

WESTPORT BOARD OF EDUCATION  
110 MYRTLE AVENUE  
WESTPORT, CT 06880  
203 341-1002

SPECIFICATION COVER SHEET  
BID #16-024-BOE

PURCHASE AND INSTALLATION OF OUTDOOR WIRELESS MESH NETWORK AT STAPLES HIGH SCHOOL

**VENDOR MUST ENCLOSE TWO COPIES OF THIS SPECIFICATION COVER SHEET and TWO COPIES OF THE BID SPECIFICATIONS PRICING SHEETS WHEN RESPONDING TO THIS BID**

The Westport Board of Education reserves the right to reject any and all bids, or separate parts thereof, requested herein before. When items are mentioned by a particular brand, substitution of equal quality items will be considered only if the proposed substitution is clearly stated. When a bidder fails to so identify a proposed substitution, it will be assumed that he is bidding on the exact item requested. The Westport Board of Education is exempt from the payment of Federal Excise Taxes and Connecticut Sales and Use Tax according to State Statute. Such taxes must not be included in bid prices nor added to any items specified.

**INSTRUCTIONS ON BID DEADLINES AND REQUIREMENTS:**

NAME OF BID: **BID #16-024-BOE**

TYPE OF BID: **Scaled Bid** QUOTATION #: \_\_\_\_\_

BID CLOSURE DATE: Received Until: DATE: **June 29, 2016** TIME: **1:30 P.M. Room 307**

LOCATION TO FORWARD BIDS:	Elio Longo, Jr., Director of School Business Operations Westport Board of Education 110 Myrtle Avenue, Room 300 Westport, CT 06880
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BID SECURITY: Bid Security Required \_\_\_\_\_ % Bid Security *Not* Required

PREVAILING WAGE: Required \_\_\_\_\_ *Not* Required

FORMS TO COMPLETE BID: **Submit two copies of the Bid Specification Sheets**

Identify Name of Bid on Outside of Envelope:

**PURCHASE AND INSTALLATION OF OUTDOOR WIRELESS MESH NETWORK AT STAPLES HIGH SCHOOL- BID #16-024-BOE**

LENGTH OF TIME PRICES WILL BE HONORED: **MUST BE 120 DAYS**

STATE ESTIMATED DELIVERY DATE: \_\_\_\_\_

STATE ESTIMATED COMPLETION DATE: \_\_\_\_\_

I have read and understand the bidding requirement of this bid specification included for my review herein:

\_\_\_\_\_  
*Signature of Company Representative*

\_\_\_\_\_  
*Date*

TYPED NAME AND TITLE: \_\_\_\_\_

COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ TOWN: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_ FAX NUMBER: \_\_\_\_\_

EMAIL ADDRESS: *(Please print clearly or attach business card):* \_\_\_\_\_

**WESTPORT BOARD OF EDUCATION  
Elio Longo, Jr.  
Office of Director of School Business Operations  
110 MYRTLE AVENUE  
Westport, CT 06880  
203 341-1002**

**INVITATION TO BID  
BID 16-024-BOE  
PURCHASE AND INSTALLATION OF OUTDOOR WIRELESS MESH NETWORK AT STAPLES  
HIGH SCHOOL**

Notice is hereby given that sealed bids on the following will be received at the Office of the Director of School Business Operations until:

**JUNE 29, 2016, 1:30 P.M.**

at which time they will be publicly opened and read aloud:

**BID 16-024-BOE  
PURCHASE AND INSTALLATION OF OUTDOOR WIRELESS MESH NETWORK AT STAPLES  
HIGH SCHOOL**

Specifications, if not attached, may be obtained at the office of the:

**Elio Longo, Jr.  
Director of School Business Operations**

The Board of Education reserves the right to reject any and all bids, or any part thereof, to waive defects in the same, or to accept any proposal it deems to be in the best interest of the Board of Education and/or the Town of Westport.

**Questions regarding this bid should be directed to Jonathan Gryak, Infrastructure Manager at 203-341-1211, email: [jgryak@westport.k12.ct.us](mailto:jgryak@westport.k12.ct.us)**

## **BID SPECIFICATIONS**

### **PURCHASE AND INSTALLATION OF OUTDOOR WIRELESS MESH NETWORK AT STAPLES HIGH SCHOOL** **BID #16-024-BOE**

Due on or before **JUNE 29, 2016, 1:30 P.M.** at the office of

**Elio Longo, Jr.**  
**Director of School Business Operations**  
**Westport Board of Education**  
**110 MYRTLE AVENUE, Room 300**  
**Westport, CT 06880**

Sealed bids will be received by the office of the Director of School Business Operations of the Westport Board of Education of the Town of Westport, Connecticut until 1:30 P.M. on June 29, 2016. Each bid should be clearly marked (example) "BID #16-024-BOE - PURCHASE AND INSTALLATION OF OUTDOOR WIRELESS MESH NETWORK AT STAPLES HIGH SCHOOL". Specifications, instructions and bid forms may be obtained at the above address. Faxed copies of the bid will not be accepted.

#### **CONDITIONS FOR BIDDING**

1. The Board of Education reserves the right to reject any bid if it is deemed to be in the best interests of the Town of Westport, Connecticut, Westport Board of Education and its students.
2. The Board of Education reserves the right to grant an award in total or for any part thereof for the items or services being bid. In addition, the Board of Education reserves the right to award this bid as a package in conjunction with other bids for similar services/supplies/equipment. The Board reserves the right to award with preference to State of Connecticut contract holders and/or local vendors.
3. The submission of a bid shall be conclusive evidence that the bidder has satisfied himself as to the requirements of the bid specifications and any controlling conditions which may exist.
4. Bidders may not withdraw their bid for a period of 120 days from the date of bid opening. The Board of Education and the bidder may mutually agree to extend the time limit.
5. In determining the ranking of responsible bidders, the Board of Education may consider, in addition to price, the quality, availability and type of items, the experience of the bidder, the sufficiency of the financial resources of the bidder and the reputation of the bidder for ability, integrity, judgment and performance, as well as the ability of the bidder to provide future service/supplies/equipment.
6. It is anticipated that the goods will be needed for the current school year, but the Board of Education reserves the right to cancel or alter this service because of enrollment changes, budget consideration or unforeseen circumstances which require a change.
7. All bid prices are to include the complete costs, which includes inside delivery to each school or location with installation and assembly of same, if applicable, and training, if applicable. All deliveries must be made prepaid and must be delivered to the location subsequently designated on the purchase orders at no cost over and above the bid price indicated in your bid. Deliveries must be made inside building indicated. In no case will collect shipments or sidewalk deliveries be accepted. A packing slip shall be included in each shipment. All packages must be clearly marked as to content.

8. The Board of Education of the Town of Westport supports efforts to reduce the use of illegal drugs in the workplace. In instances where responsible prospective bidders submit identical tie bids, preference shall be given to the businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the Board of Education for the procurement of commodities or contractual services which are bid, a bid received from a business which has certified that it has implemented a drug-free workplace program shall be given preference in the award process. The drug-free workplace program certification is attached and is to be submitted with the bid package by the bidder along with other bid documents in order to receive preference. This policy shall become effective in accordance with the provisions of the Charter of the Town of Westport regarding bidding procedure.
9. **ALTERNATIVES:** When proposing an alternate item, indicate the Brand and Model identification on the bid specification sheets. To have alternates considered, complete specifications and submit catalogues describing the product must accompany the bid. The Westport Board of Education reserves the right to request equipment samples on specific items.
10. **SUBSTITUTIONS: No substitutions**  
  
The Westport Board of Education reserves the right to request equipment samples on specific items.
11. **FORM AND STYLE OF BID:** All blanks on the Specification Form, except where otherwise requested, shall be filled in by typewriter or manually in ink and must be completely legible..
12. **WARRANTIES:** Whenever an item or service is covered by a specified product or service warranty, such warranties must be submitted with the official bid or quotation specification sheets. All such warranties shall inure to the benefit of the Board.
13. **INSURANCE REQUIREMENTS:** The successful vendor will be required to purchase from and maintain, for the life of the contract, in a company or companies with an A.M/Best rating of A- (VII) or better, such insurance as will protect the Board of Education from claims set forth below which may arise out of or result from the vendor's obligation under the Contract, whether such obligation is the vendor's or a subcontractor or any person or entity directly or indirectly employed by the successful vendor or anyone for whose acts said vendor may be liable.
14. **Workers Compensation:**  
Vendor shall provide workers compensation insurance required by law with employer's liability limits for at least the amounts of liability for bodily injury by accident of \$ 500,000 each accident and bodily injury by disease of \$500,000.
15. **Commercial General Liability Insurance:**  
Vendor shall provide commercial general liability insurance policy with an edition of 1986 or later including products and complete operations. Limits should be at least: Bodily injury and property with an occurrence limit of \$1,000,000; Personal & advertising injury limit of \$1,000,000 per occurrence; General aggregate limit of \$2,000,000 (other than products and completed operations); Products and completed operations aggregate limit of \$2,000,000. Coverage will continue three years after the completion of the work.
  - The policy shall name the Westport Public Schools' as an additional insured and include ISO Form CG2010 (07/04) and CG 2037 (07/04).
  - Such coverage will be provided on an occurrence basis, and will be primary, and shall not contribute in any way to any insurance or self-insured retention carried by the Board of Education.
  - The policy shall contain a waiver of liability in favor of the Board of Education.

- Such coverage shall contain a broad form contractual liability endorsement or wording within the policy form to comply with the hold harmless and indemnity provision of the contract.
- A per project aggregate limit of liability endorsement shall apply for any construction contract.
- Deductible and self-insured retentions shall be declared and are subject to approval by the Board of Education.

16. **Commercial Automobile Insurance:**

Vendor shall provide commercial automobile insurance for any owned autos (symbol 1 or equivalent) in the amount of \$1,000,000 each accident covering bodily injury and property damage on a combined single limit basis. Such coverage shall also include hired and non-owned automobile coverage. Policy shall name the Board of Education as an additional insured.

17. **Umbrella Liability Insurance:**

Vendor shall provide an umbrella or excess liability policy in excess (without restriction or limitation) of those limits and coverages described in items (A) through (C). Such policy shall contain limits of liability in the amount of \$5,000,000 each occurrence and \$5,000,000 in the aggregate.

As to the insurance required, the insurer(s) and/or their authorized agents shall provide the Board of Education certificates of insurance prior to execution of the agreement by the Board of Education describing said coverage.

18. **QUESTIONS:** For questions regarding the bidding procedure, contact Elio Longo, Director of School Business Operations, at (203) 341-1001. **For questions regarding the Purchase and Installation of Outdoor Wireless Mesh Network at Staples High School, contact Jonathan Gryak, Infrastructure Manager at 203-341-1211.**

**NOTE:** By bidding on this contract the vendor agrees that any or all past clients may be contacted by the Westport School System. The vendors bidding on this contract also agree to release and discharge by bidding on this contract for the vendor him/herself, his/her heirs executors administrators and assigns, release acquit and forever discharge the Westport School System, its Board of Education and all employees and any or all other persons, firms and corporations of and from any and all actions, causes of actions, claims or demands for damages, costs, loss of services, expenses, compensation, consequential damage or any other thing whatsoever, on account of, or in any way growing out of any former client contacted by the Westport School System to obtain an opinion regarding any work performed by your company. The above release shall also include and apply to any former client contacted.

## **DRUG-FREE WORKPLACE CERTIFICATE**

I hereby certify that this company:

1. Has a published statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and that this statement specifies the actions which will be taken against employees for violations of such prohibition.
2. Has a written policy informing employees about the dangers of drug abuse in the workplace, the firm's policy of maintaining a drug free workplace, any available counseling, rehabilitation, and employee assistance programs, and the penalties which may be imposed upon employees for drug abuse violations.
3. Each employee engaged in providing the commodities or contractual services which are being bid was given a copy of the statements specified in paragraphs 1 and 2, above.
4. In the statement specified in paragraph 1, the employees have been notified that, as a condition of working on the commodities or contractual services which are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of "guilty" or of "nolo contendere" to any violation of any controlled substance law of the United States or of any state, for a violation occurring in the workplace no later than five (5) days after such conviction or plea.
5. This firm will impose a sanction on or require the satisfactory participation in a drug abuse assistance program or a rehabilitation program, if such are available in the employee's community, by any employee who is so convicted.
6. This firm will make a good faith effort to continue to maintain a drug free workplace.

*As the person authorized to sign this statement, I certify that this firm fully complies with the above requirements.*

**Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**Appendix A**  
**INSURANCE PROCEDURE**  
**Westport Public Schools**  
**Westport, CT**

**PLEASE NOTE:**

**RETURN THIS COMPLETED FORM WITH YOUR BID. FAILURE TO DO SO MAY RESULT IN YOUR BID BEING REJECTED.**

Please take the insurance requirements of the BID to your agent/broker immediately upon receipt of the BID documents to determine your existing coverage and any costs for new or additional coverage required for the work noted in BID. Any BID's that contain exceptions to the insurance requirements may be considered non-responsive and may be rejected.

**STATEMENT OF VENDOR:**

**I have read the insurance requirements for this work and have taken the documentation to my insurance agent/broker. BID/RFP cost reflects any additional costs relating to insurance requirements for this work.**

**If I am awarded this BID, I or my insurance agent shall submit all of the required insurance documentation to Westport Public Schools Business Office within ten (10) days after the date of the award of the BID.**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Vendor Name

# **Purchase and Installation of Outdoor Wireless Mesh Network at Staples High School Bid 16-024-BOE Wireless Mesh Network Specifications**

## **Overview**

The Westport Public Schools (WPS) is requesting bids for the installation of an outdoor wireless mesh network at Staples High School. The network will provide wireless coverage of the football, baseball, and soccer fields. A site survey was performed during the school year to determine the number and type of wireless access points, as well as all requisite data and electrical work. These components are depicted in the site layout included with these specifications.

## **Bid Conditions and Requirements**

The bid preamble contains a number of requirements governing the bid response process. Additionally, network wiring must conform to the subsequent document entitled “Network Wiring Specifications”. Throughout these documents, the terms Contractor, Bid Responder, or Respondent shall be considered synonymous. Additional bid requirements are listed below:

- All electricians shall possess a minimum of E-1 or E-2 licensing. The Contractor is to provide copies of training certificates and Connecticut licensing as part of the bid response.
- The performance of new electrical installations to specifications will be verified prior to connecting any active equipment.
- The Contractor will obtain any and all permits as necessary.
- All electrical work must conform to all local and national electrical codes (NEC 2011).
- Trenching and excavation must be performed in conformance with Connecticut PURA Regulations Section 16-345. The Contractor will coordinate the scheduling of trenching and excavation with the WPS Athletics Director.

## **Wireless Equipment Specifications**

The site survey utilized the wireless mesh solution from Ruckus Wireless (now Brocade) as its reference equipment. The reference system supports up to 75 access points and 2000 clients, and utilizes the latest wireless standard, 802.11ac. The WPS is open to considering alternative wireless mesh solutions, provided they meet the aforementioned base capacity of the Ruckus solution. Criteria for alternative solutions include:

- The WPS currently employs HPE Aruba equipment for its internal wireless network (WLAN), with redundant local controllers. An alternate solution that can interoperate with our internal WLAN would be preferred.
- Proposed virtual controllers must be able to be hosted in a Hyper-V environment.
- Wave2 802.11ac wireless mesh access points are preferred. However, pricing for both Wave1 and Wave2 802.11ac access points is requested in the bid response.
- Data sheets and other documentation that can be used to evaluate the technical performance of alternative solutions must be included with the bid response.

It is the prerogative of the WPS to determine which proposed solution best meets its needs.

## **Scope of Work**

### **Overview**

For pricing purposes, the project is comprised of three parts, which correspond to line items 2, 3, and 4 on the price sheet:

- Base System Installation, Configuration, and Testing
- Installation, Configuration, and Testing of Additional Mesh AP, Existing Power
- Installation, Configuration, and Testing of Additional Mesh AP, New Trenched Power

The sample bill of materials included in each section should be fully specified in the bid response, with any additional equipment or action items clearly stated.

### **Base System Installation, Configuration, and Testing**

The base system consists of the installation of a new IDF (with requisite power), the Ruckus Controller, and the Root AP of the mesh network.

#### *Dedicated Circuit to IDF*

- Furnish and install approx. (120) feet of ¾ inch EMT conduit
- Furnish and install (40) 1 or 2 hole EMT straps to support conduit
- Furnish and install (12) ¾" couplers to connect EMT conduit
- Furnish and install (2) ¾" box connectors
- Furnish and install (1) 1900 junction box at IDF
- Furnish and install (2) 20 amp outlets
- Furnish and install (1) quad outlet cover
- Furnish and install approx. (250) feet of 12/2 cable to energize circuit – Dedicated Circuit home run to panel
- Furnish and install (1) 20 amp breaker if no spare breakers are available
- Furnish and install misc. hardware to mount EMT straps and 1900 box to concrete, brick, block, dry wall, and wood
- Furnish and install (2) machine labels at quad outlet and within switch gear panel to identify circuit ID number and panel ID

#### *Installation of IDF*

- Furnish and install (1) Fire-rated plywood backboard for IDF wall mount Cabinet
- Furnish and install (1) 7-12U wall mount enclosed cabinet
- Furnish and install (1) Ortronics (24) Port Cat6 Clarity patch panel for copper terminations.
- Furnish and install (2) 1U rack mountable fiber enclosures for IDF and existing network rack adjacent to Gym.
- Furnish and install (2) 12-strand LC bulkheads for fiber enclosure, (1) per enclosure
- Furnish and install (1) 2U horizontal wire manager for IDF
- Furnish and install (400) Feet of armored OS2 single mode plenum-rated 12-strand fiber optic cable (9/125)

### *Installation of Root AP*

- Furnish and install (4) Feet of ½” EMT conduit sleeve for penetration to Root AP
- Furnish and install (2) ½” bang on bushings for ends of EMT
- Furnish and install (1) Tube of sealant to weatherproof the penetration
- Furnish and install (40) Feet of Cat6 (outdoor rated) cable for data connection to Root AP
- Furnish and install (1) Ortronics Clarity TracJack for data termination at Root AP
- Furnish and install (1) Ortronics single position surface mount biscuit to house termination at Root AP
- Furnish and install (1) Hubbell dual gang weatherproof metal box with cover to mount Root AP and house data termination
- Furnish and install (3) Cat6 3-5 foot patch cables for patching
- Furnish and install (2) 1-2 meter LC to LC single mode patch cables for patching
- Furnish and install (1) Ruckus ZoneFlex T301 or T701

### *Installation and Configuration of Controller and Root AP*

- Furnish and install (1) Ruckus ZoneDirector 1200 series with (6) licenses, premise controller for mesh network
- Furnish and install (1) Mounting bracket to support T301 or T701 depending on model furnished
- Furnish and install (1) PoE power injector for T301 or T701 depending on model furnished
- Furnish and provide (1) year of Watchdog End User support for ZoneDirector
- Furnish and provided (1) year of Watchdog Advanced hardware Replacement for Access point(s)
- Work with WPS IT department to configure Ruckus ZoneDirector and Root AP with dynamic or static addresses depending on the network configuration. Obtain the proper network settings to setup the controller.
- Configure the BSSID(s) with the proper name(s) which will be provided by the WPS IT department and set the required security encryption based on the network configuration
- When the BSSID(s) are broadcasting, perform a site survey with AirMagnet or equivalent software to measure the signal strength in decibels.
- Furnish and provide a map of the coverage area with dB readings in PDF format

### **Installation, Configuration, and Testing of Additional Mesh AP, Existing Power**

For access points that will be installed in locations with existing power, the following tasks will be performed:

- Furnish and install (1) Square D 100 amp 4-Space 8 Circuit Outdoor panel, replaces existing outlet or panel.
- Furnish and install (2) Square D 20 amp single pole circuit breaker
- Furnish and install (2) GE - 20 amp outdoor rated GFI receptacle with box and cover
- Furnish and install approx. (20) feet of 12-2 UF-B W/G outdoor cable
- Furnish and install (4) ¾” watertight connectors for UF cable
- Furnish and install (8) ¾” straps for UF cable
- Furnish and install misc. hardware to mount outdoor panel, strap, and receptacles
- Furnish and install (4) machine labels at GFI outlet(s) and within switch gear panel to identify circuit ID number and panel ID

### **Installation, Configuration, and Testing of Additional Mesh AP, New Trenched Power**

One access point will be installed in a location without existing power, necessitating the trenching and laying of a new underground circuit. The following tasks will be performed:

- Prior to installation Call Before You Dig will be engaged to mark all public utilities
- Furnish and provide a private utility locating company to use radar and electromagnetic induction to verify that the pathway is clear
- Furnish and provide a hydraulic trencher with 18" to 24" digging chain to excavate the proposed pathway
- Furnish and provide (2) rolls of underground warning tape to lay on the pipe before backfilling with soil
- Furnish and install approx. (175) feet of 1" schedule 40 PVC conduit
- Furnish and install (6) 1" PVC couplers for schedule 40 conduit
- Furnish and install (2) 90 degree elbows at each score board location
- Furnish and install (1) 8 ounce bottle of PVC cement to seal conduits
- Furnish and install approx. (175) feet of 12-2 UF-B W/G outdoor cable
- Furnish and install (1) Square D 100 amp 4-Space 8 Circuit Outdoor panel
- Furnish and install (1) Square D 20 amp single pole circuit breaker
- Furnish and install (1) GE - 20 Amp outdoor rated GFI receptacle with box and cover
- Furnish and install (4) 3/4" watertight connectors for UF cable
- Furnish and install (8) 3/4" straps for UF cable
- Furnish and install misc. hardware to mount outdoor panel, strap, and receptacles
- Furnish and install (2) machine labels at GFI outlet(s) and within switch gear panel to identify circuit ID number and panel ID.
- Furnish and lay hay plus grass seed in accordance with WPS Facilities Department directions once the installation of conduit, warning tape, and backfilled soil is completed

### **Pricing**

Please fill out the following pricing spreadsheet as part of your bid response.

# Bid 16-024-BOE

## Purchase and Installation of Outdoor Wireless Mesh Network at Staples High School Site Layout

Main Score Board – (1) Mesh AP, Existing Power

Baseball Score Board – (1) Mesh AP, Existing Power



Score Board – (1) Mesh AP, Existing Power

This is the section which will need to be trenched.

Score Board – (1) Mesh AP, Need Trench for permanent power

IDF – (1) Root AP – No existing Power or Network Connectivity yet. This the Proposed Location of Both IDF and the Root AP

Shed Next to Dugout – (1) Mesh AP, Existing Power

**Purchase and Installation of Outdoor Wireless Mesh Network  
at Staples High School  
Bid 16-024-BOE  
Network Wiring Specifications**

**Section I - General**

**A. Contractor Qualifications**

1. The Contractor shall be certified and authorized to extend a fifteen (15) year extended warranty on copper and optical cabling systems. This is to include installation, warranty, and service on all products being installed as outlined in the specification.
2. There will be no subcontractors.
3. The Contractor must be registered and fully licensed to conduct business within the State of Connecticut. All installation technicians must be fully trained and certified in the installation, termination, and testing of all current copper and optical wiring standards. All installation technicians shall possess a minimum of T-1 or T-2 licensing. The Contractor is to provide copies of training certificates and Connecticut licensing as part of the bid package.
4. The Contractor must be fully insured. Evidence of insurance and workers' compensation must be provided as part of the bid package.
5. The Contractor shall provide a list of five (5) reference sites consisting of institutions of similar size and complexity within the past three (3) years. Reference sites listed shall include brief description of the project, point of contact, and contact telephone numbers and email addresses as part of the bid package.

**BIDS WILL NOT BE ACCEPTED WITHOUT THE ITEMS LISTED  
IN NUMBERS 3, 4 and 5.**

**B. Contractor Responsibilities**

1. The Contractor shall furnish, install and test all hardware and cabling as defined in these specifications. The completed installations must comply with local, state, and national fire and safety codes, and with authorities having jurisdiction. In addition, all phases of the installations must adhere to all applicable structured cabling specifications as defined by the Institution of Electrical and Electronics Engineers (IEEE) and TIA/EIA-568-B, 606,607, and 942-2 standards (including their subsequent revisions). Cables must be installed, supported, terminated, labeled, and tested per these standards.
2. The Contractor shall furnish all items listed in this specification including delivery to the sites(s), unpacking and setting in place.
3. Prior to construction or the ordering of any materials, the Contractor must confirm all drop locations, cable runs/paths, and equipment positioning with the WPS.
4. All cable, hardware, and materials shall be new and in working order with the original manufacturers' warranties in place.
5. The Contractor is responsible for daily removal of all debris, dirt, and rubbish accumulated as a result of any and all installations and must leave the premises clean and ready for use.

6. The Contractor is required to repair, replace, or reimburse the WPS for any damages made by the Contractor during the course of any installations. Any ceiling tiles that are marked must be cleaned or replaced.
7. WPS procedures for removing or cutting ceiling tiles must be followed. Tiles removed from the ceiling must be bagged. Any tile cutting must be done outside and tiles must be bagged during transport to and from the cutting area.
8. The Contractor will work with onsite WPS maintenance personnel in coordinating access to areas where cabling will be installed. If coring and drilling are necessary the WPS must be notified one (1) day in advance to coordinate cleanup.
9. The Contractor will replace any firestop materials or systems which are damaged or removed during the installation.
10. Incidental materials, such as plywood, fasteners, hangers, test equipment, tools, etc., needed to complete any and all installations as defined by this specification are the responsibility of the Contractor to provide and install.
11. The Contractor will perform all work in a craftsman-like manner with emphasis on esthetics, functionality, reliability, and serviceability.
12. The Contractor will immediately notify the WPS in writing of any locations that are discovered to have inadequate power outlets or other discrepancies that may delay the completed installation and functionality of cabling system or network.
13. The Contractor will follow all design and implementation guidelines as specified.
14. Prior to installation, the Contractor is required to confirm the final equipment and route of the cabling system.
15. The Contractor shall at the completion of the work present to the WPS all product manuals and warranty registrations cards provided with cable and equipment including 100% testing documentation.
16. The Contractor will provide the name, address, and telephone number of the manufacturer's representative and service company for each piece of equipment so that the source of replacement parts and service for each item of equipment can be readily available.
17. Should hazardous materials (i.e., asbestos) be encountered during installation, the Contractor shall cease installation in that area and notify the WPS immediately.
18. The Contractor must coordinate the installation work schedule with the WPS so as not to interfere with the operations of the building.
19. The WPS requires that all vendors follow the Confined Space Protocol as defined and published by OSHA when working in the tunnels at Coleytown Elementary School.
20. A cable pull permit is not required by the Town of Westport. However, a Low Voltage Building Permit for Telecommunications Wiring is required and the vendor shall cover all permit costs.
- 21. Under no circumstance can any vendor drill through or in any way disturb the walls within the core building at King's Highway School. The vendor must work with the WPS Maintenance department and its lead remediation service to identify any drilling or affixing that must occur to complete the wiring, and the lead remediation service will perform the necessary work.**

### **C. System Warranty**

Contractor must warranty the cabling systems for a period of no less than fifteen (15) years from the date of the WPS's acceptance. Warranty must include and not be limited to all equipment, materials, and labor. Any part of the system that fails or is found to be defective will be repaired or replaced at no cost to the WPS. Warranty certification and documentation must be provided to the WPS no less than thirty (30) days following the WPS's acceptance.

## **Section II - Product Description**

### **A. Copper Station Cable**

1. Station cable shall be Category 6, 23 AWG solid conductor, 4-pair unshielded twisted pair (UTP), riser rated, except for installations in Long Lots School and Coleytown Elementary, which must be plenum-rated.
2. Contractor will be responsible for determining total quantity of cable required. Only sufficient quantities required to complete project as specified shall be calculated and supplied. Contractor shall assume responsibility for calculation of material quantities.
3. Tie wraps used in actual plenum areas must be plenum rated.
4. The use of hybrid or composite cable assemblies will not be allowed on any installation.
5. Cabling used for data shall be blue, voice cabling shall be gray.

Specified Product(s):

Category 6: Berk-Tek LANmark, 1000 Cat 6 UTP

Category 6a: Berk-Tek LANmark-10G2 Cat 6a UTP

### **B. Fiber Optic Cable**

1. Fiber optic cable used shall meet or exceed the specifications of the reference products listed below.
2. Contractor will be responsible for determining total quantity of cable required. Only sufficient quantities required to complete project as specified shall be calculated and supplied. Contractor shall assume responsibility for calculation of material quantities.
3. Tie wraps used in actual plenum areas must be plenum rated.
4. The use of hybrid or composite cable assemblies will not be allowed on any installation.
5. External cable sheath coloring shall be: orange for MM OM1 and OM2, aqua for MM OM3 and better, yellow for SM.

Specified Product(s):

Multimode (OM3): Berk-Tek Premises Distribution Tight Buffer Fiber Optic Cabling, 50/125 $\mu$  GIGAlite-10, Plenum Rated

Multimode (OM4): Berk-Tek Premises Distribution Tight Buffer Fiber Optic Cabling, 50/125 $\mu$  GIGAlite-10XB, Plenum Rated

Single-mode: Berk-Tek Premises Distribution Tight Buffer Fiber Optic Cabling, Enhanced Single-Mode Standard for Tight Buffer, Plenum Rated

### **C. Station Jacks and Face Plates**

1. Station jacks shall be Category 6, 8P8C ("RJ45"), TIA/EIA-568-B pin configuration, unless otherwise specified.
2. Single gang faceplates shall be used in all station drop locations notes. Each faceplate used to terminate voice and data drops must accommodate six (6) station jacks. Single gang faceplates used to terminate separate voice/intercom drops locations shall accommodate one jack module.
3. Single gang faceplates shall be populated with appropriate type and amount of snap-in modules required to meet specified number of drops per locations. Blank modules shall be utilized to occupy extra module spacing in faceplate where necessary.
4. Contractor will be responsible for determining exact quantities of faceplates, jack snap-in modules, blank snap-in modules, etc. Only sufficient quantities required to complete

project as specified shall be calculated and supplied. Contractor shall assume responsibility for calculations of material quantities.

5. Data icons shall be installed at each station port to identify port type. Icon color to match color of station cable. (Data: Blue, Voice: Gray)
6. Data drops for wireless access points in locations with suspended ceilings shall be terminated above the ceiling tiles with a surface mount box.

Specified Product(s):

- a. Ortronics 1 RJ45, 8P8C, Cat6, 568B, 110, Series II, Flush (OR-S21600)
- b. Ortronics 2 RJ45, 8P8C, Cat6, 568B, 110, Series II, Flush (OR-S22600)
- c. Ortronics Surface Mount Box (OR-KSSMB2)
- d. Ortronics face plates, white, single gang (OR-40300158)
- e. Ortronics blank, 1 Unit (OR-40300164)

#### **D. Cable Hangers/Supports**

1. Contractor shall supply and install appropriate type of cable hangers/supports according to specific building installation requirements. The Contractor shall not use any existing structure to support cables.
2. Cable hangers and supports shall be spaced and installed according to TIA/EIA-568-B standards. (Typical spacing every five (5) feet.)

Specified Product(s):

Erico Caddy CableCat support clips.

Note: As required, other Caddy cable support hangers may be used. Prior approval by WPS is required before ordering or installation. Cable ring and cable tie wrap supports are not acceptable for supporting horizontal cabling.

#### **E. Face Plate Mounting Brackets**

1. All wiring is to be installed in the wall where practical.
2. Specified face plate mounting brackets shall be used to mount face plates in drywall locations.
3. Contractor shall be responsible for calculating, and supplying correct amount of caddy fasteners to be used. Quantity shall be equal to the amount of drop locations to be terminated in drywall.

Specified Product(s):

Erico Caddy Fasteners (Erico MP1)

#### **F. Surface Mount Raceway and Surface Mount Back Boxes**

1. Contractor shall provide and install surface mount raceway and back boxes where required. Surface mounted raceway and back boxes shall be secured to wall surfaces with appropriate mounting screws and hardware. Raceway shall be ivory colored. Note: Plastic raceway is not acceptable.
2. Contractor shall provide and install appropriate series of surface mounted raceway, back boxes and fittings and size to match number of required cables per location, and appropriate ceiling, corner and joining fittings matching utilized series of raceway. Install per manufacturer specifications.

3. Where applicable, Contractor may utilize wall to route cables to face plate locations (i.e., drywall). Confirm prior to installation.
4. Contractor shall be responsible for calculating exact amount of surface mount raceway and back boxes required to complete project as specified. Contractor shall be responsible for calculation of material quantities.

Specified Product(s):

- a. Metallic surface mount raceway (Wiremold V700)
- b. Metallic surface mount raceway (Wiremold V2000)
- c. Metallic surface mount chase/raceway without divider (Wiremold V4000B series)
- d. Single gang-fitting plate for V4000 series (Wiremold V4007C-1)
- e. Metallic raceway cover plate for V4000 series (Wiremold V4000C)
- f. Metallic surface mount, single gang back box (Wiremold V2048)

Note: All surface mounted raceway and back boxes shall be mounted level and secured with appropriate mounting screws per manufacturer specifications.

### **G. Tel/Power Poles**

Where required, provide and install Wiremold power poles, color ivory, type 30TP-2V. Vendor must verify ceiling height and pole length prior to purchase.

### **H. Product Substitutions/Alternatives**

1. System design based on Ortronics and Berk-Tek products. Alternative products will be considered. However, all alternative cable and termination equipment must be manufactured by like manufacturer and must be compliant with the fifteen (15) year warranty requirements of this proposal. Should alternative materials be proposed, product cut sheets and performance data must be supplied along with bid package.
2. Alternative products must be a like design, model and perform as those initially specified. Termination products proposed must be of like manufacturer, and both cable and termination hardware must together comply with the fifteen-(15) year warranty requirements of this proposal.
3. Final determination of acceptance or rejection of alternative products will reside solely with the WPS.

## **Section III - Execution**

### **A. Interior Building - Copper Cable Distribution**

1. Station cable must be run and installed in a neat and orderly manner. Station cable must be bundled, tied and run together wherever possible.
2. Copper station cable shall be run and installed according to TIA/EIA-568-B installation standards. Cable must be run in accordance to noted cable routing within each site and must be suspended by approved cable hanging devices spaced according to TIA/EIA standards. Appropriate cable suspension slack standards must be followed. At each station location a two-foot long cable slack loop must be provided. At patch panel locations a three-foot cable slack loop must be provided.
3. Contractor must notify in writing WPS immediately if a copper cable run is found that exceeds 275 feet in length.
4. Station cable runs must be of continuous cable. Splicing, cross wiring, or bridging shall not be allowed.

5. Contractor must install copper station cables with a minimum separation distance of twelve (12) inches from florescent lighting, and forty-eight (48) inches from electrical motors, transformers, or other electrical equipment.

#### **B. Coring, Sleeving, Fire Stopping**

1. Contractor will be responsible for all required coring needed to penetrate walls, floors, ceiling, etc. All penetrations must be sleeved with EMT metal sleeves containing protector rings on both ends of each sleeve.
2. All penetrations must be fire stopped with fire stop material that meets or exceeds local, state, and national building and fire codes.
3. All coring and sleeving used to accommodate cable runs must be appropriately sized to accommodate required amount of cables plus 50% growth capabilities.

#### **C. Termination Hardware - Copper**

1. Copper cable shall be installed and terminated onto termination hardware according to TIA/EIA-568-B standards for Category 6 cable installations. Copper cables must be installed in a neat and orderly fashion and supported appropriately with required hardware. Contractor shall utilize Category 6 cable support J-clips for horizontal cable support in all buildings. Contractor shall utilize appropriately sized clips based on manufacturer's recommendations and TIA/EIA-568-B standards.

#### **D. Cable Testing - Copper**

1. Upon installation and termination, all station copper cables and termination hardware shall be bi-directionally tested to assure certification under the category-specific guidelines of TIA/EIA-568-B and TIA/EIA TSB-67 standards. Cables and termination equipment must be capable of injecting a signal consistent with the maximum speed capability of the category of cable: e.g., 1 Gbps for Category 6, 10 Gbps for Category 6a. All four pairs of each data station cable must be tested.
2. Cable test units must be factory re-calibrated prior to testing, and documentation of recent calibration must be provided to the WPS prior to testing. Contractor must properly calibrate test equipment utilizing actual NVP cable rating of product being installed on this project. NVP rating must be documented in final test documentation package.
3. Voice station cable shall be tested and certified to Category 3 specifications.
4. Contractor must provide WPS with a hard copy of results downloaded directly from cable test unit, along with a summary in electronic format.
5. Contractor must provide WPS with a signed statement that all circuits were successfully tested and certify to the appropriate standards. Name of person(s) conducting testing and date of tests must be supplied to WPS.
6. Testing of all copper station cables shall be performed using the Basic Link configuration as outlined in TIA/EIA TSB-67.

#### **E. Cable Testing - Fiber Optic Cable**

1. Upon installation and termination, all fiber optic cables and termination hardware shall be double-ended (OFSTP-14) tested to assure certification under the TIA-526-7 and TIA-526-14A standards. Multimode fiber optic cable must be tested at both 850nm and 1310nm wavelengths, while single-mode cable must be tested at both 1310nm and 1550nm wavelengths. Fiber cables must meet or exceed the appropriate OFL or EM bandwidth for their cable type (e.g. 500MHz-km for OM2, 2000MHz-km for OM3.) In addition to power testing, OTDR testing shall be performed when appropriate.

2. Cable test units must be factory re-calibrated prior to testing, and documentation of recent calibration must be provided to the WPS prior to testing. Contractor must properly calibrate test equipment utilizing a launch cable that matches the fiber size and connector type of the cable being installed on this project. Launch cable loss from a single-ended FOTP-171 test must be documented in final test documentation package.
3. Contractor must provide the WPS with a hard copy of results downloaded directly from cable test unit, along with a summary in electronic format.
4. Contractor must provide the WPS with a signed statement that all circuits were successfully tested and certify to the appropriate standards. Name of person(s) conducting testing and date of tests must be supplied to the WPS.

#### **F. Labeling**

1. Labeling shall be in accordance with TIA/EIA568-606 administration standards. All copper patch panels shall be labeled in a neat and orderly manner. Copper patch panels shall clearly indicate station locations and labeled in accordance to preapproved consecutive numbering scheme. Station location numbering scheme shall match patch panel numbering scheme.
2. Handwritten identification on patch panels and faceplates is deemed unacceptable. Labeling procedures and materials must be uniform and consistent through out installation per TIA/EIA568-606 administration. Labels must be vinyl, self-laminating (i.e. 3M or Brady type).
3. Labeling procedures and numbering scheme shall be reviewed with the WPS prior to start of installation. The WPS standard is D<Closet#>-<Room#>-<Jack#> (i.e. D0-292A-01.)

#### **G. Final Completion - Inspection, Review and Acceptance**

1. The Contractor shall notify the WPS of job completion.
2. Should the WPS find work incomplete or not to specifications, WPS will suspend the review and notify the Contractor in writing as to the located discrepancies.
3. The Contractor shall complete his work, remedy discrepancies and send second notice of final completion.
4. The WPS shall upon receipt of the second notice of completion make a second review. Once all specifications have been met, the WPS shall make payment.

**PURCHASE AND INSTALLATION OF OUTDOOR WIRELESS MESH NETWORK AT  
STAPLES HIGH SCHOOLS  
BID 16-024-BOE SPECIFICATIONS**

<b>Vendor must be an authorized Ruckus (or equivalent) reseller and include proof of authorization with bid response.</b>				
<b>Bid prices must be held for 120 days</b>				
<b>Item</b>	<b>DESCRIPTION</b>	<b>Qty</b>	<b>Unit Price</b>	<b>Extended Price</b>
<b>Wireless Controller</b>				
1	Ruckus ZoneDirector 1200 Controller with 6 AP Licenses and 1 Year Support	1		
<b>Access Points</b>				
A	Ruckus ZoneFlex T301 Series Access Point	6		
B	Ruckus ZoneFlex T701 Series Access Point	6		
<b>Installation and Configuration</b>				
2	Base System Installation, Configuration, and Testing Dedicated Circuit for IDF Installation of IDF Installation of Root AP Installation and Configuration of Controller and Root AP	1		
3	Installation, Configuration, and Testing of Additional Mesh AP, Existing Power	4		
4	Installation, Configuration, and Testing of Additional Mesh AP, New Trenched Power	1		
<b>TOTAL PRICE WITH OPTION A</b>				
<b>TOTAL PRICE WITH OPTION B</b>				

**VENDOR NAME:**

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