SECTION 282302 - CCTV SYSTEM - SPECIAL HOUSING UNIT

1. GENERAL
	* + 1. RELATED WORK SPECIFIED ELSEWHERE
				1. Video Training Programs: Section 017900.
			2. SYSTEM DESCRIPTION
				1. The CCTV system for the Special Housing Unit (SHU) consists of camera stations with microphones located throughout the Special Housing Unit, Bldg. No. 16, which are operated in conjunction with monitors, audio equipment, and a microprocessor based central processing unit (TVCPU), located in a central monitoring console in Bldg. No. 1, Room 11.
				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. Camera stations are equipped with microphones which allow the attendants at the consoles to monitor the audio in the proximity to the camera station. The audio from the camera stations is automatically switched to selected amplifiers when video signals are switched to selected monitors (audio “follows” video).

Where indicated on drawings, selected camera stations are equipped with a selector switch to disable audio signal.

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

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. Keyboard control units, connected to the TVCPU, allow the attendants to control the following:

Camera station functions including addressing. (Iris is automatically controlled, not manually controlled through TVCPU).

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

* + - * 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 alphabetic symbols for each individual camera). The positioning and brightness is independently adjustable for each monitor.

* + - * 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. Restricts specific monitors which are connected to the output of the TVCPU from system wide access of camera stations. Monitor will only receive video signal from pre-determined 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:

Central Monitoring Console: One keyboard control unit. Call up of any camera in the system, priority No. 1, on any monitor in the central monitoring console (monitors Nos. 1 thru 6).

SHU Guard Station Console: One keyboard control unit. Call up of any camera in the system, priority No. 1 on monitors Nos. 7 and 8 in central monitoring console and monitors Nos. 9 and 10 in guard station console.

Keyboard cannot control monitors Nos. 1 thru 6 in central monitoring console.

Video for monitors Nos. 9 and 10 is “looped through” monitors Nos. 7 and 8.

* + - * 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.

* + - * 1. The video cassette recorders (VCR’s) in the central monitoring console are controlled as follows:

Pressing remote start push buttons automatically activate the VCR’s (alarm mode).

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

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

A remote indicating lamp will illuminate indicating that the VCR is recording in alarm mode.

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

* + - * 1. The VCR’s can also be manually controlled using key operated switches. 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 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 01330 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 acceptable), including video signal integrity equipment, etc. required for a complete system.

Scale drawings showing mounting of camera station components.

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.

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:

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. Number all conductors and show all terminations and splices. (Numbers shall correspond to numbered tags installed on each conductor.)

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

Photographs:

After completion of the work take color photographs of the completed Work of this Section, as follows:

2 of each console from different positions.

1 front view of each console.

Use a digital camera.  Use wide angle lens for overall view.  Use electronic flash capable of supplying sufficient light to evenly illuminate the overall subject.

Minimum digital requirements:

Format shall be .jpg or .tif

The resolution shall be 12 Megapixels or greater.

Submit photographs to electronic submittal website for approval and record.

* + - 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 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.

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

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. 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 fixed focal length lens for outdoor camera station.

One camera with fixed focal length lens for indoor camera station for each different lens used.

One outdoor camera housing with accessories.

3 indoor camera housings with accessories.

One video input module.

One video output module.

3 of each size fuse.

100 one hour 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): RCA Corp.’s Mega Power TC 1995 having:

Power circuits suitable for operation on 120 V 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.

* + - * 1. Switcher Follower Unit: RCA Corp.’s 1631.
				2. Video Distribution Amplifiers: RCA Corp.’s RV210DA.
				3. Keyboard Control Unit: RCA Corp.’s TC1678BM.
				4. 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:

9 inch monitor: RCA Corp.’s TC1910A (rack mounted, twin, for consoles).

* + - * 1. Audio Equipment:

Amplifier: 10 watt, solid state suitable for rack mounting; TOA Electric Co.’s, BG-10.

Speakers: 5 inch, round, cone type full range speaker with 5.3 oz magnet and 10 watt capacity. Provide grill and L-pad volume control and mount on panel suitable for rack mounting.

* + - * 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 handles.

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, 120 V ac receptacles (3 wire grounding type) as required for equipment. (Not less than 6 receptacles in each section.)

* + - * 1. SHU Guard Station Console Rack: Sloped front, welded steel frame, modular cabinet rack; Premier Metal Products Co.’s Trimline TSA series, having:

Number of section as shown on drawings (each section 23 inches deep with 19 inches wide by 17-1/2 inches sloped panel space).

Skeletal frame including top and bottom.

Textured charcoal gray frame finish.

Front, Back, and Side Panels:

Lower front vertical 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 which spans front on 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, 120 V 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 120 V 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 120 V ac.

Built-in duplex receptacle.

Dynamic type microphone, 50 to 13000 hz. Frequency response; 60 db output, 120 degree pickup. Preamp to match system and microphone with sensitivity adjustment.

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 120 V 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.

Dynamic type microphone, 50 to 13000 Hz frequency response; 60 db output, 120 degree pickup. Preamp to match system and microphone with sensitivity adjustment.

Where indicated, furnish key operated selector switch on housing to control audio; Square D. Co.’s Class 9001, Type K, 2 position selector switch. (Key withdrawal in both positions).

* + - 1. WALL MOUNT BRACKET (OUTDOOR)
				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. CABLES
				1. Video: Coaxial type camera video cables with all copper center conductor and copper braid shield as follows (unless otherwise recommended by camera manufacturer):

RG-59/U: Belden 9259.

RG-6/U: Belden 9290.

* + - * 1. Audio Cables: Single twisted shielded pair of #20 AWG conductors with overall PVC jacket; Belden 8762.
			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. MOBILE VCR CART
				1. VCR: RCA Corp.’s TC3920 with dust cover.
				2. Monitor: 19 inch, desk top, monochrome monitor, RCA Corp.’s TC1119.
				3. Amplifier: 10 watt solid state with desk top type enclosure, TOA Electric Co.’s BG-10.
				4. Speaker: Bookshelf type 2 way speaker system with minimum 6-1/2 inch woofer and 2-1/2 inch tweeter in wooden enclosure. Minimum frequency response from 100 Hz to 20,000 Hz with power handling capacity of 20 watts minimum.
				5. Cart: Portable, lockable metal cabinet assembly which is easily moved via integral 4 inch casters to desired location. Provide multi outlet assembly for connection of equipment so that only one flexible cord connection from the cart to the nearest 120 V outlet is required. Mounting height from floor to center of monitor shall be approximately 48 inches.
			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 in interconnection cabinet on each conductor entering from outdoor camera stations.
				2. Nameplates:

Install nameplate with camera station designation on camera station housings.

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.

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 Recordings:

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.

Record scene from each camera for one minute.

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.

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 security console.

END OF SECTION 282302