SECTION 14 92 00

PNEUMATIC TUBE STATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections.

1.2 QUALITY ASSURANCE:

1. The contractor shall regularly and presently manufacture, install and warrant the computer controlled pneumatic tube distribution equipment as specified herein as one of their principle products. The equipment furnished shall be the product of the Contractor and shall be installed by skilled mechanics.

2. The Contractor shall be totally responsible for the manufacture, installation and guarantee of the specified system.

1.3 WORK INCLUDED IN THIS SECTION:

1. Furnish all engineering, materials and labor for the relocation of the pneumatic tube station and pipe located in the Pathology Lab per drawings. Work will include removal of abandoned pipe and hangers. Central Control to be relocated from current location to new copy room per drawings.

2. All work shall be completed in a workmanlike manner, complete in all respects, including all items specified herein and as may be necessary for the satisfactory installation and operation of the specified system.

3. The types and locations of the stations in this specification shall be as indicated on the drawings and shall be in strict accordance with the standards established by the Contractor.

4. The Contractor shall work with the General Contractor and all trades to ensure coordination for System right-of-way.

1.4 WORK NOT INCLUDED IN THIS SECTION:

1. The following items are not included in the installation of the Fully-Automatic pneumatic tube system. Air Link International will, however, be responsible for all coordination and information required for all responsible contractors to properly perform the work.

2. General Items

a. Supply and installation of architectural enclosures or access panels/doors for equipment as specified on the contract drawings or shop drawings.

b. Cutting and patching or painting required for installation of equipment and/or system right-of-way other than standard factory finish of equipment.

c. A clear unobstructed right-of-way space for System equipment.

d. Painting of exposed tube and unfinished surfaces where required.

e. Unloading, safe, dry and adequate storage space for materials on the job site during construction.

f. Elevator services for equipment and personnel during construction.

g. Dust protection if required.

h. Cleaning of all plaster, mortar, paint, concrete and other debris in or on the PTS equipment resulting from activities of other trades.

i. Repairing, replacing, or repainting of equipment damaged by other trades.

3. Electrical Items

4. A 115 VAC single phase, 50/60 Hz power supply wired to terminals in a factory installed duplex receptacle within each station.

5. Temporary power to facilitate testing when required.

6. Data Connections

7. An active Ethernet network jack with available high speed internet access installed within 6 feet of the System control center. Remote access from outside connection required for remote support.

8. A dedicated phone jack within 5 of system control center.

1.5 SUBMITTALS:

1. Shop drawings which show tube routings on architectural floor plans, tubing riser diagram, right-of-way, methods of suspending and anchoring tubing, station details, equipment locations and detailed dimensions of all major components. Tube routings shall be shown on owner supplied architectural floor plan backgrounds in AutoCad.

2. Contractor’s marked literature showing illustrations, data and description of system to be furnished.

3. Single User Software License form with submittal for signing by the Owner and Contractor.
4. Product Data: Submit prior to installation, manufacturers literature and description of system to be furnished.

5. Shop Drawings

   a. Provide complete dimensional drawings that indicate tube routing, right-of-way, methods of suspending and anchoring transmission tube, station details, equipment locations and detailed dimensions of all major components.

   b. Contract close-out information

      i. Provide as-built drawings at project completion if required by owner.

      ii. Signed acceptance or customer use of system shall commence the 12 month warranty period.

6. Manufacturer's liability shall not be enforceable until all equipment has been fully paid for.

1.6 WARRANTY:

1. The contractor shall guarantee all components to be free from defects in material and workmanship, under normal use, for a period of 12 months.

2. Defective material shall be repaired or replaced at the discretion of the Contractor, free of charge.

3. Specifically excluded from this warranty are failures resulting from normal wear, improper operation, improper maintenance or lack of prescribed owner preventative maintenance of the system.

4. Signed acceptance or use of the System by the Owner shall commence the warranty period.

5. The Contractor's liability shall not be enforceable until receipt of full payment for the System.

1.7 MAINTENANCE AND SERVICE

1. Provide maintenance and service as required by owner for the one-year guarantee period.

2. Following the one-year guarantee period, offer the Owner an agreement for continuing preventive maintenance service

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER:

1. Vendors shall be Air Link International authorized installers to perform work and are required to provide evidence of such to be considered.

2.2 SYSTEM DESCRIPTION:

1. System shall be configured of groups of stations (zones) connected together by the Dazzle. Each station shall be connected to the System by a single tube to a diverter.

2. Each zone shall include a blower and be able to operate either zone on the system.

3. The dispatching, routing, and storage of carriers shall be directed by the system control center to provide automatic unattended transmission of carriers between any two stations.

4. The System shall provide shortest route vacuum-pressure travel. Transactions within a zone shall turn around at the nearest diverter common to the origin and destination stations.

5. To dispatch a carrier from a station, the operator shall place the latched carrier in the dispatcher, select the destination address and press the “Send” button at the station.

6. Systems with more than one zone shall allow multiple carriers to be in transit simultaneously. The system shall allow all station dispatchers to be loaded simultaneously, destinations selected and all transactions processed automatically until the System is clear.

7. The System shall consist of 14 stations 2 dual stations arranged on 2 zones.

8. System shall provide for a minimum capacity of 996 units on 32 zones without the need to modify or replace existing equipment. Additions shall require no modifications to existing equipment.

9. The modular design of the System components shall permit changes in the number of station and/or zones as Owner requirements change.

10. Individual stations or zones shall be able to be shut down without affecting the remainder of System.

11. Destinations which are unavailable (out of service, full, non-existing) shall be rejected at the origination station. Prior to dispatch the route to destination station shall be checked twice to ensure all sections of the System involved in the transaction are operating properly.

12. A transaction to a station that becomes unavailable after dispatch shall be rerouted if possible, or be rerouted back to the origin station.

13. Transactions in process when any part of the System is signed off shall deliver to their destinations. Any new requests to send shall be rejected.

14. If a power failure occurs at the control center, the system will continue to process carriers under UPS power.

15. If power fails at a blower, diverter or station, the controls will identify that device as unavailable voiding all transactions which involve affected device.

16. Each station shall be able to be individually assigned a schedule of events per day including, on/off times, send and receive priorities, carrier forwarding on/off and quantity of assigned carriers.

17. Station sending and receiving and System priorities shall ensure that carriers are processed to their destinations in the shortest time.

18. Closed loop control shall verify via feedback loops that a command to a System component is properly executed before the next segment of the transaction is initiated.

19. A 115 VAC duplex receptacle and device on/off switch shall be provided at each station.

20. Destinations available at each station shall be individually configurable at the System control center.

21. Stations shall be able to be individually scheduled to be able to dispatch but not receive carriers.

22. Each station, diverter, and blower shall include diagnostic capability at the unit.

23. Each station, diverter, and air shifter shall be pneumatically controlled. Pneumatic cylinders, valve, and sensors shall be non-proprietary and commercially available.

2.3 SYSTEM COMPONENTS:

1. Station Equipment
   a. Top load stations include a dispatch storage unit, so that no waiting is required. Carrier can be inserted and queued to destination via the built-in plain text keypad while the system is busy. When the carriers have been received, they are pneumatically slowed and discharged into a collection basket. The stations are controlled electronically by a microprocessor.

   b. The station numbers and the system texts are freely programmable thus, it is possible to program them for room numbers or telephone extensions. The station numbers may be

programmed with one, two, three, four or five digits.

c. The insertion of the carrier is possible without opening doors or lids. Carriers can also be stored during the receiving period of the station.

d. In order to ensure quiet and smooth system operation, carriers are pneumatically braked in the station.

e. Data specifically necessary for the system is programmed through a menu-controlled unit on site. Changes in system operation may be made at any time.

f. Automatically Free Jammed Carriers. The “jolting circuit”, which is included in all components, can automatically release jammed carriers. In case of the failure of a single station, the other stations can be used without restriction.

d. Carrier in station signal device available as an option.

e. Remote modem access is available as an option.

f. Computer monitoring system is available as an option, but is not required for system operation.

2. Multi-Port Diverter

a. The forwarding tube routing unit has three delivery tubes. As the system is equipped with transit stations, they have individual routing means for group routings as well as for the relay control unit. The outlying units are arranged with a rotary oscillating pipe and are pneumatically sealed. To prevent air loss, special self-adjusting teflon packings are built in.

b. Install with clamp sleeves. Sway brace with ½” welded EMT conduit against motion.

c. Allow complete and clear access to service mechanical and electrical components.

d. Line Material

e. 6” steel tubing with expanded end for slip joint, shall be 6" O.D. x .065 (16 gauge), cold rolled, electric welded steel with flash removed and hot dip galvanized.

f. Bends shall be the same material as transmission tubing formed to a centerline radius of not less than 48" and maintain a uniform cross-section free from wrinkles and distortions.

g. Joints shall be sealed with sleeves cemented in place with

suitable compound to give a rigid air tight connection.

h. Cut all ends square, file and mandrel when cutting tube in the field.

i. Solid steel slip sleeves or split steel bolted sleeves shall be used for tubing joints. Split sleeves shall be used at all connections of serviceable equipment. All sleeves shall be of the same gage as the tubing.

j. Hangers

k. Hangers shall be spaced on 10 foot centers for horizontal tubes and at each floor for vertical tubes. They shall consist of 3/8" diameter pre-threaded zinc plate rod screwed into the appropriate device attached to the structure. Proper anchors will be used for concrete or cement; Beam Clamps will be used for metal or steel structures. Tube clamps or channels fastened to the rod shall support the tubing.

l. Install seismic bracing where required by code.

m. Brace all tubing and bends against motion caused by passage of carriers.

n. Diverter

o. Air power unit:

i. The air to drive the carriers in the system and the drive of the unit is made by vacuumed or compressed air by a side channel blower with an air-shifting valve. Air circuits are planned in accordance with the plan of the system. Specifications provided on request.

p. Carriers

q. Each system shall be provided with minimum of two carriers per station.

3. Carriers. 3 per station, 4 1/2″ ID x 15″ IL, end swivel opening style, bi-directional.

PART 3 - EXECUTION

3.1 INSTALLATION

1. Refer to plans for location of each station, routing of tubing and blower location.

2. Assemble and install the system and components in strict accordance with contract documents, applicable codes, regulations, approved shop drawings and manufacturer’s recommendations.

3. Anchor and fasten system and components to building construction as required for a stable, secure installation. Closely fit and join all parts of the system and finished components exposed view, providing a neat uniform appearance.

3.2 TESTING AND ACCEPTANCE

1. Prior to a formal system performance test, contractor shall perform preliminary test, verifying all components are in full operational condition.

2. In the presence of the owner, the contractor shall perform all operational tests, inspecting system components and verifying equipment is installed and operating in proper condition, according to the intent of the contract.

3. The owner’s representative shall sign a written statement indicating that the system has been turned over and accepted by the owner.

3.3 INSTRUCTIONS

1. The system contractor shall provide all necessary instructions in the use, operation, and maintenance of the system to personnel designated by the owner.

3.4 SYSTEM OPERATION

1. Station selection

2. The address is entered using a numerical keypad. Possible station addresses are between 1 and 99999. Leading zeros need not to be entered. After entering the station number, the address on the display has to be confirmed by pressing the send key. A wrong entry can be corrected as long as the carrier has not left the station.

3. The display will also show the selected station in plain text next to the target number, so that the user can check the entry. If the station number is unknown, the system allows the user to browse through an electronic address list using the search key. The central controller automatically allocates the station name to station number. An additional “HELP” menu supports users unfamiliar with the system.

4. The stations include a dispatch storage unit, so that at any time a carrier can be inserted while the system is busy. When the carriers have been received, they are pneumatically slowed and discharged into a collection basket.

END SECTION