

SECTION 16760 - INTEGRATED TELECOMMUNICATIONS/TELEMEDIA SYSTEM

1.0 GENERAL

1.1 THE CONDITIONS OF THE GENERAL CONTRACT (GENERAL, SUPPLEMENTARY, AND OTHER CONDITIONS) AND THE GENERAL REQUIREMENTS ARE HEREBY MADE A PART OF THIS SECTION.

1.2 ALL BIDS SHALL BE BASED ON THE EQUIPMENT AS SPECIFIED HEREIN. THE CATALOG NUMBERS AND MODEL DESIGNATIONS ARE THAT OF THE RAULAND-BORG CORPORATION. ALTERNATE SYSTEM WILL NOT BE CONSIDERED.

1.3 SCOPE OF WORK

1.3.1 FURNISH AND INSTALL ALL EQUIPMENT, ACCESSORIES, AND MATERIALS IN ACCORDANCE WITH THESE SPECIFICATIONS AND DRAWINGS TO PROVIDE A COMPLETE AND OPERATING INTEGRATED TELEPHONE, INTERCOMMUNICATION, PUBLIC ADDRESS, AND TELEMEDIA CONTROL SYSTEM.

1.4 SUBMITTALS

1.4.1 SPECIFICATION SHEETS SHALL BE SUBMITTED ON ALL ITEMS INCLUDING CABLE TYPES.

1.4.2 SUBMIT FCC REGISTRATION NUMBER WHEN REQUIRED.

1.4.4 SUBMIT WIRING DIAGRAMS SHOWING TYPICAL CONNECTIONS FOR ALL EQUIPMENT.

1.4.5 SUBMIT DETAILED FLOOR PLAN DRAWINGS SHOWING ALL DEVICES AND WIRING REQUIREMENTS. FLOOR PLAN BASE SHEETS ARE AVAILABLE FROM THE ENGINEER.

1.4.6 SUBMIT THE FOLLOWING MANUFACTURER INFORMATION:

- A. INTERCOM SYSTEM MODIFICATIONS.
- B. TELEPHONE PBX MODIFICATIONS.
- C. SPEAKERS, ALL TYPES.
- H. STAFF TELEPHONE.
- I. SURGE SUPPRESSION.

1.4.7 **PER-WORK REPORT OF EXISTING SYSTEM**

1.5 SERVICE AND MAINTENANCE

1.5.1 THE CONTRACTOR SHALL PROVIDE A ONE-YEAR GUARANTEE OF THE INSTALLED SYSTEM AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP. ALL LABOR AND MATERIALS SHALL BE PROVIDED AT NO EXPENSE TO THE OWNER DURING NORMAL WORKING HOURS. THE GUARANTEE PERIOD SHALL BEGIN ON THE DATE OF ACCEPTANCE BY THE OWNER/ENGINEER.

1.5.2 THE CONTRACTOR SHALL SHOW EVIDENCE THAT HE MAINTAINS A SERVICE ORGANIZATION AND PARTS INVENTORY TO ADEQUATELY SUPPORT THE SUPPLIED EQUIPMENT.

1.6 QUALITY ASSURANCE

WEST NAVARRE INTERMEDIATE SCHOOL
5 CLASSROOM ADDITION

- 1.6.1 ALL ITEMS OF EQUIPMENT INCLUDING WIRE AND CABLE SHALL BE DESIGNED BY THE MANUFACTURER TO FUNCTION AS A COMPLETE SYSTEM AND SHALL BE ACCOMPANIED BY THE MANUFACTURER'S COMPLETE SERVICE NOTES AND DRAWINGS DETAILING ALL INTERCONNECTIONS.
- 1.6.2 THE CONTRACTOR SHALL BE AN ESTABLISHED COMMUNICATIONS AND ELECTRONICS CONTRACTOR THAT HAS HAD AND CURRENTLY MAINTAINS A LOCALLY RUN AND OPERATED BUSINESS FOR AT LEAST FIVE YEARS. THE CONTRACTOR SHALL BE A DULY AUTHORIZED DISTRIBUTOR OF THE EQUIPMENT SUPPLIED WITH FULL MANUFACTURER'S WARRANTY PRIVILEGES.
- 1.6.3 THE CONTRACTOR SHALL SHOW SATISFACTORY EVIDENCE, UPON REQUEST, THAT HE MAINTAINS A FULLY EQUIPPED SERVICE ORGANIZATION CAPABLE OF FURNISHING ADEQUATE INSPECTION AND SERVICE TO THE SYSTEM. THE CONTRACTOR SHALL MAINTAIN AT HIS FACILITY THE NECESSARY SPARE PARTS IN THE PROPER PROPORTION AS RECOMMENDED BY THE MANUFACTURER TO MAINTAIN AND SERVICE THE EQUIPMENT BEING SUPPLIED.
- 1.7 SINGLE SOURCE RESPONSIBILITY: EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE, ALL EQUIPMENT SUPPLIED SHALL BE THE STANDARD PRODUCT OF A SINGLE MANUFACTURER OF KNOWN REPUTATION AND EXPERIENCE IN THE INDUSTRY. THE SUPPLYING CONTRACTOR SHALL HAVE ATTENDED THE MANUFACTURER'S INSTALLATION AND SERVICE SCHOOL. A CERTIFICATE OF THIS TRAINING SHALL BE PROVIDED WITH THE CONTRACTOR'S SUBMITTAL.
- 1.8 SAFETY / COMPLIANCE TESTING: THE COMMUNICATION SYSTEM SUPPLIED SHALL BE LISTED BY UNDERWRITER'S LABORATORIES UNDER UL STANDARD 1459. A COPY OF THE UL LISTING CARD FOR THE PROPOSED SYSTEM SHALL BE INCLUDED WITH THE CONTRACTOR'S SUBMITTAL.
- 1.9 WIRING: SYSTEM WIRING AND EQUIPMENT INSTALLATION SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICES AS ESTABLISHED BY THE EIA AND THE NEC. WIRING SHALL MEET ALL STATE AND LOCAL ELECTRICAL CODES. ALL WIRING SHALL TEST FREE FROM ALL GROUNDS AND SHORTS. WIRING SHALL BE HOME RUN FROM THE DEVICE TO THE FINAL TERMINATING DEVICE WITHOUT SPLICES UNLESS APPROVED BY THE ENGINEER.
- 1.10 PROTECTION:
 - 1.10.1 THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRANSIENT PROTECTION ON THE AC POWER FEED AND ON ALL STATION LINES LEAVING OR ENTERING THE BUILDING.
 - 1.10.2 THE CONTRACTOR SHALL NOTE IN HIS SYSTEM DRAWINGS, THE TYPE AND LOCATION OF THESE PROTECTION DEVICES AS WELL AS ALL WIRING INFORMATION.
- 2.0 PRODUCTS
 - 2.1 THE SYSTEM IS AN EXISTING RAULAND TELECENTER INTERCOM SYSTEM. ALL NEW DEVICES SHALL BE FULLY COMPATIBLE WITH THE EXISTING SYSTEM. ADDITIONS AND MODIFICATIONS SHALL BE MADE TO ACCOMMODATE NEW MEDIA RETRIEVAL AND ADDITIONAL STATIONS. THE POWER SUPPLY SHALL BE VERIFIED AND UPGRADED IF REQUIRED.
 - 2.2 THE SYSTEM SHALL PROVIDE DIRECT DIALING, FULL DUPLEX PRIVATE TELEPHONE COMMUNICATIONS BETWEEN ALL LOCATIONS EQUIPPED WITH ADMINISTRATIVE

TELEPHONES, FEATURE TELEPHONES, AND STAFF TELEPHONES.

- 2.2.1 THE CENTRAL SWITCHING EXCHANGE SHALL PROVIDE A MINIMUM OF THIRTY (30) SIMULTANEOUS FULL DUPLEX TELEPHONIC CONVERSATION PATHS AVAILABLE FOR USE BETWEEN STAFF TELEPHONE STATIONS.

2.3 INTERCOM AND PUBLIC ADDRESS OPERATION

- 2.3.1 EACH CLASSROOM, OFFICE, TEACHER'S WORKROOM, ADMINISTRATION AREA, AND OTHER LOCATIONS SHOWN TO HAVE AN INTERCOM CONNECTION SHALL BE EQUIPPED WITH A SPEAKER AND A STANDARD DTMF DIALING TELEPHONE.
- 2.3.2 THE CENTRAL SWITCHING EXCHANGE SHALL BE SUPPLIED WITH TWO-WAY AMPLIFIED COMMUNICATION PATH(S) TO LOCATIONS EQUIPPED WITH STAFF SPEAKERS. THE INTERCOM AMPLIFIERS SHALL BE CAPABLE OF DELIVERING AT LEAST TWELVE (12) WATTS RMS AND SHALL CONTAIN AN AUTOMATIC LEVEL CONTROL. SYSTEMS WHICH ARE RESTRICTED TO A SINGLE TWO-WAY AMPLIFIED VOICE INTERCOM PATH SHALL NOT BE DEEMED ACCEPTABLE.
- 2.3.3 AUTOMATIC "QUEUEING" FOR THE TWO-WAY AMPLIFIED COMMUNICATION PATHS SHALL BE PROVIDED WITH "CALL WAITING" TO BE AUTOMATICALLY CONNECTED WHEN THE CHANNEL BECOMES AVAILABLE.
- 2.3.4 THE SYSTEM SHALL PROVIDE AUTOMATIC SWITCHING OF THE TALK PATH TO A TELEPHONE MODE, DURING THE COURSE OF A CALL, SHOULD THE TELEPHONE ASSOCIATED WITH THE SPEAKER BE LIFTED FROM ITS CRADLE.
- 2.3.5 SYSTEMS WHICH DO NOT ALLOW FOR THE AUTOMATIC SWITCHING OF THE CONVERSATION FROM THE SPEAKER TO THE TELEPHONE SHALL NOT BE CONSIDERED ACCEPTABLE.
- 2.3.6 THE SYSTEM SHALL PROVIDE FACILITIES FOR CALLING ANY STATION BY DIALING THE STATION NUMBER. PREDETERMINATION AS TO WHETHER TO RING THE TELEPHONE OR TO PERMIT TALKING OVER THE SPEAKER SHALL BE USER-SELECTABLE WHEN DIALING. SYSTEMS WHICH DO NOT PROVIDE THIS SELECTABLE FEATURE OR WHICH REQUIRE THAT SEPARATE NUMBERS BE DIALED FOR THE SPEAKER AND TELEPHONE SHALL NOT BE ACCEPTABLE.
- 2.3.7 THE SYSTEM SHALL PROVIDE THE CAPABILITY OF ASSIGNING SPEAKER LOCATIONS TO ANY ONE OR MORE OF THE EIGHT (8) SOFTWARE PROGRAMMABLE ZONES FOR ZONE PAGING OR TIME SIGNAL RECEPTION. SYSTEMS USING SWITCHES TO ASSIGN ZONES SHALL NOT BE ACCEPTABLE.
- 2.3.8 PROVIDE FOR THE DISTRIBUTION OF EMERGENCY ANNOUNCEMENTS AND FOR THE DISTRIBUTION OF MANUALLY ACTIVATED TONES TO ALL LOCATIONS WITH SPEAKERS FROM ANY AUTHORIZED TELEPHONE.
- 2.3.9 THROUGH PROGRAMMING, IT SHALL BE POSSIBLE TO EXCLUDE SELECTED SPEAKERS FROM THE RECEPTION OF PAGING ANNOUNCEMENTS.
- 2.3.10 PROVIDE CAPABILITY OF RESTRICTING THE ORIGINATION OF EMERGENCY ANNOUNCEMENTS, ALL PAGE, ZONE PAGE, AND ALARM SIGNAL ORIGINATION TO SPECIFIC ASSIGNED TELEPHONES.
- 2.3.11 THE SYSTEM SHALL PROVIDE FOR PERSONAL IDENTIFICATION NUMBERS (PIN) FOR

WEST NAVARRE INTERMEDIATE SCHOOL
5 CLASSROOM ADDITION

SELECTED ADMINISTRATORS. BY DIALING THEIR PIN AT ANY SYSTEM TELEPHONE, THE ADMINISTRATOR SHALL HAVE ACCESS TO THE SAME CAPABILITIES ASSIGNED TO THEIR OFFICE TELEPHONE, REGARDLESS OF THE RESTRICTIONS ON THE PHONE HE IS CURRENTLY USING.

- 2.3.12 IF THE TELEPHONE ORIGINATING A PAGING ANNOUNCEMENT IS ASSOCIATED WITH A LOUDSPEAKER, THE SYSTEM SHALL AUTOMATICALLY MUTE THE SPEAKER TO AVOID FEEDBACK.
- 2.3.13 THE SYSTEM SHALL PROVIDE FACILITIES FOR UP TO TWELVE (12) INDEPENDENT DIGITAL READOUT DISPLAYS UPON WHICH INCOMING INTERCOM CALLS ARE IDENTIFIED BY THEIR DESIGNATED NUMBERS. THE DISPLAY SHALL SHOW VISUALLY, IN THE ORDER RECEIVED, THREE (3) CALLS AT A TIME. EMERGENCY CALLS SHALL OVERRIDE NORMAL CALLS AND SHALL ANNUNCIATE WITH THE LETTERS "EMER" AND THE CALLING STATION NUMBER.
- 2.3.14 THE SYSTEM SHALL ALLOW THE CLASSROOM TELEPHONES TO PLACE INTERCOM CALL-IN'S FROM THE TELEPHONE KEYPAD. THIS FUNCTION SHALL OPERATE EXACTLY AS IF THE CALL SWITCH HAD BEEN USED. IT SHALL BE POSSIBLE TO PLACE A NORMAL CALL BY PRESSING THE "*" KEY. IT SHALL BE POSSIBLE TO PLACE AN EMERGENCY CALL BY PRESSING THE "*" KEY TWICE.
- 2.3.15 PROVIDE FACILITIES FOR ANSWERING CALLS REGISTERED IN THE DISPLAY BY PRESSING A SINGLE "RESPONSE" BUTTON. THIS CAPABILITY SHALL NOT PREVENT OTHER CALLS FROM BEING PLACED OR ANSWERED BY DIALING THEIR NUMBERS.
- 2.4 CLASSROOMS WHICH ARE CONNECTED TO A VIDEO SOURCE SHALL HAVE THE CAPABILITY TO INSTANTLY GAIN CONTACT WITH THE MEDIA CENTER TELEPHONE FOR ADJUSTMENTS AND CORRECTIONS TO THE VIDEO SOURCE BY SIMPLY PRESSING A HOOK-FLASH. IT SHALL BE POSSIBLE TO GAIN CONTACT OVER EITHER THE SPEAKER OR THE TELEPHONE. RE-CONNECTION TO THE VIDEO SOURCE SHALL BE ACCOMPLISHED BY AGAIN PRESSING THE HOOK-FLASH.
- 2.5 CLASSROOM TELEPHONES SHALL BE EQUIPPED WITH A MESSAGE WAITING LAMP. THE LAMP SHALL BE ILLUMINATED "STEADY" WHEN THE PROGRAM SOURCE IS READY.
- 2.6 STAFF (CLASSROOM) TELEPHONES: SHALL BE STANDARD UTILITY GRADE TELEPHONES WITH BUILT-IN NETWORK AND RINGERS. SYSTEMS WHICH DO NOT PROVIDE STANDARD TELEPHONES SHALL NOT BE CONSIDERED ACCEPTABLE. ALL CLASSROOM TELEPHONES SHALL BE EQUIPPED WITH A STANDARD DTMF TOUCH TONE DIAL PAD. SYSTEMS EMPLOYING DYNAMIC HANDSETS SHALL NOT BE ACCEPTABLE. ALL CLASSROOM TELEPHONES SHALL BE WALL MOUNTED.
- 2.6.1 PROVIDE TWO-WIRE BALANCED AUDIO TRANSMISSION WITH DIAL TONE, RINGING, AND BUSY SIGNAL CAPABILITY TO ALL ADMINISTRATIVE AND CLASSROOM TELEPHONES.
- 2.7.1 TO FULFILL THE ABOVE REQUIREMENTS, THE FOLLOWING EQUIPMENT SHALL BE PROVIDED:
 - A. RAULAND STAFF/CLASSROOM TELEPHONE WITH DTMF ON PLANS TYPE

WEST NAVARRE INTERMEDIATE SCHOOL
5 CLASSROOM ADDITION

TOUCH TONE DIAL PAD. ONE UNIT SHALL BE PROVIDED FOR EACH INTERCOM LOCATION INDICATED ON THE DRAWINGS.

- B. RAULAND SW25 ROOM POSITION SWITCH PANEL. EACH PANEL PROVIDES 25 ROOM POSITIONS. PROVIDE AS REQUIRED TO ACCOMMODATE THE SWITCH LOCATIONS WITHIN THE SCHOOL.

2.7.2 TO FULFILL ALL OTHER REQUIREMENTS, PROVIDE THE FOLLOWING AS SHOWN ON PLANS:

- A. RAULAND USO-188 CLASSROOM/HALLWAY 8" LOUDSPEAKER UNIT OR EQUAL WITH 25 VOLT MULTI TAP TRANSFORMER AND 5 OZ. MAGNET.
- B. RAULAND 3601 15 WATT PAGING TALK BACK SPEAKER-HORN (WEATHERPROOF) OR EQUAL WITH ADJUSTABLE TAP TRANSFORMER (25 VOLT).
- C. RAULAND ACC1004 SQUARE 2 PIECE CEILING BAFFLE OR EQUAL FOR MOUNTING RAULAND USO-188 SPEAKER UNIT, BAFFLE SHALL HAVE CONCEALED SPEAKER MOUNTING STUDS. UTILIZE IN ALL AREAS, CLASSROOMS, HALLWAYS, ETC., UNIT SHALL BE FLUSH MTD. AND BE FINISHED IN WHITE EPOXY PAINT.
- D. RAULAND ACC1100 SQUARE RECESSED BACKBOX (FLUSH MTD.) PROVIDE WITH RAULAND ACC1004.

3.0 EXECUTION

3.1 COMPLETE SYSTEM SHALL BE INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3.2 ALL WIRING SHALL BE INSTALLED IN RACEWAYS UNTIL WIRING MAY BE ROUTED IN THE PROVIDED CABLE TRAYS. CONDUIT SHALL BE CONTINUOUS FROM THE OUTLET TO THE CLOSEST CABLE TRAY.

3.3 INTERIOR STATION WIRING SHALL BE WEST PENN, ALPHA OR SOUTHWEST WIRE AND CABLE, INC.

3.4 INSTALL ANTENNA IN CEILING SPACE ADJACENT TO INTERCOM RACK. PROVIDE ALL WIRING AND TERMINATIONS AS REQUIRED.

3.5 ALL WIRING TO CONSOLES SHALL BE CONCEALED IN WALL SPACE FROM CEILING TO THE RACKS. ALL WIRING SHALL BE NEATLY FORMED AND TIED.

3.6 ALL CABLES SHALL BE IDENTIFIED AT THE DEVICE AND AT THE CONSOLE.

3.7 INSPECTION AND TEST UPON COMPLETION

3.7.1 CHECK-OUT AND FINAL CONNECTIONS TO THE SYSTEM SHALL BE MADE BY A FACTORY TRAINED TECHNICIAN IN THE EMPLOY OF A MANUFACTURER OF THE PRODUCTS INSTALLED. IN ADDITION, FACTORY TRAINED TECHNICIANS SHALL DEMONSTRATE OPERATION OF THE COMPLETE SYSTEM AND EACH MAJOR COMPONENT TO THE OWNER.

3.7.2 SYSTEM FIELD WIRING DIAGRAMS SHALL BE PROVIDED TO THIS SUBCONTRACTOR BY THE SYSTEM MANUFACTURER PRIOR TO INSTALLATION.

WEST NAVARRE INTERMEDIATE SCHOOL
5 CLASSROOM ADDITION

- 3.7.3 ALL MATERIALS AND INSTALLATION SHALL BE GUARANTEED TO BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP FOR ONE YEAR AFTER FINAL ACCEPTANCE OF INSTALLATION AND TEST.
- 3.7.4 UPON COMPLETION OF THE INSTALLATION, FOUR (4) COPIES OF COMPLETE OPERATIONAL INSTRUCTIONS SHALL BE FURNISHED, COMPLETE WITH RECORD DRAWINGS. INSTRUCTIONS SHALL INCLUDE PART NUMBERS AND NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF PARTS SOURCE. FINAL PAYMENT SHALL NOT BE MADE UNTIL OPERATIONAL AND MAINTENANCE MANUALS HAVE BEEN RECEIVED.
- 3.7.5 UPON COMPLETION OF THE INSTALLATION OF THE EQUIPMENT, THE ELECTRICAL CONTRACTOR SHALL PROVIDE TO THE ENGINEER A SIGNED STATEMENT FROM THE EQUIPMENT SUPPLIER THAT THE SYSTEM HAS BEEN WIRED, TESTED, AND FUNCTIONS PROPERLY ACCORDING TO THE SPECIFICATIONS.
- 3.7.6 NOTHING HEREIN CONTAINED SHALL BE CONSTRUED TO RELIEVE THE CONTRACTOR FROM FURNISHING A COMPLETE AND ACCEPTABLE ELECTRICAL WIRING SYSTEM IN ALL ITS CATEGORIES. THE ENGINEER WILL CONDEMN AND REJECT ANY MATERIALS OR LABOR WHICH ARE OR MAY BECOME DETRIMENTAL TO THE ACCOMPLISHMENT OF THE INTENTIONS OF THESE SPECIFICATIONS.
- 3.8 WARRANTY: THE CONTRACTOR SHALL WARRANTY THE SYSTEM FOR TWO YEARS FROM FINAL ACCEPTANCE OF THE OWNER. THE WARRANTY SHALL INCLUDE PARTS AND LABOR.
- 3.9 SOFTWARE: THE OWNER SHALL BE PROVIDED ALL SYSTEM SOFTWARE NECESSARY TO MODIFY AND MAINTAIN THE SYSTEM. ALL SOFTWARE UPDATES FOR TWO YEARS AFTER THE FINAL ACCEPTANCE OF THE OWNER SHALL BE PROVIDED. ANY REQUIRED SYSTEM MODIFICATION OR SOFTWARE INSTALLATION SHALL ALSO BE INCLUDED FOR A PERIOD OF TWO YEARS.

END OF SECTION