SECTION 282304 - INDOOR AND OUTDOOR SURVEILLANCE CCTV SYSTEM

1. GENERAL
	* + 1. RELATED WORK SPECIFIED ELSEWHERE
				1. Video Training Programs: Section 017900.
			2. SYSTEM DESCRIPTION
				1. The indoor and outdoor surveillance CCTV system consists of microphone/speaker units and camera stations located throughout the facility which are operated in conjunction with monitors, audio equipment, and a microprocessor based central processing unit (TVCPU) located in the central monitoring console.
				2. The system, when expanded to its full capacity has a minimum of 512 video input sources (cameras, VCR’s, etc.) and 64 video outputs (monitors and VCR’s which are connected to the output of the TVCPU).
				3. An attendant at the central monitoring console operates the system and observes the monitors to survey and evaluate the status of personnel in the areas within range of the camera stations.

Personnel at guard station consoles may also operate the system and observe monitors within the limits established and programmed into the system for each guard station.

* + - * 1. The attendant may converse with a person standing in proximity to camera stations which are equipped with microphone/speaker units. The audio follows the video on a selected automatic sequencing monitor.

The attendant presses a talk button; then delivers desired message. Pressing the camera sequence hold button allows additional time for message completion.

The person at the camera station replies to the call without having to perform any functions (hands free reply).

* + - * 1. Scenes are viewed by camera stations:

Zoom-pan/tilt camera stations contain equipment required for completely adjustable viewing of scenes (remotely controlled from TVCPU keyboard control unit).

Fixed camera stations contain equipment required for viewing a fixed scene (not remotely adjustable).

* + - * 1. Camera stations transmit video signals to the input of the TVCPU for crosspoint switching, control, and distribution to monitors and VCR’s, which are connected to the output of the TVCPU. Any video input source may be switched to any video output source at any time.
				2. The video signals from selected camera stations are also transmitted to dedicated monitors.

Camera station transmits video signal to single dedicated monitor via “looped-through” connection (camera to monitor input, monitor output to TVCPU input).

Camera station transmits video signal to multiple dedicated monitors, each viewing same scene, via video distribution amplifier (camera to video distribution amplifier, signal distributed to inputs of dedicated monitors and TVCPU).

Each monitor continuously displays the scene viewed by the camera station to which it is dedicated.

Dedicated monitors are not controlled by TVCPU.

The scenes displayed by dedicated monitors are also displayed on selected monitors which are connected to the output of the TVCPU.

* + - * 1. Keyboard control units, connected to the TVCPU allow the attendants to control the following within the limits established and programmed into the system for each keyboard control unit.

Camera station functions including addressing, pan and tilt (joy stick control) zoom, and focus. (Iris is automatically controlled, not manually controlled through TVCPU).

Alarm closure arm and clear.

Camera station automatic sequencing run and hold.

The programmed sequence may either be continuously repeated until the hold button is depressed or the sequence may be programmed to stop on a selected camera station until the run button is pushed.

Single “quick look” sequence.

Call up of prepositioned scenes.

Call up of any camera station to any monitor connected to the output of the TVCPU.

Up to 3 auxiliary function (can be latching or momentary control points) can be indicated in subparagraph below.

Auxiliary Functions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

* + - * 1. The following can be programmed by the system manager via the keyboard control unit:

Automatic roll-free sequencing of camera stations in any order on monitors connected to the output of the TVCPU.

Dwell time (2 to 60 seconds) that each camera station scene is displayed in sequence on the monitor.

Time and date.

On screen camera station identification (2 or 3 digit numeric plus up to 16 alphanumerics for each individual camera). The positioning and brightness is independently adjustable for each monitor.

Eight prepositioned scenes (4 automatic, 4 manual) for each zoom-pan/tilt camera station.

* + - * 1. The TVCPU automatically controls and limits the function of each camera station, monitor, VCR, and keyboard control unit in the system. The functions are not alterable through normal operation of the TVCPU by the attendant (a factory modification may be required to change parameters).

Partitioning: Permits exclusion of designated keyboard control units from access to designated monitors which are connected to the output of the TVCPU. If an attendant tries to access a non- designated monitor, the keyboard will display the non-designated monitor number, but will not display that monitor’s camera station number. The keyboard does not control any function assigned to that monitor.

Preference Tabling: Video output is restricted to designated camera stations. It restricts specific monitors which are connected to the output of the TVCPU from systemwide access of camera stations. Monitor will only receive video signal from predetermined camera stations.

Prioritizing: Permits assignment of priority operation of the keyboard control units. The keyboard with the higher priority may take control of monitors which are connected to the output of the TVCPU or operations of a remote control function associated with a lower priority keyboard control unit.

Lockout: Permits exclusive control of designated remote locations by designated keyboard control units and prevents other keyboards from affecting remote operations. Attendant may view, but not control locked camera stations.

Specific partitioning, preference tabling, prioritizing, and lockout functions:

Examples:

Guard Station No. 1 (Wardens Office): One keyboard control unit, priority No. 1. Call up and hold any camera station in the system. One non-dedicated monitor, displaying the scene associated with the camera station which was called up.

Guard Station No. 2 (\_\_\_\_\_\_\_\_): One dedicated monitor displaying the scene associated with camera station No. 2.

Guard Station No. 3 (Visiting Control Station): 2 dedicated monitors. One displaying the scene associated with camera station No. 3, the other monitor displaying the scene associated with camera station No. 4.

Guard Stations No. 4 and 5 (\_\_\_\_\_\_\_\_): One dedicated monitor at each guard station, both monitors displaying the scene associated with camera station No. 5.

Guard Station No. 6 (\_\_\_\_\_\_\_\_): One dedicated monitor displaying the scene associated with camera station No. 6. One non-dedicated monitor connected to the output of the TVCPU, displaying scene associated with monitor No. 1 in central monitoring console.

* + - * 1. Access to the system functions are controlled thru at least 2 levels of access security to prevent program modifications or use by unauthorized personnel.

At the lowest level of access, the keyboard programming functions are disabled. The attendant has minimum access to the system functions (camera switching and remote control).

At the highest level of access, programs may be modified by the system manager.

Up to 64 independent 2 wire closures are available for external alarms. Specify how system is to operate for each type external alarm. Several variations of automatic call-up software programs are available. (Below is an example of automatic call-up upon alarm from camera stations equipped with motion detectors)

* + - * 1. An external alarm from a video motion detector causes the camera station in alarm to take priority over sequencing cameras and hold on one or more predetermined TVCPU video outputs (monitors and VCR’s). The video signal from motion detector equipped camera stations is looped through the video motion detectors before transmission to the input of the TVCPU.

The video from the camera station in alarm is automatically called up and displayed on a specific monitor connected to the output of the TVCPU.

Alarm overrides camera sequence on the alarm (armed) monitor.

Multiple alarms cause sequencing at the rate of 2 seconds among alarmed camera stations.

Attendant may enable or disable alarm call up, and may arm or disarm individual camera stations for alarm call up.

Alarm status (arm/off) of each camera and monitor is displayed on the monitors.

The video signal from the camera station in alarm is automatically connected to a VCR in the central monitoring console.

The VCR is automatically activated.

If VCR is “stopped” it will automatically “start” and record video in “real-time” mode.

If VCR is currently operating in the “time-lapse” mode, it will automatically switch to the “real-time” mode.

Time, date, and camera station identification is recorded on tape in conjunction with the video from the camera station in alarm.

Several VCR’s can be used with this system.

* + - * 1. The VCR can also be manually controlled using a key operated switch. When the switch is in the manual position the key cannot be removed.
				2. When camera station signals are displayed on monitors connected to the output of the TVCPU, camera station identification, date, and time are also displayed.
				3. Failure of the 120V ac primary (main) power supply:

Causes the system to be non-functional.

Title memory (camera station identification) is non-volatile and does not have to be reprogrammed upon failure of primary and secondary power supplies.

Automatically transfers TVCPU to its secondary (standby) power supply to maintain:

Time/date generator for a minimum of 2 hours.

Preposition scene programming memory for minimum of 8 hours.

* + - 1. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Waiver of Submittals: The “Waiver of Certain Submittal Requirements” in Section 013300 does not apply to this Section.
				5. Submittals Package: Submit the shop drawings, product data, and quality control submittals specified below at the same time as a package.
				6. Shop Drawings:

Composite wiring and/or schematic diagrams of the complete systems proposed to be installed (standard diagrams will not be accepted), including video signal integrity equipment, etc. required for a complete system.

Scale drawings showing mounting of camera station components.

Details of camera station poles and bases.

Scale drawings of central monitoring console and guard stations showing location and mounting of components.

* + - * 1. Product Data:

Catalog sheets, specifications and installation instructions.

Bill of materials.

Detailed description of system operation (format similar to SYSTEM DESCRIPTION).

State number of video inputs and outputs used specifically for this project and number of video inputs and outputs available for future use if system is expanded to maximum capacity.

Name, address and telephone number of nearest fully equipped service organization.

* + - * 1. Quality Control Submittals:

Copy of license for installing Security Systems.

Also include copy of identification card issued by the Licensee for each person who will be performing the work.

Design Data: Certified data from the manufacturer of the camera station poles proving that the deflection rate will not exceed the specified limits.

Installers Qualifications Data: Include the following for each person who will be performing the Work:

Name.

Employers name, business address and telephone number.

Name and addresses of the required number of similar projects worked on which meet the experience criteria.

Company Field Advisor Data: Include:

Name, business address and telephone number of Company Field Advisor secured for the required services.

Certified statement from the Company listing the qualifications of the Company Field Advisor.

Services and each product for which authorization is given by the Company, listed specifically for this project.

* + - * 1. Contract Closeout Submittals:

Video tape test recordings (scenes).

System acceptance test report.

Certificate: Affidavit, signed by the Company Field Advisor and notarized, certifying that the system meets the contract requirements and is operating properly.

Operation and Maintenance Data:

Deliver 2 copies, covering the installed products, to the Director’s Representative. Include:

Operation and maintenance data for each product.

Complete point to point wiring diagrams of entire system as installed. Identify all conductors and show all terminations and splices. (Identification shall correspond to markers installed on each conductor.)

Name, address, and telephone number of nearest fully equipped service organization.

Photographs:

Employ a professional photographer to take color photographs of the completed Work of this Section, as follows:

2 of each console from different positions.

1 overall view of each console.

Use a medium format camera (2-1/4 x 3-1/4 inch negative size or larger). Use wide angle lens for overall view. Use electronic flash capable of supplying sufficient light to evenly illuminate the overall subject.

Make photographs 7-1/2 x 9-1/2 inches. Mount photographs on linen with 1-1/2 inch wide margin on the left side for binding (11 inches long overall).

Deliver photographs flat, not rolled. Include date pictures were taken, name of Contractor, project number and title.

* + - 1. QUALITY ASSURANCE
				1. Equipment Qualifications For Products Other Than Those Specified:

At the time of submission provide written notice to the Director of the intent to propose an “or equal” for products other than those specified. Make the “or equal” submission in a timely manner to allow the Director sufficient time to review the proposed product, perform inspections and witness test demonstrations.

If products other than those specified are proposed for use furnish the name, address, and telephone numbers of at least 5 comparable installations that can prove the proposed products have performed satisfactorily for 3 years. Certify in writing that the owners of the 5 comparable installations will allow inspection of their installation by the Director's Representative and the Company Field Advisor.

Make arrangements with the owners of 2 installations (selected by the Director) for inspection of the installations by the Director's Representative. Also obtain the services of the Company Field Advisor for the proposed products to be present. Notify the Director a minimum of 3 weeks prior to the availability of the installations for the inspection, and provide at least one alternative date for each inspection.

Only references from the actual owner or owner’s representative (Security Supervisor, Maintenance Supervisor, etc.) will be accepted. References from dealers, system installers or others, who are not the actual owners of the proposed products, are not acceptable.

Verify the accuracy of all references submitted prior to submission and certify in writing that the accuracy of the information has been confirmed.

The product manufacturer shall have test facilities available that can demonstrate that the proposed products meet the contract requirements.

Make arrangements with the test facility for the Director's Representative to witness test demonstrations. Also obtain the services of the Company Field Advisor for the proposed product to be present at the test facility. Notify the Director a minimum of 3 weeks prior to the availability of the test facility, and provide at least one alternative date for the testing.

Provide written certification from the manufacturer that the proposed products are compatible for use with all other equipment proposed for use for this system and meet all contract requirements.

* + - * 1. Installers’ Qualifications: The persons installing the Work of this Section and their supervisor shall be personally experienced in closed circuit television systems and shall have been engaged in the installation of closed circuit television systems for a minimum of 3 years.

Furnish to the Director the names and addresses of 5 similar projects which the foregoing people have worked on during the past 3 years.

* + - * 1. Test Facility: The Company producing the system shall have test facilities available which can demonstrate that the proposed system meets contract requirements.

Edit number of hours to suit.

* + - * 1. Company Field Advisor: Secure the services of a Company Field Advisor from the Company producing the TVCPU and cameras for a minimum of 80 hours for the following:

Render advice regarding installation and final adjustment of the system.

Render advice on the suitability of each camera, camera tube, and lens for its particular application.

Assist in initial programming of the system.

Witness final system test and certify with an affidavit that the system is installed in accordance with the contract documents and is operating properly.

Edit number of hours to suit.

Train facility maintenance personnel in operation, programming and routine maintenance of the system (minimum of 16 hours).

Edit number of sessions and hours to suit.

Train facility security personnel in operation and programming of the system (minimum four 2 hour sessions).

Explain available service programs to facility supervisory personnel for their consideration.

* + - 1. DELIVERY, STORAGE AND HANDLING
				1. Storing Cameras: Do not store cameras in total darkness for extended periods. Maintain camera tube integrity in accordance with manufacturer’s recommendations.
				2. Spare parts:

Furnish the following spare parts and store at the site where directed:

* + - 1. MAINTENANCE
				1. Service Availability: A fully equipped service organization capable of guaranteeing response time within 8 hours to service calls shall be available 24 hours a day, 7 days a week to service the completed system.
				2. Spare Parts:

Edit spare parts to suit.

One camera with zoom lens and control for outdoor camera station.

One camera with zoom lens and control for indoor camera station.

One camera with fixed focal length lens for outdoor camera station.

One camera with fixed focal length lens for indoor camera station.

One outdoor camera housing with accessories.

One indoor camera housing with accessories.

One receiver/driver control unit.

One pan/tilt unit (outdoor).

One pan/tilt unit (indoor).

One video input module.

One video output module.

3 of each size fuse.

100 one hour cassettes for VCR.

1. PRODUCTS
	* + 1. CENTRAL MONITORING CONSOLE EQUIPMENT
				1. Television Central Processing Unit (TVCPU): RCA Corp.’s Mega Power TC 1995 having:

Note: a separate compatible computer may also be required. The TVCPU can be programmed to control sequencing, switching, preposition, pan, tilt, and zoom. It cannot be programmed to turn control points on or off at specific times, nor perform specific tasks such as automatically calling up all monitors for display along a specific route (to follow person through corridor, etc.). The computer connects to the TVCPU through an RS232C port.

Power circuits suitable for operation on 120V ac primary (main) power supply.

Battery powered secondary (standby) power supply to operate portions of TVCPU as specified in SYSTEM DESCRIPTION.

Rack mounting capability.

Camera Bays: RCA Corp.’s TC1909R, with:

Video Input Cards: RCA Corp.’s TC1609CM.

Monitor Bays: RCA Corp.’s TC1925R, with:

Monitor Output Cards: RCA Corp.’s TC1625MM.

Include paragraph below when audio or other signals are required to follow video.

* + - * 1. Switcher Follower Unit: RCA Corp.’s 1631.
				2. Video Motion Detectors: RCA Corp.’s TC1461.
				3. Video Distribution Amplifiers: RCA Corp.’s RV210DA.
				4. Alarm Interface Unit: RCA Corp.’s TC1696.
				5. Signal Distribution Unit: RCA Corp.’s TC1691.
				6. Keyboard Control Units: RCA Corp.’s TC1678BM.
				7. Video Cassette Recorders: RCA Corp.’s TC3920 having:

Mounting For VCR’s (Active and Spare): Sliding shelf assembly equipped with roller type bearings for rack mounting. Shelf assembly shall allow full extension of each VCR unit with stops to prevent accidental removal of VCR from console. Equip spare VCR with dust cover.

* + - * 1. Monitors:

Single 15 Inch Monitor: RCA Corp.’s TC1115, rack mounted.

9 Inch Monitor: RCA Corp.’s TC1910A, rack mounted, twin, for central monitoring console.

* + - * 1. Audio Equipment:

Specify audio equipment to suit project.

Microphone/Speaker Units.

Amplifier.

Microphone and Speaker (for central monitoring console):

* + - * 1. Central Monitoring Console Rack: Vertical front, welded steel frame, modular cabinet rack; Premier Metal Products Co.’s Trimline TVA series, having:

Number of section as shown on drawings (each section 23 inches deep with 19 inches wide by 70 inches high panel space.)

Skeletal frame including top and bottom.

Matching 45 degree wedge sections as shown.

Textured charcoal gray frame finish.

Front, Back, and Side Panels:

Back panels hinged with locking door handle.

Blank panels to cover front panel space where equipment is not installed.

Louvers in back and side panels to provide adequate ventilation of components.

Beige tan enamel finish.

White plastic laminate (formica) covered writing shelf, one piece construction which spans front of console.

Aluminum trim with black vinyl inlay.

Accessories as required for mounting and support of equipment.

Multi-outlet strips mounted within the enclosure with number of 15 amp, 120V ac receptacles (3 wire grounding type) as required for equipment. (Not less than 6 receptacles in each section.)

* + - 1. CAMERA STATIONS (OUTDOOR)
				1. Type O-FFLL (Outdoor-Fixed Focal Length Lens):

Camera: RCA Corp.’s TC1005/U, having:

One inch camera tube, RCA Corp.’s Ultricon II.

Factory installed fixed focal length, auto iris lens, l inch format (focal length and aperture as indicated in camera station schedule on drawings).

Power circuit suitable for operation on 120V ac.

Camera Housing: Outdoor environmental camera housing; Vicon Industries Inc.’s V810H, having:

Blanket type heater, thermostat and extreme low temperature system to maintain internal temperature above + 40 degrees F with outside temperature down to -60 degrees F.

Blower with thermostat.

Sunshield.

Power circuit suitable for operation on 120V ac.

Built-in duplex receptacle.

Weatherproof quick disconnect cable connectors to match connectors on incoming cables.

Mounting Accessories: As required for mounting and support of components.

* + - * 1. Type O-Z/P/T (Outdoor-Zoom/Pan/Tilt):

Camera: RCA Corp.’s TC1005/U, having:

One inch camera tube, RCA Corp.’s Ultricon II.

Factory installed 15-180 mm focal length, l inch format, f/l.9 aperture, motorized zoom lens and auto iris, with RCA Corp.’s TC143OR lens control unit mounted on camera.

Power circuit suitable for operation on 120V ac.

Preposition option.

Pan/Tilt Unit: Environmental, all weather heavy duty pan/tilt drive unit; Vicon Industries Inc.’s V390APT, having:

Adjustable limit stops for both pan and tilt.

80 pound load capacity.

Seals and gaskets for outdoor use.

Power circuit suitable for operation on 120V ac.

Mounting accessories.

Cable guard.

Limit stop assembly.

Preset position control.

Receiver/Driver Control Unit (R/D): Control unit for receiving and decoding signals from TVCPU and controlling camera station pan, tilt and lens functions; RCA Corp.’s TC1680 Series, having:

Internal address coding switches.

Built-in electric heater.

NEMA 4 weatherproof housing.

Power circuit suitable for operation on 120V ac.

8 scene preposition feature.

Mounting accessories.

Up to 3 auxiliary functions may be added (latching or momentary control points).

Camera Housing: Outdoor environmental camera housing; Vicon Industries Inc.’s V810H, having:

Blanket type heater, thermostat and extreme low temperature system to maintain internal temperature above + 40 degrees F with outside temperature down to -60 degrees F.

Blower with thermostat.

Sunshield.

Power circuit suitable for operation on 120V ac.

Built-in duplex receptacle.

Weatherproof quick disconnect cable connectors to match connectors on incoming cables.

Mounting Accessories: As required for mounting and support of components.

* + - 1. CAMERA STATIONS (INDOOR)
				1. Type I-FFLL (Indoor-Fixed Focal Length Lens):

Camera: RCA Corp.’s TC 2511/U, having:

2/3 inch camera tube, RCA Corp.’s Ultricon III.

Factory installed fixed focal length, auto iris lens, 2/3 inch format (focal length and aperture as indicated in camera station schedule on drawings).

Power circuit suitable for operation on 120V ac.

Camera Housing (Maximum Security): Vicon Industries Inc., Model V89MSH, having:

Vandal resistant lock and 2 keys.

Corner mount adapter and mounting accessories as required.

Configuration suitable for wall or ceiling mounting as indicated on drawings.

Several styles of housing and mountings are available. Consult company’s catalogs.

* + - * 1. Type I-Z/P/T (Indoor-Zoom/Pan/Tilt):

Camera: RCA Corp.’s TC2511/U, having:

One inch camera tube, RCA Corp.’s Ultricon III.

Change lens parameters to suit.

Factory installed 15-180 mm focal length, l inch format, f/l.9 aperture, motorized zoom lens and auto iris, with RCA Corp.’s TC143OR lens control unit mounted on camera.

Power circuit suitable for operation on 120V ac.

Preposition option.

Pan/Tilt Unit: Heavy duty pan/tilt drive unit; Vicon Industries Inc.’s V390APT, having:

Adjustable limit stops for both pan and tilt.

80 pound load capacity.

Power circuit suitable for operation on 120V ac.

Mounting accessories.

Cable guard.

Limit stop assembly.

Preset position control.

Receiver/Driver Control Unit (R/D): Control unit for receiving and decoding signals from TVCPU and controlling camera station pan, tilt and lens functions; RCA Corp.’s TC1680 Series, having:

Internal address coding switches.

Power circuit suitable for operation on 120V ac.

8 scene preposition feature.

Mounting accessories.

Up to 3 auxiliary functions may be added (latching or momentary control points).

Camera Housing: Maximum security; Vicon Industries Inc.’s. \_\_\_\_\_\_\_\_ having:

Power circuit suitable for operation on 120V ac.

Built-in duplex receptacle.

Weatherproof quick disconnect cable connectors to match connectors on incoming cables.

Mounting Accessories: As required for mounting and support of components.

* + - 1. CAMERA STATION POLES

Standard details available in office.

* + - * 1. Tapered (continuous or step taper) galvanized steel poles, having:

26 feet nominal height.

15 inch minimum bolt circle.

11 inch minimum shaft diameter as base (minimum 3 gage).

Bracket Arm: 6 feet long, 6 inch diameter, 7 gage minimum galvanized steel with:

Mounting plate at end for mounting camera station.

x 5 inch minimum handhole with reinforcing frame and cover located at outer end of arm.

3 x 5 inch minimum handhole with reinforcing frame and cover near top of pole.

4 x 8 inch minimum handhole near pole base with reinforcing frame and cover. Secure cover with vandal resistant screws.

Mounting plate on top of pole suitable for mounting camera station.

Four 1-1/2 inch diameter anchor bolts 60 inches long with 4 inch right angle leg. Threaded end hot dipped galvanized for minimum of 10 inches. Galvanized nut, lockwasher, and flat washer with each bolt. Template for setting anchor bolts.

One 1/8 inch and two 1/16 inch galvanized shims with each pole.

Pole construction suitable for a deflection rate of less than .26 inches per 100 lbs. loading applied transversely 18 inches from top of pole.

* + - * 1. Acceptable Manufacturers: Carlan Mfg. Co. Inc., 601 Coates Ave., Holbrook, NY 11741, 516-567-2050.
			1. WALL MOUNT BRACKET
				1. Vicon Industries Inc.’s V24AWM, having:

24 inch length.

Model V24S support strut.

Adjustable head for fixed camera stations.

Mounting hardware.

Galvanized span clamp for attaching support strut to pole.

* + - 1. SURGE SUPPRESSORS
				1. Equip outdoor camera stations with surge suppressors to protect equipment from voltage transients and lightning surges (suitable for use with twisted pair wiring and coax wiring as required).
			2. WIRING
				1. Outdoor and Underground Cables:

Type VDO: Coaxial type camera video cable as recommended by camera manufacturer. Cable shall be flooded type with a high density polyethylene jacket and shall be suitable for direct burial.

For final connection to camera housing, provide coaxial cable with stranded conductors and weatherproof jacket suitable for continued flexing at all temperatures. (Make transition to Type VDO underground cable within camera station pole.)

Type TVB: Shielded twisted pair of #18 AWG conductors, with high density polyethylene jacket suitable for direct burial; Belden Corp.’s 8760 (modified), or American Insulated Wire Corp.’s Specification 10061.

Type CTRL (Control cables for camera lens and pan/tilt unit control).

Number, size, and type of conductors as recommended by the Company producing the equipment.

Conductors shall be enclosed in a cable with a jacket suitable for direct burial.

* + - * 1. Indoor Cables:

Type VSC (Video Signal Cable): 75 ohm, 95 percent copper braid shield, copper center conductor, 100 percent sweep tested from 5 - 300Mhz, RG11/U.

CTRL-I (Control Cables for Camera Lens and Pan/Tilt Unit Control-Indoor):

Number, size, and type of conductors as recommended by the Company producing the equipment.

Conductor shall be enclosed in a cable with \_\_\_\_\_\_\_\_ jacket.

Specify audio cables to suit project.

Audio Cables:

* + - 1. CONNECTORS
				1. Connectors: As produced by Amphenol Corp. (Weatherproof type where installed in exterior locations.)
			2. VIDEO SIGNAL INTEGRITY EQUIPMENT
				1. Video amplifiers, differential amplifiers, ground loop eliminators, etc., as required for proper signal transmission to produce sharp, clear, distortion free pictures on monitors.
			3. CCTV INTERCONNECTION CABINETS
				1. Lockable, vandal resistant, surface mounted cabinets constructed of 14 gage steel, size as recommended by the Company producing the system. Paint cabinets green and stencil “CCTV”.
			4. MARKERS AND NAMEPLATES
				1. Markers: Premarked self-adhesive; W.H. Brady Co.’s B940, Thomas and Betts Co.’s E-Z Code WSL self-laminating, Ideal Industries’ Mylar/Cloth wire markers, or Markwick Corp.’s permanent wire markers.
				2. Nameplates: Precision engrave letters and numbers with uniform margins, character size minimum 3/16 inch high.

Phenolic: Two color laminated engraver’s stock, 1/16 inch minimum thickness, machine engraved to expose inner core color (white).

Aluminum: Standard aluminum alloy plate stock, minimum .032 inches thick, engraved areas enamel filled or background enameled with natural aluminum engraved characters.

Materials for Outdoor Applications: As recommended by nameplate manufacturer to suit environmental conditions.

* + - 1. STATION LOCATORS
				1. Flip type bound file, indexed with building numbers and floor tabs, and equipped with 8-1/2 x 11 inch (minimum) floor plans showing location of each camera station and guard station. Enclose each floor plan in clear plastic envelope.
			2. CONCRETE BASES
				1. As detailed on the drawings. Bases may be precast or poured in place.
			3. ACCESSORIES
				1. Include accessories required to perform the functions summarized in SYSTEM DESCRIPTION and indicated on the drawings.
1. EXECUTION
	* + 1. INSTALLATION
				1. Install closed circuit television system in accordance with the Company’s printed instructions unless otherwise indicated.
				2. Connections: Make connections and splices at camera stations, CCTV interconnection cabinets, and console only. Connections or splices will not be allowed at any other location in the system.

Use markers to identify conductors at terminal strips, cabinet and pullboxes (designations shall correspond with point to point wiring diagrams).

* + - * 1. Surge Suppressors: Install surge suppressors on each conductor entering and leaving console from outdoor camera stations.
				2. Nameplates:

Install nameplate with camera station designation:

For wall and ceiling mounted camera stations, install nameplate on camera station.

For pole mounted camera stations, install nameplate on pole.

For dedicated monitors, install nameplate over monitor.

Install nameplate with monitor designation over each monitor.

* + - * 1. Station Locators: Install adjacent to central monitoring console and each guard station.
			1. FIELD QUALITY CONTROL
				1. Cable Test: Electronically test coaxial cables under supervision of Company Field Advisor.
				2. Preliminary System Test:

Preparation: Have the Company Field Advisor adjust the completed system and then operate it long enough to assure that it is performing properly:

Make adjustments for clear, sharp, distortion free scenes and roll-free vertical interval switching to the satisfaction of the Director’s Representative.

Aim fixed lens cameras as directed by Director’s Representative.

If lens installed on camera does not adequately cover the area to be viewed by that camera, replace with a camera and lens with a more suitable focal length at no additional cost.

Program system, including preposition programming of each camera, as follows:

Modify preposition functions to suit.

Preposition No. 1: Camera lens at full wide angle with cameras aimed so that entire route is covered and that automatic sequencing of cameras simulates a walk down the main corridor. All camera stations shall be covered by another camera station in this position.

Preposition No. 2: Camera lens at full wide angle aimed at area below camera.

Preposition No. 3: Camera lens at full zoom aimed at \_\_\_\_\_\_\_\_.

Prepositions No. 4 thru 8: As directed.

Run a preliminary test for the purpose of:

Determining whether the system is in suitable condition to conduct the acceptance test.

Checking and adjusting equipment.

Training facility personnel.

* + - * 1. Video Tape Test Recordings (Scenes):

After completion of the preliminary system test and prior to system acceptance test make video tape recordings of the following scenes recorded from the cameras installed under this project:

Consecutive sequencing of all cameras for a period of 15 minutes (cameras in preposition scene No. 1).

One minute of each prepositioned scene from each camera.

Include written description to accompany tape to identify each recorded scene.

Video tape recordings shall be suitable for playback on an RCA TC 3800 time lapse video cassette recording system.

Supply equipment necessary to make the video tape recordings.

* + - * 1. System Acceptance Test:

Preparation: Notify the Director’s Representative at least 3 working days prior to the test so arrangements can be made to have a Facility Representative witness the test.

Make the following tests:

Test each system function step by step as summarized under SYSTEM DESCRIPTION.

Demonstrate that:

Each camera station provides sharp, clear, distortion free scenes on the associated monitors for the lighting conditions.

Each indoor camera station operates through full range of lighting conditions including; daylight (all fixtures off), general lighting on (at night), night lights only (at night).

Each outdoor camera station operates through a full range of lighting conditions including low lighting levels. A portion of this test must be performed at night.

Each camera operates through the full range of zoom lens.

Each camera housing operates through the full range of its pan and tilt capabilities.

Outdoor camera station mountings are stable in wind conditions at the site.

Supply equipment necessary for system adjustment and testing.

Submit written report of test results signed by Company Field Advisor and Director’s Representative. Mount a copy of the final report in a plexiglass enclosed frame assembly adjacent to the console.

END OF SECTION 282304