***only if*** the air temperature is **above 40° F**.

5. **Vibrate concrete** into all corners to avoid air pockets.
6. **Finish the deck with a bull float.**
7. **Hand trowel or broom** to desired finish.
8. Allow deck to **moist cure for seven (7) days**, or coat with liquid curing compound instead.
   - *Do not use or calibrate scale* until the deck has cured and reached **4000psi min compressive strength or at least 28 days**.
9. Touch up paint finish as needed.

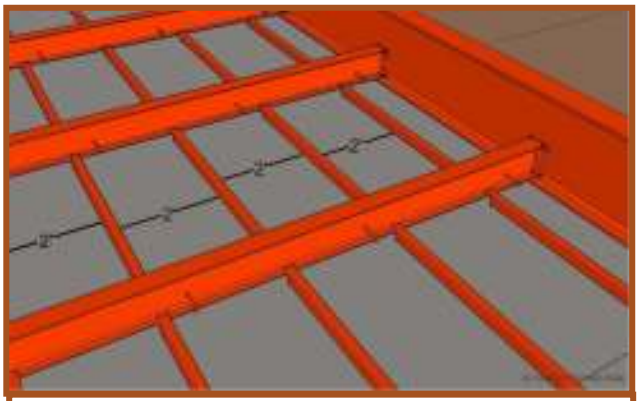


Figure 5 Shoring Placement

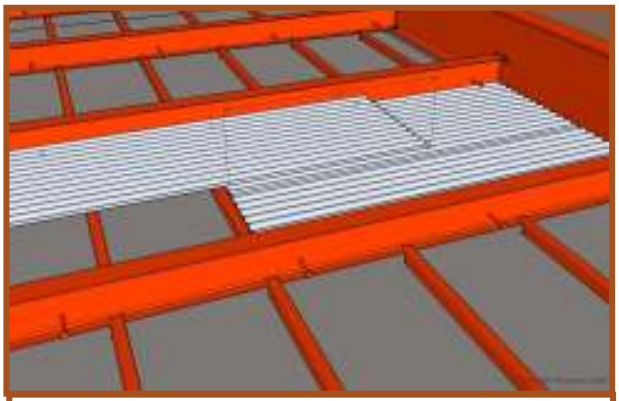


Figure 6 Corrugated Placement

Section 3: Wiring Analog System Instruments

WIRING STEPS

Wiring Load Cells Into the Junction Boxes (J-Boxes)

✓ **Important steps!**

Mount the Junction Boxes to the outside of the panels.

1. Remove the Junction Box Cover and Gasket.

   — *Keep out all dirt, dust, moisture or other debris from the Junction Box as damage to the Summing Board may occur.*

2. Route the Load Cell Cables into the Junction Box cavity.

   a. Identify Load Cell Numbers
   b. Wire to the proper terminals using the following chart:

Load Cell Wire Color	Function
Red	(-) Signal
White	(+) Signal
Black	(-) Excitation
Green	(+) Excitation
Bare/Orange/Yellow	Shield

Load Cell-to-Junction Box Wiring Table

Wire the J-Boxes to Each Other

✓ ***Important steps!***

3. Route the Module Interconnect Cable into the Junction Box mounting areas of the other section(s).

4. Pass the cable through the Sealing Hub, located at the end of the Junction Box, directly over the Terminal Strip marked "**Remote J-Box**".

5. Connect the cable to the terminals of the strip marked "**Remote J-Box**".

   — The wires ***must be*** connected so that the terminals match between the summing boards of the different sections.

Wire the J-Boxes to Each Other, Continued

Wire Color (Cable #66931)	Function
White	(+) Signal
Red	(-) Signal
Brown	(-) Sense
Black	(-) Excitation
Blue	(+) Sense
Green	(+) Excitation

Weighbridge Module Interconnecting Cable Wiring Table

6. **Tighten the cable glands** until the O-ring Clamps further around the wire.

   — If not tightened properly, moisture damage may occur.

7. **Route the Instrument Interconnect Cable** through the Sealing Hub on the Junction Box, located on the Base Module.

Wiring THE J-Box to the Instrument

✓ ***Important steps!***

8. **Attach the Instrument cable** to the terminal strip marked "**Indicator**"

9. Match functions of the Digital Instrument to those marked on the Summing Board.

   — Using instruments with sense lines is strongly recommended for vehicle scale applications.

J-Box-to-Analog Instrument Wiring Table

(*Thurman Model IS-3000 A1, as an example*).

Scale Model IS-3000 A1	Junction Box Terminal Strip marked 'Indicator'
1	(-) Excitation
2	(+) Excitation
3	(+) Sense
4	(-) Sense
6	Shield
7	(+) Signal
8	(-) Signal

Note: *Thurman Scale Model IS-3000 A1 Instrument designations are shown as* ***Terminal Locations*** *on the Load Cell Connector, TB-1, located on the PCB.*

Grounding for Analog Instrument

Proper grounding is important in any electronic system.

— *See* **Appendix I** *for more information regarding this.*

10. Using a quality ohm meter, verify that a good connection exists between all of the following points:

— Each Load Cell Case to the Weighbridge.

— Each Load Cell Shield to the Junction Box Board Shield.

— Junction Box Board Shield to the Weighbridge.

— Module Interconnecting Cable Shield to each Junction Box Board Shield.

— Instrument Connecting Cable Shield to the Junction Box Board Shield.

— Instrument Connecting Cable Shield to the Instrument Case ground.

— Weighbridge to a single properly placed Ground Rod.

Data Recording

11. Record scale serial number from the tag.
12. Record instrument, junction box and load cell serial numbers.
13. Keep a copy of the sheet in the customer file.
    - *See* **Appendix II** *for more information regarding this.*

Moisture Protection

Full Electronic Scales have been designed to provide protection from the effects of moisture.

- The load cells are calibrated with the cable attached.
- **The cable *MUST NOT* be cut.**
- The cable is connected directly to the Junction Box through a sealed bushing which ***MUST BE TIGHTENED WITH PLIERS*** to keep moisture out of the box.
- All cabling should have a **Drip Loop** at the cell or box entry location to help prevent water entry.
- On **all** boxes, the black plastic fittings have O-rings that can be forced out of position if the bushing itself is not tight.
  - To prevent this, first tighten the inner nut securing the bushing in the hole.
  - Then insert the cable and carefully tighten gland with pliers until it is very snug.
  - ***DO NOT over-tighten*** where bushing 'turns'.
  - All box covers ***MUST BE SECURED*** with ***ALL*** screws tightened properly (**18 to 20 lbs/in**) for protection against moisture.

*A **Drip Loop** helps prevent water entry*

Section 4: Wiring for Intalogix™ Systems

Introduction

Intalogix™ systems use Smart Sectional Controllers (SSCs) and Pit Power Supplies (PPSs) for load cell excitation and signal processing.

Description

- One (1) SSC per section.
- One (1) PPS per platform unless the number and resistance of the cells require a second Pit Power Supply.
- SSC boxes have four (4) terminals, two (2) for load cells and two (2) for "daisy chaining" to other SSC boxes or terminating to a pit power supply
- All cell/section/scale adjustments are made via the Intalogix™ Technology instrument.

INSTALLATION

Boxes

The box has tabs for bolting to mounting bars located on one side of each module.

1. On SSC and PPS boxes, attach the Ground Wire Lug-to-one of the Mounting Bolt Studs.
2. On PPS boxes, secure the isolated Ground Wire to the separate Ground Rod, as noted on the *Certified Print*.
3. Tighten all connections securely to provide a good electrical ground.

SSCs

4. Wire the load cells to the SSCs.
5. Connect the SSC to SSC cabling.
6. Set the address switches in the SSCs.

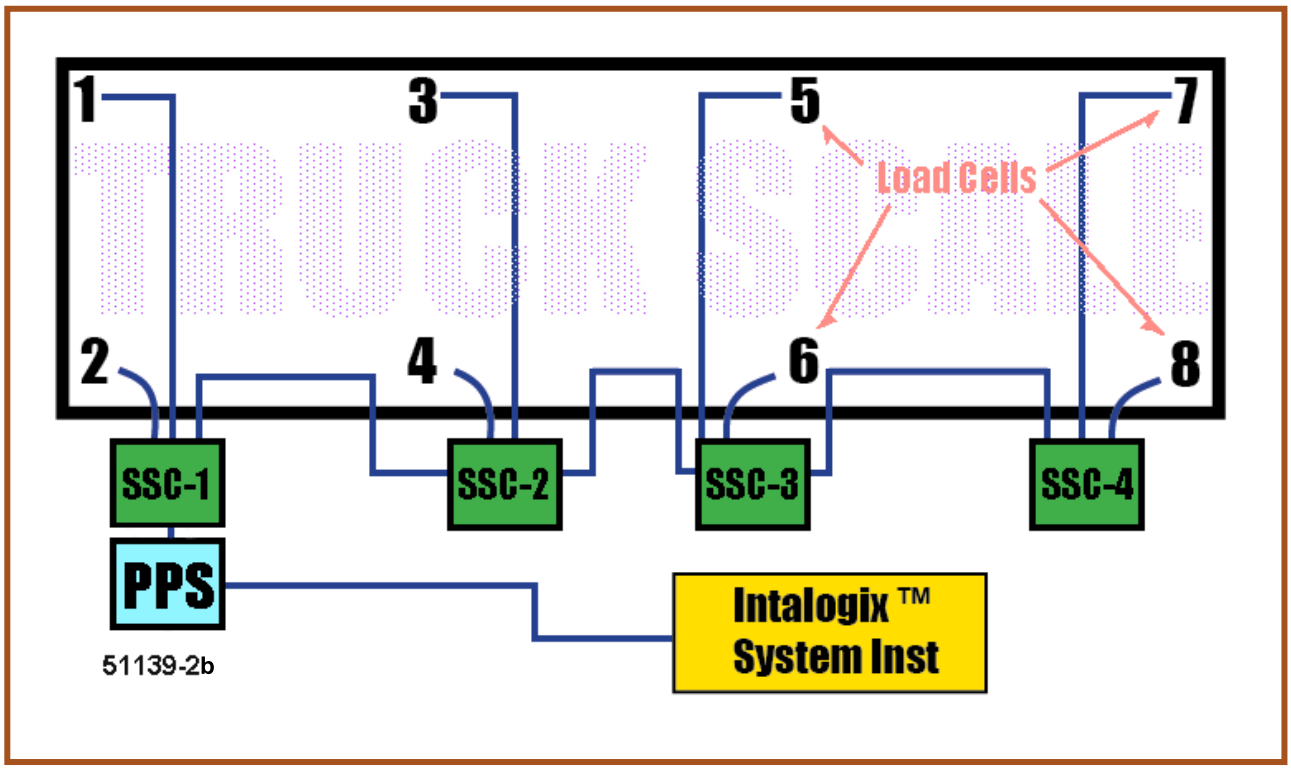
LOAD CELL WIRING

Intalogix™ installations use a different numbering system for load cells because of the digital addressing of the SSCs.

Cell Numbering

With respect to the following starting position, face the platform from where the Instrument is located.

- The cell at the upper left (far side) of the platform is **Cell One (1)**.
- The cell positions along the **far side are odd cell numbers**,
- The **near side locations are even cell numbers**.



Above is an example of four (4) section cell numberings using SSCs.

Note: *SSCs have connections for two (2) Load Cells, labeled* **TB1** *and* **TB2**.

- *The odd numbered cell goes to* **TB1**.
- *The even numbered cell goes to* **TB2**.

Installing Load Cells

- The cable used in *all* wiring (other than load cells) must be a **minimum of 18 AWG** (**Cable 17246**).
- The SSC boxes are daisy-chained to the end where they terminate into the Pit Power Supply (**24722**).

7. Wire the Load Cells into each sections' SSC, as illustrated in **Appendix 1: Wiring, Drawing 51139-1d**.

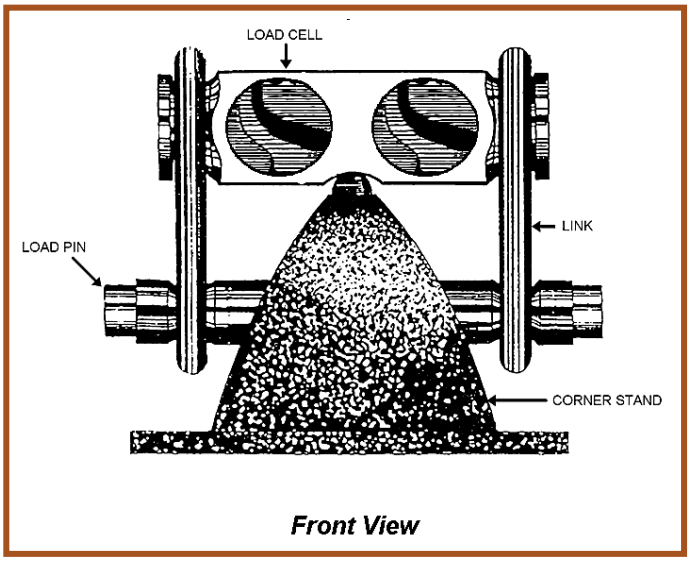
   — Load Cell Drain Wires, if applicable, connect to Ground Lug on the Balance Box exterior.

8. Wire the load cells into the SSC boxes.

Load Cell Connections at the SSC

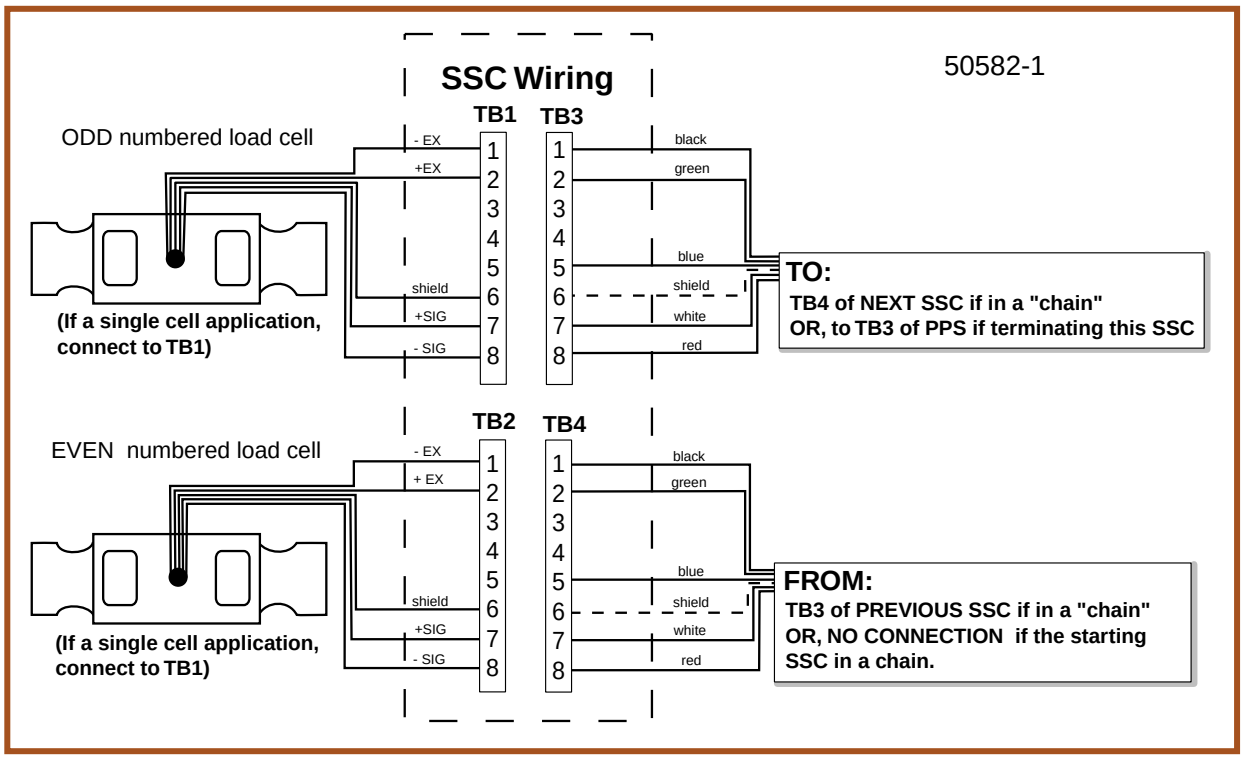
TB1 or TB2 in SSC	Terminal Description	DE Shear Beam L/C Wire Color
1	(-) Excitation	Black
2	(+) Excitation	Green
6	Shield	Yellow (bare)
7	(+) Signal	White
8	(-) Signal	Red

Note: *Complete wiring diagram is shown on the following page.*



Front View

Installing Load Cells, Continued



9. **Wire the SSCs to each other.**

Terminal Number	Function	17246 Cable
1	(-) 8.0 volts	Black
2	(+) 8.0 volts	Green
5	DC Return	Blue
6	Shield	Shield
7	RS-485 (+)	White
8	RS-485 (-)	Red

NOTE: *On the* **17246 Cable,** *don't use the* **Orange wire.**

Installing Load Cells, Continued

10. **Set the Switches**.

Dip (Address) Switch Setup, SSCs

— In each of the smart SSC boxes there is an 8-position dip switch labeled **S1**.

— This switch is used to identify the section in a binary code.

— The switches must be set properly for the scale to operate.

Note: ***Switches 1, 2, and 3*** *are* **always OFF**.

Leave these switch settings alone.

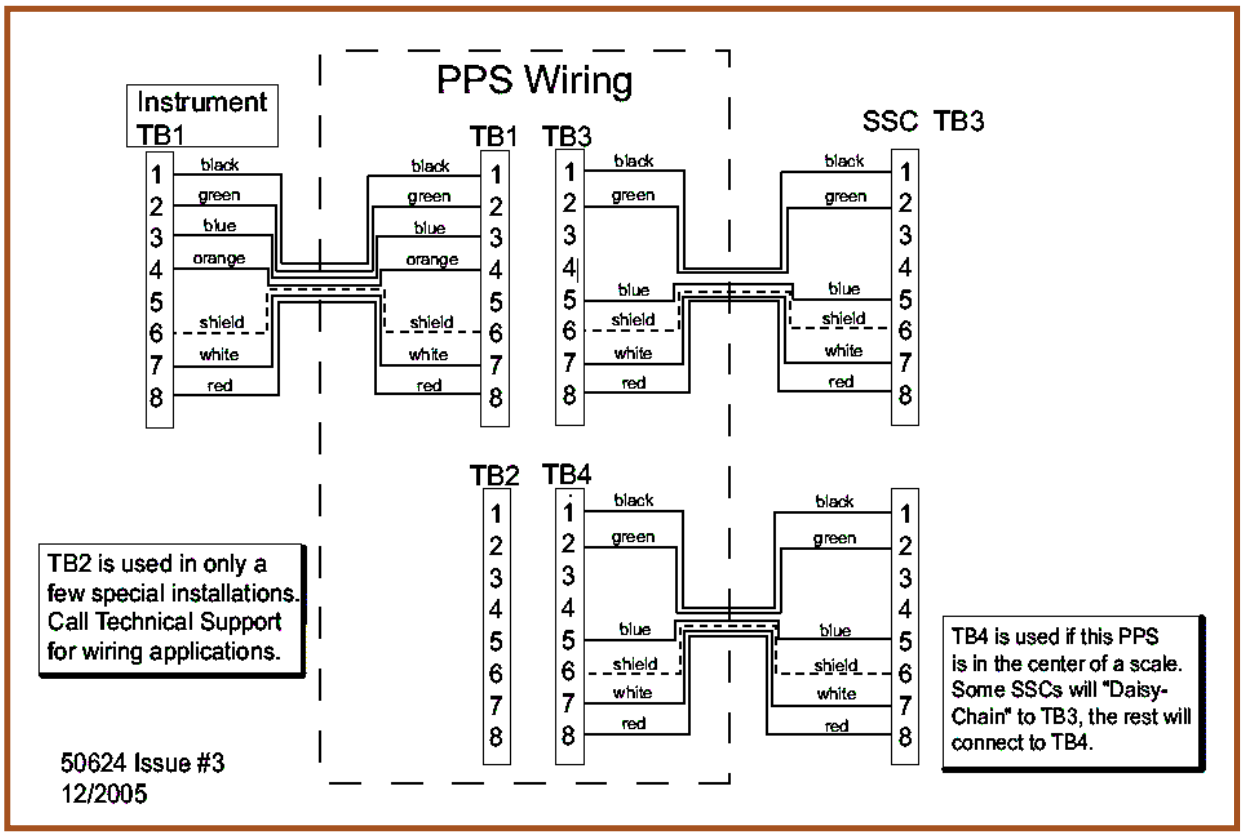
— Switches 4 thru 8 are used to set the section (section address) numbers.

11. Set the section number according to the following chart.

Section Number	Switch Settings				
	4	**5**	**6**	**7**	**8**
Section 1	On	Off	Off	Off	Off
Section 2	Off	On	Off	Off	Off
Section 3	On	On	Off	Off	Off
Section 4	Off	Off	On	Off	Off

12. Continue in this manner until each smart SSC box has a unique section number entered on the dip switches.

WIRING THE POWER SUPPLY



1. Connect the **PPS** to an **SSC** (#1 or any SSC).

   — Feed a cable from SSC#1 TB3 through the bushing for in the PPS for TB3 and make connections as follows:

TB3 SSC#1	TB3 PPS	17246 Cable	Description
1	1	Black	(-) 8.0 volts
2	2	Green	(+) 8.0 volts
5	5	Blue	DC Return
6	6	Shield	Shield
7	7	White	RS-485 (+)
8	8	Red	RS-485 (-)

WIRING THE POWER SUPPLY, CONTINUED

2. Wire the PPS to the Instrument.

   — Run the 'Home-Run' cable from the PPS, TB1 to the Instrument's TB1, wire as follows:

TB1 PPS	TB1 Inst	17246 Cable	Description
1	1	Black	28 volts, AC
2	2	Green	AC Return
3	3	Blue	20 Volts, DC
4	4	Orange	Enable
6	6	Shield	Shield/DC Return
7	7	White	Transmit
8	8	Red	Receive

Note: *Shields are used for DC Return and **MUST be connected**.*

GROUNDING THE SCALE

For accurate operation and protection against damage from lightning strikes, all of the components of the system must be properly grounded. The grounding system contains ground rods for the scale location. Below are points to correctly ground the system.

- It is recommended that the grounding be done with **#8 or larger wire or braided ground straps.**
- All of the ground connections should be **2 feet** or as short as possible.
- The case of the SSCs and PPSs must be attached in a clean electrical connection to the platform frame.

  — The platform frame is then connected to a scale ground rod.
- The **insulated WHITE wire** from the PPS connects directly to the separate ground rod (not to the same rod as the steel).

GROUNDING THE SCALE, CONTINUED

- The **117 VAC SVP Unit** (**65056**) must be connected to a known good ground at the instrument location.
  - Use a voltmeter to test the electrical power source available for the Neutral-to-Ground voltage level
    - *It must be* **0.2VAC or LESS**.
  - If unsure about the voltage, or the testing reveals a higher than acceptable level (**0.2VAC MAXIMUM**), install a separate ground rod at the **SVP 65056** location.
  - Use **braided cable** or **#8 wire** to make the SVP to ground rod connection.

DATA RECORDING

1. Record the scale serial numbers from the tag.
2. Record the instrument, SSC, PPS, and load cell serial numbers.
3. Keep a copy of the sheet in the customer file.
   - *Use* **Appendix II** *for additional information.*

Full Electronic Scales are designed to provide protection from moisture.

- The load cells are calibrated with the cable attached, and therefore ***the cable* should *NOT* be cut.**
- The cable is connected directly to the SSC through a sealed bushing which ***MUST* be tightened** with pliers to keep water/moisture out of the box.
- All cabling should have a "drip loop" at the cell or box entry location to help prevent water entry.
- On all boxes, the black plastic fittings have O-rings that can be forced out of position if the bushing itself is not tight.
  - *To prevent this, first tighten the inner nut securing the bushing in the hole, then insert cable and carefully tighten gland with pliers until it is very snug.*
  - *Do not over-tighten where bushing 'turns.*
- All box covers **MUST be secured** with ALL screws tightened properly (**18-20 lbs/in**) for protection against moisture.

Section 5: Calibration

INITIAL ZERO AND SPAN ADJUSTMENTS

1. Seat the suspension components.
2. Drive the test truck across the scale stopping and starting several times.
3. Repeat this procedure **at least three times** to assure that all parts are properly seated.
4. The zero and span of the scale need not be set perfectly, but it should be roughly adjusted to check for repeatability.
5. Return to zero to properly adjust the section readings.
6. Refer to the appropriate technical manual for the scale Instrument for the initial and span calibration procedures.
7. Perform the coarse initial and span adjustments.
8. Perform the final zero and span adjustments after adjusting the sections.

Repeatability and Return-to-Zero Performance Tests

1. Position the test truck in the center of the Weighbridge.
2. Note the weight reading.
3. Pull the truck off the scale and note the return to zero.
4. Repeat this procedure at least three times to assure consistency.
   c. If the scale does not repeat the readings, within tolerance, check for mechanical obstructions or "touches".
   d. Check the scale thoroughly for proper assembly
   e. Check the load cells for proper alignment and to be certain it is plumb.

Note: *This is best accomplished with the* **AZT disabled.**

Section Test and Adjustment, Analog Systems

The section test should be conducted centering the test load over each section.

— These tests require a weight cart, block weights, or the rear axles of the test truck.

1. Note the weight indication of each section.

   — The sections should be adjusted so the weight indications of all sections match within the tolerances set forth by the **National Institute of Standards and Technology's Handbook H-44**.

2. Trim the sections by adjusting a potentiometer in each of the section circuits.

   — This decreases the output of that circuit.

   — The normal trimming procedure lowers the readings of the higher sections to match the reading of the lowest section.

- The **Section and Corner Trim Potentiometers** are located on the Junction Box summing board, which is mounted in a protective cavity on the Weighbridge.
- To access the Summing Board located on the side of the main beam exposing the Junction Box, remove the Junction Box Cover and Gasket.

   — Keep dirt, dust, moisture or other debris from the Junction Box, as damage to the Summing Board may occur.

3. Place the test load over each section and adjust the corresponding trim potentiometer, if necessary, so that the weight indication equals that of the lowest section.

   — Due to a small interaction which may occur between sections, it may be necessary to repeat this procedure in order to bring the sections within tolerance.

4. Replace the Junction Box Gaskets and Covers.

5. Torque all screws evenly at **18-20 lbs/inch**.

Section Test and Adjustment, Intalogix™ Technology Systems

- Follow setup and programming instructions in the appropriate Intalogix™ Technology manual.
- Use a weigh cart or weights placed directly over the section for proper trimming.

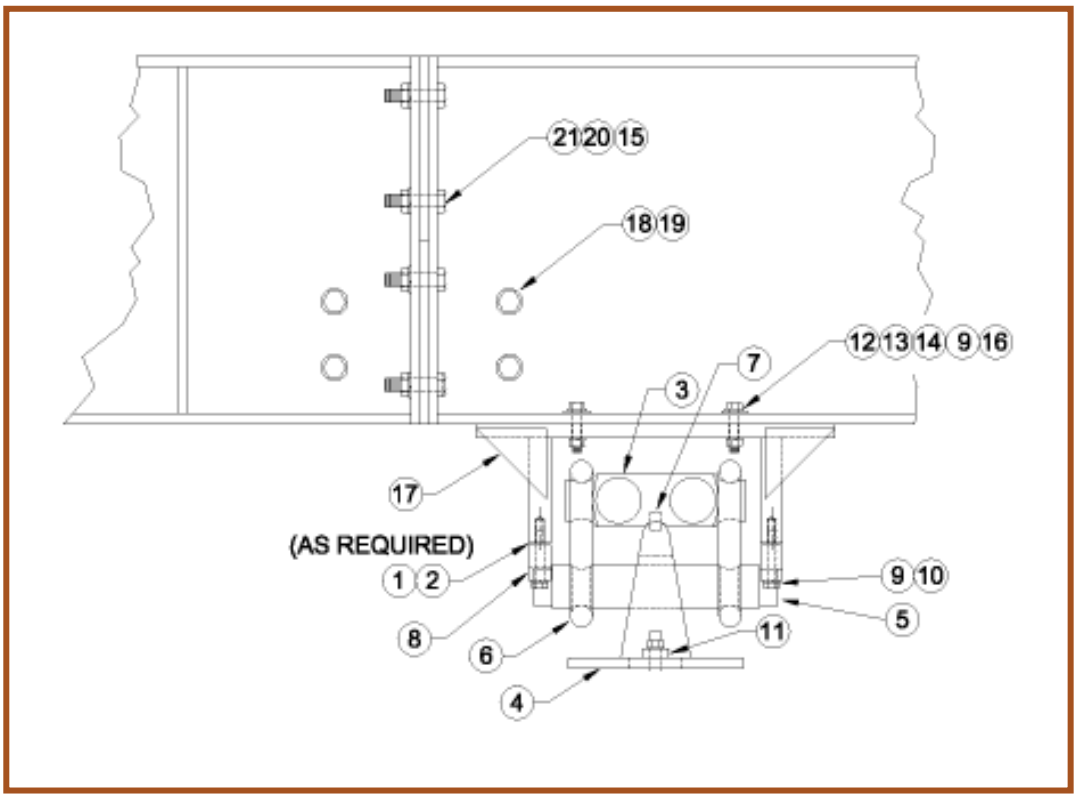
Digital Instrument initial and span calibration Analog Intalogix™ Technology

- Perform the initial and span adjustments, following the appropriate scale Instrument technical manual.

Section 6: Parts

SCALE COMPONENTS

Item #	Part #	Description
1	66971	1/16" Pin Seat Shims
2	66974	1/8" Pin Seat Shims
3	149075	Load Cell, 75K DE Shear Beam, 3mV/V (20' Cable)
4	64805	Corner Stand, DB Load Cell
5	64812	Load Pin
6	66347	Link 1-1/4"
7	64824	Dowel Pin, 5/8" Dia. X 1" Long
8	64822	Pin Seat
9	54769	Lock Washer, ½"
10	54401	Bolt, ½"-13 x 3"
11	61743	Clamp Bar
12	54385	1/2"-13 x 2 1/2"
13	54220	1/2" Flat Washer
14	54233	3/4" Flat Washer
15	54264	3/4"-10 Hex Nut
16	54252	1/2" -13 Hex Nut
17	105748	Top Bracket Weldment
18	54207	3/4"-10 x 2 1/2" A325 w/ Nut
19	54867	3/4" A325 Flat Washer
20	54776	3/4" Lock Washer
21	54532	3/4"-10 x 3" HHCS
No Ref	23143	Surge Protector, AC
No Ref	65058	Surge Protector, DC (Analog Systems Only



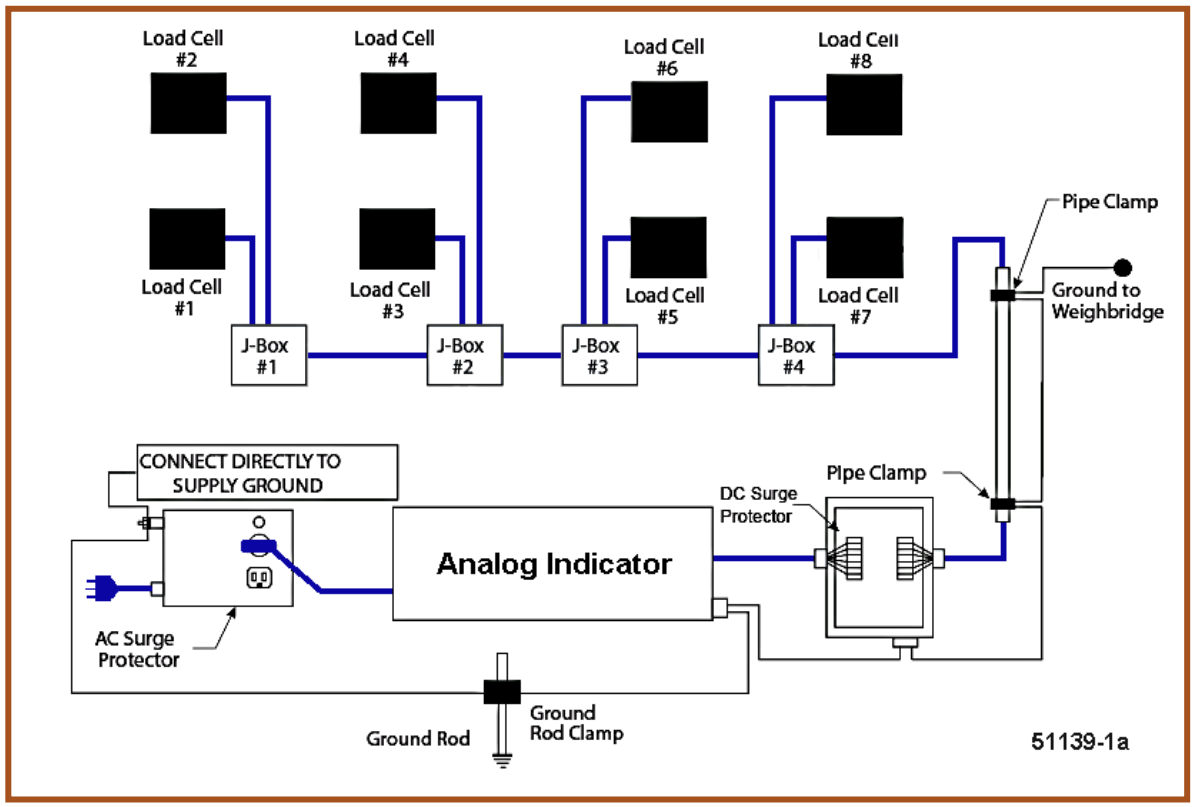
ANALOG SCALE COMPONENTS

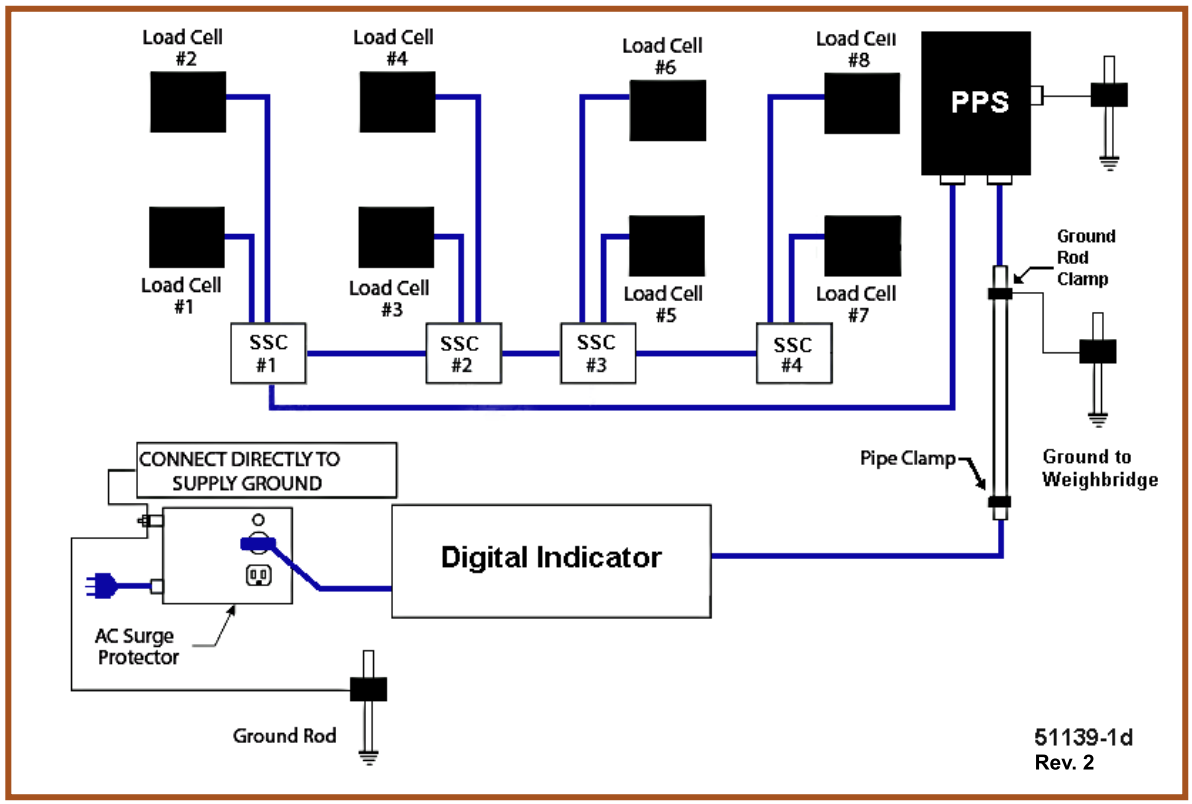
Ref	Number	Description
1	21912	Junction Box with Summing PCB
2	21842	Summing PCB

INTALOGIX™ TECHNOLOGY SCALE COMPONENTS

Number	Description
27926	Sectional Controller Assembly (SSC)
26164	SSC Box
26080	SSC PCB Only
32163	Pit Power Supply Assembly (PPS)
31500	Pit Power Supply PCB only (Latch Style)
15646	Pit Power Supply Box (Bolted Style)
23393	Pit Power Supply PCB only (Bolted Style)
17545	Connector, Liquid Tite PPS (small)
17535	Connector, Liquid Tite PPS(large)
24977	Connector, Liquid Tite SSC

Appendix I: Wiring Diagrams





Appendix II: Data Recording

Location/Name _____ Phone # _____

Scale Model _____ Serial _____

Date Installed _____

Date placed in service _____

Installer's Name _____

Instrument Model _____ Serial _____

Load Cell #1 Serial _____
Load Cell #2 Serial _____
#1 SSC or J Box Serial _____

Load Cell #3 Serial _____
Load Cell #4 Serial _____
#2 SSC or J Box Serial _____

Load Cell #5 Serial _____
Load Cell #6 Serial _____
#3 SSC or J Box Serial _____

Load Cell #7 Serial _____
Load Cell #8 Serial _____
#4 SSC or J Box Serial _____

PPS Serial _____

Location/Name _____ Phone # _____

Scale Model _____ Serial _____

Date Installed _____

Date placed in service _____

Installer's Name _____ ____

Instrument Model _____ Serial _____

Load Cell #1 Serial _____
Load Cell #2 Serial _____
#1 SSC or J Box Serial _____

Load Cell #3 Serial _____
Load Cell #4 Serial _____
#2 SSC or J Box Serial _____

Load Cell #5 Serial _____
Load Cell #6 Serial _____
#3 SSC or J Box Serial _____

Load Cell #7 Serial _____
Load Cell #8 Serial _____
#4 SSC or J Box Serial _____

PPS Serial _____

Manufactured by **Thurman Scale, Inc.**
4025 Lakeview Crossing
Groveport, Ohio 43215

www.thurmanscale.com

FULLY ELECTRONIC
SIDE RAIL TRUCK SCALE
MODEL – 8530KD
Document 51174