SECTION 28 23 00 – SECURITY SURVEILLANCE SYSTEM

PART 1 – GENERAL

1.1 SUMMARY

A. Provide all labor, materials, and equipment for the complete installation of Work called for in the Contract Documents.

B. Work of this Section includes all labor, materials, installation, integration, graphic entry and importation, testing, and documentation for the purpose of expanding the Airport Board's Security Surveillance System (SSS).

C. Included in this section are the minimum composition requirements and installation methods for the following:

1. Installation of cameras providing coverage of designated areas.
2. Installation of intercom and microphone stations providing coverage in designated areas.
3. Cabling to the designated ceiling mounted quad location on concourse level, or ramp level communications room.
4. Adjustment of cameras for optimum field of view.
5. Testing installed camera, intercom and microphone station operation, and preparation of reports as required by the referenced standards and these documents.
6. Installation of ceiling mounted quad, infrastructure, and other electronics as necessary to support installed cameras.

D. Portions of the surveillance system scope may be performed by DFW personnel, or their approved maintenance contractor, to preserve the integrity and warranties of the existing head end equipment.

1. This work includes head end configuration and programming.
2. Coordinate head end integration requirements with the Owner

E. Cameras shall be the precise manufacturer and model numbers called out in the PRODUCTS section of this specification.

F. Cameras shall be ceiling or wall-mounted per the manufacturer's recommendations. Refer to camera schedule on drawings for the Owner's desired mounting option.

G. Integrate cameras into the existing surveillance system.

H. Adjust the camera for aim, zoom, backlight, and focus for optimum field of view.

I. Camera views must be reviewed and approved in writing by the Owner's representative.

J. The Contractor shall deactivate and remove existing cameras and return to the Owner or the Owners representative.

1.2 DEFINITIONS AND TERMS

A. Trade association names and communications terminology are frequently abbreviated. The following acronyms or abbreviations may be referenced within this Section:

1.	ANSI	American National Standards Institute
2.	AWG	American Wire Gauge
3.	CBP	Customs and Border Protection
4.	CIB	Camera Interface Box
5.	EMI	Electromagnetic Interference
6.	FCC	Federal Communications Commission
7.	IEEE	Institute of Electrical and Electronics Engineers
8.	ISO	International Standards Organization
9.	LAN	Local Area Network
10.	MCR	Main Communications Room
11.	NEC	National Electric Code
12.	NEMA	National Electric Manufacturers Association
13.	RU	Rack Unit(s)
14.	PoE	Power over Ethernet
15.	SSS	Security Surveillance System
16.	TIA	Telecommunications Industry Association
17.	TSA	Transportation Security Administration
18.	UL	Underwriters Laboratories

1.3 QUALITY ASSURANCE

A. The Texas Department of Public Safety requires that portions of this work defined as regulated under the provisions of SB 1252, 78th Legislative Session of the State of Texas be performed by a contractor holding a valid and current Class B Security Contractor Company License.

B. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where “approved equal” is stated, or a substitution is requested, equipment shall be equivalent in every way to that of the equipment specified. All substitutions are subject to the control and approval of the Owner.

C. Comply with NEC as applicable to construction and installation of system components and accessories.

D. Provide system components, which are UL-listed and labeled.

E. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner.

F. Contractor's Qualifications:

1. Firms regularly engaged in the installation of Surveillance Systems and that have three (3) years of installation experience with systems similar to that required for this project. The Contractor shall have been actively engaged in installing, maintaining, and operating similar systems and services as outlined in this document.
2. The Security Surveillance System is maintained by DFW ITS for programming and integration. M.C. Dean is the preferred vendor/contractor for camera installation. They have established unit cost pricing for equipment and, labor, and work closely with the DFW ITS team for the configuration and integration tasks. Approved cameras can also be installed by a licensed and certified integrator for the camera make/model.

    a. For additional information regarding M.C. Dean services to the Airport, contact DFW ITS Gregg Weiland via cell (469-988-3294), or email at gweiland1@dfwairport.com to coordinate.

3. Provide references to include client names, phone numbers and a summary of project details. These references will be checked, and the clients will be asked questions relative to the performance of your company.
4. Provide verification that installation personnel responsible have been professionally trained to install the products described in this Section.
5. Provide project manager with a minimum of five (5) years field experience in installation of communications systems and infrastructures. Project manager shall be assigned for the duration of the project and shall not be replaced without written consent from the Owner.

G. Manufacturer's Qualifications:

1. Firms regularly engaged in manufacture of products of the types, ratings and capacities required for this project; whose products have been in satisfactory use in similar service for not less than five (5) years, with production capabilities per applicable NEMA standards.

H. Comply with all applicable codes, standards, regulations, and the most current issue of the following publications, including all amendments thereto of the issue that is current on the date of contract award. Applicable requirements of the following publications shall apply to the work under this specification as if fully written herein. Where conflicts exist between the Technical Specification and the referenced publications, local codes shall govern.

1. American Standards Association (ASA)
2. Institute of Electrical and Electronic Engineers (IEEE)
3. National Fire Protection Association (NFPA)
4. National Electrical Manufacturers Association (NEMA)
5. Underwriters Laboratories, Inc. (UL)
6. Federal, State and Municipal Building Codes and all other Authorities having jurisdiction.
7. National Electrical Code (NEC)
8. Insulated Power Cable Engineers Association Specification (IPCEA)
9. American Society for Testing Materials Specification (ASTM)
10. Occupational Safety and Health Administration (OSHA)
11. National Electrical Safety Code (NESC)

I. Special attention shall be made to the following specific codes, standards, and publications where applicable. Equipment References to codes and standards called for in the Specifications refer to

the latest edition, amendments, and revisions to the codes and standards in effect on the date of these Specifications. Designer shall advise of any suggested edition changes to listing below for review and approval by Owner.

1. ANSI B20.1 Conveyor Safety
2. ANSI/TIA-568.0-E – Generic Telecommunications Cabling for Customer Premises
3. ANSI/TIA-568.1-D – Commercial Building Telecommunications Infrastructure Standard
4. ANSI/TIA-569-E – Telecommunications Pathways and Spaces
5. ANSI/TIA-606-C – Administration Standard for Telecommunications Infrastructure
6. ANSI/TIA-607-D – Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
7. BICSI – Telecommunications Distribution Methods Manual, 14th Edition
8. TIA-232-F – Interface between Data Terminal Equipment and Data Circuit-Termination Equipment Serial Binary Data
9. IEEE 802 – Local Area Network Standard
10. NECA 1-2015 – Standard Practice of Good Workmanship in Electrical Construction
11. NFPA 70 – National Electric Code (currently adopted edition)
12. NFPA 72-D – Installations, Maintenance and Use of Proprietary Protective Signaling Systems
13. NFPA 75 – Protection of Electronic Computer Data Processing Equipment
14. NFPA 77 – Static Electricity
15. NFPA 78 – Lightning Protection Code
16. Title 47 CFR Part 15 – Radio Frequency Devices
17. Title 49 CFR 1520 – Protection of Sensitive Security Information
18. Title 49 CFR 1540 – Civil Aviation Security General Requirements
19. Title 49 CFR 1542 – Airport Security
20. Title 49 CFR 1544 – Aircraft Operator Security
21. Title 49 CFR 1546 – Foreign Air Carrier Security
22. Title 49 CFR 1548 – Indirect Air Carrier Security.
23. Transportation Security Administration Recommended Security Guidelines for Airport Planning, Design and Construction
24. UL 13 – Standard for Safety for Power-Limited Circuit Cables
25. UL 294 – Access Control System Units
26. UL 444 – Standard for Safety for Communications Cables
27. UL 497B – Standard for Protectors for Data Communications and Fire-Alarm Circuits
28. UL 796 – Electrical Printed-Wiring Boards
29. UL 1950 – Information Technology Equipment, including Electrical Business
30. DFW Airport Design Criteria Manual
31. Applicable codes and directives of authorities having jurisdiction.

J. In addition, the contractor shall comply with all applicable Security Directives as issued by the TSA.

K. Work:

1. The Work shall be performed in compliance with the applicable manufacturer's installation instructions, Standards, and certifications listed herein, the Contract Documents, and governing codes and regulations of the authorities having jurisdiction.
2. The drawing and specification requirements govern where they exceed Code and Regulation requirements.

3. Where requirements between governing Codes and Regulations vary, the more restrictive provision applies.
4. Nothing in the Contract Documents grants authority or permission to disregard or violate any legal requirements.

1.4 CONFLICTS

A. This installation shall be made in strict accordance with the Specifications, Drawings, any applicable codes, referenced publications and standards. In case of conflicts, notify the Owner in writing prior to commencement of affected work.

1.5 SCHEDULING

A. The Contractor must comply with all scheduling requests established by Owner, both prior to commencing Work, and during construction.

B. The Contractor must provide a detailed schedule of work to be performed, which will be used to track work status.

C. It must be The Contractor`s responsibility to coordinate work with all trades and with the owner, in a timely manner, and in accordance with the construction schedule.

D. The Contractor will be responsible for achieving a complete and fully functional installation on or before the contract scheduled completion date.

1.6 REQUIREMENTS

A. All references to manufacturers, model numbers and other pertinent information herein are intended to establish standards of performance and quality of construction. The Owner must approve material submittal and substitutions in writing.

B. Verification that all the components specified and installed meet the criteria specified by the respective component manufacturer, supplier and designer is the responsibility of the Contractor.

C. All installation tools, special equipment and testing apparatus required to accomplish field connections and related work as described herein shall be furnished by the Contractor at no additional cost.

D. The Contractor is obligated to provide all materials necessary to complete this Scope of Work, with the sole exception of those items noted as “salvaged,” “existing” or “provided by others.”

E. The Contractor shall verify engineering of the tasks outlined in these specifications. Any issues or concerns regarding adequacy/suitability of components or installation requirements should be brought to the attention of the Owner prior to commencement of the associated tasks.

F. The requirements, as given in this document, are to be adhered to unless the Owner authorizes revised requirements in writing.

G. All equipment that uses radio frequency energy shall be certified to comply with Subpart J of Title 47 CFR Part 15 of Federal Communication Commission rules, as those rules define a Class A computing device.

H. This system is to be installed at an airport and is subject to background RF levels expected in such an area. It is the Contractor's responsibility to protect the systems specified here from interference of other systems, and through compliance with G, above, to prevent interference with other systems.

I. The Owner reserves the right to waive these requirements at any time.

1.7 SUBMITTALS

A. Comply with provisions of Division 01.

B. Comply with provisions of Section 280500.

C. Submittals for components listed in this Section shall also be reviewed and approved by ITS / Owner.

D. Provide information needed (quantities by type) to alter the existing System Maintenance Agreement as further defined in the Warranty section of these specifications.

E. Submit manufacturer's data on Security Surveillance components including, but not limited to, electrical specifications, mechanical specifications, rough-in diagrams, and instructions for installation, operation, and maintenance, suitable for inclusion in maintenance manuals.

F. Provide Shop Drawings showing equipment/locations and arrangements. Provide an assembly drawing of every equipment rack and card cage enclosure with location and dimensions shown. Provide wiring diagrams showing all field-connected wiring.

G. Prepare and submit Phased System Testing documents and plans, Final Testing and Acceptance Plans, Test Procedures, Test Reports, and System Availability Test documents as described in this specification section. The contractor shall submit the standard forms used for these tasks for DFW Airport Board approval.

1.8 CONTRACTOR CLOSE OUT SUBMITTALS

A. The intent of this Section is to provide supplemental information to include with the complete documentation of the existing Security Surveillance System, for the purpose of system operation and maintenance during and after the Warranty period. It is intended that the operation and maintenance manuals be exhaustive in the coverage of the system to the extent that they may be used as the sole guide to the troubleshooting, identification, and repair of defective parts.

B. The supplemental information requirement of this Section is in addition to Shop Drawing requirements. Information documentation and Drawing sets shall be compiled after system fabrication and testing and shall incorporate any changes made after Shop Drawing submittal.

C. The Contractor shall provide the DFW Airport Board with complete copies of the supplemental information .

D. This information shall include wiring diagrams, schematics, and functional details such that any component, wire, or piece of equipment added to the system may be easily identified by going to the actual equipment and referring to this information. It is required that all supplemental products be neatly labeled and easily identifiable. Every terminal, wire, component, or piece of equipment, relay, and other such items shall have a number or letter designation. All identification characteristics shall be included in the supplemental information documents.

E. Operation and Maintenance Manual

1. Provide manufacturer's standard literature, covering all equipment included in the system expansion.
2. The supplemental information shall contain specifications, adjustment procedures, circuit schematics, component location diagrams, and replacement parts identification. All references to equipment not supplied on this Project shall be crossed out.

F. Drawing Books:

1. All Drawings developed specifically for this Project shall be reduced to 11" X 17", folded and bound with durable plastic covers.
2. The Drawings provided shall be easily readable after printing, even if this requires breaking large Drawings into several parts. Text shall be no smaller than 1/16-inch.
3. The drawing book documents shall be produced with AutoCAD.
4. The electronic files shall be provided to the Airport at the completion of the Project on agreed media (e.g., flash drive; FTP).
5. Provide component identification and cross reference on the Drawings to allow the maintenance department to understand the function of each item (the block diagram), find the room where the device is mounted (Contract Document plans), find its location in a rack (Arrangement Drawings), find how it is wired (wiring diagrams), and its detailed Specifications (vendor data sheets), and how to repair it (spare part lists). Include the following drawings as a minimum:
6. Functional Block / One Line Diagram

    a. Provide overall block diagrams showing the major interconnections between components and subsystems.

7. Arrangement Drawings

    a. Provide Drawings showing the physical arrangement of all major system components.

        1) Camera
        2) CIB
        3) Quad
        4) Communications Room

8. Floor Plans

   a. Provide floor plans showing the location of all components in the system and at each door.
   b. Provide floor plan of the communications rooms showing the location of each piece of related equipment in the room.

9. Elevation Drawings

   a. Provide elevation drawings of all wall-mounted equipment showing the location of each component on the wall. Components on the walls shall be identified consistently with the functional block diagrams.

10. Wiring Diagrams

    a. Provide wire-by-wire diagrams showing all field- installed interconnections. The wire color and identification on the diagrams shall agree with the wire and wire markers installed on the equipment.

G. Submit this Closeout documentation in accordance with Division 01 of the Project Manual and any applicable supplements.

H. Document Package

1. At a minimum, the Contractor shall provide the following:

   a. Three (3) complete hard copies of the manufacturers' literature and of the drawing books.
   b. Three (3) complete soft copies of the above information in PDF format via digital storage device (e.g., USB flash drive) or FTP/download site link.
   c. Three (3) complete soft copies of the drawing books in AutoCAD "dwg" format.

      1) All documents provided by the Contractor in digital format via the internet, email, etc. shall be password protected.
      2) Documents to be provided to DFW ITS (Gregg Weiland; via cell 469-988-3294, or gweiland1@dfwairport.com to coordinate); copy transmittal to DFW Project Manager.

1.9 INTELLECTUAL PROPERTY

A. Should patented articles, methods, materials apparatus, etc., be used in this Work, the Contractor shall acquire the right to use same. The Contractor shall hold the DFW DPS and Airport Board and his agents harmless for any delay, action, suit, or cost growing out of the patent rights for any device on this Project.

B. Should copyrighted software be used in this Work, the Contractor shall acquire the right to use same. The Contractor shall hold the DFW DPS and Airport Board and his agents harmless for any delay, action, suit, or cost growing out of the copyrights for any software on this Project.

C. All software required for the complete operation of the system as specified herein shall be delivered with either full Ownership transferred to the DFW DPS and Airport Board or a non-time

limited License to use on each machine it is installed on, including the right to make backup copies.

1.10 DELIVERY, STORAGE AND HANDLING

A. Deliver materials factory-packaged in containers or reels and handle them in accordance with manufacturer's recommendations. Store in a clean, dry space and protect products from damaging fumes and traffic. Handle materials carefully to avoid damage.

B. Storage space on the project site may be limited. Contractor shall coordinate delivery and arrange storage of materials and equipment with the Owner.

C. Components sensitive to damage in a harsh environment shall be stored off-site and delivered as needed.

D. Provide protective covering during construction to prevent damage or entrance of foreign matter.

E. The Contractor is responsible for on-site security of tools, test equipment and materials.

F. Replace at no expense to Owner, product damaged during storage, handling, or the course of construction.

1.11 PROJECT CONDITIONS

A. Verify conditions on the job site are applicable to this Work. Notify Architect in writing of discrepancies, conflicts, or omissions promptly upon discovery.

B. The Drawings diagrammatically show cabling and arrangements of equipment fitting the space available without interference. If conditions exist which make it impossible to install Work as shown, recommend solutions and/or submit drawings to the Architect for approval, showing how the Work may be installed.

1.12 MATERIAL PURCHASES

A. Latest Technology

1. The Contractor shall purchase products and materials in a timely manner to meet construction schedules. However, the Contractor shall not purchase products so far advanced of the date(s) of installation, that they become technologically obsolete or replaced with newer technologies.
2. In the event the manufacturer(s) of submitted products and materials have upgraded or replaced their products and materials with newer or improved technologies at the time of purchase, the newer or improved products or materials shall be provided unless they are incompatible with the rest of the SSS, or so directed by the Design Consultant.

3. Latest technology products and materials shall be operationally and functionally equivalent or superior to the submitted products and materials. These products shall be submitted to the Design Consultant for approval before ordering.

1.13 WARRANTY

A. Warrant labor and product to be free of defects and deficiencies, and to conform to the drawings and specifications as to kind, quality, function, and characteristics, following Contractor Warranty requirements defined in Division 01. Should a failure occur within the Contractor warranty period, the Contractor shall provide all labor and materials necessary to restore the system to the condition required for the Final Test and Acceptance for this Contract, at no cost to the DFW Airport Board.

B. During the Warranty period, additional cameras and components may be connected, and their use entered into the video management system. New devices will be connected in the same manner as shown on the Drawings for this Contract and the existence of the new connections shall not void this guarantee.

C. All surplus parts and pieces to the installation shall be turned over to the Owner for use as spare parts inventory. Parts replaced during the warranty period shall have a warranty matching that of the original part from the date of replacement.

PART 2 – PRODUCTS

2.1 GENERAL

A. The products specified in this document do not necessarily constitute the exhaustive list of products required to complete the statement of work. Except where described in the SUMMARY subpart of this document, the contractor is responsible for providing any other parts and materials needed to deliver a complete and working system.

2.2 ACCEPTABLE VENDORS

A. Subject to compliance with requirements, install products from the following manufacturers:

1. SSS Components
    a. Fixed IP Cameras:
        1) Axis
    b. Fixed Camera Housings, Brackets and Mounts:
        1) Axis
    c. Pan/Tilt/Zoom IP Cameras:
        1) Axis

d. Security Intercom System

1) Zenitel Stentofon

B. Part Numbers are provided for convenience purposes only; the contractor is responsible for the complete material list and quantities.

2.3 ACCEPTABLE DISTRIBUTORS

A. The Contractor shall procure all components through manufacturer authorized product distributors.

2.4 FIXED NETWORK CAMERAS

A. Type F2 Camera

1. Capabilities include:

a. Single 2 megapixel sensor.
b. Sensor has pan, tilt, and rotate capabilities.

2. Video performance:

a. Digital Video Compression methods supported must include:

1) H.264 (high profile)
2) H.265

b. Video Resolutions include:

1) 1280 x 720
2) 1920 x 1080

c. Frame Rate capable of no less than thirty (30) images per second for all required digital video compression methods and all required video resolutions.
d. Supports multiple simultaneous unicast video streams.

3. Lens features

a. Remote zoom and focus.
b. Built-in infrared emitter for outdoor and low light indoor spaces.
c. Varifocal, 3.4 - 8.9 mm focal length range

1) Housing:

d. NEMA and IP rating must match the environment in which the camera is installed.
e. IK10 impact rating.
f. Dome color to be “smoked” and must induce no more than 0.5 f-stop light loss of light attenuation.

4. Power:

a. IEEE 802.3af Power over Ethernet.

5. Mounting options:

    1) Ceiling Surface Mount
    2) Ceiling Flush Mount
    3) Wall Surface
    4) Wall Arm Mount
    5) Pole Mount
    6) Pendant Mount
    7) Parapet Mount

6. Approved products:

    a. Axis P3265-V (indoor only)
    b. Axis P3265-LV (indoor only, low light spaces)
    c. Axis P3265-LVE (indoor/outdoor)
    d. Owner approved equivalent.

B. Type MS2 Camera

1. Capabilities include:

    a. Dual 2 megapixel sensors, with one IP address.
    b. Each sensor has pan, tilt, and rotate capabilities.

2. Video performance:

    a. Digital Video Compression methods supported must include:

        1) H.264 (high profile)
        2) H.265

    b. Video resolutions per sensor include:

        1) 1280 x 720
        2) 1920 x 1080

    c. Frame Rate capable of no less than thirty (30) images per second for all required digital video compression methods and all required video resolutions.
    d. Supports multiple simultaneous unicast video streams.

3. Lens features

    a. Remote motorized zoom and focus.
    b. Built-in infrared emitters.
    c. 180-degree horizontal field of view
    d. Varifocal, 3 - 6 mm focal length range

4. Housing:

    a. NEMA 4X rating.
    b. IP66 ingress protection rating
    c. IK10 impact rating.
    d. Built-in tamper switch.
    e. Dome color to be “smoked” and must induce no more than 0.5 f-stop light loss of light attenuation.

5. Power:

a. IEEE 802.3af Power over Ethernet.

6. Mounting options include:

a. Ceiling Surface Mount
b. Wall Surface
c. Wall Arm Mount
d. Pendant Mount

7. Approved products:

a. Axis P3715-PLVE (indoor/outdoor)
b. Approved equivalent.

C. Type MS4 Camera

1. Capabilities shall include:

a. Four HD sensors, with one IP address.
b. Each sensor has pan, tilt, and rotate capabilities.

2. Video performance:

a. Digital Video Compression methods supported must include:

1) H.264 (high profile)
2) H.265

b. Video resolutions per sensor include:

1) 1920 x 1200 per sensor

c. Frame Rate capable of no less than thirty (30) images per second for all required digital video compression methods and all required video resolutions.
d. Supports multiple simultaneous unicast video streams.

3. Lens features

a. Remote motorized zoom and focus.
b. Built-in infrared emitters
c. 360-degree horizontal field of view
d. Minimum 3 - 6 mm focal length range

4. Housing:

a. NEMA 4X rating.
b. IP66 ingress protection rating
c. IK09 impact rating.
d. Dome color to be “smoked” and must induce no more than 0.5 f-stop light loss of light attenuation.

5. Power:

a. IEEE 802.3af Power over Ethernet.

6. Mounting options include:

a. Ceiling Surface Mount

b. Wall Surface
c. Wall Arm Mount
d. Pendant Mount

7. Approved products:

a. Axis P3727-PLE (indoor/outdoor)
b. Approved equivalent.

D. Type MS4E Camera

1. Capabilities shall include:

a. Four Quad HD sensors, with one IP address.
b. Each sensor shall have pan, tilt, and rotate capabilities.

2. Video performance:

a. Digital Video Compression methods supported must include:

1) H.264 (high profile)
2) H.265

b. Video resolutions per sensor include:

1) 1920 x 1200
2) 2560 x 1440

c. Frame Rate capable of no less than thirty (30) images per second for all required digital video compression methods and all required video resolutions.
d. Supports multiple simultaneous unicast video streams.

3. Lens features

a. Remote motorized zoom and focus.
b. Built-in infrared emitters.
c. 360-degree horizontal field of view
d. Varifocal, 3 - 6 mm focal length range

4. Housing:

a. NEMA 4X rating.
b. IP66 ingress protection rating
c. IK09 impact rating.
d. Dome color to be “smoked” and must induce no more than 0.5 f-stop light loss of light attenuation.

5. Power:

a. IEEE 802.3af Power over Ethernet.

6. Mounting options include:

a. Ceiling Surface Mount
b. Wall Surface
c. Wall Arm Mount
d. Pendant Mount

7. Approved products:

   a. Axis P3719-PLE (indoor/outdoor)
   b. Approved equivalent.

2.5 PANORAMIC CAMERAS

A. Type P12 Camera

1. Capabilities include:

   a. Single 12 megapixel sensor.

2. Video performance:

   a. Digital Video Compression methods supported must include:

      1) H.264

   b. Video Resolutions include:

      1) 2992 x 2992
      2) 3584 x 1344
      3) 3584 x 2688

   c. Frame Rate capable of no less than twenty (20) images per second for all required digital video compression methods and all required video resolutions.
   d. Supports multiple simultaneous unicast video streams.

3. Lens features

   a. Fixed iris, fixed focus, IR corrected.
   b. Fixed focal length.
   c. Built-in infrared emitters.

4. Housing:

   a. NEMA 4X rating.
   b. IP66 ingress protection rating
   c. IK10 impact rating.

5. Power:

   a. IEEE 802.3af Power over Ethernet.

6. Mounting options:

      1) Ceiling Surface Mount
      2) Pendant Mount

7. Approved products:

   a. Axis M3058-PLVE (indoor/outdoor)
   b. Owner approved equivalent.

2.6 PAN/TILT/ZOOM NETWORK CAMERAS

A. Type PTZ Camera

1. Video performance:

a. Digital Video Compression methods supported shall include:

1) H.264 (high profile)
2) H.265

b. Video Resolutions include:

1) 1280 x 720
2) 1920 x 1080

c. Frame Rate capable of no less than thirty (30) images per second for all required digital video compression methods and all required video resolutions.
d. Supports multiple simultaneous unicast video streams.

2. Lens features

a. Remote pan, tilt and zoom.
b. Varifocal, 4.3 - 137 mm focal length
c. Autofocus and auto-iris capability.

3. Housing:

a. NEMA 4X
b. IP66 ingress protection rating
c. IK10 impact rating
d. Dome color to be “smoked” and must induce no more than 0.5 f-stop light loss of light attenuation.

4. Power:

a. IEEE 802.3at PoE+
b. 24VAC

5. Mounting options:

1) Ceiling Surface Mount
2) Ceiling Recessed Mount
3) Wall Arm Mount
4) Pole Mount
5) Pendant Mount
6) Parapet Mount

6. Approved products:

a. Axis P5655-E (indoor/outdoor)
b. Owner approved equivalent.

B. Type FPTZ

1. Capabilities include:

a. Three 5 fixed megapixel sensors and one PTZ sensor.
b. PTZ sensor has remote pan, tilt, and rotate capabilities.

2. Video performance:

   a. Digital Video Compression methods supported shall include:

      1) H.264 (high profile)
      2) H.265

   b. PTZ video resolutions include:

      1) 1280 x 720
      2) 1920 x 1080

   c. Fixed video resolutions per sensor include:

      1) 1920 x 1080
      2) 2592 x 1944

   d. Frame Rate capable of no less than thirty (30) images per second for all required digital video compression methods and all required video resolutions.
   e. Supports multiple simultaneous unicast video streams.

3. PTZ Lens features

   a. Remote pan, tilt and zoom.
   b. Varifocal, 4.3 - 137 mm focal length
   c. Autofocus and auto-iris capability.

4. Fixed lens features

   a. Fixed focal length.

5. Housing:

   a. Dome color to be “smoked” and must induce no more than 0.5 f-stop light loss of light attenuation.

6. Power:

   a. IEEE 802.3at PoE+

7. Mounting options:

      1) Ceiling Surface Mount
      2) Pendant Mount

8. Approved products:

   a. Axis M5000 (indoor only)
   b. Owner approved equivalent.

2.7 NETWORK ENCODERS AND DECODERS

A. Video Encoder

1. Provide multi-channel video encoders for all analog camera signals.
2. Encoder is to be equipped with the following minimum I/O port count:

   a. (8) or (16) Analog video inputs, with BNC connectors.

b. (1) RS-232/485/422 data port for PTZ control.
c. (4) Alarm Inputs
d. (4) Relay Outputs
e. (1) 10/100/1000Base-T Ethernet

3. Include a rack mount kit.
4. Approved products:

a. NICE NVE 1008, or current model
b. NICE NVE 1016, or current model
c. Owner approved equivalent.

B. Video Decoder

1. Provide video decoders for dedicated viewing locations.
2. Decoder shall have the following capabilities:

a. Compatible with the existing video management system.
b. 10/100 Mbps Ethernet connection
c. Supports VGA/DVI monitors.
d. Full and split screen modes
e. Remote management

3. Decoders must be installed in a rack in a communications room. Include a rack mount kit, as required.
4. Approved products:

a. NICE NVD 5104, or current model.
b. NICE NVD 1002, or current model.
c. Owner approved equivalent.

C. Video Extenders

1. Provide video extenders from video decoders to monitors.
2. Extender must be capable of transmitting standard 1920x1080 video over Category-rated twisted pair cable.
3. Include a power supply for the transmitter and receiver.
4. Include video cables between the PC and monitor and the extenders.
5. Basis of design:

a. Extron DTP T/R DP 4K 330
b. Approved equivalent

2.8 CEILING ENCLOSURES

A. Provide ceiling enclosures for all new “quads” added to the airport security surveillance system.

1. The enclosure shall accommodate a minimum of 2 RU of active electronics and 3 RU, or more, of passive connectivity.
2. The enclosure shall be designed to accommodate an electrical receptacle.
3. The enclosure shall include airflow and heat dissipation features, allowing for proper thermal management.

4. The enclosure shall be designed to mount in a conventional 2-foot, by 2-foot, or 2-foot, by 4-foot drop tile ceiling.
5. The door shall have a 50 lb. weight capacity.
6. Include door plate, equipment mounting bracket, horizontal cable management, a low decibel fan assembly, air dam and electrical junction box.
7. Provide a grounding and bonding kit.
8. Equip each enclosure with a tamper switch.
9. Approved assembly:
    a. Panduit
        1) Panduit PZICEA Active In-Ceiling Enclosure
        2) Panduit PZICGK Grounding & Bonding Kit
    b. Owner approved equivalent.

2.9 SECURITY INTERCOMS AND MICROPHONES

A. Where shown on drawings

B. Wall Mount Intercom Substation

1. Provide intercom stations, where indicated in drawings.
2. Substation to be a flush mount station, with a stainless-steel cover and button.
3. Substation shall utilize Voice-over-IP (VoIP) technology.
4. Substations shall be powered using Power-over-Ethernet (PoE) technology.
5. Approved products:
    a. Zenitel TMIS-1, Model #1008116010
    b. Owner approved equivalent.

C. Handset Intercom Substation

1. Provide an intercom substation, with a handset, for each SSCP lane and passenger exit podium.
2. Approved products:
    a. Zenitel Stentofon IP Hotline Station Model # 1008070010
    b. Owner approved equivalent.

D. Surveillance Microphones

1. Provide a surface mounted IP microphone for each SSCP lane.
2. The microphone shall consist of a bare intercom substation board and microphone assembly.
3. Substation shall utilize Voice-over-IP (VoIP) technology.
4. Substations shall be powered using Power-over-Ethernet (PoE) technology.
5. Mount the board assembly in a black plastic, surface mount enclosure.
6. Affix the enclosure to the top of X-ray inspection machine, near the operator's position, and cable to the nearest airside quad.
7. Approved products:

a. Zenitel Substation Kit Model 1008090200
b. Owner approved equivalent.

2.10 CABLING AND MISCELLANEOUS ITEMS

A. Horizontal cabling and connectors for all cameras shall be provided, installed, and tested under Division 27.

B. Camera Interface Boxes

1. Provide camera interface boxes near each camera to contain the cable service loop and work area outlet. The box also serves as a transition point between hard conduit from the nearest IT presence and flexible conduit to the camera.
2. The box shall carry a NEMA rating appropriate for the environment in which it is installed.
3. The box shall have a minimum dimension of 10-inches, by 10-inches, 4-inches.
4. The cover shall be tethered to the box with a safety chain.
5. Basis of design:

a. Hoffman ASE10X10X4 Type 1
b. Hoffman A10104GSC Type 3
c. Hoffman ASE10X10X4SSNK Type 4X

PART 3 – EXECUTION

3.1 GENERAL

A. Install the equipment in accordance with the contract documents, all applicable codes and standards and the Manufacturer's written instructions. The installed system shall meet all applicable equipment and performance requirements.

B. Any disruption of service to the SSS must be coordinated with the Owner through the Impairment process. Impairment notices must be requested 7 days prior to the service disruption.

C. Provide and install and make fully operational all components required for a fully functional system.

3.2 EXAMINATION

A. Inspect the jobsite and survey the conditions to be encountered during performance of the work. This shall be accomplished prior to starting the work. Failure of the Contractor to become familiar with the site conditions shall not relieve the Contractor of responsibility for full completion of the work in accordance with the contract provisions.

B. Verify that all conduit, wires, cables, security equipment are installed and ready for connection and integration with the rest of the system.

C. Examine area to be protected and verify that environmental characteristics will not affect effective communication and interfacing. Report observed problems in writing.

D. Determine that power supplies, conduit, wires, cables, connections, and equipment are ready for installation and interfacing before attempting installation.

E. Check all power and communications cabling for continuity before making connections.

F. Visually inspect each piece of equipment, determine defects, and correct.

G. Inspect locations where installation work will be performed. Verify that site conditions found are in accordance with drawings and are acceptable for Contractor's installation work. Report any discrepancies in writing to the Design Consultant, stating suggested means of correction.

3.3 INSTALLATION

A. The Contractor shall investigate the Site and become thoroughly familiar with the existing security surveillance system, Airport security and Airport operations. The Contractor shall be consistent in architecture, materials, and programming with existing environment. All SSS processing components shall be installed and tested for proper operation before any device is cut over to the SSS.

B. Install all system components, including furnished equipment, and appurtenances in accordance with the manufacturer's instructions, and as shown, and shall furnish all necessary interconnections, services, and adjustments required for a complete and operable system as specified and shown. Control signal, communications, and data transmission line grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.

C. Install the equipment in accordance with the contract documents, all applicable codes and standards and the Manufacturer's written instructions. The installed system shall meet all applicable equipment and performance requirements.

D. Standardize the installation practices and material to provide uniform materials and procedures to the maximum extent possible.

E. Locate pull boxes, wire-ways or other items requiring inspection, removal, or replacement conveniently and accessibly with reference to the finished facilities.

F. Where possible for ceiling mounted and wall mounted cameras, install a suitable sized camera interface box, and feed the camera via a 1-inch flexible liquid-tight conduit to the mounting location. Provide an additional eight feet of slack in the flexible conduit, over what is required, to ease subsequent camera repositioning.

G. Install the security system equipment in accordance with the standards for safety, NFPA 70, UL 681, UL 1037 and UL 1076, and the appropriate installation manual for each equipment type.

H. All wiring, including low voltage wiring outside the control console, cabinets, boxes, and similar enclosures, shall be installed in rigid galvanized steel conduit conforming to UL 6 (when outdoors), or electric metallic tubing (EMT) when indoors. Minimum conduit size shall be 1-inch, except 3/4-inch is allowed between last pull box and end device, in the form of flexible liquid tight conduit. All other electrical service work shall be as specified with electrical specifications and drawings that are part of the contract document and as shown. Grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.

I. All equipment connected to alternating current circuits shall be protected from power line surges. Equipment protection shall meet the requirements of ANSI C62.41. Fuses shall not be used for surge protection.

J. All inputs shall be protected against surges induced on device wiring. Outputs shall be protected against surges induced on control and device wiring installed outdoors and as shown. All communications equipment shall be protected against surges induced on any communications circuit.

K. All cables and conductors, except fiber-optics, shall have surge protection circuits installed at each end. Fuses shall not be used for surge protection.

L. Calibrate all equipment.

M. Inspect each component, determine obvious defects, and correct.

N. All electrical service (not low voltage) work shall be in accordance Division 26.

O. Perform tests as recommended by manufacturer or as required to ensure the SSS equipment is operating properly and meets specified requirements.

P. Correct all deficiencies detected and retest affected components.

Q. Record test data, tabulate, and write narrative describing tests, results, deficiencies found, corrective measures, and results of retesting. Certify that the security equipment has been tested and is ready for performance verification testing.

R. Service Loops

1. Service loops shall be provided for all SSS cabling. Service loops shall be a minimum 10 feet in length on both ends of cable runs.

S. Contractor shall be responsible for verifying the exact final location of each camera prior to installation. The Contractor shall be responsible to coordinate with lighting, signage, and other subcontractors to avoid conflicts with intended field of view as indicated in the drawings.

1. If available, arrange for verification of surveillance camera mounting arrangement and final locations utilizing 3D modeling of the new condition.
2. If 3D modeling is not available, Contractor shall arrange for reviewing the proposed camera locations with the Owner on-site and provide a portable surveillance camera (with

extension pole) to validate camera views, positions, and mounting locations. This shall be performed when construction has advanced enough to view final major architectural features and potential obstructions.

3. Contractor shall provide Area Tilting and PTZ preset programming for each camera.

3.4 INSTALLATION OF CONDUCTORS

A. Make conduit connections to equipment using flexible conduit. Use liquid-tight flexible conduit with watertight connectors in damp or wet locations.

B. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

C. Install receptacle outlet to accommodate connection with attachment plug.

D. Install cord and cap for field-supplied attachment plug.

E. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

F. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

G. Install terminal block jumpers to complete equipment wiring requirements.

H. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements. Installation of conductors shall comply with Division 26 Specification “Electrical Connections to Equipment”, and meet all applicable manufacturer recommendations, local, state, and national codes.

3.5 IDENTIFICATION AND LABELING

A. All devices, cables, conduits, and cabinets shall be labeled in accordance Specification Section 270553, “Identification for Communications Systems”.

B. The Contractor shall develop and submit for approval a labeling system consistent with that used on the Owner’s Consolidated System. As a minimum compliance the labeling system shall clearly identify all components of the system, including cameras, multiplexers, and ports. Identifiers shall be unique and consistent in depiction. All labeling information shall be recorded on the as-built documents and in the PSIM. All test documents shall reflect the appropriate labeling scheme.

C. Control and Display Labels:

1. Each control, display and any other item of equipment that must be located, identified, read, or manipulated shall be appropriately and clearly labeled to permit rapid and accurate identification of its operating state of position.

2. Orient Labels and information thereon horizontally so that they may be read quickly and easily. Vertical orientation shall be used only where space is limited.

D. Locate labels so that there is no confusion as to which item they identify. Labels shall not obscure any other information required by the operator. Controls shall not obscure labels. The location of labels shall be consistent.

E. Use Permanent Room Numbers as indicated on the Room Finish Schedules for construction period identification of rooms and building spaces. All required shop drawings and submittals, including manuals and Project Record Drawings shall identify rooms and spaces using the Permanent Room Numbers. Permanent identification devices including signage, equipment nameplates, and panels shall use the Permanent Room Numbers.

3.6 FIELD QUALITY CONTROL

A. Provide all personnel, equipment, instrumentation and supplies necessary to perform all testing.

B. A phased installation and functional testing approach shall be implemented to ensure that the system will operate as designed. Successful completion of each testing phase is required before proceeding to the next level of testing. Any problems discovered during these tests will be documented and brought to the attention of the Owner and corrected at Contractor's expense. The Contractor shall promptly correct all problems encountered, providing field service personnel appropriately trained for the types of problems encountered. Prior to cut over of the first portal, the door configuration databases must be completely populated.

C. Functional Testing Approach

1. When the initial conduit installation is completed, an inspection must be called. Upon acceptance of the conduit installation by the Owner, wire may be installed in the conduit.
2. When the installation of the wiring is completed, an inspection must be called. Upon acceptance of the wire installation by the Owner, the devices may be installed.

a. Upon completion of work, perform operational system tests to verify that system complies with Specifications. Include all modes of system operation. Test equipment for proper operation in all functional modes. The functional testing shall as a minimum include:

1) Operation of all electrical, mechanical, and software controls and verification that the control performs the designed function.
2) Verification that all conductors are terminated properly.
3) Verification that all cameras are aimed and focused properly. Conduct a walk test of the area covered by each camera to verify the field of view. A test target must be used to verify that proper focus and image resolution have been achieved for each camera. Recorded video demonstrating proper focus and resolution must be available to the Owner at time of acceptance testing.
4) Verification that all audio sources are working properly, that the levels are properly set, and that the speech intelligibility is acceptable. Recorded video demonstrating audio intelligibility must be available to the Owner at time of acceptance testing.

5) Verification that fixed mount cameras facing the direction of rising or setting sun are aimed sufficiently below the horizon so that the camera does not view the sun directly.
6) If vehicles are used in proximity of the assessment areas, verification of night assessment capabilities and determination if headlights cause blooming or picture degradation.
7) Verification that all other ancillary video and audio equipment is functioning properly.
8) Verification that video equipment with alarm indicators annunciates alarms properly and under the correct conditions.
9) Aim each surveillance camera for the optimum view of the area that it is intended to cover using a monitor to view the camera output. Final aiming shall be approved and accepted by the DFW Airport Board.
10) Schedule tests after pretesting has been successfully completed and system has been in normal functional operation for at least 14 days. A spreadsheet listing all cameras to be tested and accepted by the owner along with highlighted floor plans must be provided to the Owner when scheduling acceptance tests. The spreadsheet shall include the following fields:
    a) Camera name/number
    b) Type
    c) Lens
    d) Target resolution (pixels per foot).
    e) IPS for event and non-event modes.
    f) Audio verification
    g) Drawing sheet reference number
    h) Date of pretesting
    i) Print a hardcopy of an image capture from each camera view to demonstrate that the test target is in proper focus.
        a. Export the entire view (do not crop or resize the image).
        b. Print the exported image on letter-size paper.
        c. Label each print out with the camera name and location.
        d. These hardcopies will be considered part of the camera acceptance document and must be submitted with each request for final acceptance testing.
    j) Field for Designer acceptance initials
    k) Field for Owner acceptance initials

3. After the contractor installation and testing is completed, the device is turned over to the Owner for further functional testing and acceptance. Testing shall be observed by a DFW DPS or another Owner representative or designee. The person observing the testing shall sign and date (including time of day) all forms as required proving that the test was witnessed.
4. Upon acceptance of these tests, the Owner will take over the active management. From this point forward, the contractor may not perform any further work on the device without submitting an impairment request.

D. The security surveillance system work will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports.

F. The SSS nor any of its components will not be considered as “accepted” until the Designer and the Owner have formally participated in the Acceptance Testing process and initialed acceptance test spreadsheet indicating acceptance of each individual camera.

3.7 ADJUSTING AND CLEANING

A. Upon completion of the installation, make all components free of any oil, grease, dust, and debris.

B. Touch-up scratched and marred surfaces to match original finishes; remove dirt and construction debris.

C. Clean installed items using methods and materials recommended in writing by manufacturer.

D. Clean security surveillance system components, including camera housing windows, lenses, and monitor screens.

3.8 ASSET INFORMATION AND TAGGING

A. Provide inventory information and tag all equipment (greater than $2,000 in value) as directed by the Owner for update in the Owner’s Inventory System(s).

1. Asset tracking systems may include BIM, ITS Inventory, and financial inventory systems.
2. Asset tags and inventory control sheet are to be obtained from the Owner. Data to be captured shall include but not be limited to asset number, description, location, make/model, serial number, label name, etc.
3. Data required to be obtained shall be coordinated with Owner.
4. Signed, completed inventory control sheet shall be provided at substantial completion and included in as-built documents.
5. Asset inventory information shall also be provided in Excel format to facilitate import by Owner into Owner system(s).

B. Coordinate with Owner for information required for population in the Airport GIS System.

1. Provide X/Y coordinate information for GIS mapping. Request assistance from ITS GIS Team if required to determine/confirm information.
2. Other component meta data as defined.

3.9 ACCEPTANCE

A. Acceptance will be withheld until the successful completion of the following:

1. Acceptance of all submittals.
2. Delivery of final documentation (including as-built documents).
3. Camera aiming.
4. Successful testing.

5. Successful demonstration, including camera operation and documentation review.

END OF SECTION 28 23 00

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