



City of West Linn, OR

Technical Specifications

For A

Pipeline Television Inspection System

ADVERTISEMENT FOR BIDS

**Sewer Pipe Line Television Inspection System
Mounted in a 4500 gas cutaway van with 14' hi-cube body**

IN THE CITY OF WEST LINN, CLACKAMAS COUNTY, OREGON

CITY OF WEST LINN, OREGON

Sealed proposals for the building of a sewer pipe line Television Inspection System for the City of West Linn, Clackamas County, Oregon will be received by the City of West Linn Public Works Department at 4100 Norfolk St., City of West Linn, Oregon 97068 (Telephone (503)656-6081, Fax (503)657-3237) until 2:00 PM, April 7th, 2009 (Tuesday), after which time, the bids will be publicly opened. Proposals received after this time will not be considered. Proposals shall be clearly marked "Bid for Sewer Pipe Line Television Inspection System" and addressed to the attention of Mike Cardwell.

The proposal and specifications may be obtained at no cost through the City of West Linn's web site at <http://westlinnoregon.gov> or at West Linn Public Works located at 4100 Norfolk St., City of West Linn, OR. 97068.

If you wish to receive any possible future addendums for this proposal, please email prich@westlinnoregon.gov with your name, address, phone, fax, and email address or call (503)722-5501 to be placed on a proposers list.

Dated this March 23, 2009.

**Mike Cardwell
Project Manager**

Publish: Daily Journal of Commerce – March 24, 2009

Intent

It is the intent of this specification to provide for the purchase of one (1) complete color television inspection system completely installed in an Express 4500 gas cutaway van with 14' hi-cube body, ready for operation. The system shall be capable of inspecting 8" to 30" pipes and sewer lines. The system shall include a pan and tilt color television camera having 360° rotation, 1300' 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 West Linn has evaluated different types of television inspection systems and has determined that this product is 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.

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 West Linn 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.

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 West Linn. 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 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 City of West Linn. Based upon such inquiry, the City may choose to issue an addendum to the specifications.

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 West Linn 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.

Experience and Longevity

The equipment to be furnished shall be the product of a qualified firm that is regularly engaged in the manufacture and supply of this equipment. The successful bidder must supply a list of (5) users of the equipment specified

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 and this will be available for the life of the equipment.

Bid Validity

Bid and prices must be valid for a minimum of 60 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 this bid specification package, checking "YES" to show compliance, or "NO" indicating a variance. 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_____
 - e. User list Initial_____

Bid Price Submittal Form

BASE BID EQUIPMENT

Bid Price = \$ _____ (price in words) _____

Specifications for:

Equipment to be Supplied:

**HIGH CUBE VAN WITH MULTICONDUCTOR
TV INSPECTION EQUIPMENT**

Each camera, camera transporter, and external lighthead to be supplied on this specification must be labeled and listed as a minimum by a Nationally Recognized Testing Laboratory (NRTL) to the applicable Standard for Safety for Closed Circuit Television Equipment, UL 2044, 2nd edition, 11/9/01. A listing report must be supplied that certifies the aforementioned equipment is acceptable as defined by 29 CFR 1910.399 and required by 29 CFR1910.303(a). Self-certification or certification by a laboratory that is not an NRTL will be deemed unacceptable. NRTL labeled and listed equipment shall be supplied as required by the FEDOSHA memorandum, dated September 25, 2002, page 3, Section on Compliance, prepared by John L Henshaw, Assistant Secretary of Occupational Safety and Health.

Component List:

Chevy Express 4500 TV HI-CUBE 14' Gas

1 Chevy Express Cutaway 4500 TV Hi-Cube Van, Gas with Automatic Transmission, 14,200 GVW, and 14' Loadspace Body with Rear Barn Doors to Include:

Compliance: YES___NO___

1 Aero cap Full Height Pass Thru

Compliance: YES___NO___

1 TV Hi-Cube Van Equipment to include:

- 2 Amber Electronic Strobe Warning Beacons - Roof Mount with on/off switch in Cab
- 2 Adjustable Floodlights Rear of Vehicle Area Illumination - Mounted Inside of Rear Doors
- 1 Standard Drivers Seat with Seatbelt and Sunvisor
- 1 Standard Passenger Seat with Seatbelt and Sunvisor
- 1 12 Volt Light, Cab Area
- 1 Back-Up Alarm
- 1 Cab Air Conditioner
- 1 AM/FM Radio with CD Player
- 1 Safe Entry/Exit Rear Bumper with Grab Handles
- 1 Sliding drawer Storage in Rear Kickplate of trucks and accessories
- 1 Lockable Storage Cabinet in Rear Kickplate for Camera / Transporter and Downhole Poles
- 1 Sealed Kickplate Storage Drawer - Bottom Steel Grated to Allow Cleanout - will Store camera

Compliance: YES___NO___

1 TV Hi-Cube Van Power Package to include:

- 1 6.0 Honda 120 Volt, 60 HZ, Commercial Grade Generator, Gas Powered with Electric Start
- 1 Generator Remote Start/Stop Cable Assembly
- 1 Generator Storage with a Lockable External Access Door - on passenger side of truck
- 1 Commercial Power Supply Receptacle, 25' Cord and Plug
- 1 Electric Supply Center with Circuit Breaker Box, Commercial Power and Generator Power Connectors
- 1 Automatic Power Transfer Switch

Compliance: YES___NO___

1 System Engineering Panel, Power Distribution System Rack Mount to include:

- 1 Voltage Readout, Power Supply
- 1 Hertz Readout, Power Supply for 60Hz
- 1 Generator Hour Readout
- 1 Remote Generator Start/Stop Control Switch

Compliance: YES___NO___

1 TV Hi-Cube Van Control Room Interior to Include:

- 1 13,500 Air Conditioner Roof Mount with 5600 BTU Heat Strip
- 1 Lonseal Lonplate Flooring
- 1 Kemlite Surface Wall Covering
- 1 Kemlite Ceiling Covering
- 1 Bulkhead Wall with Passage Door From Control Room To Equipment Room with "Safety Plus Visual" Viewing Window
- 1 Ergonomic (angled) Placement of Main Controllers in Desktop with Recessed Housing
- 1 Control Console with Rack Mount for Electronic Equipment Mounted Above Desktop
- 1 Desktop/work area
- 1 12V Courtesy Light with 15 Minute Timer located at rear door area
- 1 110 Volt Fluorescent Light Fixture
- 1 Electrical Outlet with Dual Receptacles
- 1 Fire Extinguisher with Bracket, 10 BC Rating
- 1 Operators Chair With Castors
- 1 Padded Bench Seat with Storage
- 1 Open Storage Area Under Desktop

Compliance: YES___NO___

1 TV Hi-Cube Van Equipment Room Interior to Include:

- 1 Lonseal Lonplate Flooring
- 1 Kemlite Covered Walls and Ceiling
- 1 Insulated Tapered Roof
- 1 Climate controlled Breaker Box/Electronics Storage Area with Locking Positive Latches
- 1 Electrical Outlet with Dual Receptacles
- 1 110 Volt Fluorescent Light Fixture
- 1 12V Courtesy Light with 15 Minute Timer located at rear door area
- 1 Workbench with Lonseal Lonplate Covered Worktop, No sink, 20 gallon Wash Down System and upper Cabinet.
- 1 Retractable Hose Reel with 25' Water Hose and Nozzle
- 1 5 Drawer Tool Chest

Compliance: YES___NO___

1 Rear Video Monitor 19" LCD Flatscreen to include:

- 1 Video Monitor 19" LCD Flatscreen, NTSC/PAL Color Standards
- 1 Cable Assembly - Video Monitor to Monitor in control room
- 1 Monitor mount bracket

Compliance: YES___NO___

1 Pan, Tilt, and Zoom Camera System to include:

- 1 Solid State Color Sewer TV Camera with a Pan & Rotate Camera Head, 40:1 Zoom Ratio, 10x Optical Zoom, 4x Digital Zoom, NTSC Color Standard, 4x Light Integration
- 1 Camera Controller
- 1 Camera Lighting System
- 1 Camera Transportation and Storage Case

Compliance: YES___NO___

1 Color TV Power Control Unit-Multi Conductor Rack Mount, NTSC Color Standard to include:

- 1 TV Camera Remote Optical Focus Control
- 1 TV Camera Automatic Iris Remote Control
- 1 TV Camera Lighthead Intensity Control w/Meter
- 1 Camera Test Cable Assembly

Compliance: YES___NO___

2 19" LCD Flat Screen Color Industrial TV Monitor/Computer Monitor, NTSC/PAL Color Standards, Built-in Speakers

Compliance: YES___NO___

1 Combination VCR/DVD Player/Recorder System to include:

- 1 Rack Mount for VCR/DVD
- 1 Sony RDR VX500 VCR/DVD player/recorder
- 1 Cable Assembly - DVD to Power Control Unit

Compliance: YES___NO___

1 PipeTech pipeline data collection software and computer system Cartegraph integrated w/MPEG including:

- 1 Pii Basic data logging overlay module, rack mounted
- 1 Industrial hardened case with air filtering, vibration dampening hard drive mounts, peripheral cards support bar, 19" rack
- 1 3.0 GHz Intel Core2 Duo Processor
- 1 160 GB Internal Hard Drive
- 1 160 GB External hard drive
- 1 2GB SDRAM
- 1 LAN, on board network connection, Intel 82562ET
- 6 USB ports, 2 located on front of PC
- 1 CD/DVD-R/W drive
- 1 PCI Card MPEG Video Capture Device for Pipetech
- 1 Soundblaster compatible on board sound
- 1 101 key enhanced keyboard
- 1 Optical PS/2 mouse
- 1 Windows XP Professional operating system software
- 1 PipeTech Scan 5.X Software with MPEG-1,2,4 Compression
- 1 Pipe-Tech Cartegraph Integration Utility
- 2 User guide, hard copy
- 1 Ink Jet printer, color, HP, parallel port
- 1 User guide, CD
- 2 Days of Training on PipeTech Software

Compliance: YES___NO___

1 Combination TV Transmission & Tow Cable Assembly to include:

- 1 1300 Multi Conductor Kevlar Fiber Armored Cable, .350" Diameter
- 1 Kevlar Armored Cable Terminal Connector
- 1 Stainless Steel bullet connection – field repairable – no scotchcast
- 1 Cable Strain Relief

Compliance: YES___NO___

1 Electric Motor Drive Television Cable Reel to include:

- 1 Power Level Wind & Multi-Ratio Manual Transmission
- 1 Footage Meter with Local Counter and Remote Electronic Counter
- 1 Transmission Control at Viewing Station
- 1 Local Reel Mount Electrical & Mechanical Control
- 1 Sealed Continuous Contact Collector Assembly
- 1 Controller Cable Reel/Power Winch Motor
- 1 Auto Payout
- 1 Foot control for transporter operation at rear of truck

Compliance: YES___NO___

1 Electric Pedestal Crane with Controller

Compliance: YES___NO___

1 Self Propelled Camera Transporter, Wheel Driven, to Include:

- 1 Three sets of wheels to inspect 8" through 60" pipe to include minimum 3.8" diameter, intermediate 5.0" diameter, and maximum 10.5" diameter wheel sets
- 1 Two Speed Transmission to maximize torque in larger diameter pipe with manual shifter on camera carrier. The unit shall have forward, free wheel, and powered reverse capabilities
- 1 All six (6) wheel drive transporter assembly to include motor and enclosed drive train
- 1 Transporter Controller w/Automatic Safety Off
- 1 Manual Camera Lift
- 1 Tip-up rear 12 pin connector with Locking Piece

Compliance: YES___NO___

1 Cable Manhole Guide System to include:

- 1 TV Invert Pulley Assemblies
- 6 Quick Coupling Extension Poles
- 1 Manhole Adapter Hooks
- 1 Manhole Top Roller Assembly
- 1 Equipment retrieval tool

Compliance: YES___NO___

1 TV Inspection Accessories Package to include:

- 1 TV Maintenance Tool Kit
- 1 Set Manual Operation, Instruction and Maintenance TV
- 1 TV Inspection Log Book
- 1 Manual Spare Parts, TV
- 1 Video Training Tape, TV Systems Operating Procedures
- 1 Video Training Tape, System Trouble Shooting Procedures
- 1 Video Training Tape, TV Cable Repair Procedures

Compliance: YES___NO___

1 Cable Manhole Guide System to include:

- 1 TV Invert Pulley Assemblies
- 6 Quick Coupling Extension Poles
- 1 Manhole Adapter Hooks
- 1 Manhole Top Roller Assembly

Compliance: YES___NO___

1 TV Inspection Accessories Package to include:

- 1 TV Maintenance Tool Kit
- 3 Manual Operation, Instruction and Maintenance TV
- 1 Manual Spare Parts, TV
- 1 Video Training Tape, TV Systems Operating Procedures
- 1 Video Training Tape, System Trouble Shooting Procedures
- 1 Video Training Tape, TV Cable Repair Procedures

Compliance: YES___NO___

2 Days On - Site Training for Truck

1 Delivery

CHEVY EXPRESS COMMERCIAL CUTAWAY CHASSIS DETAILED SPECIFICATIONS:

Engine	Vortec 6.0 Liter V-8 SFI Gas Minimum 323 Net Horsepower @ 4600 RPM 373 lb.-ft @ 4400 RPM
Exhaust System	Stainless Steel Content
Emission Control Systems	Meets Government Standards
Cooling System	Heavy Duty
Wheelbase	159" Minimum
GVWR	14,200 lb. Minimum
Suspension	Front – Independent with Coil Springs Rear – Hypoid Drive Axle with multi leaf springs
Brakes	Power Disc - Front Power Disc - Rear 4 Wheel Antilock
Electrical	12 Volt System
Alternator	145 AMP
Battery Type	600 CCA
Fuel Tank Capacity	57 Gallons
Steering	Power Steering
Transmission	Automatic, 4 Speed, HD Electronic w/ Overdrive
Tires and Wheels	6 each LT 225/75R16 E all season
Miscellaneous Accessories	Back - Up Alarm (2) Floodlights (Rear) Chassis Undercoating High Back Bucket Seats w/Seat Belt & Sunvisor Overload Springs Intermittent Wipers w/Washers AM/FM Stereo with CD Player Full Height Aerocap Slide Out transporter/camera storage in kickplate 2 – Pull out storage drawers in kickplate

TV HI-CUBE VAN BODY

Construction	Aluminum
Side Door	With Drop Down Steps
Rear Doors	Full Opening
Rear Bumper	Safe Entry/Exit Bumper
Lighting	Standard Lights including Stop/Turn, License Plate, Back Up and ICC Running Lights

TV HI CUBE VAN BODY DIMENSIONS AND EQUIPMENT:

Interior Height	82 Inches Minimum
Interior Width	90 Inches Minimum
Interior Loadspace	14 Foot Minimum

EXTERIOR

The vehicle body shall include front and rear amber warning beacons mounted on the roof. Dual adjustable 12V halogen floodlights (work lights) shall be mounted inside of the vehicle box, at the rear header. The floodlight placement on the inside of the box allows the operator to safely adjust them while standing on the inside of the truck box facing rearward. **Floodlights that are mounted on the outside of the vehicle shall be deemed unacceptable due to the awkwardness of adjustments.**

Compliance: YES___NO___

INTERIOR

The van interior shall be divided into two areas - an Operators Control Room and an Equipment/ Storage Room. A full width laminate covered bulkhead wall constructed with cabinet grade plywood with an operator pass through door will divide the two areas. The bulkhead wall will have a 3" aluminum kick plate (minimum 1/8" thick) attached at the base for protection from possible damage caused by impact.

Access to the truck cab from the viewing room shall be via a full height passage with a hinged door located in a dividing (bulkhead) wall

Compliance: YES___NO___

VAN CONTROL ROOM

The Control Room shall be located at the front of the van body. A roof mounted 13,500 BTU air conditioner with a built in 5,600 BTU heat strip shall be supplied. All cabinets and hinged cabinet doors shall be constructed of 7ply cabinet grade plywood for durability. All cabinets will be mounted above the floor surface on 1/4" nylon spacers to minimize any potential water damage from absorption of water during the wash down process. Edges of cabinet doors, bulkhead doors, door cutouts, and cabinets shall have 1/8" thick aluminum trim installed on them to provide maximum protection in areas that are susceptible to potential impact. A 3" aluminum kick plate (minimum 1/8" thick) will be installed at the base of all cabinets and walls to provide maximum protection against potential damage caused by impact or moisture. **Cabinets not constructed with 7ply cabinet grade plywood shall be deemed unacceptable.** All hinged cabinet doors will have a metal flush (recessed) mounted positive latch, eliminating the unwanted opening of doors during transit. **Plastic door latches or surface mounted "barrel bolt" type latches shall be deemed unacceptable on any cabinet doors.**

Compliance: YES___NO___

Cabinets installed directly on the floor surface without nylon spacers and cabinets constructed with particle/MDF board shall be deemed unacceptable due to the possibility of water damage. Cabinets installed with no protective aluminum trim for exposed surfaces and no 3 inch aluminum kick plate at the base shall be deemed unacceptable due to lack of protection from potential long term impact damage.

Compliance: YES___NO___

The Control Room floor shall be constructed of a 3/4" cabinet grade plywood substrate with 1/4" tall water relief channels attached to the bottom of the floor to prevent moisture from gathering under the floor, thus minimizing potential long term water damage. The plywood substrate shall be covered with Lonseal Lonplate Flooring. The Control Room walls and ceiling will be covered with a seamless Kemlite laminate. The Kemlite laminate on the walls and ceiling shall be void of any seams or exposed screws for easy cleaning. **Laminate**

wall and ceiling covering that is not void of seams and screws will be deemed unacceptable due to the difficulty of cleaning.

Compliance: YES___NO___

A plywood control console shall be used for mounting all electronic components. The control console shall be designed to bring all controls within comfortable reach of the operator. The control console shall be positioned so the operator can see the Equipment Room area through a 30" X 30" (minimum) smoked Plexiglas window in the bulkhead wall. The control console shall be equipped with a 19" industrial rack mount for the electronic components mounted above the desktop. An ergonomic, recessed angled housing will be provided to house the Pan and Tilt Camera Controller, TV Reel Motor / Power Winch Controller, and the Self Propelled Camera Transporter Controller. The exact controllers furnished will be indicated on the component list. A 1" thick counter top constructed with 7ply cabinet grade plywood shall be provided. The counter top shall be covered (including the edge) with an industrial grade "standard" laminate (.062" thick) for durability.

Compliance: YES___NO___

A bench seat with a seamless vinyl cushion shall be supplied. **Fabric covered cushions or vinyl covered cushions with seams shall be deemed unacceptable due to the inability to clean them thoroughly. An open storage area will be provided under the desktop.**

One 48" 110 VAC indirect fluorescent light shall be supplied for optimum lighting in the Control Room. **Track lighting shall be deemed unacceptable due to the heat produced from the bulbs.**

(1) Duplex interior electrical outlet shall be supplied in the Control Room.

Compliance: YES___NO___

EQUIPMENT/ STORAGE ROOM

The Equipment/Storage Room will be located in the rear of the van. The floor shall be constructed of 2 X 6 pine planks and covered with a plywood sub-floor and Lonseal Lonplate flooring. **Aluminum Diamond plate flooring shall be deemed unacceptable due to its poor wear characteristics and potential glare hazards from the sun.** The side walls, rear doors, and ceiling shall be constructed of 3/8" plywood and covered with a protective washable Kemlite laminate. The Kemlite laminate on the walls and ceiling of the Equipment Room shall be void of any seams or exposed screws for easy cleaning. **Laminate wall and ceiling covering that is not void of seams and screws will be deemed unacceptable due to the difficulty of cleaning.**

Compliance: YES___NO___

There shall be a workbench with a plywood worktop covered with Lonseal Lonplate flooring material located on the passenger side (curbside) of the Equipment Room. A wall mounted upper storage cabinet will be mounted above the curbside wall workbench. A five drawer tool chest will also be provided.

Compliance: YES___NO___

A 20-Gallon (minimum) Washdown System with a 12 VDC water pump shall be installed to maintain water pressure for wash down of all cameras, transporters and other related equipment.

Compliance: YES___NO___

The electrical system shall be designed to fully meet the environmental, safety, and electrical requirements of the vehicle as specified. All electronics will be housed in a climate-controlled cabinet.

Compliance: YES___NO___

One 48" 110 VAC indirect fluorescent light shall be supplied for optimum lighting in the Equipment Room. A 12 VDC cargo bay light will also be installed on the Equipment Room. All Equipment Room electrical boxes, outlets, and wiring conduit will be UL approved for exterior use in a wet environment. One (2) duplex interior electrical outlets will be supplied in the Equipment Room area. No exposed wiring will be acceptable. All electrical wiring shall be in accordance with applicable electrical codes including NEC. An automatic transfer switch for Shore / Generator Power shall be installed and will be activated upon receipt of power with a minimum 40 second delay to protect all electronic components and assemblies.

Compliance: YES___NO___

Brackets shall be mounted on the passenger side rear door to hold all downhole poles, invert rollers and manhole adapter hooks when required.

GASOLINE GENERATOR w/ELECTRIC START - 6000 WATT

The power source for the system will be a 6000-watt commercial grade alternating current gasoline powered generator consisting of the following (minimum):

Generator

- Shall be mounted in an enclosed cabinet with a fire retardant liner, locking vented door with a recessed stainless steel lock, and spark free exhaust system.
- Shall be the product of a firm regularly engaged in the manufacture of gasoline powered generators.
- Shall be designed for commercial mobile applications capable of handling the load of intermittent heavy-duty use for sewerline television inspection units.
- Shall be capable of continuously producing 6000 watts of power (50.0 amps) at 120 volts AC while rotating at 3600 RPM without undue heating, wear or vibration.
- Shall be furnished with vibration isolators and a heavy-duty industrial muffler to ensure quiet operation.
- Dry weight: 216 lbs.
- Dimensions (LxWxH): 25.59" L x 19.09"W x 14.17" H

Engine

- Shall be a 359cc twin-cylinder, liquid-cooled, electronic ignition, OHC four-stroke unit developing at least 12.2 hp.
- Shall be designed to operate the generator at 60 cycles + or - 2 cps and shall be governor controlled to maintain these cycles under varying load conditions.
- Shall be equipped with an electrical starting device for local and remote start/stop, electrical fuel pump and low oil pressure shutdown.

- Shall be equipped with an oil and temperature alert system to automatically shut off the engine to prevent damage when the oil level drops below the recommendation level.
- Ignition system: transistorized magneto
- Fuel consumption: 0.84 gal/hr gasoline

Other

- A 30-amp external shore power receptacle shall be provided.
- Shore power to generator switchover shall be accomplish through a UL approved automatic changeover switch with suitable time delay to avoid damaging power surges.
- A 25 foot, 30 A shore power extension cable shall be supplied.

Compliance: YES___NO___

SYSTEM ENGINEERING PANEL

The engineering panel shall provide monitoring of the power supply to the system. The panel circuitry shall be assembled in a rack mounted chassis for installation in a built in control console. The face plate shall be heavy gauge aluminum finished with an industrial grade surface and shall have permanent labels designating the function of the various switches and controls.

Provisions shall be made on the panel for the following items:

- AC Volt Readout
- AC Frequency Readout (58-62 Hertz)
- Generator Remote Start/Stop
- Generator Run Time Readout
- Beacon on/off Glow Switch

Compliance: YES___NO___

REAR 19" COLOR FLATSCREEN LCD MONITOR NTSC,

19" Widescreen Monitor

- Shall be a high quality, ultra-thin, industrial grade color unit providing a minimum of 1280 x 1024 pixels of resolution.
- Shall be securely mounted above the cable reel for viewing at the rear of the vehicle. The mounting position shall provide maximum protection from direct sunlight for enhanced viewing.
- Shall include a user-friendly, on-screen menu for easy parameter adjustments.
- Shall be compatible with both NTSC and PAL signals; shall include an auto-detect function that has the ability to identify the signal that's being input and automatically switch from NTSC or PAL.
- Shall have the ability to automatically monitor / adjust the video input and optimize the display settings without manual adjustments.
- Shall include an On-screen Menu for adjusting monitor parameters. The menu shall include a user-friendly graphical interface to guide users through the customization of features and individual preferences.
- Shall operate from 120V AC or 230V AC power sources.
- Shall be black in color with a metallic finish.

Compliance: YES___NO___

CAMERA POWER CONTROL UNIT - MULTI CONDUCTOR

The power control unit shall provide all the necessary power and controls to operate and monitor the television inspection system. All circuits shall be of solid state design, assembled in a rack mounted chassis for installation in a built in control console. The faceplate shall be heavy gauge aluminum finished with an industrial grade finish and shall have permanent labels designating the function or purpose of the various switches, readouts and controls. The PCU shall have a back plate for all cable connectors each separately indexed and locking, and labeled as to purpose. Each camera system shall be equipped with a test cable to allow for the direct by-pass of slip rings, TV cable and any applicable connectors for testing purposes.

Compliance: YES___NO___

POWER CONTROL UNIT MINIMUM TECHNICAL REQUIREMENTS

The power control unit shall operate off of 120 volts AC current. The PCU shall contain a solid state lighthouse power source whose input shall be through an isolation, variable voltage transformer and whose output shall be from 0 volts to 120 volts DC. A light intensity adjustment control and DC volt readout shall be provided on the front panel. Input and output of both the camera and lighthouse power shall be protected by circuit breakers with indicators to identify open circuits. Circuits shall be isolated to provide operator protection from electrical shock hazards.

Compliance: YES___NO___

The power control unit will be equipped with the following remote camera adjustments:

Focus Control

A two pole switch spring loaded to off, permits the operator to adjust the camera focus for changes in pipe diameter or different views of defect conditions. In the neutral position, the camera focus will be electronically locked.

Compliance: YES___NO___

Automatic Iris Control

This control allows the operator to override the camera's automatic light compensating circuitry operating range in the event an excess of light or lack of light produces a poor picture response. With the proper adjustment, the operator can change the iris opening to compensate for the light level available thereby improving the picture response. **Systems requiring manual external camera settings or the removal of the camera from the sealed housing in the field to make these adjustments, shall be deemed not acceptable.**

Compliance: YES___NO___

PAN, TILT, and OPTICAL ZOOM CAMERA

The unit shall be labeled and listed as a minimum by a Nationally Recognized Testing Laboratory (NRTL) to the applicable Standard for Safety for Closed Circuit Television Equipment, UL 2044, 2nd edition, 11/9/01. A listing report must be supplied that certifies the aforementioned equipment is acceptable as defined by 29 CFR 1910.399 and required by 29 CFR 1910.303(a). Self-certification or certification by a laboratory that is not an NRTL will be deemed unacceptable. NRTL labeled and listed equipment shall be supplied as required by the FEDOSHA memorandum, dated September 25, 2002, page 3, Section on Compliance, prepared by John L Henshaw, Assistant Secretary of Occupational Safety and Health.

The Pan, Tilt, and Zoom Camera shall be designed for use in 8" diameter relined pipe and larger. The unit will be designed to provide close-up views of pipe walls during inspection including minute defects and voids. The unit will be color, shall operate optimally through a maximum of 4000' multi conductor, and shall consist of the following (minimum):

Camera

- Chassis construction shall include 100% solid state circuitry designed to withstand shocks and vibration normally sustained while being pulled through a pipe.
- The camera module shall be an industrial model only. **Repackaged consumer grade cameras (i.e. Camcorders) will be deemed unacceptable for use in a pipeline television inspection system.**
- Operating temperature ranges of the camera shall be 0 degrees C to 50 degrees C. **Cameras incorporating built in lighting systems that generate heat exceeding the operating temperature parameters listed by the base stock camera manufacturer will not be acceptable.**
- The camera shall develop a true color and transmit a sharp image picture on the video bandwidths only. **Picture transmission systems that require the use of R.F. suppressors and are subject to local transmitter interference shall not qualify as being equal.**
- Full color video bandwidths shall be provided with no sacrifice of low frequency response. **There shall be no visible streaking of the low frequency test bars when viewing a standard EIA Test Chart.**
- Shall not exceed an overall length of 17.7", a head length of 6.6", and a camera barrel diameter of 3".

Compliance: YES___NO___

Camera Optical & Digital Zoom

- Optical & digital zoom and zoom & focus speeds shall be selectable from the maintenance terminal. Remote control of pan, tilt, pan and tilt homing, optical zoom, manual focus, automatic focus, shutter speed, frame integration, manual iris, diagnostics and internal lights shall be provided.
- Optical Zoom Range: 10x
- Digital Zoom Range: 4x (40x with optical zoom)
- Total effective zoom ratio: 40:1
- The lens shall be an automatic iris type with a manual override (controlled from the control console) to control the illumination range for an acceptable picture between 3 and 10,000 lux.

Compliance: YES___NO___

Pan and Rotate Speeds

- Full Pan (no load): 56 deg/sec, full pan in 5-7 seconds
- Full Rotation (no load): 31 deg/sec, full rotation in 11-13 seconds

Compliance: YES___NO___

Camera Housing

- The camera mechanics and electronics shall be housed in a high strength, damage resistant, aluminum housing with a stainless steel tube.
- The rear portion of the camera shall not exceed 3 inches in diameter to allow for operation in skids and self-propelled units that are designed for 3-inch diameter cameras.
- The housing shall be 1/8" minimum wall thickness. **Housings with thinner stainless steel walls or aluminum walls that easily dent on impact will not be considered equal.**
- The front of the camera head housing shall have a view port of optical grade sapphire.
- The rear of the housing shall have a recessed bell to protect the indexed cable connector.

Compliance: YES___NO___

Mounting Fork

- The forward portion of the camera shall not exceed 4.5 inches in diameter and will include the mounting fork, camera head and lighting.
- The camera forks must be rounded or chamfered and be the same diameter as the forward portion of the camera to eliminate any sharp corners that can become caught on obstructions. **Camera forks that exceed the diameter of the camera housing that are subject to damage inside the pipe are not acceptable.**
- The mounting fork will rotate 360 degrees with an optical viewing angle of 400 degrees and shall allow the camera head to pan mechanically 285 degrees with a pan viewing angle of 331 degrees.

Compliance: YES___NO___

Camera Lighting

- Shall be remotely controlled from the control console.
- Shall be integrated into the camera and include four 12W xenon lamps equaling 48 watts.
- Shall provide adequate lighting in pipe sizes from 6" – 72" in diameter. **Cameras that require external mounted non-directional lighting for 36" through 72" pipe are not acceptable.**

Compliance: YES___NO___

Camera Controller

- The mounting surface for the joystick, switches, and LED shall be angled for ease of operator use.
- RS-232 maintenance port shall be provided.
- The pushbuttons mounted on the controller's panel shall provide the following switch positions: Focus: Near and Far, Zoom: In and Out, Iris: Open and Close, Autofocus and Lamps, Shutter: Fast and Slow, Pan, Tilt, Focus and Zoom Home, and Diagnostics.
- Shall include a joystick mounted in the middle of the controller's front panel.
- The joystick shall have the ability to move the camera head in four directions: up, down, left, and right.

Compliance: YES___NO___

ELECTRICAL SPECIFICATIONS and CAMERA REQUIREMENTS**Video Output**

- Multi-Conductor Version: 1 V, S/N 46dB or greater

Integrated Lights

- 4 x 12W xenon lamps
- Power consumption: 48W max 12V
- Illumination: 80 mscp (1000 lumens)
- Lamp life: 200 hours
- Color temp: 3000°K

Image Pick-up Device

- Interline transfer 1/4 inch CCD color

Picture Elements (pixels)

- Solid state ¼" diagonal pixels: 768 (H) x 494 (V) = 379,392 elements (NTSC)

Lens

- 10x Zoom f=4.2mm to 42mm (F1.8 to F2.9)

Digital Zoom

- 4x (40x with optical zoom)

Field of View

- 56° diagonal, 46° (H) wide, 4.6° (H) tele end

Resolution Lines

- 470 TV lines horizontal

Electronic Shutter

- ¼ s to 1/10,000 s, 20 steps

Minimum Illumination

- 3 lux @ F/1.4

Input Camera Voltage

- Single-Conductor Version: 64V to 160V
- Multi-Conductor Version: 20-72V from controller

Head Rotation

- Axial Rotation: 360°
- Rotation Optical Viewing Angle: 400°
- Lateral Pan: 285°
- Pan Viewing Angle Range: 331°
- Operate in a 6" Relined Pipe
- Rotational Diameter: 4½"

Internal Diagnostics

- Humidity sensor, CCD temperature, camera voltage, light head voltage, serial number identification, and operating hour meter. *Cameras without the aforementioned diagnostics will be deemed unacceptable.*

Working Pressure

- 50 PSI (minimum)

Operating Temperature

- 0° to 50°C

Compatible PCU's

- Multi-conductor Version: 1208 Mainline PCU and Inspector General portable PCU
- Single-Conductor Version: SC-2000 CCU

Compatible Cables

- Multi-Conductor Version: Up to 4000'
- Single-Conductor Version: Up to 2000'

Dimensions

- Overall length: 17.7", Head length: 6.6", Body tube diameter: 3", Head rotational diameter, 4 ½"

Weight

- Overall weight of transporter to be under 60 lbs

Compliance: YES___NO___

19" COLOR FLATSCREEN LCD MONITOR - NTSC, PAL Auto Select

19" Widescreen Monitor	• Shall be a high quality, ultra-thin, industrial grade color unit providing a minimum of 1280 x 768 pixels of resolution.
	• Shall be a desk-mounted 19" LCD computer display in the Viewing Room of the vehicle.
	• Shall include a user-friendly, on-screen menu for easy parameter adjustments.
	• Shall be compatible with both NTSC and PAL signals; shall include an auto-detect function that has the ability to identify the signal that's being input and automatically switch from NTSC or PAL.
	• Shall be equipped with built-in speakers to allow for audio playback from a video tape recording and detachable power cable.
	• Shall provide a wide-format desktop with precision scaling and a 20-Watt audio system.
	• Shall have the ability to automatically monitor / adjust the video input and optimize the display settings without manual adjustments.
	• Shall be equipped with (2) built-in speakers to allow for audio playback from a video tape recording.
	• Shall include an On-screen Menu for adjusting monitor parameters. The menu shall include a user-friendly graphical interface to guide users through the customization of features and individual preferences.
	• Shall operate from 120V AC or 230V AC power sources.
• Shall be black in color with a metallic finish.	

Compliance: YES ___ NO ___

19" COLOR FLATSCREEN LCD COMPUTER MONITOR - NTSC, PAL Auto Select

19" Computer Monitor	• Shall be a high quality, ultra-thin, industrial grade color unit providing a minimum of 1280 x 768 pixels of resolution.
	• Shall be a desk-mounted 19" LCD computer display in the Viewing Room of the vehicle.
	• Shall include a user-friendly, on-screen menu for easy parameter adjustments.
	• Shall be compatible with both NTSC and PAL signals; shall include an auto-detect function that has the ability to identify the signal that's being input and automatically switch from NTSC or PAL.
	• Shall be equipped with built-in speakers to allow for audio playback from a video tape recording and detachable power cable.
	• Shall provide a wide-format desktop with precision scaling and a 20-Watt audio system.
	• Shall have the ability to automatically monitor / adjust the video input and optimize the display settings without manual adjustments.

	<ul style="list-style-type: none">• Shall be equipped with (2) built-in speakers to allow for audio playback from a video tape recording.
	<ul style="list-style-type: none">• Shall include an On-screen Menu for adjusting monitor parameters. The menu shall include a user-friendly graphical interface to guide users through the customization of features and individual preferences.
	<ul style="list-style-type: none">• Shall operate from 120V AC or 230V AC power sources.
	<ul style="list-style-type: none">• Shall be black in color with a metallic finish.

Compliance: YES ___ NO ___

AUTO PAYOUT TV CABLE REEL ASSEMBLY

A TV cable reel assembly will be supplied with a minimum storage capacity for 1500' of 1/2" or 5/8" maximum diameter video transmission cable. The reel shall be chain driven and properly reinforced to withstand 200% of the maximum motor torque to insure trouble-free operation. The reel shall be powered by a variable speed electric motor and driven through a multi-gear ratio transmission with auto payout. The transmission will have multiple speeds to limit the motor load during varying towing conditions. The reel shall be equipped with an automatic level wind assembly to evenly pay out or rewind the cable to prevent pile-ups, entanglements and burying. The reel shall be built into a rugged frame designed for fixed mounting into a unit. The reel drum and level wind shall be open to view to allow for inspection during operation. There will be a foot control at the rear of the truck for transporter operation. TV reel systems that are not controlled remotely or do not have a multi ratio transmission will not be acceptable.

Compliance: YES___NO___

TV CABLE REEL SLIP RING ASSEMBLY

The reel shall be equipped with a continuous contact rotary slip ring assembly. The assembly will be equipped with a minimum of twelve (12) slip rings to conduct the necessary current and signals through the reel. Slip ring assemblies with fewer than twelve (12) rings will not be acceptable. The slip ring assembly shall be fully enclosed in a dust and weatherproof high strength aluminum housing. Systems equipped with the high maintenance copper slip ring assemblies shall not be considered acceptable. Mercury Slip Rings shall not be considered acceptable.

Compliance: YES___NO___

CABLE FOOTAGE METER, LOCAL / REMOTE ELECTRONIC READOUT

The unit shall be equipped with a distance counting meter designed to accurately measure cable travel in feet and tenths of feet. The metering head shall be constructed of machined cast aluminum parts and shall include the necessary sheaves, wheels and guides. The meter shall be equipped with an LCD for use at the rear of the unit and an electronic counter which is connected to the Data Display System at the operator's station.

Compliance: YES___NO___

CONTROLLER TV CABLE REEL MOTOR/POWER WINCH MOTOR

A single combined controller will be furnished to operate either the TV Cable Reel Motor or Power Winch Motor if supplied. It will be designed for mounting at the control console in an angular panel. The controller shall be equipped with an ON/OFF switch, an ON indicator light, clutch control (forward/reverse switch) and speed control with built in automatic off positioning for safety when the operator releases the speed control.

Compliance: YES___NO___

TV CABLE REEL CONTROL REMOTE AND LOCAL

A gear shift selector and linkage shall be provided at the control console to operate the reel mounted transmission. The combination of the reel motor controller and transmission gear shift selector will maximize the efficiency of the television inspection operation and minimize the load on the reel and motor. A speed controller, gear shift selector and on/off switch shall be provided at the reel for local control during set up.

Compliance: YES___NO___

COMBINATION VIDEO TRANSMISSION/TOW CABLE, KEVLAR FIBER ARMORED, - MULTI-CONDUCTOR

A combined video and towing cable shall be furnished in a continuous length of 1300 feet (minimum) and shall consist of the following (minimum):

Compliance: YES___NO___

Cable

- The cable shall consist of a coaxial core wrapped with a braided wire shield ground return.
- An additional braided wire shield shall encircle both the coax and ground return and shall act as a Faraday shield. **Cables with only a single braided wire shield acting as a ground return shall be deemed unacceptable.**
- A total of 10 separately insulated and color-coded 18/20 gage standard copper conductors shall be bundled and twisted in groups of 3 with one conductor remaining single.
- To prevent cable breakage when placed under load, all wire bundles, wires, and the coax shall twist in a serpentine pattern for the entire length of the cable so that all wires, including the coax, are the same total lengths. **Cables that have a 'center' coax, making it the shortest and therefore the most easily broken conductor, shall be deemed unacceptable.**
- The cable diameter shall be no greater than .375 inches and shall be able to withstand external pressures of up to 400 psi.
- **The cable weight shall not exceed 65 lbs. per 1000 feet.**

Compliance: YES___NO___

Cable Jacket

- The exterior of the cable shall consist of a minimum 1/16" thick abrasion resistant high-density nylon composite outer jacket embedded with Kevlar fibers to provide the cable with the required towing tensile strength.
- Shall provide a lower coefficient of friction to reduce drag and therefore increase its resistance to wear.

Cable Connection

- The end of the multi-conductor cable shall be equipped with a waterproof scotchcast splice to allow for the direct wiring of the female connectors.
- An adjustable strain relief shall be provided to transfer the cable towing strength from the cable to the camera skids or transporter.
- The termination shall consist of the necessary connectors and dummy plugs.

Compliance: YES___NO___

PEDESTAL CRANE

A pedestal type crane shall be provided to allow the insertion/retrieval of TV inspection equipment without the need for personnel to enter the manhole. The crane shall be manufactured by a reputable crane company and include the following (minimum):

Crane Type/Capacity

- Shall be a pedestal type crane with a designated lifting capacity of 1500 lbs.

Boom Height

- Shall include a 15 position manually adjustable boom.

Boom Length

- The boom shall have an adjustable length of 52" to 72".

Rotation

- The crane shall have a 360-degree continuous manual rotation on machined surfaces with environmentally sealed needle bearings (quantity 2) and thrust bearing (quantity 1).

Rotation Lock

- The crane shall have a positive locking device for securing the boom at 12 fixed points of rotation while operating the crane.

Hoist

- The 12VDC powered hoist motor shall include a dual internal breaking system. The hoist shall have power up and power down.

Cable

- The cable shall be 50' X 3/16" in diameter stainless steel aircraft quality cable with a single line breaking strength of 3700 lbs. and a quick release hook.

Control

- A 12VDC powered hand-held pendant control, 10 feet in length, shall be furnished for controlling the hoisting function. The pendant control shall be weather resistant with a solid rubber grip.

Power Source

- The power source shall be the vehicles own 12VDC battery.

Wiring

- The crane shall be pre-wired from the factory and tested. The entire electrical system shall be circuit breaker protected.

Safety

- The crane shall be designed and manufactured according to the applicable ANSI standards for mobile cranes. The crane shall be clearly marked with maximum load and warning decals.

Finish Coating

- The crane shall be finished with a durable powder coating, semi-gloss black.

Warranty

- The manufacturer shall warrant the materials and workmanship for a period of one year from the date of delivery (excluding any cable).

Compliance: YES___NO___

SELF-PROPELLED CAMERA TRANSPORTER

The unit shall be labeled and listed as a minimum by a Nationally Recognized Testing Laboratory (NRTL) to the applicable Standard for Safety for Closed Circuit Television Equipment, UL 2044, 2nd edition, 11/9/01. A listing report must be supplied that certifies the aforementioned equipment is acceptable as defined by 29 CFR 1910.399 and required by 29 CFR 1910.303(a). Self-certification or certification by a laboratory that is not an NRTL will be deemed unacceptable. NRTL labeled and listed equipment shall be supplied as required by the FEDOSHA memorandum, dated September 25, 2002, page 3, Section on Compliance, prepared by John L Henshaw, Assistant Secretary of Occupational Safety and Health.

A self-propelled camera transporter shall be provided for inspecting relined pipe and storm drains/wastewater pipelines measuring 8" and up in diameter. The transporter assembly shall be designed to operate optimally with 1500' multi-conductor or 2000' single conductor cable and shall consist of the following (minimum):

Transporter

- Shall include the following (minimum) equipment: (6) Driven Wheels, available in various sizes.
- Shall operate through a minimum of (1300) feet of multi conductor video cable in suitable pipe conditions.
- Shall include a two speed transmission to optimize traction by doubling the torque in difficult pipe conditions or in larger diameter pipe. There will be a protected manual shifter assembly on the transporter to facilitate quick gear ratio changes.
- Shall have sufficient power and traction to inspect a minimum of (1300) feet from the manhole entry point in suitable pipe conditions.
- Shall include a heavy-duty drive motor specifically designed to meet the power requirements of the system, regardless of size of pipe being inspected.
- Shall be equipped with self-propelled power forward, power reverse, and free wheel capabilities.
- Shall have speed and direction controlled from the control console.
- Shall be retrievable in the free wheel mode by the video cable reel to reduce the normal wear on the drive motor by 50%.
- Shall have full, variable speed in power forward or power reverse modes. The maximum speed for camera / transporter assemblies shall be 45 fpm in high gear for pipe configurations up to 15" and 65 fpm in low gear for pipe configurations up to 48". **Camera / transporter assemblies incapable of operating at the specified speeds will be deemed unacceptable.**
- Shall include an electrical connection for an external light source to ensure a clear picture in various pipe configurations.

Compliance: YES___NO___

Camera Compatibility

- The transporter, when used with the pan & tilt camera, shall fit into a 7" diameter circular area with the camera in the home position to optimize clearance in an 8" diameter relined pipe. **All transporter / pan & tilt combinations with less clearance than specified will be deemed unacceptable.**
- The combined length of the transporter / pan & tilt camera assembly shall not exceed 30" with the camera in the home position. This will allow the inspection and traversal of 8" diameter pipe with off sets or meandering conditions and facilitate entry into short inverts. **Pan & Tilt Camera / transporter assemblies exceeding 30" in length will be deemed unacceptable.**
- The transporter, when used with the pan and tilt optical zoom camera, shall fit into an 8" diameter relined pipe and will have the ability to operate in an 8" diameter pipe with offsets. **All transporter / optical zoom camera combinations that are unable to operate in 8" diameter pipe will be deemed unacceptable.**
- The combined length of the transporter / pan and tilt optical zoom camera assembly shall not exceed 28" with the camera in the home position to allow the inspection and traversal of 8" diameter pipe. **Optical Zoom Camera / transporter assemblies exceeding 28" in length will be deemed unacceptable.**

Compliance: YES___NO___

Tires

- The Transporter shall include the sets of tires required to TV up to 30" pipe plus an additional set of traction steel wheels for , PVC pipe s, designed to maximize traction in each pipe size. The transporter shall be capable of inspecting pipes up to 60" diameter with the addition of larger diameter wheels. The (2) smaller diameter wheels, designed to help negotiate offsets in larger pipe configurations, shall remain affixed to the middle axle, regardless of pipe size to be inspected. **Transporters driven by belts will not be acceptable. Transporters with external drive train components will be unacceptable.**

WHEELED TRANSPORTER TIRE MATRIX

Tire Requirements for Various Pipe Size Configurations

Tires/Wheels	7" (Relined)	8"	8" (PVC)	10"	12"	15"	10" (PVC)	12" (PVC)	15" (PVC)
Tire, 4.57" Diameter, Qty. 6, WT090, <i>Standard Equipment</i>		6							
* Kit, Wheel, Steel, 8" PVC Pipe, Qty. 6, WT914, <i>Standard Equipment</i>			6						
* Kit, Tire, WT910, Tire, 5.0" Diameter, Qty. 6, <i>Standard Equipment</i>				6	6	6			
* Kit, Wheel, Steel, 10"-15" PVC Pipe, Qty. 6, WT913, <i>Standard Equipment</i>							6	6	6
Tire, 3.8" Diameter, Qty. 6, WT040, <i>Optional</i>	6								

*** Kits contain complete sets of wheels.**

Tires/Wheels	18"	21"	24"	30"	36"	48"
Tire, 10.5" Diameter, Qty. 4, <i>Standard</i> (* Kit, Tire, Knobby, WT911)	4	4	4	4	4	4
Tire, 10.8" Diameter, Qty. 4, <i>Optional</i> (* Kit, Tire, Chevron, WT912)	4	4	4	4	4	4

Compliance: YES ___ NO ___

Camera Lift

- A remote-operated mechanical camera lift shall be provided for pipeline inspections ranging from 18" 48" in diameter to prevent the need for an operator to enter the manhole to position and reposition the camera height.
- Camera height shall be variable from the collapsed position to 10.5" in the extended position.

Compliance: YES___NO___

CABLE GUIDE EQUIPMENT, TV only

Manhole cable guide rollers shall be provided to protect the TV cable, and/or winch cable from damage during the inspection. They shall be constructed of aluminum to minimize weight and be equipped with corrosion resistant pulleys. The minimum pulley bend radius shall be 6".

Six (6) 4.8 foot (57.5") quick coupling spring loaded extension poles will be supplied to connect to the down hole cable guides. To minimize weight, the quick coupling extension poles shall be constructed of .125" thick fiberglass tubing with an outside diameter of 1.25". The fiberglass tubing shall consist of 1 ounce continuous strand matt encapsulated with vinylester resin. ***The weight per each pole shall not exceed 2.8 lbs.*** The extension poles shall be corrosion resistant and orange in color to ensure visibility for added safety.

Manhole adapter hooks will be supplied to secure the guide system to the manhole ring. A manhole top roller assembly shall be supplied to provide topside cable protection. The top roller shall consist of a welded steel angle iron frame with the necessary pulleys. Rear door mounted pole and guide holding brackets with appropriate safety warnings shall be provided. **Downhole equipment requiring manhole entry to install shall not be deemed acceptable.**

Compliance: YES___NO___

RETRIEVAL TOOL FOR CAMERA, SKIDS AND TRANSPORTER

A Retrieval Tool will be supplied for skids and/or transporter. This device will allow placement or retrieval of camera, skids and/or transporter without the need to enter the manhole. Tool will feature 6' to 10' extending fiberglass safety handle with extension locks.

Compliance: YES___NO___

TV MAINTENANCE TOOL KIT

A kit containing sets of tools as listed herein shall be furnished. The kit shall contain the necessary items to field test, adjust and repair a number of components on the television systems. This kit must include: volt OHM test meter (0-600 milliamps), Allen wrench set, and soldering kit.

Compliance: YES___NO___

OPERATING MANUALS

Operating manuals shall be furnished that contain the recommended operating instructions and maintenance procedures for all systems and components being furnished. The instructions shall provide step-by-step use methods and include adequate illustrations, diagrams and other aids. Special attention shall be given to safety considerations for personnel and the equipment.

Compliance: YES___NO___

SYSTEMS PARTS BOOK

A parts book supporting field repair and replacement of the various components of the delivered systems shall be furnished. This book shall include exploded or cutaway drawings of numerous components and assemblies with each drawing referencing a manufacturer's part number and description.

Compliance: YES___NO___

INSTRUCTIONAL VIDEO TAPES

The vendor shall provide VHS format training videos covering the following minimum requirements:

Video 1

TV System instructional video covering the recommended operation, step by step set up procedures and safety precautions for personnel and equipment. Minimum run time, 12 minutes.

Compliance: YES___NO___

Video 2

Trouble Shooting instructional video covering step by step procedures on continuity, cable testing, trouble shooting steps and safety precautions for personnel and equipment. Minimum run time, 14 minutes.

Compliance: YES___NO___

Video 3

TV Cable End Replacement instructional video covering step by step procedures on replacing the TV cable end, soldering techniques, connection location and safety precautions for personnel and equipment. Minimum run time, 34 minutes.

All videos provided must be produced from BataCam SP studio cameras and edited on "1" master dubs allowing for the maximum reproduction quality of the VHS videos provided. Video tapes produced for the purpose of sales or marketing shall be deemed not acceptable. Video training tapes produced from consumer grade camcorders shall be deemed not acceptable.

Compliance: YES___NO___

INSTRUCTION AND TESTING

The supplier shall fully instruct and test buyers in the operation of the equipment furnished after delivery. The instruction period shall be of sufficient duration (number of days shown on the component list) to fully familiarize the buyers operating personnel. The instruction and testing shall be conducted by the supplier's field service technician and shall include component familiarization, theory of operation, equipment operation, field procedures, techniques of use, troubleshooting, maintenance recording and logging of sewer conditions and safety procedures. Training provided by sales or office personnel will not be acceptable.

Compliance: YES___NO___

Although the proposal stated herein is for the city of West Linn, OR – other Washington or Oregon municipalities or public agencies may purchase at the same price as stated on this proposal, subject to the agreement of the awarded vendor. The city of West Linn, OR shall incur no liability in connection with a purchase by another public agency. It will be the responsibility of the awarded vendor to inform & provide copies of this contract. Any city wishing to use this contract may alter it at the permission of the awarded vendor.