CITY OF GOSHEN, INDIANA

REQUEST FOR PROPOSALS

FOR

Combination Sewer Jetter Rodder Truck

FOR

THE CITY OF GOSHEN
WATER AND SEWER DEPARTMENT

TABLE OF CONTENT

CITY OF GOSHEN WATER AND SEWER DEPARTMENT'S REQUEST FOR PROPOSALS

For a Combination Sewer Jetter Rodder Truck
and optional Trade-in

The City of Goshen, hereinafter referred to as "City" is requesting proposals for the purchase of a Combination Sewer Jetter Rodder Truck (CSJRT) and optional Trade-in. For the context of this Request for Proposals, the use of the words contractor, vendor, supplier, or respondent all have the same meaning for the company/business submitting an offer.

Project Name: Request for Proposal of a Combination Sewer Jetter Rodder Truck (CSJRT)

and optional Trade-in.

RFP Issue Date: October 21, 2024

Submission Deadline December 9, 2024

Proposals shall include a Combination Sewer Jetter Rodder Truck and optional Trade-in. capable of meeting the current and future Maintenance needs within the City's service area.

The purchase requirements of new Combination Sewer Jetter Rodder Truck (CSJRT) shall meet the following Specifications.

CURRENT OPERATION

The City currently has two 2100 plus Series Vactor's (currently one 2016 and one 2021) that maintain approximately sixty-two (62) miles of Storm Sewer, three thousand (3,200) Storm Structures, one hundred and fifty-two miles of Sanitary Sewer, thirty-eight Lift Stations and used for a variety of hydro excavation projects.

The City is looking to replace the 2016 Vactor 2100 plus that has a 15-yard Debris tank, Positive displacement vacuum, high pressure sewer line jetting and capable of running root cutting heads from 4" to 24", with a truck that is very similar in size and functionality.

The truck needs to be capable of performing the following:

- vacuuming out sludge, rocks, stones, gravel, grit, mud, and other debris from sewer lines, lift stations, storm drains, and facilities holding tanks;
- responding to emergency spills and containment issues;
- jetting and flushing out sewage lines and storm drains;
- hydro-excavating
- removing debris from sewage lines and storm drains with special tools such as root cutters and high-pressure blast nozzles.

WARRANTIES AND SUPPORT SERVICES

Vendor/s shall list and describe any and all standard warranties that are with the unit. Example: Water Tanks, Water Pump, Hydraulic System, Chassis Warranty (these are just examples not meant to be all inclusive)

Extended Warranties:
Please provide all extended warranties available.

Maintenance and Service Support:
Distance to nearest service center and does the vendor have field service available.

Maintenance:
Describe information available for Tech repair manuals, schematics, and parts manuals. Is there a fee to use any of this technical support or is it included in the purchase of the unit?

Vendor Qualifications:
Number of units manufactured in the last three years.
Number of units Vendor have sold in the last three years.

Vendor Requirements:
Vendors required at no cost to the City to perform a performance demonstration.
Demonstration shall thoroughly and factually illustrate the results of the proposed sewer truck.
Vendor shall contact Carl Gaines at Central Garage if additional information is needed.

Vendors shall be prepared to demonstrate to the City the range of their equipment by performing a field test with the equipment they are proposing and will be scored on their performance. All Vendors performing this test will have the same testing locations. This test will need to be scheduled and completed a minimum of ten (10) business days before the proposal submission dead line. To schedule your test contact Marv Shepherd at 574-534-5701 or email marvshepherd@goshencity.com.

Demonstration Requirements:
The following is a list of the demonstrations the City is requiring:

- Catch Basin Cleaning
- Ease of Manhole Set up
- Fill tank with water (timed event)
- Dumping into City's dump station
- Jetting/vacuuming a sewer line and/or cleaning a section of sewer
- Washout
- Lift Station Cleaning

SUBMISSION INSTRUCTIONS

All proposals shall contain concise written material and illustrations. Legibility, clarity, and completeness are essential. All submittals must have the following tabbed heading.

- Proposal transmittal letter on company letterhead signed by a representative of the Respondent organization who is authorized to submit and sign a proposal and bind the Respondent to the terms and conditions of this RFP, the firm name, address, telephone number, the name of the person authorized to submit/sign the proposal, and his/her title, telephone number, and e-mail address.
- Project Approach (recognizing that focus on the Approach to this specific project will be highly valued by the reviewers).
- Item 1. Description of CSJRT
- Item 2 – Optional Trade-in
  - 2016 2100 plus Vactor
    VIN# 1FVHG3CY5GHHD66107629
    Current hours/miles 9150hrs/53175 miles
    2016 2100 plus Vactor positive displacement with a 15-yard debris tank hydro excavator equipped and cold weather package.

Submission of Proposals
Firms wishing to be considered in the selection process must submit seven (7) copies of their proposal and the separate sealed compensation packages no later than **December 9, 2024, 4:00 p.m.** local Goshen time.

A complete proposal package shall consist of seven (7) copies each of the proposal transmittal letter and selection criteria tabs, and the sealed proposed compensations together sealed in an envelope. The complete proposal package shall be marked as shown below:

Project Name: Combination Sewer Rodder Jetter Truck

City of Goshen
Attention: Brandy Toms, Paralegal
Legal Department
204 E. Jefferson Street
Goshen, IN 46528

Submittal Date_____

Firm Name_____

The Respondent shall assume full responsibility for delivery of the Submission to the City of Goshen to the person and location addressed above on or before the appointed date stated above and shall assume the risk of late delivery or non-delivery. Late submissions may not be accepted or considered. The Submission must be contained in a sealed, opaque envelope clearly labeled 'Combination Sewer Jetter Rodder Truck and optional Trade-in' and the Respondent's company name and address.

Submissions will be opened on or after the Submission due date and time, at the sole discretion of the City of Goshen.

If it becomes necessary to revise any part of the Request for Proposal or otherwise provide additional information, an addendum will be issued by the City and furnished to all firms that have received copies of the original Request for Proposal.

QUESTIONS

Requests for further information or questions regarding this Request for Proposal should be addressed only to the individual listed below either in writing, facsimile transmission, or e-mail five (5) business days prior to the proposal due date. Unauthorized contact regarding this request for proposal with any City employee may result in disqualification. Any oral communication will be considered unofficial and non-binding. Respondents shall rely only on written addenda issued by the individual listed below. Disclosing any questions received by the City of Goshen to all Respondents will be at the sole discretion of the City of Goshen.

Carl Gaines, Fleet Manager
Central Garage
320 Steury Avenue
Goshen, IN 46528
Phone: (574)534-4288
Fax (574) 875-3276
Email: carlgaines@goshencity.com

EVALUATION CRITERIA

The following information will form the basis of the evaluation. The point number is the weight of each criterion. The points are not intended to reflect the qualifications of the consultant for that criterion; rather, it is reflective of relative ranking. Interviews may be conducted to obtain additional information regarding the proposal.

Total – 180 Points

1. Safety 15 Points

- Strobes/Safety lighting - amount and location
- Arrow board
- Entry into truck – footing and hand holds egress
- E-stop
- Noise Level – Decimals at work station
- Location of work station and apparatuses

2. **Ease of Operation** 30 Points
   - Set-up
   - Amount of time to activate machine
   - Attachments – boom range vertical, horizontal, downward
   - Hose reel – control panel, telescope, pivot, rotation
   - Camera location
   - Dumping wash out
   - Pipe storage racks
   - Dumping procedure

3. **Training** 5 Points
   - Operator Field Training – type, length of time
   - Maintenance Technician Field Training – type, length of time
   - Factory Training – distance to facility, amount of hours, number of people at no cost to the City

4. **Warranties** 10 Points
   - Define/describe all warranties. The following are examples but not **all** inclusive:

Electrical	Water Pump	Emissions
Water Tanks	Hydraulic Pump/System	Paint
Debris Tank	Chassis – bumper to bumper	PD

5. **Maintenance and Service Support** 20 Points
   - Distance to nearest service center
   - Electrical Schematics
   - Hydraulic Schematics
   - Technical repair information
   - Parts manuals (electronic version acceptable this includes web base)

6. **Vendor Qualifications** 15 Points
   - Number of units sold in the last (3) three years
   - Parts replacement inventory on hand
   - Technical support

7. **Performance Demonstration requirements** 25 Points
   - Catch basin cleaning
   - Ease of manhole set up
   - Fill debris tank with water (timed event)
   - Performance/Fuel Consumption:

Suppliers are required to submit with proposals certified fuel economy test results stating fuel consumption rates of the following operational scenarios. Results are to be stated and summarized below as gallons of diesel/hour and Rpm of chassis engine. The Supplier awarded the contract for the combination sewer truck will be required to validate the information provided below by means of the City's performance testing of the combination sewer truck upon delivery.

The information provided and the calculations below will be used to determine the combination sewer truck's lifecycle cost over a one (1) year period. The calculations will use fixed figures of Three Dollars and Fifty Cents ($3.50) per gallon for fuel price and one hundred twenty-five (125) for hours. The total of the calculations will be used as the Fuel Lifecycle Cost. The Fuel Lifecycle Cost will be added to the Base Bid Price to provide a Bid Evaluation Cost.

Please note: All GPH amounts shall be completed. If the amount is left blank or a zero is submitted, the bid will be rejected as "non-responsive".

Pump only mode: 60 gpm @ 2000 psi _____ GPH (no vacuum) x $3.50 x 125 hours = $_____

Pump only mode: 80 gpm @ 2000 psi _____ GPH (no vacuum) x $3.50 x 125 hours = $_____

Pump only mode: 60 gpm @ 2500 psi _____ GPH (no vacuum) x $3.50 x 125 hours = $_____

Pump only mode: 80 gpm @ 2500 psi _____ GPH (no vacuum) x $3.50 x 125 hours = $_____

Combination mode: 60 gpm @ 2000 psi with 4" vacuum inlet _____ GPH x $3.50 x 125 hours = $_____

Combination mode: 60 gpm @ 2500 psi with 4" vacuum inlet _____ GPH x $3.50 x 125 hours = $_____

Minimum:

Combination mode: 80 gpm @ 2000 psi with 4" vacuum inlet _____ GPH x $3.50 x 125 hours = $_____

Maximum:

Combination mode: 80 gpm @ 2500 psi with 4" vacuum inlet _____ GPH x $3.50 x 125 hours = $_____

Total Fuel Lifecycle Cost (Total of all eight figures above) **$_____**

Additionally, please provide the Rpm information for each of the above items:

Pump only mode:	**Combination mode:**
60 gpm @ 2000 psi at _____ Rpm	60 gpm @ 2500 psi with 4" vacuum inlet at _____ Rpm
80 gpm @ 2000 psi at _____ Rpm	60 gpm @ 2500 psi with 4" vacuum inlet at _____ Rpm
80 gpm @ 2500 psi at _____ Rpm	80 gpm @ 2000 psi with 4" vacuum inlet at _____ Rpm
80 gpm @ 2500 psi at _____ Rpm	80 gpm @ 2500 psi with 4" vacuum inlet at _____Rpm

8. **Delivery** 20 Points
   - Date delivered to City of Goshen

9. **Compensation** 40 Points
   - Total purchase price without trade in.
   - Total purchase price with optional trade in.

SELECTION PROCESS

The proposals considered in the selection process will be evaluated by a Selection Advisory Committee appointed by the Superintendent of Goshen Water Department and the Central Garage Fleet Manager. The City will not release the names of the Selection Advisory Committee members and requires that Respondents direct any questions to:

Carl Gaines, Fleet Manager
320 Steury Avenue
Goshen, IN 46528
Phone: (574)534-4288
Email: carlgaines@goshencity.com

The selection process is initiated with the opening of the proposals to be considered in the selection process.

The Selection Advisory Committee will evaluate the proposals for the Items 1 & 2 including the Compensation based on the evaluation criteria and the identified point system for each of the following items:

Item 1. Combination Sewer Jetter Rodder Truck

Item 2. Optional Trade in of City owned 2016 2100 plus Vactor

The Selection Advisory Committee may require additional information and/or clarification and may contact applicable Respondent(s) with questions or request for an interview as determined by information and/or clarification required. If the Selection Advisory Committee requires information and/or clarification, the applicable Respondent(s) will be contacted by phone to provide the information and/or clarification over the phone or to schedule an interview. Following the evaluation of the proposals, the Selection Advisory Committee may then recommend interviewing a minimum of three (3) of the top-rated Respondents.

Interviews/discussions may be conducted with, and best and final offers obtained from, responsible offerors who submit proposals determined to be reasonably susceptible of being selected for award. If the City intends to hold interview(s), the Respondent(s) to be interviewed will be contacted to schedule an interview. The interviewed Respondent's point values or ratings are subject to change based upon the interview.

Following the final stage of the evaluation, the City may negotiate with the highest rated Respondent the contractual terms, level of effort and scope of services, and upon successful negotiations an award recommendation will be made to the Respondent. The City, because of time constraints and depending upon the thoroughness of the proposals, may at its sole option award a contract based upon the initial proposal submittal.

Do not assume there will be an opportunity for submitting additional information. Submit your proposal as if it were your "best and final offer".

The City will send a letter to all Respondents informing them of the City's selection and the date of the anticipated Board of Public Works and Safety meeting to award the contract.

As required by and in compliance with Indiana Code 5-22-9-7:

(a) Award shall be made to the responsible offeror whose proposal is determined in writing to be the most advantageous to the governmental body, taking into consideration price and the other evaluation factors set forth in the request for proposals.

DISCLAIMERS

This Request for Proposals does not commit the City to award a contract. The City reserves the right to accept or reject part of a proposal, any or all proposals received, to negotiate with qualified Respondents, or to cancel the RFP. The City reserves the right to alter, amend, or modify any provision of this RFP or the consultant selection process, or waive irregularities in procedures related to the RFP, at any time prior to the award of a Contract, if it is in the best interest of the City of Goshen to do so. The City reserves the right to evaluate proposals for a period of sixty (60) days before deciding which proposal, if any, to accept. Proposal prices shall be maintained through the evaluation period.

The City of Goshen reserves the right to make inquiries as deemed necessary of Respondents and their references and clients regarding qualifications and information submitted as part or their responses. The city may require the Respondent to submit additional data or information the City deems necessary to substantiate the costs presented by the Respondent. The City may also require the Respondent to revise one or more elements of its proposal in accordance with contract negotiations.

The City will not be liable for any costs incurred by the respondents in replying to this Request for Proposal. The City is not liable for any costs for work or services performed by the selected Respondent prior to award of the Contract. Total liability of the City of Goshen is limited to the terms and conditions of this request and any resulting Contract.

In the event the selected Respondent(s) do not enter into the required agreement to carry out the purposes described in this RFP, the City of Goshen may commence negotiations with another Respondent.

DETAILED SPECIFICATIONS

2025 15yd. Combination Sewer Jetter Rodder Truck

		COMPLY	
		YES	NO
1.0	**INTENT**		
1.01	The intent of this specification is to provide for the purchase or lease of one (1) new and unused single-engine combination sewer and catch basin cleaner used for removing all debris commonly found in catch basins/storm lead structures and sanitary sewer lines/manhole structures using a front mounted operating station. The unit shall consist of a Positive Displacement (PD) Blower vacuum system, a hydraulically driven high-pressure water pump, an enclosed sealed body for storage of collected debris and equipped with a self-contained water supply as the source for the water pump system. The unit shall have the capability of operating both vacuum and water system simultaneously at full operating speeds continuously. (Submit horsepower requirements of all systems on unit)		
2.0	**EQUIVALENT PRODUCT**		
2.01	Bids will be accepted for consideration on any make or model that is equal or superior to the equipment specified. Decisions of equivalency will be at the sole interpretation of the Purchasing and Public Services Director.		
2.02	Bidder shall demonstrate a reasonable likeness of the equipment being offered within a reasonable time of request. Equipment demonstrated shall be equipped with all accessories and components required in this specification to ascertain equivalence.		
2.03	A blanket statement that equipment proposed will meet all requirements will not be sufficient to establish equivalence. Original manufacturer's brochures of the proposed unit are to be submitted with the proposal.		
3.0	**BIDDER REFERENCES**		
3.01	To ensure adequate local availability of parts and competent service from experienced suppliers, bids are preferred from local vendors who have sold and serviced at least 10 units of same manufacturer within service area of is preferred and should include contacts with phone numbers.		
4.0	**SERVICE AND SUPPORT**		
4.01	Location of warranty service center and amount of inventory shall be noted which may be verified and inspected.		
4.02	Amount of OEM parts at this facility: $		
4.03	Years of servicing equipment being bid: Years		
4.04	Number of factory qualified service technicians:		
5.0	**SUBFRAME**		
5.01	The equipment shall be of modular design consisting of vacuum system, water tanks system, debris body and drive system.		
5.02	A sub frame shall be fabricated to the exact dimensions of the truck chassis for mounting of modular components.		
5.03	All components of the module shall attach to the sub frame and not directly to the chassis.		
5.04	Sub frame shall be designed to ASME standards for maximum applied loads, chassis frame movement and even distribution of weight to the chassis and suspension.		
5.05	Sub frame shall be continuous and uninterrupted from back of cab to end of frame.		
6.0	**DEBRIS BODY**		

6.01	The body shall be cylindrical having a minimum usable liquid capacity of 15 cubic yards.		
6.02	The body shall be capable of high dump height of 60". Dump height of 60" must be achieved without the use of scissor lift mechanism.		
6.03	The debris storage body shall be constructed with a minimum 1/4" corrosion and abrasion resistant Ex-Ten steel.		
6.04	The debris storage body shall have a minimum yield point of 50,000 PSI and a minimum tensile strength of 70,000 PSI.		
6.05	Body shall have a rear door that is hinged at the top and is equipped with a replaceable neoprene type seal. Adjustable for periodic compensation of door seal wear.		
6.06	Dual outward mounted rear door props shall be included as standard to prevent operator from entering door swing path when engaging rear door prop.		
6.07	For optimal particulate separation, vacuum shall be drawn from separate ports in the top of the debris body.		
6.08	Body shall be dumped by raising the body to a 50-degree angle utilizing a forward mounted, double acting hydraulic dump cylinder.		
6.09	Dump controls, accessory controls, e-stop control shall be provided at a central curb side location directly behind the cab of the truck.		
6.10	For stability and safety, dumping must be accomplished while the pivot point of the body remains fixed to the subframe.		
6.11	Industrial style rear debris body door shall be flat, and shall open and close hydraulically by cylinders mounted at the top of the body. Door shall open 50 degrees from the fully closed position. Door shall be unlocked, opened, closed, and locked by a failsafe hydraulically activated sequential positive locking system, cam operated by a single hydraulic cylinder, with all controls located behind truck cab, forward of the debris body, so operator is not subject to sewage when dumping.		
6.12	Debris body shall have a body flush out system with a fan-type spray nozzle located in the front wall of the debris body to aid in the flushing of heavy debris. The nozzle shall also utilize (2) spray nozzles to flush the front most area of the debris body. System must produce a flow of 80GPM. Control valve shall be on the curb side of the unit.		
6.13	Body shall have a float type automatic shut-off system protecting the Positive Displacement Blower with (2) 10" stainless steel shut-off balls located in the debris body. Each float ball housing shall be within a non-corrosive slide-out screen assembly and be accessed without the use of tools. Debris body also equipped with an audible alarm to indicate when full.		
6.14	The debris body shall be equipped with a rear door drain to drain off excess liquids while retaining solids and shall include a manually operated 6" knife valve with cam-lock coupler and 25' of lay flat hose having camlock quick connects.		
6.15	Pump off ports for installation of Pump-Off System shall be provided on curbside on forward portion of debris body along with all necessary programming.		
6.16	3” 500 GPM trash pump installed in forward section of debris body. Pump off to operate while unit is under vacuum.		
6.17	(4) Dual vertical (cyclone) centrifugal separators shall be installed in-line between the debris body and the air mover, (2) per side for each debris body discharge port. Each dual separator shall include large fallout chamber cleanout door.		
6.18	For safety, a minimum of (5) vacuum tubes shall be stored on curbside storage racks to minimize operator exposure to traffic side of unit. Shall include quick release retainer handles (no bungees or clamps).		
6.19	A curb-side, folding 3-pipe rack shall be provided, constructed of steel tubing, spring assisted. Shall include quick release retainer handles (no bungees or clamps).		

6.20	A street-side, folding 3-pipe rack shall be provided, constructed of steel tubing, spring assisted. Shall include quick release retainer handles (no bungees or clamps).		
6.21	(2) Pipe Storage Racks on rear door with quick releases and (2) Pipe Storage Racks Curbside waist level.		
6.22	A stainless-steel micro-strainer (to 30 microns) shall be provided prior to the blower inlet, with (3) removable cartridge style screens and bottom drain port.		
6.23	A splash shield shall be mounted around the lower 60% of door opening to direct liquid and debris away from the chassis. Shield shall be minimum 10" deep bolted assembly with no openings.		
6.24	A lubrication manifold system shall be provided to allow ground level greasing of boom lift and swing cylinders, float level indicator, top rear door hinges and debris body hoist cylinder pins.		
6.25	A plastic lube chart shall be provided to call out when specific points on the unit should be greased.		
6.26	A 6" valve, electrically activated, air operated valve debris body vacuum relief system shall be located in the inlet of the vacuum system to allow the venting of the tank and relieve vacuum at the debris intake hose. (3) Kunkel relief valves shall be included.		
6.27	A debris inlet deflector distributing load evenly in debris body shall be included.		
7.0	**WATER TANKS**		
7.01	The water tanks shall be manufactured from a non-corrosive material to prevent rust yet still provide for maximum strength.		
7.02	The water tank material shall require no internal coating and shall be repairable if patching is required.		
7.03	The water tanks shall be easily removed from the subframe to provide complete access to the truck chassis for maintenance purposes.		
7.04	The water tanks shall be adequately vented and connected to provide complete filling.		
7.05	The water tanks shall be totally separate from the debris tanks and provide no structural support.		
7.06	The water tanks shall share no common walls with the debris tanks to prevent corrosion.		
7.07	The water tanks shall come equipped with an anti-siphon device and 25' of hydrant fill hose and fittings.		
7.08	The water tanks shall carry a 10-year warranty against corrosion or cracking.		
7.09	All water tanks shall be fully baffled to form a maximum compartment storage of 150 gallons for each compartment. has determined that for the stability of the vehicle when turning and stopping and for safety of personnel that systems baffled at 150 maximum gallon compartments are preferred. Exceptions of requirement shall be explained in detail accompanied with detailed engineering drawings.		
7.10	The water tank shall be located for the lowest possible center of gravity while providing 100% gravity flooded intakes to water pump.		
7.11	Fresh water shall enter the tanks through an in line 6" air gap, all aluminum covered anti-siphon device.		
7.12	Water level sight tubes of non-yellowing plastic shall be installed on both tanks.		
7.13	The sides of these water tanks shall not extend more than 48" out from the centerline of the truck chassis.		
7.14	A fresh water drain system shall be provided to completely drain the fresh water system from one location utilizing the 3" Y-strainer on the pump.		
7.15	A minimum 6" connection between tanks shall be provided.		
7.16	For stability safety, the water tanks shall not elevate with debris body during dump cycle.		

7.17	A low water alarm with indicator on control screen shall alert operator when water storage has reached an operator set remaining water level.		
7.18	A continuous water fill system shall be provided at the water tank inlet including an air operated valve which opens when the water level in the tanks are low. This water start and stop levels shall be operator set on control screen.		
7.19	A 3 in-line "Y" trap strainer shall be located at inlet of water tank fill air-gap.		
7.20	A 3 in-line "Y" trap stainless steel strainer shall be located between the water cells and water pump.		
7.21	A 3" Gate Valve shall be provided at water pump.		
7.22	Water tank must be a certified metered capacity of 1500 gallons. Certification shall be necessary upon delivery.		
7.23	Water tanks shall be constructed of 1/8" aluminum with baffled compartments maximum 150 gallons each.		
7.24	Liquid Float Level Indicator shall be provided.		
8.0	**WATER PUMP SYSTEM**		
8.01	For most efficient use of horsepower and reduced fuel consumption, high pressure rodder pump shall be hydraulically driven via (2) variable displacement pumps		
8.02	Hydraulic powered rodder pump via (2) variable displacement hydraulic pumps utilizing (2) 10-bolt PTO's.		
8.03	High pressure water pump shall be rated capable of continuous delivery of 100 GPM at 2500 PSI (submit manufacturer support documentation).		
8.04	High-pressure water (rodder) pump system shall be completely controlled through the range with use of the MultiFlow Control and throttle located on the control panel.		
8.05	Digital flow meter shall be displayed in front LCD display. Flow meter shall be capable of displaying system flow in all pump operating modes. In addition, a low water alarm shall be provided.		
8.06	Water pump speed to remain fully adjustable via an independent operator input regardless of the selected vacuum drive speed.		
8.07	Variable flow systems routing water back-to-tank are not considered equal due to additional wear, horsepower and fuel consumption. Any deviation from this drive requirement should have full explanation of horsepower consumption.		
8.08	Water (rodder) pump shall include smooth and pulsation operation mode feature without altering pump flow.		
8.09	When required to assist nozzle breaking through obstructions, water pump "pulsation mode" shall provide a forward-acting nozzle surge. Pulsation surge wave shall allow nozzle to punch forward 2" to 18" depending on flow dynamics and length of hose in sewer pipe.		
8.10	Explanation of forward-acting pulsation method shall be submitted with bid or explained below. Systems that require the use of air induction into the water pump shall not be accepted.		
8.11	Water pump location shall provide a flooded gravity suction inlet to eliminate potential cavitation’s damage.		
8.12	An oil to water heat exchanger will be provided in the water system to cool all hydraulic fluids on the unit. State horsepower requirement to operate hydraulics at full speed:		
8.13	The water pump shall provide precise 0-80 GPM controlled flow at variable pressure up to 2500 PSI.		
8.14	An extreme cold weather recirculation system - minimum 25 GPM via transmission PTO at chassis engine idle speed.		
8.15	A hydro-pneumatic nitrogen charged accumulator system shall be provided with all		

	control valves, piping and hoses for either continuous flow or jackhammer rodding. Accumulator shall be a 2.5-gallon capacity and 1000 to 2500 PSI pressure rating.		
8.16	Two (2) 1/2" high pressure ball valves shall be provided for draining the water pump and flushing sediment from the bottom of the pump.		
8.17	A nozzle rack accommodating (3) nozzles shall be provided in curbside toolbox. The nozzles shall be labeled on storage rack for pipe size/flow and application.		
8.18	Handgun shall be supplied that allows for changing of flow pattern from a fine mist to a steady stream.		
8.19	Handgun shall come equipped with quick connect couplers.		
8.20	An additional 1" water relief valve shall be provided.		
8.21	A mid-ship quick disconnect handgun couplers shall be provided.		
8.22	Hydro-Excavation Package - Includes Lances, Nozzles, and Vacuum Tubes. Water system shall allow precise variable flow control range of 0-22 GPM at 2500 PSI with digital flow meter in clear view of adjustment control.		
8.23	A water pump hour meter shall be provided.		
8.24	A high-pressure hose reel capable of operating at system pressure shall be provided.		
9.0	**VACUUM/VACUUM DRIVE SYSTEM**		
9.01	Vacuum shall be provided by a positive displacement rotary lobe type blower driven via chassis engine and heavy-duty split transfer case direct to the blower.		
9.02	Interlock safety system shall prevent drive axle from engaging.		
9.03	A horizontal silencer with rain cap shall exhaust above the cab.		
9.04	A blower tachometer / hour meter shall be provided and displayed digitally on front control screen.		
9.05	For the most efficient use of horsepower and fuel consumption, full vacuum and/or combination operation shall be approximately 1750 RPM of chassis drive engine.		
9.06	Blower shall be driven by the chassis engine and shall produce inlet volume of 4500 cfm @ 0" hg @ 2250 rpm, and 3490 cfm @ 18" hg @ 2250 rpm vacuum (Roots 824RCS 18 or equal). Drive engine not to exceed 1760 RPM.		
9.07	For added protection, the vacuum system shall have three (3) relief valves set at 18" hg, heavy duty horizontal mounted noise muffler, removable and cleanable stainless-steel filter screen, and shall be enclosed with a steel cage guard for safety.		
9.08	Transfer case shall be activated by air via a one touch control located in cab with animated confirmation on screen.		
9.09	A hot shift blower drive system shall be provided, including transfer case, air shift control, vacuum relief, and front control for blower engagement.		
9.10	Blower shall be driven from chassis engine via the transmission drive shafts and heavy-duty split shaft transfer case direct to blower, engagement via one touch control on front control panel.		
9.11	The blower drive mechanism shall be engaged and disengaged via an electrical switch located at the operator's station on the front mounted hose reel. This feature shall reduce blower runtime and the extend the blower service life.		
9.12	Blower shall be provided with a horizontal silencer with exhaust above the cab and rain cap protecting the silencer from rain water.		
9.13	Blower shall draw air from two (2) separate ports in the debris body.		
9.14	Hydraulic shut off valves shall be provided at the suction, return and filter lines to permit servicing of the hydraulic system.		
9.15	Ball valve drains shall be provided for both the final filter and silencer to be able to drain any carryover that comes from the debris body.		

10.0	**VACUUM BOOM SYSTEM**		
10.01	Vacuum hose shall be designed for front operation with hose mounted and stored at front mounted work station. The hose must also allow for transport with a 5' catch basin tube attached for quick setup. The hose must also be able to be transported fully retracted to eliminate any obstruction to a drivers view of the road. A front mounted location is required for ease of positioning vacuum hoses well as minimizing need for operator to swing hose into traffic.		
10.02	All connections between debris body and vacuum system will be of the self-adjusting pressure fitting type.		
10.03	Vacuum hose will remain stationary and not rise with debris body.		
10.04	A sub-frame mounted cab guard shall be mounted behind cab with boom rest cradle.		
10.05	All vacuum pipes shall be connected to vacuum pick up tube and extension pipes by adjustable over-center quick clamps to join the aluminum flanges on pipes.		
10.06	One (1) quick clamp for each pipe supplied shall be provided.		
10.07	Boom pedestal shall be directly mounted to module subframe.		
10.08	Boom support used for travel mode shall not interfere with access or require removal to tilt hood forward.		
10.09	A control station shall be equipped with a control joystick for all directions as well as a safety emergency shut-down button, which shall automatically eliminate power to boom.		
10.10	The vacuum boom shall have a heavy-duty flexible hose assembly joining the transition pipe to the debris body make break, and a 8" heavy duty hose at the suction end of the boom.		
10.11	Boom shall rotate 180 degrees and shall be operated by an electric over hydraulic system. Lift and swing movements shall be actuated by hydraulic cylinders.		
10.12	The horizontal inner steel vacuum tube and inner box beam boom section shall telescope (tube within tube, box beam within box beam) and retract a minimum of 10’ without affecting the vertical position of the pickup tubes, and shall be located at the front work station in its retracted position, providing 324” maximum reach off longitudinal axis of unit.		
10.13	A joystick for hydraulic control of the boom shall be installed on hose reel front panel.		
10.14	A removeable 4" diameter storage "Post" to stabilize the lower boom hose during transport. Storage device shall not interfere with raising hood.		
10.15	A cordless remote boom control system equipped to activate boom functions, throttle, water pump on/off, hose reel in/out, hose reel speed, vacuum relief on/off and all dumping functions of the debris body. There must be an e-stop on cordless remote no exceptions. E-stop must not kill chassis engine in the process of emergency shut down due to possible damage to engine components.		
10.16	A rotatable inlet hose for telescopic/extendable boom shall be provided.		
10.17	A detailed engineering drawing must be supplied showing the relationship of the hose reel in relation with the vacuum boom range of motion. Drawing shall show module mounted on chassis, full arc of vacuum hose both retracted and extended, full rotation of arc for hose reel in the extended position and dimension all arc lengths of vacuum boom retracted and extended. Drawing shall highlight intersection areas whereby combination cleaning is possible (within full arc on telescoping boom system).		
11.0	**HOSE REEL**		
11.01	Hose reel assembly shall be direct frame mounted in the front of the truck.		
11.02	Hose reel assembly shall be mounted on an independent frame that can be removed from brackets attached permanently to front of main truck frame members.		

11.03	Reel will be manufactured out of 1/4" spun steel for added structural strength and shall require no internal or external reinforcements that could damage rodder hose.		
11.04	Hose reel shall be driven by adjustable gear reduction chain and sprocket assembly.		
11.05	Hose reel shall operate at full rotational speed while chassis engine is at idle.		
11.06	Hydraulic Telescoping Rotating Hose Reel - 800' capacity of 1" hose shall be provided.		
11.07	The front mounted hose reel shall telescope 15" forward down centerline of truck.		
11.08	Entire reel assembly shall rotate 270 degrees on a large diameter ball bearing.		
11.09	Hose reel shall include a dual locking device to positively lock reel in any position across operating range.		
11.10	The hose reel shall rotate about the reel assembly centerline so the reel shall never extend beyond the truck width. Reel coverage diagram shall be submitted with bid.		
11.11	Controls shall be accessible on both sides of the hose reel via a mounting station for the belly pack wireless remote control, allowing operator to work at either side of unit for safety purposes.		
11.12	600' x 1" Piranha Sewer Hose / 2500 Psi shall be provided		
11.13	An automatic hose level wind scroll device shall be supplied. An air-cylinder actuated pinch-roller shall exert downward pressure across full width of reel to retain hose on reel when encountering nozzle blockages.		
11.14	An air-cylinder actuated pinch-roller shall exert downward pressure across full width of reel to retain hose on reel when encountering nozzle blockages. Pinch roller must be activated via a one touch, backlit button with lighted feedback on the control panel.		
11.15	Digital footage counter displaying footage values shall be provided. System must be capable of resetting value to ensure operator safety. Accuracy to Within One Percent of Actual Distance, Large Easy To Read LCD Screen located on the 7” front control panel screen.		
11.16	10' Leader Hose		
12.0	**WASHDOWN EQUIPMENT**		
12.01	A handgun with 1/2" x 35' hose shall be provided at mid-ship to which allow the operator to deliver water to area served by pick up hose and to the inside of the debris body for clean out.		
12.02	Hand sprayer with adjustable spray-pattern to be provided with trigger-style gun.		
13.0	**FRONT OPERATING STATION AND CONTROLS**		
13.01	Primary operator station will be located at front of hose reel.		
13.02	All operator controls should be located on a single control panel that can be rotated on a 90-degree arc for an operator customizable location. The control panel shall also feature the ability to raise and lower through a range of not less than 8” to accommodate operators of different height.		
13.03	Station shall include a 7” Touch enabled display screen with corresponding tactile buttons for reading critical machine data including (hose footage, hose reel speed settings, water pressure, water flow. Air mover information, chassis data, mode indicator, chassis fuel level, and diagnostic controls), Back lit button keypads with, laser etched function icons, and 4 light feedback indicators. These buttons shall operate the following functions: All setup functions (remote/panel selector, work lights, hose reel extend/retract, hose reel lock, and pinch roller activation) and Vacuum functions. Additionally, there will be separate sealed rocker switches for Water Pump on/off and Throttle up/down. There shall be a multi flow control dial for controlling the full range of the water pump.		
13.04	There shall be a hose reel joystick to control the pay in and pay out of the hose reel, this joystick shall offer speed control that increases the further the joystick is moved in either direction. There shall be an additional hose reel speed dial for setting specific speed		

	ranges of the reel. There shall be a boom joystick that controls all function of the boom including up/down, left/right, and extend/retract. There shall be an E-Stop button, E-Stop activation must turn off rodder pump, shutdown Hydraulics, set chassis throttle to idle, stop vacuum		
13.05	Tachometer and hour meter for chassis engine provided at control station shall be provided.		
13.06	Tachometer and hour meter for blower provided at control station shall be provided.		
13.07	All Hydraulic Functions - Color Coded, Sealed Electric/Hydraulic NEMA 4 switches shall be provided.		
13.08	Blower Engagement/Vacuum Relief - Sealed Electric/Air NEMA 4 Switch shall be provided.		
13.09	Water pump hour meter shall be provided.		
13.10	PTO hour meter shall be provided.		
13.11	A temperature light and alarm shall be provided. Light and alarm will be activated when hydraulic temperature reaches 180 F.		
13.12	Front control screen shall display a water level indicator to show level of water through the range of the tank.		
13.13	Front control screen shall display the debris body level.		
14.0	**IN CAB CONTROLS**		
14.01	All In cab controls are to be located on a single in cab control screen. This shall be a 7” full color display screen. It shall utilize 12 back lit tactile (glove ready) buttons on the sides of the screen as well as feature touch screen operation.		
14.02	All Back up camera Features shall be displayed on the In-Cab Control Screen.		
14.03	All work lights shall be able to be activated or deactivated in cab with on screen controls.		
14.04	All safety strobes and beacons shall be controlled via on screen controller		
14.05	Jet or Combo mode shall be activated via one touch button on the control panel. Control screen must display an on-screen representation of the chassis drive system and must animate to show as drive systems activate or deactivate.		
14.06	Recirculation must be activated on the in-cab control screen and visibly show that it is active at all times aka Cold Weather Package		
15.0	**ELECTRICAL & SAFETY LIGHTING**		
15.01	The entire system shall be vapor sealed to eliminate moisture damage, "Nema-4" type or equal.		
15.02	IQAN Electronic Package: Chassis Tachometer, Blower Tachometer, Operating Mode, PTO Mode, Hydraulic Oil Temperature shutdown, Hose Reel Speed, Water Pressure, and E-Stop shall be included. E-Stop activation must turn off rodder pump, shutdown Hydraulics, set chassis throttle to idle, stop vacuum E-stop must be located at each operator interface; including hose reel controls, pendant control, wireless control (if equipped) Diagnostics for basic machine functions and all inputs and outputs shall be accessible via the display. Advanced diagnostics, updates, data retrieval, and remote diagnostics will be available via PC or Bluetooth connection.		
15.03	Logs, reports, and hour meters will be accessible via the display.		
15.04	All electrical connections shall be void of exposed wires or terminals nor should they be painted. Paint process shall be completed prior to installation of wiring.		
15.05	All wiring shall be color-coded and encased in conduit to scaled terminal boxes with circuit breakers.		
15.06	All other lights required by State and Federal Laws.		
15.07	Handheld, Pistol Grip LED Spot light with rechargeable Lithium Ion battery.		

15.08	(2) L.E.D. Boom worklights shall be provided.		
15.09	L.E.D. Work light at midship curbside shall be provided.		
15.10	(2) L.E.D. Rear door work lights shall be provided		
15.11	L.E.D. Lights, Clearance, Back-Up, Stop, Tail & Turn shall be provided.		
15.12	Mid-Ship L.E.D Bubble Type Turn Signals Shall be Provided		
15.13	A LED arrowstick shall be installed at the rear of the unit to provide directional control for approaching traffic.		
16.0	**SAFETY EQUIPMENT**		
16.01	E-stop shall be located at each operator interface location. Standard locations to include: front hose reel, mid-ship curbside dump controls, & wireless controller (if equipped.)		
16.02	Electrical system controls shall be configured to allow for single point operation only. Upon engagement of controls at specified locations, additional controls shall be disabled.		
16.03	Electrical system must enable self-check to ensure all switches are in home position prior to critical function enablement. System must "lock out" controls when switch is not in-home position.		
16.04	Rear work lights shall be activated upon engagement of reverse gear.		
16.05	(1) Emergency Flare Kit		
16.06	(1) 5# Fire Extinguisher.		
16.07	Screen Backlighting shall be provided.		
16.08	Menu Driven Menu Screens shall be provided.		
16.09	Multi-View Available on Monitor, Up To (4) Camera Inputs and Up To (4) Simultaneous Views shall be provided.		
16.10	Back-Lit Soft Touch Controls shall be provided.		
16.11	Front Hose Reel Color Camera With 130 Viewing Angle shall be provided.		
16.12	Rear Back-up Color Camera With 130 Viewing Angle shall be provided.		
16.13	Left and Right Side Mounted Color Cameras. Each With 130 Viewing Angle shall be provided.		
16.14	LED Low Light Assist on Each Camera shall be provided.		
16.15	Automatic Activation of Rear Camera When Transmission REVERSE is selected shall be provided.		
16.16	Automatic Activation of Appropriate Side Camera When Turn Signal is activated shall be provided.		
16.17	Normal Image / Mirror Image Orientation shall be provided.		
16.18	Manual Selection of Camera, Except in Reverse shall be provided.		
16.19	PAL compatibility shall be provided.		
16.20	Quad- Adapter shall be provided.		
16.21	Waterproof cable connector shall be provided.		
16.22	Digital water pressure shall be displayed in front LCD display. 7” Pressure gauge shall be capable of displaying water system pressure in all pump operating modes.		
17.0	**SEWER TOOLS AND ACCESSORIES**		
17.01	Super Slam 3D Nozzle Part #1-0110-8020-C		
17.02	Rotor Nozzle Part # 1-0142-6020-C		
17.03	Flying Nozzle 3D small Part # 1-0166-8020-C		
17.04	Ultimate Chisel Nozzle Part # 1-0220-6020-S		
17.05	Cleaning Nozzle-3D Part # 1-0182-8020-C		
17.06	Cleaning Nozzle-3D Part # 1-0183-6020-C		

17.07	Primus Nozzle-3D Part # 1-0502-8020-C		
17.08	Dredger Nozzle Part # 1-0302-8020-C		
17.09	Dredger Nozzle Part # 1-0303-8020-C		
18.0	**VACUUM TOOLS AND ACCESSORIES**		
18.01	The basic vacuum tube package shall include the following:		
18.02	(1) 8" x 3' aluminum pipe		
18.03	(2) 8" x 5' aluminum pipe		
18.04	(1) 8” x 6'6" catch basin tube. (1) 4” valve box cleaning tube		
18.05	(1) Higby style tube approximately 36”		
18.06	Sixteen (16) adjustable “over-center” quick clamps with “j” style hook at the adjustable ends in lieu of loop style.		
19.0	**CHASSIS EQUIPMENT AND STORAGE**		
19.01	Two (2) front tow hooks shall be provided.		
19.02	Two (2) rear tow hooks shall be provided.		
19.03	A safety cone storage rack shall be provided to contain safety cones in the inverted position.		
19.04	Aluminum Toolbox - Behind Cab - with Lighting		
19.05	(1) 18" x 24" x 24" Aluminum Toolbox Mounted street side shall be provided.		
19.06	(1) 48" x 22" x 24" Aluminum Toolbox Mounted curb side shall be provided.		
19.07	(2) 18 In. x 16 In. x 12 In. Aluminum Toolbox - Front Bumper shall be provided.		
19.08	(1) 24" x 24" x 24" Aluminum Toolbox Mounted street-side shall be provided.		
19.09	Storage locations for various tools and accessories shall be provided at the front hose reel for point of use storage.		
20.0	**MODULE FINISH**		
20.01	Painting of the module shall be with a DuPont Imron Elite Polyurethane Enamel Top Coat. Application is to be a wet top coat applied to a dried and sanded primer base or equal.		
21.0	**CHASSIS SPECIFICATION**		
21.01	The unit shall be a new model year 2025 or newer. No discontinued models will be accepted		
21.02	Freightliner 114SD Plus Conventional Cab Chassis		
21.03	The unit shall be equipped with a diesel engine, turbo charged and after cooled, with a Cummins ISL-370; 370 HP @ 2100 RPM, 1250 LB/FT @ 1200 RPM		
21.04	2025 EPA compliant		
21.05	Set Back Axle		
21.06	The unit shall be equipped with an Allison 3000 RDS Automatic Transmission with PTO Provision		
21.07	The unit shall be equipped with a Meritor MFS-20-133A 20,000# Wide Track, I-Beam Type Single Front Axle Flat Leaf Front Suspension		
21.09	The unit shall be equipped with a Meritor RT-46-160P 46,000# R-Series Tandem Rear Axle		
21.10	The unit shall be equipped with a 46,000# Hendrickson RT463 Rear Suspension		
21.11	The unit shall be equipped with a 114-inch BBC flat room aluminum conventional cab		
21.12	The unit shall have a wheelbase of 277 inches		
21.13	Turning radius: Wall to wall diameter not to exceed 95.6 feet		
21.14	The unit shall have a 7/16 x 3-9/16 x 11-1/8-inch steel frame with 120 KSI rating		

21.15	The unit shall have a 1/4-inch C-Channel inner frame reinforcement		
21.16	The unit shall have a 71-inch rear frame overhang		
21.17	Conventional style cab		
21.18	All windows shall be tinted safety glass		
21.19	Seats shall be factory installed. Driver's seat shall be an air suspension type seat with a minimum of six-way adjustment. Seats must minimally adjust up, down, forward, back, tilt forward, and tilt back.		
21.20	Driver's seat must include one arm rest on the right side that can be moved to promote access to all cab features		
21.21	Passenger and drive side must include DOT approved shoulder belts		
21.22	Cab exit and entry (egress) must be ergonomic with three points of stability (one hand and two feet or two feet and one hand contact) for operator at all times.		
21.23	Grab handles must be mounted vertically behind each cab door. Vertical grab handles must not be less than 8 inches long and constructed and installed to promote safe entry and exit to and from the cab.		
21.24	Three (3) complete sets of keys must be provided upon delivery		
21.25	Interior dome light must be provided		
21.26	Unit shall include an air horn		
21.27	Full-length heavy-duty floor covering made of washable rubber with removable floor mats for each side must be included		
21.28	Cab must have a forward tilting hood with splash shields, mud flaps and mud shields		
21.29	An AM\FM\Bluetooth radio must be provided that is able to communicate Operators phones for hands free phone use		
21.30	A six-inch rear-view camera must be included that will provide the operator clear view of all of the activities behind the truck, left and right sides when turn signal activated. A camera mounted on the front hose reel to assist with manhole setup. This view must remain clear under both low (night) and direct (bright) sunlight conditions		
21.31	Instrument panel and all gauges must be visible under extreme bright and extreme low light conditions		
21.32	All instruments must be grouped in clear view of the operator's position		
21.33	Fuel gauge		
21.34	Amp and or voltage gauge		
21.35	Air brake pressure gauge with auditable warning		
21.36	Oil pressure gauge with auditable warning for low oil pressure		
21.37	Water temperature gauge with auditable warning for high coolant temp		
21.38	Tachometer, speedometer, and engine hour meter		
21.39	Three additional (blank) lighted switches		
21.40	Air filter restriction gauges		
21.41	Electronic back up alarm		
21.42	Electronic box up indicator light		
21.43	Engine cooling system must be adequate to enable the vehicle to operate at both extremely high and extremely low ambient temperatures for long periods of time. This unit must be capable operating stationary at high ambient temperatures for long periods of time without overheating.		
21.44	Coolant fan shall be a Horton Drive master on\off or pre-approved equivalent		
21.45	A front radiator particulate protection mesh or grill must be provided		
21.46	Engine coolant must be lifetime coolant with protection to -30 below minimally		

21.47	Engine shall have a total displacement of not less than 8.9 liters.		
21.48	Engine output torque must not exceed transmissions maximum input torque rating.		
21.49	Engine oil check and fill shall be located in a convenient spot to enable the operator to check and fill the oil without tools or having to move the front hose reel. This may or may not require a small access door depending on the truck hood configuration.		
21.50	Minimum 110-volt, 1000-watt, 110 volt engine block heater		
21.51	A heated fuel water separator must be included similar or equivalent to a Racor, 1000fg-12.		
21.52	Fuel system must include a spin on secondary fuel filter		
21.53	Unit shall have a 12-volt system		
21.54	Alternator must be adequate to run all electrical components at an idle for prolonged periods of time without discharging the batteries. A minimum of 150-amp 12-volt alternator is acceptable if it meets the criterion above.		
21.55	All lighting must be DOT approved and in compliance with the federal motor carrier regulations.		
21.56	All wires will have protective cover with added protection at wear points.		
21.57	Batteries: three (3) maintenance free 12-volt group 31 stud type post with a minimum cold cranking amp of 1.5 times the cubic inch of engine displacement.		
21.58	Front tires minimum shall be 425-65-R-22.5 16 ply with a 20,000 lbs minimum rating or DOT compliance, whichever is greater.		
21.59	Tire size may have to be increased to meet additional weight requirements per DOT regulations.		
21.60	Rear tire shall be a minimum of 11.00\R\22.5 14 ply traction tires. These tires sizes may need to be increased to meet regulatory compliance.		
21.61	Tires must be traction tires on the rear and highway steer tread on the front.		
21.62	Rims shall be steel rims 10-hole hub piloted rims.		
21.63	Brake system shall meet or exceed DOT regulations: 393.40, 393.41, 393.50, and 393.51 minimally.		
21.64	A parking brake shall be provided and an audio/visual warning device shall be provided on the instrument panel to indicate when the parking or hand brake is applied when the engine is running.		
21.65	Parking brake with dash mounted quick release valve must be provided.		
21.66	Front shoes must be 16.5X6 inches or larger and meet the applicable stopping and heat fade SAE and DOT regulations and industry standards.		
21.67	Full 360-degree brake dust covers on all wheels must be provided.		
21.68	Air reservoirs will be equipped with drain cock easily accessible to the operator. The drain cock will point downward and away from the operator. A valve stem air recharge port will be installed so air brakes can be released with an external source.		
21.69	Brake system shall be slack adjuster s-cam style brakes with self-adjusting automatic slack adjusters on every wheel.		
21.70	All four rear brakes must have parking brake canisters or air chambers. Service only or single can rear brakes will not be acceptable. Parking brakes must and will be required to hold the fully loaded unit on a 45-degree slope minimally.		
21.71	Minimally, type 30/30 air cans must be provided on both axles. 36/30 may be required to meet the parking brake application requirements.		
21.72	Unit shall include an Allison HD automatic transmission 3000 RP with retarder and PTO capabilities (minimum) a larger size transmission may be substituted if needed to meet the engine or truck hp requirements.		

21.73	Rear axles must have a weight rated a minimum of 46,000 lbs. This rating may be increased to meet weight requirements.		
21.74	Rear axles must include magnetic drain plugs.		
21.75	A mechanical rear suspension will be required. Air suspension systems are not acceptable.		
21.76	Rear suspension must be Hendrickson or a pre-approved equivalent suspension system.		
21.77	Rear axles shall have an inter-axle differential lock system.		
21.78	Front axle must have a minimal weight rating of 20,000 lbs. This can and must be increased as needed to meet the specific weight requirements of the selected vacuum truck.		
21.79	Power steering with a gear driven style pump must be included. The nature of the operation of this unit combined with the weight will require a heavy-duty steering system.		

	Warranty		
22.01	Warranty response required within 24 hours if unit can't be repaired within 48 hours vendor will supply the City with a "loaner" unit of equal at no cost to the City.		
22.02	Warranty repairs required at vendors service center will include transport 1 way.		
23.0	**Training**		
23.01	8 hour of mechanic training in maintenance, adjustment and repair vehicle		
23.02	Minimum of 4 hours of operator training		
23.03	Video Operation Guides		
23.04	All dealer training will take place within 15 days of delivery		
23.05	Factory/Manufacturer' training to be offered within 6 months of delivery		
23.06	Operator and Mechanical training shall be two separate classes		
23.07	Service, Parts, and Operators Manuals will be supplied		
23.08	One additional Operators manual will be contained in truck cab		
23.09	Training specific to Drive train operation and service		
23.10	Training specific to the selected Diesel Engine		
23.11	A minimum of 2 hours Safety training specific to the operation of the Vacuum Truck to be included		
23.12	A Preventative Maintenance schedule of maintenance requires a specific time interval and a list of all fluids will be supplied		