

SECTION 053700
LANDFILL VEHICLE WEIGHT SCALE SYSTEM (S-119)

1. DESCRIPTION

This specification shall govern all work and materials necessary to furnish, construct, install, and calibrate, and place scales into operation scales, data base system and remote terminal required to complete the project.

2. GENERAL

2.1 Requirement:

The Contractor shall furnish and install two vehicle weight scale systems complete with computer terminals and a remote office terminal. The weight scales will be used for weighing vehicles, consisting mostly of garbage packer trucks, entering in the City's landfills. The City has two landfills, the Elliott Landfill at 7002 Greenwood and the Westside Landfill located at 3702 Carbon Plant Road. The complete weight scale and data base system shall fully document vehicle weighing operations; also upon request provide various detailed reports, monthly customer invoices, and provide a complete accounting system of accounts receivable and revenues as described in the following specifications.

Computer terminals shall be installed at each landfill location along with scales and remote terminal shall be installed at the Solid Waste Services Office. Computer terminal for the Westside Landfill shall be portable.

2.2 Warranty:

The Contractor shall provide the City with a manufacturer's warranty covering all materials, labor, and freight. The warranty period shall begin upon acceptance of the completed project by the City. The warranty period shall be as follows:

Scale	3 Years
All Other	2 Years

The Contractor shall be responsible for all system maintenance for the first year of the warranty period.

3. MATERIALS

3.1 Scale:

Two (2) required, one for the Elliott Landfill and one for the Westside Landfill.

Minimum Dimensions:	10 feet width x 60 feet long
Weight Capacity:	60 ton (minimum)
Section Capacity:	40 tons
Scale Type:	Pitless low profile - fully electronic or electronic mechanical.
Weightbridge Design:	Shall meet American Railroad Engineering Association (AREA) specifications for bridge deflection with 40,000 lb. tandem axle load placed in the center of any module.
Deck Type:	Steel

Platform Checking: Checking of platform shall be by bumper bolts.

Scale Side Rails: Side rails shall be a minimum of 6" high, either integral or bolt-on structural steel, radiused to prevent damage to hubs and tires.

Paint Specifications: All metal surfaces shall be sandblasted to white metal (SP-5; before coating with 2 part catalyzed Epoxy). Any portion of the finish which is damaged by field installation shall be reblasted and recoated.

3.2 Data Base System:

Three (3) required. Systems shall be installed at the scale locations, one at Elliott, one at Westside Landfills and one system at the Solid Waste Services Office. The system for the Elliott Landfill and the Solid Waste Services Office shall be linked by telephone data circuit line for daily down loading of daily transactions from Elliott Landfill to the office. The system for the Westside Landfill shall be portable type and down load daily transactions onto a diskette for up loading transactions onto office computer.

HARDWARE:

Computer: Elliott Landfill and Solid Waste Services Office

Processor - Shall have a 80286 CPU
 Shall have a minimum clock speed at 10 mhz
 Shall have a functional 80287 math co-processor

Memory - Shall be 640K RAM capacity
 Shall have 1 mb on the system board expandable to 2mb
 Shall be able to expand to 16mb using cards

Security - Shall include a security key lock
 Shall include a security lock down device

Clock/
Calendar - Shall include an internal battery powered system clock/calendar

Storage - Shall have one internal 5 1/4" disk drive capable of reading/writing .36 or 1.2mb 5 1/4" diskettes
 Shall have one (1) 20mb fixed disk or larger with (40 ms) access time or faster at each landfill 60mb fixed disk at Solid Waste Services Office

Ports - Must include the serial port, one parallel port, and one mouse port

Mode - Shall be internal with a 2400 baud

Westside Landfill

Same as above except security, modem and mouse port will not be required.

Keyboard - Elliott and Solid Waste Services Office

E Keyboard must include an IBM enhanced 101 keyboard or equivalent

Westside Landfill

E Shall be minimum of 84 key keyboard, detachable

Display
Monitor -

Elliott and Solid Waste Services Office

E Shall be a 14" color display

E Shall support all VGA Modes EShall
include a tilt and swivel base

E Shall address at least 640 x 480 pixels (graphic mode)

E Shall have provisions to connect with existing PC/AT and PS/2
class machines through direct connections or by use of
adapter

Westside Landfill

E Shall be integral to computer unit

E Shall be 6" display minimum

E Shall support all CGA modes

E Shall be Gas Plasma Display

Printer -

Solid Waste Services Office

E Shall be Okidata Microline 321 or equivalent

E Shall support high resolution APA Graphics

E Shall print 300 cps or faster in draft mode

E Shall print 63 cps or faster in NLQ mode

E Shall have front panel controls wide carriage

E Shall attach via parallel printer cable

E Shall support continuous - forms feed, single sheet feed
(manual) and envelope feed (manual)

E Shall include ribbon, parallel printer cable, adapters and
documentation necessary to make operational in addition
to printer drive

E Shall support 3" to 16.5" paper width for cut sheets

E Shall support 3" to 15" paper width for continuous forms

E Shall support word processing software

Elliott and Westside Landfills

E Shall be EPSON FX S50 or equivalent

E Must print 264 cps or faster in draft form

E Must print 54 cps or faster in NLQ form

E Shall have front panel controls

E Shall attach via parallel printer cable

E Shall support 80 column paper

Scale

Indicator - Elliott Landfill and Westside Landfills (only)

E Shall be housed in a dust tight metal enclosure
designed for desk-top mounting

- E Shall be programmed and calibrated through keyboard data entry only
- E Shall provide Serial ASCII data output of gross weights in 20MA current loop, R232C and RS422 modes
- E Shall provide selectable on demand or continuous data output, with baud rate selections from 300 to 9600
- E Shall provide adjustable low pass digital filters to dampen scale vibration on motion while maintaining a responsive display and fast settling time
- E Shall have selectable automatic zero maintenance to compensate for weight vibrations
- E Shall have selectable motion detection to inhibit zero and print functions while scale display is changing
- E Shall have a minimum of six digit display

SOFTWARE: The software system shall be capable of printing weight tickets, general management reports, accounting reports, monthly invoices and performing accounting procedures as described herein. Software shall have several security levels to prevent unauthorized access. Weight and cash tickets are the only thing to be printed at landfill location, all other reports, invoices, and accounting capabilities shall be handled in the Solid Waste Services Office. Complete documentation and support shall be provided with software. Software **shall not be copy protected** and shall be easily installed on hard disk.

The system shall have the capacity to handle the following:

- E Cash Accounts - 1,000 daily transactions and separate receipt numbers from other accounts
- E City Garbage Collection Accounts with 75 vehicle capacity and is not to be included in monthly revenues accounting program, but information accessible by management report programs
- E 300 commercial monthly billed accounts of which 25 accounts shall have 50 vehicle capacity and 275 accounts shall have 10 vehicle capacity
- E 50 material categories with different rates (\$) per category
- E Ability to enter manually (at Solid Waste Services Office only) information on customers activities while scales were inoperable and hand written tickets were given out with estimates of trash volume (cubic yards)
- E Grid System information to identify placement of waste within landfill
- E Shall distinguish accounts for each landfill by a code number
- E Ability to keep count of anything driving onto the scale which weighs more than 2000 lb. whether a weight ticket was printed or not

Weight

Tickets - The system shall print weight tickets as vehicles are weighed. Printed tickets shall include the following information:

- E Landfill name and code number
 - E Ticket number
 - E Customer name, account number, address, zip, and phone number
 - E Vehicle ID number

- E Vehicle license number
- E Vehicle gross weight
- E Vehicle tare weight
- E Vehicle net weight
- E Material category
- E Time and day vehicle was weighed
- E Total charge (\$)

A place for the attendant to initial and for the vehicle driver to sign

Cash Tickets - The system shall print cash receipt tickets for vehicles not being weighed. Printed tickets shall include the following information:

- E Landfill name and code number
- E Ticket number
- E Vehicle license number
- E Estimate of volume in cubic yards
- E Material category
- E Time and day of transaction
- E Attendants initials
- E Total charge (\$)

Management
Reports -

System shall be able to print reports for any specified time period and shall sort by landfill, customer, and material category the following information and provide cumulative summary of specified items:

- E Customer account number, name, address. zip, and phone number
- E Landfill name
- E Optional customer vehicle information (printed only when requested)

Vehicle ID number
Vehicle license number
Material category
Grid ID where material was placed
Total weight per material category

- E Total weight for customers vehicles (by material category)
- E Total number of vehicles per customer
- E Rate for material category (\$/ton or \$/cubic yard)
- E Total charge (\$) per customer
- E A summary of the cumulative totals of revenue generated (\$), number of vehicles, tons by material category, cubic yards by material category

ACCOUNTING
CAPABILITIES

The system shall provide the capability to perform daily and monthly accounting procedures used to verify daily bank deposits and track monthly accounts receivable and payments as follows.

Daily Cash

Accounts - Daily cash transactions shall be kept separate from entries for monthly invoices. Each cash entry/transaction shall be

identified by consecutive receipt number. A cash total for each daily work shift (2 minimum) and an end of day total shall be required and printed upon request.

Monthly

Accounts - The system shall have the capability to store accounts receivable by account number order and charges to each customer for each calendar month.

An itemized list of account receivable (debits) for all customer accounts being invoiced shall be printed at the end of the month showing monthly totals and grand totals.

As payments (credits) are received for an individual account, the system shall have the ability to recall the debit accounts receivable balance, to which the payment entry would allow zeroing of the owed amount if account was paid in full or applying partial payment (as the case may be), leaving an unpaid balance (arrears) for that month.

All payments entered within the month shall be stored until the end of the month at which time an itemized list of payments shall be printed.

Unpaid balances shall be stored and shall be shown as an arrears amount on the next month's invoices.

Unpaid accounts receivables shall be stored for one year to coincide with a fiscal audit.

Monthly

Invoices - System shall be able to print monthly invoices for customers and segregate customers activity by landfill. Invoices shall include the following information:

E Customer account number, name, address, zip, and phone number

E Payment due date with optional message space

E Arrears amount (\$)

E Landfill name and code number

E Customer vehicle information

E Vehicle ID number

E Vehicle License plate number

E Vehicle gross weight

E Vehicle tare weight

E Vehicle net weight and/or cubic yards

E Time and date vehicle was weighed

E Material category

E Rate charge

E Total charge (\$) per vehicle

E Total charge per customer

4. SCALE AND DATA BASE SYSTEM INSTALLATION:

- E Contractor shall furnish all labor and materials to install, calibrate and place into satisfactory operation two vehicle weight scales with computer terminal systems, one each at the Elliott Landfill and at the Westside Landfill and a remote scale computer terminal at the City's Solid Waste Services Office located at 2525 Hygeia. The Contractor shall have a qualified software analyst and programmer available on the jobsite to supervise set-up and system start-up. This work shall include earth excavation for scale foundation, foundation form work, pouring concrete foundation, backfilling and compacting solid around foundation, offloading scale from haulers truck, scale installation on foundation, installation of computer terminal with scale indicator and printer and associated wiring, scale calibration and systems start up and trouble shooting.
- E Each scale and data base system installation shall be completed and operating within 15 working days from start of installation. Foundation installation shall be scheduled to start as close as possible to scale delivery date to minimize interrupting standard operations at the Westside Landfill. Contractor shall have the option to install scales and data base system simultaneously or consecutively with the Westside being first.
- E Installation of scales and Data Base Systems shall be limited to office working hours (8 a.m. - 5:00 p.m. Monday thru Friday) and landfill hours (7:00 a.m. - 7:00 p.m. Monday thru Friday).
- E Scale shall be installed in accordance with the National Bureau of Standards Handbook 44 Specifications and Recommendations.
- E Scale shall be installed at a distance no greater than 10 feet from the scale building at each landfill site.
- E All wiring from scale to building shall be in sealed rigid conduit a minimum of 12" below ground surface and rigid conduit shall extend up to location where wire enters building.
- E Reinforced concrete foundation designed for a soilbearing pressure of 1,500 pounds per square foot for scales shall be installed as specified on certified foundation drawing furnished by the scale manufacturer.
- E Concrete foundations design and installation shall conform to standard specifications Section 030020, Section 038000 and Section 032020 as attached in part S of these specifications.
- E Concrete shall have a minimum of 3000 pounds per square inch compressive strength.
- E Load bearing portions of the foundation shall extend across the entire width of the foundation.
- E For the Elliott Landfill (only) non-load bearing portion in between load bearing portions of the foundation shall be concrete, a minimum of 4" deep reinforced with Welded Wire Mesh (6x6x6).
- E The entrance and exit ramps of the scale shall be concrete, with minimum thickness of 6".

- E The entrance and exit ramps of the scale shall have a 10 feet level section and an additional ramp with a slope of not more than 1 inch vertical to 1 foot horizontal.

5. SUBMITTALS

The Contractor shall furnish the Engineer with four (4) sets of complete operation and maintenance manuals. The manuals shall be bound in a three ring binder and shall include the following information:

1. Detailed shop drawings of scale and foundation
2. Detailed specifications of all components
3. Wiring diagrams
4. Software with documentation
5. Name, address, phone number of manufacturers supplying components of system
6. List of manufacturer's recommended replacements/spare parts with prices

6. TECHNICAL SUPPORT

The contractor shall have a qualified software and programmer analyst on site to supervise set-up and system start-up.

The software manufacturer shall conduct a two day operator training course.

The software manufacturer shall provide free technical support of software by phone during normal business hours.

7. MEASUREMENT AND PAYMENT

Vehicular scales and data base systems shall be described in the proposal and shall include furnishing, constructing, and installing all materials and equipment; providing all labor, equipment, and incidentals required to complete the job complete, in place.