SECTION 16720
FIRE ALARM SYSTEM

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS:

a. Furnish all labor, equipment, materials and performance of all operations associated with installation of the manual type, augmented with automatic devices, Fire Alarm System as outlined. All items required to complete the installation whether detailed in these specifications or on construction drawings shall be included in this contract.

b. Requirements of the conditions of the Contract, Supplementary Conditions and General Requirements apply to the work specified in this Specification.

c. Specification is based upon equipment manufactured by Edwards Systems Technology.

d. Fire Alarm System shall comply with California Building Code and requirements as set forth by State and local Fire Marshall Office and be listed by Underwriter's Laboratories. Inc.

e. Substitutions: Refer to Section 01600.

1.2 SUBMITTALS:

a. Contractor shall submit eight (8) sets of fire alarm drawings and eight (8) sets of submittal booklets to the City, County or local fire marshal for approval. Upon approval, contractor shall deliver to the Architect two (2) sets of approved drawings and two (2) sets of approved submittal booklets. These approved sets are to be used for construction purposes.

b. Include the following on all drawings:

1. Building floor plans drawn to 1/8" scale minimum. Building floor plans shall show location of all devices, conduit and interconnecting wires. Show all fire rated corridors, occupancy separations and area separation walls. Show all Room Identification Numbers/Use.

2. Complete symbol legend showing all symbols, wire, manufacturer, model number, backbox, mounting height and CSFM Listing Number.

3. Typical mounting height details.

4. Voltage drop using point to point or OHMS Law calculations. Voltage drop shall not exceed 10% per circuit.

5. Battery calculations with batteries used:
   Normal - 100% for applicable equipment and devices for period of 24 hours.
   Alarm - 100% for applicable equipment and devices for a period of 5 minutes.

6. Codes as used in the design of this project.

7. Typical fire penetration detail showing methods and codes used.

8. Wiring riser diagram including but not limited to devices, wiring, zoning, EOLS, etc.

9. Sequence of operations schedule.

10. General notes pertaining to this project.

c. Include following in submittal booklet:

1. Cover Sheet: Project Name, Project Location, Architect of Record, System Supplier, System Installer with C-10 License Number and Expiration Date.

2. Table of Contents: Page number of all specification sheets and CSFM Listing Numbers.

3. Specification Sheets for each piece of equipment.

4. CSFM Listing Sheets.

1.3 QUALIFICATION OF BIDDERS

a. Contractor shall:

1. Have a valid C-10 License issued by Contractor's State License Board of California.

2. Be factory authorized distributor (at time of bid) for brand of equipment being installed.

3. Have been in business of supplying and servicing Addressable Fire Alarm Systems for a minimum five (5) years in the State of California and have a minimum twenty (20) projects of this nature rendering satisfactory service with contact persons, phone numbers and addresses.

4. Maintain a fully equipped service organization capable of furnishing adequate repair service to the equipment.

5. Maintain an inventory of all major components in stock at all times.

6. Maintain on staff for duration of the project a minimum of two (2) certified installers.

b. It is the responsibility of installing Contractor to provide drawings, submittals, wire, devices, equipment, installation of conduit system, programming, final test out and certification. All specialty Fire Alarm Backboxes for the conduit system shall be provided under this Specification.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION:

a. Fire Alarm System as outlined on this specification shall be a Life Safety System as manufactured by Edwards Systems Technology, Notifier or Fire Control Instruments. It shall be complete with all necessary hardware, software and memory specifically tailored for this project.

b. Provide Fire Alarm Control Panel, Remote Panels, Devices, etc., in accordance with this specification.

c. All equipment needed for a complete operable system, (whether specifically indicated or not) shall be included in this section. It shall be the installing Contractor's responsibility for a COMPLETE AND OPERABLE SYSTEM upon completion of this project.

2.2 AUTOMATIC ALARM OPERATIONS:

a. System alarm operation subsequent to the alarm initiation via pull station, smoke detector, heat detector, etc. shall be as follows:

1. All audible alarm indicating devices shall sound the California Signal Code until silenced at the control panel.

2. All visual alarm indicating devices shall flash per NFPA requirements until reset at the control panel.

3. Alarm signals shall be inhibited from being silenced for a period of at least one (1) minute after commencing operation. This rate is to be field programmable for actual Authority having jurisdiction requirements.

4. Display type and location of alarm on the Main FACP LCD display.

5. List on printer time, date, type and user defined message for each event printed.

6. Subsequent alarms are to report to the FACP and indicate to the operator that a subsequent alarm is present and also the number of subsequent alarms.

2.3 AUTOMATIC SUPERVISORY OPERATION:

a. All data, initiating, indicating and supervisory lines shall be constantly monitored for integrity. Indicate opens, shorts, ground at Main FACP.

2.4 OPERATION:

a. During normal state, NORMAL LED (green) shall flash. First line of LCD shall display time in (HH:MM:SS) as well as number of active points (AP) and of disabled points (DP) in the system.

b. When control panel goes into alarm condition, NORMAL LED (green) extinguishes and ALARM LED (red) shall light, buzzer pulsates and LCD indicates time, number of messages waiting, type of alarm, alarm zone or device number and the time that alarm occurred. Second line is dedicated to user specified message.

c. To acknowledge the alarm, operator shall press the NEXT/ACK button and buzzer will silence providing there is not an additional alarm waiting.

d. To silence audible devices, operator shall press the ALARM SILENCE button. New alarm shall cause the audibles to resound.

e. During the TROUBLE condition, amber TROUBLE LED shall light, NORMAL LED shall go out and buzzer shall pulsate. Display shall indicate the type of event, time event occurred and up to a 40-character custom user description.

f. During the MONITOR OR SUPERVISORY condition, amber SUPERVISORY LED shall light, NORMAL LED shall go out and buzzer shall pulsate. Display shall indicate type event, time event occurred and up to a 40-character custom user description.

2.5 MAIN FIRE ALARM PANEL EST-3W/CAB 21 (CSFM#7165-1591:186):

a. Control Panel construction shall be modular with solid state, micro-processor based electronics. It shall display only primary controls and displays essential to operation during a fire alarm condition. Keyboards or Keypads shall not be required to operate the system during fire alarm conditions.

b. Local audible device shall sound during Alarm, Trouble or Supervisory conditions. This audible device shall sound differently for each condition, to distinguish one condition from another without having to view the panel.

c. Primary Keys, LEDs, LCD Display

1. Following primary controls shall be visible through a front access panel:
    1. 8 Line by 21 Character LCD display
    2. Individual System ALARM LED and Switch
    3. Individual SUPERVISORY LED and Switch
    4. Individual TROUBLE LED and Switch
    5. Individual MONITOR LED and Switch
    6. Individual ALARM SILENCE LED and Switch
    7. PANIC SILENCE LED and Switch
    8. Individual RESET LED and Switch
    9. Individual DRILL LED and Switch
    10. Individual LED's for Power, Test, CPU fail, Ground fault, Disable.
    11. NEXT/BACK Switch per Condition

d. Master Controller shall be capable of supporting up to 64 supervised modes per single line network without any change in hardware. Each controller shall contain RS-232 Printer/Programming Port for programming locally via an IBM PC.

e. Each controller shall support up to ten (10) Intelligent Loop Cards (SDCs). Each card shall support 125 Intelligent Sensors and 125 Intelligent Modules. Each sensor shall respond to a panel poll for information with an analog representation of measured fire related phenomena (smoke density, particles of combustion, temperature). Such response proved end to end sensor response including the operation of the sensor electronics. Systems which only monitor the presence of a conventional detector in an addressable base shall not be acceptable.

f. Master Controller shall have the following additional features without any changes in hardware or firmware:

1. Auto Programming and Electronic Addressing of field devices
2. Logic Statements
3. Time Controls.
4. Sequences
5. Actions
6. Analog Value Reporting of all analog sensors and traditional zones.
7. Maintenance Reporting by Intelligent Sensor
8. Sensitivity Setting by Sensor (Within UL Limits)
9. Sensitivity Setting changed by time (Day/Night Mode)
10. Alarm Verification by point or zone (0-60 seconds)
11. Print a history of Sensors Activating the Verification Cycle
12. On demand system condition printouts (status)
13. Enabling and Disabling of any system device or function
14. Ground Fault Detection on all system devices and inputs

15. Normal and Silent One Man Test
16. 1750 event history log
17. Windows based Programming
18. Loop response time under 750 miliseconds
19. Device mapping feature for As-Builts
20. Network response time under three (3) seconds

2.6 ANALOG PULL STATIONS - SIGA-278 (CSFM#7150-1657:129):

a. Provide pull stations where required.

b. Pull station shall be double action with terminals for field wiring. Pull station shall be constructed of Red Lexan with White Letters, Key resettable with break glass rod.

c. Station shall be equipped with a STI1100 Protective Cover.

d. For flush mounting application - Use 4S 2-1/8" box with 1/2" Single Gang Ring.

e. For surface mounting applications- Use 276B-RSB backbox with STI-3100 Conduit Spacer.

2.7 ANALOG SMOKE DETECTORS - SIGA-IPHS W/SIGA-SB BASE (CSFM#7258-1657:123):

a. Provide Intelligent Multi-Sensor Detector where required.

b. Units shall incorporate three (3) sensing technologies. It shall process and analyze information from each technology (ion/photo/heat) separately using dynamic filters, then apply a sophisticated algorithm for optimum detection accuracy.

c. Each sensing element self-compensates for changes in the detectors installed environment to maintain sensitivity setting and prevent unwanted alarms. Detector reports when it cannot compensate any further.

d. Units shall incorporate twin status LEDs. Flashing green shows normal; flashing red shows alarm state; steady red and steady green show alarm state in stand alone mode, visible from any direction.

e. Units shall incorporate a stand alone operation mode. The detector makes decisions and inputs an alarm even if the loop controller fails. The detector reverts to an intelligent "conventional" detector when polling interrogation stops.

f. Units shall mount to the SIGA-SB, SIGA-RB or SIGA-IB bases as required.

g. Base shall mount to a 4S 2-1/8" box with 3-0 1/2" ring.

2.8 HEAT DETECTORS SIGA-HRS W/SIGA-SB BASE (CSFM#7270-1657:125):

a. Provide heat sensors where required.

b. Detectors shall gather analog information from their fixed temperature and/or rate-of-rise heat sensing elements and convert it into digital signals. The detectors on board microprocessor measures and analyzes these signals. It compares the information to historical readings and time patterns to make an alarm decision. Digital filters remove signal patterns that are not typical of fires.

c. Units shall incorporate twin status LEDs. Flashing green shows normal; flashing red shows alarm state; steady red and steady green show alarm state in stand alone mode, visible from any direction.

d. Units shall mount to the SIGA-SB, SIGA-RB or SIGA-IB bases as required.

e. Base shall mount to a 4S 2-1/8" box with 3-0 1/2" ring.

2.9 Strobes – Edwards #GIR-MV (CSFM #7125-1657:218)

a. Provide strobes where required.

b. Strobes shall have field adjustable ratings of 15cd, 30cd, 75cd, or 110cd. Strobes shall be synchronized. Strobes shall flash pr NFPA requirements. Strobe shall be listed for indoor applications. Units shall be rated for 24VDC polarized operation. Units shall be red in color and mount to a single gang opening.

c. For flush mounted operation indoor – Use 4S 2-1/8" boxes with single gang plaster ring to finish flush with wall surface.

d. For surface mounted operation indoors – Use single gang deep Wiremold Box.

2.10 Horn/Strobes – Edwards #GIR-HDMV (CSFM #7125-1657:202)

a. Provide horn/strobes where required.

b. Strobes shall have field adjustable ratings of 15cd, 30cd, 75cd, or 110cd. Strobes shall be synchronized. Strobes shall flash pr NFPA requirements. Strobe shall be listed for indoor applications. Units shall be rated for 24VDC polarized operation. Units shall be red in color and mount to a single gang opening.

c. For flush mounted operation indoor – Use 4S 2-1/8" boxes with single gang plaster ring to finish flush with wall surface.

d. For surface mounted operation indoors – Use single gang deep Wiremold Box.

e. Audible and visual devices shall operate on the same two wire circuit and shall be capable of audible silencing.

2.11 Remote annunciator – Edwards #3LCDANN (CSFM #7120-1657:193

a. Provide remote annunciator where required.

b. The annunciator shall provide an 126 character display which shall duplicate all information on the base system display, with the exception of menus. It shall also contain the following function keys: Alarm Acknowledge, Trouble Acknowledge, Signal Silence, System Reset/Lamp Test and System Drill Test.

c. The cabinet shall contain a keylock which will enable the switches only when placed in the "ON" position, with the exception of the Trouble Acknowledge which is used to silence the local trouble audible sounder.

d. The annunciator shall also contain LED's: Alarm, Supervisory System Trouble, Power Fault, System Silenced, Notification Appliance Circuit Silenced.

e. Annunciator shall mount in a semi-flush cabinet provided by the annunciator manufacturer.

2.12 HORNS - 757-1A-T (CSFM#7135-1591:188):

a. Provide Horns where required.

b. Horns shall be rated at 94dBA-low and 98dBA-high. Units shall incorporate a high and low setting position. Units shall be rated for 24VDC polarized operation. Units shall have screw terminals for input/output wiring, be red in color and be suitable for indoor or outdoor applications. Units shall sound the Temporal Code at 15dBA above ambient noise levels in all areas.

c. For flush mount applications indoors - Use 4S 2-1/8" boxes with 4S 1-1/2" Extension Ring.

d. For surface mount application indoor - Use 757A-SB Backbox.

e. For surface mount application outdoor - Use 757A-WB Backbox.

2.13 CONTROL MODULES - SIGA-CR (CSFM#7300-1591:121):

a. Provide monitor modules where required.

b. Units shall permanently store serial number, type of device and job number. Each module shall be capable of having its own personality code. Use respected module for particular application Modules shall use electronic addressing. Use of switches to set address will be prohibited.

c. Module for flush or surface mountings - Use 4S 2-1/8" Boxes with 1/2" One Gang Ring.

PART 3 - EXECUTION

3.1 INSTALLATION:

a. Wiring shall be installed in conduit as specified under this section of the specification.

b. The sum of the cross-sectional areas of individual conductors shall not exceed 40% of the interior cross sectional area of the conduit. Minimum conduit size shall be 3/4 inch trade size.

c. Wiring shall be identified at terminal and junction locations to prevent unintentional interference with the circuits during testing and servicing.

d. Junction, pull and terminal boxes/cabinets shall be labeled. Labels shall be permanently affixed to covers/doors.

e. Wiring color code shall be consistent throughout the system and shall allow for easy identification of initiating, indicating and auxiliary control circuits. Submit to Architect for approval.

f. Wiring at building terminal cabinets shall be terminated to screw barrier strips, with circuits identified.

g. Wiring in control, terminal and junction cabinets shall be neatly arranged and bundled.

h. Wiring shall test fee of earth grounds or shorts between conductors.

i. The contractor shall be responsible and assure the use of adequate numbers of skilled workmen, who are thoroughly trained and experienced and completely familiar with the specified equipment and code requirements.

j. Contractor shall be responsible for assuring that conduit size, wire type and color coding meets the specification, manufacturer's and code requirements.

3.2 SYSTEM VERIFICATION:

a. Upon completion of the installation, the fire alarm contractor shall place into operation and test all operational features, functions and devices.

b. Upon completion of testing and after the system has been in operation for a minimum of five (5) days without failure, fire alarm Contractor shall schedule with the Authority having jurisdiction, Owner Representative and Architect, a demonstration and field acceptance test. Provide test results to Architect, Owner, Inspector of Record and Local Fire Authority.

c. Field acceptance and approval of the fire alarm system shall be evidenced in writing by the authority having jurisdiction.

d. Prior to scheduling field acceptance, the fire alarm system contractor shall certify in writing and record method of testing, the results of all tests and certify that the system has been in operation a minimum of five (5) days.

e. All testing shall be conducted in accordance with NFPA-72H, contract documents, manufacturer's instructions and per the requirement of the Authority having jurisdiction.

3.3 GUARANTEE AND SERVICE:

a. Fire alarm system contractor shall provide written guarantees for all fire alarm equipment and devices used on this project for a period of three (3) years from the date of final acceptance.

b. During the guarantee period the contractor shall repair or replace any defective material at no additional cost to the Owner.

3.4 IN SERVICE TRAINING:

a. Fire alarm contractor shall provide factory trained representatives to demonstrate operation of fire alarm system to Owner's personnel. Representative shall have thorough knowledge of equipment and operation of the system. Contractor shall provide one (1) 4-hour in-service training session.

b. Fire alarm contractor shall provide to the authority having jurisdiction a demonstration of system operation. Session shall consist of one (1) 4-hour in-service training.

3.5 OPERATION MAINTENANCE MANUALS:

a. Fire alarm contractor shall provide to the Architect, three (3) weeks after the field acceptance test three (3) sets of operating/maintenance manuals and one (1) set of as-built drawings.

b. As-built drawings shall indicate the location of all devices, appliances, coding, zoning, wiring sequences, wiring methods, color coding, identification, labeling and connections of the components of the fire alarm system as installed.

c. Provide NFPA certificate of compliance to Owner, Architect and Local Fire Official.

END OF SECTION - 16720

SECTION 16725
SECURITY SYSTEM

PART 1 - GENERAL

1.1 SCOPE

a. Work Included: All labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for and incidental to performing all operations in connection with furnishing, delivery and installation of the work of this Section, complete as specified herein. Work includes, but is not necessarily limited to the following:

1. Furnish and install all door sensors and motion detectors.

2. Furnish and install all control panels and keypads

3. Furnish and install all wiring, connectors, and conduit, as needed. Wiring in exposed locations, including equipment shall be in conduit.

4. Furnish and install backup batteries.

5. Provide and connect operating power, as required, including conduit and wiring.

6. Prepare and provide the Owner all as-built drawings of the work (2 sets).

7. Obtain all building permits necessary to do the work and comply with all local, State, and Federal Building, Fire, and Electrical Codes, as applicable.

All equipment to be installed under this contract is to be non-proprietary. That is, the equipment is not to be the sole and exclusive use of one security or alarm company. The Owner will own the equipment. This is not an equipment lease. All equipment is to be new, unused, and not discontinued stock.

1.2 SUBMITTALS (ADDITIONAL REQUIREMENTS)

a. Submit product data sheet for all switches, detectors, wiring devices device plates, controllers, power supplies, cabinets, etc.

b. Submit detailed shop diagrams including dimensioned plans, elevations, details, schematic and point-to-point wiring diagrams and descriptive literature for all component parts and cabinets.

c. Submit six (6) copies redrawn building floor plans showing all components of the Security System including interconnecting cabling and conduits. Drawings shall be prepared to scale and show all exterior glass, exterior doors, all interior and exterior building walls, roof hatches, gates and other architectural/structural elements relevant to the installation of the security system. Each security system zone shall be shown on the plans.

1.3 QUALITY ASSURANCE:

All components of the entire system shall be listed by Underwriters Laboratory or a nationally recognized testing laboratory.

1.4 QUALIFICATION:

Contractor shall have a valid C-7 or C-10 contractors' license issued by the State of California as well as a City of Perris Business License.

PART 2 - PRODUCTS

2.1 GENERAL SYSTEM DESCRIPTION

a. System shall include the following items:

1. Control and monitor panels
2. Keypads
3. Battery backup
4. Motion detector-indoor and perimeter
5. Door sensors
6. Modem to connect to local area network or telephone interface
7. Sirens

b. All equipment is to be capable of being linked electronically to the Administration Building where the master control panel(s), and backup battery(ies) will be located.

c. It is the intent of the contract that all work and materials are included. By submitting a proposal, it is understood that the security contractor is fully aware of the scope of work and contract requirements. The proposal is to include furnishing, installation, connection, testing, labor, taxes, and transportation to provide a complete and operational system. The proposed price shall include all mark-ups and profit.

d. Zones - The system shall be considered as ten zones as follows:

Locations	# of Zones
Fence gates	6
Stadium Club Building	1
Administration Building	1
Concession Building	1
Maintenance Building	1
Total	10

e. Equipment Locations – Door sensors, motion detectors, control panels, sirens, and keypads shall be installed in the following areas:

Location	Sirens	Control Panels	Door/Window/ Roof Hatch Sensors	Motion Detectors	Keypads
Gates and Fence Areas	6	1	0	16	1
Stadium Club Building	1	1	14	11	1
Administration Building	1	1	11	8	1
Concession Building	1	1	8	1	1
Maintenance	1	1	2	3	1

Building					
Total	10	5	35	39	5

2.2 KEYPADS:

Keypads will be located in each facility listed except for gates and fences. Keypads shall be vandal resistant and internally illuminated. Keypads shall be white or almond in color, shall incorporate oversize keys, and a 32-character display panel. There shall be a cover over the keys. A speaker shall "beep" to indicate various situations. Keypad entry shall be based on entry code and function and operate on a 12-Volt system. Keypads shall be Ademco 6160, or equal.

2.3 CONTROL PANELS:

Control panels for each zone shall be Ademco V10, V20, or equal. Control panels shall allow use of a designated keypad to disarm the alarms for the applicable building area. Control panels shall support up to six hardwired sub zones per panel, or more if centralized. Centralized control panels shall be partitioned to allow separate zones to arm and disarm their own areas. Panels shall support up to 48 user codes. Control panels shall support auto arm/disarm, keypad macros, single button and entry code operation, connection to computer monitoring systems and telephone alarm systems, user scheduling for programmed times, and wireless capability. The panel shall also report low battery conditions. Alarm signals are to be audible at the control panels or monitors. As an option to separate control panels, a centralized panel in the Administration Building may also be proposed. A separate cost estimate shall be shown for this option and the Owner will choose between the two approaches.

The control panels shall be located as follows:

- Administration Building
- Stadium Club Building
- Concession Building
- Maintenance Building
- Gates can combine with the Administration Building Control Panel

2.4 MOTION DETECTORS:

Motion detectors shall be located near all door openings within buildings and near gates around fields. Interior motions detectors shall be Optex EX35T, or equal, and exterior motion detectors shall be Protech Piramid XL2. Motion detectors shall tie directly to the applicable control panel(s) to trigger sirens. Exterior motions detectors shall be weatherproof and resistant to ultraviolets. They shall be designed to not activate in wind, rain, or snow.

2.5 DOOR SENSORS:

Door sensors shall be 3/8 contact Sentrol 1075, or equal. Door sensor alarms shall activate when the door is held open or forced open. If there is forced entry, door contacts shall send a signal directly to the applicable control panel to activate sirens or report via telephone line to an alarm service company.

2.6 SIRENS:

An exterior siren shall be installed for each building and each gate, which shall go off in the event of security intrusion. The sirens shall be weatherproof and audible for 500 feet. Siren shall be a Wave 2, or equal. The siren for the Administration Building and adjacent

gates can be combined. One gate siren is to be combined with the Maintenance Building.

2.7 CENTRALIZED COMPUTER:

All equipment installed shall have the ability to be monitored by a centralized computer if one is installed in the future with the ability to set times for zones and/or codes for key personnel. This computer would be located in the Administration Building.

2.8 WIRING:

All wiring is to be new and appropriate for the distance, current, and voltage. Wiring within attics or above suspended ceilings is to be installed using approved cable installation methods such as Caddi-clips or J-hooks. All wiring is to be independently supported at 4-foot intervals. Wirings is not to be supported by other wiring, pipes, HVAC ducts, ceiling support wires, etc. Wiring is to be shielded and grounded as per Building Code and industry practice. Unless otherwise approved, wiring is to be placed in conduit or raceways. Contractor shall follow the manufacturer's recommendations for wiring.

2.9 POWER SUPPLY:

Power to the system is to be from a 120-Volt AC source. All circuit breakers shall be labeled appropriately. Security system operating power is to be 12-Volt DC with battery backup.

2.10 BATTERY BACKUP:

Battery backup shall be for a minimum of four hours per installation, plus a minimum of 25 lock activations in the event of a power failure. Backup Power supplies shall be Altronix, Security Door Control, Yuasa, or approved equal.

2.11 TELEPHONE INTERFACE:

The system will have the ability to connect to a dial-up telephone interface. The codes will be 2-digits in length. The telephone system being installed in the project is an NEC IPK telephone system.

2.12 LANGUAGE:

All operational commands for the security system are to be in English.

PART 3 - EXECUTION

3.1 TESTING:

All work shall be tested in a turnkey fashion, with the Owner's inspector present before being accepted by the Owner. The contractor is responsible for checking equipment, making sure all connections have integrity, making sure all equipment and racks are properly grounded, and verifying continuity of all system wiring. After installation, the contractor shall set controls, make any corrections, verify voltages, and check for false alarm readings for day and night. An as-built diagram is to be provided at the end of the job along with four copies of Operation and Maintenance manuals.

3.2 WARRANTY:

All equipment and labor shall be warrantied for one year from the date of installation. If manufacturers' equipment warranties are no longer than one year, that shall be the minimum warranty required for the equipment, excluding damage to neglect or misuse. Sixty days prior to the expiration of the warranty, the contractor shall inspect and retest all components, and submit a written report of findings. All deficient items covered by warranty shall be corrected immediately. The warranty shall remain in effect until 100% of the defective items are corrected by the contractor.

3.3 OPERATING MANUALS AND LABELING:

Copies of all equipment manuals, warranties, and instructions shall be provided to the Owner on each piece of equipment. Equipment is to be clearly detailed as to location of output and input.

END OF SECTION - 16725

SECTION 16740
CATV SYSTEM

PART 1 - GENERAL

1.1 SCOPE

a. Work Included: All labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for and incidental to performing all operations in connection with furnishing, delivery and installation of the work of this Section, complete as specified herein. Work includes, but is not necessarily limited to the following:

1. Provide equipment and labor to render the CATV System complete and operable for all designated locations of the site specified.

2. Conform to serving utility company, city, county and equipment manufacturer standards and codes.

3. Provide hardware and cable dressing to be consistent with layout and appearance acceptable to CATV industry standards.

4. Coordinate installation requirements with electrical drawings and specifications provided.

5. Provide any and all equipment, cables, devices and other materials even though not specifically mentioned herein, which are necessary for the proper integration of the system so that the system shall perform the function described herein in compliance with specified requirements.

6. Furnish and install individual cable runs from telephone/signal backboard to each TV location in the stadium club, administration and concession building.

7. The Contractor shall insure that manufacturer- recommended maximum pulling tensions and minimum bending radius of the cables being installed are not exceeded at any time during the installation. Failure to follow such guidelines will result in the Contractor providing additional material and labor necessary to rectify any problems resulting from such situations, at no additional cost to the Owner. This shall also apply to any and all damages to the cables caused by the Contractor during implementation.

8. All backbone copper and fiber optic cables shall be installed with adequate slack to allow repair and/or splicing as may be required due to damage or breaking, and for dressing within building entry and telecommunications closets.

9. All installed cable must be properly labeled, tested and documented. This documentation, which is due one week prior to the final customer walk through, shall include one set of bound test results and diskette copies (including viewing software) and one set of red-lined as-built drawings.

1.2 SUBMITTALS

a. Make each specified submittal as a coordinated package complete with all information specified herein. Incomplete or uncoordinated submittals will be returned with no review action.

b. Should the Contractor proceed with the Work of this Section in the absence of submittals for such work submitted and returned with action "No Exception Taken" or "Make Corrections As Noted", the Contractor proceeds at the Contractor's sole risk.

c. Manufacturer's Product Data:

1. List of Materials. For each item, include:
   a. Manufacturer.
   b. Model number.
   c. Listing: UL, City, County Lab or none.
   d. Quantity.

2. Manufacturer's Product Data Sheets: In sequence of List of Materials, Data sheet for each item, including all accessories, marked for proposed product.

d. Field (Installation) Drawings: Collate in sequence:

1. Drawing index/symbol sheet.

2. Floor plans. At scale of Contract Documents. Show:

   a. Rough-in.
   b. Mounting height.
   c. Conduit size.
   d. Rough-in.
   e. Wire type.
   f. Wire fill.

3. Sections/Elevations: At scale of Contract Documents:

   a. Mounting location reference.

4. Enlarged plans. At ½" = 1'-0" scale. Show:

   a. Refer to "floor plans" above.
   b. Architectural features.
   c. Rack cabinets.
   d. Clearances required by applicable Code.
   e. Show calculations on drawings or in bound.

5. Wire run sheets (if used). Show:

   a. Wire Number.
   b. Source.
   c. Designation.
   d. Signal Type.
   e. Wire Type.

e. Shop and Project Site Test Reports:

1. Schedule: Submit test reports in timely manner relative to Project schedule such that the representative of the Owner may conduct Verification of Submitted Test Data without delay of progress.

2. Shop test report: Submit prior to shipping completed equipment racks to Project site.

3. Project Site test report: Submit following system completion and prior to and as condition precedent to Acceptance Review and Testing of the Work of this Section.

4. Content: Include at least:

   a. Time and date of test.
   b. Personnel conducting test.
   c. Test equipment, including serial and date calibration.
   d. Test object.
   e. Procedure used.
   f. Results of test – numerical or graphical presentation.

1.3 OPERATING AND MAINTENANCE DATA

a. Manuals: In addition to the requirements of Division 1, submit two (2) additional sets. Submit in three (3) post binders (not ring binder) with Tabs.

b. Include:

   1. Index.
   2. Reduced set of system Record Drawings.
   3. Maintenance and spare parts schedules.
   4. Equipment manuals. Collate alphabetically by manufacturer. Provide manufacturer's original operation, instruction and service manuals for each item. For each set, provide manufacturer's original printed copies only. Photocopies not acceptable.

1.4 DELIVERY, STORAGE AND HANDLING

a. Deliver materials in manufacturer's original undamaged packages or in bulk packing which provides equivalent protection.

b. Store packaged materials off ground or slab in manner to protect them from elements, especially moisture damage.

c. Deliver completed, wired, tested equipment racks and backboards to associated equipment rooms at the Project site when major work of all other Sections, is complete, equipment room ventilation is operating with clean filters in place, the area is clean and free from airborne contaminates, and continuing work of other trades will not produce airborne contaminated or permit transport of such airborne contaminates to the equipment rooms.

1.3 WARRANTY SERVICE:

a. Warranty: Warrant all of the Work of this Section to be free from defects in materials and workmanship for a period of twelve (12) months from the date of Owner's Acceptance of the Work of this Section.

b. Response Time: Provide a qualified technician familiar with the work at the Project Site within twenty-four (24) hours after the receipt of a notice malfunction. (8) hours a day, five (5) days a week, to be called in the event of a malfunction.

c. Off Site Service: Conduct all warranty repairs and services at the Project Site, unless in violation of manufacturer's standard product warranty. Provide substitute systems, equipment, and/or devices acceptable to the Owner for the duration of off-site repairs. Provide transportation for substitute systems, equipment, devices, materials, parts and personnel to and from the Project Site.

PART 2 - PRODUCTS

a. CATV cabling: CATV in Stadium Club, Administration and Concession building to be individual RG6 runs from telephone/signal backboard to each TV location and terminated in patch box allowing for connection to TV with patch coax cable. Local Cable TV Cable company shall provide CATV cable into each telephone/signal backboard from street. All coax RG6 cables shall be labeled and 100% tested ensuring continuity, no shorts or opens. All labeling with TIA/EIA 606-A labeling standards.

b. Provide CATV drops as indicated on plans.

PART 3 - EXECUTION

3.1 GENERAL

a. Perform the Work of this Section in accordance with acknowledged industry and professional standards and practices, and the procedures specified herein.

b. Furnish and install (herein, "provide") all materials, devices, components, and equipment required for complete, operational systems.

3.2 TEST EQUIPMENT

a. Furnish, store and maintain test equipment at the fabrication shop and the job site for both routine and Acceptance Testing of the Work of this Section. Maintain all test equipment at the job site from installation if equipment racks until Owner Acceptance of this Work; thereafter remove all of this test equipment from the job site. Provide all required test cables, jogs and adapters.

3.3 EQUIPMENT ENCLOSURE (RACK) AND EQUIPMENT BACKBOARD FABRICATION

a. Combustible material, other than incidental trim of indicated equipment, is prohibited within equipment racks.

b. Within each equipment enclosure, provide a full-height multi-circuit ISOLATED GROUND outlet strip locate on the left side of the equipment enclosure, as viewed from the rear. Provide flexible steel raceway and junction box for connection of power service. Bond internal raceway to rack frame.

c. Provide a permanent label on the front of each equipment rack designation, and the circuit breaker number and associated electrical distribution panel designation servicing same.

d. Access shall not require demounting or de-energizing of equipment. Install access covers, hinged panels, or pull-out drawers to insure complete access to terminals and interior components.

e. Fasten removable covers containing any wired component with a continuous hinge along one side, with associated wiring secured and dressed to provide an adequate service loop. Provide an appropriate stop locks to hold all hinged panels and drawers in a serviceable position.

f. Provide permanent labels for all equipment and devices. Where possible, fasten; such labels to the rack frame or to blank or vent panels-which will remain in place when active equipment is removed for possible service.

g. At jackfields, provide service loop to permit removal of jackfields from rack sufficient to conveniently access all jack contacts for routine cleaning and maintenance. Organize the service loop and harness such that reasonable reconnection of jacks and jack normal is possible --without cutting apart the harness.

h. Coordinate the design and execution of wire harnessing of multi-bay rack ensembles with conditions of delivery to installation locations at Project Site, and with the requirement herein for test of the completely wired system in the shop prior to delivery to the Project Site. Organize the wiring harness such that they will fold within one shippable unit without the risk of damage, or provide polarized multipin connectors and related interconnect systems as specified elsewhere herein.

i. At each equipment backboard, provide UL Listed surge suppressing multioutlet assembly with at least six (6) receptacles.

3.4 ACCEPTANCE REVIEW AND TESTING PRECEDURES

Complete all Work of this Section. Submit Test Report. Submit review copies of Operating and Maintenance Manuals, less reduced set of Record Drawings. Notify the Architect in writing that the Work of this Section is complete and fully complies with the Contract Documents. Request Acceptance Review and Testing. The Owner will conduct Verification of Submitted Test Data, and otherwise direct testing and adjustment of this Work. These procedures may be performed at any hour of the day or night as required by the representative of the Owner to comply with the Project Schedule and avoid conflict with these procedures from possible ongoing work of other sections. Provide all specified personnel and equipment at any time without claim for additional cost or time.

a. Personnel: Provide services of the designated supervisor and additional technicians familiar with work of this, Section. Provide quantity of technicians as required to comply with Project Schedule.

b. In Addition, Provide:

1. All test equipment.
2. Complete set of latest stamped, actioned submittals of record for reference.
3. Complete set if Shop and Project Site Test Reports.

4. Complete set of manufacturer's original operation, instruction and service manuals for each equipment item for reference.

c. Demonstrate: Complete operation of all systems.

d. Adjust: As directed by the representative of the Owner.

e. Correct: In timely manner, failure to comply with the Contract Documents, as reasonably determined by the representative of the Owner.

3.5 CLOSEOUT

a. Punch List: Perform any and all remedial work, at no claim for additional cost or time. Where required, retest and submit Test Report. Notify the Owner after completion of Punch List.

b. Portable Equipment: Furnish all portable equipment and spares to the designated representative of the Owner, along with the complete documentation of the materials presented. Where applicable, furnish portable equipment in the original manufacturer's packing.

c. Operating and Maintenance Data: Instructions. Submit Manuals.

d. Project Record Documents: Submit.

e. Keys: If applicable, replace construction locks with permanent locks. Transmit keys to the Owner.

f. Training: Conduct specified training.

g. Warranty: Submit Warranty dated to run from date of Acceptance of the Work of this Section.

3.6 OWNER'S RIGHT TO USE EQUIPMENT

Acceptance of the Work in this Section will be after completion of corrections and ad adjustments requires by the "Punch List" which results from Acceptance Review and Testing of the completed installation. The Owner reserves the right to use equipment, material and services provided as part of the Work of this Section prior to Acceptance without incurring any obligation to Accept any equipment or completed systems until all Punch List work is complete and all systems comply with the Contract Documents; or accept any claim for additional cost or time.

END OF SECTION - 16740

SECTION 16742
COMMUNICATION & DATA PROCESSING EQUIPMENT

PART 1 – GENERAL

1.1 References:

a. All applicable portions of Section 16010 shall apply to this section as though written herein completely.

1.2 Communication & Data Standards

a. Project documents are to include a complete system including all wire pulls and jacks, except as specifically stated herein.

b. The following information is provided by the Big League Dreams Department of Information Technologies:

1. Work Station by Electrical Contractor (drop).

a. 1 Phone Jack & 1 Data Jack per Workstation
b. Phone Wire - Cat. 6
c. Data Wire - Cat. 6
d. Phone Jack - Hubbell HXJUGY*
e. Data Jack - Hubbell HXJ6B (T568B)**
f. Wall Plate - Hubbell IMF1W frame w/ (2) IM2KA15W modules or Hubbell AFP14W
g. Conduit - ¾" min. drop size
1. 1" H.R.- max. 3 drops
2. 1¼" H.R.- max. 5 drops

2. Computer Hardware and Software Provided & Installed by DIBS under contract by GC, CMR or City.

Description	Qty	Detail
Hardware		
Server	1	Hewlett Packard Proliant ML350 Server with dual Quad Core Xeon minimum 2.0GHz Processors, 4-GB RAM, 48x CD-ROM, Floppy, NIC, (4) RAID 5 Configured 250GB Hard Drives (Total Capacity 500-GB With Hot Spare) 3-Year H.P. Onsite Warranty
LAN Table	1	For server
Backup Drive	1	SDLT 110/220 Tape Backup Drive
Backup Tapes	11	Backup Tapes (including 1 Cleaning Tape)
Thin Client diskless workstations	15	Hewlett Packard 800 MHz, Flash 64 MB, 128 MB DDR SDRAM, Graphics VIA S3 graphics with support for high-resolution monitors

		up to 1280 x 1024,Microsoft Windows CE 5.0, Mouse and Keyboard, 3 Year Limited Warranty
Retail store POS computer	1	Hewlett Packard Pentium 4 3.06 GHz Processor 512MB DDR 80GB hard drive 48X CD-ROM drive 1 Year (parts, labor and next business day on-site) limited warranty Windows XP Professional
KVM Switch	1	KVM Switch for Sports Store
Flat Panel Monitors	16	17" Flat Panel Monitors
Mounting Brackets	6	Monitor and Thin Client Mounting Brackets
Firewall	1	Sonicwall - TZ170 Firewall Appliance Unlimited Nodes
Printer for Sports Office	1	Hewlett Packard - Laserjet P2015
Print Servers	2	Hewlett Packard 175x Print Server for P2015
Printer for Sports Office	1	Hewlett Packard - Color Laserjet 2505dn
Printer for Sports Office	1	Hewlett Packard - Laserjet 4350tn
Printers for Restaurant	2	Hewlett Packard - Deskjet 6940dt
Receipt Printers	2	Epson Receipt Printers TMU220 Including Cable
Print Servers	2	**Netgear** Print Server for Epson Receipt Printers
Uninterruptible Power Supply	1	APC 1500VA UPS
Switch	1	Netgear - 24-Port 10/100 Rack Mountable Switch
Switches	2	**Netgear** - 8-Port 10/100 Rack Mountable Switch
Switches	4	Netgear - 5-Port 10/100 Rack Mountable Switch
Park Wireless	1	Netgear - Prosafe Dual Antenna Wireless Access Point
Park Wireless	2	Netgear - Omni-directional antennas Indoor/Outdoor 9 dBi with Cables
Wireless connection to Maintenance if needed	2	Netgear - Prosafe Single Antenna Wireless Access Point
Wireless connection to Maintenance if needed	2	Netgear – Directional Indoor/Outdoor antennas 14 dBi with Cables
Wireless connection to Maintenance if needed	2	Netgear - 5-Port 10/100 Rack Mountable Switch
Fiber Converters	8	Fiber Optic 10/100 BaseT to 100 BaseFX-SC Converters
Surge Protectors/extension cables	10	Surge Protectors for Equipment
Patch Cables		Patch Cables for Fiber and Cat-5 Systems
Software		
Server Software	1	Microsoft Windows 2003 Server with 5 Users

Server Software	2	Microsoft Windows 2003 Server 5 Additional Cals
Server Software	20	Terminal Server License CALS
Server Software	15	Microsoft Office 2007 Small Business Edition
Server Software	1	Symantec anti-virus Corporate Edition
Server Software	1	Symantec Backup Exec 11d
Retail Store POS Software and Hardware	1	Quickbooks POS Basic System with Hardware

3. Approved Hardware Software provider/installer DIBS

Brett Churnin
Executive Vice President
Microsoft® Systems Consultant
Digital Information Business Solutions, Inc
Tel: (818) 848-3148 x416
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1.3 General Requirements:

a. The work covered by this section includes, but is not limited to, furnishing and installing a telephone and data wiring system as specified herein.

b. The installation shall include UTP cable (unshielded twisted pair copper), connectors (copper), jumpers (twisted pair copper), wiring blocks, telecommunications outlets, racks and any other equipment necessary for a complete system. Contractor shall provide labor and any incidental material required for installation. All copper station cables shall be terminated on patch panels (MDF end) and data communications outlets (work station end). All copper backbone cables shall be terminated on wiring blocks at each end. Upon completion of installation, Contractor shall test all copper pathways and record the test results, as specified in the following.

c. The work performed under this specification shall be of good quality and be performed in a workmanlike manner. In this context, "good quality" means the work shall meet industry technical standards and have a quality appearance. The City of Las Vegas reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds.

d. All new facilities shall accommodate Telephone, Satellite & CATV entrance concerns with a minimum of two (2) two inch (2") conduits w/ large radius bends and pull strings, to the Main Telephone Board (TTB) location. In addition, a three quarter inch (3/4") fire retardant plywood backboard (unpainted so Building & Safety can inspect the material), size commensurate to the site's telephone, data, satellite, CATV, fire and intrusion alarm requirements, will be installed; along with a #6 ground wire long enough to reach anywhere on the backboard (TTB).

1.4 Applicable Standards:

a. EIA/TIA-569A-"Comercial Building Standards for Telecommunications Pathways and Spaces".

b. EIA/TIA-568A-"Commercial Building Telecommunications Cabling Standard".

c. EIA/TIA-TSB-36-"Technical Systems Bulletin, Additional Cable Specifications for Unshielded Twisted-Pair Cables".

d. EIA/TIA-TSB-67-"Transmission Performance Specifications for Field Testing of UTP cabling systems".

e. EIA/TIA-607-"Commercial Building Grounding and Binding Requirements for Telecommunications".

f. EIA/TIA-606-"Administration Standards for Telecommunications Infrastructure of Commercial Buildings".

g. All cabling systems, either conforming to this standard or deviating form this standard, must be proposed in writing and be approved by the BLD.

h. NEC-National Electric Code, Chapter 8.

i. Local and National Building and Electrical codes.

1.5 Contractor Qualifications.

a. In order to qualify for installation of the data communications system, Contractor must possess the required license classification, a performance history and a minimum of two (2) years experience in the installation and termination of Category 6 UTP and Fiber Optic Systems. Certifications of training shall be presented with the submittals.

1.6 Definitions.

a. Main Distribution Facility (MDF): The MDF is the location(s), within a building, where the entire telecommunications system originates. It may include: the physical location, enclosure, wire and cable management hardware, termination hardware, distribution hardware and equipment racks. The MDF shall be located with the telephone utility demarcation point.

b. Backboard: Backboard generally refers to the plywood sheeting lining the walls of telecommunications facilities. Backboard may also refer to the entire wall-mounted assembly, including wire management, wiring blocks and equipment racks.

1.7 Submittals.

a. Provide 1/8" scale drawings indicating point-to-point wiring requirements, elevations of racks, riser diagram and equipment.

PART 2 - PRODUCTS

2.1 Throughout this specification, Hubbell and other manufacturers are cited, along with specific part numbers. These citations are for the purpose of establishing quality and performance criteria.

2.2 Unless specified otherwise, in the following, the equipment furnished shall fall into six (6) classes, and with the exception of class four, all of the material within a single class shall be the standard product of one (1) manufacturer. The six (6) classes are as follows:

a. Class One: Copper cable, copper jumpers, interconnection devices, connectors (copper), and wiring blocks. All material covered in Class One shall be equal in quality and performance to that manufactured by AT&T/Lucent.

b. Class Two: Nineteen by eighty four inch (19"x 84") Equipment racks. All material covered in Class Two shall be equal in quality and performance to that manufactured by Hubbell, as required.

c. Class Three: Communications Cabinets, Patch Panels, Wire Management Panels and Communications Outlets (jacks). All material covered in Class Three shall be manufactured by Hubbell.

d. Class Four: Wire ties, labels, "D" rings, nuts, bolts, screws and other miscellaneous hardware.

e. Class Five: Category 3 UTP shall be 4 pair cable, 24 AWG, solid copper, unshielded twisted pair, manufactured by AT&T/Lucent.

f. Class Six: Category 6 UTP shall be 4 pair round cable, 24 AWG, solid copper, unshielded twisted pair, Blue Ultramedia 75N4, manufactured by Commscope.

2.3 Equipment Racks.

a. Floor standing four legged racks are preferred for data equipment, but when space considerations do not allow for the use of a rack, provide a backboard and Hubbell RE4X wall cabinet, no substitutions allowed. It comes with a NSQ tool that is used to turn recessed bolts in the door and does not require a keyed lock for security.
http://www.hubbell-premise.com/Pdf/Catalog/CABINETS/REBOX.PDF

b. Equipment racks shall be assembled in accordance with the manufacturer's instructions and recommendations.

2.4 Wire Management Components:

a. Where required, patch panels and wire management components shall be mounted to the equipment racks or the plywood backboard. Each device shall be mounted such that its horizontal dimension is level. In cases where more than one device is mounted, they shall be aligned vertically. A minimum of four (4) of the mounting holes provided shall be utilized for fastening. Screws shall be tightened to the extent that they hold the device snug to the rack or backboard, but not so tight as to damage the device. Patch panels shall be terminated in accordance with the manufacturer's recommendations. Installation of accessories shall be conducted in accordance with the manufacturer's instructions and recommendations.

2.5 Copper Cable:

a. Where copper cable enters MDF, it shall be affixed to the rack or backboard via "D" rings and cable ties. All cable runs, within the MDF, shall be horizontal or vertical while maintaining the minimum cable bend radius.

b. Labeling.

1. All labels shall be machine printed on clear or white tape, stenciled onto adhesive labels or typewritten onto adhesive labels. The font shall be at least one-eighth inch (1/8") in height block characters and legible. The text shall be of a color contrasting with the label such that it may be easily read. If labeling tape

is utilized, the font color shall contrast with the background. Patch panels shall exhibit workstation jack numbers, in sequential order, for all workstations served by the MDF. A numbering scheme will be approved by the BLD, prior to labeling.

2.6 Combination Voice/Data Outlets:

a. Provide two (2) RJ-11 jacks for voice and two (2) RJ-45 jacks for data at each combination voice/data outlet. The RJ-11 voice jacks shall be wired according to the USOC standard and the RJ-45 data jacks shall be wired to the EIA/TIA T568B standard. All installation/termination of cabling shall comply with code as specified by the EIA/TIA Standards Documents pertaining to the category of cable being installed. Faceplates shall be Hubbell, white, with a minimum of four (4) jacks. Identification of the jacks shall be Gray for voice and Blue for data.

2.7 Workstation Cable:

a. Description: From the MDF, provide two (2) 4 pair, 24 AWG, Category 6 UTP cables and (1) 4 pair, 24 AWG, Category 3 UTP cable to each workstation/office served by the MDF.

b. Installation: Installation shall be conducted in accordance with guidelines established by the product manufacturer and industry standards. Wall plates shall be mounted such that their vertical dimension is plumb. Each wall plate shall be labeled with appropriate Voice & Data jack numbers.

c. Patch Cables: Two (2) Blue Hubbell Category 6 patch cables shall be provided for each workstation served, one (1) 6' and one (1) 12'.

2.8 Building Interconnect Wiring/Fiber:

a. Provide a minimum of six (6) pairs of fiber optic cable to be pulled between buildings and to each phone closet and left terminated to patch panels in equipment racks and labeled according to EIA/TIA 606 standards as closet interconnects.

b. Depending on the requirements of the location in question, any combination of the following types of fiber optic cable & connectors may be specified:

1. Singlemode Fiber w/ ST or Yellow SC connectors
2. 50/125 Multimode Fiber w/ Orange SC connectors
3. 62.5/125 Multimode Fiber w/ ST or Blue SC connectors

c. Fiber connectors shall be affixed using Epoxy & Polish or Fusion Splicing Only. <u>(NO CRIMP-ONS)</u>

2.9 Wiring Closets:

a. In the wiring closet, all Category 3 UTP cabling will be terminated on 66 blocks.

b. Category 6 UTP data cabling will terminate in the wiring closet on Category 6 compliant patch panels utilizing the 110-termination system (T568B). The patch panels will be mounted in 19" equipment racks.

2.10 Specialty Communications Outlets:

a. Wall mount phones shall comply with ADA requirements and may be whatever faceplate is convenient to the telco contractor.

PART 3 - EXECUTION

3.1 Category 3 & 6 Testing:

a. Contractor shall test each pair of each twisted pair cable. BLD reserves the right to have a representative present during all or a portion of the testing process. If BLD elects to be present during testing, test results will only be acceptable when conducted in the presence of BLD.

b. All data cables will be tested with approved Category 6 test equipment meeting EIA/TIA-TSB 67 requirements from the faceplate to the termination point in the wiring closets and comply with the EIA/TIA 568B and Category 6 Standards. Fiber optic cable will be tested with an approved Fiber tester or an Optical Time Domain Refractometer (OTDR) with attenuation not to exceed 3db/Km and meet FDDI specifications. Each cable will be tested, documented and labeled in accordance with the EIA/TIA 606 standard and provided to BLD.

c. Workstation Cable: Each workstation cable shall be tested from the Jack Panel to the data outlet jack.
   1. Test Equipment: Wirescope 350 or equivalent.
   2. Tests: Attenuation, Noise, Near End Cross-talk, Far End Cross-talk, Length, Power Sum Next, Power Sum ACR, DC loop back resistance, and pair-by-pair continuity.
   3. Test Criteria: The system shall be tested to Category 6 specifications. The test path shall include workstation jacks, station cables, jack panels and patch cables.
   4. All voice cables shall be tested to Category 3 specifications and documented.

3.2 Cable Termination:

a. Maximum distance for any single Category 6 data run shall not exceed 90 meters.

b. Category 6 data cables shall be terminated in accordance with standards and practices governing the installation of such cable. This includes proper termination techniques to ensure minimum near end cross talk (NEXT). Contractor may be asked to verify that the installed cable meets Category 6 requirements and is capable of GIGABIT data transmission speeds.

c. Category 6 data cables shall be terminated on RJ-45 jacks that are wired to the T568-B standard. Jacks shall be rated and clearly designated Category 6 compliant (Cat.6). All pairs shall be terminated on each jack.

d. Category 3 voice cables shall be terminated on RJ-11 jacks that are wired to the USOC standard. Two (2) pairs shall be terminated on each jack.

e. In locations where voice and data jacks are required, such jacks shall be combined into a double gang outlet box with single gang mounting plate. Each jack must be labeled VOICE or DATA.

f. All cables, jacks, patch panels and wiring blocks shall be clearly marked with a unique number designation identifying the cable termination at the jack location and the corresponding termination in the wiring closet.

3.3 Raceways:

a. All voice and data cable must be installed in conduit or approved raceway systems. Cable trays and conduit systems shall comply with a minimum bend radius and separation from power cabling and fluorescent lighting requirements as specified in the EIA/TIA 568A and 569A standards. Where conduit is installed, the bend radius shall be a minimum of 10X the diameter of the conduit.

b. Minimum conduit size for systems installed under this section shall be ¾".

3.4 Documentation:

a. Contractor shall provide documentation in electronic format, including test results and as-built drawings within fourteen (14) days of job completion.

b. Test Results: The results of the workstation cable and fiber optic, if applicable, tests shall be in the form of pinouts from the test equipment, in a comma delimited format.

c. As-Built Drawings: Contractor will be provided with clean copies of the Electrical Drawings depicting data outlet location. The Contractor shall update the drawings depicting network drop locations and numbers as they were installed and return a copy to BLD, in AutoCADLT format.

3.5 Acceptance:

a. Acceptance of the Datacommunications System, by BLD, shall be based on the test esults, functionality and the receipt of documentation. With regard to Category 6 functionality, Contractor must demonstrate to BLD that gigabit data signals can be successfully transmitted, bi-directionally, from the MDF to and from all individual data outlets. With regard to Fiber cabling, Contractor must demonstrate to BLD that it was installed according to standards and passed specific tests. With regard to documentation, all required documentation shall be submitted to BLD.

3.6 Warranty:

a. A complete cabling system warranty of no less than 15 years shall be provided to cover applications and components, as well as labor associated with the change out of any non-performing product. Warranty shall cover all installed components from entrance point to workstation outlets. Contractor will correct any problems resulting from their workmanship or the provided material failure, providing that there have been no alterations or changes to the installation by personnel other than the Contractor. Contractor will respond to warranty repair calls within 48 hours.

3.7 Telecommunications Standards for BLD Parks:

a. Phone Equipment

Line	Part #	Qty.	Description
1			**NEC Electra IPK-II System Components**
2	750018	1	ELITE IPK II BASIC PKG (V1000)
3	750118	1	DSPII-U10 FOR INMAIL
4	750160	1	COI(8)-U10 ETU WITH CALLER ID CAPABILITY
5	750219	1	ESIE(8)-U20 DIGITAL STATION CARD
6	750305	1	PGD(2)-U10 ADP (EXTERNAL PAGE INTERFACE TO AMPLIFIER)
7	750559	1	ELITE IPK II INMAIL 4 PORTS
8	750879	1	REMOTE SOFTWARE UPGRADE-ACTIVATION
9	780584	16	DTH-16D(BACK-LIT DISPLAY)-2 (BK) PHONES
10	750449	1	COI(4)-U10 ETU WITH CALLER ID CAPABILITY
11	750211	1	ESIB(8)-U20 DIGITAL STATION CARD
12			**NEC - Terminals (NEC Dterm® Telephone, DESI Labels)**
13	780420	1	DESI LASER LABELS FOR PHONES
14	ICMP8P8SRD	4	Oval 8-position mod plugs for ESI-E card
15			**Installation Hardware**
16	25PX25-90DEG	3	NEC 25PX25-90 NEC PBX Amphenol Cables (IPK)
17	40066-M50	2	66M150 Connecting Blocks
18	40089-00D	2	89-B Brackets
19	6301BW-1000	1	1-Pair Cross-Connect Wire
20	MISC NEC	1	Miscellaneous Installation Materials
21	F9S800-06	1	IPK Power Surge Protector

3.8 Basic Phone (local utility) Service Requirements:

a. These design standards do not attempt to list all phone requirements. Reference the phone standards and BLD for standards and required variations from the above and following standards. Verify exact number of required lines with BLD prior to design.

b. Provide two 2" buried conduits originating from the nearest phone designated telephone cable facilities to the park's designated point of termination, aka - telephone board (TTB), per phone Engineer's specifications.
   1. Provide one pull string per conduit end to end.
   2. All bends shall consist of not less than 24" sweeps.
   3. No buried elbows of any degree shall be used.

c. Provide one 30" pull box for every 400' of buried conduit length and/or for each 270 degrees of bends.

d. Provide one unpainted ¾" fire-retardant plywood backboard of not less than 24" X 24" mounted 40" above grade (unpainted so Building & Safety can inspect the material).

e. Provide one #6 ground located at the backboard.

f. The TTB shall be placed to allow easy access by phone Technicians

3.9 Contacts:

a. If you have any questions or concerns, please feel free to contact BLD Project Manager Gary Weinstein @ (949)246-2280)

SECTION 16760
PUBLIC ADDRESS / PAGING SYSTEM

PART 1 - GENERAL

1.1 Scope of Work:

A. All applicable portions of Section 16010 shall apply to this section as though written herein completely.

B. The work under this section includes all labor, materials, equipment, and accessories required to furnish and install a complete Paging Systems as indicated on the drawings and as specified herein.

1.2 Related Work:

A. The work described by this part includes the furnishings of all materials, equipment, supplies, labor and the performing of all operations necessary for the installations of complete and operating systems.

B. The entire responsibility of the system including the installation, operation, function, testing and maintenance for one (1) year after acceptance under this section shall be the responsibility of the Communications Contractor.

C. The Installing Communications Contractor shall furnish and install all equipment, cables, devices, and other materials even though not specifically mentioned herein, which are necessary for the proper integration of the system so that the system in compliance with all specified requirements.

1.3 General Requirements:

A. The installing Communications Contractor shall hold valid State of California C-10 License, as well as a City of Perris Business License, shall have completed 20 projects of equal scope, shall have been in business of furnishing and installing communication systems of this type for at least five years, and capable of being bonded to assure the owner of performance and satisfactory service during the guarantee period.

B. The Installing Communications Contractor shall be a factory authorized distributor and warrantee station for the brand of equipment offered and shall maintain a fully equipped service organization capable of furnishing adequate repair service to the equipment. The Installing Communication Contractor shall maintain a spare set of all major parts for the system at all times. All circuit boards, amplifiers and control sub systems shall be 100% backed up with stock at contractors' shop.

1.4 Submittal and Manuals:

A. Comply with all requirements of the General Conditions.

B. Coordination Drawings: Prepare coordination drawings.

C. Additional requirements of this section are:

1. Within thirty five (35) calendar days after the date of award of the Contract, the Contractor shall submit to the Architect for review, eight copies of a complete submission.

2. The submission shall consist of five major sections with each section separated with index tabs. Each page in the submission shall be numbered chronologically and shall be summarized in the index.

3. The first section shall be the "Index" which shall include the project title and address, name of the firm submitting the proposal and name of the Architect.

4. The second section shall include a copy of the Installing Communication Contractors valid C-10 California State Contractors License, letters of factory authorization and guaranteed service, list of 20 projects of equal scope and list of proposed instrumentation to be used by the Contractor.

5. The third section shall contain the comparative specification listing, including a complete listing of the characteristics of the equipment to be furnished next to all of the specified equipment's features and functions as stated in the specifications and data sheets.

6. The fourth section shall contain an original factory data sheet for every piece of equipment in the specifications.

7. The fifth section shall contain a wiring designation schedule for each circuit leaving each piece of equipment and drawings showing system wiring plans.

D. The Contractor shall provide two copies of an "Operating and Servicing Manual" for the system. The manuals shall be printed bound in flexible binders. All data shall be printed or typewritten. Each manual shall include the following: Instructions necessary for the proper operation and servicing of the system; complete as-built installation drawings of the system; a wiring destination schedule for each circuit leaving for each piece of equipment; a schematic diagram of major components with all transistor and IC complements and replacement number.

PART 2 - PRODUCTS

A. Speakers: The system shall have speakers as follows:

	Type	Speaker
Baseball Fields	Horn	12
Stadium Club Building	Recessed	12
Administration Building	Horn/Recessed	5
Concession Building	Horn/Recessed	3
Maintenance Building	Horn	2
Soccer Arenas	Horn	4
Total		38

The drawings show the location of the speakers within buildings and on the exterior of the buildings. Speakers within buildings are to be recessed. Exterior speakers shall be weather resistant and come with a full one-year warranty.

B. Performance and Control: The system shall be capable of providing clearly audible with sufficient sound level to reach persons inside and within 50 feet of all structures listed

above. The system volume shall also be adjustable to be able to reduce the volume at night to conform to use permit requirements of not exceeding 40 dB at any residential property line.

C. Zones: Each baseball field, each soccer field and each building is to be considered a separate zone.

D. Horn Speakers: See drawings for quantity and locations of horn speakers.

E. Equipment Rack Location: The location of the equipment rack shall be in the Telephone/Signal closet of the Administration Building.

F. Equipment Control Location: The location of the system controls, CD changer, and cassette player will be in the telephone/signal closet of the Administration Building.

G. Power Amplifier: Power amplifier(s) shall be installed in a system rack location in the telephone/signal closet of the Administration Building. Amplifiers and other electronic equipment shall meet manufacturers' standard specifications, EIA/TIA and UL, and shall be installed to meet the Owner and Electrical Code requirements. Each power amplifier shall be on its own AC power circuit.

H. Telephone Interface: The system shall have a dial-up telephone interface (Universal Telecom/Paging Interface). The code arrangement shall consist of a main centrex access and several number codes, which shall allow specific zone calling and an "all zone" call. The codes will be 2-digit in length. The telephone system being installed is an NEC IPK telephone system.

I. Voltage: The system shall be continuous voltage 70.7v and the output of each power amplifier will be matched to the speakers for that zone.

J. Zones: The system shall be divided into twelve zones as follows:

Baseball Fields	(6)
Stadium Club Building	(1)
Administration Building	(1)
Concession Building	(1)
Maintenance Building	(1)
Soccer Arenas	(2)
	(12)

The system shall be capable of handling up to 16 zones.

K. Microphone Plugs: Plugs for microphones are to be installed in:

Baseball Fields	(6)
Stadium Club Building	(1)
Administration Building	(1)
Concession Building	(1)
Soccer Arenas	(2)
	(11)

L. Speaker Sizing: Speaker sizes will be proportionate to the area they cover. Each internal speaker shall have a variable adjustment on each internal speaker.

M. Wiring: System wiring shall be installed from speaker, microphone, and control locations to the room where the equipment rack will be located in the Administration Building. The contractor shall need to install all conduit and wiring within a building and pull speaker and microphone wire to all locations.

Speaker wiring shall not be less than 16 AWG gauge two conductor stranded wire and shall be properly rated for current and voltage for the length of the run and number of speakers. The wire used must provide a minimum of 95 percent shielding, have an outside jacket covering the inside conductors in their own insulators providing a minimum of 600vdc flash over, and have the appropriate drain wires tied throughout the 70.7v system. The microphone wire will be 22-gauge shielded two conductor wire with the appropriate drain wire.

PART 3 - EXECUTION

3.1 Installation

A. The wiring of the system shall be executed in accordance with the drawings and the equipment manufacturer's wiring diagrams. Should any variations in these requirements occur, the contractor shall notify the architect before making any changes. It shall be the responsibility of the factory authorized distributor of the approved equipment to install the equipment and guarantee the system to operate as per plans and specifications.

B. Furnish all conductors, equipment plugs, terminal strips, etc.; And labor to install a complete and operable system.

C. The cables within the rack or cabinets shall be carefully cabled and laced with no.12 Cord waxed linen lacing twine or T & B model Ty-Rap series 500 cable straps. All cables numbered for identification.

D. Splices of conductors in underground pull boxes is not permitted.

E. The labor employed by the contractor shall be regularly employed in the installation and repair of communication systems and shall be acceptable to the Owner and architect to engage in the installation and service of this system.

F. The contractor shall thoroughly clean all equipment and materials. All exposed parts of the equipment, cabinets, and other equipment shall be left in a clean condition, unblemished and free of all dirt, dust, smudges, spots, fingerprints, etc. The contractor shall remove all debris and rubbish occasioned by the electronic systems work from the site. The contractor shall thoroughly clean all buildings of any dirt, debris, rubbish, marks, etc., caused by the performance of this work.

G. The contractor shall provide not less than eight (8) hours for instruction of personnel in the operation and maintenance of the systems. This instruction time shall be divided as directed by the Owner.

H. Identify all equipment and wiring.

3.2 Warranty

A. The entire system shall be warranted free of mechanical or electrical defects for a period of one (1) year after final acceptance of the installation. Any material showing mechanical or electrical defects shall be replaced promptly at no expense to the Owner.

B. The contractor shall maintain a competent service organization and shall, if requested, submit a service maintenance agreement to the Owner after the end of the guarantee period.

C. A typewritten notice shall be posted at the equipment rack which shall indicate the firm, address and telephone number to call when necessary. The notice shall be mounted in a neatly finished metal frame with a clear plastic window and securely attached to the inside of the door.

3.3 Testing

A. Provide all instruments for testing and demonstrating in the presence of the Owner's inspector that the frequency response is as stated in the factory data sheets. Check all circuits and wiring to verify they are free of shorts and grounds.

B. The Owner reserves the right to make independent tests of all equipments furnished to determine whether or not the equipment complies with the requirements specified herein and to accept or reject any or all of the equipment on the basis of the results thereby obtained.

END OF SECTION - 16760