Generic CCTV software Specifications for Granite XP *Asset Management & Decision Support Software* as provided by CUES

Functional Requirements of the Software

a. The inspection software shall fully support CMOM activities as defined by the USA EPA.
b. The inspection software shall support GASB 34 regulations.
c. The software shall be NASSCO PACP and MACP version 4.3.2 certified and conform to its pipeline assessment procedures.
d. The software shall offer the ability to quickly click on an asset and see all of the history performed against that asset.
e. The software's data entry interface shall be intuitive, easy to use, and able to provide on-line help files within the software to assist remote users with questions they may have.
f. It shall use familiar Microsoft™ layouts or 'panes' that are customizable screens for each user's preferences and job responsibility.
g. It shall offer tool bars, drop-down menus, 'auto-complete' features to speed data entry, and display data with easy Microsoft tree structures.
h. Users shall be able to "single click" to burn CD/DVD's or generate reports.
i. The core software or 'standard' inspection edition used in the field shall maintain a complete database of infrastructure assets (pipelines, manholes, lateral service connections, lift stations, etc.).
j. The software shall enable users to immediately point to a defect within the video stream.
k. The software shall allow the user to create "single entry" continuous defects, where the continuous defect is defined by the start distance and the length.

The panes shall be synchronized, whereby interaction with the main navigation window will determine the display of data in other associated panes. Changes made to an individual observation, inspection, asset, project, - or multiple changes made as a result of selecting a specific filtering criteria, shall display the newly selected properties in all corresponding open panes.

a. To allow the user to select his/her default preferences as to which panes to view on a regular basis, each of the panes selected shall be able to be "docked" and/or made "floating". The user shall have the ability to "dock" the panes side-by-side, place one pane over another, and access each pane through a tab. "Floating" panes shall be able to be positioned anywhere in the application window. The software provider shall provide a common "out-of-the-box" layout scheme for use while performing a field inspection as well as for use in the office to review the collected data.
b. The software shall be configurable to provide user-defined views, preferences and options.
c. The user shall be able to change the field labels. The ability to change labels shall be part of the system and shall not require third party software.
d. A pipe graph shall be interactive and the pane viewable during the inspection. The pipe graph shall show service connections with a graphic indicating the location of the connection. The user shall have the ability to control the graphical representation of the observations made during the inspection by selecting any combination of the following features: Connections, Defects, Continuous, Laterals, Informational, and/or Status Bar.
e. A zoom feature shall be available for the pipe graph that allows the user to select a portion of the pipe with a mouse and zoom to that specific portion. A grid system shall be provided to display the location of a 'zoomed' observation within 10 feet.
f. To start an inspection, the user shall be able to select structure, nodes or manhole information already within the database. If the data is not available, the operator shall be able to enter the correct information and the information shall be retained in separate tables for future selection. A graph shall be provided for structures that allow for the direction of entry and exit and flow direction of each main and lateral.

g.   The user shall be able to display live video, playback video, and captured pictures on the screen simultaneously.
>   a.   All drop down look up values shall be customizable by the end user without the use of third party programs.
>   b.   The application shall allow for the addition of custom fields available in the user interface without the need of third party applications.
>   c.   City Administrators shall be able to set visual mandatory entry fields for both pipe information and defect entry fields and import them into this basic module.

The software shall offer the following optional modules to provide the relevant functions as noted by their descriptions below:

a.   The inspection software shall include an optional ESRI GIS module to enable bi-directional integration using the Arc Objects Framework with ESRI's GIS software. Software that simply "toggles" or enables a "cut-and-paste" method of data exchange shall be deemed unacceptable.
b.   The inspection software shall include an optional GPS module to enable wireless (up to 1500 feet), real-time collection of GPS coordinates.
c.   The inspection software shall include an optional Manhole, Structure & Nodes module to capture inspection and observation details that shall be linked to the manhole, structure or node.
d.   The inspection software shall include an optional Lateral Assets module to capture inspection data, observation details, video, and pictures which are all linked to the lateral structure.
e.   The inspection software shall include an optional Inclination module to support an inclinometer.
f.   The inspection software shall include an optional Seal & Grout module to record and graph pressure changes and test results that show the repair integrity and quantity of grout used.
g.   The inspection software shall include an optional WRc Compatibility and Export Module.
h.   The inspection software shall include an optional WinCan v.7 export module.
i.   The inspection software shall include an optional Flexidata PACP v2.x export module.
j.   The inspection software shall include an optional Sonar Inspection module.
k.   The inspection software shall include an optional Cleaning Inspection capability for use on Cleaning/Jetting/Vacuum Excavating vehicles to integrate their activities to the CCTV inspection program.
l.   The inspection software shall include an optional Smoke Test capability to capture evidence of line failures and sources of Inflow and Infiltration pollution.

Technical Requirements of the Software

The software shall be coupled with a firmware controller to receive multiple, simultaneous inputs from connected devices to, for example, allow mainline footage, lateral footage and inclination data to be received into the software without the need for manual input from multiple keyboards.

The software shall also automatically generate text overlay titling to highlight problem areas and asset inspection information. The titling options and position shall be customizable and titling display shall not require special separate controls.

Database Structure & Requirements

a.   The inspection database shall include an *asset-based* architecture which allows multiple inspections to be performed and retained as a historical record for a specific physical location (asset). The "project- based" database architecture shall store and immediately show all inspection history for each asset.
b.   The software shall be able to import an entire asset database.

c. The software shall have the ability to import and retain the entire list of assets despite not ever having generated an inspection.
d. The inspection database shall have the ability to support and synchronize with multiple data sources, such as Microsoft Access, Oracle 8, 9i, 10g, 11g,, or SQL Server 2000 SP3 or SQL Server 2005. All or part of the data shall be capable of being duplicated between video and inspection databases and exported into multiple formats, such as Granite XP, Access, PACP, Azteca, Hansen, Maximo, GBA, RJN, and ASCII. All or part of the inspection and asset information shall be able to be synchronized between the field and office with built-in automatic validation and error checking.
   a. The software must be based on Microsoft Windows and be a 32 bit Windows application, compatible with Microsoft Windows XP and 2000.
   b. The software must be capable of connection to external systems via an ODBC or OLE DB connection.
   c. The collected CCTV survey data shall be stored in either a Microsoft Access, SQL or Oracle tables, and be available for use by the system owner.
   d. Databases shall be able to be created in the default directory or on any writable drive available.
e. The Database structure shall have the ability to use Microsoft Jet Engine 4.0 files, Microsoft Access, or an OLE DB drivers, such as Oracle or Microsoft SQL Server.
f. The database shall support simultaneously the following code systems: WRc, PACP, CUES standard and individual custom codes. The "Customer" shall provide the "Contractor" the code requirement prior to inspection creation. The code editor shall provide the ability to add, modify, and/or delete the code systems per the inspection requirements or user's preferences. Each project shall be able to utilize a different code system and units of measurement based on the "Customer" inspection requirements. The "Customer" shall have full and independent access to the code editor for customization needs without the use of third party applications.
g. The database structure shall retain information on the various structures found within a Sewer, Storm or combined system. It is important that the structures, nodes, manholes and pipe identifiers and related attribute information be retained as separate tables from the inspection allowing import of existing data from multiple sources. The data structure allows different projects to reside within a single database. Information gathered in projects shall be available to view by project or by system. Data gathered during project inspection shall be available to view by the selected structure. Therefore, all inspections can be viewed on a structure even if gathered in different projects.

Digital Video Format Capabilities and Requirements

a. Digital video files (Inspection Videos) shall be captured and/or recorded in the MPEG 1, 2 or 4 formats or as specified by the City or County. The Video capture files shall be in MPEG format with linking to the database file(s) (Inspection Observations). The "Link" of the video capture file to the database observation file is required and each Observation shall record the name of the video file and the frame number referencing the time in the video when the inspection was made. The inspection observation(s) shall link to the video record in real-time.
b. A Main, Lateral, or Node Inspection may have one or many linked video files. Video recording can be paused and then restarted without generating a new file.
c. On playback, single click selection of a Main, Lateral or Node Observation shall start the video from the moment the observation was made, and subsequent selections of observations will "jump" the video playback to the corresponding spot. If no additional observation selection is made, the software will play sequentially all linked videos in the inspection.
d. Video linking to pipe inspection observations is a patented and protected technique, and only software that holds the appropriate licenses is deemed acceptable.

Image (Photos) Capture Format Capabilities and Requirements

a. The Inspection image files (pictures) shall have the ability to be exported to Industry Standard Formats to include JPEG, BMP, TIFF formats and be transferable by disk, DVD and/or External Hard drive to an external personal computer utilizing standard viewers and printers.
b. The video image capture module shall be capable of collecting multiple color video frames of the defects found during inspection and then linked to the inspection reports. There shall not be a limitation to the number of pictures allowed per observation.
c. Images or video clips shall be easily launched for viewing during inspection report review.
d. Images can be captured and linked to an observation directly from "live" video during the TV inspection, or from the video playback at the office.
e. Images already captured by third party devices like still cameras, scanners, etc. will be available for linking to any selected observation.
f. Footage count shall be attached to the corresponding video image and shall appear on the reports indicating the correct footage when the image was captured during the pipeline inspection.
g. Shall be able to print any captured image on the ink jet color printer in the inspection truck. Picture files shall be stored and exported with inspection data.
h. A "thumbnail" preview of all pictures at an observation shall be available. The pictures shall be able to be expanded from thumbnail to window to full screen by utilizing the mouse.

Export of the Database, Videos, Pictures - Capabilities and Requirements

a. The database, videos, pictures shall have the ability to be "Exported". Export is the process of selecting all or portions of the original data, video, and pictures, and creating a complete and independent copy of this information, which can be run independently or synchronized by a City's or County's office program.
b. The office program shall have the ability to select the Assets and Projects to transfer to a particular database.
c. All or part of a database can be exported from the TV Inspection database with or without videos and pictures. This new file can be burned to a CD/DVD, or transferred to a USB Hard drive and brought into the office from the truck, or vice versa.
d. The Export process will validate the PACP and MACP data and reject any non compliant inspections, notifying the user via log files so that a corrective action can be implemented.

Synchronization Capabilities and Requirements

a. The application shall have the ability to synchronize with assets and inspections from exported databases.
b. The synchronization process shall have built-in error checking for duplicates, conflicts, updates and any modifications to the data being synchronized using a unique hash revision control mechanism for every data object.
c. The software shall have an optional Scheduler module that allows for a daily, weekly, or monthly scheduled transfer of information and media between two databases (i.e. central office to truck, truck to Enterprise, etc.). Inspections for an asset shall be able to be sent to the truck from the office.
d. Synchronization and Exporting activities can be independently scheduled.
e. Log files must be created for review purposes.
f. During the synchronization process, validation dialogs shall be used to allow the user to select which data takes precedence when a conflict is challenged.
g. All filtering capabilities previously described must be available for all exporting and synchronization tasks.
h. The application will allow for multiple sources of data to be effectively consolidated into a single unitary database for analysis and evaluation.

i.   The Import process of PACP and MACP files will reject any non compliant inspection, and notify the user of the reasons.

Televising Survey Collection/Reporting Capabilities and Requirements

a.   The software's basic module shall be capable of providing complete survey reports.
b.   The software shall be capable of customization with the ability to modify/add to the pipeline condition descriptions/codes and to group them for ease of use.
c.   The software shall allow footage reading from the existing mainline and lateral camera equipment to be automatically entered into the current survey record and directly correspond to the noted defect location throughout either the main or lateral pipe graph and in all tabular reports generated.
d.   A context-sensitive, complete on-screen help file should be available.
e.   Drop-down boxes shall be available to quickly reference common information such as defects, pipe materials, survey purpose, locations, pipe usage, etc.
f.   Multiple windows shall be allowed so as to display live video compared to recorded video and/or recorded snapshots.
g.   The software's basic module database shall have the means to sort in ascending and descending order according to date, pipe id, street name, structure id, observed footage, pipe materials, pipe diameters, work order numbers, etc.
h.   Summary reports compiling data from multiple inspections shall be available. Reporting order shall be user defined.
i.   Individual inspection summary reports shall also be available, and tabulate pipe survey results.
j.   Quarter section (or map or project areas) summary reports are to be made available so that all surveys within a quarter section are listed showing purpose of inspection, dates, work order numbers, structure ids, street names and total lengths.
k.   A report showing defects by inspection shall be available and programmable to list specific defects observed with corresponding footage, starting and ending manhole numbers, structural pipe defects (i.e. cracks, offsets, defective laterals, collapsed pipe, etc) and service oriented defects (i.e. roots, grease, obstructions, infiltration, etc).
l.   A report showing grading scores shall be available and summarize the structure ID's, pipe material and diameter, and the grade scores for each survey with totals.
m.   Reports showing service and structural aspect scoring shall also be available and shall list the pipe ID, total observed length, number of defects and total score with reference to the condition of the total pipe, average of the pipe, total defects and average of defects.
n.   The software shall allow users to create additional reports as needed using a report creation wizard to easily guide the user.
o.   The report wizard shall include a drag and drop interface to select the fields and position them on the page.
p.   The report wizard shall allow the user to add logos, pipe run graphics, GIS map views, customer information, date, and time.
q.   The software shall allow users to edit existing reports, add or remove fields, and change formatting options
r.   Report templates created by one user shall be transferable to other users when required.
s.   The data structure shall allow different projects to reside within a single database. Information gathered in projects shall be available to view by project or by a unique system ID number or asset ID. Data gathered during the project inspection shall be available to view by the selected structure. Therefore, all inspections can be viewed on a structure even if gathered in different projects.
t.   The data structure shall allow for the entire asset data inventory to be created or imported even if no inspections have been performed on the assets.

Viewer Edition (Read Only Client) Capabilities and Requirements

A Viewer Module shall be freely available for viewing all collected data and shall allow users to:
a.   View or print all available pictures.
b.   View all available video files.
c.   Review or print individually all available reports.
d.   View all data in the same format as the main software application.
e.   Use GIS map within the viewer to select assets, review inspections, and run reports.
f.   Use predefined and custom filters to search and sort the information and reports.

GIS and GPS Requirements

a.   The inspection software will integrate with GIS, GPS, and selected CMMS systems.
b.   The Database and Software program shall be able to import and export asset data, export Inspection Observations, and export pipeline inspection scores to/from an ArcGIS 9.3 system (shape files, personal geo-database or ArcSDE) utilizing the network features to associate Sewer, Storm or combined Mains with corresponding Node and Lateral assets.
c.   Both an "import" and "export" profile shall be provided in the software to strictly control the attributes exchanged between the systems.
d.   The "import" and "export" profiles shall allow for data type conversions when the source and destination field types are not the same. (i.e. allow for data type conversion of a float to an integer)
e.   Imported asset data from GIS, as well as exported asset data to GIS shall be filterable to bring in all asset data (full asset inventory) or selected assets/pipelines.
f.   The inspection software shall allow linear references to be created in GIS with corresponding hyperlinks to spawn video, still images and other data from the inspection software or an ESRI GIS application.
g.   An interactive and integrated GIS map shall be viewable from within the application and allow for the initiation of inspection, creation of multiple inspections in a project format, viewing, exporting, burning, and reporting of inspections for selected assets, map layer management, customizable filtering capabilities for selection of map features, and zooming to specific assets from selected feature.
h.   The software shall collect real-time submeter accurate GPS coordinates wirelessly from the field for located structures.
i.   The software shall allow collection/storage of GIS coordinates imported from an existing ArcGIS database (shape files or personal geodatabase).
j.   The inspection software shall provide a 'zoom to GPS location' capability when a GPS device is connected to show the location of the inspection vehicle or a particular known structure's location.
k.   The software shall enable structures, observations, entry points, etc. to be estimated with GPS coordinates, entered manually, or captured from a GPS receiver..
l.   The software shall provide the ability to use the GIS map within the viewer to select assets, review inspections, and run reports.
m.   The software shall provide the ability to use the integrated GIS map to show a recently completed inspection for a selected asset
n.   The software shall provide the ability to use the integrated GIS map to zoom to a selected defect from an inspection
o.   The software shall provide the ability to print from the integrated GIS map
p.   The software shall capture GPS "accuracy" parameters (i.e., number of satellites, signal to noise Ratio, HDOP, PDOP, etc)
q.   The software shall provide an ArcMap tool bar allowing linking of assets from GIS map to software db to zoom to asset and show the properties of the selected asset

r. The software shall provide an ArcMap tool bar allowing linking of assets from GIS map to software db to open the last inspection of selected asset

s. The software shall provide an ArcMap tool bar allowing linking of assets from GIS map to software db to be able to select assets from map and generate inspection projects from selected assets

CMMS Asset Management Software Integration Requirements

a. The inspection software shall seamlessly interface with the following CMMS software applications to allow future flexibility to meet changing requirements:

IBM Maximo (bidirectional)
Hansen v.7x (bidirectional)
Hansen v.8x (bidirectional via Neztek)
Azteca Cityworks v4.x (bidirectional)
GBA MasterSeries (unidirectional)
RJN Cass Works (unidirectional)
Syclo (bidirectional)

Data Analysis/Reporting Capabilities and Requirements

a. Users shall have the ability to check for invalid data. To avoid corruption, data gathered from the field inspection shall be error checked. Inconsistent or erroneous data shall automatically be displayed and allow the user or supervisor to add or change data before being input into the database.

b. Users shall have the ability to perform data entry and automatically control the video text overlay simultaneously to eliminate the need for dual entry.

c. Users shall be able to directly access Oracle 8i, 9i, 10g, 11g, and Microsoft SQL Server 2000 SP3 and SQL Server 2005 databases.

d. Users shall have the ability to transfer data between the Data Acquisition System and the Software Interface without the need for any user supplied programming, special scripts, or macros.

e. The user shall be able to build a code system from active codes.

f. The administrator shall be able to select asset and inspection fields that can be updated without user verification, therefore allowing quick transfer.

g. The application shall have the ability to filter all data using any data field in the application. Filter state should be savable for future use. Multiple filters can be saved. Filters can be defined graphically or by SQL query language.

h. Users shall be able to filter the list of mainline inspections or assets to be exported. Users shall be able to select the mainline inspections by:
    a. Data Acquisition System projects, filtering by: Project name
    b. Inspections, filtering by date (from/to), operator name, or work order number
    c. In addition, the user shall be able to filter the mainline inspections by Sewer Main Assets:
        a. The user shall be able to select a list of Main Assets and the inspections associated with these assets will be displayed.
        b. The user shall be allowed to select/deselect individual inspections.

i. A scoring system incorporated in the software shall assist the user/management personnel in making proper pipe condition assessments. Scoring is to be based upon grades assigned to observation codes and calculated using either standard or customer specific algorithms. Grades can be programmed to be dependant to secondary properties like pipe size, type, weather, etc. Only Administrators shall be allowed/able to make changes to grade and scoring algorithm values.

j. Upload/download features shall be available to move surveys, assets, or projects between databases, to allow information and media stored on a truck system to be incorporated into a master database on

the City's network or a supervisor's computer. The software program shall be able to combine databases from multiple sources into a master database and link media to a central location. A revision control system shall automatically monitor changes and resolve conflicts between databases.

Vendor Requirements

a. Vendor shall design, develop and support the software in the US. The software shall not be designed and supported offshore.
b. Vendor shall offer comprehensive Annual Support Plans which include Web-based troubleshooting tools, online assistance, user forums, and access to downloadable upgrades and documentation via an established Support web site.
c. Vendor shall provide referencable clients similar in size and scope.
d. Vendor should not be engaged in software patent or copyright infringement litigation.

Definitions

ASCII: The American Standard Code for Information Interchange is a standard seven-bit code. In the software rendering a Report to ASCII means to save it in ASCII format (also known as plain text format).

Asset: A general term representing sewer physical structure (see Lateral Asset, Main Asset and Node Asset). All Inspections in the application can be grouped into Assets because all Inspections (and their respective Observations) are performed on Assets. Multiple inspections can be linked to an asset to provide a historical perspective.

Code System: A set of Codes that comprise the menu of possible choices when assigning defect description values to observations. For example, when recording a specific type of inspection observation, the Code System will provide the user with a full range of codes to choose from, including all of the types of defects that the Observation may have (e.g. crack, sag, blockage, etc.).

Codes: A value assigned to fields in the software. Codes control the type of information that can be entered for a particular field.

CSV file format: Comma-separated values contain table values as a series of ASCII text lines organized so that each column value is separated by a comma from the next column's value and each row starts a new line. This is useful for importing data into spreadsheets, such as Microsoft Excel.

Engineering Edition: This is a special version of the Software. An Engineer is a user that is able to access and view data contained in the database to check the validity of the data and perform minor corrections.

Template: A field template is used for assigning certain fields in the software specific values. Field templates are used for Asset Addresses, Node Asset IDs, and Site IDs.

Footage: The distance from a Node Asset (or other starting point) from which an Inspection began. Footage is used to describe the location of observed defects in pipes. Footage also is used to describe the current camera position during an Inspection. Footage also refers to the distance in a service line inspection from either the mainline asset or the cleanout/property line.

HTML: The Hyper Text Mark-up Language is the language that web pages are written in to format the presentation of content. Reports exported in HTML format retain formatting and are viewable in many email applications and word processing applications.

Inclination Survey: The process of recording the slope of the pipe at every tenth of a foot in order to calculate the changes in inclination and depth from node to node.

Inspection: General term to refer to the procedure of investigating the quality and conditions of pipes. An Inspection means a TV inspection in which a camera presents live video and/or records video and still pictures for later playback to determine the status of a pipe.

Integration: The process by which one software application can interact, import, process and export data from another software application using predefined and preferably certified methods. Integration does not only copy the contents of individual fields, but also maintains the relationships between the fields and implements the required business rules to ensure the proper operation and data integrity of the software applications involved.

Jet DB: Microsoft Jet Database, a database engine that provides a workstation-based storage system and enables data exchange in a replicated database over an Internet connection and other (traditional) transfer means.

Labels: The names of fields in the software dialogs.

Lateral Asset: An adjoining pipe to the main pipe of a Main Asset. A Lateral Asset intersects and opens into the main.

Lateral Inspection: An investigation of a Lateral Asset usually undertaken in the context of a TV Inspection, but may also be an independently generated inspection.

Lateral Observation: A defect found during a Lateral Inspection of a Lateral Asset.

Main Asset: A physical structure defined by two Node Assets and the interconnecting pipe.

Node Asset: The physical manhole or entry point into the sewer system. It can also be any type of an end point (catch basin, pumping station, ditch, etc.)

Node Asset Inspection: An investigation of the type and condition of a Node Asset. This procedure also enters Node Asset data into the software.

MDB file format: Microsoft Database, the file format used to read, view, and store Microsoft Access databases.

Observation: General term to describe a peculiarity during an Inspection. In the software, Observations are perceived defects, informational items, or general comments noted during a TV Inspection.

ODBC Data Source: Open Database Connectivity standard, an integration tool to access information from a range of databases including Access, dBase, DB2, Excel, SQL Server, Oracle, and Text. Reports may be generated to ODBC data sources.

Enterprise Edition: A special version of the software. An Enterprise edition user can manage inspection information, generate customized reports, configure and manage Oracle and SQL Server databases, customize and manage scoring algorithms, and export the database containing all the inspections performed to clients. Enterprise databases (Oracle, SQL Server) allow for multiple users running Engineering, Inspection, and Viewer Editions to access and work with the centralize data and media.

PACP: NASSCO's Pipeline Assessment and Certification Program. It is a coding standard used to evaluate and classify sewer pipe conditions.

Pane: A window containing different views of data and processes in the software. These panes are synchronized, wherein operating in one of the panes will effect changes in another pane. Panes can be laid out in any custom arrangement.

PDF: Portable Display Format document. PDF files are viewable independent of the application that created them using PDF Viewers such as Adobe Acrobat Reader. The software shall allow generating of Reports into this format.

Plug-ins: Additional components of an application that can be added to the basic system configuration to extend the application's functionality. The software shall use plug-ins to allow for an expandable application to meet the needs of different users.

Project: A grouping of Inspections completed or assigned and the Assets upon which these Inspections have been or will be performed by the contract, customer, or other manner. In the software, all Inspections in the system are grouped into projects since Inspections are completed for specific reasons (customers, contracts, etc.).

Report Filter: This is a means of selecting only relevant information to be presented in a report. In the software, reports can be filtering by applying a Report Template to include user-defined information for the Report.

Report Preset: A Report Preset is a setting to generate reports rapidly. It is useful to specify persistent filters for daily or weekly reports and for selecting and generating several reports at a time. Using Report Preset can substantially reduce report processing time.

Report Template: Defines the content and look of a report. Reports packaged with the software will be represented as templates (in conjunction with report presets to set up filtering criteria) and when run request values for variable parameters to be entered, such as dates, operators, etc.

Report: A paper or electronic file based presentation of data contained in the application. Customized Reports can be generated that meaningfully present the data contained in the software.

Seal & Grout Inspection: A grouping of all the sealings and air pressure tests completed during an Inspection of an Asset.

Sealing: A sealing of a single Joint or Crack during a Seal and Grout Inspection.

Synchronization: The Database Synchronization is a process of forcing two data subsets of two databases to have the same content. This is useful for data transfer between the Inspection and the Enterprise/Engineering databases, when the Inspection edition user brings the updated database to the office and synchronizes completed inspections (for example) with the Enterprise/Engineering database. Also in the software, the Panes representing different modules of the application must be integrated and synchronized so a change in one pane effects a change in another.

Toolbar: Graphic tool that contains buttons with small images (the same images you see next to corresponding menu items), menus, or a combination of both. The software should include many built-in toolbars that you can show, hide, and position as needed.

Tool-tip: Notes that appear when you position the mouse over a control element (button, field etc.) that describes the element usage.

Inspection Edition: A special version of the software. An Inspection edition user conducts the Inspections on Assets and may synchronize the results with a central database. The Inspection edition provides all of the functionality for conducting Inspections, recording Observations, and synchronizing the results.

TV Inspection: The main method of inspected pipes and nodes. The procedure includes viewing television output of a camera traversing the pipe between two Node Assets.

Viewer Edition: A special version of the software. A Viewer is any user interested in simply viewing the results of the Inspections. Viewers cannot change data stored in the software, but have full access to review all of the stored data using the appropriate Panes. Viewers can print reports and review the video

WRc: Water Research Center (UK) is a technology-based consultancy providing services to the water, wastewater and environmental industries. It is a coding standard used to evaluate and classify sewer pipe conditions.