ONONDAGA CENTRAL SCHOOLS

Tiger Pride

Smart Schools Investment Plan 1 Narrative
in support of *District Technology Goal 1*

Improve School Connectivity

August 23, 2016

ARCHI-TECHNOLOGY LLC
Technology Consultants

20 YEARS OF TECHNOLOGY LEADERSHIP 1996 2016

Contents

Executive Summary

In support of its strategic technology goal to **Improve School Connectivity,** the Onondaga Central School District's (OCSD) Smart Schools Investment Plan (SSIP) 1 will allocate 100% of its **$800,506** from its Smart Schools Bond Act (SSBA) allocation to:

1. Upgrade Technology Infrastructure including establishing industry-standard Technology Rooms and structured backbone cabling (Goal 1.1)
2. Upgrade Network Equipment to provide reliable district-wide services (Goal 1.2)
3. Expand Wireless Coverage to provide reliable, pervasive district-wide wireless services (Goal 1.3)

These deployments will occur in a total of (4) instructional facilities: (2) Elementary Schools, (1) Junior/Senior High School and (1) Industrial Arts building.

About the proposed technology upgrades

In preparation for the deployment of additional student and staff computing devices, the OCSD has identified the need to upgrade select strategic components of the current technology infrastructure.

- The primary infrastructure components identified for improvement are the establishment of **spaces** including Technology Rooms (TRs) and **pathways** to support new cabling.
- In some locations, existing office and/or storage spaces will be **repurposed** for the development of TRs that meet current and future needs; in other locations, existing spaces will be **upgraded** to current standards.
- The establishment of primary **horizontal pathways** that will support backbone and horizontal cabling will be a key component of this initiative.

While identifying potential TR locations in each of the (4) district buildings, consideration has been given to minimize the need to replace legacy cabling prior to the planned 2023/2024 capital project.

Budget overview

The proposed $800,506 funded from the district's SSBA allocation includes the following major expense categories:

- **Network/Access Costs** $198,058
- **School Internal Connections and Components**. $296,780
- **Professional Services and Installation**. $126,400
- **Other Upfront Costs** $179,268

These categories are further itemized in the SSIP 1 Budget Breakdown section on page 10 of this plan.

Schedule overview

- **Aug. 23, 2016:** SSIP1 Final Board approval
- **Aug. 31, 2016:** Board-approved SSIP 1 Plan submitted to State Education Department (SED) via SSBA website
- **Oct. 1, 2016:** Design documents submitted to SED Facility Planning for review
- **April 1, 2017.** Target date to start Bid process (pending SED FP review)

Smart Schools Bond Act (SSBA) Overview

State-wide Information

The Smart Schools Bond Act of 2014 was passed in New York's 2014 – 15 Enacted Budget and approved by the voters in a statewide referendum held during the 2014 General Election.

The Smart Schools Bond Act (SSBA) authorized the issuance of $2 billion of general obligation bonds to finance improved educational technology and infrastructure to improve learning and opportunity for students throughout the State.

The purpose of the SSBA is to improve learning and opportunity for public and nonpublic school students by funding capital projects to:

1. Install high-speed broadband or wireless **internet connectivity** for schools and communities;
2. Acquire **learning technology equipment** or facilities, including but not limited to interactive whiteboards, computer servers, and desktop, laptop, and tablet computers;
3. Construct, enhance, and modernize educational facilities to accommodate **pre-kindergarten programs** and to provide instructional space to r**eplace classroom trailers;** and/or
4. Install **high-tech security features** in school buildings and on school campuses, including but not limited to video surveillance, emergency notification systems, and physical access controls.

All school districts are required to submit a Smart Schools Improvement Plan (SSIP) to demonstrate how SSBA funds will be used to provide the educational tools and opportunities to students to prepare them for success in the 21st Century economy.

Effective plans are to:

- Include linkages between the district's long-term educational planning and technology investments;
- Provide learning opportunities beyond the classroom through the use of technology; and
- Address the educational needs of all students, including students with disabilities, English language learners and those who have not succeeded in traditional classroom settings.

OCSD District Information

The Onondaga Central School District (OCSD) is eligible for **$800,506** for approved expenditures aligning to the objectives of the Smart School Bond Act. All plans for the expenditure of funds will be submitted to a state review board for approval. The review board will ensure that the District has articulated:

- That the technology investments are aligned to district's instructional technology plan;
- An adequate technological infrastructure with sufficient connectivity meeting the FCC standard of 100 Mbps per 1,000 students. Achieving this speed standard is a precondition for the purchase of devices;

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Smart Schools Bond Act (SSBA) Overview/District Information (cont.)

- A professional development plan providing training to administrators, teachers and staff to employ the purchased technology to enhance instruction; technical support capacity demonstrating sufficient support for the technology purchases; and
- A plan for sustainability and ongoing maintenance, replacement, support, internet fees, ongoing professional development and replacement of incidental items.

This Smart Schools Investment Plans was vetted with representatives from the school community including parents, civic leaders, community members, teachers, administrators, staff and students. Initial Smart School Investment Plans were reviewed and approved by the District's Board of Education and then posted on the District's website for thirty (30) days.

Additionally, a public hearing was held on August 9, 2016 to present the District's plan for the use of the Smart School funds.

After the public hearing, the Board of Education is to review the modified Smart Schools Investment Plan and consider final approval. Once approved by the Board of Education, the plan will be attached to the District's application for Smart Schools Investment Plan funds for review by the state board.

After state approval, the District is authorized to make approved expenditures.

After funds are expended, the District will then submit claims to the state for reimbursement.

Onondaga CSD SSBA Funding Summary

OCSD is submitting (1) Smart Schools Investment Plan (i.e., this document) to the NY State Education Department (SED) for the District's total $800,506 SSBA allocation.

Onondaga City School District SSBA Allocation		**$**	**800,506**
SSIP1, Technology Infrastructure Upgrades	(–)	$	800,506
Onondaga City School District SSBA Balance		**$**	**0**

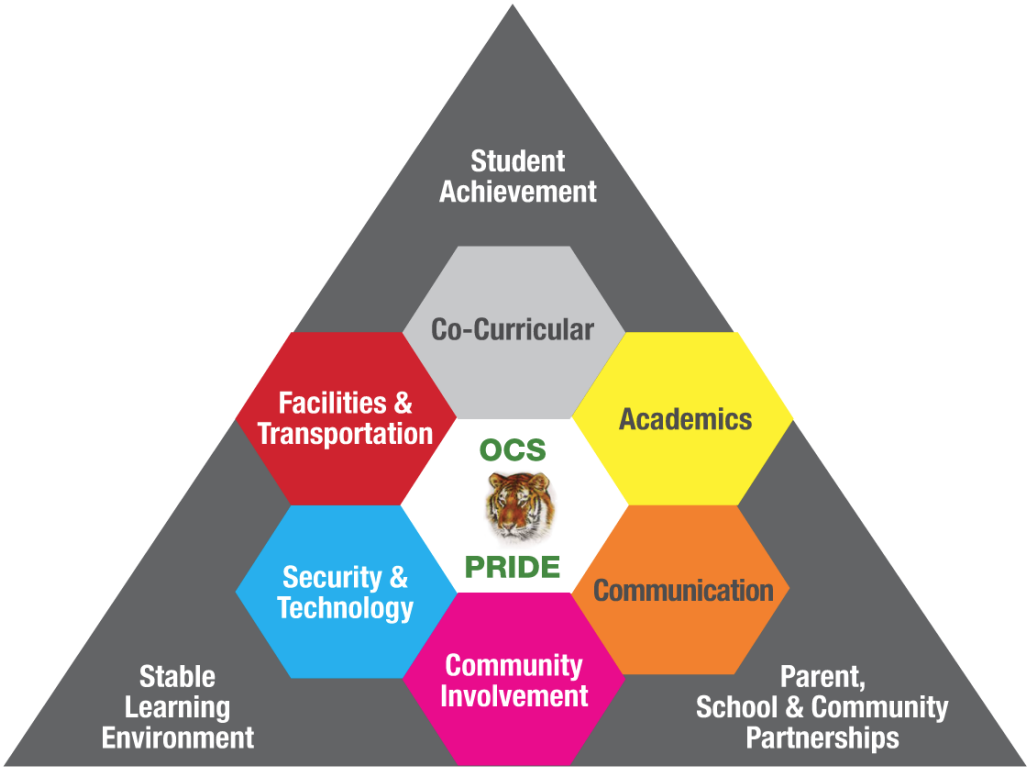
Onondaga CSD Goals and Objectives

Onondaga Central School District (OCSD) has the following Mission, Goals and Technology Vision.

Mission

The Onondaga Central School Community challenges individual maximum potential, prides itself on success and prepares contributing citizens for life. *We get you ready for life!*

District Goals



Technology Vision

The OCSD is committed to working collaboratively to provide educational experiences and opportunities that inspire students to reach their individual potential as productive citizens.

We recognize that technology is an essential tool for competing in our global society. In order to succeed in college and career, our students need ethical, digital, visual, information and textual literacy.

Therefore, we are committed to providing our students with a high level of proficiency in the use of technology for communication, critical thinking and creative problem solving. In order to achieve this goal, it is a district priority to provide equitable and widespread access to technological tools and resources for all staff and students in the OCSD.

OCSD Goals and Objectives (cont.)

21st Century Learning

21st Century Learning requires organizations to meet the current requirements of our standardized tests while also striving to achieve the 4Cs:

- Communication
- Collaboration
- Creativity, and
- Critical thinking.

The skills needed for success in college and career are becoming increasingly complex, and schools must rise to meet new demands.

New academic standards and accountability measures across the nation have broadened the classroom experiences required for proficiency. As expectations rise, students are struggling to keep up. This trend is evidenced by falling preliminary assessment scores across the nation. Traditional instruction may be to blame. In their recent investigation of 21st Century Learning, *National Academies Press* found that rote learning does not support the educational transfer necessary to tackle the complex problems demanded by intensified academic standards. Students must be exposed to unfamiliar problems and encouraged to design meaningful solutions. Technology is a tool for such problem solving. A national *Walden University* study reports that teachers who use technology frequently place the highest emphasis on problem solving.

In addition to meeting traditional academic standards, students must also be prepared to tackle the demands of a modern world and modern workforce. A research report from *Adobe Education* notes that; “In today’s world, a proficient employee needs to be computer literate, visually literate, information literate, media literate, and digitally literate.”

According to a report from the *Partnership for 21st Century Skills:* “Many of the fastest-growing jobs and emerging industries rely on workers’ creative capacity—the ability to think unconventionally, question the herd, imagine new scenarios, and produce astonishing work.”

Technology assists with this type of capability. *Pew* reports that 76% of Advanced Placement and National Writing Project teachers believe that digital tools such as the Internet, social media, and cell phones “encourage student creativity and personal expression.”

In addition, the *National Writing Project* reports that the creation and consumption of multimedia increases the likelihood of deeper learning and longer skill retention.

Technology is a key driver towards instruction that impacts student learning outcomes, both on standardized assessments and for 21st Century Learning skills. Students must have regular opportunities to engage in the 4Cs. In addition, they must have access to the instant feedback enabled by digital assessment and customized assistive technology. Being aware of the classroom setting and the typical learning experiences afforded to students in your organization is the first step towards the cultivation of 21st Century Learning.

OCSD Goals and Objectives (cont.)

District Technology Goals

The District's Technology Committee has defined the following (4) major **district-wide** technology goals and sub-goals where applicable:

1. **Improve School Connectivity**
    1.1. Upgrade Technology Infrastructure
    1.2. Upgrade Network Equipment
    1.3. Expand Wireless Coverage
2. **Upgrade Instructional Technology**
    2.1. Additional Student and Staff Computing Devices
    2.2. Upgrade Projectors and Interactive Displays
3. **Integrate IP-based Security System**
4. **Finish Technology Systems Modernization**

Goal 1, Improve School Connectivity is the technology goal that the District's Technology Committee has selected for Smart Schools Bond Act funding. This is based on the fundamental importance of having a robust, efficient and upgradable technology infrastructure to which all networked systems can connect; all other district technology goals are incumbent on a reliable data-transport foundation.

OCSD Smart Schools Investment Plan 1: Improving School Connectivity

In the spring of 2016, an independent consulting firm conducted on a Technology Conditions Survey (TCS) of Onondaga Central School District four instructional buildings. The TCS provides an objective, detailed baseline of information about the conditions of each building's technology infrastructure as well as connected networked systems such as Communications, Security and AV.

Based on the findings of the TCS, the OCSD Technology Committee decided to focus the district's SSBA allocation on **Goal 1, Improving School Connectivity,** upon which the successful completion of all other goals are ultimately based.

There are three sub-goals associated with Improving School Connectivity:

1.1. Upgrade Technology Infrastructure
1.2. Upgrade Network Equipment
1.3. Increase Wireless Access

The importance of Technology Infrastructure

A reliable, adequate and upgradeable technology infrastructure platform is the foundation on which all networked and other inter-connected technology initiatives rest. The quality and conditions of the structured cabling, pathways and spaces is critical to making the District's internet access available from edge-of-property to its (4) primary instructional buildings.

While these cabling, pathways and spaces—collectively known as "technology infrastructure"—are literally out of sight behind walls and above ceilings, any comprehensive district technology upgrades or improvements must start here.

The importance of Network Equipment

Network Equipment plays a vital role in connecting devices and systems to each other and the world using the available technology infrastructure. Servers, switches and routers control how digital signals are sent, managed and received within a classroom, floor or building, and throughout the district.

Like the components that comprise technology infrastructure, Network Equipment needs to be reliable, up-to-date and upgradeable, as possible, to meet evolving needs and standards.

The importance of Wireless Access

Cutting the physical cords that connect devices to the network is as pertinent to a school building as it is to your home. The resultant freedom of movement and related applications open up a world of inquiry and discovery for students and educators alike.

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OCSD SSIP 1: Improve School Connectivity (cont.)

Key strategic issues addressed in this SSIP

Key strategic issues that are addressed in this Smart School Investment Plan and the district's technology goals they affect include:

Upgrade Technology Infrastructure key issues

- Establish industry-standard Backbone infrastructure from edge-of-property to and throughout each district building.
- Consolidate, dedicate and secure Technology Rooms (TRs) that meet industry best practices.
- Reduce the number of necessary cables (i.e., lengths and quantity) and terminations in each building based on the TR locations.
- Account for planned technology upgrades during the 2023/24 capital project.

Upgrade Network Equipment key issues

- Establish industry-standard Backbone infrastructure from edge-of-property to and throughout each district building.
- Consolidate, dedicate and secure Technology Rooms (TRs) that meet industry best practices.
- Reduce the number of necessary cables (i.e., lengths and quantity) and terminations in each building based on the TR locations.
- Account for planned technology upgrades during the 2023/24 capital project.

Upgrade Wireless Access key issues

- Establish industry-standard, pervasive Wireless infrastructure throughout each district building.
- Ensure a capacity-based design that will support peak demand locations and provide adequate coverage.
- Establish reliable, secure wireless network access for students and staff so that teaching and learning can depend on the availability of adequate signal and internet access.
- Provide guest and public access for parents and families.

OCSD SSIP1: Technology Infrastructure Upgrades

Total SSIP1 Estimated Expenses: Summary of Sub Allocations

Note: More detailed technology cost estimates appear in *Appendix A, SSIP Estimated Expenses by MasterFormat Category.*

SSBA Funding Source

Item	Amount
Network/Access Costs	**$198,058**
Outside Plant Costs	**$0**
School Internal Connections and Components	**$296,780**
Professional Services	**$126,400**
Testing	**$0**
Other Upfront Costs	**$179,268**
Other Costs	**$0**
Total Estimated Cost	**$800,506**

SSIP1 Network/Access

Items	Qty	Cost per Item	Total Cost
Data Communications Switches 10/100/1000 PoE	19	$3,133	$59,527
Data Communications Wireless Access Points	164	$522	$85,608
Data Communications Servers	3	$17,641	$52,923
Total Network/Access Costs			**$198,058**

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OCSD SSIP1: Technology Infrastructure Upgrades/ Total SSIP1 Estimated Expenses: Summary of Sub Allocations (cont.)

SSIP1 Internal Connections and Components

Items	Qty	Cost per Item	Total Cost
District-Wide Technology Room Improvements	1	$125,000	$125,000
District-Wide Communications Pathways	1	$33,950	$33,950
District-Wide Structured Cabling for WLAN	1	$58,580	$58,580
District-Wide Fiber Optic Cabling	1	$53,000	$53,000
Underground Conduits	1	$12,000	$12,000
Temporary Facilities	1	$6,250	$6,250
Communications Services	1	$8,000	$8,000
Total Internal Connections and Components Costs			**$296,780**

SSIP1 Professional Services

Items	Qty	Cost per Item	Total Cost
Infrastructure Design & Construction Management Fees	1	$100,000	$100,000
Hardware/Software Installation	1	$16,500	$16,500
CNYRIC Project Management	1	$9,900	$9,900
Total Professional Services Costs			**$126,400**

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OCSD SSIP1: Technology Infrastructure Upgrades/
Total SSIP1 Estimated Expenses: Summary of Sub Allocations (cont.)

SSIP1 Other Costs

Items	Qty	Cost per Item	Total Cost
Infrastructure Design Contingency	NA	$87,446	$87,446
Infrastructure Construction Contingency	NA	$87,446	$87,446
Network Equipment Contingency	NA	$3,960	$3,960
Network Equipment Insurance	1	$416	$416
Total Other Costs			**$179,268**

Financial Sustainability

This Smart Schools Investment Plan was developed as part of a larger 2025 Comprehensive Technology Plan (CTP) that includes financial planning for technology-related purchases through the 2025 school year.

This SSIP will greatly expedite meeting the first goal, Improve School Connectivity, that is the foundation upon which rests the success of all other District technology goals.

Next Steps

Date	Milestone
July 19, 2016	SSIP1 Executive Summary **Draft** approved by Board ***(completed)***
July 20	SSIP Executive Summary posted to district website for 30-day review ***(completed)***
Aug. 9	SSIP1 Plan Public Review meeting, 5:30pm, High School Auditorium ***(completed)***
Aug. 23	SSIP1 Executive Summary **Final** approval by Board
Aug. 31	SSIP1 Submission via SSBA website
Oct. 1	Design Documents Submitted to NYSED Facility Planning for review
Apr 1, 2017	Target Date to Start Bidding (pending NYSED Facility Planning Review)

Available Resources

Click on the link to open the PDF or web page in your web browser.

OCSD Resources

- OCSD Strategic Plan
- OCSD District Technology Plan
- OCSD Comprehensive Technology Plan *(in development with final document available by Aug. 30, 2016 prior to SSIP submission)*

NYS Resources

- Smart Schools Bond Act of 2014 Statute
- Smart Schools Bond Act FAQs
- Smart Schools Bond Act (SSBA) Guidance
- NYS State Education Dept. (SED) SSBA website

Public Comment and Feedback

As per the NYS Smart School Bond Act (SSBA) Statute, public feedback to this Smart School Investment Plan (SSIP) was provided prior to submitting this final Plan to the New State Department of Education for consideration of SSBA funding.

All Onondaga School Districts parents and community stakeholders were encouraged to provide feedback to the SSIP1 Preliminary Plan via the following outlets:

- **SSIP1 Plan Public Review Meeting** at **5:30 pm, Tuesday, August 9, 2016** at the High School Auditorium in Onondaga.
- Via the District's website that can be accessed by selecting this link. Input was due by **5 p.m., Friday, August 19,** 30 days after posting the Plan on July 20.

Thanks to all the staff, teachers, students, parents, guardians, and community members that helped shape this Smart Schools Investment Plan.

Project Estimate (Displayed Total: $800,506.00)

Project: KK - Onondaga - CTP **MasterFormat:** All **Contract:** All
Funding Source: All **Budget:** All **Budget Code:** SSIP
Design Option: All **Phase:** All **Bid Package:** All
Total: $800,506.00 **Total Per SF:** Infinity **Risk Factor:** $0.00 (0) **Total Including Risk Factor:** $800,506.00

Per SF	Item	Qty	Furnish	Install	Total
Infinity	**00 00 00 Procurement and Contracting Requirements**				**$245,982.00**
N/A	aDesign Fees for SSBA Design Fees - 12% of Total Estimated Construction Cost.	1	$0.00	$60,000.00	$60,000.00
N/A	bDesign Contingency Adjusted up from original 60K to create an allocation for the full 800K SSBA	1	$0.00	$72,991.00	$72,991.00
N/A	cCM Fees for SSBA CM Fees - 3% of Total Estimated Construction Cost. (if we move BOCES PM fee to this line we may want to adjust to 5% - however for now the BOCES fee is in their line items.)	1	$0.00	$15,000.00	$15,000.00
N/A	dConstruction Contingency Adjusted up from original 60K to create an allocation for the full 800K SSBA	1	$0.00	$72,991.00	$72,991.00
N/A	zIncidentals since the scope is limited, we have plugged in a smaller incidental line	1	$0.00	$25,000.00	$25,000.00
Infinity	**01 50 00 Temporary Facilities and Controls**				**$6,250.00**
N/A	High School - Temporary IDF Links Temporary fiber optic cable from MTR-2A to the legacy MDF in room 142.	250 LF	$0.00	$25.00	$6,250.00
Infinity	**27 00 00 Communications**				**$145,000.00**
N/A	Industrial Arts - Spaces Architectural, Power, Cooling, Grounding	1 EA	$0.00	$20,000.00	$20,000.00
N/A	Jr / Sr High School - CTR The need for this is TBD. (Power, Grounding, Fiber Optic Cable, Equipment Cabinet)	1 EA	$0.00	$5,000.00	$5,000.00
N/A	Jr / Sr High School - Spaces Architectural, Power, Cooling, Grounding	2 EA	$0.00	$20,000.00	$40,000.00
N/A	Rockwell - Spaces Architectural, Power, Cooling, Grounding	2 EA	$0.00	$20,000.00	$40,000.00
N/A	Wheeler - Spaces Architectural, Power, Cooling, Grounding	2 EA	$0.00	$20,000.00	$40,000.00
Infinity	**27 05 13 Communications Services**				**$8,000.00**

N/A	Jr/Sr High School Service Provider Fiber Relocation	1	$0.00	$3,000.00	$3,000.00
N/A	Rockwell Service Provider Fiber Relocation	1	$0.00	$5,000.00	$5,000.00

Infinity	**27 05 28 Pathways for Communications Systems**				**$33,950.00**
N/A	Jr / Sr High School - Pathways Conduits, sleeves, firestop from new TR locations to location of future primary pathways. To be constructed to accommodate WLAN CAT 6A cabling and new fiber backbone cabling.	100 LF	$0.00	$100.00	$10,000.00
N/A	Jr/Sr High School - Pathways Establish J - Hook Pathways	600 EA	$0.00	$15.00	$9,000.00
N/A	Rockwell - Pathways Conduits, sleeves, firestop from new TR locations to location of future primary pathways. To be constructed to accommodate WLAN CAT 6A cabling and new fiber backbone cabling.	50 LF	$0.00	$100.00	$5,000.00
N/A	Rockwell - Pathways Establish J - Hook Pathways	150 EA	$0.00	$15.00	$2,250.00
N/A	Wheeler - Pathways Establish J - Hook Pathways	180 EA	$0.00	$15.00	$2,700.00
N/A	Wheeler - Pathways Conduits, sleeves, firestop from new TR locations to location of future primary pathways. To be constructed to accommodate WLAN CAT 6A cabling and new fiber backbone cabling.	50 LF	$0.00	$100.00	$5,000.00

Infinity	**27 05 43 Underground Ducts and Raceways for Communications Systems**				**$12,000.00**
N/A	District - Redundant Underground Service Provider Conduit	500 LF	$15.00	$0.00	$7,500.00
N/A	Press Box - Conduit Trenching, 2" Conduit Installation, Parking Lot Restoration. Conduit to originate from Industrial Arts	150 LF	$30.00	$0.00	$4,500.00

Infinity	**27 10 00 Structured Cabling**				**$58,800.00**
N/A	Industrial Arts - CAT 6A WAP Cabling Place Terminate and Test. Includes Cable Connectors and Patch Panels For 6 WAPs.	6 EA	$0.00	$400.00	$2,400.00
N/A	Jr/Sr High School - CAT 6A WAP Cabling Place Terminate and Test. Includes Cable Connectors and Patch Panels For 73 WAPs.	73 EA	$0.00	$400.00	$29,200.00
N/A	Rockwell - CAT 6A WAP Cabling Place Terminate and Test. Includes Cable Connectors and Patch Panels For 35 WAPs	35 EA	$0.00	$400.00	$14,000.00
N/A	Wheeler - CAT 6A WAP Cabling Place Terminate and Test. Includes Cable Connectors and Patch Panels For 33 WAPs	33 EA	$0.00	$400.00	$13,200.00

Infinity	**27 13 23 Communications Optical Fiber Backbone Cabling**				**$61,750.00**
N/A	Industrial Arts - Cabling Relocate cable and terminate in new MTR with LC connectors	150 LF	$0.00	$20.00	$3,000.00
N/A	Jr / Sr High School - Cabling Intra-Building Fiber Optic Cabling 50 micron / sm hybrid cable with LC connectors	700 LF	$0.00	$25.00	$17,500.00
N/A	Jr / Sr High School - Wheeler Inter-Building sm cable with LC connectors	1000 LF	$0.00	$25.00	$25,000.00
N/A	Rockwell - Cabling Intra-Building Fiber Optic Cabling 50 micron / sm hybrid cable with LC connectors	350 LF	$0.00	$25.00	$8,750.00
N/A	Wheeler - Cabling Intra-Building Fiber Optic Cabling 50 micron / sm hybrid cable with LC connectors	300 LF	$0.00	$25.00	$7,500.00

Infinity	**27 21 29 Data Communications Switches and Hubs**				**$71,809.00**
N/A	Data Switches per CNYRIC Quote for Project 61410	1 EA	$71,809.00	$0.00	$71,809.00

Infinity	**27 21 33 Data Communications Wireless Access Points**				**$91,728.00**
N/A	Wireless - Aruba 1 Option from CNYRIC quote for Project 61410	1 EA	$91,728.00	$0.00	$91,728.00

Infinity	**27 22 19 Data Communications Servers**				**$65,237.00**
N/A	Servers from CNYRIC quote for Project 61410	1 EA	$65,237.00	$0.00	$65,237.00