SECTION 27 32 26 – EMERGENCY PHONE SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. The Contractor shall secure, and pay for, as part of this contact agreement, the services of a qualified Emergency Phone System. Contractor to install the emergency phone stations and any associated power supply(s) that will connect to the Department of Public Safety (DPS) and Airport Operations Center (AOC) via the existing telephone/data system.

B. This Section covers installation and testing for emergency phone system and devices for Terminal C Central Terminal Area Expansion.

C. Provide all required labor, warranty labor, materials, equipment, system programming, testing, submittals and services necessary for a complete and operational garage emergency phone system as hereinafter described, and as shown on the design drawings.

D. Work shall begin at the source of 120 volt AC power for the emergency phone system stations and shall include but not be limited to the following:

1. Emergency Phone System Stations
2. Communications Cabling
3. Dedicated Power Circuits
4. CCTV Camera Cabling

E. It is intended that the design drawings and specification shall describe and provide for a working installation complete in every detail and all items necessary for such complete installation shall be provided whether or not specifically mentioned herein or shown on the design drawings.

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. CMR Communications Riser Cable
5. CMP Communications Plenum Cable
6. DCM Design Criteria Manual
7. DFW Dallas/Fort Worth International Airport
8. EIA Electronics Industries Association
9. FEP Fluorinated Ethylene Propylene
10. IDC Insulation Displacement Connector
11. IEC International Electrotechnical Commission
12. IEEE Institute of Electrical and Electronics Engineers
13. ISO International Standards Organization
14. MCR Main Communications Room
15. MER Main Equipment Room
16. NEMA National Electric Manufacturers Association

17. NEXT Near End Crosstalk
18. NFPA National Fire Protection Association
19. OAR Owner's Authorized Representative
20. PCI Panduit Certified Installer
21. RCDD Registered Communications Distribution Designer
22. RL Return Loss
23. STD Standard
24. STP Shielded Twisted Pair
25. TIA Telecommunications Industry Association
26. TR Telecommunications Room
27. TSA Transportation Security Administration
28. TSB Technical Services Bulletin
29. UL Underwriters Laboratories
30. UTP Unshielded Twisted Pair

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. Strictly adhere to all BICSI, EIA and TIA recommended installation practices when installing communications cabling.

D. Contractor's Qualifications:

1. Firms regularly engaged in the installation of Data Communications cabling 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 a BICSI RCDD 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 RCDD 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.

E. 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.

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

1. NECA 1 – Standard Practice of Good Workmanship in Electrical Construction, 2010
2. ANSI/NECA/BICSI-568 – Standard for Installing Commercial building Telecommunications Cabling, 2006
3. ANSI/TIA-568-C.0 – Generic Telecommunications Cabling for Customer Premises, 2009
4. ANSI/TIA-568-C.1 – Commercial Building Telecommunications Cabling Standard, 2009
5. ANSI/TIA-568-C.2 – Balanced Twisted-Pair Telecommunications Cabling and Components Standards, 2009
6. EIA/TIA TSB-36 – Additional Cable Specifications for Unshielded Twisted Pair
7. EIA/TIA TSB-40 – Additional Transmission Specifications for Unshielded Twisted Pair
8. EIA/TIA TSB-67 – Transmission Performance Specifications for Field-testing of Unshielded Twisted Pair Cabling Systems
9. ANSI/TIA-568-C.3 – Optical Fiber Cabling Components Standard, 2008
10. ANSI/TIA/EIA-569-A Commercial Building Standard for Telecommunications Pathways and Spaces, 1998-2004
11. ANSI/TIA/EIA-606-A – Administration Standard for the Telecommunications Infrastructure of Commercial Buildings, 1993-2002
12. ANSI-J-STD-607-A – Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications, 2002
13. ANSI/TIA-942 – Telecommunications Infrastructure Standard for Data Centers, 2005
14. NFPA 70 – National Electric Code, 2008
15. UL 13 – Standard for Safety for Power-Limited Circuit Cables
16. UL 444– Standard for Safety for Communications Cables
17. BICSI – Telecommunications Distribution Methods Manual, 12th Edition, 2009
18. IEEE 802 – Local Area Network Standard
19. DFW Airport Design Criteria Manual
20. American Airlines Facilities Design Guidelines
21. Applicable codes and directives of authorities having jurisdiction

G. 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 horizontal cabling, to include but not limited to, proposed routing and its location relative to building structure (columns, floor or ceiling) and its relationship to electrical, mechanical elements as well as any horizontal cables that may exceed 295’ in length (including service loops).

D. Provide all submittal requirements under this section as a single package.

E. 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. Manufacturer’s certificate of acceptance of the qualifications of the installing Contractor to install, test and maintain the manufacturer’s equipment.
3. Manufacturer’s installation specifications for UTP cabling and optical fiber, indicating minimum bend radius and maximum pull tension.
4. Outline of administration labeling scheme for voice and data communications cabling and termination locations per ANSI/EIA/TIA-606 and DFW/DCM.
5. Proposed format of as-built documentation.

1.8 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. Test reports on all copper and optical fiber cables (electronic file format and hard copy).

3. As-built cable schedules with recorded cable routing and lengths of each designated run.
4. As built documentation of all cabling systems.
5. As built documentation of IDF/TR modifications and associated cabinet elevations.
6. Laminated as-built drawing sheet of TR service area representing each level, with a scale of not less than 1/8”, mounted on the wall of each TR.

B. Warranty and Maintenance:

1. Test Report Binder(s)
2. Record Drawings

1.9 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.

1.10 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.

1.11 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, or for a period of 1 year from date of final completion, whichever is longer. 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.

C. In addition to the warranty outlined above, the Contractor shall facilitate a warranty between the Owner and the Manufacturer that provides coverage of the installed cabling system for a period of (25) twenty-five years (Panduit Certification Plus System Warranty). This warranty will cover the installed horizontal cabling system (Patch Panel to Workstation). Category 6 copper links originating from patch panels shall be warranted against the link performance minimum expected results defined in the ANSI/TIA/EIA Telecommunications Systems Bulletin (TSB-67), now incorporated into TIA/EIA 568-B, for Category 6 performance requirements. Category 6 copper links originating from wall mounted 110-style termination blocks shall be warranted against link performance minimum expected results for Category 6 performance requirements. Installation shall be performed by a Panduit Certified Installer.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. The Manufacturer shall be Talk-A-Phone Co. (773) 539-1100, 7530 N. Natchez Ave, Niles, Illinois 60714-3804, www.talkaphone.com.

B. All equipment supplied shall be UL listed for the required function.

C. All emergency phone equipment shall be a product of one system manufacturer.

2.2 EMERGENCY PHONES

A. Emergency Phone Station

1. The Emergency Phone shall be Talk-A-Phone model VOIP-500D, no substitutions, and have one red anodized aluminum tactile button labeled "EMERGENCY", one black anodized aluminum tactile button labeled "INFO" with three (3) 5 mm diameter red light emitting diodes (LED's) labeled "Call Placed", "Call Received" and "Help On The Way".
2. The unit shall consist of an outdoor-rated, vandal resistant and ADA- compliant hands-free Voice over IP (VOIP) speakerphone communications device with 12 gauge #4 brushed stainless steel faceplate and metal buttons. Signage shall be constructed of cast metal with lettering and Braille raised approximately 3/32" for ADA compliance with "EMERGENCY" adjacent to the red button and "INFO" adjacent to the black button. The unit shall include three (3) LED's for the hearing impaired that illuminate to indicate when calling party has placed the call, when the call has been answered and when help is on the way.
3. The speaker and microphone shall be protected by non-ferrous metal screen to provide a barrier against vandalism, rain and snow. The speaker shall be 3.5 inch outdoor speaker corrosion resistant cone and operate at temperatures of -67ºF (55ºC) to +185ºF (+85ºC). The microphone shall be 6 mm in diameter in an IP57type enclosure with an operating temperature range of -40ºF (-40ºC) to +158ºF (+70ºC). Output sound level shall be greater than 90 dBC at one meter for normal conversation.
4. The unit shall be programmable with all programming stored in non- volatile flash memory from a Web GUI.
5. The unit shall be totally hands-free. The unit shall feature one Layer 2 switch 10/100 Base T Ethernet port and one 10/100 Base T WAN Ethernet port.
6. The unit shall be compatible with Ethernet standard (IEEE 802.3 and TCP/IP (RFC 1122) protocol.
7. Unit shall support standard VoIP protocol SIP (RFC3261) and G.711 PCM a-Law @ 64 kbps, G.711 PCM u-Law @ 64kbps, G.729a and G.723a audio codes.

8. Unit shall comply with FCC Title 47, Part 15 (47 CFR 15).

B. Emergency Station Phone Tower

1. The phone tower shall be a highly vandal-resistant free-standing steel, model ETP-MT-72, no substitutions, with built-in combination blue light/strobe and lighted faceplate.
2. The unit shall be constructed of steel measuring 10" W x 8" D x 72" H with 0.25" thick walls and shall include multi-coat, rust-inhibitive coating shall be applied to withstand prolonged exposure to harsh environments.
3. The internal base plate shall be fully welded within the tower 2" above the tower base fabricated of 0.75" A-36 steel and include a 4" diameter center hole for wiring access and four 1" diameter holes for anchor bolt clearance.
4. The unit shall be outdoor-rated and painted "hospital blue" with the word "EMERGENCY" on the side and include lower edge of the opening shall slope down 30º from rear to front, making the edge difficult to use as a shelf yet convenient as a writing surface.
5. The unit shall include a combination blue light and strobe with polycarbonate refractor/housing that is powered from 120VAC. The blue light shall be a 7 watt high efficiency, compact fluorescent light with a 10,000 hour lifetime. It shall be lit at all times The strobe shall provide 1.5 million candlepower and flash 70 times per minute when the emergency phone is activated and continue flashing until the call has been completed.
6. CSA Certified to UL Standard 60950.

C. Informational Signage

1. Provide additional signage on stainless steel plate indicating instructions for using emergency stations

   a. Location
   b. Emergency – “In Case of Emergency Press RED Button to contact DFW Department of Public Safety”
   c. Non-Emergency – “Non-Emergency Assistance Press BLACK INFO Button”.

2.3 CONDUCTORS

A. Wiring will be in accordance with local, state, National Electrical Code and the ICC Electrical Code.

B. Conductors for wet locations shall be as follows:

C. Types RHW, TW, THW, THHW, THWN, XHHW or other type listed for use in wet locations.

D. Type listed for direct burial.

E. All electrical characteristics (conductor-to-conductor capacitance, DC resistance, etc.) of the emergency phone system conductors shall meet the requirements of the selected EM for the intended application.

F. Wire used for 120 VAC power circuits shall be minimum size of 12 AWG stranded copper conductors, with THHN insulation.

G. Cable used for emergency station communications shall be 100-ohm, 4-pair UTP, 23 AWG copper conductors with FEP or polyolefin insulation. Cable shall exceed ANSI/TIA/EIA-568-B.2-1 and ISO/IEC 11801 E Standards. Conductors shall be in twisted pairs, separated by an integrated pair divider and shall be covered by a water blocked, black sunlight resistant jacket that is suitable for wet locations and use for outdoors.

2.4 CONDUIT / RACEWAY

A. The following raceway types shall be permitted:

1. EMT conduit (3/4 inch minimum).
2. RIGID conduit (3/4 inch minimum).

B. Non-Metallic conduit for wet locations (3/4 inch minimum).

C. All raceway types shall be new. Installing used raceway is unacceptable.

D. Using existing raceway is unacceptable without prior written permission of the designer or Owner's Representative.

E. Boxes, supports, and other accessories for the raceway installation shall be listed for the intended application.

F. All wiring shall be installed in conduit.

G. Install garage emergency phone system wiring in conduit or approved raceway

H. Poured in the concrete deck, or;

I. Surface mounted parallel or perpendicular to building structure when possible.

J. Strap or bundle all cables and wires inside equipment enclosures and terminal cabinets, parallel to the enclosure sides.

K. All EMT conduit fitting shall be compression type. All rigid conduit fitting shall be threaded with plastic inserts..

PART 3 - EXECUTION

3.1 COORDINATION WITH OTHER TRADES

A. Coordinate closely with all other trades to expedite construction, accurately interface with related systems and avoid interferences.

3.2 INSTALLATION / APPLICATION

A. Furnish and install all control wiring, raceway and outlet boxes for the garage emergency phone system.

B. Furnish and install all backboxes, equipment and devices for the garage emergency phone system.

1. Backboxes shall be of the exact type recommended by the EM as shown on the equipment and device submittals.
2. Backboxes shall be installed per the manufacturer's installation recommendations.
3. Equipment must be installed by personnel legally permitted and currently licensed to install the devices and equipment. The cost of installation, warranty of installation and

equipment, coordination of the installation, and supervision of the installation are responsibilities of the Contractor.

C. All emergency phone system junction boxes, pull boxes, cable splices and terminal cabinets shall be accessible clearly marked “Emergency Phone”. The Contractor shall comply with any local codes or AHJ requirements for circuit identification. Any access panels required for the accessibility to the junction boxes, pull boxes, cable splices and terminal cabinets shall be the responsibility of the Emergency Phone System Contractor.

D. All wiring conductors and conduits shall be installed in a neat and workmanlike manner at right angles to the building walls, floors and ceilings, and supported from the building structure at intervals compliant with NEC requirements.

E. All wiring conductors for the garage emergency phone system shall be installed in conduit.

F. All wiring conductors shall be tagged at all junction points and shall test free from grounds or crosses between conductors.

G. Communication conductors shall not be installed in conduits with electric light, power Class 1, and medium power network-powered broadband communications circuits.

H. Garage emergency phone system cabling shall not be painted.

I. Conduits shall enter the emergency phone station enclosures only in the approved locations, as identified in the EM installation instructions.

3.3 EQUIPMENT MOUNTING

A. Emergency phone tower shall be mounted to 24” x 24” x 36” deep concrete foundation using four (4) 3/4” – 10 x 24 long anchor bolts with five inches (5”) projecting above grade. Applications for shorter foundations and pre-poured decks install towers in accordance with the manufacturers’ recommendations.

B. Emergency Phone shall be mounted into the emergency phone tower using six (6) vandal-resistant, truss-head spanner mounting screws.

3.4 PAINTING AND PATCHING

A. All garage emergency phone system junction boxes, pull boxes, conduit, cable splices and terminal cabinets shall be thoroughly cleaned, removing all dirt, oil, etc. and made ready to receive paint.

B. All penetrations of fire rated assemblies (wall or floor construction) shall be firestopped to preserve the original fire resistance and smoketight integrity of the assembly. All firestopping methods shall be UL listed Through Penetration Firestop Systems or otherwise approved by the Owner, Architect, Designer, and AHJ. Specific firestop assembly shall be identified at the penetration location with a sticker or other approved identification means.

3.5 SYSTEM TESTS

A. All test and inspections specified in this section shall be reported in writing and submitted in accordance with this specification section.

B. The system shall meet all the requirements of the listed applicable codes and the requirements of the AHJ. The system tests and test documents shall meet the requirements of the AHJ.

C. Provide one hundred (100) percent initial acceptance testing of the entire garage emergency phone system prior to the required AHJ acceptance testing. Before requesting the AHJ acceptance testing, furnish a written statement to the Owner's Representative indicating that the system has been installed in accordance with the approved documents and tested in accordance with the manufacturer's specifications and the applicable requirements.

D. All testing, inspection and retesting required for certification and required for all warranty work or replacements shall meet the requirements of the AHJ. This certification, inspection, or testing shall be completed at no additional cost to the Owner.

E. Provide the testing date in writing to the Owner a minimum of two (2) weeks before the date. The Owner may elect to have a representative present for testing.

F. The garage emergency phone system will not be acceptable until final testing and receipt of the testing certificates have been obtained.

END OF SECTION 27 32 26