



City of Milton

Purchasing Department

P.O. Box 909

MILTON, FL 32572

Phone: (850) 983-5480

Fax: (850) 983-5469

TO: Interested Parties

RE: **REQUEST FOR PROPOSALS – PIPELINE TELEVISION INSPECTION SYSTEM WITH TRAILER [RFP #2017-03-006]**

DATE: March 31, 2017

The City of Milton is proposals for the purchase of one (1) complete color television inspection system completely installed in a 6 X 10 trailer, ready for operation. The system shall be capable of inspecting relined 6” to 15” pipes and sewer lines. The system shall include a pan and tilt color television camera having infinite rotation, 1000’ of multi-conductor cable, and a tractor camera carriage. It will be used for the inspection of underground infrastructure assets from a single access point. Components usable with the base unit shall include a small diameter camera for push or pull applications, various tractor drive systems, and a mainline-launched lateral inspection system.

Information on the bid opportunity is available at the bid links located on the City of Milton’s webpage at www.ci.milton.fl.us/322/Purchasing

The deadline for submitting your proposal is **Tuesday, April 18, 2017 at 2:00 p.m.** CST, at City Hall, 6738 Dixon Street, Milton, Florida. Bids may be mailed to P.O. Box 909, Milton, FL 32572 or delivered by FedEx or other courier to our physical address. Proposer is responsible to ensure delivery by the due date.

The selected firm will be expected to provide the product(s) in accordance with the specifications and the requirements of the solicitation. Questions should be submitted in writing and directed to Lori McCafferty at lori.mccafferty@ci.milton.fl.us. Proposals received after the designated time will not be accepted

If necessary, Interpretations of the proposal, clarification of proposal specifications and requirements or changes to the RFP which have a material effect will be documented and communicated to bidders only by written addenda. An addendum to the bid with questions and answers will be made available on the city bid sites. Proposers are responsible for checking for any addenda that may be issued and to obtain such addenda.

Lori McCafferty

Lori McCafferty, Purchasing Agent

INSTRUCTIONS FOR PROPOSAL/QUOTE:

- I. Bid must be received by **Tuesday, April 18, 2017 at 2:00 p.m. (CST)**

- II. Proposals must be submitted to:
City of Milton
Attn: Purchasing Department
6738 Dixon Street, P.O. Box 909
Milton, Florida 32572

- III. Bids must be complete and include:
 - A. Public Entity Crime Form (FS Section 287.133)(3)(A) [*City website or online*]
 - B. Conflict of Interest Disclosure Form [*City website*]
 - C. Non Collusion Affidavit [*City website*]
 - D. Bid Submittal Information Form [*Pages 4 & 5*]
 - E. Technical Specification Checklist [*Pages 6-18*]
 - F. Deviation Sheets, if needed. [*Reference on page 4*]

The **successful bidder** will be required to submit additional information, including a Taxpayer Identification Number.

All proposals submitted shall be subject to acceptance or rejection and the City of Milton specifically reserves the right to accept or reject any or all proposals, to waive any technicalities and formalities in the proposal process and award the bid in part or in any manner deemed to be in the best interest of the City. The City of Milton is exempt from sales tax.

Upon quote/bid award, the terms and conditions of this quote/bid or any portion thereof, may, upon mutual agreement of the parties, be extended for an additional term or for additional quantities.

Interested Parties shall submit all required forms and information simultaneously with sealed proposal, which forms and information become a part of the property of the City of Milton and will not be returned to the firm unless a written request to withdraw is received prior to **Tuesday, April 18, 2017 at 2:00 p.m.**

The purchaser may consider as non-responsive, any bid in which there is an alteration of, or departure from the proposal form hereto attached.

The proposal will be awarded to the best firm, as determined by the City of Milton, who complies with the conditions of the invitation for quotes. The firm to whom award is made will be notified at the earliest possible date. The City of Milton reserves the right to reject the proposal of a firm who has previously failed to perform properly or complete on time, contracts of a similar nature, or the proposal of a firm who, in the sole opinion and discretion of the City of Milton is not in a position to perform the contract, or whose name appears on the United States Comptroller General’s list of ineligible contractors.

Proposals may be withdrawn by written or faxed request, provided such withdrawals are received prior to bid opening date. **NOTE:** Unless stated on the Proposal form, the proposal submitted will assume all specifications will be met.

PART 1. PURPOSE:

A. It is the intent of this specification to provide for the purchase of one (1) complete color television inspection system completely installed in a 6 x 10 trailer, ready for operation. The system shall be capable of inspecting relined 6” to 15” pipes and sewer lines. The system shall include a pan and tilt color television camera having infinite rotation, 1,000’ of multi-conductor cable, and a tractor camera carriage. The system will be used for the inspection of underground infrastructure assets from a single access point. Components usable with the base unit shall include a small diameter camera for push or pull applications, various tractor drive systems, and a mainline-launched lateral inspection system.

The City of Milton has evaluated different types of television inspection systems and has determined the product best suited for the City’s needs regarding safety, quality, and standards of performance. This specification is not to be interpreted as restrictive, but rather as a measure of the safety, reliability, and performance against which all television inspection systems will be compared.

B. In comparing proposals, consideration will not be confined to price only. The successful bidder will be the one whose product is judged to best serve the interests of the City when price, product, safety, and delivery are considered. The City of Milton reserves the right to reject any or all bids or any part thereof, and to waive any minor technicalities. A contract will be awarded to the bidder submitting the lowest responsible bid meeting the requirements of this specification.

PART 2. Equivalent Product:

Bids will be accepted for consideration on any make or model that is equal or superior to the television inspection system specified. Decisions of equivalency will be at the sole interpretation of the City of Milton. 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. All modifications made to the standard production unit described in the manufacturer’s brochures must be certified to have been in prior successful use through the submission of a minimum of three (3) references to be included in the proposal. Failure to submit references for non-standard units will deem the proposal “non-responsive” and will be rejected without further review. If requested by the City, the bidder must be prepared to demonstrate a unit similar to the one proposed.

Interpretations

In order to be fair to all bidders, no oral interpretations will be given to any bidder as to the meaning of the specification documents or any part thereof. Any request for such consideration shall be made in writing to the Purchasing Department at lori.mccafferty@ci.milton.fl.us Based upon such written inquiry, the City may choose to issue an addendum to the specifications which will be posted for all parties to see on The Florida Purchasing Group AND Vendor Registry. (Links on city website)

General

The specification herein states the minimum requirements of the City. All bids must be regular in every aspect. Unauthorized conditions, limitations, or provisions shall be cause for rejection. The City of Milton will consider as “irregular” or “non-responsive” and reject any bid not prepared and submitted in accordance with the specifications, or any bid lacking sufficient technical literature to enable the City to make a reasonable determination of compliance to the specifications.

Deviations

It shall be the bidder’s responsibility to carefully examine each item of the specification. Failure to offer a completed bid or failure to respond to each section of the technical specification (YES / NO) will cause the proposal to be rejected without further review as “non-responsive.” **All exceptions and/or deviations shall be fully described in the appropriate section.** Deceit in responding to the specification will be cause for automatic rejection.

The bidder must include a separate sheet where any and all deviations to the specifications are listed. The City understands that manufacturers design systems with different features. This listing is therefore integral to the City’s determination of an equivalent product. Each deviation must reference the listed specification, by number if necessary, and explain in full detail how the proposed system is different.

Loan Equipment Program

If the manufacturer’s service center is unable to repair and have ready to return any component of the system within 48 hours of receipt from the purchaser, the service center shall have available loaner equipment for immediate shipment.

Bid Validity

Bid and prices must be valid for a minimum of ninety (90) days after the bid submission date.

Bid Submission

Each bidder is required to submit the following information with their bid. Please initial each item to confirm compliance.

- A. Complete the bid specification package, checking “YES” to show compliance, or “NO” indicating a variance. **(Pages 7-18)** Initial _____

- B. Submit the following technical information with the bid proposal:
 - a. Detailed component listing with quantities Initial_____
 - b. Detailed system specifications Initial_____
 - c. Explanation of deviations, if necessary Initial_____
 - d. Complete supplier information sheet(s) Initial_____

- C. Bid Price Submission Form **(Page 6)** Initial_____

The following forms are also required with the bid submission:

- i. Public Entity Crime Form FS Section 287.133(3)(A) Initial_____
- ii. Non Collusion Form **(City website)** Initial_____
- iii. Conflict of Interest Disclosure Form **(City website)** Initial_____

The successful proposer will be required to submit additional forms, including, but not limited to: Drug Free Workplace Certification.

Bid Price Submittal Form – RFP #2017.03.006

BASE BID EQUIPMENT

Bid Price = \$_____

(Price in words)

Delivery of system within _____ days

Prices quoted valid for _____ days

Company name: _____

Address: _____

Authorized bidder signature: _____

Date: _____

Name: _____

Title: _____

E-Mail: _____

RFP #2017.03.006– SPECIFICATIONS
Pipeline Television Inspection System with Trailer

COMPLY ✓

YES / NO

		<p>1. Trailer</p> <p>1.1. A new 6' x 10' trailer shall be provided. The trailer shall conform to all of the following specifications:</p> <ul style="list-style-type: none">1.1.1. 5,000 lb. rated axle, with ITS and radial tires1.1.2. Interior width of 66" minimum1.1.3. Interior length of 120" minimum1.1.4. Interior height of 82" minimum1.1.5. Interior walls and ceiling insulated and finished in seamless white vinyl1.1.6. Floor plywood construction1.1.7. Electric braking system with breakaway safety switch1.1.8. Extended triple tube tongue with 2-5/16 ball hitch1.1.9. Drop-down tongue jack, manually operated1.1.10. Dual safety chains for hitch1.1.11. Drop-down corner stabilizing posts, 1000 lb. rating each1.1.12. Exterior aluminum panels painted in the City's standard color (White)1.1.13. Curb side lockable swing opening 32" wide door forward of axle1.1.14. Full opening rear swing doors with tie-down latches1.1.15. ATP front stone guard <p>1.2. The trailer shall contain all standard equipment and meet all current Federal DOT and State highway motor vehicle standards.</p> <p>1.3. The vehicle shall be additionally equipped with the following aftermarket products:</p> <ul style="list-style-type: none">1.3.1. Front and rear amber LED strobe lights, with controls in cab1.3.2. Rear facing LED arrow style traffic advisor, with controls in cab1.3.3.(2) 12V rear facing LED floodlights <p>2. On-Board AC Power System, 5500W</p> <p>2.1. The system shall include an on-board electrical power source rated for 5500W of alternating current output. The system shall be a commercial mobile generator set, duty-rated for operating at a full 8-hour day minimum. Systems that include an "RV" style power source at a lighter duty-rating, shall be deemed unacceptable due to the higher life-cycle cost.</p> <p>2.2. All electrical fixtures shall be appropriate for the complete electrical requirements of the system and are installed to NEC codes and local requirements.</p> <p>2.3. All wiring shall be run in protective conduits.</p> <p>2.4. The electrical system shall include an AC power distribution panel, with a minimum of (6) circuit breakers of appropriate size.</p> <p>2.5. A disconnection feature shall be provided for the on-board power supply. This will allow for the system to be connected to a commercial 120V AC house power supply through an exterior connection in the vehicle. The unit shall be an automatic switchover box with time-delay protection. There shall be a weatherproof housing in the driver's side of the vehicle body at an appropriate power rating for the system. There shall also be a house power cord with weatherproof plug and socket for attaching to house power.</p>
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RFP #2017.03.006– SPECIFICATIONS
Pipeline Television Inspection System with Trailer

COMPLY ✓

YES / NO

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| | | <p>2.6. The electrical system shall include a 12V system. This shall include a 600 CCA 12V automotive battery in a protective case as well as a minimum 45A Dc converter. The 12V system shall be for starting the generator as well as powering all 12V aftermarket equipment including emergency lighting and pumps. This shall prevent any additional load on the vehicle's 12V system. Any 12V installed equipment that ties into the vehicle's 12V system shall be deemed unacceptable.</p> <p>2.7. The overall generator set shall include the following features:</p> <ul style="list-style-type: none">2.7.1. Commercial mobile duty cycle2.7.2. Remote start and stop capability2.7.3. Sound attenuated housing with a rating of 64 dB at 10' under full load2.7.4. Local and remote control panels <p>2.8. The engine powering the system shall have the following features:</p> <ul style="list-style-type: none">2.8.1. Gas powered 653 cc V-twin engine, rated for 11.6 HP at 2400 rpm2.8.2. Electronic Fuel Injection (EFI) for power stability2.8.3. Centrifugal blower, 500 cfm, for alternator and engine2.8.4. Replaceable air cleaner2.8.5. Electric fuel pump2.8.6. Replaceable oil filter and fuel filters2.8.7. USDA-approved spark arrest muffler2.8.8. Automatic shutdown for low oil pressure and high temperature <p>2.9. The alternator producing the electrical power shall have the following features:</p> <ul style="list-style-type: none">2.9.1. Rated AC output of 120V ± 2.0%, 60 Hz ± 1.7%2.9.2. Double-sealed long-life ball bearings2.9.3. Electrographic long-life brushes2.9.4. High quality pure sine wave output <p>2.10. The generator mounting system shall include the following:</p> <ul style="list-style-type: none">2.10.1. Generator enclosure including the following:2.10.2. Located on the tongue of the trailer2.10.3. 14-gallon EVAP-certified fuel tank with gauge2.10.4. Metal construction2.10.5. Lockable outside access door(s) with ventilation grating2.10.6. Mounting bridge with welded steel framing for air flow handling2.10.7. Electrical, fuel, and exhaust connections <p>2.11. The system shall also include a remote control panel including voltmeter, frequency meter, hour meter, and start/stop switch. The panel shall be mounted in the control room within clear view of the operator.</p> <p>3. Control Room</p> <p>3.1. The control room shall be located in the forward section of the trailer. It shall be accessible through a curb side lockable access door and a swing door from the equipment room.</p> <p>3.2. The walls shall be insulated and finished with white non-porous laminate.</p> <p>3.3. The ceiling shall be insulated and finished with a non-porous laminate.</p> |
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RFP #2017.03.006– SPECIFICATIONS
Pipeline Television Inspection System with Trailer

COMPLY ✓

YES / NO

- 3.4. The room shall include a roof-mounted air conditioning unit with a minimum rating of 13000 BTU of cooling, combined with a 5600 BTU rated heat strip.
- 3.5. The floor shall be covered with seamless industrial grade non-skid flooring (Lonplate preferred).
- 3.6. A bulkhead wall shall separate the control room from the equipment room and include the following:
 - 3.6.1. Minimum 2 x 4 framing with ½” 7-ply Luan plywood laminated with non-porous laminate matching corresponding room wall surfaces
 - 3.6.2. Swinging door of hollow core construction with minimum 10” x 23” tinted window and non-locking handle
 - 3.6.3. Minimum 16” H x 30” W tinted Plexiglas window, allowing operator to view rear of vehicle
- 3.7. The room shall be lit by fluorescent lighting, with switch next to the bulkhead door.
- 3.8. The room shall include a tall storage closet including:
 - 3.8.1. Minimum ¾” 7-ply Luan plywood with exterior finish matching wall laminate
 - 3.8.2. Minimum of (5) removable or adjustable height shelves, constructed from ¾” 7-ply Luan plywood, including ½”x2” oak trim at the front of each shelf
 - 3.8.3. Swing-opening doors with hollow core construction, full-length stainless steel hinge, and latching hasps to prevent opening in transit
- 3.9. The room shall include a standard 19” EIA electronics rack for the secure mounting of the system’s electronic components. The rack shall be mounted above the window of the bulkhead wall, and include sufficient free space for future electronic upgrades to the system.
- 3.10. A countertop shall be included with the following features:
 - 3.10.1. Minimum ¾” 7-ply Luan plywood construction with non-porous durable laminated finish
 - 3.10.2. Adequate space for specified system controls, possibly including: camera controller, transporter controller, reel controller, lateral inspection controller, cutter controller, steerable transporter controller, keyboard, and mouse
- 3.11. An adjustable height, fabric covered, foam padded chair with 5-leg base and casters (minimum locking) shall be supplied. A securing cord shall also be supplied for in-transit storage.
- 3.12. There shall be a minimum of (2) quad outlet boxes supplied in the room.
- 3.13. There shall be a fire extinguisher securely mounted to a wall of the room in clear view of the operator. The fire extinguisher shall be a dry chemical type, NFPA-Classified 3A-40BC.

4. Equipment Room

- 4.1. The equipment room shall be located in the rearward section of the trailer. It shall be accessible through the rear body door and a swing door from the control room.

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COMPLY ✓

YES / NO

- 4.2. The walls shall be finished with white non-porous laminate.
- 4.3. The ceiling shall be finished with white non-porous laminate.
- 4.4. The floor shall be covered with aluminum tread plate flooring, with caulked protection at wall joints.
- 4.5. The room shall be lit by fluorescent light fixtures, with switches placed near entry points.
- 4.6. The back of the electronics rack equipment shall be accessible from the equipment room through a sliding removable door.
- 4.7. A workbench area shall be included with the following features:
 - 4.7.1. Lonplate worktop
 - 4.7.2. Vise with 5” jaws
 - 4.7.3. Aluminum trim protection at all corners
- 4.8. A lockable 9-drawer tool chest shall be included.
- 4.9. There shall be a minimum of (2) quad outlet boxes supplied in the room.
- 4.10. The TV cable reel system shall be mounted at the rear of the room on the street side.
- 4.11. A set of vertical storage brackets and hooks shall be included on the curb side of the vehicle at the rear of the room.
- 4.12. Down hole pole storage brackets shall be included on the rear door of the vehicle.

5. Wash Down System

- 5.1. A pressurized water system shall be supplied in order to rinse down hole equipment after an inspection. The wash down system shall conform to the following specifications:
 - 5.1.1. The pump shall operate from 12VDC with circuit breaker protection. The pump shall supply a minimum of 1.4gpm at 60psi.
 - 5.1.2. The system shall include a reservoir with the following features:
 - 5.1.2.1. 12 gallon capacity
 - 5.1.2.2. Fill port
 - 5.1.2.3. Drain port
 - 5.1.2.4. Mounted along driver’s side wall
 - 5.1.3. The system shall include a spray nozzle.
 - 5.1.4. The system shall include a 25’ length of 90 psi-rated hose on a retractable reel.

6. 19” LCD Monitor(s)

- 6.1. A 19” LCD monitor shall be supplied in the control room for viewing the inspection.
- 6.2. A 19” LCD monitor shall be supplied in the equipment room, facing rearward, for viewing the inspection at the rear of the vehicle.

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COMPLY ✓

YES / NO

- 6.3. The monitor(s) shall meet these minimum specifications:
 - 6.3.1. Size = 19" diagonal
 - 6.3.2. Dimensions = 16.34"h x 16.65"w x 8.58"d
 - 6.3.3. Resolution = 1280x1024
 - 6.3.4. Brightness = 270 cd/m²
 - 6.3.5. Viewing angle = 160° horizontal, 135° vertical
 - 6.3.6. Contrast ratio = 700:1
 - 6.3.7. Power signal = 100 to 240V AC at 50 to 60Hz
 - 6.3.8. Video input from PC and component sources
 - 6.3.9. Internal speakers, qty.2, 1W + 1W
 - 6.3.10. Adjustments for H-position, V-position, contrast, tint, brightness, and color

7. Data System Hardware

- 7.1. A laptop system shall be supplied for the data inspection software. The laptop shall include the most current features offered, and have the following features at a minimum:
 - 7.1.1. Intel processor
 - 7.1.2. 500 GB internal hard disk drive (HDD)
 - 7.1.3. 8 GB memory (SDRAM)
 - 7.1.4. Flat panel display, 14" minimum size
 - 7.1.5. 8X DVD±R/W, 4x+DL optical drive, external
 - 7.1.6. Internal dual pointing keyboard
 - 7.1.7. Docking station
 - 7.1.8. Carrying case
 - 7.1.9. Lithium-Ion battery
 - 7.1.10. AC adapter
 - 802.11 a/b/g/n wireless transmitter with Bluetooth 4.0
- 7.2. The laptop shall include a Windows 7 Professional operating system.
- 7.3. The system shall include an ink jet printer with 4800x1200dpi color resolution and 15ppm (color) output.
- 7.4. The data system hardware shall also include a video overlay device. The device shall place characters over the inspection video, and be controlled through the computer. The data system software shall be able to place characters in a 40-column x 21-row matrix, black or white, at a minimum.

8. Data System Software

- 8.1. The software for the inspection system shall have full editing and modifying capabilities for all video and data handling involved in pipeline inspection.
- 8.2. The software shall operate under the following general specifications:
 - 8.2.1. Windows 7 operating system, 64-bit
 - 8.2.2. Customized Microsoft Access database or other open architecture, NASSCO format-capable
 - 8.2.3. Design elements similar to Windows Desktop applications (scroll bars, sizing grips, menu bar, etc.)
 - 8.2.4. Help function
 - 8.2.5. Continuous data storage so data is not lost in case of failure

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COMPLY ✓

YES / NO

		<p>8.2.6. Still-photo capturing, user-selectable as automatic per observation</p> <p>8.2.7. Video capture with MPEG4 compression</p> <p>8.2.8. Any firmware or hardware required to achieve MPEG4 compression shall be included</p> <p>8.3. The software shall have two modes of operation. Recording mode shall be used to conduct new inspections. Review mode shall be used to open and review existing inspections. Review mode shall also have the ability to modify inspection data and add or remove observations.</p> <p>8.4. The software user interface shall include the following features at a minimum:</p> <p>8.4.1. Information section, customizable via template</p> <p>8.4.2. Asset information</p> <p>8.4.2.1. Manhole numbers</p> <p>8.4.2.2. Pipe material</p> <p>8.4.2.3. Pipe size</p> <p>8.4.3. Inspection information</p> <p>8.4.3.1. Date</p> <p>8.4.3.2. Time</p> <p>8.4.3.3. Operator</p> <p>8.4.3.4. Weather conditions</p> <p>8.4.3.5. Inspection direction</p> <p>8.4.4. Observation section, governed by template selected</p> <p>8.4.5. Distance</p> <p>8.4.6. Defect ID</p> <p>8.4.7. Clock location</p> <p>8.4.8. Free form comment</p> <p>8.4.9. Observation grid to scroll through inspection via observation list, indexed to video</p> <p>8.4.10. Lateral grid to scroll through list of lateral inspections</p> <p>8.4.11. Video Window displaying camera/overlay output in native aspect ratio</p> <p>8.4.12. Snapshot reel to scroll through observation snapshots</p> <p>8.5. The software shall allow for an unlimited number of faults or observations per inspection.</p> <p>8.6. Asset and inspection information shall be importable from a previous inspection.</p> <p>8.7. Overlay information shall be displayed on any stored still images or videos.</p> <p>8.8. Video quality shall be selectable among three (3) levels.</p> <p>8.9. Distance shall be selectable between metric and imperial units of measure.</p> <p>8.10. The list of fault codes shall be editable by the operator.</p> <p>8.11. Lateral inspections shall be able to be categorized as stand-alone or tied to a mainline inspection.</p> <p>8.12. Reports shall be able to be generated through the software in either hard copy or PDF format. Report styles shall include at a minimum:</p> <p>8.12.1. Top view report</p>
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COMPLY ✓

YES / NO

- 8.12.2. Side view report
- 8.12.3. Detailed list report (tabular)
- 8.12.4. Snapshot report
- 8.12.5. Nassco-Standard report

8.13. The software shall automatically save data as the inspection progresses. Project data, video, and still-frame pictures shall be stored in a single file. The user shall be able to determine where inspection data files and PDF reports will be stored on the PC.

9. Power Control Unit (PCU)

9.1. A power control unit (PCU) shall be provided to control and distribute power to the TV system equipment specified. The PCU shall include the following features at a minimum:

- 9.1.1. Housing for mounting in a standard 19” EIA electronics rack
- 9.1.2. Approval through test spec UL1012 for power units
- 9.1.3. All electrical connections to be plug-type, no “terminal block” wiring is allowed
- 9.1.4. All electrical connection plugs to be keyed and vibration proof
- 9.1.5. Isolation transformer for clean downhole power signal source
- 9.1.6. Front face of unit shall include the following controls:
- 9.1.7. Camera power switch
- 9.1.8. Camera power breaker reset button
- 9.1.9. Camera voltage adjustment dial, 0 to 150V DC
- 9.1.10. Camera current adjustment dial
- 9.1.11. Pan and tilt controller connection
- 9.1.12. Auxiliary lighthouse switch
- 9.1.13. Lighthouse power switch
- 9.1.14. Lighthouse power breaker reset button
- 9.1.15. Lighthouse lamp power selector
- 9.1.16. Lighthouse intensity dial
- 9.1.17. Lighthouse overcurrent warning light
- 9.1.18. Auxiliary lighthouse controller connector
- 9.1.19. Auxiliary tractor controller connector
- 9.1.20. Diagnostic meters on front face of unit shall include:
- 9.1.21. Camera module voltage
- 9.1.22. Camera module current draw
- 9.1.23. Lighthouse voltage
- 9.1.24. Lighthouse current draw

10. Pan and Tilt Zoom Camera

10.1. A color pan and tilt view camera shall be supplied. The camera shall use directional long-life-rated LED light sources to provide adequate pipe wall illumination in sizes up to 36”.

10.2. The camera shall have the following operational features:

- 10.2.1. Usable in 6” relined pipes and larger
- 10.2.2. Transmits a color video signal through at least 1000’ of multi-conductor cable
- 10.2.3. Designed with solid-state circuitry to withstand shock and vibration
- 10.2.4. Operates in climatic conditions from at least 0°C to 50°C with 100% RH

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COMPLY ✓

YES / NO

- 10.3. The camera module shall have the following electronic features:
- 10.3.1. Color Super HAD CCD, 1/3"
 - 10.3.2. Collection matrix of 768h x 494v pixels, total of 379,392
 - 10.3.3. 480h TV lines of resolution
 - 10.3.4. NTSC color image scanning - 525 lines a 60Hz, 2:1 interlaced
 - 10.3.5. Minimum illumination sensitivity of 0.14lux, with (4) user-selectable preset shutter settings
 - 10.3.6. Automatic light-compensating iris, with manual override
 - 10.3.7. White balance optimization with minimum (4) user-selectable presets
 - 10.3.8. Regulated DC power input range of 18-36V
 - 10.3.9. Software resident on upgradeable EEPROM
 - 10.3.10.4.2 ~ 42mm, f1.8 zoom lens, 10x optical, 4x digital, 40:1 total zoom
 - 10.3.11. Proportionally slowed camera movements when zooming
 - 10.3.12. 1/2" to ∞ automatic focus, with manual override

The City of Milton has evaluated different cameras and has determined that the following characteristics must be present in the camera electronics to be acceptable:

- Minimum light sensitivity of 0.1lux or better
- Camera software upgrades

- 10.4. The camera chassis shall have the following electromechanical features:

- 10.4.1. Overall length of 8" or less
- 10.4.2. Head diameter of 3 1/4" or less
- 10.4.3. Stainless steel and anodized aluminum construction
- 10.4.4. Infinite camera head axial rotation
- 10.4.5. Infinite camera head pan/tilt rotation
- 10.4.6. Lens wiper system for clearing debris from lens during inspection
- 10.4.7. Pan and tilt angle to view backward a minimum of 45°
- 10.4.8. Military-rated gold slip ring contacts
- 10.4.9. Scratchproof sapphire camera window
- 10.4.10. Sealed keyed military connector with gold plated contacts
- 10.4.11. DC motors with planetary gears, ball bearings, power all camera motions, with clutches to protect from overloads and impacts
- 10.4.12. Redundant dirt and pressure seals at all moving joints
- 10.4.13. Automatic home feature to upright forward viewing, with forks at top and bottom of camera head
- 10.4.14. Qty.6 minimum user-selectable location presets
- 10.4.15. Qty.2 minimum user-selectable scanning presets
- 10.4.16. Fast-check LED indicator for low camera head pressure

The City of Milton has evaluated different cameras and has determined that the following characteristics must be present in the camera mechanisms to be acceptable:

- Infinite camera head axial and pan/tilt rotation
- Forks at top and bottom of camera head at home position
- Lens wiper system for on-demand cleaning

- 10.5. The camera lighting system shall have the following features:

- 10.5.1. Light emitting diode (LED) light sources, lifetime rated for 10,000 hours of use

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- 10.5.2. A maintenance-free directional true color warm white LED module for operation up to 36” pipelines
- 10.5.3. Maintenance-free forward facing true color warm white LED modules, positioned in the arms of the camera
- 10.5.4. Field-replaceable polycarbonate LED windows

The City of Milton has evaluated different cameras and has determined that a 10,000-hour life rated LED light source is the only acceptable light source. Cameras that offer lighting through any style incandescent bulb with substantially shorter life ratings will be deemed unacceptable.

- 10.6. The camera shall be equipped with the following diagnostic and safety features:
 - 10.6.1. Internally pressurized with dry nitrogen to a minimum of 15psi
 - 10.6.2. A set of diagnostic telemetry, including:
 - 10.6.2.1. Camera module regulated Voltage
 - 10.6.2.2. Light head current
 - 10.6.2.3. Camera model, serial number, and software revision level
 - 10.6.2.4. Internal camera head pressure
 - 10.6.2.5. Operating hours

The City of Milton has evaluated different cameras and has determined that only cameras with the aforementioned safety devices are acceptable.

- 10.7. The camera shall include a field pressurization kit including:
 - 10.7.1. Dry nitrogen pressurized container
 - 10.7.2. Pressure delivery regulator
 - 10.7.3. Pressure meter for system
 - 10.7.4. Pressure delivery trigger
 - 10.7.5. Enclosed valve port design

The City of Milton has evaluated different cameras and has determined that only cameras with an enclosed pressurization valve port will be considered acceptable. Cameras that employ a design that allows a standard automotive-type air chuck to be attached shall be deemed unacceptable due to the possibility of over-pressurizing the system without proper equipment.

- 10.8. The camera controller shall have the following features:
 - 10.8.1. Joystick controller for camera head pan/tilt and rotational movements
 - 10.8.2. Switch for manual focus override (in/out)
 - 10.8.3. Switch for manual iris override (open/close)
 - 10.8.4. Switch for diagnostic telemetry display (on/off)
 - 10.8.5. Switch for camera home position
 - 10.8.6. Desktop model, with cable connection to rear of control unit

- 10.9. The camera shall be shipped with a damage-resistant case. The case shall have foam lining, allowing shipping on commercial carriers.

11. Wheel Drive Steerable Transporter

- 11.1. A remotely controlled steerable wheeled transporter shall be supplied. The transporter system shall be able to propel an inspection camera through relined 6” to 15” pipes to a distance of up to 1000’ from point of entry.

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- 11.2. The transporter shall have the following operational features:
 - 11.2.1. Usable in 6” relined pipes and larger
 - 11.2.2. Capable of lifting the camera head a minimum of 4”
 - 11.2.3. Capable of free-wheeling, allowing retrieval by cable and reel combination
 - 11.2.4. Capable of driving around debris or other obstacles in a pipeline
 - 11.2.5. Capable of transporting a standard pan and tilt or mini-mainline camera

- 11.3. The transporter shall have the following electronic features:
 - 11.3.1. Continuous duty rated brushless drive motors, (1) motor per side
 - 11.3.2. Transporter shall accept controls from system power control unit transmitted through a maximum of 1000’ of cable
 - 11.3.3. Complete solid-state design, with gel-filled electronics cavity for protection
 - 11.3.4. Articulated rear cable connector for added cable strain relief
 - 11.3.5. Rearward viewing color camera with LED lighting, for viewing behind tractor during and inspection
 - 11.3.6. Integral 512 Hz transmitting beacon
 - 11.3.7. Auxiliary LED lighthouse for use in large pipes

- 11.4. The transporter shall have the following mechanical features:
 - 11.4.1. Maximum overall length of 16” including rear connector and miniature camera
 - 11.4.2. Forward attachment for mounting miniature pan and tilt camera
 - 11.4.3. Replaceable O-ring seals at all field-serviceable joint locations
 - 11.4.4. Manually-operated camera lifting mechanism, 4” minimum rise
 - 11.4.5. A transmission that includes:
 - 11.4.6. Gears in oil bath for maximum cooling and lubrication
 - 11.4.7. Neutral position to freewheel during retrieval
 - 11.4.8. Heavy duty worm drive gear to absorb drive line shock
 - 11.4.9. An enclosed drive train that includes:
 - 11.4.10.(Qty.6) 3” wheels for use in 6” relined pipe
 - 11.4.11.(Qty.4) 4” wheels for use in 8” to 18” un-relined lines
 - 11.4.12.(Qty.4) 5” wheels for use in 12” pipes and larger
 - 11.4.13.(Qty.4) 5” wheels with extended hubs for use in larger pipes
 - 11.4.14.All wheels must be interchangeable with a single fastener

The City of Milton has evaluated different transporters and has determined that the following characteristics must be present in the transporter mechanisms to be acceptable:

- Articulated rear cable connector
- Overall length less than 16”

- Rear viewing camera to prevent cable entanglements
- Freewheeling capability during retrieval

- 11.5. The transporter controller shall have the following features:
 - 11.5.1. Power supply unit, mounted in standard 19” EIA rack, with the following features:
 - 11.5.2. Power switch with lamp
 - 11.5.3. Directional switch, 3-position toggle (F/N/R)
 - 11.5.4. Speed control dial
 - 11.5.5. Voltage and ammeter display for power draw to transporter
 - 11.5.6. Overload breaker protection

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11.5.7. Desktop joystick controller for directional control

11.6. A spare parts kit shall be included with the unit that includes all parts that are expected to be replaced in the field. The kit shall also include any tools that are regularly needed in the servicing of the transporter.

11.7. The camera and transporter shall be shipped with a damage-resistant case. The case shall include a foam cradle, with solid exterior construction.

12. Transmission Cable and Reel System

12.1. A portable reel with multi-conductor cable shall be supplied. The cable shall be used for closed circuit video transmission as well as retrieval of the downhole equipment. The reel shall be capable of providing adequate force to the cable for equipment retrieval.

12.2. The reel shall have the following features:

- 12.2.1. Aluminum construction with anodized finish
- 12.2.2. Cable storage drum and frame handles
- 12.2.3. Overall dimensions 16" x 22" x 21" maximum in any direction
- 12.2.4. 120V AC motor
- 12.2.5. Maximum motorized retrieval speed of at least 180 fpm
- 12.2.6. Clutch system with freewheeling capability and manual override
- 12.2.7. Mechanical drive chain between clutch and drum
- 12.2.8. All chains and linkages enclosed and safety labeled
- 12.2.9. Low friction greased bearings to minimize drag
- 12.2.10. Cable level wind that automatically lays cable evenly across drum with manual override
- 12.2.11. Mechanical footage meter mounted on level wind
- 12.2.12. Footage encoder to send electronic footage data to display system, ±2% accuracy minimum
- 12.2.13. Sealed continuous gold contact slip ring assembly with the following features:
- 12.2.14. Voltage range from 1μV to 460V
- 12.2.15. Current range from 1nA to 25A
- 12.2.16. Pulse DC frequencies to 100MHz
- 12.2.17. Corrosion proof and maintenance free
- 12.2.18. 12 circuits minimum
- 12.2.19. Control panel with speed and direction controls
- 12.2.20. Drop down cable guide with directional roller and locking positions
- 12.2.21. Mounting kit for securing reel in a vehicle application

The City of Milton has evaluated different reels and has determined that the following characteristics must be present in the camera electronics to be acceptable:

- Gold contact slip rings
- All mechanical drive mechanism (drives with solenoids are deemed unacceptable)
- Enclosed drive assembly
- Freewheeling capability
- 180 feet per minute minimum retrieval speed

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- 12.3. The cable shall have the following features:
- 12.3.1. Continuous length of 1000' minimum
 - 12.3.2. Diameter of 0.28" minimum
 - 12.3.3. Rated breaking strength of 1200 pounds minimum
 - 12.3.4. Outer jacket of low-friction abrasion-resistant material
 - 12.3.5. Continuous length terminated at resin-free 12-pin connector
 - 12.3.6. Construction of (10) separate conductors of adequate gauge for delivering power and control signals to downhole equipment
 - 12.3.7. Termination to field-replaceable resin-free sealed tapered connector

12.4. The cable shall also include a repair kit for repairing the termination.

13. Downhole Guide System

- 13.1. A downhole guide system shall be supplied for guiding and protecting the cable between the inspection system and the pipe. The system shall include the following devices at a minimum:
- 13.1.1. Topside roller with aluminum roller and steel frame
 - 13.1.2. Downhole roller with aluminum rollers and steel frame, quick-lock detachable
 - 13.1.3. (Qty. 30') of fiberglass poles for attaching to downhole roller, quick-lock detachable sections
 - 13.1.4. Hook for attaching to poles allowing for roller to be hung from manhole ring
 - 13.1.5. Extraction pole assembly for lifting equipment from manhole or culvert, including:
 - 13.1.6. Tractor lifting eye with attachment hardware
 - 13.1.7. (Qty. 3) quick-lock detachable reinforced fiberglass poles

14. Training

14.1. Within 30 days of delivery, a qualified factory representative shall fully instruct appointed personnel in the operation and maintenance of the sewer inspection equipment specified. At a minimum, this instructional course shall be two (2) days in duration. Topics covered shall include operational procedures, maintenance procedures, and safety procedures. Data handling procedures shall also be discussed, tailored to the data system specified.

15. Instructional Materials

- 15.1. The following instructional materials must be delivered with the system:
- 15.1.1. Master set of equipment manuals, matched to specified system equipment, including any aftermarket equipment installed
 - 15.1.2. Copy set of equipment manuals, TV system only, matched to specified system equipment
 - 15.1.3. Manufacturer's parts catalog

16. Maintenance Kit

- 16.1. A maintenance kit shall be included with delivery of the system. This kit shall include all the necessary common tools needed in the normal course of maintenance of the TV system equipment specified. Tools should include at a minimum:
- 16.1.1. Adjustable wrench

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- 16.1.2. Combination wrench set
- 16.1.3. Allen wrench set
- 16.1.4. Side cutter pliers
- 16.1.5. Long nose pliers
- 16.1.6. Channel lock pliers
- 16.1.7. Vise-Grip pliers
- 16.1.8. Screwdriver set including flat blade and Phillips
- 16.1.9. 5/16 nutdriver
- 16.1.10. Soldering iron
- 16.1.11. Roll of 60/40 resin core solder
- 16.1.12. Multimeter with AC and DC voltage, resistance, and continuity signal
- 16.1.13. Wire cutter with terminal crimper
- 16.1.14. Utility knife
- 16.1.15. Electrical tape

17. Warranty

- 17.1. The TV inspection system shall be warranted against manufacturing defects for a period of (12) months from the date of delivery at a minimum. Any installed equipment warranties that extend beyond this period (e.g. a vehicle 36 month / 36000 mile warranty) shall be passed on to the City of Milton by the TV system manufacturer.

18. Delivery

- 18.1. The system shall be delivered to the City of Milton in first-class operating condition. Acceptance of the system shall be subject to inspection and approval by City personnel.

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