ITV EQUIPMENT INSTALLATION
SENIOR HIGH SCHOOL

PRODUCTION STUDIO:

1. Provide three (3) HD-SDI Camera setups, each fully equipped with lens, viewfinder, Triax adaptor, handlers, zoom controls, and Teleprompter display. Each camera shall be powered through a 3/8" "extra flexible" Triax cable. Each camera set-up shall have a dedicated 17" LCD monitor with Teleprompter system mounted on the pedestal, an intercom system, and a video program return at camera LCD 16:9 viewfinder, switchable at one touch from the zoom control.
2. Each camera system shall be mounted on its own 3-stage pedestal type tripod with dolly, capable of handling the total load of the Teleprompter, the camera Triax adaptor, lens assembly, studio camera viewfinder, zoom and focus controls, plus handler bars with counter-balance weight capable.
3. Provide three (3) 50-foot long Triax jumper cables with appropriate end connectors, for use with cameras set up.
4. Each camera system shall be capable of powering the Teleprompter directly from the camera. The use of external AC adaptors for this purpose is NOT ALLOWED.
5. At the 12"X12"X8" Junction Box (j-box) located next to the Chroma-key wall, provide an I/O cover-panel assembly, with provision to plug-in three (3) microphones, two (2) separate intercom/ IFB, one (1) HD-video program OUT, one (1) HD-video-to-HD-video production switcher and one (1) Teleprompter BNC IN.
6. Provide and install three (3) microphones with table stand and extra flexible audio cables terminated with XLR connectors, and connected to the audio microphone panel.
7. Using existing 4"X4"X4" j-box located 7'-0" AFF on wall opposite Chroma-key wall, provide and install two (2) wall-mounted speakers and one (1) wall-mounted slave countdown clock, all facing the Chroma-key wall.
8. Using existing 4"X4"X4" j-box located at 18" AFF on wall opposite to Chroma-key wall at 18" AFF, provide and install one (1) 40" LED TV/monitor with HDMI connector, pedestal and rollers.
9. Provide and install four (4) headsets with microphone (single earmuff), one for each Camera Operator and one for Floor Manager.
10. Provide and install three (3) wireless body pack transmitters with ME-2 microphones.

- See attached "MDCPS CCTV/ITV SYSTEM: SENIOR HIGH – Production Studio Sketch No. SH006 – Top View" for equipment layout. Please note that the attached sketch is not to scale.

CONTROL ROOM:

1. Provide and install a six (6) bay equipment console, to accommodate all equipment indicated on the Senior High School ITV Equipment List & Specifications including, the Video Camera Control Unit (CCU) operator station, the Technical Director station, the character-generator operator station, the Teleprompter Operator station, and the Audio operator station. Maintain minimum of 36" clearance from the wall to the rear face of the console for service and maintenance purposes. One end of the equipment console shall be placed against the wall next to main 36"X36"X8" I/O j. box, leaving access to the other end.
2. The ITV system shall be capable of sending and receiving digital HD-SDI MPEG-2/DOLBY AC3 (two (2) channels) audio signal embedded to-and-from the Distribution Room router system.
3. Provide and install all necessary wiring for recording and playback to all HD-SDI recorder/player units.
4. Each console bay must have power strip with surge protector mounted inside each rack to power all the equipment with the flick-of-a-switch.
5. The complete system is to be designed in SD/HD-SDI, MPEG-2 and QAM 64 / 256 J.83 Annex B format, 16:9 aspect ratio, 480i, 1080i capable.
6. Provide and install two (2) HD-SDI Tapeless file-base recording and playback machines, with file transfer access over Ethernet.
7. Provide and install one (1) HD-SDI Blu-ray recorder/playback unit with IN and OUT BNC connectors and Ethernet access control.
8. Provide and install one (1) HD/SD-SDI video production switcher with sixteen (16) inputs, two (2) ME special effects, menu display, USB-3 port and Ethernet control access.
9. Provide and install one (1) video editing system with monitor and keyboard, including software and licenses.
10. Provide and install one (1) HD-SDI single channel character generator, in a rack-mount configuration.
11. Provide and install one (1) 24" full HD (1920X1200) widescreen monitor, rack-mount configuration, to be used as a character generator monitor.
12. Provide and install complete Teleprompter system, in a rack-mount configuration, connected to all three (3) studio cameras.
13. Provide and install one (1) 24" full HD (1920X1200) widescreen monitor, rack-mount configuration, to be used as Teleprompter monitor.
14. Provide and install one (1) HD 40" LED (multi-view) monitor able to display, program, and preview, all cameras, recorders and players from video production switcher out-put. Unit shall be mounted on a pedestal behind the Production console facing the Technical Director station.

15. Provide and install two (2) speakers mounted in a desktop configuration, located adjacent to the Program monitor.
16. Provide and install one (1) 17” HD-SDI OLED to be used as a quality control monitor for the camera control unit (CCU) operator. Unit shall be mounted in a desktop configuration, facing the camera remote control panels (RCP).
17. Provide and install one (1) 12X1 HD-SDI serial digital switcher.
18. Provide and install one (1) serial digital sync generator.
19. Provide and install one (1) rasterizer (waveform/vector) analyzer in a rack-mount configuration.
20. Provide and install twenty-two (22) channel audio console mixer with equalization per channel, talk back and tone generator, in a desktop configuration.
21. Provide and install two (2) audio stereo amplifiers, in a rack-mount configuration.
22. Provide and install one (1) Blu-ray/DVD/CD duplicator, with four (4) slave bays, in a desktop configuration.
23. Provide and install one (1) combo master clock/count down unit, with 2” display, in a rack-mount configuration.
24. Provide and install one (1) master intercom station with two (2) channels, power supply and speakers, in a rack-mount configuration.
25. Provide and install one (1) 12” gooseneck type microphone.
26. Behind Rack #1, provide a Triax cable patch-panel containing three (3) female chassis connectors capable of switching all three (3) cameras from the Production Studio, Auditorium/Cafetorium, Gymnasium or Language Arts Lab (Little Theater) locations.
27. From the existing 36”X36”X8” I/O j-box located in the Control Room, and using the existing 4” conduit**,** provide and install the following:
    a. Three (3) Triax camera cables, terminating at three (3) existing 12”X12”X8” j-boxes located in the Auditorium/Cafetorium sitting area. One cable shall be terminated at the j-box located at the center of the “apron” of the stage. The other two (2) cables shall be terminated at j-boxes located opposite to each other, on walls perpendicular to the stage opening. These cables shall past through the existing 12”X12”X8” j-box located by the Control Booth in the Auditorium/Cafetorium area (j-box faces the stage).
    b. Two (2) CAT 6 cables and two (2) intercom cables all terminated at the existing audio rack located in Auditorium/Cafetorium Control Booth. These cables, with appropriate connectors, shall pass through the existing 12”X12”X8” j-box located adjacent to the Control Booth serving the Auditorium/Cafetorium (j-box faces the stage). These cables shall be connected to the Audio Program Out from existing audio console provided by others, and be able to feed signals back and forth.
28. From the existing 36”X36”X8” I/O j-box located in the Control Room, and using the existing 2” conduit, provide and install the following:

a. One (1) Triax camera cable terminating at the existing 8”X8”X8” junction box located in the Gymnasium. This cable shall pass through the audio rack serving the Gymnasium.
b. Two (2) CAT 6 cables and two (2) intercom cables all terminated at existing audio rack serving the Gymnasium. These cables, with appropriate connectors, shall be connected to Audio Program Out from the existing audio console provided by others, and be able to feed signals back and forth.

29. From the existing 36”X36”X8” I/O j-box located in the Control Room, and using the existing 2” conduit, provide and install the following:
    a. One (1) Triax camera cable terminating at existing 8”X8”X8” junction box located in the Language Arts Lab (Little Theater). This cable shall pass, through the audio rack located in the control booth serving this area.
    b. Two (2) CAT 6 cables and two (2) intercom cables all terminated at existing Audio Rack located in Language Arts Lab (Little Theater). These cables, with appropriate connectors, shall be connected to the Audio Program Out from the existing audio console provided by others, and be able to feed signals back and forth.

- See attached “MDCPS CCTV/ITV SYSTEM: SENIOR HIGH - Control Room Sketch No. SH004 Front View” and “Control Room Sketch No. SH005 Top View” for Racks and Equipment Layout. Please note that the attached sketches are not to scale.
- See attached “MDCPS CCTV/ITV System: SENIOR HIGH – School Facility Sketch No. SH008 Distribution Raceways” for Conduit Raceway Prototypical Layout. Please note the attached sketch is not to scale.

Note: Bidders shall base their quotes on the length of the existing 2”/4” conduits to be a maximum of 700 feet each run. These runs include from the Control Room I/O j-box, to the respective terminating I/O j-boxes at the Auditorium/Cafetorium, Gymnasium, and the Language Arts Lab (Little Theater).

DISTRIBUTION ROOM:

1. There will be three (3) gangable racks (Racks #1, #2 and #3) that will be provided by others. Rack #1**,** will be reserved for the installation of the High Definition Players, Recorders, Monitors, Computer, Router, Encoders, and RF distribution equipment.
2. The RF amplifier will be provided by others. However, all wiring to the input of the main RF amplifier shall be provided and installed under the scope of this work.
3. The system shall be capable of recording and play back CATV (Clean QAM) signals into all HD-SDI devices.
4. In Rack #3**,** provide and install one (1) computer rack-mount with monitor, mouse, and keyboard as an in-house Info-Channel.

5. In Rack #2, provide and install two (2) HD-SDI Blu-ray recorder/players with BNC IN/OUT connectors.
6. In Rack #2, provide and install one (1) HD-SDI recorder/player with removable solid-state drives and two (2) SSD cards to enable redundancy file storage.
7. In Rack #2, provide and install three (3) dual-pack HD-SDI color monitors, in a rack-mount configuration.
8. In Rack #1, provide and install one (1) four-pack Analog color monitor, in a rack-mount configuration, with video loop on each monitor.
9. In Rack #3, provide and install one (1) 24" HD LED TV/monitor with (ATSC/NTSC/QAM) tuner, in a rack-mount configuration, to serve as a main distribution monitor.
10. In Rack #3, provide and install one (1) TV/cable (ATSC/NTSC/QAM) Demodulator with BNC output connector, in a rack-mount configuration.
11. At the bottom of Rack #1, adjacent to the existing 36"X36"X8" main "Hub" j-box, reserve eight (8) rack unit spaces for placement of the RF main amplifier, which will be provided by others.
12. In Rack #3, provide and install one (1) sixteen-by-sixteen (16 X 16) HD-SDI (audio embedded) router, with BNC 75 OHMS connectors, with assigned sources and destinations labeled, as follows:

INPUT		OUTPUT	
1	TV Studio	1	HD-Encoder (1)
2	Blu-ray (1)	2	HD-Encoder (2)
3	Blu-ray (2)	3	HD-Encoder (3)
4	PIX (1)	4	HD-Encoder (4)
5	Demodulator	5	Blu-ray (1)
6-16	Spares	6	Blu-ray (2)
		7	PIX (1)
		8-15	Spares
		16	TV Monitor

13. In Rack #1, provide and install:
    - One (1) Six-slot frame (host) with power supply;
    - Four (4) HD-SDI to QAM 256 Encoders;
    - Two (2) Double audio/video base band to QAM-256 Encoders;
    - One (1) Double VGA/HDMI/audio/video base band to QAM-256; and
    - Three (3) Ch-3 CATV/NTSC to audio/video base band Demodulators
14. Balance and combine complete Head-End System to main RF amplifier, including channels 36 and 39, coming from existing EBS down converter installed by others.
15. Follow MDCPS CCTV/ITV Channel Lineup chart below for channel assignment to radio frequency final combiner.

MDCPS CCTV/ITV Channel Lineup

CH-#	Format	Description
36.1	SD	EBS-A4
36.2	SD	EBS-A4
36.3	SD	EBS-A4
36.4	SD	EBS-A4
36.5	SD	EBS-A4
36.6	SD	EBS-A4
39.1	SD	EBS-D4
39.2	SD	EBS-D4
39.3	SD	EBS-D4
39.4	SD	EBS-D4
39.5	SD	EBS-D4
39.6	SD	EBS-D4
40	HD	PRODUCTION STUDIO
41	HD	BLU-RAY (1)
42	HD	BLU-RAY (2)
43	HD	PIX PLAYER
44	SD	COMCAST (1)
45	SD	COMCAST (2)
46	SD	COMCAST (3)
47	SD	SPARE
48	HD	INFO-CHANNEL
49	HD	SPARE

16. All blank spaces shall be filled with vented filler panels.
17. All equipment shall be mounted with tamperproof screws.
18. Consult WLRN Engineering Dept. at (305) 995-1717 for additional information and coordination.

- See attached "**MDCPS CCTV/ITV SYSTEM: SENIOR HIGH -** Distribution Room Sketch No. SH001 - Front View", "Distribution Room Sketch No. SH002 – Top View" and "Distribution Room Sketch No. SH003 – Wiring Distribution" for equipment layout. Please note that the attached sketches are not to scale.

EDITING ROOM 1 and 2:

1. Using the existing 8"X8"X4" j-box located in each Editing Room, and using existing 2" conduit, provide all necessary interconnection cables to send HD-SDI and data control signals to and from Control Room production switcher.
2. At each Editing Room, provide and install one (1) Apple i-Mac edit system station, which shall be self-contained with monitor, hard drive, headphones, and licensed software.

3. At each Editing Room provide and install one (1) mobile workstation with casters.

- See attached "MDCPS CCTV/ITV SYSTEM: SENIOR HIGH - Editing Room 1 & 2 Sketch No. SH007 – Top View" for equipment layout~~s~~. Please note that the attached sketch is not to scale.

PROP STORAGE ROOM:

1. Provide three (3) single stage tripods for camera setup.
2. Provide three (3) portable HD-video cameras with two (2) spare memory cards, two (2) spare batteries for each camera**,** and three (3) lavalier microphones for studio use and on-site Electronic News Gathering (ENG) TV productions.
3. Provide three (3) dual-stage tripods (studio configuration) with panhandle for on-site and ENG TV productions.
4. Provide three (3) one (1) channel IFB portable belt packs (hard-wired system).
5. Provide one (1) 50-foot long Triax jumper cable with appropriate end connectors, for camera setup in the Language Arts Lab (Little Theater).
6. Provide one (1) 100-foot long Triax jumper cable with appropriate end connectors, for camera setup in the Gymnasium.
7. Provide three (3) 150-foot long Triax jumper cables with appropriate end connectors, to be used in the Auditorium/Cafetorium area for TV productions.

GENERAL INSTRUCTIONS:

1. **FREIGHT AND TRANSPORTATION:** Provide and deliver to school location all Equipment, Engineering Logistics, and System Integration. Consult and coordinate with MDCPS Project Manager for installation schedule.
2. **SIGNAL FORMAT CONVERSION AND DISTRIBUTION:** Provide all necessary electronics, accessories, and devices for signal format conversion and distribution including D/A's, bit rate, video, frame ratio, and audio embedding/de-embedding. All devices shall be installed in a four-rack space and in a multi-slot type configuration, reserving two (2) empty slots for future expansion.
3. **INSTALLATION, COMMISSIONING and TRAINING:** Provide:
    - all required equipment from attached Senior High School ITV Equipment List & Specification;
    - all labor and installation;
    - all necessary cables and connectors;
    - TRIAX cables and jumpers;
    - fiber encoders & decoders (when necessary due to distance issues always consult with WLRN Engineering Dept. at 305- 995-1717);
    - vented blank panel to cover un-used spaces in racks and console;

- tamperproof screws;
- Ethernet switcher/router for initial set up and equipment's operation requiring RJ-45 access in Control and Distribution room;
- always use existing conduits provided by M-DCPS, provide Triax patch panel and I/O j-box cover with audio/video connectors;
- equipment operation and maintenance manuals;
- Warranty documentation on entire installation;
- as-built diagrams for complete TV production/distribution system; and
- eight (8) hours hands-on operational training for on-site MDCPS staff.

Note: Complete ITV System shall operate in SD/HD-SDI (480i/1080i) format, provide combined "RF" signals to main amplifier input with the maximum of 10 dBmV, of (clean) not-encrypted 64/256 QAM ITU J.83 Annex B signal format, with proper signal balance of ± 1.5 dBmV through the spectrum, MER:> 44 dB equalized, and a maximum output of 43 dBmV. Consult and coordinate with MDCPS for final inspection date.

Please note that the attached MDCPS CCTV/ITV SYSTEM: SENIOR HIGH sketches 1 through 8 are not to scale.