



# Department of Transportation

## Aberdeen Region Office

West Highway 12

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October 2, 2009

### ADDENDUM NO. 1

**Re: HR Z618(01), PCN 02JF**  
**Roberts County**  
**Supply, Install, and Calibrate Weigh Scale**

#### TO WHOM IT MAY CONCERN:

The following addenda to the plans shall be inserted and made part of your plans for the referenced project.

**Sheet 2:** Discard the plan note sheet and replace with the enclosed revised plan note sheet. The following changes were made to Sheet 2:

-Removed 1<sup>st</sup> paragraph under **STATIC SCALE SOFTWARE**. Added, "New indicator software shall be included with the new scale instrument. The existing scale instrument will not be reused."

-Added heading "**SCORE BOARD DISPLAY**" prior to score board specifications.

-Under heading **SCORE BOARD DISPLAY** added sentence, "The score board shall be a Cardinal SB500M, or equivalent." Revised last sentence to read "Install 110v weather box and mount score board to existing pole."

-Added heading "**SCALE STARTUP**" after score board specifications.

-Under **SCALE STARTUP**, last paragraph, changed "computer software upgrade" to "indicator software, and score board display"

-Under **Section 1.0 – Truck Scale**, second sentence, removed 100%.

**Sheet 3:** Discard the plan note sheet and replace with the enclosed revised plan note sheet. The following changes were made to Sheet 3:

-Under **Section 2.10**, added sentence, "The junction box shall be i-Qube, or equivalent."

-Under **Section 3.3**, removed 100%

-Under **Section 3.6**, added sentence, "The keyboard shall be included with the new system."

When sending in your sealed bid please state on the front of the envelope that Addendum No. 1 was received.

Sincerely,

DEPARTMENT OF TRANSPORTATION

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Jeff Senst, P.E.  
Region Engineer

cc: Plan Holders

Humphrey

File

**ESTIMATE OF QUANTITIES**

Bid Item Number	Item	Quantity	Unit
009E0010	Mobilization	Lump Sum	LS
900E5835	Static Scale	1	Each

**SPECIFICATIONS**

Standard Specifications for Roads & Bridges, 2004 Edition and Required Provisions, Supplemental Specifications and/or Special Provisions as included in the Proposal.

**TRAFFIC CONTROL**

The weigh station is not currently in full operation. Any additional traffic control needed for the installation of the scale will be provided by state forces. Traffic control items anticipated for the scale installation include barricades and traffic barrels.

**SCALE REMOVAL AND DISPOSAL**

State forces will furnish a loader to assist the Contractor in the removal of the original scale deck. The Contractor shall be responsible for removal of the existing truck scale from the scale pit. State forces will be responsible for the disposal of the depleted truck scale and deck.

The Contractor shall give the Watertown Area Engineer, Ron Sherman (605) 882-5166, a minimum of 5 calendar days advance notice prior to beginning work.

All costs associated with removal of scale shall be incidental to the contract unit price per each for "Static Scale".

**STATIC SCALE SOFTWARE**

New indicator software shall be included with the new scale instrument. The existing scale instrument will not be reused.

The indicator must have the ability to weigh from 2 to 8 axles, display, and print them to an 80 column printer along with the time, date, and gross axle total. The indicator must then be able to clear the weight screen and keep an accumulated count of all trucks with a password resettable counter.

The programmable indicator shall be programmed with up to 10 scrolling messages selectable from indicator soft keys.

**SCORE BOARD DISPLAY**

The score board shall be a Cardinal SB500M, or equivalent. The score board display shall have the following:

- 6 Digit - 5" tall LED digit display
- 7 Segment digits (weight display)
- Wireless transmitter and receiver
- 24 segment digits (alpha display)
- LED display with messaging capability
- Install 110v weather box and mount score board to existing pole.

**SCALE STARTUP**

The Contractor shall be responsible for the scale startup, including termination of wires, calibration, and placing the scale in service with the State of South Dakota. The Contractor performing the installation and calibration of the scale shall be a service agency registered with the South Dakota Department of Public Safety. (refer to the following website: <http://www.state.sd.us/dps/wm/RAgencies.htm>). The DOT is responsible for charges by South Dakota Weights and Measures.

All costs of work for the new scale, including materials, equipment and labor, pit preparation for new scale, furnish and install scale, scale calibration, indicator software, and score board display shall be incidental to the contract unit price per each for "Static Scale".

**STATIC SCALE SPECIFICATIONS**

The following set of specifications describe a fully electronic, single modular type steel deck truck scale system, designed to fit existing piers in a pit style foundation. Foundation drawings shall be provided by the scale manufacturer, and constructed in accordance with certified drawings. Scale shall be suitable for easy movement from one location to another.

**Section 1.0 – Truck Scale**

The scale shall be a Fully Electronic, Low Profile, Fabricated Steel Deck Design Truck Scale. The scale platform, load cells, and digital indicators will be designed, manufactured and assembled by one manufacturer located in the United States of America. Scale must be NTEP (National Type Evaluation Program) approved.

- 1.1 The scale shall have a nominal capacity of 60 Tons with a displayed resolution of 120,000# x 20# in accordance with NIST (National Institute of Standards and Technology), class III-L devices.
- 1.2 Scale shall be a full electronic fabricated steel design. Mechanical lever or hydraulic systems are not acceptable. Scale weigh-bridge will consist of 1 factory welded module, with a total platform length of 16' and platform width of 10' 0". No field assembly or welding will be allowed. Exact field measurements will be required by successful bidder.
- 1.3 Each scale module shall be designed with a CLC (Concentrated Load Capacity) of 45 Tons (90,000#), as defined by NIST. When the designed CLC is applied at mid-span on a module, according to NIST regulations, the maximum bending stress in the steel shall not exceed 26,000 PSI. The deflection at this loading condition shall not cause the scale to exceed the allowable accuracy tolerance as specified by NIST in Handbook 44.
- 1.4 The scale provided will have an unobstructed weighing surface of ten feet (width) by sixteen feet (length) and a profile to match existing piers.
- 1.5 The scale modules shall be designed as such to eliminate use of grout plates requiring setting and leveling prior to arrival of scale at job site.

- 1.6 The scale system shall be a full electronic design, with internal self-checking weigh-bridge. Scale weigh bridges using bumper bolts, externally fixed check rods, or embedded bumper plates in the end walls shall not be permitted.
- 1.7 The scale shall have a span deflection ratio of no less than 1:1100 under legal highway loading at mid span of module.
- 1.8 Minimum weighbridge thickness will be 12". Scale shall be an open bottom design. Weighbridges that utilize a sealed bottom plate for structural strength shall not be permitted.
- 1.9 3/8" checkered steel deck plate shall be supported with minimum of (12) 12" WF14# structural longitudinal beams, welded to top flange of beam and plate. Only structural wide flange beams construction shall be allowed. Weighbridge designs utilizing junior beams and or bent plate shall not be permitted.
- 1.10 Module end plates shall be a minimum 3/4" thick, and shall be reinforced on each side with longitudinal I-beams. Load cell pockets shall be constructed of minimum 3/4" steel plate and shall be tied to the end plates using tabs and laser cutouts to reinforce strength of the end box assembly. Scale modules using flat welded or bolted end boxes shall not be allowed.
- 1.11 Scale weighbridge shall be designed to accommodate a minimum of 500 trucks per day for a period of 10 years without weighbridge fatigue.
- 1.12 All steel components in the design of the bridge structure shall be bead blasted to SSPC-A-SP6 standards.
- 1.13 Each module assembly shall be cleaned prior to addition of any coatings or paint application to the weighbridge modules. The Department reserves the right to inspect the steel surfaces prior to application of any coatings to the prepared steel surfaces. All steel surfaces shall be free of all welding gas residue, oil, mill scale, and rust.
- 1.14 The lower portion of the weighbridge and all wide flange beams shall be evenly spray coated with an Asphalt Emulsified coating to protect the lower portion of the weigh bridge from corrosion due to high humidity, excessive rain, and standing water beneath the scale.
- 1.15 A rock guard shall be welded to the end modules to prevent scale binding against end walls due to debris.
- 1.16 All steel surfaces shall be coated with high solids PPG Urethane Primer to a 1.0-1.8 mil dry film thickness using a commercially approved electrostatic spray process. A final coat of a high solids PPG AUE-360 Acrylic Urethane top coat shall be applied to a dry film thickness of 1.5-2.5 mil thickness.
- 1.17 The scale will be NTEP certified and shall meet the requirements set forth by the NIST Handbook 44 for Class III-L devices. The bidder shall submit a current copy of COC (Certificate of Conformance) with bid.
- 1.18 The scale platform shall have a 24" fabricated square access manhole ring with removable cover.
- 1.19 The scale provided shall be a Rice Lake Weighing Systems Survivor Series, or equivalent.

**Section 2.0 - Load Cells and Junction Boxes**

Load Cells are rigidly mounted utilizing a single link suspension to provide equal, consistent, and evenly distributed force to the load cell. Load Cells shall be totally self-contained and come complete with mounting stands, single-link suspension and 60' signal cable to junction box. Compression or rocker style load cells shall not be permitted. The following are standard load cell requirements:

- 2.1 Load Cells shall be rigidly mounted in fabricated steel stands parallel to traffic flow. Suspension system will be E4340 material forged single link suspension hardened to Rockwell "C" 40-45 to allow self-centering and free floating platform. Rocker column or compression type load cells requiring check rods, or bumper bolts will not be permitted.
- 2.2 Load Cells will be of the analog type and have a minimum capacity of 75,000# each with an overload safety factor of 150%. Scales utilizing a lower capacity load cell than 75,000# will not be permitted.
- 2.3 Scales utilizing adjustable bumper bolts or embedded plates in the wall to check movement of the bridge shall not be allowed.
- 2.4 Systems utilizing internal circuitry to convert analog to digital conversion of the load cell signal within the load cell shall not be permitted.
- 2.5 All cables must be protected in conduit.
- 2.6 A flexible screw type conduit fitting shall be provided at each load cell, for protection of the cable from rats or other rodents.
- 2.7 Load Cells shall be of 4340 alloy steel nickel plated and shall be scientifically sealed with a minimum IP67 rating.
- 2.8 Replacement load cells shall be available from a multitude of vendors nationally, and shall not be single sourced or of a proprietary design.
- 2.9 Manufacturers using proprietary load cell technology available from a single source will not be permitted.
- 2.10 Fiberglass Reinforced Polyester (FRP) Junction box with formed contoured edges and gasketed access to be placed inside scale house. The junction box shall be analog to digital converting to provide the indicator with digital diagnostics through cable or Fiber optics. The junction box shall be i-Qube, or equivalent.
- 2.11 Load Cell stands will be flush mounted to concrete piers and anchored using Red Head wedge locks or similar bolts. A maximum of (2) ¾" x 7" anchor bolts will be required per stand and shall be incidental to the contract unit price per each for "Static Scale". Grout plates or embedded items in the foundation concrete will not be allowed.
- 2.12 A 1" braided copper transient by-pass cable shall be provided at each load cell from the weighbridge to the base stand.

- 2.13 Load cells use UPS Sola 2000 Duplex Voltage regulating transformer, or equivalent.
- 2.14 Load cells use UJB-3T6 DC Transient circuitry protection or equivalent.
- 2.15 Load cells shall be warranted for 5-years against failure of all types including lightning or surge voltage
- 2.16 A single-point grounding system shall be provided. Systems utilizing a multiple point ground will not be permitted.

**Section 3.0 Digital Instrumentation Specifications**

The scale instrument shall be a Rice Lake Weighing Systems 920 I Digital Weight Microprocessor based indicator or equivalent complete with operator friendly diagnostics.

- 3.1 The scale instrument shall be an NTEP approved model and meet or exceed all specifications set forth by NIST, Handbook 44 for Class II, III, and III-L devices. Additionally the instrument shall meet or exceed approvals for CSA and UL. The manufacturer on request shall provide a Certificate of Conformance to these standards.
- 3.2 The scale instrument shall be housed in an all stainless steel, NEMA 4X/IP66 enclosure measuring 10.5" wide x 11.5" high x 4.5" deep with swing away mounting base for ease of installation.
- 3.3 The instrument shall be manufactured by the manufacturer of the weighbridge assembly.
- 3.4 The instrument shall be microprocessor based using a 32 bit, 64Mhz processor or equivalent.
- 3.5 The scale instrument shall be fully programmable and configurable according to the needs of the application. Custom programming for the application will be available through common programming techniques.
- 3.6 The instrument shall allow hook up of a QWERTY type computer style keyboard. The keyboard shall be included with the new system.
- 3.7 The scale display shall be a backlit LCD graphical display with minimum size of 3.4" high x 4.6" wide with characters from ¼" to 1.2" high. Display must be capable of displaying alpha and numeric characters or graphic images.
- 3.8 The front panel of the instrument shall have the following operational keys as standard with tactile and audible feedback.
 

1. Zero	6. Units
2. Tare	7. Escape
3. Print	8. Clear
4. G/N	9. Numeric 0-9
5. Select	10. Decimal Point

- 3.9 Custom Soft Keys  
5-User Defined Function Keys
  - 1. Driver No.
  - 2. Contract No.
  - 3. Inbound
  - 4. Outbound
  - 5. Other
- 3.10 Displayed Operational Annunciators
  - 1. Gross, Tare, Net, Print, Zero, Motion
  - 2. Under, Accept, Over, Cutoff, ID
  - 3. Three units of measurement
- 3.11 The instrument shall have the ability to display both gross and net weights and the ability to recall gross or tare weights in the net mode.
- 3.12 The instrument shall have the ability to provide In/Out Gross Tare Net calculation of individual truck weights, and storage for the following information:
  - 1. 1000 open transactions
  - 2. 4000 tare weights
  - 3. data base report
- 3.13 The instrument shall have a minimum of (4) standard Bi-Directional Serial Ports with the following configurations available.
  - Com. 1 RS-232, RS-485/422
  - Com. 2 RS-232, 20mA current loop.
  - Com. 3 RS-232, RS-485/422/, 1650 UART
  - Com. 4 RS-232, RS-485/422/, 1650 UART
- 3.14 The digital instrument shall be warranted by the manufacturer for a period of 2 years from date of installation.
- 3.15 The instrument shall have a multi-level digital filtering system for environmental noise or vibration.
- 3.16 Individual load cell monitoring and system diagnostics
- 3.17 Operational power input shall be 115 Volts AC, plus or minus 10% @ 0.3 amp maximum. 50/60Hz single phase.
- 3.18 The scale instrument shall have the capability of receiving custom programs.
- 3.19 The instrument shall have a real time clock and battery backed feature.
- 3.20 Digital instrument shall meet all requirements for NTEP, NIST, CSA, CE, Measurement Canada Approval, UL and FCC Class A.