SECTION 27 42 16 – TRANSPORTATION INFORMATION DISPLAY SYSTEMS

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. This section includes the minimum requirements for the installation of new systems relating to FIDS, BIDS, CIDS, and GIDS; collectively called EVIDS.

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

1. DFW Airport Content Players
2. American Airlines Content Player
3. Displays
4. Other items necessary for delivering a complete and working system

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.	BICSI	Building Industry Consulting Service International
4.	BIDS	Baggage Information Display System
5.	CIDS	Counter Information Display System
6.	CR	Communications
7.	CTS	Certified Technology Specialist
8.	DFW	Dallas/Fort Worth International Airport
9.	DS	Dynamic Digital Signage
10.	EVIDS	Electronic Visual Information Display System
11.	FCC	Federal Communications Commission
12.	FIDS	Flight Information Display System
13.	GB	Gigabyte
14.	GHz	Gigahertz
15.	GIDS	Gate Information Display System
16.	HDD	Hard Disk Drive
17.	LCD	Liquid Crystal Display
18.	NECA	National Electrical Contractors Association
19.	NEMA	National Electric Manufacturers Association
20.	NFPA	National Fire Protection Association
21.	OAR	Owner’s Authorized Representative
22.	RIDS	Ramp Information Display System
23.	SSCP	Security Screening Checkpoint
24.	RPM	Revolutions Per Minute
25.	STD	Standard
26.	TSA	Transportation Safety Administration

27. TIA Telecommunications Industry Association
28. UL Underwriters Laboratories

1.3 QUALITY ASSURANCE

A. 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 OAR.

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 OAR.

C. Contractor’s Qualifications:

1. Firms regularly engaged in the installation of audiovisual display systems and that have five (5) years of installation experience with systems similar to that required for this project.
2. 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.
3. Provide verification that installation personnel responsible have been properly trained to install the products described in this Section.
4. Provide an INFOCOMM CTS certified professional for oversight on this project. This person does not have to be working on-site but must be accessible to answer questions and provide weekly status reports. The CTS shall be a full-time employee of the contractor.
5. Provide full time project manager with a minimum of ten (10) 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 OAR.

D. 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.

E. Material and Work specified herein shall comply with the applicable requirements of:

1. NECA 1 – Standard Practice of Good Workmanship in Electrical Construction, 2015
2. ANSI/TIA-568.0-D – Generic Telecommunications Cabling for Customer Premises, 2015
3. ANSI/TIA-568.0-D-1 – Generic Telecommunications Cabling for Customer Premises – Addendum 1: Updated References, Accommodation of New Media Types, 2017
4. ANSI/TIA-568.1-D – Commercial Building Telecommunications Infrastructure Standard, 2015
5. ANSI/TIA-568.1-D-1 – Commercial Building Telecommunications Infrastructure Standard – Addendum 1: Updated References, Accommodation of New Media Types, 2018
6. ANSI/TIA-606-C – Administration Standard for Telecommunications Infrastructure, 2017
7. ANSI/TIA-607-D – Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises, 2019
8. Title 47 CFR Part 15, Subpart B – Radio Frequency Devices, Unintentional Radiators
9. NFPA 70 – National Electrical Code, 2017

10. BICSI – Telecommunications Distribution Methods Manual, 13th Edition
11. DFW Airport Design Criteria Manual
12. Applicable codes and directives of authorities having jurisdiction

F. 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 between the aforementioned, notify the OAR in writing prior to commencement of affected work.

1.5 SCHEDULING

A. The Contractor shall comply with all scheduling requests established by OAR, both prior to commencing Work, and during construction. The Contractor shall provide a detailed schedule of work to be performed.

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 OAR 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 requirements as given in this document are to be adhered to unless revised by the OAR in writing.

E. 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 27 05 00.

C. Produce Shop Drawings for ALL EVIDS locations relative to building structure (columns, floor or ceiling) and its relationship to electrical, mechanical elements. Include the Owner and Service Boundary assignment of each display.

D. Provide product data for the following:

1. Product data consisting of manufacturers specifications for each type of product to be installed, all applicable certifications and elevation/plan documents supporting compliance with stated Specifications.
2. Proposed format of as-built documentation.

1.8 MOCK-UP

A. Build mockup to demonstrate quality standards and functions for fabrication and installation of Transportation Information Display Systems elements.

1. Mockup shall consist of a GIDS as specified here.
2. Mockup shall consist of a BIDS as specified here.
3. All LED's shall be fully operational for testing of security systems.
4. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.
5. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 CONTRACTOR CLOSE OUT SUBMITTALS

A. Submit Closeout documentation in accordance with Division 01 of the Project Manual and any applicable supplements. The number of submittal sets required is the greater of either the requirements of Division 01 of the Project Manual, or a minimum of four (4) sets.

1. Segregate documents into separate binders containing data relevant to operational, maintenance, and warranty issues.
2. Provide above closeout documentation as an electronic file in PDF format.

B. Warranty and Maintenance:

1. Record Drawings

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials factory-packaged in containers or reels and handle 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 project site may be limited. Contractor shall coordinate delivery and arrange storage of materials and equipment with the OAR.

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. 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 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. Repair or replace defects occurring in labor or product within the Warranty period without charge.

B. All surplus parts and pieces to the installation shall be maintained as a spare parts inventory at the building site. Parts replaced during the warranty period shall have a warranty matching that of the original part from 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 DFW AIRPORT EVIDS SERVERS

A. Content Player

1. Provide one media player for each deployed FIDS display.
2. Player motherboard shall have the following features:

    a. Intel® Core™ i5-3427U CPU w/heatsink and fan
    b. Intel® QS77 Express Chipset
    c. Intel® High Definition Audio
    d. Intel® Gigabit Ethernet Controller
    e. Motherboard shall be equipped with the following connectors:

        1) Two SO-DIMM slots supporting up to 32 GB of 1333/1600MHz DDR-3 memory
        2) Dual Mini DisplayPort 1.1a ports

3) High definition multimedia interface (HDMI*) port supporting 1.4a
4) 8-channel (7.1) digital audio via HDMI 1.4a output and via one DisplayPort 1.1a connector
5) One USB 3.0 port (front panel)
6) Two USB 2.0 ports (back panel)
7) Two USB 2.0 ports (internal headers)
8) RJ-45 LAN connector (back panel)
9) Full-sized mini PCI Express* (PCIe) with mSATA support
10) Half-sized mini PCIe

f. Motherboard shall come with a 3-year warranty

3. Player shall be equipped with the following components:

a. MLC Internal Solid-State Drive (SSD)

1) SATA 6Gb/s
2) 550 Mb/s Read, 475 Mb/s Write Speeds
3) 4K 15000 Read IOPS, 80000 Write IOPS
4) 60 GB Storage Capacity
5) mSATA Form Factor

b. 8GB DDR3-1600 (PC3-12800) CL11 SDRAM
c. Intel® Wireless Wi-Fi Link 802.11a/g/n Radio
d. Metal enclosure, with cooling fan.

4. The operating system shall be Windows® Embedded Standard 7 Runtime.
5. Player shall be bundled with the following accessories:

a. Power Supply
b. HDMI Cable
c. RS-232 Control Cable
d. 3-Year "Swap-It" warranty on player

6. NUC allocation per display is as follows:

a. Public FIDS require one NUC per three displays.
b. Back-of-House FIDS require one NUC per two displays.
c. Gate Counter GIDS require one NUC per.

7. Approved Products:

a. Four Winds Interactive (www.fourwindsinteractive.com) FWP87-i5-BSW-DFW
b. Equivalent product by Now Micro (www.nowmicro.com)
c. Owner Approved Equivalent

2.3 FLIGHT INFORMATION DISPLAY SYSTEM (FIDS)

A. FIDS Display

1. Provide flat panel LED LCD displays for the FIDS banks in the public and concourse areas, as shown in the drawing set.
2. Displays shall be commercial-grade and use LED LCD technology.
3. The aspect ratio shall be 16:9.
4. The size shall be 43” diagonal.
5. The displays shall be capable of being mounted in a portrait orientation, without affecting the horizontal viewing angle.
6. Displays shall be equipped with an analog VGA (15-pin) input and a HDMI input.
7. Acceptable Products:

a. NEC P435
b. Owner Approved Equivalent

B. Display Mount

1. Provide mounting brackets for FIDS displays.
2. Mount shall be designed to support the size and weight of the display.
3. Attach mount to the FIDS bank support structure, which will be provided by others.
4. Mount shall be of the tilt wall mount variety.
5. Acceptable Products:

a. Chief Manufacturing MTMS1U
b. Owner Approved Equivalent.

2.4 GATE INFORMATION DISPLAY SYSTEM (GIDS) AND COUNTER INFORMATION DISPLAY SYSTEM (CIDS)

A. Display

1. Provide flat panel LED LCD displays in each gate hold lounge for the CIDS or GIDS.
2. Displays shall be commercial-grade and use LED LCD technology.
3. The aspect ratio shall be 16:9.
4. The size shall be 43” diagonal.
5. Displays shall be equipped with an analog VGA (15-pin) input and a HDMI input.
6. Acceptable Products:

a. NEC P435
b. Owner Approved Equivalent

B. Display Wall Mount

1. Provide flat panel wall mounts for wall mounted CIDS or GIDS displays.
2. Mount shall be designed to support the size and weight of the display.
3. Mount shall be tilt wall mount.
4. Acceptable Products:

a. Chief Manufacturing MTM1U
b. Owner Approved Equivalent.

C. Display Pole Mount

1. Provide flat panel pole mounts for ceiling mounted CIDS or GIDS displays.
2. Mount shall be single-sided and designed to support the size and weight of the display.
3. Mount shall be ceiling, pole mount.
4. Provide Electrical Outlet Coupler, black in color, that provides four outlets.
5. Mount shall be capable of tilting down at least 20°.
6. Include an appropriate extension column (White), ceiling plate, escutcheon ring (White) and any other accessories required to provide a complete and working solution.
7. Acceptable Products:

a. Chief Manufacturing
b. Owner Approved Equivalent.
c.

2.5 MONITORS (MON)

A. Information Display

1. Display to be provided by the Owner.

B. Display Wall Mount

1. Provide flat panel wall mounts for the MON displays.
2. Mount shall be designed to support the size and weight of the display.
3. Mount shall be tilt wall mount.
4. Acceptable Products:

a. Chief Manufacturing
b. Owner Approved Equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation of displays until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify rack space and power in the TR(s).

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 ASSET MANAGEMENT

A. Install a DFW Airport provided asset tag on each DFW Airport media player and display.

B. Create a spreadsheet containing the following information for each media player.

1. Asset tag number
2. Serial number
3. MAC address
4. Installed location (e.g. airside FIDS bank at column line 125)

C. Turn the completed spreadsheet over to the Owner as soon as installation is complete.

3.4 INSTALLATION

A. Install displays and mounts in accordance with manufacturer's instructions.

B. Provide assistance when the Owner is installing and commissioning their OFOI or OFCI content computers.

1. Make any adjustments necessary to the video extension systems to provide a picture quality suitable to the Owner.

C. Perform testing of the complete installation to the Owner's satisfaction (e.g. content computer, video extension system, displays, etc.).

3.5 AC POWER AND GROUNDING

A. Coordinate and verify final connection of related electrical power and equipment grounding.

3.6 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 27 42 16

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