

AUTOMATED FUEL DISPENSING  
Bill Young, Nevada Department of Transportation

In early 1982, we recognized that our manual system for tracking fuel consumption was falling far short of our required accuracy. Our initial problem was identifying exactly where and what our deficiencies were. Our investigation showed poor security, inaccurate and illegible entries in the field stations and costly time delays and cumbersome data entry into our Equipment Management System.

Once these areas were identified, management and the Equipment Division discussed how best to correct the major problems. The Equipment Division had already made some inquiries into automated fueling systems so the Division was assigned to prepare a proposal and cost estimate.

It was finally decided to gain as much control as possible and yet remain cost effective. Seventeen of our 50 fueling sites would be equipped with card controls. The other 33 sites would use a 10 position keylock, and each key would have an individual meter. Each card control site is equipped with a card reader, a printer, a transcoder for transaction storage and a keyboard access console for communicating with the system. Also each of the 17 card sites is linked via telephone to our mainframe computer in Reno. The criteria for selecting the card sites were based first on consumption and second on location to provide convenience in fueling when traveling statewide. The 17 sites that were chosen represented approximately 90% of all fuels pumped by the Nevada Department of Transportation.

The system purchased by Nevada Department of Transportation was required to monitor, via cards, location, date, time, card number, vehicle number, mileage, operator, fuel type, transaction number for that day and quantity. The system was required to be a one-card or a two-card system, meaning that the system could be activated by use of a single card or two cards. The system purchased at \$500,000 for 17 automated sites and 33 keylock sites was a Petro-vend System.

We require Nevada Department of Transportation personnel to use two cards; an operator card and a vehicle card. We currently are using 1300 operator cards and 1400 vehicle cards. Use of the two cards makes it possible for the system to automatically record and monitor the vehicle or unit number, fuel type, quantity restrictions and operator identification. The manual entry required of NDOT operators is the mileage or engine hours of vehicle or equipment being fueled. This gives us error-free entries with the exception of the mileage or engine hours, which is self-correcting upon the next fueling transaction. At the beginning, some 30,000 transactions were being made and recorded by hand by the operators. We are now doing some 152,000 transactions a year of which approximately 120,000 are automatically recorded virtually error free. The system has also eliminated the need for every entry to manually keypunched and entered into the computer. We are now able to allow any state agency to fuel at our card sites with little or no problems in billing. Before installation of the system, we allowed 10 non-DOT agencies to fuel at our sites. We now have over 77 outside agency accounts that represent approximately 35% of all fuel pumped. Our data processing people wrote programs to facilitate automatic billing each month. We also charge five cents a gallon administration costs. Our system also provides a monthly report by each vehicle number. The vehicle

report is very useful in monitoring fuel consumption by individual units or a class of units. This report has been used numerous times to identify unauthorized usage.

It was originally felt that training of and acceptance by NDOT personnel was going to be a problem. However, because of the ease with which the system operates and the simplicity of using the card, none of the anticipated problems materialized. With numerous state employees fueling about 3000 vehicles, at a cost of about \$3,000,000, complaints have been very rare. The 3000 vehicles being fueled at this time represent an increase of approximately 1200 vehicles over the five years of operation.

It is our estimate that in just over three years the system paid for itself in productive time savings and fuel shortage elimination. Another benefit realized has been a reduction in the use of commercial credit cards for fuel, not only by the Nevada Department of Transportation but by the 75 other state agencies that utilize our facilities. The automated system has also allowed for unattended fueling during normal working hours.

In total, we are very pleased with the success of the operation of this system. I would like to emphasize that the central computer link is directly responsible for our success. With the central tie, it makes no difference where a vehicle receives fuel. We can monitor all fuel consumption. This is good not only for security reasons, but as an equipment management tool as well. Any card can be locked out of the system statewide in a matter of minutes. We can also check the fuel mileage on any vehicle.

Major problems identified during this period were:

1. The original fuel cards would not withstand the Nevada heat and would shrink and stop working. This led to the development of a new type of card that has proven to be very durable.
2. The system was originally installed using electronic pulsers. These proved to be very unreliable. We have since replaced them with Veeder-Room manual pulsers and, at this time, we have not experienced any malfunctions at all.
3. When preparing our specifications, we failed to place enough priority on fuel pumps being retrofitted to make them work with the system. As a result we have had to use operational monies to replace these pumps. I highly recommend that anyone considering the installation of this type of system conduct an in-depth survey of fueling pumps.

In addition to the system problems listed, our other most consistent problem is operators' use of incorrect procedures. We find, in most instances of card complaints, that the operator does not fully understand the proper procedure for using the card. This seems to be prevalent with personnel who do not normally use or fuel their own vehicles.

When cards are inserted and used in the right sequence, we gather precise and complete information. All the information we require is gathered as the card is inserted and retrieved. We experience none of the problems created by incorrect numbers being punched by operators in the miscellaneous field.

The only operator entry is the odometer reading and, even when this is misentered, it is not a problem because if the mileage is entered correctly, the next time fuel is pumped the erroneous mileage entry is ignored. In this way the system is self-correcting.

Outside agencies do have some problems with their personnel not entering correct data in the miscellaneous field but, because this does not affect our billing procedure, we leave it to each agency to determine if they wish this information or not.

Overall our systems and procedures for monitoring our 49 fueling sites are excellent. Our ability to respond to breakdowns and problems statewide within a 24-hour period has enabled us to control and maintain the system very efficiently. The time during which any site has been on manual operation during the past five years has been minimal.

On the basis of my meetings with representatives for other states and discussions of fueling operations, I can state we have by far the most advanced and efficient systems in the country. In five years of operation, we have pumped approximately 12,200,000 gallons of fuel with less than 1/10 of 1% shrinkage or shortage (12,000 gallons). Over 80% of this shortage can be directly attributed to leaking tanks. At this time, we have installed two leak detection systems and are evaluating their effectiveness for possible installation on all tanks within our system.

Notes (See following sample contract)

1. It is my recommendation that an inspection of pumps and dispensers be made by the agency before release of any bid and at a specific list of pumps and dispensers that should be replaced be included with the bid. Also in this section a sentence should be added that any pumps not listed in the specific list that are found by the successful bidder to be inadequate will also be replaced upon an approval by the paying agency at prearranged specified cost.
2. A sentence should be added here to say one (1) year or standard manufacturer's warranty whichever is longer. Also a paragraph should be included stating that if any furnished equipment, parts or supplies fail three (3) or more times in different locations during the warranty period, all like equipment, parts or supplies will be replaced at all locations statewide.
3. This paragraph should include a provision that cards be guaranteed not to shrink, expand or change shape as the result of exposure to extreme heat or cold (-20 degrees F to +120 degrees F).
4. I recommend that card punches be ordered for all major sites; however, all I.D. and lockout numbers should be controlled at a single location.
5. With the Petrovend system the printer is separate from the keyboard access console.
6. Do not use acoustic couplers. I recommend the Multi-Tech modem with direct phone line hookup.

## SAMPLE CONTRACT

SPECIAL TERMS AND CONDITIONS

A. Successful bidder shall provide a Performance Bond in the sum equal to the total amount of the bid to the Administrator of the Nevada State Purchasing Division, within ten (10) working days after award of bid. The bond shall be on the form provided in the bid and shall be written by a surety approved by the Insurance Commission of the State of Nevada.

B. The Nevada State Purchasing Division reserves the right to cancel the award of the contract at any time before the execution of said contract by all parties without any liability against the State of Nevada.

C. Bidders shall have been in the business of supplying and installing successfully operating comparable security fueling systems for a period of not less than two (2) years just prior to submitting the bid. They shall submit a list of similar projects successfully completed within the above period. The list shall provide the name, address and telephone numbers for the project.

D. ALL BIDDERS SHALL inspect the jobsite specified hereinbefore to check exact measurements where fueling systems are to be installed, all conditions incidental to or that effect the work of installation. Such check shall be the sole responsibility of the bidder and no allowances will be made by the State of Nevada for any errors made by bidder in count and/or dimensions. Arrangements for inspection of jobsite may be made by contacting: persons listed on page 5.

E. After award of the contract, the Successful Bidder shall prepare and submit to the Nevada Department of Transportation for approval a progress schedule showing the order in which the Successful Bidder proposes to carry out the work within the contract time and showing beginning times and completion times for each of the work sites, as itemized in the contract. The progress schedule shall be developed under a critical path method. The schedule shall outline in sufficient detail the proposed operations, the interrelations of the various operations and the order of performance so that the progress of the work can be evaluated accurately at any time during the performance of the contract. Upon request of the Nevada Department of Transportation, successful bidder shall submit supplementary progress schedules in the form required by the Nevada Department of Transportation. Such supplemental schedules may be required if a significant time deviation from the original schedule is noted by the Nevada Department of Transportation.

F. A late penalty of One Hundred Fifty (\$150.00) dollars per calendar day may be assessed for each day after contract completion date of June 30, 1983.

G. All materials, supplies or services furnished shall be exactly as specified in the bid, free from all defects in successful bidder's design, workmanship and materials, and, except as otherwise provided in the bid, shall be subject to inspection and test by the Nevada Department of Transportation at all times. If prior to final acceptance, materials, supplies or services are found

NAME OF BIDDER \_\_\_\_\_

SPECIAL TERMS AND CONDITIONS CONTINUED

to be defective or not as specified, the Nevada Department of Transportation shall reject them and require delivery of materials, supplies of services that meet specifications.

H. The Resident Inspector on the site will keep the Nevada Department of Transportation informed of the progress of the work and the manner in which it is being done, and to call the successful bidder's attention to any non-conformance with the drawings or specifications. We will not be authorized to accept any portion of the project, to issue instructions contrary to the drawings and specifications, or to act as foreman for the successful bidder. The Resident Inspector will have authority to reject defective material and to suspend any work that is being improperly performed, subject to the final decision of the Nevada Department of Transportation provided the suspension is confirmed in writing.

I. The successful bidder shall, if the Resident Inspector or Nevada Department of Transportation requires, remove or uncover any portion of the finished work as may be directed before the final acceptance of the same. After examination, the Successful Bidder shall restore such portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering or removing and the replacing of the covering or making good on the parts removed shall be paid for as extra work, but should the work so exposed or examined prove unacceptable, the uncovering or removing shall be at the Successful Bidder's expense. Any work done or materials used without supervision or inspection by the Resident Inspector may be ordered removed and replaced at the Successful Bidder's expense. Failure to reject any defective work or material shall not in any way prevent later rejection when such defect is discovered, or obligate the Nevada Department of Transportation to make final acceptance. It is the Successful Bidder's responsibility to coordinate his work with the Resident Inspector to insure a smooth and orderly construction schedule.

J. Successful Bidder shall submit to the Nevada Department of Transportation a proposed acceptance test plan for review and approval by the Nevada Department of Transportation prior to the installation certification. They shall notify the Nevada Department of Transportation, Assistant Equipment Superintendent William A. Young at 702-784-6371 when each site is ready for use and start of integrated system testing. The Nevada Department of Transportation shall commence acceptance testing as soon as possible after notification. The acceptance test plan shall be for a minimum of thirty (30) days. The Nevada Department of Transportation shall, at the end of the designated testing period, have the option of terminating or extending the test period (up to a maximum of 120 days), or until such time as the system is deemed to have met the Nevada Department of Transportation's requirements. If the test period is extended beyond thirty (30) days, liquidated damages as outlined in (F) shall not apply.

K. Contractor shall be responsible for complying with all City, County and State Codes and Regulations, as applicable, in the performance of the contract.

NAME OF BIDDER \_\_\_\_\_

SPECIAL TERMS AND CONDITIONS CONTINUED

L. All bidders must include the following information or bill WILL NOT be considered:

- (1) State Contractors License Number \_\_\_\_\_
- (2) License Monetary Limit \$ \_\_\_\_\_
- (3) License Classification \_\_\_\_\_

M. The Successful Bidder shall, prior to award of the contract, furnish the following properly executed documents and certificates:

(1) Liability Insurance Certificates indicating that the Successful Bidder has regular contractor's liability insurance to protect himself and all of his personnel and subcontractors from claims for personal injury, accidental death and damage to property, which may arise from operations under said contract, whether such operations be by the Successful Bidder, subcontractor or by anyone directly or indirectly employed by either.

(2) Certificates of such insurance must be filed with the Nevada State Purchasing Division in minimum limits of liability as follows:

- |                     |             |
|---------------------|-------------|
| (a) Bodily Injury   | \$1,000,000 |
| (b) Each Accident   | \$ 500,000  |
| (c) Property Damage | \$ 100,000  |

Said Liability Insurance Certificate shall be issued by a firm properly licensed and approved by the State of Nevada Insurance Commissioner.

N. The Successful Bidder shall indemnify, defend and hold harmless the State of Nevada for any and all loss, liability, damages, claims or demands of employees, agents and servants of the Successful Bidder or of all other persons allegedly arising out of the negligence or wrongful acts or omissions of the Successful Bidder's agents, servants or employees while performing this contract.

O. No portion of the project may be assigned or subcontracted by the Successful Bidder without the express written consent of the Nevada Department of Transportation. Whenever the Successful Bidder is authorized to subcontract or assign, terms of the contract shall not conflict or be violated. Any attempt by the Successful Bidder to assign or subcontract any portion of the project without the express consent of the Nevada Department of Transportation shall be invalid and shall constitute a breach of contract.

P. If Nevada State Purchasing Division determines that Successful Bidder has been delayed in the work due to causes beyond the control and without the fault or negligence of Successful Bidder, Nevada State Purchasing Division may extend the time for completion of the work called for by this contract, when promptly applied for in writing by Successful Bidder.

Q. Progress payments will be made for work completed at each site or sites. However, ten (10) percent of the total amount of the contract will be withheld

NAME OF BIDDER \_\_\_\_\_

SPECIAL TERMS AND CONDITIONS CONTINUED

until completion of installation and acceptance of all sites. To enable progress payments to be made, bidders shall indicate the total cost per site for furnishing and installing of the specified system and the total cost for all sites combined.

R. Invoices for payment shall be made out to the Nevada State Purchasing Division. However, as all payments shall require the prior approval of the Nevada Department of Transportation, such invoices shall be mailed directly to the Nevada Department of Transportation, to the attention of William A. Young, Assistant Equipment Superintendent, P.O. Box 930, Reno, NV 89504-0930.

S. If the State of Nevada deems necessary it may require of the contractor a variance in the prescribed work program other than specified in the bid. In such an event, the contractor will furnish the State an itemized price for additions, deletions, or changes, and thereafter, shall not proceed to make any change(s) without a written change order issued by the Nevada State Purchasing Division.

T. If there is any deviation from the contract plans, it will be the responsibility of the Successful Bidder to furnish the Nevada Department of Transportation with a set of "as built" plans to a scale suitable to locate facilities, prior to final payment.

U. The Contractor shall not employ or contract with any firm or organization that is unfit or unskilled in the work to be performed. He shall not discriminate or allow discrimination against any employee or applicant for employment because of sex, race, color, creed or national origin. He shall comply and shall require the subcontractors to comply with the applicable provisions of Title 53 of the Nevada Revised Statutes. He shall insure that all employees on the work are paid in accordance with the Prevailing Wage Rates approved by the State Labor Commissioner for the area or place of Work.

V. Access to sites for inspection prior to bidding can be obtained by contacting the following personnel:

DISTRICT ONE

Mr. E.N. Emigh	702-385-0367	Southern portion of District One.
Mr. G.G. Kritner	702-482-6461	Northern portion of District One.

DISTRICT TWO

Mr. L.D. Hough	702-784-6451	All of District Two except for Equipment Division Yard located in Reno.
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DISTRICT THREE

Mr. D.A. Rundle	702-738-6284	Eastern portion of District Three.
Mr. A.J. Aguirre	702-623-2536	Western portion of District Three.

EQUIPMENT DIVISION

Mr. W.A. Young	702-734-6371	Equipment Division Yard in Reno.
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NAME OF BIDDER \_\_\_\_\_

SPECIAL TERMS AND CONDITIONS CONTINUED

W. Successful Bidder will be furnished with a list of inspectors to be contacted prior to any installation. For access at other than normal working hours, Successful Bidder must contact the Resident Inspector at the site.

X. Successful Bidder shall assume full responsibility for installation of the entire system which includes, but is not limited to, the following:

- (1) Installations of the automated and key lock fuel dispensing systems and their components.
- (2) Removal of concrete and asphalt by saw cutting at the automated sites only.
- (3) Trenching.
- (4) Conduit and wiring placement in accordance with attached "Typical Electrical Trench Detail".
- (5) Backfill with sand and 95% select fill and placement of continuous warning tape 12" below grade as per attached Typical Electrical Trench Detail.
- (6) Compaction of trench.
- (7) Hookup of system to power source.
- (8) Clean up area.
- (9) Interfacing with Nevada Department of Transportation computer facilities.

Y. The Nevada Department of Transportation shall be responsible for installation of telephone service, replacement of concrete and asphalt where applicable.

Z. Installation shall be accomplished in a manner which will cause a minimum of interruption to the normal fueling activities. It should be noted that the peak fueling times generally occur at the beginning (7:00 a.m. to 7:30 a.m.) and the end (3:30 p.m. to 4:00 p.m.) of the daily shifts on normal working days (Monday through Friday). Periods of total disruption of service should be limited to one (1) hour.

AA. The Equipment Division Yard located in Reno will be the first site to be installed. Installation at all sites shall be completed no later than June 30, 1983.

AB. Attached are copies of plot plans for each site which show the locations where the physical plants must be installed. All installations will be underground unless indicated otherwise on the plot plans.

AC. All phases of installation shall comply with the latest edition of the National Electrical Code; federal, state and local codes and any other applicable safety codes. Particular reference is made to Article 500 of the National Electrical Code concerning work performance in hazardous areas. Any needed upgrading of the existing electrical system to comply with above shall be performed by the successful bidder.

AD. Successful Bidder shall repair any and all damage caused to all property,

NAME OF BIDDER \_\_\_\_\_



SPECIAL TERMS AND CONDITIONS CONTINUED

except as specifically excluded in this contract, which arise as a result of work performed under this contract. Property is to be repaired and restored as nearly as possible to its original condition.

AE. The system shall be guaranteed by the Successful Bidder against defects resulting from faulty design, the use of inferior materials, equipment or workmanship for a one (1) year period following the date of final acceptance of the system. Such guarantee shall include parts, labor, travel or other expenses required to repair any system malfunction.

State Period of Warranty and Coverage \_\_\_\_\_

AF. It shall be the responsibility of the Successful Bidder to provide all service, including the coordination of service from all vendors whose units were supplied under this bid. If the Successful Bidder, after notice, fails to proceed promptly to comply with the terms of the guarantee, the Nevada Department of Transportation may have the defects corrected and the Successful Bidder and surety shall be liable for all expenses incurred. Successful Bidder will not be held liable or responsible for vandalism, theft or abuse to the system during the warranty period.

AG. Successful Bidder shall be required to provide group or on-site training at six major sites: Reno, Winnemucca, Elko, Tonopah, East Ely and Las Vegas, and/or assistance for Nevada Department of Transportation personnel in developing the operational skills required to implement and operate the system offered in response to this bid. Training on use of the data entry terminals will be given by the Successful Bidder to Nevada Department of Transportation selected personnel, and selected personnel from other Nevada agencies using the Nevada Department of Transportation fueling sites. Approximately eight (8) hours of training will be required and cost of this training shall be included in the bid.

AH. Successful Bidder shall provide maintenance training to Nevada Department of Transportation personnel for the maintenance and upkeep of the system offered in response to this bid. Approximately eight (8) hours of training will be required and cost of such training shall be included in the bid.

AI. A Preconstruction conference may be required prior to system installation at the Equipment Division Office at 310 Calletti Way, Sparks, Nevada.

AJ. Successful Bidder shall be required to replace fuel dispensers or suction pumps at sites where the present dispensers or suction pumps will not be compatible with the fuel systems specified. A complete listing by site indicating the number of dispensers or suction pumps to be replaced shall be submitted with the bid. The listing shall show in addition to the above, the Manufacturer and Model number of the new unit, the unit cost and the installation cost. The total unit costs and installation costs shall be included in the complete bid price. Replaced units shall remain the property of the Nevada Department of Transportation. A list of dispensers or suction pumps showing manufacturer, model and serial number is attached. (See Note I.)

NAME OF BIDDER \_\_\_\_\_

SPECIAL TERMS AND CONDITIONS CONTINUED

AK. Repair parts and component replacement availability may be considered in award of this bid.

State Location of Nearest Service Representative \_\_\_\_\_

State Location of Nearest Repair Parts Stock Point \_\_\_\_\_

AL. The page titled: "EXCEPTIONS TO SPECIFICATIONS" attached will be considered the final page of this bid and will be made a part thereof.

NAME OF BIDDER \_\_\_\_\_

STATE OF NEVADA - PURCHASING DIVISION  
PERFORMANCE AND COMPLETION FORM

To Accompany Contract

KNOW ALL MEN BY THESE LEGAL PRESENTS,

THAT \_\_\_\_\_ doing business under the firm name and style of \_\_\_\_\_, as Principal, hereinafter called Contractor, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_ and lawfully authorized to and doing business as a Surety within the State of Nevada as Surety, are held and firmly bound unto the State of Nevada acting through its Purchasing Division, hereinafter called "Owner" in the sum of \_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_) lawful money of the United States of America to be paid to the Owner, or its assigns, said sum being one hundred percent (100%) of the contract amount payable by the Owner under the terms of the contract, for which payment well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly, and severally, firmly by these presents.

WHEREAS, The Contractor is about to enter into a contract in writing dated the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_, with the Owner, covering the work described as follows:

which said Contract and the plans and specifications therein mentioned are hereby made a part hereof as fully as if copied at length herein.

AND WHEREAS, Said Contractor is required by Nevada Revised Statutes 408.357, and all acts amendatory thereof and supplemental thereto, to furnish a bond in connection with said contract guaranteeing the faithful performance thereof;

AND WHEREAS, The Contractor under the terms of said Contract agrees to replace and/or repair without cost to the State of Nevada any damage or imperfections due to faulty labor or materials incorporated in said work for a period of one (1) year, from and after the date of completion and acceptance by Owner of the work contracted to be performed; **(See Note 2)**

NOW, THEREFORE, THE CONDITIONS OF THE ABOVE OBLIGATIONS ARE SUCH that is the Contractor shall well and truly save harmless and indemnify the Owner from and against any and all claims and demands or liens and shall also complete in all its parts all the work described in said Contract within the time and in the manner therein specified and shall for a period of one (1) year from the date the work contracted to be performed is completed and accepted by Owner replace and repair any and all defects arising in said work, whether resulting from defective material or workmanship, and shall also observe, perform, fulfill, and keep all and every Covenant and agreement in said Contract on the part of the Contractor to be kept, performed and complied with within the time and in the manner therein specified and shall truly and fully comply with all guarantees required in said Contract, then this obligation shall become null and void, otherwise it shall remain in full force and effect.

And the said Surety, for value received, hereby stipulates and agrees, if requested to do so by the State of Nevada, to perform and fully complete the work mentioned and described in said Contract, pursuant to the terms, conditions and covenants thereof, if for any cause, said principal fails or neglects to so perform and fully complete said work; the said Surety further agrees to commence said work of full completion within twenty (20) days after notice thereof from the State of Nevada, and to fully complete the same with all due diligence and in accordance with the plans and specifications.

No change or alteration of the work, extensions of time or other modification of said Contract shall release or exonerate any Surety or Sureties upon this bond. It is expressly agreed and understood that this bond is made and executed contemporaneously with the Contract above-mentioned, and in consideration of the covenants and agreements therein made and entered into on the part of the Owner; and that the due execution and delivery hereof is a condition precedent to liability on the part of the Owner, on said above-mentioned Contract. It is further understood and agreed that this bond is made in compliance with NRS 408.357, and all acts amendatory thereof and supplemental thereto; and that all benefits therein set forth inure to the benefits of Owner.

I, WITNESS WHEREOF, THIS instrument has been executed this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_.

APPROVED as to Legality and Form  
Date \_\_\_\_\_ 19\_\_\_\_\_

\_\_\_\_\_  
Contractor

State of Nevada,  
Department of Transportation

BY (sign) \_\_\_\_\_  
(type) \_\_\_\_\_  
(title) \_\_\_\_\_

\_\_\_\_\_  
Chief Counsel  
Deputy Attorney General

NOTE: This signature is to be notarized.

State of Nevada Contractor's Lic. No.

Licensed Nevada Resident Agent:

\_\_\_\_\_

\_\_\_\_\_  
Name

\_\_\_\_\_  
Name of Surety

\_\_\_\_\_  
Address

BY (sign) \_\_\_\_\_

(type) \_\_\_\_\_  
Attorney-In-Fact

NOTE: This signature shall be notarized

Amount of Bond Premium (Bond  
Premium to be filled in by the  
Surety Company)

\$ \_\_\_\_\_

SPECIFICATIONS FOR  
AUTOMATIC FUELING SYSTEM

GENERAL:

It is the intent of the Nevada Department of Transportation that upon completion of this contract, this project will be a fully functional operation, i.e. a complete turn key operation.

These specifications describe the installation and furnishing of seventeen (17) automated card systems and thirty-three (33) key lock security type fuel dispensing systems, located at Nevada Department of Transportation sites throughout the State of Nevada, for the fueling of Nevada Department of Transportation and other state agency vehicles.

A list and map detailing site locations, number of pumps, pump identification numbers and type of fuel being dispensed is attached.

Systems furnished shall be of manufacturer's current design and shall incorporate the latest state-of-the art advancements and systems configurations that their systems might contain.

These specifications cover Veeder-Root automated card system and key lock security type fuel dispensing system. However, other manufacturer's systems of equal or better quality and utility will be considered.

State System Mfr. \_\_\_\_\_

The following is a technical description of the automated fuel dispensing and data acquisition system. It will provide specifications for required equipment, software and communication capabilities and the required functions of each item described. Attached will be a site by site list showing what the specific equipment needs shall be for each location.

The system will be required to operate as a one-card, two-card, or combination system whereby some of the cards are authorized to be used without a second card.

CARD DESCRIPTION: Cards will be approximately 2 1/8" x 3 3/8" and made of oil-resistant PVC material and be available in any combination of two (2) colors. (See Note 3.)

CARD CODING INFORMATION: Cards shall be capable of containing the following information:

1. Identify Number - Up to 16 digits; nine digits will be used for operator identification and six digits will be used for vehicle coding. Digit configuration must be changeable by issuing new cards without equipment hardware or software modification.
2. Validity Number - Card will contain a three digit validity number to be assigned by the Successful Bidder to prevent outside card holders access to the system. Each card will also have a four digit lockout number.

NAME OF BIDDER \_\_\_\_\_

SPECIFICATIONS CONTINUED

CARD CODING INFORMATION CONTINUED: Successful Bidder will be required to furnish up to 5000 cards coded with Nevada Department of Transportation assigned identification numbers and vehicle identification numbers. Each card will be furnished with a visible identification strip. Vehicle cards will be of a different color from the operator identification cards. Successful Bidder will also furnish 2500 uncoded cards of each color (two).

CARD PUNCH: Two (2) electrically operated card punch will be furnished with two (2) instruction manuals. Successful Bidder shall also furnish 2500 blank card punch format sheets and original copies of the format sheet for the required coded cards. (See Note 4.)

DATA ENTRY TERMINAL: The Data Entry Terminal (DET) will control card reading, pump selection, authorization product counting and required odometer reading. The DET is to be mounted on the island near the fueling dispensers. It must be capable of controlling a minimum of eight hoses.

The DET shall contain the following:

1. An optical card reader with no moving parts.
2. A numeric entry key pad for manual entry of odometer readings.
3. A liquid crystal display (LCD) for visual verification of numeric entries. The LCD assembly must contain a heater for protection against cold weather.
4. Prompting indicators to lead users through the fueling procedures in a sequential manner.
5. Pump in use indicators.
6. Manual override switches to select normal operation, manual operation, or off for each hose. These switches must be behind a lock panel for security.
7. Control relays for each hose for applying power to authorize fueling.
8. Input for accepting pulses indicating quantity dispensed.

The DET will control the fueling procedures in the following manner:

1. Card holder inserts his/her card along with vehicle card into the card reader in the DET.
2. When the "ENTER ODOMETER" indicator lights, the card holder enters six digits from the vehicles' odometer or hour meter. This will be accomplished via the DET's numeric key pad. Coding on each card must indicate whether or not that card requires odometer or hour meter entry.
3. When the "SELECT PUMP" indicator lights, the card holder enters the number of a pump not in use that dispenses a product for which the card is authorized.
4. The system then checks the following:
  - a. Card not locked out.
  - b. Card properly coded.
  - c. Correct validity number.
  - d. Authorized product selected.
5. If everything checks the "PULL CARD - OK TO FUEL" indicator lights. Fueling is allowed only after the card is removed to prevent leaving the card in the card reader.

NAME OF BIDDER \_\_\_\_\_

SPECIFICATIONS CONTINUED

NOTE: The system must be able to automatically turn off the pump when fueling does not commence within two minutes or longer or fueling is interrupted for two minutes or longer.

6. When the limit code on the card is reached or if the user turns off the dispenser, the transaction is ended, and the system records and stores the quantity dispensed.
7. The DET will communicate via the controller to the teleprinter the following information for immediate printing:
  - a. Transaction sequence number (5 digits)
  - b. Julian date (3 digits)
  - c. Time of day, 24 hour time (4 digits)
  - d. Identify number, this includes both operator and vehicle identification in any combination required by the Nevada Department of Transportation (up to and including 16 digits)
  - e. Odometer reading (6 digits)
  - f. Hose number (2 digits)
  - g. Product Number (1 digit)
  - h. Quantity (minimum 4 digits including decimal)
  - i. Site number (3 digits)

The DET must be packaged in an all metal enclosure suitable for harsh environmental conditions and ambient temperatures of -30° F. to 130° F. The card reader slot must be equipped with a door or other devices to eliminate and restrict the entry of foreign particles.

CONTROLLER: All data entry terminals will be interconnected to a controller which in turn monitors all procedures to insure that pumping information being received is accurate, correct and validated. Controller must be housed in a wall type enclosure suitable for indoor installation. Controller must be able to connect and control up to eight (8) DET's and contain the following:

1. Profile of pumps and products entered by the operator. Each pump individually set for 1, 10 or 100 pulses per unit volume.
2. Communication interfacing for the keyboard printer.
3. Memory for locked-out or locked-in card numbers. The system shall have the capability of either locking-out or locking-in up to 10,000 cards.
4. Calendar/Clock: Calendar will indicate Julian date. Clock will be a 24 hour time clock.
5. Transaction memory with a capacity of 450 or 1000 transactions as specified on-site location equipment list.
6. Product report with storage of pump totals, product totals, and tank inventories. Operator must be able to either preset these registers to any starting point or reset them to zero.
7. Low level alarm as an indicator of low inventory with alarm level for each tank adjustable to any amount.

KEYBOARD PRINTER: Teleprinters furnished will be of two types. The first type will be furnished with a typewriter type keyboard and must be a Teletype Model KSR43 or approved equal. This teleprinter, with the use of an acoustical

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SPECIFICATIONS CONTINUED

coupler phone moden, will be able to communicate security lock-outs and lock-ins with remote sites throughout the state. It also must be able to perform lock-out and lock-in functions directly at the local level. Via the keyboard teleprinter, the Nevada Department of Transportation will also require the ability to poll all sites statewide to receive fueling transactions and/or reports. In addition to the above listed function, this teleprinter will automatically record local transactions as they occur. (Refer to site equipment list for those fueling sites which will require the keyboard teleprinter). Keyboard teleprinter will accept 1200 Baud transmission. **(See Note 5.)**

The second type of teleprinter that is required will be a print only to facilitate recording fueling transactions as they occur. No commands or communication abilities will be required with the print only teleprinter. (Refer to site equipment list for those sites requiring this type of teleprinter).

DATA COMMUNICATIONS: The system must have an KS-232 port for remote communication and for interfacing with the Nevada Department of Transportation 4/90 Four Phase Computer. The following modes must be available for transaction memory output:

1. Packed output
2. Check Sum Protocol
3. ACR/NZK operation
4. 1200 Baud Output

For questions concerning computer interface contact Mr. Al Larsen at 702-885-5572.

No bids will be considered without prior approval from Mr. Larsen as to the systems capability to interface with the Nevada Department of Transportation's 4/90 Four Phase Computer.

Controller phone modems for each site will be provided by the Successful Bidder. Phone line communication jacks will be provided by the Nevada Department of Transportation. Phone lines will be a unique number for the fueling system only. For information concerning communication lines and hookup contact Mr. John MacDonald at 702-885-5512.

Successful Bidder shall provide acoustical couplers to those sites indicated on the attached site-by-site equipment list and one acoustical coupler to the Equipment Division headquarters for portable use at those sites equipped with keyboard teleprinters. **(See Note 6.)**

It will be the sole responsibility of the Successful Bidder to make any and all hookups of the equipment listed.

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