

McFARLAND UNIFIED SCHOOL DISTRICT

BID # ER - 13-001A, B, C, & D

CABLE PLANT SCOPE OF WORK

GENERAL

- A. Contractor will purchase, install, terminate, label, test and document all materials for a Voice/Data/Video Cable Plant and Conduit pathway at four different school campus sites. Contractor will comply with all ANSI/EIA/TIA 568A-5, B.I, B.I-I Clause II, B.1-3 8.2, 8.2-2, B.2.-3, 8.3, 569A,, A-I, A-4, A-7, B, 606A, 607A, 526-I4A, Annex B & C, 526-7, Method A.I, ANSI/TIA/EIA 5988, 758-1999 and ANSI/NECA/BICSI 568-2001 standards and applicable TSB's. A minimum 20 year manufacturer's warranty is required.
- B. All National Electrical Codes, NFPA70 (2005 edition), Article 770.3 (A), Article 300.11 (A), 300.22 (C) FPN:) Article 800.90 (A), 800.53, State, County, City laws, standards, ordinances, regulations and codes are to be strictly adhered to by the Contractor. Any judgments, fines or court actions resulting from the work performed by the Contractor will hold harmless the McFarland Unified School District Board, McFarland Unified School District employees and their agents.
- C. Contractor to submit Name and Pager/Cell/Fax numbers of designated Project Manager, Supervisor, Superintendent, Foreman or Lead person to be present when employees of the Contractor, or Sub-contractor are on site for the duration of the project, to ensure all employees conduct themselves in a safe, courteous and professional manner. Any infraction of behavior specified, observed by parents, School Staff, District Staff or their agents would result in the immediate removal of the person or persons committing the infraction for the duration of the project, and the possibility of forfeiture of the Contract.
- D. No smoking, drugs or alcoholic beverages are permitted anywhere on this property at any time. This includes vehicles parked on the property.
- E. The McFarland Unified School District will determine work hours; assign restroom facilities, eating area and secured storage area for materials if available. No food or beverages are permitted anywhere other than assigned area for this purpose.
- F. Work sites will be kept free of trash tools, materials and equipment during working hours to ensure the safety, minimum traffic interference and disruption of the working day of all persons at the work site. Contractor will provide all safety barriers or fencing required for blocking off area where overhead or underground work is required.

- G. Any change deemed necessary by the Contractor to the Scope of Work, Specifications or Drawings supplied must be submitted as a formal quote to the McFarland Unified School District for approval. A complete description of work to be performed, a detailed line item materials list with unit pricing and quantities, manufactures specifications of materials to be used, rental prices of equipment needed and complete labor cost are required. The District will respond in writing if approved. This does not constitute a change order, but rather additional work to be performed. Any work done by the Contractor, Contractor's employees or Sub-Contractor's employees on verbal instruction, without the written approval of the District WILL NOT BE REIMBURSABLE.
- H. This project is under the jurisdiction of the State Public Works Laws. Contractor is required to pay prevailing wages to all employees and Subcontractors employees who work on his project. Contractor and Subcontractors will maintain certified payroll records and submit copies of those records to the District with the Contractors Letter of Completion of this project. The District reserves the right to view these records at anytime during the progress of this project. The Contractor and Sub-Contractors will be responsible for determining the prevailing wage rate for each employee on this project. Any dispute that may arise from the classification used by the Contractor or Sub-Contractor will be the sole financial responsibility of the Contractor or Sub-Contractor and hold harmless the McFarland Unified School District Board, the McFarland Unified School District Staff or its agents.
- I. Contractor will test and document all copper cables installed as stated in the Specifications under Section 9.1 and **SUBMIT REQUIRED DOCUMENTATION, CD, CERTIFIED PAYROLL AND CONTRACTORS LETTER OF COMPLETION PRIOR TO OWNERS INSPECTION FOR ACCEPTANCE AND FINAL PAYMENT BEING RELEASED.**

McFARLAND HIGH SCHOOL SCOPE of WORK ER 13-001A

CABLEPLANT

1. Contractor will replace all fiber optic cable trays/ patch panels and re-terminate all fiber optic cables in MDF and all IC's with LC type connectors. All fiber patch cables will be replaced with new patch cables rated at 10 Gb. All single mode patch cables will be red and all multimode cables will be green. Patch cables will be clearly marked and installed using appropriate length or using cable management to leave an organized and finished installation.
2. Contractor will purchase and install new four pair Category 6, 24 AWG, UTP, solid copper Data patch cables in all IDF's and MDF to replace existing patch cables. Cables will be installed using appropriate length or using cable management to leave an organized and finished installation. Contractor will also purchase and install new four pair Category 6, 24 AWG, UTP, solid copper Data patch cables to all network attached devices on campus in the color code specified in 6.1.4 of General Specifications.
3. As alternate bid number 1, contractor will purchase and install 3sets of 6 pairs of single mode and 6 pairs of multi mode fiber optic cable to replace bad fiber cables found during re-termination of fibers. This project may include but not be limited to trenching, installing all necessary conduit, Christy boxes, and patch panels as well as acquiring any necessary permits. Conduit to be installed running North/South or East/West if existing conduit cannot be utilized.
4. Testing and documentation as stated in Section 9.1 of specifications will be required for all cables installed.
5. Contractor will test and label all existing data drops in MC and all IC's. Any failing cables will be noted. Contractor will repair or replace 48 Data jack locations, designated by the District Representative that were previously installed by others. Contractor will test and submit test results as a separate document, than the required document for the newly installed Data station cable drops.

TELEPHONE CABLES WILL NOT SHARE DATA CABLE PATHWAY OR CABINET ENTRY POINTS.

PLEASE SEE GENERAL SPECIFICATIONS, SECTION 1.1 FOR MORE DETAIL.

McFARLAND MIDDLE SCHOOL SCOPE of WORK ER 13-001B

CABLEPLANT

1. Contractor will replace all fiber optic cable trays/ patch panels and re-terminate all fiber optic cables in MDF and all IC's with LC type connectors. All fiber patch cables will be replaced with new patch cables rated at 10 Gb. All single mode patch cables will be red and all multimode cables will be green. Patch cables will be clearly marked and installed using appropriate length or using cable management to leave an organized and finished installation.
2. Contractor will purchase and install new four pair Category 6, 24 AWG, UTP, solid copper Data patch cables in all IDF's and MDF to replace existing patch cables. Cables will be installed using appropriate length or using cable management to leave an organized and finished installation. Contractor will also purchase and install new four pair Category 6, 24 AWG, UTP, solid copper Data patch cables to all network attached devices on campus in the color code specified in 6.1.4 of General Specifications.
3. As alternate bid number 1, contractor will purchase and install 3sets of 6 pairs of single mode and 6 pairs of multi mode fiber optic cable to replace bad fiber cables found during re-termination of fibers. This project may include but not be limited to trenching, installing all necessary conduit, Christy boxes, and patch panels as well as acquiring any necessary permits. Conduit to be installed running North/South or East/West if existing conduit cannot be utilized.
4. Testing and documentation as stated in Section 9.1 of specifications will be required for all cables installed.
5. Contractor will test and label all existing data drops in MC and all IC's. Any failing cables will be noted. Contractor will repair or replace 48 Data jack locations, designated by the District Representative that were previously installed by others. Contractor will test and submit test results as a separate document, than the required document for the newly installed Data station cable drops.

TELEPHONE CABLES WILL NOT SHARE DATA CABLE PATHWAY OR CABINET ENTRY POINTS.

PLEASE SEE GENERAL SPECIFICATIONS, SECTION 1.1 FOR MORE DETAIL.

KERN AVENUE ELEMENTARY SCHOOL SCOPE of WORK ER 13-001C

CABLEPLANT

1. Contractor will replace all fiber optic cable trays/ patch panels and re-terminate all fiber optic cables in MDF and all IC's with LC type connectors. All fiber patch cables will be replaced with new patch cables rated at 10 Gb. All single mode patch cables will be red and all multimode cables will be green. Patch cables will be clearly marked and installed using appropriate length or using cable management to leave an organized and finished installation.
2. Contractor will purchase and install new four pair Category 6, 24 AWG, UTP, solid copper Data patch cables in all IDF's and MDF to replace existing patch cables. Cables will be installed using appropriate length or using cable management to leave an organized and finished installation. Contractor will also purchase and install new four pair Category 6, 24 AWG, UTP, solid copper Data patch cables to all network attached devices on campus in the color code specified in 6.1.4 of General Specifications.
3. As alternate bid number 1, contractor will purchase and install 3sets of 6 pairs of single mode and 6 pairs of multi mode fiber optic cable to replace bad fiber cables found during re-termination of fibers. This project may include but not be limited to trenching, installing all necessary conduit, Christy boxes, and patch panels as well as acquiring any necessary permits. Conduit to be installed running North/South or East/West if existing conduit cannot be utilized.
4. Testing and documentation as stated in Section 9.1 of specifications will be required for all cables installed.
5. Contractor will test and label all existing data drops in MC and all IC's. Any failing cables will be noted. Contractor will repair or replace 48 Data jack locations, designated by the District Representative that were previously installed by others. Contractor will test and submit test results as a separate document, than the required document for the newly installed Data station cable drops.

TELEPHONE CABLES WILL NOT SHARE DATA CABLE PATHWAY OR CABINET ENTRY POINTS.

PLEASE SEE GENERAL SPECIFICATIONS, SECTION 1.1 FOR MORE DETAIL.

BROWNING ROAD ELEMENTARY SCHOOL SCOPE of WORK ER 13-001D

CABLEPLANT

1. Contractor will replace all fiber optic cable trays/ patch panels and re-terminate all fiber optic cables in MDF and all IC's with LC type connectors. All fiber patch cables will be replaced with new patch cables rated at 10 Gb. All single mode patch cables will be red and all multimode cables will be green. Patch cables will be clearly marked and installed using appropriate length or using cable management to leave an organized and finished installation.
2. Contractor will purchase and install new four pair Category 6, 24 AWG, UTP, solid copper Data patch cables in all IDF's and MDF to replace existing patch cables. Cables will be installed using appropriate length or using cable management to leave an organized and finished installation. Contractor will also purchase and install new four pair Category 6, 24 AWG, UTP, solid copper Data patch cables to all network attached devices on campus in the color code specified in 6.1.4 of General Specifications.
3. As alternate bid number 1, contractor will purchase and install 3sets of 6 pairs of single mode and 6 pairs of multi mode fiber optic cable to replace bad fiber cables found during re-termination of fibers. This project may include but not be limited to trenching, installing all necessary conduit, Christy boxes, and patch panels as well as acquiring any necessary permits. Conduit to be installed running North/South or East/West if existing conduit cannot be utilized.
4. Testing and documentation as stated in Section 9.1 of specifications will be required for all cables installed.
5. Contractor will test and label all existing data drops in MC and all IC's. Any failing cables will be noted. Contractor will repair or replace 48 Data jack locations, designated by the District Representative that were previously installed by others. Contractor will test and submit test results as a separate document, than the required document for the newly installed Data station cable drops.

TELEPHONE CABLES WILL NOT SHARE DATA CABLE PATHWAY OR CABINET ENTRY POINTS.

PLEASE SEE GENERAL SPECIFICATIONS, SECTION 1.1 FOR MORE DETAIL.

DESIGN DOCUMENTATION
 McFarland Unified School District
 McFarland High School
 * *Pending 2013 E-Rate Funding*

BACKBONE EQUIPMENT SPECIFICATIONS

1. Brief Overview of LAN Including Drop Counts
2. Current Hardware Layout and Design
3. Hardware Needs
4. Access Point Needs
5. Installation and Configuration
 - Design Drawing Sheet

BRIEF OVERVIEW OF LAN INCLUDING DROP COUNT

McFarland Unified School District's technology plan specifies up to eight computers, a printer and a teacher workstation per classroom. The cable plant will allow for up to ten nodes per classroom. The proposed backbone design for McFarland High School is submitted as a switched, collapsible Fast Ethernet system interconnecting all of the switches at Gigabit speed with each Interconnect located within its own LAN. All devices connecting to the wireless access points will be in a separate LAN from the wired network. The wireless LAN will be divided into 3 categories, one with access to the interior network, one with partial access to the interior network, and one with no access to the interior network.

The following table provides a basic understanding of the current port requirements and the potential growth built in to this campus data communication network. All switches will have 48 ports.

McFarland High School			
<u>Location of IC</u>	<u># of Drops</u>	<u># of Active Drops</u>	<u># of Switches</u> When complete
-MC { }	-	-	
--Server Rack	30 Drops	24 Active	2
--Workstations	98 Drops	94 Active	2 –see core below
IC 1.1	72 Drops	65 Active	2
IC 1.2	48 Drops	36 Active	2
IC 1.3	144 Drops	132 Active	3
IC 1.4	72 Drops	65 Active	2
IC 1.5	72 Drops	63 Active	2
IC 1.6	56 Drops	50 Active	2
IC 1.7	72 Drops	65 Active	2
IC 1.8	20 Drops	10 Active	1
IC 1.9	48 Drops	40 Active	2
IC 1.10	144 Drops	98 Active	3

Current Hardware Layout and Design

The current network consists of a Cisco 6509 switch at the core with various switches in the IC's. Most IC's currently have a Cisco 3560 POE switch and an older switch to handle the traffic. Each switch in each IC will interconnect with the 6509 at the core with a 1 Gigabit Fiber (1000BaseSX) connection creating a switched collapsible backbone. The District would prefer Cisco product but will consider equivalent performing product. It is the vendor's responsibility to demonstrate "product and specification equivalency" to district's satisfaction in the Bid Docs turned in.

Hardware Needs for ER13-002A

Each IDF and MDF is to have a rack mounted UPS capable of powering switches in location for 5 minutes. Model is to be no more than 16 inches deep to fit in racks.

Qty 50 MM SFP GBIC's for Interconnecting switches 1Gb as alternate 10 Gb

Qty 4 SM SFP GBIC's for Interconnecting switches 1Gb as alternate 10 Gb

Stacking cables to connect 3750 switches: CAB-STACK-3M or CAB-STACK-1M

Firewall

Install new ASA 5512-X / Security Plus Firewall and configure.

Fiber Portion of Core

2- 24 Port SFP Switches. Layer 3 IOS integrated and redundant power supplies

Qty 2: **WS-C3750X-24S-E** Description: CAT3750-X 24PORT GBE SFP IP SVCS (24 Port Fiber Switch, without SFP modules)

Qty 2: **CON-SNT-C375X24E** Description: US ONLY NBD 8X5 SMARTNET CATALYST 3750-X 24PORT

Qty 2: **C3KX-PWR-350WAC=** Description: CATALYST 3K-X 350W AC POWER SUPPLY

Copper Portion of Core

2- 48 Port PoE Switches. Layer 3 IOS Upgrades and Redundant Power Supplies

Qty 2: **WS-C3750X-48PF-S** Description: CATALYST 3750X 48PORT FULL POE IP BASE

Qty 2: **CON-SNT-3750X4FS** Description: US ONLY SMARTNET 8X5 NBD CATALYST 3750X 48 PORT FULL POE IP

Qty 2: **L-C3750X-48-S-E** Description: C3750X-48 IP BASE TO IP SERVICES E-LICENSE

Qty 2: **C3KX-PWR-1100WAC=** Description: CATALYST 3K-X 1100W AC POWER SUPPLY

IC's

Qty 11: **WS-C3560X-48PF-S** Description: CATALYST 3560X 48PORT FULL POE IP BASE

Qty 11: **CON-SNT-3560X4FS** Description: US ONLY SMARTNET 8X5 NBD CAT 3560X 48 PORT FULL POE IP BASE

Qty 11: **C3KX-PWR-1100WAC=** Description: CATALYST 3K-X 1100W AC POWER SUPPLY

Qty 12: **WS-C3560X-48T-S** Description: CATALYST 3560X 48PORT DATA IP BASE

Qty 12: **CON-SNT-3560X4TS** Description: US ONLY SMARTNET 8X5 NBD CAT 3560X 48 PORT DATA IP BASE

Qty 12: **C3KX-PWR-350WAC=** Description: CATALYST 3K-X 350W AC POWER SUPPLY

**** NOTE - Please include these on your LINE ITEM PRICING page with your bid. Also, if you see that what the District has listed is incomplete, please show any additional components to provide a complete solution as an ALTERNATE BID along with the reasoning for the addition.**

Hardware Needs for ER13-003A

Access Point Needs

McFarland Unified School District would like to cover each of its campuses with a wireless network to accommodate the Ipads currently in place, BYOD, and to allow for increased mobility of staff and students with technology. This will require the ability to port certain traffic directly to the internet. 60 access points with 802.11 a/g/n capability will also be needed. For network access students and staff will authenticate with Active Directory accounts. There will also be web authentication available for those that have forgotten their Active directory domain account or have not had one assigned yet. Additionally, different groups will have different network access rights configured.

Cisco 5508 Wireless Controller

Qty: 1: AIR-CT5508-500-K9 (5500 Series Wireless Controller for up to 500 Cisco access points.)

Qty 1: LIC-CT5508-BASE (This is the base license for the Wireless Controller. This should be included in the cost of the controller, but you may want to include with your parts list).

Qty: 1: CON-SNT-CT08250 (SMARTnet for controller)

Qty: 1: AIR-PWR-5500-AC= (Redundant Power Supply)

Cisco 1140 Series Access Points

Qty 60: AIR-LAP1142N-x-K9

Qty 8: Uplinks

8 -GLC-T (1000BASE-T), copper GB

8-GLC-LH-SM (1000BASE-LX/LH SFP). SM fiber GB

8-SM Fiber SFP GBic for 3750 uplink

EQUIPMENT INSTALLATION

The bid winner (vendor) will install and configure all wireless network equipment, MC and IC equipment to work within existing network infrastructure, and according to network design outlined by McFarland Unified School District. Final network design will be provided by vendor at time of installation. Vendor to supply cabling to switches for solution, but may use cabling to existing wireless access points at their discretion. Either way, vendor responsible for functional cabling and access point operation. Vendors Manufacturer's certification and E-Rate spin number **MUST BE INCLUDED** with bid or bid may be considered **NON-RESPONSIVE**.

Vendor will also provide up to four hours basic switch maintenance and configuration training to staff designated by district at this site.

Upon Completion, a written NOTICE OF COMPLETION and all Network Documentation will be delivered to the district PRIOR TO final payment and sign off Network Documentation will include but not be limited to:

Location of Equipment installed; Manufacturer's Make & Model, Serial Number, MAC address, IP address assigned, password installed, and interconnections made in each MC/IC. IP Addresses will be affixed to each switch by Vendor using P- Touch or equivalent.

DESIGN DOCUMENTATION
 McFarland Unified School District
 McFarland Middle School
 * *Pending 2013 E-Rate Funding*

BACKBONE EQUIPMENT SPECIFICATIONS

1. Brief Overview of LAN Including Drop Counts
2. Current Hardware Layout and Design
3. Hardware Needs
4. Access Point Needs
5. Installation and Configuration
 - Design Drawing Sheet

BRIEF OVERVIEW OF LAN INCLUDING DROP COUNT

McFarland Unified School District's technology plan specifies up to eight computers, a printer and a teacher workstation per classroom. The cable plant will allow for up to ten nodes per classroom. The proposed backbone design for McFarland High School is submitted as a switched, collapsible Fast Ethernet system interconnecting all of the switches at Gigabit speed with each Interconnect located within its own LAN. All devices connecting to the wireless access points will be in a separate LAN from the wired network. The wireless LAN will be divided into 3 categories, one with access to the interior network, one with partial access to the interior network, and one with no access to the interior network.

The following table provides a basic understanding of the current port requirements and the potential growth built in to this campus data communication network. All switches will have 48 ports.

McFarland Middle School			
<u>Location of IC</u>	<u># of Drops</u>	<u># of Active Drops</u>	<u># of Switches</u> When complete
-MC { }	-	-	
--Interconnect	30 Drops	24 Active	2 –see core below
--Workstations	96 Drops	90 Active	2 –see core below
IC 2D Band Room	26 Drops	20 Active	1
IC 3D Multi-Purpose Room	36 Drops	24 Active	2
IC 4D Gym	20 Drops	16 Active	1
IC 5D Rm 501	36 Drops	28 Active	2
IC 5PD Rm 503	88 Drops	86 Active	2
IC 6D Interior Room	56 Drops	50 Active	2
IC 7D Rm 712	92 Drops	86 Active	2
IC 8D Rm 803	68 Drops	68 Active	2
IC 9D Rm 903	120 Drops	96 Active	3
IC 9B Rm 912	50 Drops	16 Active	2

Current Hardware Layout and Design

The current network consists of a Cisco 6509 switch at the core with various switches in the IC's. Most IC's currently have a Cisco 3560 POE switch and an older switch to handle the traffic. Each switch in each IC will interconnect with the 6509 at the core with a 1 Gigabit Fiber (1000BaseSX) connection creating a switched collapsible backbone. The District would prefer Cisco product but will consider equivalent performing product. It is the vendor's responsibility to demonstrate "product and specification equivalency" to district's satisfaction in the Bid Docs turned in.

Hardware Needs for ER13-002B

Each IDF and MDF is to have a rack mounted UPS capable of powering switches in location for 5 minutes. Model is to be no more than 16 inches deep to fit in racks.

Qty 38 MM SFP GBIC's for Interconnecting switches 1Gb as alternate 10 Gb

Qty 4 SM SFP GBIC's for Interconnecting switches 1Gb as alternate 10Gb

Stacking cables to connect 3750 switches: CAB-STACK-3M or CAB-STACK-1M

Fiber Portion of Core

2- 24 Port SFP Switches. Layer 3 IOS integrated and redundant power supplies

Qty 2: **WS-C3750X-24S-E** Description: CAT3750-X 24PORT GBE SFP IP SVCS (24 Port Fiber Switch, without SFP modules)

Qty 2: **CON-SNT-C375X24E** Description: US ONLY NBD 8X5 SMARTNET CATALYST 3750-X 24PORT

Qty 2: **C3KX-PWR-350WAC=** Description: CATALYST 3K-X 350W AC POWER SUPPLY

Copper Portion of Core

2- 48 Port PoE Switches. Layer 3 IOS Upgrades and Redundant Power Supplies

Qty 2: **WS-C3750X-48PF-S** Description: CATALYST 3750X 48PORT FULL POE IP BASE

Qty 2: **CON-SNT-3750X4FS** Description: US ONLY SMARTNET 8X5 NBD CATALYST 3750X 48 PORT FULL POE IP

Qty 2: **L-C3750X-48-S-E** Description: C3750X-48 IP BASE TO IP SERVICES E-LICENSE

Qty 2: **C3KX-PWR-1100WAC=** Description: CATALYST 3K-X 1100W AC POWER SUPPLY

IC's

Qty 10: **WS-C3560X-48PF-S** Description: CATALYST 3560X 48PORT FULL POE IP BASE

Qty 10: **CON-SNT-3560X4FS** Description: US ONLY SMARTNET 8X5 NBD CAT 3560X 48 PORT FULL POE IP BASE

Qty 10: **C3KX-PWR-1100WAC=** Description: CATALYST 3K-X 1100W AC POWER SUPPLY

Qty 9: **WS-C3560X-48T-S** Description: CATALYST 3560X 48PORT DATA IP BASE

Qty 9: **CON-SNT-3560X4TS** Description: US ONLY SMARTNET 8X5 NBD CAT 3560X 48 PORT DATA IP BASE

Qty 9: **C3KX-PWR-350WAC=** Description: CATALYST 3K-X 350W AC POWER SUPPLY

** NOTE - Please include these on your **LINE ITEM PRICING** page with your bid. Also, if you see that what the District has listed is incomplete, please show any additional components to provide a complete solution as an ALTERNATE BID along with the reasoning for the addition.

Hardware Needs for ER13-003B

Access Point Needs

McFarland Unified School District would like to cover each of its campuses with a wireless network to accommodate the Ipads currently in place, BYOD, and to allow for increased mobility of staff and students with technology. This will require the ability to port certain traffic directly to the internet. 60 access points with 802.11 a/g/n capability will also be needed. For network access students and staff will authenticate with Active Directory accounts. There will also be web authentication available for those that have forgotten their Active directory domain account or have not had one assigned yet. Additionally, different groups will have different network access rights configured.

Cisco 1140 Series Access Points

Qty 60: AIR-LAP1142N-x-K9

EQUIPMENT INSTALLATION

The bid winner (vendor) will install and configure all wireless network equipment, MC and IC equipment to work within existing network infrastructure, and according to network design outlined by McFarland Unified School District. Final network design will be provided by vendor at time of installation. Vendor to supply cabling to switches for solution, but may use cabling to existing wireless access points at their discretion. Either way, vendor responsible for functional cabling and access point operation. Vendors Manufacturer's certification and E-Rate spin number **MUST BE INCLUDED** with bid or bid may be considered **NON-RESPONSIVE**.

Vendor will also provide up to four hours basic switch maintenance and configuration training to staff designated by district at this site.

Upon Completion, a written **NOTICE OF COMPLETION** and all Network Documentation will be delivered to the district **PRIOR TO** final payment and sign off Network Documentation will include but not be limited to:

Location of Equipment installed; Manufacturer's Make & Model, Serial Number, MAC address, IP address assigned, password installed, and interconnections made in each MC/IC. IP Addresses will be affixed to each switch by Vendor using P- Touch or equivalent.

DESIGN DOCUMENTATION
 McFarland Unified School District
 Kern Avenue Elementary School
 * *Pending 2013 E-Rate Funding*

BACKBONE EQUIPMENT SPECIFICATIONS

1. Brief Overview of LAN Including Drop Counts
2. Current Hardware Layout and Design
3. Hardware Needs
4. Access Point Needs
5. Installation and Configuration
 - Design Drawing Sheet

BRIEF OVERVIEW OF LAN INCLUDING DROP COUNT

McFarland Unified School District's technology plan specifies up to eight computers, a printer and a teacher workstation per classroom. The cable plant will allow for up to ten nodes per classroom. The proposed backbone design for McFarland High School is submitted as a switched, collapsible Fast Ethernet system interconnecting all of the switches at Gigabit speed with each Interconnect located within its own LAN. All devices connecting to the wireless access points will be in a separate LAN from the wired network. The wireless LAN will be divided into 3 categories, one with access to the interior network, one with partial access to the interior network, and one with no access to the interior network.

The following table provides a basic understanding of the current port requirements and the potential growth built in to this campus data communication network. All switches will have 48 ports.

<u>Location of IC</u>	<u>Kern Avenue Elementary School</u>		<u># of Switches</u>
	<u># of Drops</u>	<u># of Active Drops</u>	<u>When complete</u>
-MC { }--Interconnect	30 Drops	24 Active	2 --see core below
--Workstations	48 Drops	36 Active	2 --see core below
IC A Rm 4	58 Drops	52 Active	2
IC B Rm 11	52 Drops	48 Active	2
IC C1 Rm24	48 Drops	40 Active	2
IC C2 Rm 21	60 Drops	50 Active	2
IC D Rm 31	48 Drops	48 Active	2
IC E Rm 42	72 Drops	70 Active	2
IC F Rm 51	72 Drops	68 Active	2
IC G Rm 65	50 Drops	48 Active	2
IC J1 Rm 81	48 Drops	43 Active	2
IC J2 Rm 85	30 Drops	25 Active	2
IC L Rm 28	50 Drops	26 Active	2
IC O Office	36 Drops	26 Active	2
IC H Rm 93	56 Drops	48 Active	2
IC K Rm 97	68 Drops	48 Active	2

Current Hardware Layout and Design

The current network consists of a Cisco 6509 switch at the core with various switches in the IC's. Most IC's currently have a Cisco 3560 POE switch and an older switch to handle the traffic. Each switch in each IC will interconnect with the 6509 at the core with a 1 Gigabit Fiber (1000BaseSX) connection creating a switched collapsible backbone. The District would prefer Cisco product but will consider equivalent performing product. It is the vendor's responsibility to demonstrate "product and specification equivalency" to district's satisfaction in the Bid Docs turned in.

Hardware Needs for ER13-002C

Each IDF and MDF is to have a rack mounted UPS capable of powering switches in location for 5 minutes. Model is to be no more than 16 inches deep to fit in racks.

Qty 60 MM SFP GBIC's for Interconnecting switches 1Gb as alternate 10 Gb

Qty 4 SM SFP GBIC's for Interconnecting switches 1Gb as alternate 10Gb

Stacking cables to connect 3750 switches: CAB-STACK-3M or CAB-STACK-1M

Fiber Portion of Core

2- 24 Port SFP Switches. Layer 3 IOS integrated and redundant power supplies

Qty 2: **WS-C3750X-24S-E** Description: CAT3750-X 24PORT GBE SFP IP SVCS (24 Port Fiber Switch, without SFP modules)

Qty 2: **CON-SNT-C375X24E** Description: US ONLY NBD 8X5 SMARTNET CATALYST 3750-X 24PORT

Qty 2: **C3KX-PWR-350WAC=** Description: CATALYST 3K-X 350W AC POWER SUPPLY

Copper Portion of Core

2- 48 Port PoE Switches. Layer 3 IOS Upgrades and Redundant Power Supplies

Qty 2: **WS-C3750X-48PF-S** Description: CATALYST 3750X 48PORT FULL POE IP BASE

Qty 2: **CON-SNT-3750X4FS** Description: US ONLY SMARTNET 8X5 NBD CATALYST 3750X 48 PORT FULL POE IP

Qty 2: **L-C3750X-48-S-E** Description: C3750X-48 IP BASE TO IP SERVICES E-LICENSE

Qty 2: **C3KX-PWR-1100WAC=** Description: CATALYST 3K-X 1100W AC POWER SUPPLY

IC's

Qty 14: **WS-C3560X-48PF-S** Description: CATALYST 3560X 48PORT FULL POE IP BASE

Qty 14: **CON-SNT-3560X4FS** Description: US ONLY SMARTNET 8X5 NBD CAT 3560X 48 PORT FULL POE IP BASE

Qty 14: **C3KX-PWR-1100WAC=** Description: CATALYST 3K-X 1100W AC POWER SUPPLY

Qty 14: **WS-C3560X-48T-S** Description: CATALYST 3560X 48PORT DATA IP BASE

Qty 14: **CON-SNT-3560X4TS** Description: US ONLY SMARTNET 8X5 NBD CAT 3560X 48 PORT DATA IP BASE

Qty 14: **C3KX-PWR-350WAC=** Description: CATALYST 3K-X 350W AC POWER SUPPLY

** NOTE - Please include these on your **LINE ITEM PRICING** page with your bid. Also, if you see that what the District has listed is incomplete, please show any additional components to provide a complete solution as an ALTERNATE BID along with the reasoning for the addition.

Hardware Needs for ER13-003C

Access Point Needs

McFarland Unified School District would like to cover each of its campuses with a wireless network to accommodate the Ipads currently in place, BYOD, and to allow for increased mobility of staff and students with technology. This will require the ability to port certain traffic directly to the internet. 75 access points with 802.11 a/g/n capability will also be needed. For network access students and staff will authenticate with Active Directory accounts. There will also be web authentication available for those that have forgotten their Active directory domain account or have not had one assigned yet. Additionally, different groups will have different network access rights configured.

Cisco 1140 Series Access Points

Qty 75: AIR-LAP1142N-x-K9

EQUIPMENT INSTALLATION

The bid winner (vendor) will install and configure all wireless network equipment, MC and IC equipment to work within existing network infrastructure, and according to network design outlined by McFarland Unified School District. Final network design will be provided by vendor at time of installation. Vendor to supply cabling to switches for solution, but may use cabling to existing wireless access points at their discretion. Either way, vendor responsible for functional cabling and access point operation. Vendors Manufacturer's certification and E-Rate spin number **MUST BE INCLUDED** with bid or bid may be considered **NON-RESPONSIVE**.

Vendor will also provide up to four hours basic switch maintenance and configuration training to staff designated by district at this site.

Upon Completion, a written **NOTICE OF COMPLETION** and all Network Documentation will be delivered to the district **PRIOR TO** final payment and sign off Network Documentation will include but not be limited to:

Location of Equipment installed; Manufacturer's Make & Model, Serial Number, MAC address, IP address assigned, password installed, and interconnections made in each MC/IC. IP Addresses will be affixed to each switch by Vendor using P- Touch or equivalent.

DESIGN DOCUMENTATION
 McFarland Unified School District
 Browning Road Elementary School
 * *Pending 2013 E-Rate Funding*

BACKBONE EQUIPMENT SPECIFICATIONS

1. Brief Overview of LAN Including Drop Counts
2. Current Hardware Layout and Design
3. Hardware Needs
4. Access Point Needs
5. Installation and Configuration
 - Design Drawing Sheet

BRIEF OVERVIEW OF LAN INCLUDING DROP COUNT

McFarland Unified School District's technology plan specifies up to eight computers, a printer and a teacher workstation per classroom. The cable plant will allow for up to ten nodes per classroom. The proposed backbone design for McFarland High School is submitted as a switched, collapsible Fast Ethernet system interconnecting all of the switches at Gigabit speed with each Interconnect located within its own LAN. All devices connecting to the wireless access points will be in a separate LAN from the wired network. The wireless LAN will be divided into 3 categories, one with access to the interior network, one with partial access to the interior network, and one with no access to the interior network.

The following table provides a basic understanding of the current port requirements and the potential growth built in to this campus data communication network. All switches will have 48 ports.

Browning Road Elementary School			
<u>Location of IC</u>	<u># of Drops</u>	<u># of Active Drops</u>	<u># of Switches</u> <u>When complete</u>
-MC { }--Interconnect	30 Drops	24 Active	2 --see core below
--Workstations	86 Drops	50 Active	2 --see core below
IC A	96 Drops	90 Active	2
IC B	48 Drops	48 Active	2
IC C	54 Drops	48 Active	2
IC D	48 Drops	48 Active	2
IC E	76 Drops	64 Active	2
IC F	46 Drops	40 Active	2
IC G	36 Drops	30 Active	2
IC H	32 Drops	28 Active	2
IC I	66 Drops	50 Active	2

Current Hardware Layout and Design

The current network consists of a Cisco 6509 switch at the core with various switches in the IC's. Most IC's currently have a Cisco 3560 POE switch and an older switch to handle the traffic. Each switch in each IC will interconnect with the 6509 at the core with a 1 Gigabit Fiber (1000BaseSX) connection creating a switched collapsible backbone. The District would prefer Cisco product but will consider equivalent performing product. It is the vendor's responsibility to demonstrate "product and specification equivalency" to district's satisfaction in the Bid Docs turned in.

Hardware Needs for ER13-002D

Each IDF and MDF is to have a rack mounted UPS capable of powering switches in location for 5 minutes. Model is to be no more than 16 inches deep to fit in racks.

Qty 38 MM SFP GBIC's for Interconnecting switches

Qty 4 SM SFP GBIC's for Interconnecting switches

Stacking cables to connect 3750 switches: CAB-STACK-3M or CAB-STACK-1M

Fiber Portion of Core

2- 24 Port SFP Switches. Layer 3 IOS integrated and redundant power supplies

Qty 2: **WS-C3750X-24S-E** Description: CAT3750-X 24PORT GBE SFP IP SVCS (24 Port Fiber Switch, without SFP modules)

Qty 2: **CON-SNT-C375X24E** Description: US ONLY NBD 8X5 SMARTNET CATALYST 3750-X 24PORT

Qty 2: **C3KX-PWR-350WAC=** Description: CATALYST 3K-X 350W AC POWER SUPPLY

Copper Portion of Core

2- 48 Port PoE Switches. Layer 3 IOS Upgrades and Redundant Power Supplies

Qty 2: **WS-C3750X-48PF-S** Description: CATALYST 3750X 48PORT FULL POE IP BASE

Qty 2: **CON-SNT-3750X4FS** Description: US ONLY SMARTNET 8X5 NBD CATALYST 3750X 48 PORT FULL POE IP

Qty 2: **L-C3750X-48-S-E** Description: C3750X-48 IP BASE TO IP SERVICES E-LICENSE

Qty 2: **C3KX-PWR-1100WAC=** Description: CATALYST 3K-X 1100W AC POWER SUPPLY

IC's

Qty 9: **WS-C3560X-48PF-S** Description: CATALYST 3560X 48PORT FULL POE IP BASE

Qty 9: **CON-SNT-3560X4FS** Description: US ONLY SMARTNET 8X5 NBD CAT 3560X 48 PORT FULL POE IP BASE

Qty 9: **C3KX-PWR-1100WAC=** Description: CATALYST 3K-X 1100W AC POWER SUPPLY

Qty 9: **WS-C3560X-48T-S** Description: CATALYST 3560X 48PORT DATA IP BASE

Qty 9: **CON-SNT-3560X4TS** Description: US ONLY SMARTNET 8X5 NBD CAT 3560X 48 PORT DATA IP BASE

Qty 9: **C3KX-PWR-350WAC=** Description: CATALYST 3K-X 350W AC POWER SUPPLY

** NOTE - Please include these on your **LINE ITEM PRICING** page with your bid. Also, if you see that what the District has listed is incomplete, please show any additional components to provide a complete solution as an **ALTERNATE BID** along with the reasoning for the addition.

Hardware Needs for ER13-003D

Access Point Needs

McFarland Unified School District would like to cover each of its campuses with a wireless network to accommodate the Ipads currently in place, BYOD, and to allow for increased mobility of staff and students with technology. This will require the ability to port certain traffic directly to the internet. 60 access points with 802.11 a/g/n capability will also be needed. For network access students and staff will authenticate with Active Directory accounts. There will also be web authentication available for those that have forgotten their Active directory domain account or have not had one assigned yet. Additionally, different groups will have different network access rights configured.

Cisco 1140 Series Access Points

Qty 60: AIR-LAP1142N-x-K9

EQUIPMENT INSTALLATION

The bid winner (vendor) will install and configure all wireless network equipment, MC and IC equipment to work within existing network infrastructure, and according to network design outlined by McFarland Unified School District. Final network design will be provided by vendor at time of installation. Vendor to supply cabling to switches for solution, but may use cabling to existing wireless access points at their discretion. Either way, vendor responsible for functional cabling and access point operation. Vendors Manufacturer's certification and E-Rate spin number **MUST BE INCLUDED** with bid or bid may be considered **NON-RESPONSIVE**.

Vendor will also provide up to four hours basic switch maintenance and configuration training to staff designated by district at this site.

Upon Completion, a written NOTICE OF COMPLETION and all Network Documentation will be delivered to the district PRIOR TO final payment and sign off Network Documentation will include but not be limited to:

Location of Equipment installed; Manufacturer's Make & Model, Serial Number, MAC address, IP address assigned, password installed, and interconnections made in each MC/IC. IP Addresses will be affixed to each switch by Vendor using P- Touch or equivalent.

As an alternate bid, the district has quite a few switches to trade in for credit. The district would like a bid on the value of each: Catalyst 3500 Series XL-24 ports and 48 ports, Catalyst 2950-12, 24 and 48 ports, Catalyst 3560 48 ports, and Cisco 3845 Router. The quantity of each will be determined after the equipment is installed.

Server and Software needs for ER13-004

The server and software required for this project include the following:

1. Email Server with Specs below or equivalent
2. DNS, DHCP server with Specs below or equivalent
3. Windows Server 2012 for the two servers
4. Microsoft Exchange 2010 with 400 email cal

SYSTEM OPTIONS

PowerEdge R310	PowerEdge R310 Chassis, Up to 4 Cabled Hard Drives and Quad Pack LED diagnostics	edit
Processor	Intel® Xeon® X3470, 2.93 GHz, 8M Cache, Turbo, HT	edit
Memory	16GB Memory (4x4GB), 1333MHz, Dual Ranked RDIMM	edit

OPERATING SYSTEM

Operating System	Windows Server® 2012, Standard Ed, Factory Install, No MED, 2 Socket, 2 VMs	edit
Enterprise Software Licensing	Windows Server® 2012, Standard Ed, Add License, 2 Socket and/or 2 VMs	edit
Secondary OS	None	edit
OS Media kits	Windows Server® 2012, Standard Edition, Media Kit	edit

HARD DRIVES AND CONTROLLERS

Hard Drive Configuration	RAID 1 - Add-in SAS6iR/H200/H700 (SAS/SATA Cntrlr), 2 Hard Drives	edit
Internal Controller	PERC H700 Adapter, Internal RAID Controller NVDIMM 1GB Cache	edit
Hard Drives (Multi-Select)	3TB 7.2K RPM Near-Line SAS 6Gbps 3.5in Cabled Hard Drive	edit
External Controller	None	edit

POWER OPTIONS

Power Supply	Power Supply, Redundant, 400W	edit
Power Cords	2x Power Cord, NEMA 5-15P to C13, wall plug, 10 feet	edit

SYSTEMS MANAGEMENT OPTIONS

Embedded Management	Baseboard Management Controller	edit
Systems Management Consoles with License	None	edit
Systems Management Upgrades	None	edit

NETWORKING OPTIONS

Network Adapter	On-Board Dual Gigabit Network Adapter	edit
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VIRTUALIZATION OPTIONS

Optional Virtualization	None	edit
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Offerings		
Enabled Virtualization	None	edit

STORAGE BACKUP OPTIONS

Host Bus Adapters	None	edit
Tape Backup Software	None	edit

SOFTWARE OPTIONS

Microsoft SQL Server 2008	None	edit
OS and SW Client Access Licenses	None	edit

OTHER OPTIONS

Rails	Sliding Ready Rails with Cable Management Arm	edit
Bezel	Bezel	edit
Internal Optical Drive	No Internal Optical Drive	edit
Server Accessories	None	edit
System Documentation	Electronic System Documentation and OpenManage DVD Kit	edit
Asset Tag on System Chassis (CFI)	None	edit

SERVICES OPTIONS