

RESOLUTION 2024-09-09-06

BE IT RESOLVED, that the Shelby County Commission hereby awards the bid for the Shelby County Landfill Truck Scales to the lowest responsive and responsible bidder, Birmingham-Toledo, Inc. as follows:

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| Birmingham-Toledo, Inc. | \$247,000.00 |
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Tuscaloosa Scale Company, Inc. provided a bid of \$219,000 but their proposed scale manufacturer, Cardinal Scale Manufacturing Company, did not meet bid specifications. The analysis of the submitted bids versus the bid specifications is attached.

Said eBid 2024-8-11496 is located within the Office of the Chief Financial Officer.

SHELBY COUNTY LANDFILL TRUCK SCALES BID ANALYSIS

| SPECIFICATIONS SECTION 4 | BIDDERS | |
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| | BIRMINGHAM TOLEDO | TUSCALOOSA SCALE CO. |
| 1. Furnish and install three steel deck landfill scales and associated electronic controls. The specified scales shall be bid each and times three total as shown on the proposal form. | Meets Specifications | Meets Specifications |
| 2. The scale shall have a clear and unobstructed weighing surface of not less than 70 feet long and 11 feet wide. | Meets Specifications | Meets Specifications |
| 3. The scale shall have a profile not to exceed 14-1/2 inches, which is measured from the top of the scale to the top of the foundation slab or pier at the load cell bearing points. | Meets Specifications | Meets Specifications |
| 4. The scale shall be fully electronic in design and shall not incorporate any mechanical weighing elements, check rods, or check stays. | Meets Specifications | Meets Specifications |
| 5. The scale shall be designed to perform as a single weighing platform and shall be of flat-top design. Side rail support beams are not acceptable. | Meets Specifications | Meets Specifications |
| 6. The scale shall have a gross weighing capacity of 100 tons. | Meets Specifications | Meets Specifications |
| 7. The scale shall be designed to perform as a single weighing platform and shall be of flat-top design. Side rail support beams are not acceptable. | Meets Specifications | Meets Specifications |
| 8. Scale is to have bolt on type side rails on both sides of the scales. Side rails are to be supported by a total of four (4) side rail brackets per side, per module and shall be constructed from 2.5 inch O.D. x 0.25" wall, steel pipe. Pipe should be powder coated or hot dip galvanized. Side rails shall extend 11 inches above the scale deck. | Meets Specifications | Meets Specifications |
| 9. The scale shall have a Concentrated Load Capacity (CLC) of 100,000 pounds. | Meets Specifications | Meets Specifications |
| 10. The scale shall be designed to accept vehicles that generate up to 80,000 pounds per tandem axle. | Meets Specifications | Meets Specifications |
| 11. The scale shall be designed to accept an average daily traffic volume of up to 250 vehicles per day, 365 days per year, for 20 years, assuming that 100% of the vehicles are fully loaded with the equivalent of 80,000 pounds on their dual tandem axle. | Meets Specifications | Meets Specifications |
| 12. In order for the bid to be considered, the supplier must provide written confirmation of empirical testing data to validate the design of the weighbridge through actual life-cycle testing. During the testing process the weighbridge must see a minimum of 2 million cycles, with at least 80,000 pounds of test load, applied on the 8 contact points of a standard truck's dual tandem axle tires. This documentation must be provided with the proposal submittal. Failure to provide this information will result in the bid being considered non-responsive. | Meets Specifications | Does Not Meet Specifications |

| SPECIFICATIONS SECTION 4 | BIRMINGHAM TOLEDO | TUSCALOOSA SCALE CO. |
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| 13. The scale shall be calibrated to a minimum of 120,000 pounds by 20-pound increments and not to exceed 200,000 pounds. System configurations with increments greater than 20-pound increments will not be accepted; therefore scales with gross capacities in excess of 200,000 pounds will not be acceptable in order for the scale to meet NTEP Legal-for-Trade regulatory requirements. | Meets Specifications | Meets Specifications |
| 14. The scale's weighing-related electronics shall consist solely of load cells, load cell cables, and digital weight display. No other devices shall be permitted between the load cell and the digital weight display. Junction boxes, summing boards, gathering boards, gathering boxes, totalizers, external analog-to-digital converter boxes, and sectional controller boxes will not be accepted because of their significant and inherent maintenance issues. | Meets Specifications | Meets Specifications |
| 15. The load cells and load cell mounting hardware shall be constructed of stainless steel. The cables shall be stainless steel sheathed. Load cells which are not stainless steel and hermetically sealed shall not be acceptable because of their inability to prevent moisture from entering the load cell and causing a premature failure. | Meets Specifications | Does Not Meet Specifications |
| 16. The scale shall meet the requirements set forth by the current edition of the National Institute of Standards and Technology Handbook 44 (NIST HB-44). The scale manufacturer shall provide a Certificate of Conformance (NTEP Certification) to these standards upon request. | Meets Specifications | Meets Specifications |
| 17. The design and manufacture of the scale weighbridge, load cells, and digital instrument shall all be of one manufacturer to maximize compatibility and availability of components and to insure maximum benefit from the system's lightning protection capability. Also, the manufacturer shall have a quality system that has been registered to the standards of ISO 9001. | Meets Specifications | Meets Specifications |
| 18. The scale shall be a METTLER TOLEDO Model VTS231 or approved equal. | Meets Specifications | Meets Specifications |
| 19. The scale weighbridge shall be constructed of three prefabricated scale modules each with a nominal surface dimension of 11' wide by 23'-4" long. | Meets Specifications | Meets Specifications |
| 20. The scale weighbridge shall be capable of weighing trucks that have dual-tandem axle weights (4 feet minimum between dual axles and at least 10 feet from next axle) of up to 80,000 pounds, and shall have a Concentrated Load Capacity (CLC) of 100,000 pounds. | Meets Specifications | Meets Specifications |
| 21. All welding shall be completed in accordance with the American Welding Society (AWS) D1.1 Structural Welding Code. | Meets Specifications | Does Not Meet Specifications |
| 22. All welding shall be performed by welding operators who have been certified to the AWS D1.1 Structural Welding Code. | Meets Specifications | Does Not Meet Specifications |
| 23. All welding shall be performed in position 1F to ensure maximum weld integrity. | Meets Specifications | Meets Specifications |
| 24. Longitudinal weighbridge members shall be welded continuously, using a high-penetration, submerged arc welding process. The use of intermittent or stitch welds on longitudinal members or deck tread plate is unacceptable. | Meets Specifications | Meets Specifications |

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| 25. The weighbridge shall be designed to allow access to load cell cables, base plates, and all foundation anchor bolts from the top of the scale platform. | Meets Specifications | Meets Specifications |
| 26. The weighbridge and load cell mounting assemblies shall be designed to allow installation or replacement of a load cell with only one additional inch of clearance required between the top of the foundation and the bottom of the weighbridge on pitless installations. | Meets Specifications | Meets Specifications |
| 27. There shall be no bolted connections between the load cell and weighbridge assemblies. | Meets Specifications | Does Not Meet Specifications |
| 28. The load cell assembly shall be designed so that when you are at the scale weighbridge with a lifting jack, the load cell can be replaced in less than 5 minutes. | Meets Specifications | Meets Specifications |
| 29. There shall be no field welding required for the installation of the scale. | Meets Specifications | Meets Specifications |
| 30. The weighbridge shall be shot blasted to a minimum SSPC-SP6 specification prior to painting. | Meets Specifications | Meets Specifications |
| 31. All enclosed chambers created by joining two steel members must be hermetically sealed to eliminate internal corrosion. | Meets Specifications | Does Not Meet Specifications |
| 32. All exterior surfaces of the scale shall have a two-component, high-build epoxy finish, impregnated with aluminum flake for increased corrosion resistance and UV protection, providing total Dry Film Thickness of 8-10 mils (International/Akzo Nobel Intergard 7562 or equivalent). | Meets Specifications | Does Not Meet Specifications |
| 33. The finish shall be force cured in order to reduce risk of contamination and ensure durability of the surface. | Meets Specifications | Meets Specifications |
| 34. Each load cell shall have a minimum capacity of 50 metric tons (110,000 pounds) with 300% ultimate overload rating. | Meets Specifications | Meets Specifications |
| 35. All Load cells shall be certified by NTEP and meet the specifications as set forth by NIST HB-44 for Class III L devices. The manufacturer shall provide a Certificate of Conformance to these standards upon request. | Meets Specifications | Meets Specifications |
| 36. All load cells shall be certified to meet the specifications set forth by the International Organization of Legal Metrology (OIML) in document R60 for C3 load cells, which requires 60% tighter accuracy tolerances than NIST HB-44 for Class III L devices. The manufacturer shall provide a Certificate of Conformance to these standards upon request. | Meets Specifications | Meets Specifications |
| 37. Load cells shall be digital with an integral microprocessor and analog-to-digital conversion function located within the load cell housing. | Meets Specifications | Meets Specifications |
| 38. Load cells shall output only converted digital information without load correction for load position to the scale instrument. Analog output of signals from the load cell is not acceptable due to susceptibility of signal interference. | Meets Specifications | Meets Specifications |
| 39. The load cell assembly shall be constructed so as to perform as a rocker pin and shall have no positive fixed mechanical connectors, such as bolts or links that are required in mounting the load cell to the weighbridge or foundation base plates. | Meets Specifications | Meets Specifications |

| SPECIFICATIONS SECTION 4 | BIRMINGHAM TOLEDO | TUSCALOOSA SCALE CO. |
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| 40. The load cell shall not require check rods, flexures, or chain links for stabilization, as these items are sources of ongoing maintenance requirements. | Meets Specifications | Meets Specifications |
| 41. The load cell shall not require a junction box to communicate between the load cell and scale instrument. No other devices shall be permitted between the load cell and the digital weight display. Junction boxes, summing boards, gathering boards, gathering boxes, totalizers, external analog-to-digital converter boxes, and sectional controller boxes will not be accepted because of their significant and inherent maintenance issues. | Meets Specifications | Meets Specifications |
| 42. The load cell shall be of stainless steel construction and hermetically sealed with a minimum NEMA 6P / IP68 (submersible) and IP69K rating. | Meets Specifications | Does Not Meet Specifications |
| 43. The load cell shall contain integral Transient Voltage Surge Suppressors (TVSS) for all input and communication lines. Each TVSS shall contain self-resetting thermal breakers to protect the load cell components from voltage and current surges. | Meets Specifications | Meets Specifications |
| 44. The load cell shall come equipped with a neoprene rubber boot to keep debris from contaminating the lower bearing surface. | Meets Specifications | Does Not Meet Specifications |
| 45. The load cell shall have a positive-lock quick connector integral to its housing for connecting and disconnecting the load cell interface cable at the load cell. The connector shall be of glass-to-metal, pin-type construction to maintain a hermetic seal. | Meets Specifications | Does Not Meet Specifications |
| 46. System shall be so designed as to permit a load cell cable to be replaced without either splicing the load cell cable or replacing the load cell, either of which will contribute to eventual system failure and unnecessary service costs. System shall be so designed as to permit the replacing the load cell cable without requiring that the scale must be recalibrated, further reducing service and maintenance costs. | Meets Specifications | Meets Specifications |
| 47. The load cell shall have the following specifications: <ol style="list-style-type: none"> 1. V_{min}: 5.0 pounds maximum 2. Hysteresis: $\pm 0.025\%$ of full scale 3. Non-Linearity: $\pm 0.015\%$ of full scale 4. Creep (30 minutes): $\pm 0.017\%$ of applied load 5. Temperature range: $-10^{\circ}\text{C} + 40^{\circ}\text{C}$ | Meets Specifications | Meets Specifications |
| 48. The load cell interface cable shall be stainless steel sheathed for environmental and rodent protection. Neoprene covered load cell cable shall not be permitted. | Meets Specifications | Meets Specifications |

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| 49. Load cell cables which are hard wired directly to the load cell are not acceptable due to the failure rates associated with moisture wicking into the load cell from aged cables or damaged cables, and due to the unnecessary expense associated with replacing entire load cells when only a cable has been damaged. | Meets Specifications | Meets Specifications |
| 50. The load cell shall have a minimum 10-year warranty against defects in materials and workmanship and failure resulting from lightning or surge voltages. The warranty shall cover all costs associated with replacement parts, travel, mileage, on-site labor, and recalibration after repair, the full cost of which shall be supported solely by the manufacturer and not in part by any other third party. | Meets Specifications | Does Not Meet Specifications |
| 51. Load cells shall be METTLER TOLEDO POWERCELL® PDX® load cell or equivalent. | Meets Specifications | Meets Specifications |
| 52. Junction boxes shall not be permitted in the scale, attached to the exterior of the scale, or remotely mounted from the scale. Sectional controllers with encapsulated PCBs shall not be permitted due to the failure rates associated with PCBs that have wired connections made within enclosures which are not hermetically sealed. | Meets Specifications | Meets Specifications |
| 53. Load cell cables and scale instrument cables shall be stainless steel sheathed for environmental and rodent protection. | Meets Specifications | Meets Specifications |
| 54. In order to minimize maintenance issues, only a single cable shall be used to transmit data or weight signals between the weighbridge and the digital weight display. | Meets Specifications | Meets Specifications |
| 55. A comprehensive lightning protection system shall be provided with the scale. | Meets Specifications | Meets Specifications |
| 56. The system shall not require complicated wiring or devices to provide this protection. | Meets Specifications | Meets Specifications |
| 57. Major scale components including load cells and scale instrument (terminal) shall be included in the lightning protection system. | Meets Specifications | Meets Specifications |
| 58. Grounding of all scale components including load cells; scale instrument, and accessories shall be to one common point. Systems with multiple ground points are not acceptable. | Meets Specifications | Meets Specifications |
| 59. An AC line surge protector shall conveniently plug into a common electrical outlet and have a receptacle. | Meets Specifications | Meets Specifications |
| 60. Each AC line surge protector required shall have one isolated, grounding, hospital-grade duplex receptacle, and an internal 15-amp circuit breaker. | Meets Specifications | Meets Specifications |
| 61. Verification of the lightning protection system's performance shall be available in writing from a third-party verification laboratory upon request. Proposals submitted without confirming the availability of third-party verification that the load cells, cables, and instrument as a system have been able to withstand the equivalent of a lightning strike with 80,000 amperes will be rejected. | Meets Specifications | Meets Specifications |
| 62. The lightning protection system shall be a METTLER TOLEDO StrikeShield™ Lightning Protection System or approved equal. | Meets Specifications | Meets Specifications |

| SPECIFICATIONS SECTION 4 | BIRMINGHAM TOLEDO | TUSCALOOSA SCALE CO. |
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| 63. The scale manufacturer shall warrant the scale assembly including weighbridge structure, scale instrument, and associated cables from failures due to a defect in manufacturing, workmanship, lightning, or surge voltages. | Meets Specifications | Does Not Meet Specifications |
| 64. The guarantee will warrant the product for a period of 10 years from date of installation or 122 months from date of shipment to the Buyer, whichever occurs first. Bidder shall promptly correct any such defect appearing within the warranty period. | Meets Specifications | Meets Specifications |
| 65. The warranty shall support 100% coverage of repair parts, labor, travel time, and mileage from the closest service location, or at the manufacturer's sole discretion, replacement of the product under warranty. The full cost of warranty as specified herein shall be supported solely by the manufacturer and not in part by any other third party or service provider. | Meets Specifications | Meets Specifications |

Tuscaloosa Scale Co. and County Responses to Items in Which Bid Specifications Were Not Met

Tuscaloosa Scale Co. quoted scales manufactured by Cardinal Scale Co.

Section 4 Item 12 - In order for the bid to be considered, the supplier must provide written confirmation of empirical testing data to validate the design of the weighbridge through actual life-cycle testing. During the testing process the weighbridge must see a minimum of 2 million cycles, with at least 80,000 pounds of test load, applied on the 8 contact points of a standard truck's dual tandem axle tires. This documentation must be provided with the proposal submittal. Failure to provide this information will result in the bid being considered non-responsive.

Tuscaloosa Scale Co. Response-

Cardinal Scale Co. does not use a device like this to test their scale. Cardinal Scale Co. uses Engineered Designs and tests their scales under conditions cooperating with regulatory officials to Federal Handbook Standards. These tests are temperatures, concentrated loading, X number of weighing cycles with no adjustments allowed after initial testing is completed. Cardinal's Certificate of Conformance is attached. Cardinal has more than 3,000 installations of this scale in service nationwide at this time and has no failures.

Determination- Does not meet the specifications. This requirement is critical to the longevity of the scales.

Section 4 Item 15 - The load cells and load cell mounting hardware shall be constructed of stainless steel. The cables shall be stainless steel sheathed. Load cells which are not stainless steel and hermetically sealed shall not be acceptable because of their inability to prevent moisture from entering the load cell and causing a premature failure.

Tuscaloosa Scale Co. Response-

The digital load cells in the Cardinal scales do not lend themselves for hermitically sealed to, however they are sealed to IP96K rating, and they are sealed to allow for a 10-year warranty. The Cardinal load cells are mounted higher in the scale to minimize flooding issues. Additionally, the Cardinal Weight Indicator can send emails to designated personnel advising of out or normal specs.

Determination- Does not meet the specifications. This requirement is critical to longevity of the scales. The Mettler Toledo scale has IP68 submersion rating. The Cardinal Scale does not have this rating.

Section 4 Item 21 - All welding shall be completed in accordance with the American Welding Society (AWS) D1.1 Structural Welding Code.

Tuscaloosa Scale Co. did not submit proof of this spec.

Determination- Does not meet the specifications. This requirement is critical to the longevity of the scales.

Section 4 Item 22- All welding shall be performed by welding operators who have been certified to the AWS D1.1 Structural Welding Code. All welding shall be performed in position 1F to ensure maximum weld integrity.

Tuscaloosa Scale Co. did not submit proof of this spec.

Determination- Does not meet the specifications. This requirement is critical to the longevity of the scales.

Section 4 Item 27- There shall be no bolted connections between the load cell and weighbridge assemblies.

Tuscaloosa Scale Co. response -

Cardinal Scale Co. use two cap screws to fix the location of the load cell. No opportunity to tip or side load the cell. The cap screws are not in tension, and they simply fix and maintain the position of the load cell.

Determination- Does not meet the specifications. This requirement is critical to the longevity of the scales. Bolts and cap screws serve the same purpose.

Section 4 Item 31- All enclosed chambers created by joining two steel members must be hermetically sealed to eliminate internal corrosion.

Tuscaloosa Scale Co. response –

If a crack in a weld or steel member occurs, could internal corrosion happen? Is the sealed area tested for integrity frequently?

Determination- Does not meet the specifications. This requirement is critical to the longevity of the scales. Hermetically sealed members do not allow for internal corrosion. The Cardinal scale weighbridge has an open bottom (I-beam). The Mettler Toledo scale is completely enclosed so as to not allow any corrosion from the underside.

Section 4 Item 32- All exterior surfaces of the scale shall have a two-component, high-build epoxy finish, impregnated with aluminum flake for increased corrosion resistance and UV protection, providing total Dry Film Thickness of 8-10 mils (International/Akzo Nobel Intergard 7562 or equivalent).

Tuscaloosa Scale Co. response-

Cardinal Scale Co. uses a powder coated electrostatically applied coating and then baked in an oven till cured. Painting/finishing specs are attached. In our opinion, the powder coating process is less harmful to the atmosphere than sprayed on coatings.

Determination- Does not meet the specifications. This requirement is critical to the longevity of the scales.

Section 4 Item 42- The load cell shall be of stainless-steel construction and hermetically sealed with a minimum NEMA 6P / IP68 (submersible) and IP69K rating.

Tuscaloosa Scale Co. response-

Cardinal Scale Co. has IP69K rating for its loads cells and the load cells sit much higher than MT's cells

Determination- Does not meet the specifications. This requirement is critical to the longevity of the scales. The IP68 (submersible) rating is critical for the load cells to be completely waterproof in the event they are ever submersed.

Section 4 Item 44- The load cell shall come equipped with a neoprene rubber boot to keep debris from contaminating the lower bearing surface.

Tuscaloosa Scale Co. response-

The MT load cell does not need the rubber boot for corrosion resistance; it needs the rubber boot to keep foreign material from getting under the cell's convex bottom which could cause restriction of movement which will cause alignment issues and side loading which leads to scale error over time.

Determination- Does meet the specifications. This requirement is critical to the longevity of the scale. The Mettler Toledo load cell have a neoprene boot that protects the load cells from debris and corrosion.

Section 4 Item 45- The load cell shall have a positive-lock quick connector integral to its housing for connecting and disconnecting the load cell interface cable at the load cell. The connector shall be of glass-to-metal, pin-type construction to maintain a hermetic seal.

Tuscaloosa Scale Co. response-

Cardinal's military type connector will require more turns of the connector to mate.

Determination- Does meet the specifications. This requirement is critical to the longevity of the scale.

Section 4 Item 50- The load cell shall have a minimum 10-year warranty against defects in materials and workmanship and failure resulting from lightning or surge voltages. The warranty shall cover all costs associated with replacement parts, travel, mileage, on-site labor, and recalibration after repair, the full cost of which shall be supported solely by the manufacturer and not in part by any other third party.

Tuscaloosa Scale Co. response-

Usually the dealer who sold the equipment is involved with the warranty, and my experience has been the servicing dealer assisted with warranty claims and was paid by the manufacturer for warranty work on equipment still under warranty. The rate for warranty work paid for by the manufacturer is usually a reduced rate from the dealer's normal service rate.

Determination- Does not meet the specifications. This requirement is critical to the longevity of the scale. The specs clearly state that the warranty has to be from the manufacturer not a third-party dealer. This could be an issue if the dealer changes brands of scales, or goes out of business etc.

Section 4 Item 63- The scale manufacturer shall warrant the scale assembly including weighbridge structure, scale instrument, and associated cables from failures due to a defect in manufacturing, workmanship, lightning, or surge voltages.

- The guarantee will warrant the product for a period of 10 years from date of installation or 122 months from date of shipment to the Buyer, whichever occurs first. Bidder shall promptly correct any such defect appearing within the warranty period.
- The warranty shall support 100% coverage of repair parts, labor, travel time, and mileage from the closest service location, or at the manufacturer's sole discretion, replacement of the product under warranty. The full cost of warranty as specified herein shall be supported solely by the manufacturer and not in part by any other third party or service provider

Tuscaloosa Scale Co. response-

Usually the dealer who sold the equipment is involved with the warranty, and my experience has been the servicing dealer assisted with warranty claims and was paid by the manufacturer for warranty work on equipment still under warranty. The rate for warranty work paid for by the manufacturer is usually a reduced rate from the dealer's normal service rate.

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