SECTION 282305 - CCTV SYSTEM

1. GENERAL
	* + 1. RELATED WORK SPECIFIED ELSEWHERE
				1. Optical Fiber Cables: Section 271524.
				2. Security Console: Section 281601.
				3. Camera Accessory Stations: Section.
			2. SYSTEM DESCRIPTION
				1. The system, when expanded to its full capacity has a minimum of 24 video input sources (cameras, VCR’s, video multiplexers, etc.), 4 video outputs (monitors which are connected to the output of the TVCPU), 24 alarm inputs and 4 alarm outputs.
				2. The system shall provide 24 hour recording of all camera stations:

Operation of the TVCPU shall not effect the recording of any camera station.

* + - * 1. An attendant at the 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.
				2. Scenes are viewed by camera stations:

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

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

* + - * 1. The video signals from existing camera stations 1 thru 8 and camera stations 9 thru 16 are transmitted to a sixteen channel video multiplexer. The video signal from camera station 17 is transmitted to the TVCPU via “LOOPED-THRU” connections on its dedicated VCR’s.

The video signals for camera stations 9 thru 17 are transmitted from the camera via an optical fiber bi-directional transmission system.

Optical fiber bi-directional transmitters (OFBDT’s):

Transmit the camera station’s video signal to its receiver.

Receive camera control signals for the camera station’s receiver/driver control unit.

Optical fiber bi-directional receivers (OFBDR’s), located in the console:

Receive the camera station’s video signal.

Transmit camera control signals to the camera station’s receiver/driver control unit.

* + - * 1. The sixteen channel video multiplexer shall perform the following:

Multiplex the video signals of all camera stations connected to its inputs and transmit them as a single multiplexed video output for recording by its dedicated VCR’s.

Each camera station’s video signal shall be recorded with its camera number, 16 character title, the date and time.

Each camera station’s video signal shall also be transmitted to the TVCPU via “Looped-Thru” connections on the video multiplexer.

Combine the video signals of all of its inputs into a Multi-Screen Display (single video signal, which is connected to an input of the TVCPU), which will allow an operator to simultaneously view all the camera station scenes (video inputs) on a single monitor (which is connected to an output of the TVCPU).

* + - * 1. The TVCPU shall be capable of transmitting the video signal of any of its video inputs to each of its video outputs.
				2. The TVCPU allows the attendant to simultaneously switch the video signals of up to 3 camera stations as a salvo (synchronized group) to an equal number of 9 inch monitors. The entire facility shall be divided into salvos. The attendant can switch salvos by either of the following methods:

Salvos can be manually switched from one area of the facility to the next area by the attendant.

Automatically switched with a preset dwell time to view each salvo. In the automatic mode the complete facility shall be viewed one salvo (area) after another.

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

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

Dwell time (1 to 64 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 identification positioning and brightness is independently adjustable for each monitor.

Pre-positioned scenes for each zoom-pan/tilt camera station.

* + - * 1. The video cassette recorders (VCRs) shall operate as follows:

Shall be on at all times.

Shall operate in 6hr mode.

For the video multiplexer multiplexed video signal and the video signal from camera station 17, 2 VCRs for each shall record consecutive 6 hr periods with a 5 minute overlap at the beginning and end of each period (total 6 hrs, 10 min each period).

The video signal from camera station 17 shall be recorded with the time and date in conjunction with the video from the camera station.

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

* + - * 1. When camera station signals are displayed on monitors connected to the output of the TVCPU, camera station identification, date, and time are also displayed.
				2. A Mobile Video Cabinet will be provided having a video multiplexer, monitor and 2 VCR’s and shall be used for the following:

Viewing any of the camera stations on the pre-recorded tapes.

Making copies of any of the camera stations on the pre-recorded tapes.

* + - * 1. Failure of the 120 V 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.

* + - 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 system as proposed to be installed (standard diagrams will not be accepted), including interface equipment, video signal integrity equipment, etc. required for a complete system.

Scale drawings showing mounting of camera station components.

Scale drawings of console 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:

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

Name.

Employer’s 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.

* + - 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.
				2. Company Field Advisor: Secure the services of a Company Field Advisor from the Company producing the TVCPU and cameras for a minimum of 40 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.

Train facility maintenance personnel in operation, programming and routine maintenance of the system (minimum of 8 hours).

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

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

* + - 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:

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

One outdoor camera housing with accessories.

One R/D control unit.

One pan/tilt unit (outdoor).

One OFBDT.

One OFBDR.

3 of each size fuse.

10 E-200 video cassettes for VCR.

* + - 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.
1. PRODUCTS
	* + 1. CONSOLE EQUIPMENT
				1. Television Central Processing Unit (TVCPU): Burle Industries Inc.’s TC8124B, having:

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.

* + - * 1. Controller Follower Unit: Burle Industries Inc.’s TC8135.
				2. Sixteen Channel Video Multiplexer: Burle Industries Inc.’s TC8288A.
				3. Video Cassette Recorders: Vicon Industries Inc.’s VCR402, having:

6 hour recording mode.

Front loading.

Rack mounting kit for mounting VCR in 19 inch console rack.

* + - * 1. Monitors:

Single 14 Inch Monitor: Burle Industries Inc.’s TC1914, rack mounted.

9 Inch Monitor: Burle Industries Inc.’s TC1909 (rack mounted, twin, for mounting in security console).

* + - * 1. Optical Fiber Bi-directional Receiver (OFBDR):

Fiber Options Inc.’s Model 242DR-R-M, for use where the total length of optical fiber circuit is less than 5000 feet.

Fiber Options Inc.’s Model 242DR-R-M/13, for use where the total length of optical fiber circuit is more than 5000 feet.

* + - * 1. Optical Fiber Receiver Rack (OFRR): Fiber Options Inc.’s 515R, having:

Central Power Supply for OFBDR’s: 120 volt, 60 Hz input, output voltage as required for OFBDR’s.

Filler plates for un-used portions of OFRR.

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

Camera: Burle Industries Inc.’s TC300E, having:

2/3 inch format, CCD image sensor.

Power circuit suitable for operation on 120V ac.

Line-Lock phase adjustment, which allows all cameras in the system to be synchronized for roll-free switching.

Factory installed 2/3 inch format motorized zoom (10-100mm focal length, f/1.4 aperture) lens, with auto iris and pre-position options.

Pan/Tilt Unit: Weatherproof, medium duty outdoor pan and tilt driven unit; Burle Industries Inc.’s TC6570PT, having:

40 pound load capacity.

Power circuit suitable for operation on 120V ac.

Adjustable limit stops for both pan and tilt.

Preset position option.

Blanket and spot heaters for operation to minus 50 degrees F.

Mounting accessories.

Receiver/Driver Control Unit (R/D): Control unit for receiving and decoding signals from TVCPU and controlling camera station pan, tilt and lens functions; American Dynamics’ AD1686, or Burle Industries Inc.’s TC8561, having:

Internal address coding switches.

Built-in electric heater, as required, for R/D operation to -40 degrees F.

NEMA 4 weatherproof housing.

Power circuit suitable for operation on 120V ac.

Minimum of 16 scene pre-positions.

Mounting accessories.

Optical Fiber Bi-directional Transmitter (OFBDT):

Fiber Options Inc.’s Model 242DT/M, for use where the total length of optical fiber circuit is less than 5000 feet.

Fiber Options Inc.’s Model 242DT-M/13, for use where the total length of optical fiber circuit is more than 5000 feet.

Power Supply for Optical Fiber Bi-directional Transmitter: Fiber Options Inc.’s Model 610-P.

Camera Housing: Weatherproof, environmental housing; Burle Industries Inc.’s TC9346-1T, having:

Capability of accepting camera/lens combinations of up to 5.98 inches high, by 7.25 inches wide, by 20 inches long.

Low temperature package, which maintains the internal temperature of the housing within camera and lens temperature ratings with the outside temperature down to minus 60 degrees F.

Power circuit suitable for operation on 120V ac.

Built-in receptacle for camera power.

Forward opening lid with gas spring assist.

Blower with thermostat.

Sunshield; Burle Industries Inc.’s SS5526.

Mounting accessories.

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

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

* + - 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.

* + - 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.

1. For final connection to camera housing, provide coaxial cable with stranded conductors and weatherproof jacket suitable for continued flexing at all temperatures.

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.

Type DFO and MFO: Optical fiber cables specified in Section 271524.

Type TVB: Shielded twisted pair of #18 AWG conductors, with high density polyethylene jacket suitable for direct burial; American Insulated Wire Corp.’s Specification 10061, Belden Corp.’s 8760 (modified), or Tappan Wire & Cable Inc.’s 1802ATDB.

* + - 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. CAMERA JUNCTION BOX (CJB)
				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. MOBILE VIDEO CABINET
				1. Monitor: 14 inch monitor in desk top enclosure, Burle Industries Inc.’s TC1914.
				2. Video Cassette Recorder: Vicon Industries Inc.’s VCR402.
				3. Sixteen Channel Video Multiplexer: Burle Industries Inc.’s TC8288A.
				4. Video Cabinet: Medium oak video console with slide out shelf for keyboard, shelves for monitor, 2 VCR’s and video multiplexer, locking doors and heavy duty casters; Winsted Corp.’s Model 37512.
				5. Accessories:

Multi-Outlet Plug-In strip for monitor, VCRs and video multiplexer.

Cables to interconnect monitor, VCR’s and video multiplexer.

* + - 1. VIDEO CASSETTES
				1. Video Cassettes: Techtron Systems, Inc. E-200.
			2. 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. ACCESSORIES
				1. Include accessories required to perform the functions summarized in Part 1.01 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, camera junction boxes 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 mounted camera stations, install nameplate on camera station.

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 pictures and roll-free vertical interval switching to the satisfaction of the Director’s Representative.

Program system, including preposition programming of each camera as indicated on Drawings.

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 TC video cassette recording system provided in this Contract.

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 282305