



## CITY of NOVI CITY COUNCIL

**Agenda Item 3**  
**August 24, 2015**

**SUBJECT:** Approval to purchase three Force America CommandAll regulating controllers and three wing plows for the City's winter maintenance fleet from Truck and Trailer Specialties Inc., the low bidder, in the amount of \$154,188; and approval of a resolution to amend the budget to add \$24,200 to this line item.

**SUBMITTING DEPARTMENT:** Department of Public Services – Field Operations Division *M.W.* *RA*

**CITY MANAGER APPROVAL:** *[Signature]*

<b>EXPENDITURE REQUIRED</b>	<b>\$154,188</b>
<b>AMOUNT BUDGETED</b>	<b>\$130,000 (101-442.20-982.000 – Miscellaneous Equipment)</b>
<b>APPROPRIATION REQUIRED</b>	<b>\$130,000 (rollover from FY 14-15) \$24,188 (Property Tax Revenue)</b>
<b>LINE ITEM NUMBER</b>	<b>101-442.20-982.000 (Miscellaneous Equipment)</b>

**BACKGROUND INFORMATION:** The Novi City Council appropriated \$85,000 in FY2013-2014 for the purchase of six Force America 5100 regulating controllers to improve efficiency in the application of rock salt and salt brine during winter maintenance operations. In FY2014-2015 another \$45,000 was budgeted for three new wing plows to reduce snow clearing times associated with each truck. These combined project allocations totaled \$130,000 (\$85,000 for regulating controllers plus \$45,000 for wing plows). Upon learning of the successive fiscal year funding, it made the most sense to combine projects, limiting the amount of down time the trucks would experience.

Three trucks were selected (three International 7400 Single Axle trucks outfitted with a dump bodies, front plows and underbody scrapers), to be retrofitted with both wing plows and new control centers. These trucks were selected because of their ability to economically upgrade due to their relatively new hydraulic control components.

It is estimated that each truck outfitted with a wing plow can clear snow up to one-third faster than equipment that uses conventional plowing equipment (underbody scraper and front plow), resulting in operational cost savings, streets cleared sooner rather than later, and reduced staff fatigue. In addition, wing plows offer a much more efficient and effective way to clear cul-de-sacs. The new control centers allow operators to accurately calibrate and disperse salt and brine which reduces associated expenditures, and lessens environmental impacts.

Following a public bid solicitation period, one bid was received on June 24, 2015. Upon a thorough evaluation, DPS determined that Truck & Trailer Specialties, Inc. met all specifications by providing a responsive bid on the control centers and wing plows.

The total cost to outfit the three trucks is \$154,188, which is \$24,188 higher than the anticipated cost of the project. This variance is primarily due to equipment, material and

labor cost increases associated with making the retrofits since the project was originally scoped. An appropriation of \$24,200 is being reallocated from property tax revenue to cover the full expenditure.

Upon approval, the supplier will order all necessary equipment and schedule dates to begin the retrofits on each truck. Because of long lead time items, it is anticipated that final delivery will take place in approximately 40 weeks with no impact to 2015-2016 winter maintenance services that would otherwise be caused by removing trucks from service to perform the retrofits.

**RECOMMENDED ACTION:** Approval to purchase three Force America CommandAll regulating controllers and three wing plows for the City's winter maintenance fleet from Truck and Trailer Specialties Inc., the low bidder, in the amount of \$154,188; and approval of a resolution to amend the budget to add \$24,200 to this line item.

	1	2	Y	N
<b>Mayor Gatt</b>				
<b>Mayor Pro Tem Staudt</b>				
<b>Council Member Casey</b>				
<b>Council Member Markham</b>				

	1	2	Y	N
<b>Council Member Mutch</b>				
<b>Council Member Poupard</b>				
<b>Council Member Wrobel</b>				

**RESOLUTION**

NOW, THEREFORE BE IT RESOLVED that the following Budget Amendment for the controllers and wing plows is authorized:

	<b>INCREASE (DECREASE)</b>
<b>General Fund</b>	
<b>REVENUES</b>	
Property Tax Revenue	24,200
<b>TOTAL REVENUES</b>	<u><b>\$ 24,200</b></u>
<b>APPROPRIATIONS</b>	
<b>Department of Public Services - Field Operations</b>	
Capital Outlay	157,250
<b>TOTAL APPROPRIATIONS</b>	<u><b>\$ 157,250</b></u>
<b>Net Increase (Decrease) to Fund Balance</b>	<u><u><b>\$ -</b></u></u>

I hereby certify that the foregoing is a true and complete copy of a resolution adopted by the City Council of the City of Novi at a regular meeting held on August 24, 2015

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Maryanne Cornelius  
City Clerk

# Wing Plow



# Control Center



CITY OF NOVI  
CONTROL CENTER & WING PLOW RETROFITS  
June 24, 2015 11:00 A.M.

	<b>Truck &amp; Trailer Specialties</b>
A. Truck 601	\$ 51,396.00
B. Truck 602	\$ 51,396.00
C. Truck 619	\$ 51,396.00
<b>TOTAL</b>	<b>\$ 154,188.00</b>
<b>Alternate 1:</b> Hydraulic Pump Replacement	included in above prices
<b>Alternate 2:</b> Alternate option for fuel &/or hydraulic fluid on #619	included in above prices
Delivery ARO	240-300 days ARO
Addenda Acknowledged	Yes
Comments	<p>Sec 1 Notations: 1. The controller includes a data port for a road watch temperature sensor. It does not include the sensor. 2. A hydraulic oil temperature sensor is not included. A "low oil" sensor is included in the tank.</p>



CITY OF NOVI

CONTROL CENTER & WING PLOW RETROFIT

BID FORM

We, the undersigned as bidder, propose to furnish to the City of Novi, according to the specifications, terms, conditions and instructions attached hereto and made a part thereof:

	Truck Number	Lump Sum
A.	601	\$ 51,396.00
B.	602	\$ 51,396.00
C.	619	\$ 51,396.00
TOTAL		\$ 154,188.00

Delivery after receipt of order 240 - 300 Days ARO

We acknowledge receipt of the following Addenda: Addendum # 1  
(please indicate numbers)

EXCEPTIONS TO SPECIFICATIONS (all exceptions must be noted here):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

COMMENTS: Sec 1. Notations.

- ① The controller includes a data port for a Road Watch temperature sensor. It does not include the sensor.
- ② A hydraulic oil temperature sensor is not included. A "Low Oil" sensor is included in the Tank.

**NON-IRAN LINKED BUSINESS**

By signing below, I certify and agree on behalf of myself and the company submitting this proposal the following: (1) that I am duly authorized to legally bind the company submitting this proposal; and (2) that the company submitting this proposal is not an "Iran linked business," as that term is defined in Section 2(e) of the Iran Economic Sanctions Act, being Michigan Public Act No. 517 of 2012; and (3) That I and the company submitting this proposal will immediately comply with any further certifications or information submissions requested by the City in this regard.

**THIS BID SUBMITTED BY:**

Company (Legal Registration) Truck & Trailer Specialties, Inc

Address 1200 Victory Drive

City Howell State Mi Zip 48843

Telephone 855-710-3855 Fax 517-552-3666

Representative's Name Daniel Bowman

Representative's Title President

Authorized Signature Daniel Bowman

E-mail dbowman@ttspec.com

Date 06-22-15

COPY



**NOTICE - CITY OF NOVI  
INVITATION TO BID**

**CONTROL CENTER & WING PLOW RETROFIT**

The City of Novi will receive sealed bids for **Control Center & Wing Plow Retrofit** according to the specifications of the City of Novi.

**A mandatory pre-bid meeting will be held Wednesday, June 10, 2015 promptly at 10:00 A.M.** at the Department of Public Services, Field Services Complex, 26300 Lee BeGole Drive, Novi, MI 48375.

Sealed bids will be received until **11:00 A.M.** prevailing Eastern Time, **Wednesday, June 24, 2015** at which time bids will be opened and read. Bids shall be addressed as follows and delivered to:

**CITY OF NOVI  
CITY CLERK'S OFFICE  
45175 Ten Mile Rd.  
Novi, MI 48375-3024**

All bids must be signed by a legally authorized agent of the bidding firm. **OUTSIDE OF MAILING ENVELOPES/PACKAGES MUST BE PLAINLY MARKED "Control Center & Wing Plow Retrofit Bid" AND MUST BEAR THE NAME OF THE BIDDER.**

The City reserves the right to accept any or all alternative bids and award a contract to other than the lowest bidder, to waive any irregularities or informalities or both; to reject any or all bids; to subdivide the award, and in general to make the award of the contract in any manner deemed by the City, in its sole discretion, to be in the best interest of the City of Novi.

Sue Morianti  
Purchasing Manager

Notice Dated: June 1, 2015

**NOTICE TO BIDDERS:**

The City of Novi officially distributes bid documents through the Michigan Intergovernmental Trade Network (MITN). **Copies of bid documents obtained from any other source are not considered official copies.** The City of Novi cannot guarantee the accuracy of any information not obtained from the MITN website and is not responsible for any errors contained by any information received from alternate sources. Only those vendors who obtain bid documents from the MITN system are guaranteed access to receive addendum information, if such information is issued. If you obtained this document from a source other than the source indicated, it is recommended that you register on the MITN site, [www.mitn.info](http://www.mitn.info) and obtain an official copy.



## VENDOR ASSISTANCE IN SPECIFICATION PREPARATION

On occasion the City of Novi finds it advantageous to accept technical assistance in preparing/researching specifications from vendors who may bid on the equipment or services. This assistance may or may not be compensated depending upon the type of assistance required.

The purpose of this clause is to insure that such vendor assistance does not compromise our policy of fair and open competition.

When vendor assistance is utilized the following disclosure statement shall be included in the specification package:

Disclosure Statement: The following specification has been prepared with the assistance of Truck & Trailer Specialties, 6726 Hanna Lake Road SE, Caledonia, MI 48316. It is our policy to disclose this vendor's participation.

If you have any questions or concerns regarding the specifications please contact:

City of Novi  
Sue Morianti, Purchasing Manager  
smorianti@cityofnovi.org  
(248) 347-0446



**CITY OF NOVI**  
**CONTROL CENTER & WING PLOW RETROFIT**  
**INSTRUCTIONS TO BIDDERS**

This bid is issued by the Purchasing Office of the City of Novi.

**IMPORTANT DATES**

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Bid Issue Date	June 1, 2015
<b>Mandatory Pre-Bid Meeting</b>	<b>Wednesday, June 10, 2015 promptly at 10:00 A.M.</b> Department of Public Services Field Services Complex 26300 Lee BeGole Drive Novi, MI 48375
Last Date for Questions	Wednesday, June 17, 2015 by 12:00 P.M. Please submit all questions via email to: Sue Morianti, Purchasing Manager smorianti@cityofnovi.org
<b>Response Due Date</b>	<b>Wednesday, June 24, 2015 by 11:00 A.M.</b>

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**MANDATORY PRE-BID MEETING**

The mandatory pre-bid meeting begins promptly at the time listed above and will be closed thereafter to latecomers. It is the vendor's responsibility to take traffic, weather, etc. into consideration in order to arrive at the pre-bid meeting on time.

**QUESTIONS**

Please email all questions to the staff member listed above. Please write the name of the bid in the subject line. If you write anything else in the subject line, your email may be deleted as spam.

**TYPE OF CONTRACT**

If a contract is executed as a result of the bid, it stipulates a fixed price for products/ services.

**BID SUBMITTALS**

Provide **three (3)** copies of your bid, **one (1)** unbound signed and clearly marked as ORIGINAL, and **two (2)** copies of the original bid, clearly marked as COPY. Original bid may be clipped but should not be stapled or bound. Copies may be stapled and bound. The original and copies should be identical, excluding the obvious difference

in labeling. No other distribution of the bids will be made by the Contractor. Bids must be signed by an official authorized to bind the Contractor to its provisions.

FAILURE TO SUBMIT PRICING ON THE BID FORM PROVIDED BY THE CITY OF NOVI MAY CAUSE THE BID TO BE CONSIDERED NON-RESPONSIVE AND INELIGIBLE FOR AWARD.

#### **CHANGES TO THE BID/ADDENDUM**

Should any prospective Bidder be in doubt as to the true meaning of any portion of the ITB, or should the Bidder find any patent ambiguity, inconsistency, or omission therein, the Bidder shall make a written request (via email) for official interpretation or correction. Such request shall be submitted to the staff member indicated above. The individual making the request shall be held responsible for its prompt delivery.

Such interpretation or correction, as well as any additional Bid provisions that the City may decide to include, will be made as an addendum, which will be posted on the MITN website at [www.mitn.info](http://www.mitn.info). Any addendum issued by the City shall become part of the ITB and subsequent contract and shall be taken into account by each bidder in preparing its bid. Only written addenda is binding. It is the Bidder's responsibility to be sure they have obtained all addenda. Receipt of all addenda must be acknowledged on bid form.

#### **SUBMISSION OF BID**

Bids must be submitted in a sealed envelope, box, or package, and clearly marked with: ITB Title, Deadline, Respondent's name, address, phone, fax, and contact name. Failure to do so may result in a premature opening or failure to open such bid.

To be considered, sealed bids must arrive at City Clerk's Office on or before the specified time and date. There will be no exceptions to this requirement. Bid is considered received when in the possession of the City Clerk. The Clerk's Department time stamp will determine the official receipt time. Contractors mailing bids should allow ample time to ensure the timely delivery of their bid. Bids received after the closing date and time will not be accepted or considered. Faxed, emailed, or telephone bids are not acceptable. The City of Novi shall not be held responsible for lost or misdirected bids. The City reserves the right to postpone a bid opening for its own convenience.

All prices and notations must be typed or printed in ink. No erasures are permitted. Mistakes may be crossed out and corrections must be initialed in ink by the person signing the bid. Bids must be signed by an Authorized Representative of the submitting company on the enclosed form. Bids must show unit and total prices if requested. In case of mistakes in price extension, unit pricing shall govern.

A bid may be withdrawn by giving written notice to the Purchasing Manager before the stated due date/closing time. After the stated closing time, the bid may not be withdrawn or canceled for a period of One Hundred and Twenty (120) days from closing time.

Bidders are expected to examine all specifications and instructions. Failure to do so will be at the bidder's risk.

Failure to include in the bid all information requested may be cause for rejection of the bid.

Any samples, CDs, DVDs or any other items submitted with your bid will not be returned to the contractor.

No bid will be accepted from, or contract awarded to any person, firm, or corporation that is in arrears or is in default to the City of Novi upon any debt or contract, or that is in default as surety or otherwise, or failed to perform faithfully any previous contract with the City.

USE OF THE CITY LOGO IN YOUR BID IS PROHIBITED.

### **CONSIDERATION OF BIDS**

In cases where items are requested by a manufacturer's name, trade name, catalog number or reference, it is understood that the bidder/proposer intends to furnish the item so identified or an item of "equal" quality and value as determined by the City of Novi.

Reference to any of the above is intended to be descriptive, but not restrictive, and only indicates articles that will be satisfactory. Bids of "equal" quality and value will be considered, provided that the bidder states in his/her bid what he/she proposed to furnish, including literature, or other descriptive matter which will clearly indicate the character of the item covered by such bid.

The Purchasing Manager hereby reserves the right to approve as an "equal", any item proposed which contains minor or major variations from specification requirements, but which may comply substantially therewith.

### **RESPONSIVE BIDS**

All pages and the information requested herein shall be furnished completely in compliance with instructions. The manner and format of submission is essential to permit prompt evaluation of all bids on a fair and uniform basis. Unit prices shall be submitted if space is provided on bid form. In cases of mistakes in extension, the unit price shall govern. Accordingly, the City reserves the right to declare as non-responsive, and reject an incomplete bid if material information requested is not furnished, or where indirect or incomplete answers or information is not provided. Any exceptions to the specifications must be noted on the bid form.

### **EXCEPTIONS**

The City will not accept changes or exceptions to the bid documents/specifications unless Contractor indicates the change or exception in the "Exceptions" section of the bid form. If Contractor neglects to make the notation on the bid form but writes it somewhere else within the bid documents and is awarded the contract, the change or exception will not be included as part of the contract. The original terms, conditions and specifications of the bid documents will be applicable during the term of the contract.

### **CONTRACT AWARD**

The contract will be awarded to that responsible, responsive bidder whose bid, conforming to this solicitation, will be most advantageous to the City of Novi. Qualifications, experience, references, comparable projects, price, previous experience with vendor/contractor, delivery, and other factors will be considered in the evaluation process and award of contract. The City reserves the right to accept any or all alternative bids and award the contract to other than the lowest bidder, to waive any irregularities or informalities or both; to reject any or all bids; and in general to make the award of the contract in any manner deemed by the City, in its sole discretion, to be in the best interest of the City of Novi.

After contract award, a summary of total price information for all submissions will be posted on the MITN website at [www.mitn.info](http://www.mitn.info).

The City may, from time to time, find it necessary to continue this contract on a month-to-month basis only, not to exceed a six (6) month period. Such month-to-month extended periods shall be by mutual agreement of both parties, with all provisions of the original contract or any extension thereof remaining in full force and effect.

### **VENDOR DISQUALIFICATION**

The City maintains the right to disqualify vendors under the following conditions:

1. In addition to any other remedies authorized by law, a vendor may be disqualified from bidding on any City contracts for up to three (3) years if it has been determined that the vendor, after award of the contract:
  - (a) Failed to provide the service or supplies required;
  - (b) Provided the service or supplies in an untimely manner causing delays and interference;
  - (c) Lacked financial resources and the ability to satisfactorily perform the contract or provide the services or supplies;
  - (d) Exhibited poor quality of performance in delivering the service;
  - (e) Delivered poor quality of goods;
  - (f) Failed to comply with laws and ordinances relating to the contract performance;
  - (g) Defaulted on its quotations;
  - (h) Such other action what leads the City to believe that the contractor's duties will not comport or comply with the bid requirements.
2. Vendors who are listed on the Excluded Parties List System at [www.sam.gov](http://www.sam.gov)

## GENERAL CONDITIONS

### **INSURANCE**

A certificate of insurance naming the City of Novi as an additional insured must be provided by the successful bidder prior to commencement of work. A current certificate of insurance meeting the requirements in Attachment A is to be provided to the City and remain in force during the entire contract period.

### **NOTICE TO BIDDERS**

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### **TAX EXEMPT STATUS**

It is understood that the City of Novi is a governmental unit, and as such, is exempt from the payment of all Michigan State Sales and Federal Excise taxes. Do not include such taxes in the bid prices. The City will furnish the successful bidder with tax exemption certificates when requested. The City's tax-exempt number is 38-6032551.

The following exception shall apply to installation projects: When sales tax is charged to the successful bidder for materials to be installed during the project, that cost shall be included in the "Complete for the sum of" bid price and not charged as a separate line item. The City is not tax exempt in this case and cannot issue an exemption certificate.

### **FREIGHT CHARGES/SHIPPING/HANDLING**

All bid/proposal pricing is to be F.O.B. destination.

### **DOWN PAYMENTS OR PREPAYMENTS**

Any bid submitted which requires a down payment or prepayment prior to delivery and full acceptance, as being in conformance with specifications, will not be considered for award. No payments will be made until work is performed/goods are received to the satisfaction of the authorized City representative.

### **INVOICING**

Invoices must be mailed to: City of Novi, Attn: Finance Department, 45175 Ten Mile Road, Novi, MI 48375. We do not accept emailed or faxed invoices.

### **CONTRACT TERMINATION**

The City may terminate and/or cancel this contract (or any part thereof) at any time during the term, any renewal, or any extension of this contract, upon thirty days (30) days written notice to the Contractor, for any reason, including convenience without

incurring obligation or penalty of any kind. The effective date for termination or cancellation shall be clearly stated in the written notice.

**TRANSFER OF CONTRACT/SUBCONTRACTING**

The successful bidder will be prohibited from assigning, transferring, converting or otherwise disposing of the contract agreement to any other person, company or corporation without the expressed written consent of the City of Novi. Any subcontractor, so approved, shall be bound by the terms and conditions of the contract. The contractor shall be fully liable for all acts and omissions of its subcontractor(s) and shall indemnify the City of Novi for such acts or omissions.

**NON-DISCRIMINATION**

In the hiring of employees for the performance of work described in this ITB and subsequent contract, neither the contractor, subcontractor, nor any person acting in their behalf shall by reason of religion, race, color, national origin, age, sex, height, weight, handicap, ancestry, place of birth, sexual preference or marital status discriminate against any person qualified to perform the work required in the execution of the contract.

**ACCEPTANCE OF BID CONTENT**

Should a contract ensue, the contents of the bid of the successful Bidder may become contractual obligations. Failure of a contractor to accept these obligations may result in cancellation of the award.

**DISCLOSURE**

All documents, specifications, and correspondence submitted to the City of Novi become the property of the City of Novi and are subject to disclosure under the provisions of Public Act No. 442 of 1976 known as the "Freedom of Information Act". This Act also provides for the complete disclosure of contracts and attachments hereto. This means that any informational material submitted as part of this ITB is available without redaction to any individual or organization upon request.

**ECONOMY OF PREPARATION**

Bids should be prepared simply and economically, providing a straightforward and concise description of the bidder's ability to meet the requirements of the bid. Emphasis should be on completeness and clarity of content. Included in the response must be a point by point response to the Requirements and other sections of the bid.

The City of Novi is not liable for any costs incurred by bidders prior to issuance of a contract.

**INDEPENDENT PRICE DETERMINATION**

By submission of a bid, the offerer certifies, and in case of a joint bid, each party hereto certifies as to its own organization, that in connection with the bid:

(a) The prices in the bid have been arrived at independently without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other offerer or with any other Competitor; and

(b) No attempt has been made or will be made by the offerer to induce any other person or firm to submit or not submit a bid for the purpose of restricting competition.

Each person signing the bid certifies that:

(c) He is the person in the offerer's organization responsible within that organization for the decision as to prices being offered in the bid and that he has not participated and will not participate in any action contrary to (a) and (b) above; or

(d) He is not the person in the offerer's organization responsible within that organization for the decision as to prices being offered in the bid but that he has been authorized in writing to act as agent for the persons responsible for such decisions in verifying that such persons have not participated, and will not participate, in any action contrary to (a) and (b) above, and that as their agent, does hereby so certify; and that he has not participated, and will not participate in any action contrary to (a) and (b) above.

A bid will not be considered for award if the sense of the statements required in the bid has been altered so as to delete or modify the above.





## CITY OF NOVI

### CONTROL CENTER & WING PLOW RETROFIT

### SPECIFICATIONS

cityofnovi.org

#### **SCOPE**

The City of Novi is requesting bids to provide and install new equipment; control centers and outfit three (3) International 7400 SBA single axle plow trucks with mid mount wing plows. The project will require the removal of existing hydraulic reservoir, valve assembly, in cab controls, all hoses to all hydraulic components, fuel tank and behind cab liquid tank. It will require the installation of new fuel and hydraulic oil reservoirs, new in cab controls, all new hydraulic hoses, new valve and enclosure and new 7' jr. wing.

All bidders are required to inspect each truck prior to submitting a bid package at the mandatory pre-bid meeting date. City of Novi truck #'s 601, 602 and 619.

#### **GENERAL SPECIFICATIONS**

##### **1. Control Center:**

- a. Controls for all valve functions and electronic spreader control will be integrated into a single, self-contained control center. The control center shall be a padded armrest style that is ergonomically designed. Control center shall be modular in design for ease of installation and service, and wiring and connectors shall be keyed and color coded throughout. A sealed, pre-wired harness for all valve controls must be provided. All components must be durable for long life and trouble free operation.
- b. The electronic controller shall be a single-handle design with a minimum of three miniature fully-proportional joysticks in the head of the handle to operate all cylinder functions. Multi-stick PWM driver electronics shall include as standard the capability to control at least 9 proportional outputs simultaneously.
- c. Use of a single, 3-axis joystick with pushbuttons in the handle to change joystick operation modes (from Plow to Wing, for instance) is unacceptable, as it presents a safety risk to the operator.
- d. The joystick handle assembly is available in a 1, 2, or 3-stick configuration, in addition to the primary Hoist control provided through actuation of the main joystick. Controls for spreader must be located on armrest at the operator's fingertips. There shall also be four auxiliary rocker switches available with an additional fifth switch being the main power switch for the spreader control. The switches shall be located between the joysticks

and spreader control interface and each shall be rated for 15 amps continuous current minimum. Console shall be capable of supplying full rated power to switch outputs when all four auxiliary switches are at full 15 amp load.

- e. A mechanical interlock shall be provided on the primary joystick for Hoist-interlock which requires the operator to intentionally lift the joystick out of the mechanical interlock before moving the joystick forward/back to move the hoist cylinder. The primary joystick for operation of the Hoist function shall be a return-to-center style.
- f. The multi-stick control shall include LED-backlit nomenclature for all joystick functions, and an optional trigger that performs electrical interlock of the joysticks. The decals for each function shall be located near the corresponding miniature joysticks, and shall be illuminated amber while the joysticks are disabled, and change to green backlighting when the driver engages the electrical interlock. The green LEDs shall remain illuminated while the joysticks are under operation and shall time-out after a period of joystick inactivity that is selectable from 0 to 15 seconds.
- g. The primary joystick handle head shall include LED-backlit momentary pushbuttons for activation of remote standby, remote blast, and the truck body vibrator. The multi-stick communication hardware/software shall include 4 integral float options. The use of add-on float modules is unacceptable. For flexibility of use the integral float programming shall have the following standard features: (4) axis functional float on any or all of the outputs with selectable forward/back, right/left functionality, 3-way or 4-way functionality, selectable (3) second float delay timer and optional float enable switch inputs. When float output for a given joystick function is active, the LED-backlit nomenclature shall blink ON/OFF to provide visual feedback to the operator that the float function is engaged.
- h. To ensure longevity of performance all lighting to be solid-state LED technology. The use of incandescent lamps or EL backlighting is unacceptable.
- i. All function joysticks shall be of contact-less Hall-effect design and offer up to a 1-Million cycle life. The use of potentiometers is unacceptable. Joystick MIN/MAX output duty cycle thresholds, deadbands and error thresholds for each joystick output shall be customizable in the field through a built-in easy to use software interface. Joystick calibration data shall be retained on-board and shall be easily transferrable between joystick system components.
- j. To ensure safe operation, joystick communication hardware/software shall include the following standard features:
  - Input power monitor circuitry with power quality diagnostics,

- Redundant dual-reference joystick signals for each joystick axis
  - Joystick output open/short circuit detection and operator notification
  - Joystick input off-center checking on all axes and output shutdown on system power-up
  - Joystick out-of-range fault condition checking and output shutdown
  - True outputs off with joystick centered
  - LED-backlit nomenclature shall illuminate and flash RED when any error condition exists and an audible alarm shall sound.
  - LED-backlit nomenclature shall blink ON/OFF with increasing frequency as the corresponding function is increased in speed to give the operator visual feedback of each joystick output.
  - The joystick control system shall be equipped with a qualified ESTOP device that immediately disconnects battery power from all joystick outputs. All joystick-operated outputs shall immediately cease to function, an audible alarm shall sound, and the joystick system display shall inform the operator that the ESTOP device has been activated. The ESTOP device must remove power from the joystick outputs while maintaining power to the display and CPU for diagnostic purposes. The operator must manually reset the ESTOP device in order to return the joysticks to operational status.
- k. The electronic spreader control shall be designed for precise, closed-loop control of granular and prewet liquid applications and operate on a CAN Bus protocol. The Central Processing Unit (CPU) shall have keyed and color coded connections to prevent incorrect installation. The CPU shall be mounted in the cab with visual access to diagnostic LED's. Mounting of the CPU unit outside of the cab is unacceptable. The unit shall have USB connectivity for file and data transfer, Ethernet connection, a J1939 communication port for connection to the vehicle bus, a second CAN bus communication port for spreader-only data use, a J1708 connection for a road and air temperature sensor, and a RS-232 connection for AVL communication. The CPU shall have on-board diagnostics, which provide real-time status of CAN bus communication, processor activity, and power status. The CPU shall have a built-in audible alarm for diagnostic purposes. The CPU operating system shall NOT be Windows-based.
- l. The spreader control interface shall have two, color-coded, continuous rotation encoders for granular and spinner control. These encoders shall have integrated push buttons for blast mode and stand-by. The controller shall have a third multifunction 4-way joystick that has an integrated rotary encoder and push button, that can be used for menu navigation, prewet liquid control, or an additional conveyor function. There shall be four, two-way soft keys included in the interface that are generically-labeled and user-configurable for different functions depending on the equipment needs. The controller shall also utilize iButton technology that is capable of using a Supervisor key to provide access to the calibration parameters without the access code. The entire operator interface shall

be backlit and encased in flexible silicone material with wear-limiting coating applied to the base silicone material. The operator interface shall communicate on the spreader control system CAN bus.

- m. The spreader control display shall be a remotely-mounted, 7" diagonal color TFT LCD, with a low-profile 16:9 widescreen format and minimum of 800X480 pixel resolution. LCD shall have variable LED backlighting. CCFL backlighting is unacceptable. The display shall include a scratch-resistant polycarbonate lens with anti-glare coating. A power status LED shall be immediately visible on the front of the display and shall report display diagnostics including loss of CAN communication. Display unit shall have a built-in audible alarm. To avoid driver distraction, the display shall have no integrated dials or pushbuttons and shall not be touch screen. LCD shall communicate on the spreader control system CAN bus.
- n. The operator menus shall be color-coded to match the encoder knobs on the operator interface. The display shall be capable of displaying the following on-screen simultaneously: Granular material name, granular material set point and actual application rate including units of measure, prewet liquid name, prewet liquid set point and actual application rate including units of measure, spread width, road temperature, air temperature, material usage total, liquid usage total, vehicle speed, and current date and time. The operator shall have the option of selecting five data items to be displayed onscreen during operation. The display will also provide four warning light indicators for low oil level, body up, oil temp, and filter bypass. These warning lights are to be functional regardless of spreader operation or status.
- o. The display must provide visual indication that the spreader control is connected to a compatible AVL device, if equipped. The spreader control shall warn operator if communication with the AVL device fails at power-up.
- p. A proportional PWM driver and input module (Valve Module) shall be remotely-mounted inside the hydraulic valve enclosure for control of both spreader control and joystick control outputs. The entire Valve Module shall be of rugged design for the mobile environment, and must meet IP68 requirements for dust and water ingress. The Valve Module shall include a minimum of eight proportional PWM outputs with potted valve output connections. All outputs shall be protected against short-circuits. Outputs shall be current-compensated and have adjustable PWM frequency. There shall be a minimum of five switch-to-ground type inputs for monitoring hydraulic system inputs such as oil level, body up, Hi and Low filter bypass, and oil temperature warnings. A minimum of two switch-to-ground type pulse train inputs shall be included in the Valve Module for connection of feedback sensors such as auger feedback and prewet liquid flowmeter feedback. A keyed and color-coded connection shall be provided for CAN bus connection to the CPU module inside the cab.

A second CAN bus connection must be provided for daisy-chaining of multiple Valve Modules within the valve enclosure. Diagnostic LED's shall be included for every input and output on the Valve Module, as well as a power status LED and CAN bus activity LED's. The Valve Module shall be potted. The Valve Module shall include a stainless steel legend plate with engraved text for easy cleaning and identification of Valve Module connections.

- q. The integrated spreader control and joystick control system shall be equipped with a qualified ESTOP device that immediately disconnects battery power from all outputs. All spreader control and joystick-operated outputs shall immediately cease to function and the system display shall inform the operator that the ESTOP device has been activated. The ESTOP device must remove power from all output devices, while maintaining power to the display and CPU for diagnostic purposes. Resetting of the ESTOP device shall not result in spreader control and joystick-operated outputs returning to an ON state without operator acknowledgement.
- r. The Control Center shall be a FORCE America CommandAll controller SPJC Ultra series with a 6100 model spreader control.
  - System set-up, calibration and driver training shall be provided for each control unit purchased

YES, MEETS ALL SPECIFICATIONS  
 NO, DESCRIBE DEVIATIONS:

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## 2. Hydraulic Valve Assembly:

- a. The hydraulic valve shall be of modular manifold design. Each hydraulic function requires an individual manifold stacked together to form the manifold base. The manifold base shall consist of an inlet section with SAE #16 inlet porting, SAE #20 outlet porting, and SAE #4 load sense porting. There shall be a main system relief in the inlet section to protect the system from high pressure in case the pump compensators fail. The dump body manifold shall be stacked next to the inlet section, and capable of 40 GPM with SAE #12 porting. All valve manifolds shall be manufactured from 6061-T6 aluminum and be anodized to MIL-A-8625F specifications. The hydraulic control valves shall be pulse-width modulated, proportionally controlled. Each hydraulic valve segment shall be individually mounted to the manifold base assembly and be serviceable without removing any hydraulic hoses or

any other hydraulic valve segments. Each hydraulic valve segment shall have individual pressure compensation to achieve independent simultaneous operations. All segments shall have heavy-duty continuous duty coils and connections shall be with Din connectors. All coils shall operate at 12 VDC and require a maximum of 1400 mille-amps. Each segment shall be equipped with a manual override except for the auger and spinner sections. The dump body segment shall be rated to 40 GPM, with all other segments rated to 20 GPM. If a double acting hoist is utilized, the dump body segment shall be equipped with a down side relief to protect the body down function. This relief shall be set to the hoist manufacturer's specifications. Valve segments shall be FORCE America Add-A-Fold® 4020 model or prior approved equal.

**b. The valve is to be arranged as follows:**

Hoist	4-way 40 GPM cylinder spool with 500 PSI down side work port relief valve
Plow lift	4-way 21 GPM cylinder spool
Plow angle	4-way 21 GPM cylinder spool
Wing	4-way 21 GPM motor spool
Scraper lift	4-way 21 GPM cylinder spool with pressure limiter and a (B) port relief valve set at 800PSI
Liquid pre-wet	2-way 7 GPM proportional cartridge valve
Auger	2-way 14 GPM proportional cartridge valve
Spinner	2-way 7 GPM proportional cartridge valve

*4 way Scraper Swing Valve is also Included.*

- c. **Valve enclosure** to be a frame mounted stainless steel construction.
- d. **Hydraulic hoses** to front plow, hoist and underbody scraper. Hydraulic stainless steel tubing for spreader auger, spinner and future pre-wet. Stainless steel hydraulic couplers at front and rear.

**3. Fuel/Hydraulic Combination Tank behind the cab:**

- e. 100gal fuel capacity/30 gal oil capacity; 7 ga. Steel construction.
- f. Ball valve shut offs on supply line and case drain.
- g. Suction strainer in supply line.
- h. Top mounted Zinga type filter.
- i. Low oil sensor with indicator light in the cab.
- j. Hydraulic system will be full of AW32 oil.
- k. Tanks will be painted black.

YES, MEETS ALL SPECIFICATIONS  
 NO, DESCRIBE DEVIATIONS:

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4. Mid-mounted 7' Junior Wing; Monroe Model MJW-7' junior mid mount parallelogram type wing:

- a. 7 ft moldboard length, 27" intake height, 28" discharge height
- b. 4"x 4" x3/4" bottom angle
- c. 4" x 10" toe cylinder, 3" x 10" heel cylinder
- d. Moldboard will be 3/16" construction with 3/8", one piece ribs
- e. Heavy duty, spring cushioned push arm with shear pin adjustable to 45 degrees from truck.
- f. Front cross tube with mounting plate
- g. Safety chain shall be installed for transport at any adjusted angle.
- h. Wing Post shall be mounted just ahead of the front drive tire with the rear push arm mounted behind the rear drive tire.
- i. Wing Post shall be a parallelogram design and shall mount directly ahead of the drive tire
- j. Rear push arm is to be equipped with a 6" cushion spring
- k. Rear push arm support brace shall be constructed of 4" x 6" x 1/4" tubing and shall be supported by both frame rails
- l. Hydraulic circuit for the wing shall be equipped with a sequencing valve for proper operation of the wing
- m. The sequencing valve shall have built in load checks to prevent the wing from drifting down when not in use.
- n. Sequencing valve shall have built in, manually adjustable flow controls
- o. Wing is to be equipped with hydraulic disconnects for easy removal
- p. Wing will also be equipped with a cushioned rubber stop to prevent it from hitting the body when placed in the stored position at any adjusted angle.
- q. All welding on the moldboard shall be continuous
- r. Wing components and moldboard shall be shot blasted and powder coated
- s. Install LED Work light on frame of truck to illuminate wing
- t. Install dual poly light box mounted on the end of the wing with a Sound Off LED amber and green flashing light
- u. A rubber cutting edge 5" x 10" x 83" shall be installed, with carbide curb guard. *Recycled Tire Cutting Edge will be installed.*
- v. Installed 1/2" thick rubber snow deflector.
- w. 24" lighted marker to be installed and activated with wing plow safety light.
- x. Controls for the wing will be wired into the Force Patrol Command All

YES, MEETS ALL SPECIFICATIONS

NO, DESCRIBE DEVIATIONS:

*Note - Light Box will be stainless steel & it will be a single oval light fixture with a green/amber flasher.*

**5. Local Service Support**

- A. The successful truck equipment supplier must be located no more than fifty (50) miles from the City of Novi Field Services Complex. This stipulation is required to ensure a quick turn-around of a truck that requires repair so that down time will be greatly shortened. This also will reduce the time spent by City of Novi personnel in delivery and pick-up of truck in need of repair.

YES, MEETS ALL SPECIFICATIONS  
 NO, DESCRIBE DEVIATIONS:

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**COMPLETE DETAILED QUOTATION AND PRODUCT BROCHURES TO BE SUBMITTED WITH BID.**

**ALL REMOVED EQUIPMENT SHALL BE RETURNED TO THE CITY OF NOVI UNLESS OTHERWISE DIRECTED.**





**CITY OF NOVI  
INSURANCE REQUIREMENTS  
ATTACHMENT A**

1. The Contractor shall maintain at its expense during the term of this Contract, the following insurance:
  - a. **Worker's Compensation** insurance with the Michigan statutory limits and Employer's Liability insurance with minimum limits of **\$100,000** (One Hundred Thousand Dollars) each accident.
  - b. **Commercial General Liability Insurance** – The Contractor shall procure and maintain during the life of this contract, Commercial General Liability Insurance, Personal Injury, Bodily Injury and Property Damage on an "Occurrence Basis" with limits of liability not less than **\$1,000,000** (One Million Dollars) per occurrence combined single limit.
  - c. **Automobile Liability** insurance covering all owned, hired and non-owned vehicles with Personal Protection insurance to comply with the provisions of the Michigan No Fault Insurance Law including Residual Liability insurance with minimum bodily injury limits of **\$1,000,000** (One Million Dollars) each person and **\$1,000,000** (One Million Dollars) each occurrence and minimum property damage limits of **\$1,000,000** (One Million Dollars) each occurrence.
2. All policies shall name the Contractor as the insured and shall be accompanied by a commitment from the insurer that such policies shall not be canceled or reduced without at least thirty (30) days prior notice date to the City; alternately, contractor may agree to provide notice of such cancellation or reduction.
3. The City of Novi shall be named as Additional Insured for General Liability and Auto Liability. Certificates of Insurance evidencing such coverage shall be submitted to City of Novi, Purchasing Department, 45175 Ten Mile Road, Novi, Michigan 48375-3024 prior to commencement of performance under this Contract and at least fifteen (15) days prior to the expiration dates of expiring policies. A current certificate of insurance must be on file with the City for the duration of the contract. Said coverage shall be PRIMARY COVERAGE rather than any policies and insurance self-insurance retention owned or maintained by the City. Policies shall be issued by insurers who endorse the policies to reflect that, in the event of payment of any loss or damages, subrogation rights under those contract documents will be waived by the insurer with respect to claims against the City
4. The Contractor shall be responsible for payment of all deductibles contained in any insurance required hereunder.

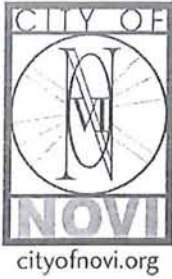
5. If, during the term of this Contract, changed conditions or other pertinent factors should in the reasonable judgment of the City render inadequate insurance limits, the Contractor will furnish on demand such additional coverage as may reasonably be required under the circumstances. All such insurance shall be effected at the Contractor's expense, under valid and enforceable policies, issued by the insurers of recognized responsibility which are well-rated by national rating organizations and are acceptable to the City.
6. If any work is sublet in connection with this Contract, the Contractor shall require each subcontractor to effect and maintain at least the same types and limits of insurance as fixed for the Contractor.
7. The provisions requiring the Contractor to carry said insurance shall not be construed in any manner as waiving or restricting the liability of the Contractor under this contract.
8. The City has the authority to vary from the specified limits as deemed necessary.

#### **ADDITIONAL REQUIREMENTS**

#### **HOLD HARMLESS/INDEMNITY**

- I. The Contractor agrees to fully defend, indemnify and hold harmless the City, its City Council, its officers, employees, agents, volunteers and contractors from any claims, demands, losses, obligations, costs, expenses, verdicts, and settlements (including but not limited to attorney fees and interest) resulting from:
  - A. Acts or omissions by the Contractor, its agents, employees, servants and contractors in furtherance of execution of this Agreement, unless resulting from the sole negligence and tort of the City, its officers, employees, agents and contractors.
  - B. Violations of state or federal law involving whether administrative or judicial, arising from the nature and extent of this Agreement.
  - C. The Contractor agrees to defend the City from and against any and all actions or causes of action, claims, demands or whatsoever kind or nature arising from the operations of the Contractor and due to the acts or omissions of the Contractor or its agents, including, but not limited to, acts of omissions alleged to be in the nature of gross negligence or willful misconduct. The Contractor agrees to reimburse the City for reasonable attorney fees and court costs incurred in the defense of any actions, suits, claims or demands arising from the operations of the Contractor under this Agreement due to the above-referenced acts or omissions.

2. The Contractor agrees that it is its responsibility and not the responsibility of the City of safeguard the property and materials used in performing this Contract. Further the Contractor agrees to hold the City harmless for any loss of such property and materials used in pursuant to the Contractor's performance under this Contract.
  
3. The Contractor shall not discriminate against any employee, or applicant for employment because of religion, race, color, national origin, age, sex, height, weight, handicap, ancestry, place of birth, sexual preference or marital status. The Contractor further covenants that it will comply with the Civil Rights Act of 1973, as amended; and the Michigan Civil Rights Act of 1976 (78. Stat. 252 and 1976 PA 453) and will require a similar covenant on the part of any consultant or subcontractor employed in the performance of this contract.



CITY OF NOVI

CONTROL CENTER & WING PLOW RETROFIT

BID FORM

We, the undersigned as bidder, propose to furnish to the City of Novi, according to the specifications, terms, conditions and instructions attached hereto and made a part thereof:

	Truck Number	Lump Sum
A.	601	\$ 51,396.00
B.	602	\$ 51,396.00
C.	619	\$ 51,396.00
TOTAL		\$ 154,188.00

Delivery after receipt of order 240 - 300 Days ARO

We acknowledge receipt of the following Addenda: Addendum # 1  
(please indicate numbers)

EXCEPTIONS TO SPECIFICATIONS (all exceptions must be noted here):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

COMMENTS: Sec 1. Notations.

① The controller includes a data port for a Road Watch temperature sensor. It does not include the sensor

② A hydraulic oil temperature sensor is not included. A "Low Oil" sensor is included in the tank.

**NON-IRAN LINKED BUSINESS**

By signing below, I certify and agree on behalf of myself and the company submitting this proposal the following: (1) that I am duly authorized to legally bind the company submitting this proposal; and (2) that the company submitting this proposal is not an "Iran linked business," as that term is defined in Section 2(e) of the Iran Economic Sanctions Act, being Michigan Public Act No. 517 of 2012; and (3) That I and the company submitting this proposal will immediately comply with any further certifications or information submissions requested by the City in this regard.

**THIS BID SUBMITTED BY:**

Company (Legal Registration) Truck & Trailer Specialties, Inc

Address 1200 Victory Drive

City Howell State Mi Zip 48843

Telephone 855-710-3855 Fax 517-552-3666

Representative's Name Daniel Bowman

Representative's Title President

Authorized Signature Daniel Bowman

E-mail dbowman@tt-spec.com

Date 06-22-15



**CITY OF NOVI**  
**CONTROL CENTER & WING PLOW RETROFIT**  
**ADDENDUM #1**

**INTENT:** This addendum has been issued to modify and/or interpret the original specifications for the bid named above. Unless otherwise instructed, the information contained within this Addendum shall take precedence over anything contrary in the original specifications, and shall hereinafter be considered as part of the package.

**RESPONSE:** The Contractor shall verify receipt of this Addendum on the Bid Form.

**CONTENTS:** Included in this Addendum are three (3) pages of written addenda description, plus one page consisting of the pre-bid sign-in sheet.

**CLARIFICATIONS:**

1. A revised bid form is included as part of this addendum.
2. Page 16 – The City is willing to consider a Wing Plow that is an equivalent to the specified Monroe.
3. All parts removed from trucks that are not re-installed are the property of the City of Novi and must be returned to the Department of Public Services Field Services Complex.
4. The City will remove the fuel rings from the trucks before they are transported to Contractor.
5. The City is requesting a price (Alternate #1) to replace the hydraulic pump on each truck. Model specified is Force America 5.6 Load-Sense Pump, model # TXV92-R-KIT.
6. The bid for Truck #619 (C.) should be based on the specifications. The City is also requesting a price (Alternate #2) to provide an alternate option for fuel and/or hydraulic fluid storage on truck #619.

Sue Morianti  
Purchasing Manager

Notice dated: June 12, 2015



**CITY OF NOVI**  
**CONTROL CENTER & WING PLOW RETROFIT**

**BID FORM (REVISED)**

We, the undersigned as bidder, propose to furnish to the City of Novi, according to the specifications, terms, conditions and instructions attached hereto and made a part thereof:

**BASE BID:**

	Truck Number	Lump Sum
A.	601	\$ 51,396.00
B.	602	\$ 51,396.00
C.	619	\$ 51,396.00
<b>TOTAL</b>		\$ 154,188.00

**ALTERNATE #1: Hydraulic Pump Replacement** - Force America 5.6 Load-Sense Pump, model # TXV92-R-KIT

Add \$ Included in each  
Above Prices

**ALTERNATE #2:** Alternate option for fuel and/or hydraulic fluid on truck 619 (please provide details in Comments section below or on a separate sheet)

Add/deduct \$ Included in Above  
(please circle) Prices

Delivery after receipt of order 240 - 360 Days ARO

We acknowledge receipt of the following Addenda: # 1  
(please indicate numbers)

**EXCEPTIONS TO SPECIFICATIONS (all exceptions must be noted here or include separate sheet if more space is needed):**

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COMMENTS: Alternate #1 Notation.

See quote for pump option

**NON-IRAN LINKED BUSINESS**

By signing below, I certify and agree on behalf of myself and the company submitting this proposal the following: (1) that I am duly authorized to legally bind the company submitting this proposal; and (2) that the company submitting this proposal is not an "Iran linked business," as that term is defined in Section 2(e) of the Iran Economic Sanctions Act, being Michigan Public Act No. 517 of 2012; and (3) That I and the company submitting this proposal will immediately comply with any further certifications or information submissions requested by the City in this regard.

**THIS BID SUBMITTED BY:**

Company (Legal Registration) Truck & Trailer Specialties, Inc

Address #200 Victory Drive

City Howell State Mi Zip 48843

Telephone 855-710-3855 Fax 517-552-3666

Representative's Name DANIEL BOCKMAN

Representative's Title President

Authorized Signature Daniel Bockman

E-mail dbockman@ttspec.com

Date 06-22-15





## Truck & Trailer Specialties, Inc.

1200 Victory Dr.  
Howell, MI. 48843

Ph 855-710-3855/Fax 517-552-3666

COPY

June 15, 2015

City Of Novi  
45175 Ten Mile Rd.  
Novi, Mi. 48375

**Bid Titled: "Control Center and Wing Plow Retrofit Bid"**

**Bid Due Date: 11:00 AM Wednesday, June 24, 2015**

**Addendum #1 Dated June 12, 2015 received and completed**

### Quotation

The following is a summary of provided products and shop removal of current equipment and the installation of new equipment as specified by bid documents for City of Novi Trucks # 601, 602 and 619.

**Removal** All of the following equipment will be removed: All hydraulic hoses and quick couplers for all current hydraulic equipment, Valve, valve enclosure and hydraulic reservoir, behind cab liquid tanks and pre-wet pump, chassis frame mounted behind cab fuel tanks and all related in cab controls for all equipment.

**Return** All removed equipment shall remain the property of the City of Novi and upon their direction shall be returned to the City of Novi by Truck and Trailer Specialties

### Install

**1. Control Center Joystick and spreader Controller FORCE America CommandAll controller SPJC Ultra series with a 6100 model spreader control.**

a. **Controls for all valve functions and electronic spreader control** will be integrated into a single, self-contained control center. The control center shall be a padded armrest style that is ergonomically designed. Control center shall be modular in design for ease of installation and service, and wiring and connectors shall be keyed and color coded throughout.

b. **The electronic controller shall be a single-handle design** with a minimum of three miniature fully-proportional joysticks in the head of the handle to operate all cylinder functions. Multi-stick PWM driver electronics shall include as standard the capability to control at least 9 proportional outputs simultaneously.

d. The joystick handle assembly will have 3-stick configuration, in addition to the primary Hoist control provided through actuation of the main joystick. Controls for spreader must be located on armrest at the operator's fingertips. There shall also be four auxiliary rocker switches **available if needed** with an additional fifth switch being the main power switch for the spreader control. The switches shall be located between the joysticks and spreader control interface and each shall be rated for 15 amps

## Truck & Trailer Specialties, Inc.

1200 Victory Dr.

Howell, MI. 48843

Ph 855-710-3855/Fax 517-552-3666

continuous current minimum. Console shall be capable of supplying full rated power to switch outputs when all four auxiliary switches are at full 15 amp load.

e. A mechanical interlock shall be provided on the primary joystick for Hoist-interlock

f. The multi-stick control shall include LED-backlit nomenclature for all joystick functions, and an optional trigger that performs electrical interlock of the joysticks. The decals for each function shall be located near the corresponding miniature joysticks, and shall be illuminated amber while the joysticks are disabled, and change to green backlighting when the driver engages the electrical interlock. The green LEDs shall remain illuminated while the joysticks are under operation and shall time-out after a period of joystick inactivity that is selectable from 0 to 15 seconds.

g. The primary joystick handle head shall include LED-backlit momentary pushbuttons for activation of remote standby, remote blast, and the truck body vibrator. The multi-stick communication hardware/software shall include 4 integral float options.

h. To ensure longevity of performance all lighting to be solid-state LED technology.

i. All function joysticks shall be of contact-less Hall-effect design and offer up to a 1-Million cycle life.

k. The electronic spreader control shall be designed for precise, closed-loop control of granular and prewet liquid applications and operate on a CAN Bus protocol. The Central Processing Unit (CPU) shall have keyed and color coded connections to prevent incorrect installation. The CPU shall be mounted in the cab with visual access to diagnostic LED's. The unit shall have USB connectivity for file and data transfer, Ethernet connection, a J1939 communication port for connection to the vehicle bus, a second CAN bus communication port for spreader-only data use, a J1708 connection for a road and air temperature sensor, and a RS-232 connection for AVL communication. The CPU shall have on-board diagnostics, which provide real-time status of CAN bus communication, processor activity, and power status. The CPU shall have a built-in audible alarm for diagnostic purposes.

l. The spreader control interface shall have two, color-coded, continuous rotation encoders for granular and spinner control. These encoders shall have integrated push buttons for blast mode and stand-by. The controller shall have a third multifunction 4-way joystick that has an integrated rotary encoder and push button, that can be used for menu navigation, prewet liquid control, or an additional conveyor function. There shall be four, two-way soft keys included in the interface that are generically-labeled and user-configurable for different functions depending on the equipment needs. The controller shall also utilize iButton technology that is capable of using a Supervisor key to provide access to the calibration parameters without the access code. The entire operator interface shall be backlit and encased in flexible silicone material with wear-limiting coating applied to the base silicone material. The operator interface shall communicate on the spreader control system CAN bus.

m. The spreader control display shall be a remotely-mounted, 7" diagonal color TFT LCD, with a low-profile 16:9 widescreen format and minimum of 800X480 pixel resolution. LCD shall have variable LED backlighting

n. The operator menus shall be color-coded to match the encoder knobs on the operator interface. The display shall be capable of displaying the following on-screen simultaneously: Granular material name, granular material set point and actual application rate including units of measure, prewet liquid name, prewet liquid set point and actual application rate including units of measure, spread width, road

## **Truck & Trailer Specialties, Inc.**

1200 Victory Dr.

Howell, MI. 48843

Ph 855-710-3855/Fax 517-552-3666

temperature, air temperature, material usage total, liquid usage total, vehicle speed, and current date and time. The operator shall have the option of selecting five data items to be displayed onscreen during operation. The display will also provide four warning light indicators for low oil level, body up, oil temp, and filter bypass. These warning lights are to be functional regardless of spreader operation or status.

o. The display must provide visual indication that the spreader control is connected to a compatible AVL device, if equipped. The spreader control shall warn operator if communication with the AVL device fails at power-up.

p. A proportional PWM driver and input module (Valve Module) shall be remotely-mounted inside the hydraulic valve enclosure for control of both spreader control and joystick control outputs.

q. The integrated spreader control and joystick control system shall be equipped with a qualified ESTOP device that immediately disconnects battery power from all outputs. All spreader control and joystick-operated outputs shall immediately cease to function and the system display shall inform the operator that the ESTOP device has been activated.

**r. The Control Center provided is a FORCE America CommandAll controller SPJC Ultra series with a 6100 model spreader control.**

### **2. Hydraulic Valve Assembly is a FORCE America Add-A-Fold® 4020 model.**

a. The hydraulic valve shall be of modular manifold design. Each hydraulic function requires an individual manifold stacked together to form the manifold base. The manifold base shall consist of an inlet section with SAE #16 inlet porting, SAE #20 outlet porting, and SAE #4 load sense porting. There shall be a main system relief in the inlet section to protect the system from high pressure in case the pump compensators fail.

#### **b. The valve is arranged as follows:**

Hoist 4-way 40 GPM cylinder spool with 500 PSI down side work port relief valve

Plow lift 4-way 21 GPM cylinder spool

Plow angle 4-way 21 GPM cylinder spool

Wing 4-way 21 GPM motor spool

Scraper lift 4-way 21 GPM cylinder spool with pressure limiter and a (B) port relief valve set at 500PSI

Scraper swing 4-way, 21 GPM cylinder spool

Liquid pre-wet 2-way 7 GPM proportional cartridge valve

Auger 2-way 14 GPM proportional cartridge valve

Spinner 2-way 7 GPM proportional cartridge valve

**Valve enclosure** to be a frame mounted stainless steel construction.

**Hydraulic hoses** to front plow, hoist and underbody scraper. Hydraulic stainless steel tubing for spreader auger, spinner and future pre-wet. Stainless steel hydraulic couplers at front and rear.

**3. Fuel/Hydraulic Combination Tank behind the cab is a Riverside Model TPF 10502 fuel tank and a TPH37012 Hydraulic oil tank with an Inverted angle carriage bracket assembly. 105 gals fuel capacity/37 gal oil capacity; 7 ga. Steel construction.**

## Truck & Trailer Specialties, Inc.

1200 Victory Dr.

Howell, MI. 48843

Ph 855-710-3855/Fax 517-552-3666

Ball valve shut offs on supply line and case drain.

Suction strainer in supply line.

Top mounted Zinga type filter.

Low oil sensor with indicator wired into the screen on the controller.

Hydraulic system will be full of AW32 oil.

Filter bypass switch is included and wired to the indicator screen on the controller

(Note oil temperature gauge is not provided and will not be wired into the controller screen . )

**Tanks will be painted black.**

#### 4. Mid-mounted 7' Junior Wing is a Monroe Model MJW-7' junior mid mount parallelogram type wing:

- a. 7 ft moldboard length, 27" intake height, 28" discharge height
- b. 4" x 4" x 3/4" bottom angle
- c. 4" x 10" toe cylinder, 3" x 10" heel cylinder
- d. Moldboard will be 3/16" construction with 3/8", one piece ribs
- e. Heavy duty, spring cushioned push arm with shear pin adjustable to 45 degrees from truck.
- f. Front cross tube with mounting plate
- g. Safety chain shall be installed for transport at any adjusted angle.
- h. Wing Post shall be mounted just ahead of the front drive tire with the rear push arm mounted behind the rear drive tire.
- i. Wing Post shall be a parallelogram design and shall mount directly ahead of the drive tire
- j. Rear push arm is to be equipped with a 6" cushion spring
- k. Rear push arm support brace shall be constructed of 4" x 6" x 1/4" tubing and shall be supported by both frame rails
- l. Hydraulic circuit for the wing shall be equipped with a sequencing valve for proper operation of the wing
- m. The sequencing valve shall have built in load checks to prevent the wing from drifting down when not in use.
- n. Sequencing valve shall have built in, manually adjustable flow controls
- o. Wing is to be equipped with hydraulic disconnects for easy removal
- p. Wing will also be equipped with a cushioned rubber stop to prevent it from hitting the body when placed in the stored position at any adjusted angle.
- q. All welding on the moldboard shall be continuous
- r. Wing components and moldboard shall be shot blasted and powder coated
- s. Install LED Work light on frame of truck to illuminate wing
- t. Install single stainless steel light box mounted on the end of the wing with a Buyers Green and Amber flashing light.
- u. A recycled tire cutting edge shall be installed, with a carbide curb guard.
- v. Installed 1/2" thick rubber snow deflector.
- w. 24" lighted marker to be installed and activated with wing plow safety light.
- x. Controls for the wing will be wired into the Force Patrol Command All

## Truck & Trailer Specialties, Inc.

1200 Victory Dr.

Howell, MI. 48843

Ph 855-710-3855/Fax 517-552-3666

### 5. Local Service Support

- A. Truck and Trailer Specialties – Howell is located no more than fifty (50) miles from the City of Novi Field Services Complex.

### 6. Additionally items and Equipment

- A. The current trucks 601, 602 and 619 currently have a gear pump. The current gear pump off the trans PTO is a 14.5 GPM @1000 RPM's of PTO.
- B. In order to provide similar hydraulic response times of the newest truck built by TTS will be removing current gear pump and installing a new Force America 5.6 Load sense Piston Pump **Model #TXV92-R-Kit** in our main quotation.
- C. **Truck #619** will also have the same behind cab fuel and oil reservoirs as trucks 601 and 602
- D. **Precise AVL cabling** will be provided to be installed by the City of Novi after retrofit is complete..

### Modifications to the chassis include the following

The prewet tank will be removed to make room for the fuel /oil combination tank

The scraper will be remounted forward to make room for the wing post

The supports for the rear hitch will be modified to allow for the installation of the rear pusharm support bracket

Modify PTO drive unit to accommodate the din connector on the pump

The following installed and painting of non-stainless steel complete

**Installed \$51,396.00 ea.**

### Pump option:

Install front of engine, 100 CC piston pump with drive line and low oil shutdown block in lieu of TXV92R pto driven pump. ( This option is only available if the truck is equipped with a front drive PTO on the engine and there is enough room to mount the pump between the bumper and the front of the engine.)

**Deduct \$420.00 each truck**

Submitted by,  
Dan Bowman/Jon Luea  
June 15, 2015