

**ADDENDUM NO. 2**  
**TO THE CONTRACT DOCUMENTS**  
**(PROJECT MANUAL, TECHNICAL SPECIFICATIONS AND DESIGN DRAWINGS)**  
**FOR THE**  
**ADMINISTRATION BUILDING IMPROVEMENTS PROJECT**  
**BID NO. 2023-BRAA-03**  
**BOCA RATON AIRPORT**  
**BOCA RATON, FLORIDA**  
**Project funded by:**  
**FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT)**

**March 31, 2023**

**PAGE 1 of 1**

**TO: ALL HOLDERS OF CONTRACT DOCUMENTS**

- a.** Your attention is directed to the following interpretations of, changes in, and additions to the Contract Specifications and Plans for the above-named project at Boca Raton Airport, Boca Raton, Florida.
- b.** This Addendum is part of the Contract Documents and Plans, and the bidders are required to acknowledge receipt of this Addendum in the space provided below.
- c.** Addendums are to be submitted along with the Bid Documents for a complete Bid.

This addendum includes the following (see attachments):

- 1. Clarification:** The movement/temporary relocation of existing furniture, files, chairs, furnishings, etc. will be performed by the Contractor as an incidental cost to the project (to be included within the bid) in close coordination and discussions with the Owner throughout the project. The relocation of such items will occur within the Existing Administration Building (i.e., no offsite relocation or offsite storage will be required).
- 2. Requests for Clarification Submitted prior to the March 28<sup>th</sup>, 2023 deadline.** See following page and attachments.

Acknowledged: \_\_\_\_\_ (Signature of Bidder)

Name of Bidder: \_\_\_\_\_ Date: \_\_\_\_\_

## **REQUESTS FOR CLARIFICATIONS AND ASSOCIATED RESPONSES:**

1. Is the finish of the panels owner-furnished as stated in the specifications. 10-22-39, 1.6.D.1?  
**RESPONSE:** No, this section is deleted. Contractor to provide finishes for the panels for a complete product installation. No component of the system will be Owner provided.
2. After review the information on bid documents I don't see any specification for Low Voltage Trade - Div 27.  
**RESPONSE:** Sheets T-001 and T-002 have been revised to include Low Voltage specification information. See descriptions below of revisions and attached are Rev 1 sheets for T-001 and T-002.

## **TECHNOLOGY**

### **T-001 - NOTES & SYMBOLS - TECHNOLOGY**

Area/Description of Change:

- Changed the sheet name from "GENERAL NOTES - TECHNOLOGY" to "NOTES & SYMBOLS - TECHNOLOGY".
- Added a revised version of the symbols legend from sheet T-002 so it can fit on this sheet.

### **T-002 - SHEET SPECS - TECHNOLOGY**

Area/Description of Change:

- Changed the sheet name from "SYMBOLS LEGEND - TECHNOLOGY" to "SHEET SPECS - TECHNOLOGY".
- Moved and revised the symbols legend to sheet T-001.
- Added sheet specs for Division 27.

**TECHNOLOGY SYSTEMS GENERAL NOTES, CONDUIT ROUTING NOTES, AND ABBREVIATIONS**

GENERAL NOTES	CONDUIT ROUTING NOTES	ABBREVIATIONS																																																																																																																																																														
<p>1. PRODUCTS SHALL BE OF MATERIALS THAT ARE SUITABLE FOR THE ENVIRONMENT IN WHICH THEY ARE TO BE INSTALLED.</p> <p>2. WORKING CLEARANCES AROUND EQUIPMENT, RACKS, AND CABINETS SHALL BE MAINTAINED IN COMPLIANCE WITH THE NATIONAL ELECTRICAL CODE ARTICLE 110 AND OSHA. COORDINATE INSTALLATION TO MAINTAIN REQUIRED CLEARANCES.</p> <p>3. IF AN OUTLET BOX IS REQUIRED TO BE LOCATED IN AN ASSEMBLY OR PARTITION RATED AS "FIRE/SMOKE" OR "SMOKE" OR IDENTIFIED AS SUCH, THEN ALL OF THE FOLLOWING CONDITIONS SHALL BE MET:</p> <ol style="list-style-type: none"> <li>THE OUTLET BOX SHALL BE METALLIC.</li> <li>THE OUTLET BOX OPENINGS SHALL OCCUR ONLY ON ONE SIDE OF THE FRAMING SPACE.</li> <li>THE OUTLET BOX OPENINGS SHALL NOT EXCEED 16 SQUARE INCHES.</li> <li>ALL CLEARANCES BETWEEN THE OUTLET BOX AND THE WALL BOARD MATERIAL SHALL BE COMPLETELY SEALED WITH APPROVED MATERIALS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS FOR THE PROJECT.</li> <li>PROVIDE A SUPPLEMENTAL BARRIER AROUND OUTLETS LARGER THAN 16 INCHES SO THAT THE ORIGINAL RATING OF THE PENETRATION IS MAINTAINED.</li> <li>THE TOTAL AGGREGATE SURFACE AREA OF THE OUTLET BOX SHALL NOT EXCEED 100 SQUARE INCHES PER 100 SQUARE FEET.</li> <li>THE OUTLET BOX SHALL BE SEPARATED FROM OPENINGS ON THE OPPOSITE SIDE OF THE RATED PARTITION BY A MINIMUM HORIZONTAL DISTANCE OF 24 INCHES.</li> <li>THE OUTLET BOX SHALL BE SECURELY FASTENED TO A PARTITION FRAMING MEMBER BY MEANS OF AN APPROVED ATTACHMENT METHOD.</li> <li>OPENINGS CUT INTO THE WALL BOARD MATERIAL SHALL NOT EXCEED 1/8 INCH BETWEEN THE EDGES OF THE OUTLET BOX AND THE EDGES OF THE OPENING.</li> </ol> <p>4. LOCATIONS OF EQUIPMENT SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE EXACT EQUIPMENT LOCATION AND CONNECTION REQUIREMENTS WITH THE OWNER, ARCHITECT, PROJECT GC, AND APPROPRIATE TRADE PRIOR TO INSTALLATION.</p> <p>5. FOR EXACT LOCATION OF CEILING MOUNTED EQUIPMENT REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN. LOCATIONS OF EQUIPMENT NOT INCLUDED ON THE REFLECTED CEILING PLAN SHALL BE COORDINATED WITH THOSE ITEMS SHOWN. COORDINATION OF CEILING MOUNTED EQUIPMENT SHALL BE COMPLETED PRIOR TO ANY ROUGH-IN. NOTIFY ENGINEER OF ANY DISCREPANCY.</p> <p>6. CONTRACTOR TO PROVIDE FINAL CONNECTIONS TO OWNER PROVIDED EQUIPMENT WHERE INDICATED ON THE PLAN DRAWINGS.</p> <p>7. PRIOR TO ROUGH-IN AND INSTALLATION OF ANY FLOOR MOUNTED DEVICE, VERIFY LOCATION WITH OWNER AND ARCHITECT.</p> <p>8. VERIFY AND COORDINATE THE LOCATION OF REQUIRED DIVISION 27 AND 28 DEVICES WITH OTHER TRADE DRAWINGS AND OWNER PROVIDED EQUIPMENT.</p> <p>9. ALL RACEWAY SYSTEMS INCLUDING CONDUITS, PULL STRINGS, AND BACK BOXES, TO SUPPORT THE INSTALLATION OF DIVISION 27 AND 28 EQUIPMENT SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. CONTRACTOR TO PROVIDE COORDINATION FOR THE INSTALLATION OF THIS RACEWAY SYSTEM WITH THE ELECTRICAL CONTRACTOR.</p> <p>10. ELECTRICAL CONTRACTOR TO PROVIDE ALL SLEEVES AS REQUIRED FOR ALL LOW VOLTAGE CABLE PATHWAYS. RESTORE THE FIRE RATING OF THE SURFACE.</p> <p>11. EACH TECHNOLOGY SYSTEMS OUTLET LOCATION SHOWN SHALL HAVE A DOUBLE GANG OUTLET BOX 4-11/16 INCHES X 4-11/16 INCHES X 2-3/4 INCHES WITH A SINGLE GANG PLASTER RING AND (1) ONE INCH CONDUIT, UNLESS OTHERWISE NOTED, STUBBED UP TO AN ACCESSIBLE LOCATION ABOVE THE FINISHED CEILING. WORK BY ELECTRICAL CONTRACTOR PER PLANS AND SPECIFICATIONS.</p> <p>12. EACH TECHNOLOGY SYSTEMS OUTLET LOCATION SHOWN SHALL HAVE A CONDUIT WITH PULL STRING, STUBBED UP TO AN ACCESSIBLE LOCATION ABOVE THE FINISHED CEILING OR TO AN ACCESSIBLE CABLE TRAY WHERE PROVIDED.</p> <p>13. EACH TECHNOLOGY FLOOR BOX MOUNTED ON THE FIRST FLOOR WITH A VOICE/DATA OUTLET SHALL HAVE A DOUBLE GANG SPACE WITHIN THE FLOOR BOX AND 1 INCH CONDUIT CONCEALED IN SLAB FROM THE OUTLET TO AN ACCESSIBLE LOCATION ABOVE THE FINISHED CEILING. WORK BY ELECTRICAL CONTRACTOR PER PLANS AND SPECIFICATIONS.</p> <p>14. ALL BONDING AND GROUNDING ELEMENTS UTILIZED FOR THE STRUCTURE CABLING SYSTEM SHALL BE IN COMPLIANCE WITH PLANS AND SPECIFICATIONS.</p> <p>15. CABLE WITHIN UNDER SLAB ON GRADE USE OSP GEL-FILLED CABLES.</p> <p>16. ALL MATERIALS AND EQUIPMENT PROVIDED UNDER THIS CONTRACT SHALL BE NEW AND CARRY A ONE YEAR MANUFACTURER'S WARRANTY. WARRANTY SHALL START ONE DAY AFTER OWNER'S ACCEPTANCE OF THE PROJECT.</p> <p>17. CONTRACTOR TO PROVIDE AND INSTALL FIRE-STOPPING IN ALL CONDUITS PENETRATING RATED WALLS AFTER CABLING IS INSTALLED AND PROVIDE PHOTOGRAPHIC EVIDENCE OF COMPLIANCE WITH CODE, PLANS, AND SPECIFICATIONS.</p> <p>18. ROUTE CABLING FOR EACH TECHNOLOGY SYSTEM BACK TO LOCAL HEAD-END TERMINATION BOARD OR CABINET AS SHOWN ON THE PLANS AND SPECIFICATIONS.</p> <p>19. PROVIDE AND INSTALL TECHNOLOGY SYSTEMS CABLEWIRING AS RECOMMENDED BY THE MANUFACTURER, APPLICABLE CODES AND STANDARDS, UNLESS OTHERWISE INDICATED ON DRAWINGS OR SPECIFICATIONS. WHERE CONFLICT EXISTS, THE LARGER SIZE SHALL BE USED.</p> <p>20. TECHNOLOGY CABLES SHALL BE GROUPED IN BUNDLES OF 40 CABLES OR LESS.</p> <p>21. TO AVOID EMI PROVIDE CLEARANCES OF THE FOLLOWING MINIMUM DISTANCES:</p> <ol style="list-style-type: none"> <li>4' FROM MOTORS AND TRANSFORMERS</li> <li>1' FROM ELECTRICAL CONDUITS USED FOR POWER DISTRIBUTION</li> <li>1' FROM FLUORESCENT LIGHTING FIXTURES</li> </ol> <p>22. TECHNOLOGY PATHWAYS SHALL CROSS FLUORESCENT FIXTURES AND POWER CONDUITS PERPENDICULARLY WITH PROPER SEPARATION.</p> <p>23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULL COORDINATION OF ALL WORK AND EQUIPMENT IDENTIFIED IN THE DRAWINGS AND SPECIFICATIONS FOR A COMPLETE SOLUTION OF MULTIPLE, FULLY FUNCTIONAL TECHNOLOGY SYSTEMS AS DESCRIBED WITHIN THIS PACKAGE.</p>	<p>1. ONLY EMT OR RIGID SHALL BE USED FOR ALL CONDUIT INSTALLATIONS ABOVE GRADE.</p> <p>2. ALL BURIED CONDUITS SHALL BE A MINIMUM OF 36 INCHES BELOW GRADE. MAINTAIN A MINIMUM OF 1 FOOT (12 INCHES) OF SEPARATION BETWEEN POWER CONDUITS AND TECHNOLOGY SYSTEMS CONDUITS.</p> <p>3. CONTRACTOR SHALL PROVIDE A MINIMUM 24 INCHES AGGREGATE BASE BELOW EACH MANHOLE, OR HANDHOLE.</p> <p>4. ALL CONDUIT ENTRY PENETRATION POINTS INTO MUST BE PROPERLY SEALED AND PACKED TO PREVENT GASES OR RODENT INTRUSION.</p> <p>5. ALL MANHOLES, VAULTS, AND PULL BOXES MUST HAVE TRAFFIC RATED COVERS MINIMUM 20,000 LBS RATED.</p> <p>6. ALL CONDUITS SHALL BE PROVIDED WITH PULL STRINGS AND PLASTIC BUSHINGS ON THE ENDS.</p> <p>7. ALL CONDUITS BETWEEN BUILDINGS, MANHOLES, AND/OR VAULTS SHALL BE SLOPED DOWN AT 1% FROM THE BUILDING OR CENTER POINT BETWEEN VAULTS.</p> <p>8. ALL UNDERGROUND CONDUITS SHALL BE CLEANED USING A MANDREL AFTER INSTALLATION AND PRIOR TO SYSTEM TURN-OVER.</p> <p>9. TECHNOLOGY SYSTEM PATHWAYS IN ACCESSIBLE CEILING SPACES MAY BE PROVIDED UTILIZING DEDICATED CABLE SUPPORTS RATED FOR THE RESPECTIVE CEILING SPACE (PLENUM OR NON-PLENUM) AND INSTALLED PER APPLICABLE CODES AND STANDARDS. FOR NON-ACCESSIBLE CEILING SPACES A CONTINUOUS PATHWAY, CONDUITS SHALL BE PROVIDED.</p> <p>10. ALL PATHWAYS SHALL BE SIZED AS RECOMMENDED BY THE MANUFACTURERS AND APPLICABLE CODES AND STANDARDS. NO PATHWAY CABLE FILL SHALL EXCEED 40% FILL.</p> <p>11. FIRE ALARM, SECURITY, ACCESS CONTROL, CLOSED CIRCUIT VIDEO SURVEILLANCE, AND CABLING SHALL BE INSTALLED IN COLOR CODED AND LABELED CONDUITS AND JUNCTION BOXES, UNLESS OTHERWISE NOTED.</p> <p>12. INTERIOR CONDUIT RUNS SHALL BE PROVIDED WITH PULL BOXES AT A MINIMUM OF EVERY 100 FEET OR AFTER TWO 90 DEGREE BENDS OR AFTER A TOTAL OF 180 DEGREES OF BENDS.</p> <p>13. EXTERIOR CONDUIT RUNS SHALL BE PROVIDED WITH HANDHOLES AT A MINIMUM OF EVERY 300 FEET OR AFTER TWO 90 DEGREE BENDS OR AFTER A TOTAL OF 180 DEGREES OF BENDS.</p> <p>14. BACKBONE RACEWAYS SHALL HAVE A MINIMUM SIZE OF 2 INCHES.</p> <p>15. HORIZONTAL RACEWAYS SHALL HAVE A MINIMUM SIZE OF 3/4 INCHES.</p> <p>16. SLEEVES SHALL BE INSTALLED ABOVE CEILINGS IN ALL WALLS, RATED OR NOT. SLEEVES SHALL BE SIZED AND IN THE QUANTITIES TO SUPPORT THE NUMBER OF CABLES AND FILL IS NOT TO EXCEED 40%.</p> <p>17. THE USE OF SURFACE MOUNTED RACEWAYS IN NEW CONSTRUCTION IS NOT ACCEPTABLE. ALL SURFACE MOUNTED RACEWAY INSTALLATION MUST BE APPROVED BY OWNER PRIOR TO INSTALLATION.</p> <p>18. WHEN INSTALLED IN ACCESSIBLE CEILING SPACES, APPROVED HOOKS SHALL BE INSTALLED TO CONFORM WITH BUILDING LINES AND BE SPACED NO MORE THAN 5 FEET APART. PROVIDE TWO HOOKS AT 90 DEGREE CORNERS.</p> <p>19. CABLE BUNDLES SHALL BE SECURED WITH VELCRO EVERY 2 FEET AND SHALL ALSO BE SECURED TO HOOKS.</p> <p>20. CABLE SAG BETWEEN HOOKS SHALL NOT EXCEED 2 INCHES.</p> <p>21. EACH TECHNOLOGY SYSTEM CABLING SHALL BE BUNDLED SEPARATELY AND SHALL HAVE SEPARATE SUPPORT BRACKETS.</p> <p>22. WHERE EQUIPMENT, CABLE TERMINATIONS, PULL BOXES, OR OTHER EQUIPMENT OR MATERIALS ARE INSTALLED ABOVE INACCESSIBLE CEILINGS OR BEHIND WALLS THE CONTRACTOR SHALL PROVIDE AND INSTALL LOCKING ACCESS PANELS. ALL ACCESS PANELS SHALL BE KEYPAD ALIKE.</p>	<table border="0"> <tr> <td>AC</td> <td>ACCESS CONTROL (SECURITY)</td> </tr> <tr> <td>AF</td> <td>ABOVE FINISHED FLOOR</td> </tr> <tr> <td>AFG</td> <td>ABOVE FINISHED GRADE</td> </tr> <tr> <td>ANNUN</td> <td>ANNUNCIATOR</td> </tr> <tr> <td>ARCH</td> <td>ARCHITECT</td> </tr> <tr> <td>AV</td> <td>AUDIO VISUAL</td> </tr> <tr> <td>AWG</td> <td>AMERICAN WIRE GAUGE</td> </tr> <tr> <td>BAS</td> <td>BUILDING AUTOMATED SYSTEMS</td> </tr> <tr> <td>BFC</td> <td>BELOW FINISHED CEILING</td> </tr> <tr> <td>BFG</td> <td>BELOW FINISHED GRADE</td> </tr> <tr> <td>BICSI</td> <td>BUILDING INDUSTRY CONSULTANT SERVICES INTERNATIONAL</td> </tr> <tr> <td>BLDG</td> <td>BUILDING</td> </tr> <tr> <td>C</td> <td>CONDUIT</td> </tr> <tr> <td>CA</td> <td>CARD ACCESS (SECURITY)</td> </tr> <tr> <td>CAB</td> <td>CABINET</td> </tr> <tr> <td>CAT</td> <td>CATEGORY</td> </tr> <tr> <td>CATV</td> <td>COMMUNITY ACCESS TELEVISION</td> </tr> <tr> <td>CCTV</td> <td>CLOSED CIRCUIT TV (SECURITY)</td> </tr> <tr> <td>CKT</td> <td>CIRCUIT</td> </tr> <tr> <td>CU</td> <td>COPPER</td> </tr> <tr> <td>DN</td> <td>DOWN</td> </tr> <tr> <td>DN</td> <td>SERVICE PROVIDER TERMINATION</td> </tr> <tr> <td>ER</td> <td>EXISTING</td> </tr> <tr> <td>ER</td> <td>EQUIPMENT ROOM</td> </tr> <tr> <td>ERL</td> <td>EXISTING TO BE RELOCATED</td> </tr> <tr> <td>ETR</td> <td>EXISTING TO REMAIN</td> </tr> <tr> <td>EXT</td> <td>INTERNAL OUTLET FOR EXTERNAL DEVICE</td> </tr> <tr> <td>FA</td> <td>FIRE ALARM</td> </tr> <tr> <td>FAFP</td> <td>FIRE ALARM CONTROL PANEL</td> </tr> <tr> <td>FOB</td> <td>FURNISHED BY OTHERS</td> </tr> <tr> <td>FT</td> <td>FEET</td> </tr> <tr> <td>GND</td> <td>GROUND</td> </tr> <tr> <td>GEN</td> <td>GENERATOR</td> </tr> <tr> <td>GF</td> <td>GROUND FAULT INTERRUPT</td> </tr> <tr> <td>HC</td> <td>HORIZONTAL CROSS CONNECT</td> </tr> <tr> <td>HDMI</td> <td>HIGH DEFINITION MEDIA INTERFACE</td> </tr> <tr> <td>IDF</td> <td>INTERMEDIATE DISTRIBUTION FRAME</td> </tr> <tr> <td>IG</td> <td>ISOLATED GROUND</td> </tr> <tr> <td>KVA</td> <td>KILOVOLT - AMPERES</td> </tr> <tr> <td>KW</td> <td>KILOWATTS</td> </tr> <tr> <td>MCC</td> <td>MOTOR CONTROL CENTER</td> </tr> <tr> <td>MCM</td> <td>THOUSAND CIRCULAR MILS</td> </tr> <tr> <td>MDF</td> <td>MAIN DISTRIBUTION FRAME</td> </tr> <tr> <td>MISC</td> <td>MISCELLANEOUS</td> </tr> <tr> <td>NEC</td> <td>NATIONAL ELECTRICAL CODE</td> </tr> <tr> <td>NC</td> <td>NORMALLY CLOSED</td> </tr> <tr> <td>NO</td> <td>NORMALLY OPEN</td> </tr> <tr> <td>NTS</td> <td>NOT TO SCALE</td> </tr> <tr> <td>NIC</td> <td>NOT IN CONTRACT</td> </tr> <tr> <td>OC</td> <td>ON CENTER LINE</td> </tr> <tr> <td>OF</td> <td>OWNER FURNISHED</td> </tr> <tr> <td>OFOI</td> <td>OWNER FURNISHED OWNER INSTALLED</td> </tr> <tr> <td>OFCI</td> <td>OWNER FURNISHED CONTRACTOR INSTALLED</td> </tr> <tr> <td>OFOV</td> <td>OWNER FURNISHED OWNER'S VENDOR INSTALLED</td> </tr> <tr> <td>PDS</td> <td>PREMISE DISTRIBUTION SYSTEM</td> </tr> <tr> <td>PM</td> <td>PROJECT MANAGER</td> </tr> <tr> <td>POS</td> <td>POINT OF SALE</td> </tr> <tr> <td>PTZ</td> <td>PAN, TILT ZOOM CAMERA</td> </tr> <tr> <td>PVC</td> <td>POLYVINYL CHLORIDE</td> </tr> <tr> <td>R</td> <td>RECESSED</td> </tr> <tr> <td>RCDD</td> <td>REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER</td> </tr> <tr> <td>RGB</td> <td>15 PIN AV CONNECTOR</td> </tr> <tr> <td>RK</td> <td>RACK</td> </tr> <tr> <td>SATV</td> <td>SATELLITE TV SOURCE</td> </tr> <tr> <td>SURF</td> <td>SURFACE</td> </tr> <tr> <td>SVGA</td> <td>15 PIN AV CONNECTOR</td> </tr> <tr> <td>TGB</td> <td>TELCOM GND BUS BAR</td> </tr> <tr> <td>TMGB</td> <td>TELCOM MAIN GND BUS BAR</td> </tr> <tr> <td>TSER</td> <td>TELECOMMUNICATIONS SERVICE</td> </tr> <tr> <td>TV</td> <td>TELEVISION</td> </tr> <tr> <td>UNIV</td> <td>UNIVERSAL</td> </tr> <tr> <td>UON</td> <td>UNLESS OTHERWISE NOTED</td> </tr> <tr> <td>USB</td> <td>UNIVERSAL SERIAL BUS</td> </tr> <tr> <td>USC</td> <td>UNDER SEPERATE CONTRACT</td> </tr> <tr> <td>UTP</td> <td>UNIFORM TWISTED PAIRS</td> </tr> <tr> <td>VGA</td> <td>15 PIN AV CONNECTORS</td> </tr> <tr> <td>W</td> <td>WALL MOUNTED</td> </tr> <tr> <td>WAP</td> <td>WIRELESS ACCESS POINT</td> </tr> <tr> <td>WP</td> <td>WEATHERPROOF</td> </tr> </table> <p>ADDITIONAL ABBREVIATIONS MAY BE USED AND IDENTIFIED IN THE SPECIFICATIONS OR DRAWINGS.</p>	AC	ACCESS CONTROL (SECURITY)	AF	ABOVE FINISHED FLOOR	AFG	ABOVE FINISHED GRADE	ANNUN	ANNUNCIATOR	ARCH	ARCHITECT	AV	AUDIO VISUAL	AWG	AMERICAN WIRE GAUGE	BAS	BUILDING AUTOMATED SYSTEMS	BFC	BELOW FINISHED CEILING	BFG	BELOW FINISHED GRADE	BICSI	BUILDING INDUSTRY CONSULTANT SERVICES INTERNATIONAL	BLDG	BUILDING	C	CONDUIT	CA	CARD ACCESS (SECURITY)	CAB	CABINET	CAT	CATEGORY	CATV	COMMUNITY ACCESS TELEVISION	CCTV	CLOSED CIRCUIT TV (SECURITY)	CKT	CIRCUIT	CU	COPPER	DN	DOWN	DN	SERVICE PROVIDER TERMINATION	ER	EXISTING	ER	EQUIPMENT ROOM	ERL	EXISTING TO BE RELOCATED	ETR	EXISTING TO REMAIN	EXT	INTERNAL OUTLET FOR EXTERNAL DEVICE	FA	FIRE ALARM	FAFP	FIRE ALARM CONTROL PANEL	FOB	FURNISHED BY OTHERS	FT	FEET	GND	GROUND	GEN	GENERATOR	GF	GROUND FAULT INTERRUPT	HC	HORIZONTAL CROSS CONNECT	HDMI	HIGH DEFINITION MEDIA INTERFACE	IDF	INTERMEDIATE DISTRIBUTION FRAME	IG	ISOLATED GROUND	KVA	KILOVOLT - 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KVA	KILOVOLT - AMPERES																																																																																																																																																															
KW	KILOWATTS																																																																																																																																																															
MCC	MOTOR CONTROL CENTER																																																																																																																																																															
MCM	THOUSAND CIRCULAR MILS																																																																																																																																																															
MDF	MAIN DISTRIBUTION FRAME																																																																																																																																																															
MISC	MISCELLANEOUS																																																																																																																																																															
NEC	NATIONAL ELECTRICAL CODE																																																																																																																																																															
NC	NORMALLY CLOSED																																																																																																																																																															
NO	NORMALLY OPEN																																																																																																																																																															
NTS	NOT TO SCALE																																																																																																																																																															
NIC	NOT IN CONTRACT																																																																																																																																																															
OC	ON CENTER LINE																																																																																																																																																															
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PDS	PREMISE DISTRIBUTION SYSTEM																																																																																																																																																															
PM	PROJECT MANAGER																																																																																																																																																															
POS	POINT OF SALE																																																																																																																																																															
PTZ	PAN, TILT ZOOM CAMERA																																																																																																																																																															
PVC	POLYVINYL CHLORIDE																																																																																																																																																															
R	RECESSED																																																																																																																																																															
RCDD	REGISTERED COMMUNICATIONS DISTRIBUTION DESIGNER																																																																																																																																																															
RGB	15 PIN AV CONNECTOR																																																																																																																																																															
RK	RACK																																																																																																																																																															
SATV	SATELLITE TV SOURCE																																																																																																																																																															
SURF	SURFACE																																																																																																																																																															
SVGA	15 PIN AV CONNECTOR																																																																																																																																																															
TGB	TELCOM GND BUS BAR																																																																																																																																																															
TMGB	TELCOM MAIN GND BUS BAR																																																																																																																																																															
TSER	TELECOMMUNICATIONS SERVICE																																																																																																																																																															
TV	TELEVISION																																																																																																																																																															
UNIV	UNIVERSAL																																																																																																																																																															
UON	UNLESS OTHERWISE NOTED																																																																																																																																																															
USB	UNIVERSAL SERIAL BUS																																																																																																																																																															
USC	UNDER SEPERATE CONTRACT																																																																																																																																																															
UTP	UNIFORM TWISTED PAIRS																																																																																																																																																															
VGA	15 PIN AV CONNECTORS																																																																																																																																																															
W	WALL MOUNTED																																																																																																																																																															
WAP	WIRELESS ACCESS POINT																																																																																																																																																															
WP	WEATHERPROOF																																																																																																																																																															

**TECHNOLOGY SYSTEMS SYMBOLS LEGEND**

**NOTE:** THESE ARE STANDARD SYMBOLS AND ALL MAY NOT APPEAR ON THE PROJECT DRAWINGS.

**DATA/TELEPHONE DISTRIBUTION**

	DATA OUTLET, FLUSH MOUNTED IN WALL AT 18° OC AFF, FLUSH MOUNTED, UNLESS OTHERWISE NOTED.
	DATA OUTLET, FLUSH MOUNTED IN RECESSED WALL BOX. SEE POWER DRAWINGS AND SPECIFICATIONS FOR RECEPTACLE TYPES AND WALL BOX SPEC.
	DATA OUTLET, FLUSH MOUNTED IN RECESSED FLOOR BOX. SEE POWER DRAWINGS AND SPECIFICATIONS FOR RECEPTACLE TYPES AND FLOOR BOX SPEC.
	DATA OUTLET, FLUSH MOUNTED IN CEILING, UNLESS OTHERWISE NOTED.

THE FOLLOWING ARE APPLICABLE TO THE ABOVE DATA/TELEPHONE DISTRIBUTION SECTION AS NOTED IN THE DESIGN:

- (D#) PROVIDE FACEPLATE WITH NUMBER OF DATA PORTS AS SHOWN. ALL FACEPLATES SHALL HAVE 6 SPACES FOR TERMINATION MODULES.
- (C) MOUNTED WHERE BOTTOM IS AT 4" ABOVE COUNTER OR BACKSPLASH. MAXIMUM 48" AFF.
- (F) MOUNTED 66" OC AFF BEHIND FLAT PANEL DISPLAY UNLESS OTHERWISE NOTED.
- (A) MOUNTED ABOVE CEILING.

**AUDIO/VISUAL SYSTEM**

	AUDIO/VISUAL OUTLET, FLUSH MOUNTED IN WALL AT 48° AFF, UNLESS OTHERWISE NOTED.
	AUDIO/VISUAL OUTLET, FLUSH MOUNTED IN RECESSED WALL BOX. SEE POWER DRAWINGS AND SPECIFICATIONS FOR RECEPTACLE TYPES AND WALL BOX SPEC.
	AUDIO/VISUAL OUTLET, FLUSH MOUNTED IN RECESSED FLOOR BOX. SEE POWER DRAWINGS AND SPECIFICATIONS FOR RECEPTACLE TYPES AND FLOOR BOX SPEC.
	AUDIO/VISUAL OUTLET, FLUSH MOUNTED IN CEILING, UNLESS OTHERWISE NOTED.
	SPEAKER, CEILING MOUNTED, UNLESS OTHERWISE NOTED.
	MICROPHONE, CEILING MOUNTED, UNLESS OTHERWISE NOTED.
	TOUCH SCREEN, SURFACE MOUNTED TO WALL AT 48° AFF, UNLESS OTHERWISE NOTED.
	TOUCH SCREEN, SURFACE MOUNTED TO TABLE, UNLESS OTHERWISE NOTED.
	CAMERA, SURFACE MOUNTED TO CEILING.
	FLAT PANEL DISPLAY, SURFACE MOUNTED TO WALL AT 66° OC AFF, UNLESS OTHERWISE NOTED.

THE FOLLOWING ARE APPLICABLE TO THE ABOVE AUDIO/VISUAL SYSTEM SECTION AS NOTED IN THE DESIGN:

- (C) MOUNTED WHERE BOTTOM IS AT 4" ABOVE COUNTER OR BACKSPLASH. MAXIMUM 48" AFF.
- (F) MOUNTED 66" OC AFF BEHIND FLAT PANEL DISPLAY UNLESS OTHERWISE NOTED.
- (A) MOUNTED ABOVE CEILING.
- (L) LAY-IN, RECESSED MOUNTED.
- (R) ROUND, FLUSH MOUNTED.
- (S) SQUARE, FLUSH MOUNTED.

**TELEVISION SYSTEM**

	TELEVISION OUTLET, TV DISPLAY SHALL BE PROVIDED BY OTHERS, FLUSH MOUNTED IN WALL AT 18° OC AFF, UNLESS OTHERWISE NOTED.
--	---

THE FOLLOWING ARE APPLICABLE TO THE ABOVE TELEVISION SYSTEM SECTION AS NOTED IN THE DESIGN:

- (C) MOUNTED WHERE BOTTOM IS AT 4" ABOVE COUNTER OR BACKSPLASH. MAXIMUM 48" OC AFF.
- (F) MOUNTED 66" OC AFF BEHIND FLAT PANEL DISPLAY UNLESS OTHERWISE NOTED.
- (A) MOUNTED ABOVE CEILING.

**CARD ACCESS SYSTEM**

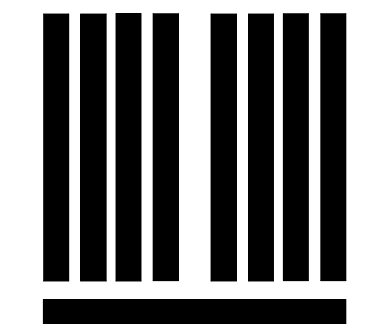
	CARD READER, SURFACE MOUNTED TO WALL AT 48" AFF.
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**CCTV SYSTEM**

	CCTV CAMERA, SURFACE MOUNTED TO CEILING.
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THE FOLLOWING ARE APPLICABLE TO THE ABOVE CCTV SYSTEM SECTION AS NOTED IN THE DESIGN:

- (D) DOME CAMERA.



**RICONDO & ASSOCIATES**  
 RICONDO & ASSOCIATES, INC.  
 1000 N.W. 57th COURT, SUITE 920  
 MIAMI, FL 33128-3511  
 (305) 260-2727  
 (305) 260-2728



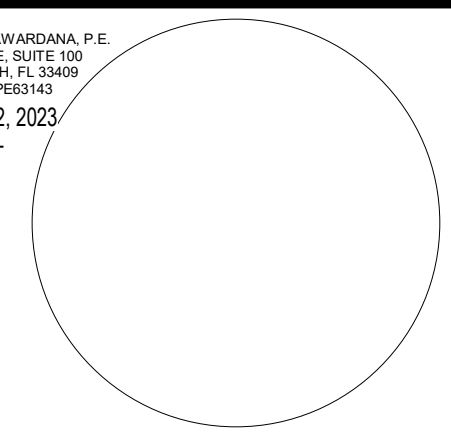
PROJECT NO : 1320727



Orlando, Fort Pierce, Fort Myers, West Palm Beach, Tampa, Washington DC, Miami, Dallas, San Francisco, Norfolk, FL, REG. NO. PR00144  
 181 Melody Lane, Suite 107, Ft. Pierce, FL 34950 | p. 772-466-1165  
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**BOCA RATON AIRPORT AUTHORITY**

SUCHARANA WIJESUNARATANA, P.E.  
 CHAIRMAN/CIRCLE, SUITE 100  
 WEST PALM BEACH, FL 33409  
 FL REG. NO. PR00144  
 FEBRUARY 02, 2023  
 BID SET



Revision Schedule		
No.	Description	Date
1	Addendum #2	2023.03.31

**ADMINISTRATION BUILDING**

**NOTES & SYMBOLS - TECHNOLOGY**

DATE :  
 FDOT PROJECT NO :  
 R & A PROJECT NO :  
 DESIGNED BY :  
 DRAWN BY :  
 CHECKED BY :

**SHEET T001**

NOT RELEASED FOR CONSTRUCTION

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SECTION 270000 - COMMUNICATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. THE WORK PERFORMED ON THIS PROJECT WILL BE IN CONFORMANCE WITH THE CURRENT EDITION OF NATIONAL ELECTRIC CODE, CURRENT VERSION OF THE ANSITIA GUIDELINES, THE CURRENT EDITION OF THE BICSI TELECOMMUNICATIONS DISTRIBUTION METHODS MANUAL, AND THE CURRENT NFPA GUIDELINES.
- B. ALL HORIZONTAL CABLING SOLUTIONS USED IN THIS PROJECT SHALL HAVE BEEN PRE-TESTED IN A WORSE CASE CONFIGURATION AS ALLOWED BY THE ANSITIA STANDARDS (FOUR CONDUCTOR, FULL-LENGTH CHANNEL) BY AN INDEPENDENT 3RD PARTY LABORATORY.

1.2 SUBMITTALS

- A. PRODUCT DATA: INCLUDE DATA ON FEATURES, RATINGS, AND PERFORMANCE FOR EACH COMPONENT SPECIFIED.
- B. THE CERTIFIED VENDOR SHALL ACCEPT COMPLETE RESPONSIBILITY FOR THE INSTALLATION, ACCEPTANCE TESTING, DOCUMENTATION, AND CERTIFICATION OF THE STRUCTURED CABLING SYSTEM.

1.3 QUALITY ASSURANCE

- A. INSTALLER QUALIFICATIONS: SYSTEM INSTALLER MUST HAVE AVAILABILITY TO A REGISTERED COMMUNICATION DISTRIBUTION DESIGNER (RCDD) CERTIFIED BY BUILDING INDUSTRY CONSULTING SERVICE INTERNATIONAL. PROVIDE COPY OF CURRENT RCDD CERTIFICATE WITH YOUR QUOTE. IN ADDITION, THE INSTALLER MUST BE CURRENTLY CERTIFIED BY THE SELECTED PRODUCT MANUFACTURER TO INSTALL THEIR PRODUCTS, AND OFFER ALL WARRANTIES ASSOCIATED WITH CERTIFIED INSTALLATIONS.
- B. SOURCE LIMITATIONS: OBTAIN ALL CONNECTIVITY PRODUCTS EXCEPT TWISTED-PAIR CABLES AND FIBER OPTIC CABLES THROUGH ONE SOURCE FROM A SINGLE MANUFACTURER. ALL JACKS, PATCH PANELS, PATCH CORDS, AND FACEPLATES SHALL BE FROM A SINGLE SOURCE MANUFACTURER OF PRODUCTS. THE CABLE CAN BE FROM ONE SOURCE AS CONNECTIVITY MANUFACTURER. THE PRODUCTS MUST PERFORM AS A SOLUTION AND MUST BE TESTED AND MUST PASS THE TEST PARAMETERS.
- C. THE BIDDERS STAFF SHALL BE CERTIFIED INSTALLERS BY THE MANUFACTURER LISTED IN THIS DOCUMENT TO INSTALL THE MATERIAL AND PROVIDE THE SERVICES NECESSARY FOR PROPER PERFORMANCE OF THIS CONTRACT. THE VENDOR SHOULD SUPPLY ANY AND ALL CURRENT MANUFACTURER CERTIFICATES OF TRAINING WITH THE BID RESPONSE FOR ALL THE EMPLOYEES WHO SHALL WORK ON THIS CONTRACT.
- D. THE SELECTED VENDOR SHALL BE FULLY CAPABLE AND EXPERIENCED IN THE PREMISE DISTRIBUTION SYSTEMS SPECIFIED. TO ENSURE THE SYSTEM HAS CONTINUED SUPPORT, THE OWNER WILL CONTRACT ONLY WITH VENDORS HAVING A SUCCESSFUL HISTORY OF SALES, CERTIFIED INSTALLATIONS, SERVICE, AND SUPPORT OF THE SELECTED SYSTEM. DURING THE EVALUATION PROCESS, THE OWNER MAY, WITH FULL COOPERATION OF THE VENDOR, VISIT THE VENDOR'S PLACES OF BUSINESS, OBSERVE OPERATIONS, AND INSPECT INSTALLATION RECORDS AND QUESTION VENDOR PROVIDED REFERENCES OF SIMILAR SYSTEMS. THE VENDOR MUST HAVE A MINIMUM OF THREE (3) YEARS EXPERIENCE.
- E. THE CONTRACTOR SHALL SUBMIT ALL DOCUMENTATION TO SUPPORT THE WARRANTY IN ACCORDANCE WITH THE MANUFACTURER'S WARRANTY REQUIREMENTS, AND TO APPLY FOR SAID WARRANTY ON BEHALF OF FLORIDA GULF COAST UNIVERSITY. THE WARRANTY WILL COVER THE COMPONENTS AND LABOR ASSOCIATED WITH REPAIR/REPLACEMENT OF ANY FAILED LINK, WITHIN THE WARRANTY PERIOD OF 25 YEARS.
- F. COMPLY WITH NFPA 70.

1.4 COORDINATION

- A. COORDINATE LAYOUT AND INSTALLATION OF DATA COMMUNICATION CABLING WITH FGCU. THE FIRST POINT OF CONTACT FOR ALL COORDINATION EFFORTS WILL BE THE FACILITIES PLANNING DEPARTMENT. AFTER CONTRACTING FACILITIES PLANNING, MEETINGS, AND DISCUSSIONS WILL BE SCHEDULED BETWEEN THE ARCHITECT, ELECTRICAL ENGINEER, CONSTRUCTION MANAGER, SUBCONTRACTORS, AND FGCU'S DIRECTOR OF NETWORK SERVICES.
- B. MEET JOINTLY WITH THE OWNER BEFORE WORK BEGINS. THIS IS THE RESPONSIBILITY OF THE CONSTRUCTION MANAGER TO ARRANGE THIS MEETING AND PROCESS AND DISSEMINATE ANY CHANGES OR INFORMATION THAT MAY COME FROM THE MEETING.
- C. RECORD AGREEMENTS REACHED IN MEETINGS AND DISTRIBUTE TO OTHER PARTICIPANTS.
- D. ADJUST ARRANGEMENTS AND LOCATIONS OF DISTRIBUTION FRAMES, CROSS-CONNECT AND PATCH PANELS IN EQUIPMENT ROOMS, AND WIRING CLOSETS TO ACCOMMODATE AND OPTIMIZE ARRANGEMENT AND SPACE REQUIREMENTS OF TELEPHONE SWITCH AND LAN EQUIPMENT.

PART 2 - PRODUCTS

2.1 APPROVED PRODUCTS

- A. APPROVED HORIZONTAL COPPER CABLE MANUFACTURER(S):
  - SYSTEMAX
  - BERK-TEK
  - BELDEN
  - ESSEX
  - MOHAWK
  - GENERAL
  - OR APPROVED EQUAL
- B. APPROVED COPPER CONNECTIVITY MANUFACTURER(S):
  - SYSTEMAX
  - ORTRONICS
  - BELDEN
  - LEVITON
  - PANDUIT
  - HUBBELL
  - OR APPROVED EQUAL
- C. APPROVED FACEPLATE MANUFACTURER(S):
  - ORTRONICS
  - BELDEN
  - LEVITON
  - PANDUIT
  - HUBBELL
  - OR APPROVED EQUAL
- D. APPROVED PATCH PANEL MANUFACTURER(S):
  - 1. ORTRONICS
  - 2. BELDEN
  - 3. LEVITON
  - 4. PANDUIT
  - 5. HUBBELL
  - 6. OR APPROVED EQUAL

2.2 HORIZONTAL COPPER CABLE

- A. CATEGORY 6A BALANCED UNSHIELDED TWISTED PAIR (UTP) CABLE:
  - 1. THE HORIZONTAL BALANCED UTP CABLE SHALL MEET OR EXCEED THE CATEGORY 6A TRANSMISSION CHARACTERISTICS PER ISSUE OF ANSITIA 568.2-D. CABLE AND CONNECTIVITY PRODUCTS MUST HAVE BEEN PRE-TESTED IN A WORSE CASE CONFIGURATION AS ALLOWED BY ANSITIA STANDARDS.
  - 2. CABLE JACKET SHALL BE COMMUNICATIONS MULTIPURPOSE RISER (CMR) OR COMMUNICATIONS MULTIPURPOSE PLENUM (CMP) RATED (ACCORDING TO THE SPACE IT OCCUPIES).
  - 3. JACKET COLOR SHALL BE BLUE.

2.3 COPPER CONNECTIVITY

- A. CATEGORY 6A DATA JACKS:
  - 1. CATEGORY 6A, 8-CONTACT (8P8C) MODULAR JACK:
    - A. THE CONNECTOR MODULE SHALL MEET OR EXCEED THE CATEGORY 6A PERFORMANCE CRITERIA PER ANSITIA 568.2-D.
    - B. THE EIGHT-POSITION CONNECTOR MODULE SHALL ACCOMMODATE SIX-POSITION MODULAR PLUS CORES WITHOUT DAMAGE TO EITHER THE CORE OR THE MODULE.
    - C. THE CONNECTOR MODULE SHALL BE DESIGNED FOR USE AT THE WORK AREA (WA), TELECOMMUNICATIONS ROOM (TR), AND/OR EQUIPMENT ROOM (ER) WITHOUT MODIFICATION.
    - D. THE CONNECTOR MODULE SHALL BE AVAILABLE IN BOTH THE T568A AND T568B WIRING CONFIGURATIONS WITHIN THE SAME MODULE.
    - E. THE CONNECTOR MODULE SHALL HAVE AN INSULATION DISPLACEMENT CONNECTION FEATURING INSULATING SLICING OF 22 TO 24 AWG PLASTIC INSULATED SOLID COPPER CONDUCTORS FORMING A GAS TIGHT CONNECTION.
    - F. ICONS SHALL BE USED IF OFFERED FROM THE MANUFACTURER.
    - G. JACKS/ICON COLORS SHALL MATCH FACEPLATE.

2.4 FACEPLATE

- A. FACEPLATES:
  - 1. THE FACEPLATE HOUSING THE CONNECTOR MODULES SHALL HAVE NO VISIBLE MOUNTING SCREWS.
  - 2. IF SHALL BE POSSIBLE TO INSTALL THE CONNECTOR MODULES IN WALL MOUNTED SINGLE AND DUAL GANG ELECTRICAL BOXES, UTILITY POLES, AND MODULAR FURNITURE (CUBICLE) ACCESS POINTS USING MANUFACTURER SUPPLIED FACEPLATES AND/OR ADAPTERS.
  - 3. THE FACEPLATE HOUSING THE CONNECTOR MODULES SHALL HAVE THE OPTION OF BEING MOUNTED ON ADAPTER BOXES FOR SURFACE MOUNT INSTALLATION.
  - 4. THE FACEPLATE HOUSING THE CONNECTOR MODULES SHALL HAVE A LABELING CAPABILITY USING BUILT-IN LABELING WINDOWS, TO FACILITATE OUTLET IDENTIFICATION AND EASE NETWORK MANAGEMENT.
  - 5. THE FACEPLATE HOUSING THE CONNECTOR MODULES SHALL PROVIDE FLEXIBILITY IN CONFIGURING MULTIMEDIA WORKSTATION OUTLETS THAT RESPOND TO PRESENT OR FUTURE NETWORK NEEDS SUCH AS AUDIO, DATA, VIDEO, COAXIAL, AND OPTICAL FIBER APPLICATIONS.
  - 6. THE COLOR SHALL BE THE SAME AS ELECTRICAL FACEPLATES.

2.5 PATCH PANEL

- A. CATEGORY 6A PATCH PANELS:
  - 1. THE CATEGORY 6A PATCH PANEL SHALL BE COMPATIBLE WITH 19" EQUIPMENT RACKS, CABINETS, AND/OR WALL MOUNT BRACKETS AND PROVIDE FOR 48 PORTS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
  - 2. THE CATEGORY 6A PATCH PANEL SHALL BE EQUIPPED WITH 8-POSITION MODULAR PORTS AND SHALL ALLOW FOR TERMINATION USING EITHER T568A AND T568B WIRING SCHEMES. ALL UTP CABLING WILL BE TERMINATED 568B.
  - 3. THE CATEGORY 6A PATCH PANEL SHALL BE EQUIPPED WITH FRONT LABELING SPACE TO FACILITATE PORT IDENTIFICATION.
  - 4. THE CONNECTOR MODULE SHALL MEET OR EXCEED THE CATEGORY 6A PERFORMANCE CRITERIA PER ANSITIA 568.2-D.
  - 5. ALL PATCH PANELS WILL HAVE DOUBLE SIDED, 2 RACK UNITS (RU) CABLE MANAGEMENT PANELS ABOVE AND BELOW THEM. INSTALL CMS COVERS WHEN INSTALLATION IS COMPLETE.

2.6 MOUNTING ELEMENTS

- A. RACEWAYS AND BOXES:
  - 1. COMPLY WITH DIVISION 26 REQUIREMENTS.

2.7 IDENTIFICATION PRODUCTS

- A. LABELS:
  - 1. COMPLY WITH DIVISION 26 REQUIREMENTS AND THE FOLLOWING:
    - A. CABLE LABELS SHALL BE SELF-ADHESIVE VINYL OR VINYL-CLOTH WRAPAROUND TAPE MARKERS, MACHINE PRINTED WITH ALPHANUMERIC CABLE DESIGNATIONS.
    - B. NO HANDWRITTEN LABELS WILL BE ACCEPTED.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. EXAMINE PATHWAY ELEMENTS INTENDED FOR CABLES: CHECK RACEWAYS, CABLE TRAYS, AND OTHER ELEMENTS FOR COMPLIANCE WITH SPACE ALLOCATIONS, INSTALLATION TOLERANCES, HAZARDS TO CABLE INSTALLATION, AND OTHER CONDITIONS AFFECTING INSTALLATION. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.2 INSTALLATION

- A. THE CONTRACTOR SHALL FURNISH ALL REQUIRED MATERIALS, EQUIPMENT, AND TOOLS NECESSARY TO PROPERLY COMPLETE THE WORK OF THESE SPECIFICATIONS INCLUDING, BUT NOT LIMITED TO, TOOLS FOR PULLING AND TERMINATING THE CABLES, MOUNTING HARDWARE, CABLE TIES, BOLTS, ANCHORS, CLAMPS, HANGERS, KITS OF CONSUMABLES, LUBRICANTS, TECHNICIAN COMMUNICATION DEVICES, CABLE TESTING EQUIPMENT, STANDS FOR CABLE REELS, CABLE WINCHES, ETC.
- B. ALL TELECOMMUNICATIONS OUTLET/CONNECTORS, PATCH PANELS, CROSS CONNECTS, CABINETS, PLYWOOD BACKGARDS, AND OTHER COMPONENTS SHALL BE LABELED USING A MECHANICALLY IMPRINTED LABEL OR A SYSTEM AS DEFINED BY THE OWNER.
- C. EMPLOYEES OF THE VENDOR SHALL PERFORM THE INSTALLATION OF THE STRUCTURED CABLING SYSTEM ALL WORK SHALL BE PERFORMED AND SUPERVISED BY TECHNICIANS AND MANAGERS QUALIFIED TO INSTALL AND TEST THE STRUCTURED CABLING SYSTEM IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

3.3 HORIZONTAL COPPER CABLE

- A. ALL COPPER CABLE SHALL BE HANDLED, INSTALLED, AND SUPPORTED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BEST INDUSTRY PRACTICES.
- B. CABLES SHALL BE DRESSED AND TERMINATED IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE ANSITIA-568.2-D DOCUMENT, MANUFACTURER'S RECOMMENDATIONS AND BEST INDUSTRY PRACTICES.
- C. CABLES SHALL BE INSTALLED IN CONTINUOUS LENGTHS FROM ORIGIN TO DESTINATION (NO SPLICES) EXCEPT FOR TRANSITION POINTS, OR CONSOLIDATION POINTS.
- D. CABLE RACEWAYS, CABLE TRAYS, CONDUITS, AND DUCTS SHALL NOT BE FILLED GREATER THAN THE ANSITIA-568.2-D MAXIMUM FILL FOR THE RACEWAY TYPE AND SHALL CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS.
- E. A PLASTIC OR NYLON PULL CORD WITH A MINIMUM TEST RATING OF 50 KG (200 LB) SHALL BE CO-INSTALLED WITH ALL CABLE AND HOUSED IN ANY CONDUIT.
  - 1. RATED CABLE SHALL BE INSULATED IN METALLIC CONDUIT WHEN INSTALLED IN A PLENUM SPACE.
  - 2. WHERE TRANSITION POINTS OR CONSOLIDATION POINTS ARE ALLOWED, THEY SHALL BE LOCATED IN ACCESSIBLE LOCATIONS AND INSTALLED IN AN ENCLOSURE INTENDED AND SUITABLE FOR THE PURPOSE.
- F. THE CABLE'S MINIMUM BEND RADIUS AND MAXIMUM PULLING TENSION SHALL NOT BE EXCEEDED. AT NO TIME SHALL THE CABLE'S STATIC OR DYNAMIC BENDING RADIUS BE LESS THAN FOUR (4) TIMES THE DIAMETER FOR COPPER. REFER TO MANUFACTURER'S REQUIREMENTS.
- G. HORIZONTAL CABLE RUNS SHALL NOT EXCEED 295'. CONTRACTOR SHALL IMMEDIATELY NOTIFY GENERAL CONTRACTOR, PROJECT MANAGER, AND ARCHITECT OF ANY CABLE RUNS THAT EXCEED THIS INSTALLED LENGTH.
- H. HORIZONTAL DISTRIBUTION CABLES SHALL BE BUNDLED IN GROUPS OF NO MORE THAN 50 CABLES. CABLE BUNDLE QUANTITIES MORE THAN 50 CABLES MAY CAUSE DEFORMATION OF THE BOTTOM CABLES WITHIN THE BUNDLE AND DEGRADE CABLE PERFORMANCE.
- I. IF A J-HOOK OR TRAPEZE SYSTEM IS USED TO SUPPORT CABLE BUNDLES ALL HORIZONTAL CABLES SHALL BE SUPPORTED A MAXIMUM OF 48 TO 60 INCH (1.2 TO 1.5 METER) INTERVALS WITH VELCRO TIES. AT NO POINT SHALL CABLE(S) REST ON ACOUSTIC CEILING GRIDS OR PANELS. ALL CABLE TIES USED SHALL BE HAND-TIGHTENED ONLY TO A POINT WHERE THE SHEATH DOES NOT TWIST.
- J. CABLE SHALL BE INSTALLED ABOVE FIRE-SPRINKLER SYSTEMS AND SHALL NOT BE ATTACHED TO THE SYSTEM OR ANY ANGLARY EQUIPMENT OR HARDWARE. THE CABLE SYSTEM AND SUPPORT HARDWARE SHALL BE INSTALLED SO THAT IT DOES NOT OBSCURE ANY VALVES, FIRE ALARM CONDUIT BOXES, OR OTHER CONTROL DEVICES.
- K. CABLES SHALL NOT BE ATTACHED TO CEILING GRID OR LIGHTING FIXTURE WIRES. WHERE SUPPORT FOR HORIZONTAL CABLE IS REQUIRED, THE CONTRACTOR SHALL INSTALL APPROPRIATE CARRIERS TO SUPPORT THE CABLES.
- L. ANY CABLE DAMAGED OR EXCEEDING RECOMMENDED INSTALLATION PARAMETERS DURING INSTALLATION SHALL BE REPLACED BY THE CONTRACTOR PRIOR TO FINAL ACCEPTANCE AT NO COST TO THE OWNER.
- M. MINIMUM CLEARANCE BETWEEN CABLES AND POWER SOURCES SHALL BE ACCORDING TO ANSITIA-568.2-D STANDARDS.
- N. LEAVE A MINIMUM OF 12" OF SLACK FOR TWISTED PAIR CABLES AT THE OUTLET. CABLES SHALL BE COILED IN THE IN-WALL BOX, SURFACE MOUNT BOX OR MODULAR FURNITURE RACEWAY IF ADEQUATE SPACE IS PRESENT TO HOUSE THE CABLE COIL WITHOUT EXCEEDING THE MANUFACTURER'S BEND RADIUS. EXCESS SLACK, 10" MIN, SHALL BE LOOSELY COILED AND STORED IN THE CEILING ABOVE EACH DROP LOCATION WHEN THERE IS NOT ENOUGH SPACE PRESENT IN THE OUTLET BOX TO STORE SLACK CABLE.
- O. CABLES SHALL BE NEATLY BUNDLED AND DRESSED TO THEIR RESPECTIVE TERMINATION DEVICE. EACH TERMINATING DEVICE SHALL BE FED BY AN INDIVIDUAL BUNDLE SEPARATED AND DRESSED BACK TO THE POINT OF CABLE ENTRANCE INTO THE RACK OR FRAME.
- P. EACH CABLE SHALL BE CLEARLY LABELED ON THE CABLE JACKET BEHIND THE TERMINATION DEVICE AT A LOCATION THAT CAN BE VIEWED WITHOUT REMOVING THE BUNDLE SUPPORT TIES. CABLES LABELED WITHIN THE BUNDLE, WHERE THE LABEL IS OBSCURED FROM VIEW SHALL NOT BE ACCEPTABLE.
- Q. APPROPRIATE FIRE BARRIERS SHALL BE PLACED AROUND THE CABLES IN THE SLEEVES, AND UNUSED SLEEVES SHALL BE PROPERLY FIRE STOPPED, AS REQUIRED.
- R. ALL PENETRATIONS, REGARDLESS OF WALL CONSTRUCTION, SHALL BE SLEEVED WITH AN APPROPRIATE SIZE CONDUIT SO THAT NO GREATER THAN A 40% FILL RATIO IS ACHIEVED. THE SLEEVES SHALL BE LABELED PER ANSITIA 606A.
- S. IF CONDUIT IS USED, THE MAXIMUM BEND BETWEEN CABLE PULLING POINTS SHALL NOT BE MORE THAN 180 DEGREES TOTAL OVER A MAXIMUM OF 100 FEET. CONDUIT SHALL BE RUN IN SUCH A WAY AS TO MINIMIZE THE DISTANCE FROM THE WIRING CLOSET TO THE JACK.
- T. INSTALL EXPOSED CABLES PARALLEL AND PERPENDICULAR TO SURFACES OR EXPOSED STRUCTURAL MEMBERS AND FOLLOW SURFACE CONTOURS WHERE POSSIBLE.
- U. IN THE TELECOMMUNICATIONS ROOM, SECURE AND SUPPORT CABLES AT INTERVALS NOT EXCEEDING 30 INCHES (762 MM) AND NOT MORE THAN 6 INCHES (150 MM) FROM CABINETS, BOXES, FITTINGS, RACKS, FRAMES, AND TERMINALS WITH VELCRO TIES.

3.4 COPPER CONNECTIVITY

- A. 8-POSITION, 8-CONTACT (8P8C) MODULAR JACKS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND INSTALLATION GUIDES, AND BEST INDUSTRY PRACTICES.
- B. ALL COPPER TERMINATIONS FOR THIS PROJECT SHALL FOLLOW THE ANSITIA 568B PER INDUSTRY STANDARDS.
- C. COMPLY WITH ANSITIA-569-A FOR SEPARATION OF UNSHIELDED COPPER DATA COMMUNICATION CABLING FROM POTENTIAL EMI SOURCES, INCLUDING ELECTRICAL POWER LINES, AND EQUIPMENT.
- D. ALL FOUR PAIRS OF EACH UTP CABLE SHALL BE TERMINATED ON A SINGLE PORT AND THE SPLITTING OF CABLE PAIR BETWEEN DIFFERENT JACKS IS NOT PERMITTED.
- E. PAIR UNTWIST AT THE TERMINATION SHALL NOT EXCEED 13 MM (0.5 INCHES).

3.5 FACEPLATES

- A. BLANK INSERTS SHALL BE INSTALLED WHERE PORTS ARE NOT USED.
- B. THE SAME ORIENTATION AND POSITIONING OF JACKS AND CONNECTORS SHALL BE UTILIZED THROUGHOUT THE INSTALLATION.
  - 1. FACEPLATES SHALL BE INSTALLED STRAIGHT AND LEVEL.
- C. THE CABLE'S MINIMUM BEND RADIUS AND MAXIMUM PULLING TENSION SHALL NOT BE EXCEEDED. AT NO TIME SHALL THE CABLE'S STATIC OR DYNAMIC BENDING RADIUS BE LESS THAN FOUR (4) TIMES THE DIAMETER FOR COPPER. REFER TO MANUFACTURER'S REQUIREMENTS.
- D. FACEPLATES SHALL BE INSTALLED AT THE SAME HEIGHTS AS ELECTRICAL FACEPLATES.
  - 1. THE CONTRACTOR SHALL INSTALL BLANK OUTLET COVERS IN ANY UNUSED OUTLET OF ALL FACEPLATES.
- E. WALL PHONE INSTALLATIONS:
  - 1. FURNISH AND INSTALL THE WALL PHONE FACEPLATE ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
  - 2. EACH WALL PHONE SHALL BE TERMINATED ON ITS OWN DEDICATED 8P8C OUTLET WHERE INDICATED ON THE DRAWINGS.
  - 3. NO SPECIAL PANEL SHALL BE INSTALLED FOR WALL PHONES.

3.6 PATCH PANELS

- A. CABLES SHALL BE DRESSED AND TERMINATED IN ACCORDANCE WITH THE RECOMMENDATIONS MADE IN THE ANSITIA-568.2-D DOCUMENT, MANUFACTURER'S RECOMMENDATIONS AND BEST INDUSTRY PRACTICES.
- B. PAIR UNTWIST AT THE TERMINATION SHALL NOT EXCEED 13 MM (0.5 INCHES).
- C. BEND RADIUS OF THE CABLE IN THE TERMINATION AREA SHALL NOT EXCEED 4 TIMES THE OUTSIDE DIAMETER OF THE CABLE.
- D. CABLES SHALL BE NEATLY BUNDLED AND DRESSED TO THEIR RESPECTIVE PATCH PANEL. EACH PATCH PANEL SHALL BE FED BY AN INDIVIDUAL BUNDLE SEPARATED AND DRESSED BACK TO THE POINT OF CABLE ENTRANCE INTO THE RACK OR FRAME.
- E. ALL PATCH PANELS SHALL HAVE STRAIN RELIEF BARS INSTALLED ON THE BACK OF THE PANELS.
- F. ALL CABLES SHALL BE SUPPORTED AND SECURED TO THE STRAIN RELIEF BAR ON THE REAR OF THE PATCH PANEL WITHIN 6" OF THE TERMINATION.
- G. EACH CABLE SHALL BE CLEARLY LABELED ON THE CABLE JACKET BEHIND THE PATCH PANEL AT A LOCATION THAT CAN BE VIEWED WITHOUT REMOVING THE BUNDLE SUPPORT TIES. CABLES LABELED WITHIN THE BUNDLE, WHERE THE LABEL IS OBSCURED FROM VIEW SHALL NOT BE ACCEPTABLE.

3.7 IDENTIFICATION

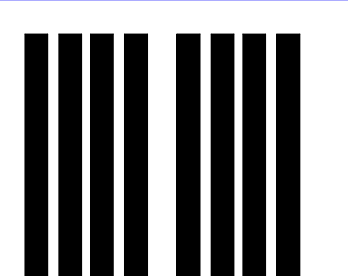
- A. IN ADDITION TO REQUIREMENTS IN THIS ARTICLE, COMPLY WITH APPLICABLE REQUIREMENTS IN DIVISION 26 AND ANSITIA-606.
- B. SYSTEM USE A UNIQUE ALPHANUMERIC DESIGNATION FOR EACH CABLE, LABEL CABLES, JACKS, CONNECTORS, AND TERMINALS TO WHICH IT CONNECTS WITH SAME DESIGNATION. USE LOGICAL AND SYSTEMATIC DESIGNATIONS FOR THE FACILITY'S ARCHITECTURAL ARRANGEMENT.
  - 1. EACH WALL OUTLET SHOULD BE LABELED WITH THE MOD/IDF ROOM NUMBER THAT IT IS TERMINATED IN.
  - 2. THE JACKS AND CABLES SHOULD BE LABELED WITH SEQUENTIAL ALPHANUMERIC CHARACTERS AND SEQUENTIAL NUMBERS. THE PATCH PANEL THAT THE WIRE TERMINATES ON SHOULD BE THE LETTER USED TO LABEL THE JACK. FOR INSTANCE, IF YOU HAVE FOUR (4) PATCH PANELS LABELED A, B, C, AND D, THE WIRES AND THE JACKS SHOULD BE LABELED AT J4, J4A, THEN B1, B2, J4B AND SO ON.
  - 3. THE PATCH PANELS THEMSELVES SHOULD HAVE THE ROOM NUMBERS BELOW THE PORTS. FOR INSTANCE, IF ON PATCH PANEL B, PORTS 5, 6, 7, AND 8 GO TO ROOM 123, THEN R123 SHOULD BE BELOW EACH PORT.
- C. WORKSTATION: LABEL CABLES WITHIN OUTLET BOXES.
- D. DISTRIBUTION RACKS AND FRAMES: EACH PATCH PANEL WILL BE LABELED USING ALPHABETIC CHARACTERS STARTING WITH A. THE LABELING SHOULD BE LEFT TO RIGHT, TOP TO BOTTOM. START ON THE LEFT MOST RACK, WORK YOUR WAY DOWN, MOVE TO THE NEXT RACK, AND CONTINUE WITH THE NEXT LETTER IN THE SEQUENCE.
- E. PATCH PANELS: LABEL EACH CONNECTOR WITH THE CORRESPONDING ROOM NUMBER.
- F. WITHIN CONNECTOR FIELDS IN EQUIPMENT ROOMS AND WIRING CLOSETS: LABEL EACH CONNECTOR AND EACH DISCRETE UNIT OF CABLE-TERMINATING AND CONNECTING HARDWARE.
- G. CABLES: LABEL EACH CABLE WITHIN 4 INCHES OF EACH TERMINATION, WHERE IT IS ACCESSIBLE IN A CABINET OR JUNCTION OR OUTLET BOX, AND ELSEWHERE AS INDICATED.
- H. CABLE SCHEDULE: POST IN PROMINENT LOCATION IN EACH EQUIPMENT ROOM AND WIRING CLOSET; LIST INCOMING AND OUTGOING CABLES AND THEIR DESIGNATIONS, ORIGINS, AND DESTINATIONS. PROTECT WITH RIGID FRAME AND CLEAR PLASTIC COVER. FURNISH AN ELECTRONIC COPY OF FINAL COMPREHENSIVE SCHEDULES FOR PROJECT, IN SOFTWARE AND FORMAT SELECTED BY OWNER.
- I. CABLE ADMINISTRATION DRAWINGS: SHOW BUILDING FLOOR PLANS WITH CABLE ADMINISTRATION POINT LABELING. IDENTIFY LABELING CONVENTION AND SHOW LABELS FOR TELECOMMUNICATIONS CLOSETS, BACKBONE PATHWAYS AND CABLES, ENTRANCE PATHWAYS AND CABLES, TERMINAL HARDWARE AND POSITIONS, HORIZONTAL CABLES, WORK AREA AND WORKSTATION TERMINAL POSITIONS, GROUNDING BUSES AND PATHWAYS, AND EQUIPMENT GROUNDING CONDUCTORS. FOLLOW CONVENTION OF ANSITIA-606.

3.8 FIELD QUALITY CONTROL

- A. PERFORM THE FOLLOWING FIELD TESTS AND INSPECTIONS AND PREPARE TEST REPORTS.
  - 1. CATEGORY 6A UTP PERFORMANCE COMPLIANCE SHALL BE VERIFIED WITH TEST UNIT CAPABLE OF TESTING UP TO 350 MHZ, WITH TEST PARAMETERS BEING ATTENUATION, INSERTION LOSS, NEXT LOSS, EYE EXT. PENET. LOSS, REFLECT, RETURN LOSS, LENGTH AND WIRE-MAP. AS A MINIMUM, EACH HORIZONTAL AND BACKBONE CABLE LINK SHALL BE TESTED AND RESULTS WILL BE SUBMITTED BOTH AS HARD COPIES AND ON A COMPACT DISK (CD). THE OWNER RESERVES THE RIGHT TO HAVE AN INDEPENDENT RCDD INSPECT, TEST, AND ACCEPT BEFORE PAYMENT IS MADE. ANY AND ALL REWORK THAT IS ATTRIBUTED TO NON-COMPLIANCE WITH ACCEPTED INSTALLATION STANDARDS AND PRACTICES PRESENTED IN THIS DOCUMENT WILL BE AT THE CONTRACTOR'S EXPENSE. PERMANENT LINK ADAPTERS SHOULD BE USED FOR UTP TESTING, UNLESS THE MANUFACTURER'S CERTIFICATION AND WARRANTY CALLS FOR A DIFFERENT TESTING METHOD.
  - 2. PERFORMANCE TESTING SHALL BE USED TO ENSURE THAT THE SYSTEM IS CAPABLE OF MEETING THE DESIRED SPECIFICATION. ALL PARAMETERS PER ANSITIA 67 SHALL BE VERIFIED USING A LEVEL II ACCURACY FIELD TESTER. ALL TESTING SHALL BE IN ACCORDANCE WITH ANSITIA 568B.
  - 3. UPON COMPLETION OF TESTING, THE CONTRACTOR WILL PROVIDE THE OWNER WITH A COMPLETE RECORD OF ALL TESTING PERFORMED ON A CD AND HARD COPY OF ALL TEST RESULTS IN BINDER FORM. THE OWNER RESERVES THE RIGHT RANDOMLY TEST ANY CABLES. IF PROBLEMS ARE DISCOVERED, IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE CORRECTIONS.
  - 4. THE CONTRACTOR SHALL PROVIDE FINAL DOCUMENTATION CONSISTING OF END-TO-END INSERTION LOSS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUBMITTING ALL TEST RESULTS FOR ALL DATA RUNS TO THE MANUFACTURER SO THAT WARRANTY COVERAGE CAN BE AWARDED.
- B. REMOVE MALFUNCTIONING UNITS, REPLACE WITH NEW UNITS, AND RETEST AS SPECIFIED ABOVE.

3.9 DEMONSTRATION

- A. TRAIN OWNER'S MAINTENANCE PERSONNEL IN CABLE-PLANT MANAGEMENT OPERATIONS, INCLUDING CHANGING SIGNAL PATHWAYS FOR DIFFERENT WORKSTATIONS, REROUTING SIGNALS IN FAILED CABLES, AND EXTENDING WIRING TO ESTABLISH NEW WORKSTATION OUTLETS. REFER TO DIVISION 01.



RICONDO & ASSOCIATES, INC.  
1000 N.W. 57th COURT,  
SUITE 920  
MIAMI, FL 33126-3511  
(305) 260-2727  
(305) 260-2728

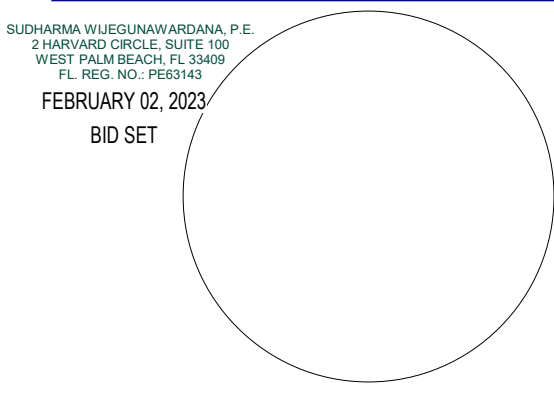
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183 Melody Lane, Suite 107, Ft. Pierce, FL 34950 | p. 772-466-1165  
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Revision Schedule		
No.	Description	Date
1.	As Bid	2023-02-01

ADMINISTRATION BUILDING

SHEET SPECS - TECHNOLOGY

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R & A PROJECT NO :  
DESIGNED BY :  
DRAWN BY :  
CHECKED BY :

SHEET T002

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