Integrated Design Solutions

architecture engineering
interiors & technology

Project Manual

Troy School District
School Technology Systems
Wireless Network Infrastructure and Laptop Computers, Laptop Carts and Printers
TSD Bid No. 9380

IDS Project No. 03234-1000 BP20
W&H Project No. 06-TSD-PWD-02

February 6, 2007
Bids

Project Manual

Troy School District
School Technology Systems
Wireless Network Infrastructure and
Laptop Computers, Laptop Carts and Printers
TSD Bid No. 9380

For The

Troy School District
4400 Livernois
Troy, Michigan 48098

Integrated Design Solutions LLC
Architecture, Engineering, Interiors & Technology
888 W Big Beaver, Suite 200
Troy, Michigan 48084
248.823.2100
Fax 248.823.2200
www.ids-troy.com

Wright & Hunter, Inc.
Innovative Technology Advisors
330 Hamilton Street, Suite 200
Birmingham, Michigan 48009
248.594.5850
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www.wrighthunter.com

TSD Bid No. 9380
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W&H Project No. 06-TSD-PWD-02

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SECTION 00100 - ADVERTISEMENT FOR BIDS

DATE: February 6, 2007

PROJECT: Troy School District
School Technology Systems
Wireless Network Infrastructure
TSD Bid No. 9380
Troy, Michigan

OWNER: Troy School District
4400 Livernois
Troy, Michigan 48098

ENGINEER/TECHNOLOGY DESIGNER: Integrated Design Solutions, LLC
Architecture, Engineering, Interiors & Technology
888 W. Big Beaver, Suite 200
Troy, MI 48084
(248) 823-2100
(248) 823-2200 fax

DESIGNER: Wright & Hunter, Inc.
Innovative and Independent Technology Advisors
330 Hamilton, Suite 200
Birmingham, MI 48009
(248) 594-5850
(248) 594-5851 fax

BIDS RECEIVED: Until 3:00 pm local time on March 1, 2007, the Owner will receive sealed Bids for the work as set forth in the Bidding Documents at:

Troy School District
Purchasing Department
1140 Rankin
Troy, Michigan 48083

ATTN: Frank Lams, Purchasing Supervisor

All Bids will be publicly opened and read aloud at 3:00 pm. A bid tabulation summary will be available.

The Bidding Documents will be on file on and after February 6, 2007, and may be examined at the following locations during regular business hours, Monday through Friday.

World Wide Web: Troy School District (Specifications Only)
http://www.troy.k12.mi.us/purchasing/items_out_for_bid.htm

The offices of: Integrated Design Solutions, LLC, 888 W. Big Beaver, Suite 200, Troy, Michigan 48084, (248) 823-2100.
Construction Association of Michigan, 43636 Woodward Ave., Bloomfield Hills, Michigan 48302, (248) 972-1000.
Plan Room, McGraw Hill Construction, 20475 Woodingham Dr., Detroit, Michigan, 48221, (313) 342-6449.

The Engineer/Technology Designer will furnish one (1) set of documents to the bidders with a $50 refundable deposit.

A pre-bid conference is scheduled for February 13, 2007, at 9:00 am local time. All Bidders are responsible for attendance at the pre-bid conference. Bidders shall meet at the Troy School District Administration Building, 4400 Livernois, Troy, Michigan, 48098.

Each Bid shall be accompanied by a Bid Security in the form of a certified check, cashier's check, money order or bid bond made payable to Troy School District in an amount not less than five percent (5%) of the base bid as a Bid guarantee.

The successful Bidder shall provide a Performance Bond and a Labor and Material Payment Bond covering the faithful performance of the Contract and payment of all obligations arising thereunder, each in the amount of one hundred percent (100%) of the contract amount. The cost of such bonds shall be included in the Bid.

The bid security of Bidders under consideration will be returned immediately after execution of the Contract by the Owner. The amount of the bid security shall be forfeited to the Owner if the successful Bidder fails to enter into a contract and furnish required bonds and insurance certificates within ten (10) days after award of Contract.

Withdrawal of any Bid is prohibited for a period of sixty (60) days after the actual date of the opening thereof.

Each Bidder agrees to waive any claim it has or may have with the Owner, the Engineer/Technology Designer and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

The Owner reserves the right to reject any or all Bids, either in whole or in part, to reject a Bid not accompanied by the required bid security or by other data required by the Bidding Documents or to reject a Bid which is any way incomplete or irregular and to waive informality and irregularity in the bids and in the bidding.

The Owner reserves the right to accept Alternates in any order or combination and to determine the low Bidder on the basis of the sum of the base bid and the Alternates accepted to award a bid that is determined to be in the Owner's best interest.

After the pre-bid conference, the Owner will make available representative school buildings for Bidders to examine site and local conditions. Interested Bidders shall meet with the Owner and Owner's Representatives in the main office of each building according to the following schedule:

1:00 pm	Troy High School	4777 Northfield Parkway
1:45 pm	Boulan Park Middle School	3570 Northfield Parkway
2:30 pm	Bemis Elementary School	3571 Northfield Parkway

END OF ADVERTISEMENT FOR BIDS

SECTION 00200 - INSTRUCTIONS TO BIDDERS

1. DEFINITIONS

A. Bidding Documents include the Bidding Requirements and the proposed Contract Documents. The Bidding Requirements consist of the Advertisement for Bids, Instruction to Bidders, the Bid Form and other bidding and contract forms. The proposed Contract Documents consist of the form of an Agreement between Owner and Contractor, General Conditions of the Contract for Construction, Supplementary and other Conditions, Specifications, Drawings and Addenda issued prior to execution of the Contract.

B. Addenda are written or graphic instruments issued by the Engineer/Technology Designer prior to the execution of the Contract, which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.

C. A Bidder is a person or entity who submits a Bid.

D. A Bid is a complete and properly signed proposal to do the work for the sums stipulated therein submitted in accordance with the Bidding Documents.

E. The Base Bid is the amount stated in the Bid for which the Bidder offers to perform the work as described in the Bidding Documents as the base, to which work may be added to or deleted from, for the amounts stated in the Alternates.

F. An Alternate is an amount stated in the Bid Form to be added to or deducted from the amount of the Base Bid if the described Alternate is accepted.

G. A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment or services or a portion of the work as described in the Bidding Documents.

2. SECURING BIDDING DOCUMENTS

A. Bidding is by public advertisement and invitation. Copies of the Bidding Documents may be obtained from Integrated Design Solutions, LLC, upon conditions set forth in the Advertisement for Bids.

B. Only complete sets of Bidding Documents will be furnished. The Owner or Engineer/Technology Designer assumes no responsibility for errors or misinterpretations resulting from use of incomplete sets of Bidding Documents.

C. All copies of the Bidding Documents received for bidding purposes shall be returned in usable condition within ten (10) days of receipt of bids.

D. Bidding Documents remain the property of the Engineer/Technology Designer.

3. PREPARATION AND SUBMISSION OF BIDS

A. Copies of the Bidding Documents may be obtained from Integrated Design Solutions, LLC, upon conditions set forth in the Advertisement for Bids.

B. Bids shall be submitted on forms bound in the Project Manual of the Bidding Documents.

C. All blanks on the Bid Form must be filled in by typewriter or by hand in ink.

D. Amounts shall be expressed in both words and figures. In case of a discrepancy the amount stated in words shall govern.

E. Alterations by erasure or interlineations must be initialed by the Bidder.

F. All Alternates must be bid. If no change in the Base Bid is required, enter "No Change."

G. Submit the Bid, along with the bid security and any other documents required to be submitted with the Bid, to the Owner, and deliver to the address given in the Advertisement for Bids on or before the day and hour set for receipt of the Bids.

1. Enclose each Bid in a sealed opaque envelope bearing the title of the work Wireless Network Infrastructure, TSD Bid No. 9380, the name of the Bidder, and the date and hour of the Bid opening, with the notation "SEALED BID ENCLOSED."
2. Do not change the wording of the Bid Form, and do not add words to, or delete words from the Bid Form.
3. Unauthorized conditions, limitations, or provisions attached to the Bid will be cause for rejection of the Bid.
4. Submit only duplicate signed copies of the Bid.
5. It is the sole responsibility of the Bidder to see that his bid is received on time.
6. Telephonic, telegraphic, facsimile (fax), or e-mail Bids or telephonic, telegraphic, facsimile (fax) or e-mail modification of a Bid will not be considered.
7. Bids received after the time fixed for receiving them will not be considered and will be returned to the Bidder unopened.
8. Properly identified Bids received on time will be publicly opened and read aloud. A bid tabulation summary will be available.
9. The "AFFIDAVIT OF BIDDER" found in the bid form must be completed.

H. The Bidder in submitting a Bid represents that:

1. The Bidder has read and understands the Bidding Documents, including the Drawings, Specifications and other proposed Contract Documents.
2. The Bid is made in compliance with the Bidding Documents.
3. The Bidder has visited the site of the Work and become informed as to existing conditions and limitations under which the Work is to be performed and included in their Bid a sum to cover the cost necessary to perform the Work as set forth in the Bidding Documents. No allowance will be made to a Bidder because of a lack of such examination or knowledge.
4. The Bid is based upon materials, equipment and systems required by the Bidding Documents without exception and without substitutions.

4. BID SECURITY AND BONDS

A. Each bid shall be accompanied by a certified check, cashier's check, money order or bid bond made payable to Troy School District in an amount not less than five percent (5%) of the Base Bid as a proposal guarantee. Bid Bond shall be provided by a company licensed to do business in the State of Michigan.

B. The successful Bidder shall provide a Performance Bond and a Labor and Material Payment Bond, covering the faithful performance of the Contract and payment of all obligations arising there under, each in the amount of one hundred percent (100%) of the contract amount. Bonds shall be provided by a company licensed to do business in the State of Michigan. The cost of such bonds shall be included in the Bid.

C. The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to be commenced prior thereto in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this paragraph.

D. Should the Bidder refuse to enter into a Contract or fail to furnish such bonds, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty.

E. The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until either the Contract has been executed and bonds have been furnished or the specified time has elapsed so that the Bid may be withdrawn or all Bids have been rejected.

5. MODIFICATIONS AND WITHDRAWAL OF BIDS

A. A Bidder may not modify, withdraw or cancel a Bid, for a period of sixty (60) days following the time and date designated for receipt of Bids, and by submitting a Bid each Bidder shall so agree.

B. A Bidder may withdraw their Bid, either personally or by written request, at any time prior to the scheduled time for receipt of bids. A withdrawn Bid may be resubmitted up to the date and time designated for receipt of Bids.

C. Prior to the time and date for receipt of Bids, a Bidder may modify a Bid by notice to the party receiving Bids, at the place designated for receipt of Bids. Such notice shall be in writing and signed by the Bidder. Written notice and the signature of the Bidder shall be received, and date and time stamped by the receiving party on or before the date and time set for receipt of Bids. A change shall be worded as not to reveal the amount of the original Bid.

6. CONSIDERATION OF BIDS

A. The Owner reserves the right to reject any or all Bids submitted either in whole or part, to reject a bid not accompanied by the required Bid security or by other data required by the Bidding Documents or to reject a Bid which is any way incomplete or irregular and to waive informality and irregularity in the Bids and in the Bidding.

B. The Owner reserves the right to accept alternates in any order or combination and to determine the low Bidder on the basis of the sum of the Base Bid and the alternates accepted and to make the awards that the Owner determines are in its best interest. The decision of the Owner is final and not subject to appeal.

C. The Owner reserves the right to negotiate with any Bidder without rebidding the project in whole or in part.

7. EXECUTION OF AGREEMENT

A. The successful Bidder will be required to execute AIA Standard Form of Agreement between Owner and Contractor, AIA Document A101-1997 in conjunction with the General Conditions of the Contract for Construction, AIA Document A201-1997. The contract documents will be available for review and signatures within seven (7) days of contract award. The owner will issue an owner's Purchase Order for the owner's accounting purposes only.

B. The Bidder to whom the Contract is awarded shall, within five (5) calendar days after notice of award and receipt of Agreement forms from the Owner, sign and deliver required copies to the Owner.

C. At or prior to delivery of the signed Agreement, the Bidder to whom the Contract is awarded shall deliver to the Owner those Certificates of Insurance required by the Owner.

D. The Owner shall approve Bonds and Certificates of Insurance before the successful Bidder may proceed with the Work. Failure or refusal to provide Bonds or Certificates of Insurance in a form satisfactory to the Owner shall subject the successful Bidder to loss of time from the allowable construction period equal to the time of delay in furnishing the required material.

E. After award of the Contract and prior to the first payment request, the Bidder to whom the Contract is awarded shall deliver to the Owner a schedule of values on a building by building basis.

8. INTERPRETATION OF CONTRACT DOCUMENTS PRIOR TO BIDDING

A. Bidders shall study and compare the Bidding Documents with each other, shall examine the site and local conditions by appointment with the Owner and if in doubt as to the true meaning of any part of the Bidding Documents, or finds discrepancies, inconsistencies, ambiguities or errors in or omissions from any part of the Bidding Documents, the Bidder may submit to the Engineer/Technology Designer a written request for interpretation thereof. The person submitting the request shall be responsible for its prompt delivery. The bidding schedule is as follows:

Bids Available:	Tuesday, February 6, 2007
Pre-bid Conference and Site Visits:	Tuesday, February 13, 2007
Deadline for RFI Submissions:	Thursday, February 22, 2007, 12:00 pm
Deadline for RFI Responses and Addenda:	Tuesday, February 27, 2007, 5:00 pm
Bids Due:	Thursday, March 1, 2007, 3:00 pm
Bid Opening:	Thursday, March 1, 2007, 3:01 pm
Post Bid Interviews:	Wednesday, March 7, 2007 Thursday, March 8, 2007
Bid Award:	Tuesday, March 20, 2007 Board of Education Meeting, 7:30 pm

B. Interpretation, connection or changes to the proposed Contract Documents will be made only by Addendum. Explanations, interpretations, corrections or changes of the Bidding Documents by any other method will not be binding.

9. ADDENDA/RESPONSES TO RFI'S

A. Addenda and responses to RFI's will be posted on the TSD website and plan houses listed on the Advertisement for Bids.

B. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file.

C. Addenda will be issued no later than four (4) days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which postpones the date for receipt of Bids.

D. Each Bidder shall ascertain prior to submitting his bid that he has received all Addenda issued and shall acknowledge their receipt on the Bid Form.

E. Each Bidder shall be responsible for compliance with all issued Addenda.

10. SUBSTITUTIONS

A. No substitutions will be considered prior to receipt of Bids, unless a written request for approval has been received by the Engineer/Technology Designer at least ten (10) days prior to the date for receipt of Bids. Such request for substitutions shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, performance and test data, samples and other information necessary for an evaluation. A statement setting forth changes in other materials, equipment or other portions of the Work, shall be included. The burden of proof of the merit of the proposed substitution is upon the proposer. The Engineer/Technology Designer's decision of approval or disapproval of a proposed substitution shall be final.

B. If the Engineer/Technology Designer approves a proposed substitution prior to receipt of Bids, such approval will be set forth in an Addendum.

C. No substitutions will be considered after Contract award unless specifically provided for in the Contract Documents.

11. TAXES

A. For the purposes of this bid, the Troy School District is tax exempt. Do not include Federal, State or local taxes in the Bid. The Owner's federal and state tax exempt number is B38.600.3099. Usage taxes shall be included in the base bid price.

12. PERMITS AND FEES

A. All Bids shall include costs of all applicable permits and fees.

13. TIME OF COMPLETION

A. The Bidder, if awarded the Contract, agrees to complete the Work on or before the Contract Completion Date stated in the Bid Form.

14. PREVAILING WAGE LAW

A. Prevailing wage rates apply to this project.

B. The wages and fringe benefits to be paid to each class of worker shall not be less than the wage and fringe benefit rates prevailing in the locality in which the work is to be performed, in accordance with Act 166 of the State of Michigan Public Acts of 1965 as amended.

15. EQUAL OPPORTUNITY

A. The Contractor and the Contractor's Subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. The Contractor shall take steps to insure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

B. The Contractor and the Contractor's Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex or national origin.

END OF SECTION 00200

STATE OF MICHIGAN

JENNIFER M. GRANHOLM
GOVERNOR

DEPARTMENT OF LABOR & ECONOMIC GROWTH
LANSING

ROBERT W. SWANSON
DIRECTOR

REQUIREMENTS OF MICHIGAN PUBLIC ACT 166 OF 1965, PREVAILING WAGES ON STATE PROJECTS

The Michigan Department of Labor & Economic Growth determines prevailing rates pursuant to the Prevailing Wage Law, Act 166, P.A. of 1965. The purpose of establishing prevailing rates is to provide rates of pay for workers on construction projects for which the state or a school district is the contracting agent and which is financed or financially supported by the state. By law, prevailing rates are compiled from the rates contained in collectively bargained agreements which cover the locations of the state projects. The attached prevailing rates provide an hourly rate which INCLUDES wage and fringe benefit totals for designated construction mechanic classifications. The overtime rates also include wage and fringe benefit totals. Please pay special attention to the overtime and premium pay requirements. The prevailing rate may be satisfied by payment in cash or payment in cash and credit for fringe benefits paid in cash or on behalf of a worker or fringe benefits provided to a worker.

State of Michigan responsibilities under the law:

- The department establishes the prevailing rate for each classification of construction mechanic ***requested by a contracting agent*** prior to contracts being let out for bid on a state project.

Contracting agent responsibilities under the law:

- If a contract is not awarded or construction does not start within 90 days of the date of the issuance of rates, a re-determination of rates must be requested by the contracting agent.
- Rates for classifications needed but not provided on the Prevailing Rate Schedule, including rates for registered apprentices, ***must*** be obtained ***prior*** to contracts being let out for bid on a state project.
- The contracting agent, by written notice to the contractor and the sureties of the contractor known to the contracting agent, may terminate the contractor's right to proceed with that part of the contract, for which less than the prevailing rates of wages and fringe benefits have been or will be paid, and may proceed to complete the contract by separate agreement with another contractor or otherwise, and the original contractor and his sureties shall be liable to the contracting agent for any excess costs occasioned thereby.

Contractor responsibilities under the law:

- Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.
- Every contractor and subcontractor shall keep an accurate record showing the name and occupation of and the actual wages and benefits paid to each construction mechanic employed by him in connection with said contract. This record shall be available for reasonable inspection by the contracting agent or the department.
- Each contractor or subcontractor is separately liable for the payment of the prevailing rate to its employees.
- The prime contractor is responsible for advising all subcontractors of the requirement to pay the prevailing rate prior to commencement of work.
- The prime contractor is secondarily liable for payment of prevailing rates that are not paid by a subcontractor.
- A construction mechanic shall only be paid the apprentice rate if registered with the United States Department of Labor, Bureau of Apprenticeship and Training and the rate is included in the contract.

Enforcement:

A person who has information of an alleged prevailing wage violation on a state project may file a complaint with the Wage and Hour Division. The department will investigate and attempt to resolve the complaint informally.

Executive Order Number 2003-001 requires that contractors doing business with the State of Michigan be in compliance with state and federal law. A violation of Act 166 of 1965, as amended, the Prevailing Wages on State Projects act or Act 390 of 1978, as amended, the Payment of Wages and Fringe Benefits Act, may result in the debarment of a contractor from being awarded a contract for the provision of goods and services to the State of Michigan for a period of up to eight (8) years.

ENGINEERS - CLASSES OF EQUIPMENT LIST

UNDERGROUND ENGINEERS

CLASS I

Backfiller Tamper, Backhoe, Batch Plant Operator, Clam-Shell, Concrete Paver (2 drums or larger), Conveyor Loader (Euclid type), Crane (crawler, truck type or pile driving), Dozer, Dragline, Elevating Grader, End Loader, Gradall (and similar type machine), Grader, Power Shovel, Roller (asphalt), Scraper (self propelled or tractor drawn), Side Broom Tractor (type D-4 or larger), Slope Paver, Trencher (over 8' digging capacity), Well Drilling Rig, Mechanic, Slip Form Paver.

CLASS II

Boom Truck (power swing type boom), Crusher, Hoist, Pump (1 or more 6" discharge or larger gas or diesel powered by generator of 300 amps or more, inclusive of generator), Side Boom Tractor (smaller than type D-4 or equivalent), Sweeper (Wayne type and similar equipment), Tractor (pneu-tired, other than backhoe or front end loader), Trencher (8' digging capacity and smaller).

CLASS III

Air Compressors (600 cfm or larger), Air Compressors (2 or more less than 600 cfm), Boom Truck (non-swinging, non-powered type boom), Concrete Breaker (self-propelled or truck mounted, includes compressor), Concrete Paver (1 drum, ½ yard or larger), Elevator (other than passenger), Maintenance Man, Mechanic Helper, Pump (2 or more 4" up to 6" discharge, gas or diesel powered, excluding submersible pump), Pumpcrete Machine (and similar equipment), Wagon Drill Machine, Welding Machine or Generator (2 or more 300 amp or larger, gas or diesel powered).

CLASS IV

Boiler, Concrete Saw (40HP or over), Curing Machine (self-propelled), Farm Tractor (w/attachment), Finishing Machine (concrete), Firemen, Hydraulic Pipe Pushing Machine, Mulching Equipment, Oiler (2 or more up to 4", exclude submersible), Pumps (2 or more up to 4" discharge if used 3 hrs or more a day-gas or diesel powered, excluding submersible pumps), Roller (other than asphalt), Stump Remover, Vibrating Compaction Equipment (6' wide or over), Trencher (service).

HAZARDOUS WASTE ABATEMENT ENGINEERS

CLASS I

Backhoe, Batch Plant Operator, Clamshell, Concrete Breaker when attached to hoe, Concrete Cleaning Decontamination Machine Operator, Concrete Pump, Concrete Paver, Crusher, Dozer, Elevating Grader, Endloader, Farm Tractor (90 h.p. and higher), Gradall, Grader, Heavy Equipment Robotics Operator, Loader, Pug Mill, Pumpcrete Machines, Pump Trucks, Roller, Scraper (self-propelled or tractor drawn), Side Boom Tractor, Slip Form Paver, Slop Paver, Trencher, Ultra High Pressure Waterjet Cutting Tool System Operator, Vactors, Vacuum Blasting Machine Operator, Vertical Lifting Hoist, Vibrating Compaction Equipment (self-propelled), and Well Drilling Rig.

CLASS II

Air Compressor, Concrete Breaker when not attached to hoe, Elevator, End Dumps, Equipment Decontamination Operator, Farm Tractor (less than 90 h.p.), Forklift, Generator, Heater, Mulcher, Pigs (Portable Reagent Storage Tanks), Power Screens, Pumps (water), Stationary Compressed Air Plant, Sweeper, and Welding Machine.

Regular Crane Operators rate shall include: Mechanics, Crane Operators, Dragline Operators, Boom Truck Operators, Power Shovel Operators and Concrete Pumps with booms.

Revised: 09/07/06

MICHIGAN DEPARTMENT OF LABOR & ECONOMIC GROWTH
WAGE & HOUR DIVISION

OVERTIME PROVISIONS for MICHIGAN PREVAILING WAGE RATE SCHEDULE

1. Overtime is represented as a nine character code. Each character represents a certain period of time after the first 8 hours Monday thru Friday.

	Monday thru Friday	Saturday	Sunday & Holidays
First 8 Hours		4	8
9th Hour	1	5	
10th Hour	2	6	
Over 10 hours	3	7	

Overtime for Monday thru Friday after 8 hours:
the 1st character is for time worked in the 9th hour *(8.1 - 9 hours)*
the 2nd character is for time worked in the 10th hour *(9.1 - 10 hours)*
the 3rd character is for time worked beyond the 10th hour *(10.1 and beyond)*

Overtime on Saturday:
the 4th character is for time worked in the first 8 hours on Saturday *(0 - 8 hours)*
the 5th character is for time worked in the 9th hour on Saturday *(8.1 - 9 hours)*
the 6th character is for time worked in the 10th hour *(9.1 - 10 hours)*
the 7th character is for time worked beyond the 10th hour *(10.01 and beyond)*

Overtime on Sundays & Holidays
The 8th character is for time worked on Sunday or on a holiday

The last character indicates if an optional 4-day 10-hour per day workweek can be worked without paying overtime after 8 hours worked.

2. Overtime Indicators Used in the Overtime Provision:

H - means TIME AND ONE-HALF due
X - means TIME AND ONE-HALF due after 40 HOURS worked
D - means DOUBLE PAY due
Y - means YES an optional 4-day 10-hour per day workweek can be worked without paying overtime after 8 hours worked
N - means NO an optional 4-day 10-hour per day workweek *can not* be worked without paying overtime after 8 hours worked

3. EXAMPLES:

HHHHHHHDN - This example shows that the 1½ rate must be used for time worked after 8 hours Monday thru Friday *(characters 1 - 3);* for all hours worked on Saturday, 1½ rate is due *(characters 4 - 7).* Work done on Sundays or holidays must be paid double time *(character 8).* The N *(character 9)* indicates that 4 ten-hour days is not an acceptable workweek at regular pay.

XXXHHHHDY - This example shows that the 1½ rate must be used for time worked after 40 hours are worked Monday thru Friday *(characters 1-3);* for hours worked on Saturday, 1½ rate is due *(characters 4 – 7)*. Work done on Sundays or holidays must be paid double time *(character 8).* The Y *(character 9)* indicates that 4 ten-hour days is an acceptable alternative workweek.

(REV 05/07/04)

State of Michigan
Department of Labor and Economic Growth

Wage and Hour Division
6546 Mercantile Way, Suite 5
PO Box 30476
Lansing, MI 48909-7976
Telephone: 517-335-0400
Fax: 517-335-0077
www.michigan.gov/wagehour

Official Request 101
Requestor: TROY SCHOOL DISTRICT

Project Description: Wirless Network Infrastructure & Laptop Computers
Project Number: DISTRICT WIDE

Oakland County

Official 2007 Prevailing Wage Rates for State Funded Projects

Issue Date: 1/24/2007
Contract must be awarded by 4/24/2007

Classification Name	Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Asbestos & Lead Abatement Laborer						
Asbestos & Lead Abatement Laborer		MLDC	$31.30	$41.83	$52.35	H H H X X X X D Y
Asbestos & Lead Abatement, Hazardous Material Handler						
Asbestos and Lead Abatement, Hazardous Material Handler		AS207	$31.30	$43.13	$54.95	X X X X X X X D Y
Boilermaker						
Boilermaker		BO169	$48.71	$68.13	$87.54	H H D H D D D D Y
	Apprentice Rates:					
	1st 6 months		$37.07	$50.67	$64.26	
	2nd 6 months		$38.03	$52.10	$66.18	
	3rd 6 months		$39.00	$53.56	$68.12	
	4th 6 months		$39.97	$55.02	$70.06	
	5th 6 months		$40.58	$56.11	$71.64	
	6th 6 months		$42.88	$59.38	$75.88	
	7th 6 months		$44.83	$62.31	$79.78	
	8th 6 months		$46.77	$65.21	$83.66	
Bricklayer						
Bricklayer, stone mason, pointer, cleaner, caulker		BR1	$46.06	$69.09	$92.12	H H D H D D D D N
	Apprentice Rates:					
	First 6 months		$29.18	$43.77	$58.36	
	2nd 6 months		$31.01	$46.51	$62.02	
	3rd 6 months		$32.82	$49.23	$65.64	
	4th 6 months		$34.64	$51.96	$69.28	
	5th 6 months		$36.47	$54.71	$72.94	
	6th 6 months		$38.28	$57.43	$76.56	

Official Request #: 101
Requestor: TROY SCHOOL DISTRICT
Project Description: Wirless Network Infrastructure & Laptop Computers

Project Number: DISTRICT WIDE
County: Oakland

Official Rate Schedule

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Classification Name / Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Carpenter					
Carpet and Resilient Floor Layer, (does not include installation of prefabricated formica & parquet flooring which is to be paid carpenter rate)	CA1045	$40.22	$56.42	$72.61	H H H H D D D D N
Apprentice Rates:					
1st 6 months		$20.93	$25.25	$31.05	
2nd 6 months		$24.02	$31.26	$39.07	
3rd 6 months		$25.64	$33.59	$42.17	
4th 6 months		$27.26	$35.95	$45.33	
5th 6 months		$28.87	$38.28	$48.43	
6th 6 months		$30.50	$40.64	$51.57	
7th 6 months		$32.11	$42.96	$54.67	
8th 6 months		$33.73	$45.30	$57.79	
Carpenter, piledriver	CA687Z1	$44.37	$62.97	$81.56	H H D H D D D D Y
Apprentice Rates:					
1st Year		$27.63	$37.85	$48.08	
3rd 6 months		$29.49	$40.65	$51.80	
4th 6 months		$31.34	$43.42	$55.50	
5th 6 months		$33.21	$46.23	$59.24	
6th 6 months		$35.08	$49.03	$62.98	
7th 6 months		$36.92	$51.79	$66.66	
8th 6 months		$38.80	$54.61	$70.42	
Cement Mason					
Cement Mason	CE514	$42.64	$58.58	$75.56	H H D H H H H D N
Apprentice Rates:					
1st 6 months		$24.81	$32.80	$41.30	
2nd 6 months		$26.56	$35.35	$44.70	
3rd 6 months		$30.06	$40.43	$51.48	
4th 6 months		$33.57	$45.55	$58.30	
5th 6 months		$35.27	$48.02	$61.60	
6th 6 months		$38.83	$53.20	$68.50	
Drywall					
Drywall Taper	PT-22-D	$38.45	$50.90	$63.35	H H D H D D D D N
Apprentice Rates:					
First 3 months		$26.00	$32.23	$38.45	
Second 3 months		$28.49	$35.96	$43.43	
Second 6 months		$30.98	$39.69	$48.41	
Third 6 months		$33.47	$43.43	$53.39	
4th 6 months		$34.71	$45.29	$55.87	

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Electrician, Inside wireman						
Electrician, Inside Wireman		EC-58-IW	$46.88	$64.00	$81.13	H H H H H H H D N
	Apprentice Rates:					
	0-1000 hours		$26.33	$33.18	$40.03	
	1000-2000 hours		$28.04	$35.75	$43.45	
	2000-3500 hours		$29.75	$38.31	$46.87	
	3500-5000 hours		$31.47	$40.90	$50.31	
	5000-6500 hours		$34.89	$46.03	$57.15	
	6500-8000 hours		$38.32	$51.17	$64.01	
Elevator Constructor						
Elevator Constructor Elevator Constructor		EL 36	$47.71		$81.45	D D D D D D D D Y
	Apprentice Rates:					
	1st Year Apprentice		$31.14		$49.70	
	2nd Year Apprentice		$34.82		$56.75	
	3rd Year Apprentice		$36.66		$60.28	
	4th Year Apprentice		$40.34		$67.33	
Glazier						
Glazier		GL-357	$41.56	$55.41		H H H H H H H H Y
	Apprentice Rates:					
	1st 6 months		$28.36	$35.29		
	2nd 6 months		$29.82	$37.44		
	3rd 6 months		$32.72	$41.72		
	4th 6 months		$34.18	$43.87		
	5th 6 months		$35.64	$46.03		
	6th 6 months		$37.09	$48.17		
	7th 6 months		$38.54	$50.31		
	8th 6 months		$41.46	$54.62		
Heat and Frost Insulator and Asbestos Worker						
Heat and Frost Insulators and Asbestos Workers		AS25	$42.80	$56.56	$70.32	H H H H H H H D Y
	Apprentice Rates:					
	1st Year		$25.05	$32.62	$40.19	
	2nd Year		$32.83	$41.78	$50.72	
	3rd Year		$34.54	$44.17	$53.80	
	4th Year		$37.30	$48.31	$59.32	
Industrial Door						
Industrial Door erection & construction		IR-25-STR-D	$33.32	$44.57	$55.82	H H D H H H D D Y

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Classification Name / Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Ironworker					
Fence Erecting	IR-25-F	$38.28	$57.26	$76.23	H H D H H H D D Y
Glazing	IR-25-GZ1	$46.57	$69.69	$92.81	H H D H H H D D Y
Mesh Iron Work	IR-25-MR	$41.22	$59.07	$76.92	H H D H D D D D N
Pre-engineered Metal Work	IR-25-PE-Z1&Z2	$39.23	$49.73	$60.23	H H H X X X X D Y
Apprentice Rates:					
1st Level		$24.11	$30.04	$35.98	
2nd Level		$26.00	$32.79	$39.59	
3rd Level		$27.87	$35.51	$43.15	
4th Level		$29.74	$38.23	$46.71	
5th Level		$31.59	$40.92	$50.24	
6th Level		$33.48	$43.66	$53.84	
Reinforced Iron Work	IR-25-RF	$46.45	$66.75	$87.05	H H D H D D D D N
Rigging Work	IR-25-RIG	$50.42	$75.53	$100.64	H H H H H H H D N
Siding & Decking	IR-25-SD	$43.31	$64.80	$86.29	H H D H H H D D Y
Structural, ornamental, conveyor, welder and pre-cast Apprentice rates apply to structural, converyor, fence, glazing, reinforced, rigging, & siding decking	IR-25-STR	$50.55	$75.66	$100.77	H H D H H H D D Y
Apprentice Rates:					
Level 1		$25.45	$38.01	$50.57	
Level 2		$27.96	$41.78	$55.59	
Level 3		$30.47	$45.55	$60.61	
Level 4		$32.98	$49.31	$65.63	
Level 5		$35.49	$53.07	$70.65	
Level 6		$38.01	$56.85	$75.69	
Level 7		$40.50	$60.59	$80.67	
Level 8		$43.02	$64.37	$85.71	

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Laborer						
Construction Laborer, Mason Tender, Carpenter Tender, Drywall Handler, Cement Finisher tender, concrete chute and concrete Bucket Handler, Concrete Laborer, Demolition Laborer		L1076-A-A	$36.48	$51.89	$67.29	H H D H D D D D Y
	Apprentice Rates:					
	0-1,000 work hours		$30.91	$43.53	$56.15	
	1,001-2,000 work hours		$32.02	$45.20	$58.37	
	2,001-3,000 work hours		$33.14	$46.88	$60.61	
	3,001-4,000 work hours		$35.37	$50.23	$65.07	
Signal man (on sewer & caisson work); air,electric or gasoline tool operator (including concrete vibrator operator,acetylene torch & air hammer operator); scaffold builder, caisson worker		L1076-A-B	$36.74	$52.28	$67.81	H H D H D D D D Y
Lansing Burner, Blaster & Powder Man		L1076-A-C	$37.23	$53.01	$68.79	H H D H D D D D Y
Furnance battery heater tender, burning bar & oxy-acetylene gun, expediter man, top man and/or bottom man (blast furnace work)		L1076-A-D	$36.98	$52.64	$68.29	H H D H D D D D Y
Cleaner/ sweeper laborer, furniture laborer		L1076-A-E	$31.03	$43.71	$56.39	H H D H D D D D Y
Plasterer Tender, Plastering Machine Operator		LPT-1	$37.86	$53.96	$70.05	H H D H D D D D N
	Apprentice Rates:					
	0 - 1,000 hours		$30.91	$43.53	$56.15	
	1,001 - 2,000 hours		$32.02	$45.20	$58.37	
	2,001 - 3,000 hours		$33.14	$46.88	$60.61	
	3,001 - 4,000 hours		$35.37	$50.23	$65.07	
Laborer - Hazardous						
Class A Laborer - performing work in conjunction with site preparation and other preliminary work prior to actual removal, handling, or containment of hazardous waste substances not requiring use of personal protective equipment required by state or federal regulations; or a laborer performing work in conjunction with the removal, handling, or containment of hazardous waste substances when used of personal protective equipment level "D" is required.		LHAZ-Z2-A	$36.48	$51.89	$67.29	H H H H H H H D Y
	Apprentice Rates:					
	0-1,000 work hours		$30.91	$43.53	$56.15	
	1,001-2,000 work hours		$32.02	$45.20	$58.37	
	2,001-3,000 work hours		$33.14	$46.88	$60.61	
	3,001-4,000 work hours		$35.37	$50.23	$65.07	

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Class B Laborer - performing work in conjunction with the removal, handling, or containment of hazardous waste substances when the use of personal protective equipment levels "A", "B" or "C" is required.	LHAZ-Z2-B	$37.48	$53.39	$69.29	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$31.66	$44.66	$57.65	
1,001-2,000 work hours		$32.82	$46.40	$59.97	
2,001-3,000 work hours		$33.99	$48.15	$62.31	
3,001-4,000 work hours		$36.32	$51.65	$66.97	
Laborer Underground - Tunnel, Shaft & Caisson					
Class I - Tunnel, shaft and caisson laborer, dump man, shanty man, hog house tender, testing man (on gas), and watchman.	LAUCT-Z1-1	$32.54	$43.21	$53.88	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$27.70	$35.95	$44.20	
1,001-2,000 work hours		$28.67	$37.40	$46.14	
2,001-3,000 work hours		$29.64	$38.86	$48.08	
3,001-4,000 work hours		$31.57	$41.76	$51.94	
Class II - Manhole, headwall, catch basin builder, bricklayer tender, mortar man, material mixer, fence erector, and guard rail builder.	LAUCT-Z1-2	$32.65	$43.38	$54.10	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$27.79	$36.08	$44.38	
1,001-2,000 work hours		$28.76	$37.54	$46.32	
2,001-3,000 work hours		$29.73	$39.00	$48.26	
3,001-4,000 work hours		$31.68	$41.92	$52.16	
Class III - Air tool operator (jack hammer man, bush hammer man and grinding man), first bottom man, second bottom man, cage tender, car pusher, carrier man, concrete man, concrete form man, concrete repair man, cement invert laborer, cement finisher, concrete shoveler, conveyor man, floor man, gasoline and electric tool operator, gunnite man, grout operator, welder, heading dinky man, inside lock tender, pea gravel operator, pump man, outside lock tender, scaffold man, top signal man, switch man, track man, tugger man, utility man, vibrator man, winch operator, pipe jacking man, wagon drill and air track operator and concrete saw operator (under 40 h.p.).	LAUCT-Z1-3	$32.71	$43.47	$54.22	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$27.83	$36.14	$44.46	
1,001-2,000 work hours		$28.81	$37.62	$46.42	
2,001-3,000 work hours		$29.78	$39.07	$48.36	
3,001-4,000 work hours		$31.73	$42.00	$52.26	

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Class IV - Tunnel, shaft and caisson mucker, bracer man, liner plate man, long haul dinky driver and well point man.	LAUCT-Z1-4	$32.89	$43.74	$54.58	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$27.97	$36.36	$44.74	
1,001-2,000 work hours		$28.95	$37.82	$46.70	
2,001-3,000 work hours		$29.94	$39.31	$48.68	
3,001-4,000 work hours		$31.91	$42.26	$52.62	
Class V - Tunnel, shaft and caisson miner, drill runner, keyboard operator, power knife operator, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars)	LAUCT-Z1-5	$33.14	$44.11	$55.08	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$28.16	$36.64	$45.12	
1,001-2,000 work hours		$29.15	$38.12	$47.10	
2,001-3,000 work hours		$30.15	$39.62	$49.10	
3,001-4,000 work hours		$32.14	$42.61	$53.08	
Class VI - Dynamite man and powder man.	LAUCT-Z1-6	$33.47	$44.61	$55.74	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$28.40	$37.00	$45.60	
1,001-2,000 work hours		$29.42	$38.53	$47.64	
2,001-3,000 work hours		$30.43	$40.04	$49.66	
3,001-4,000 work hours		$32.46	$43.09	$53.72	
Class VII - Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes and flagstones.	LAUCT-Z1-7	$26.75	$34.53	$42.30	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$23.36	$29.44	$35.52	
1,001-2,000 work hours		$24.04	$30.46	$36.88	
2,001-3,000 work hours		$24.72	$31.48	$38.24	
3,001-4,000 work hours		$26.07	$33.50	$40.94	
Landscape Laborer					
Landscape specialist includes; air, gas, and diesel equipment operator, lawn sprinkler installer.	LLAN-Z1-A	$23.38	$32.46	$41.54	X X H X X X H D Y
Landscape laborer; small power tool operator, lawn sprinkler installer helper, material mover, truck driver.	LLAN-Z1-B	$19.16	$26.13	$33.10	X X H X X X H D Y

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Marble Finisher						
Marble Finisher		TT32-MF	$38.37	$48.46	$58.54	H H D H D D D D N
	Apprentice Rates:					
	Level 1		$18.73	$24.22	$29.71	
	Level 2		$19.79	$25.81	$31.83	
	Level 3		$23.93	$30.38	$36.83	
	Level 4		$25.23	$32.33	$39.43	
	Level 5		$26.56	$33.85	$41.14	
	Level 6		$27.99	$35.64	$43.28	
	Level 7		$29.48	$37.17	$44.85	
	Level 8		$30.80	$38.73	$46.65	
Marble Mason						
Marble Mason		TT32-MM	$44.26	$57.29	$70.32	H H D H D D D D N
	Apprentice Rates:					
	Level 1		$24.21	$31.14	$38.06	
	Level 2		$26.93	$34.56	$42.20	
	Level 3		$29.70	$37.59	$45.48	
	Level 4		$32.10	$40.83	$49.56	
	Level 5		$34.18	$43.17	$52.16	
	Level 6		$37.52	$48.11	$58.71	
	Level 7		$38.55	$49.53	$60.51	
	Level 8		$39.18	$50.47	$61.77	
Operating Engineer						
Crane with boom & jib or leads 120' or longer		EN-324-A120	$47.81	$64.26	$80.70	H H D H D D D D Y
Crane with boom & jib or leads 140' or longer		EN-324-A140	$48.63	$65.49	$82.34	H H D H D D D D Y
Crane with boom & jib or leads 220' or longer		EN-324-A220	$48.93	$65.94	$82.94	H H D H D D D D Y
Crane with boom & jib or leads 300' or longer		EN-324-A300	$50.43	$68.19	$85.94	H H D H D D D D Y
Crane with boom & jib or leads 400' or longer		EN-324-A400	$51.93	$70.44	$88.94	H H D H D D D D Y
Compressor or welding machine		EN-324-CW	$36.96	$47.98	$59.00	H H D H D D D D Y
Forklift, lull, extend-a-boom forklift		EN-324-FL	$44.27	$58.95	$73.62	H H D H D D D D Y
Fireman or oiler		EN-324-FO	$35.93	$46.44	$56.94	H H D H D D D D Y
Regular crane, job mechanic, concrete pump		EN-324-RC	$46.95	$62.97	$78.98	H H D H D D D D Y

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Regular engineer, hydro-excavator, remote controlled concrete breaker	EN-324-RE	$45.98	$61.51	$77.04	H H D H D D D D Y
Apprentice Rates:					
Period 1		$36.47	$47.34	$58.22	
Period 2		$38.02	$49.67	$61.32	
Period 3		$39.57	$52.00	$64.42	
Period 4		$41.12	$54.32	$67.52	
Period 5		$42.68	$56.66	$70.64	
Period 6		$44.23	$58.99	$73.74	
Operating Engineer - Marine Construction					
Diver/Wet Tender, Engineer (hydraulic dredge)	GLF-1	$49.29	$64.74	$80.19	X X H H H H H D Y
Holidays paid at $95.64 per hour					
Subdivision of county all Great Lakes, islands therein, & connecting & tributary waters					
Crane/Backhoe Operator, Mechanic/Welder, Assistant Engineer (hydraulic dredge), Leverman (hydraulic dredge), Diver Tender	GLF-2	$47.79	$62.49	$77.19	X X H H H H H D Y
Holidays paid $91.89 per hour					
Subdivision of county All Great Lakes, islands therein, & connecting & tributary waters					
Deck Equipment Operator, Machineryman, Maintenance of Crane (over 50 ton capacity) or Backhoe (115,000 lbs. or more), Tug/Launch Operator, Loader, Dozer and like equipment on Barge, Breakwater Wall, Slip/Doc or Scow, Deck Machinery	GLF-3	$44.59	$57.69	$70.79	X X H H H H H D Y
Holidays paid at $83.89 per hour					
Subdivision of county All Great Lakes, islands therein, & connecting & tributary waters					
Deck Equipment Operator, (Machineryman/Fireman), (4 equipment units or more), Deck Hand, Deck Engineer, & Crane Maintenance 50 ton capacity and under or Backhoe weighing 115,000 lbs or less, Assistant Tug Operator	GLF-4	$40.19	$51.09	$61.99	X X H H H H H D Y
Holidays paid at $72.89 per hour					
Subdivision of county All Great Lakes, islands therein, & connecting & tributary waters					

Classification Name / Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Operating Engineer Hazardous Waste Class I					
Level A - Fully encapsulating chemical resistant suit w/ pressure demand, full face piece SCBA or pressure demand supplied air respirator w/ escape SCBA. The highest available level of respiratory, skin and eye protection.	EN-324-HWCI-Z1A	$46.22	$61.89	$77.55	H H H H H H H D Y
Apprentice Rates:					
1st 6 months		$36.62	$47.58	$58.55	
2nd 6 months		$38.18	$49.92	$61.67	
3rd 6 months		$39.75	$52.28	$64.81	
4th 6 months		$41.31	$54.62	$67.93	
5th 6 months		$42.89	$56.99	$71.09	
6th 6 months		$44.45	$59.33	$74.21	
Level B & C protection. B - Pressure demand, full face SCBA or pressure demand supplied air respirator w/ escape SCBA w/chemical resistant clothing. C - Full face piece, air purifying canister-equipped respirator w/chemical resistant clothing.	EN-324-HWCI-Z1B	$45.27	$60.46	$75.65	H H H H H H H D Y
Apprentice Rates:					
1st 6 months		$35.95	$46.59	$57.21	
2nd 6 months		$37.48	$48.88	$60.27	
3rd 6 months		$39.00	$51.16	$63.31	
4th 6 months		$40.85	$53.93	$67.01	
5th 6 months		$42.04	$55.72	$69.39	
6th 6 months		$43.56	$58.00	$72.43	
Level D - Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWCI-Z1D	$43.97	$58.51	$73.05	H H H H H H H D Y
Apprentice Rates:					
1st 6 months		$35.05	$45.23	$55.41	
2nd 6 months		$36.51	$47.43	$58.33	
3rd 6 months		$37.95	$49.58	$61.21	
4th 6 months		$39.42	$51.79	$64.15	
5th 6 months		$40.86	$53.95	$67.03	
6th 6 months		$42.32	$56.13	$69.95	
Level D When Capping Landfill Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWCI-Z1DCL	$43.72	$58.14	$72.55	H H H H H H H D Y
Apprentice Rates:					
1st 6 months		$34.87	$44.96	$55.05	
2nd 6 months		$36.31	$47.12	$57.93	
3rd 6 months		$37.76	$49.30	$60.83	
4th 6 months		$39.20	$51.45	$63.71	
5th 6 months		$40.63	$53.60	$66.57	
6th 6 months		$42.08	$55.78	$69.47	

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Classification Name / Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Operating Engineer Hazardous Waste Class II					
Level A - Fully encapsulating chemical resistant suit w/ pressure demand, full face piece SCBA or pressure demand supplied air respirator w/ escape SCBA. The highest available level of respiratory, skin and eye protection.	EN-324-HWCII-Z1A	$41.99	$55.54	$69.09	H H H H H H H D Y
Level B & C protection. B - Pressure demand, full face SCBA or pressure demand supplied air respirator w/ escape SCBA w/chemical resistant clothing. C - Full face piece, air purifying canister-equipped respirator w/chemical resistant clothing.	EN-324-HWCII-Z1B	$41.04	$54.12	$67.19	H H H H H H H D Y
Level D - Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWCII-Z1D	$39.74	$52.17	$64.59	H H H H H H H D Y
Level D When Capping Landfill Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWCII-Z1DCL	$39.49	$51.79	$64.09	H H H H H H H D Y
Operating Engineer Hazardous Waste Crane w/ Boom & Jib leads 140' or longer					
Level A - Fully encapsulating chemical resistant suit w/ pressure demand, full face piece SCBA or pressure demand supplied air respirator w/ escape SCBA. The highest available level of respiratory, skin and eye protection.	EN-324-HW140-Z1A	$48.87	$65.86	$82.85	H H H H H H H D Y
Level B & C protection. B - Pressure demand, full face SCBA or pressure demand supplied air respirator w/ escape SCBA w/chemical resistant clothing. C - Full face piece, air purifying canister-equipped respirator w/chemical resistant clothing.	EN-324-HW140-Z1B	$47.92	$64.44	$80.95	H H H H H H H D Y
Level D Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HW140-Z1D	$46.62	$62.49	$78.35	H H H H H H H D Y
Level D When Capping Landfill Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HW140-Z1DCL	$46.37	$62.11	$77.85	H H H H H H H D Y
Operating Engineer Hazardous Waste Crane w/ Boom & Jib leads 220' or longer					
Level A - Fully encapsulating chemical resistant suit w/ pressure demand, full face piece SCBA or pressure demand supplied air respirator w/ escape SCBA. The highest available level of respiratory, skin and eye protection.	EN-324-HW220-Z1A	$49.17	$66.31	$83.45	H H H H H H H D Y
Level B & C protection. B - Pressure demand, full face SCBA or pressure demand supplied air respirator w/ escape SCBA w/chemical resistant clothing. C - Full face piece, air purifying canister-equipped respirator w/chemical resistant clothing.	EN-324-HW220-Z1B	$48.22	$64.89	$81.55	H H H H H H H D Y

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Level D Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HW220-Z1D	$46.92	$62.94	$78.95	H H H H H H H D Y
Level D When Capping Landfill Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HW220-Z1DCL	$46.67	$62.56	$78.45	H H H H H H H D Y
Operating Engineer Hazardous Waste Regular Crane, Job Mechanic, Dragline Operator, Boom Truck Operator, and Concrete Pump with Boom Operator					
Level D - Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWRC-Z1D	$44.94	$59.97	$74.99	H H H H H H H D Y
Operating Engineer Hazardous Waste Regular Crane, Job Mechanic, Dragline Operator, Boom Truck Operator, Power Shovel Operator and Concrete Pump with boom					
Level D When Capping Landfill Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWRC-Z1DCL	$44.07	$58.66	$73.25	H H H H H H H D Y
Operating Engineer Hazardous Waste Regular Crane, Job Mechanic, Dragline Operator, Boom Truck Operator, Power Shovel Operator and Concrete Pump with booms					
Level B & C protection. B - Pressure demand, full face SCBA or pressure demand supplied air respirator w/ escape SCBA w/chemical resistant clothing. C - Full face piece, air purifying canister-equipped respirator w/chemical resistant clothing.	EN-324-HWRC-Z1B	$46.24	$61.92	$77.59	H H H H H H H D Y
Operating Engineer Hazardous Waste Regular Crane, Job Mechanic, Dragline Operator, Boom Truck Operator, Power Shovel Operators and Concrete Pump with booms					
Level A - Fully encapsulating chemical resistant suit w/ pressure demand, full face piece SCBA or pressure demand supplied air respirator w/ escape SCBA. The highest available level of respiratory, skin and eye protection.	EN-324-HWRC-Z1A	$47.19	$63.34	$79.49	H H H H H H H D Y
Operating Engineer Steel Work					
Crane w/ 120' boom or longer	EN-324-SW120	$51.51	$69.80	$88.08	H H D H H H D D Y
Crane w/ 120' boom or longer w/ Oiler	EN-324-SW120-O	$52.51	$71.30	$90.08	H H D H H H D D Y
Crane w/ 140' boom or longer	EN-324-SW140	$52.69	$71.57	$90.44	H H D H H H D D Y
Crane w/ 140' boom or longer W/ Oiler	EN-324-SW140-O	$53.69	$73.07	$92.44	H H D H H H D D Y
Boom & Jib 220' or longer	EN-324-SW220	$52.96	$71.97	$90.98	H H D H H H D D Y
Crane w/ 220' boom or longer w/ Oiler	EN-324-SW220-O	$53.96	$73.47	$92.98	H H D H H H D D Y

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Boom & Jib 300' or longer		EN-324-SW300	$54.46	$74.22	$93.98	H H D H H H D D Y
Crane w/ 300' boom or longer w/ Oiler		EN-324-SW300-O	$55.46	$75.72	$95.98	H H D H H H D D Y
Boom & Jib 400' or longer		EN-324-SW400	$55.96	$76.47	$96.98	H H D H H H D D Y
Crane w/ 400' boom or longer w/ Oiler		EN-324-SW400-O	$56.96	$77.97	$98.98	H H D H H H D D Y
Crane Operator & Job Mechanic		EN-324-SWCO	$51.15	$69.26	$87.36	H H D H H H D D Y
	Apprentice Rates:					
	0-999 hours		$40.04	$52.72	$65.39	
	1,000-1,999 hours		$41.85	$55.43	$69.01	
	2,000-2,999 hours		$43.66	$58.14	$72.63	
	3,000-3,999 hours		$45.48	$60.88	$76.27	
	4,000-4,999 hours		$47.28	$63.58	$79.87	
	5,000 hours		$49.10	$66.31	$83.51	
Crane w/ Oiler		EN-324-SWCO-O	$52.15	$70.76	$89.36	H H D H H H D D Y
Compressor or Welder Operator		EN-324-SWCW	$43.70	$58.08	$72.46	H H D H H H D D Y
Hoisting Operator		EN-324-SWHO	$50.51	$68.30	$86.08	H H D H H H D D Y
Oiler		EN-324-SWO	$42.29	$55.97	$69.64	H H D H H H D D Y
Tower Crane & Derrick where work is 50' or more above first level		EN-324-SWTD50	$52.24	$70.89	$89.54	H H D H H H D D Y
Tower Crane & Derrick 50' or more w/ Oiler where work station is 50' or more above first level		EN-324-SWTD50-O	$53.24	$72.39	$91.54	H H D H H H D D Y
Operating Engineer Underground						
Class I Equipment		EN-324A1-UC1	$43.72	$58.11	$72.50	H H H H H H H D Y
	Apprentice Rates:					
	0-999 hours		$34.89	$44.97	$55.04	
	1,000-1,999 hours		$36.33	$47.13	$57.92	
	2,000-2,999 hours		$37.76	$49.27	$60.78	
	3,000-3,999 hours		$39.21	$51.45	$63.68	
	4,000-4,999 hours		$40.65	$53.61	$66.56	
	5,000-5,999 hours		$42.09	$55.77	$69.44	
Class II Equipment		EN-324A1-UC2	$38.99	$51.02	$63.04	H H H H H H H D Y

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Classification Name / Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Class III Equipment	EN-324A1-UC3	$38.26	$48.40	$58.54	H H H H H H H D Y
Class IV Equipment	EN-324A1-UC4	$37.69	$49.07	$60.44	H H H H H H H D Y
Master Mechanic	EN-324A1-UMM	$43.97	$58.49	$73.00	H H H H H H H D Y
Painter					
Painter (8 hours of repaint work performed on Sunday shall be paid time & one half rate)	PT-22-P	$38.01	$50.24	$62.47	H H D H D D D D N
Apprentice Rates:					
First 6 months		$25.78	$31.89	$38.01	
Second 6 months		$29.45	$37.40	$45.35	
Third 6 months		$30.67	$39.23	$47.79	
Fourth 6 months		$31.89	$41.06	$50.23	
Fifth 6 months		$33.12	$42.91	$52.69	
Final 6 months		$34.34	$44.73	$55.13	
Sandblasting & spraywork performed, on highway bridges, overpases, tanks or steel, OR spraywork & sandblasting done with a scaffold height of 40' above the floor level	PT-22-S	$38.81	$51.44	$64.07	H H D H D D D D N
Pipefitter					
Pipefitter	PF-636	$51.46	$66.44	$81.41	H H D H D D D D N
Apprentice Rates:					
1st & 2nd periods		$26.23	$33.23	$40.23	
3rd period		$28.23	$36.23	$44.23	
4th period		$29.48	$38.11	$46.73	
5th period		$30.73	$39.98	$49.23	
6th period		$31.98	$41.85	$51.73	
7th period		$33.23	$43.73	$54.23	
8th period		$34.23	$45.23	$56.23	
9th period		$35.23	$46.73	$58.23	
10th period		$36.66	$48.87	$61.09	

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Official 2007 Prevailing Wage Rates for State Funded Projects

Issue Date: 1/24/2007

Contract must be awarded by 4/24/2007

Classification Name	Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Plasterer						
Plasterer		BR1P	$40.97	$61.46	$81.94	H H H H H H H D N
	Apprentice Rates:					
	1st 6 months		$20.77	$31.16	$41.54	
	2nd 6 months		$24.16	$36.24	$48.32	
	3rd 6 months		$27.52	$41.28	$55.04	
	4th 6 months		$30.88	$46.32	$61.76	
	5th 6 months		$34.25	$49.58	$66.10	
	6th 6 months		$37.61	$56.42	$75.22	
Plasterer		PL67	$38.32	$52.78	$67.24	H H H X D D D D N
	Apprentice Rates:					
	1st 6 months		$20.97	$26.76	$32.54	
	2nd 6 months		$23.86	$31.09	$38.32	
	3rd 6 months		$26.75	$35.42	$44.10	
	4th 6 months		$29.64	$39.76	$49.88	
	5th 6 months		$32.54	$44.11	$55.68	
	6th 6 months		$35.43	$48.44	$61.46	
Plumber						
Plumber		PL-98	$51.88	$68.40	$84.91	H H D H D D D D Y
	Apprentice Rates:					
	Period 1		$17.11	$23.41	$29.71	
	Period 2		$17.11	$23.41	$29.71	
	Period 3		$26.78	$35.13	$43.47	
	Period 4		$27.41	$36.07	$44.73	
	Period 5		$28.57	$37.81	$47.05	
	Period 6		$29.72	$39.53	$49.35	
	Period 7		$30.87	$41.26	$51.65	
	Period 8		$32.04	$43.01	$53.99	
	Period 9		$33.19	$44.74	$56.29	
	Period 10		$34.35	$46.48	$58.61	

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Roofer						
Commercial Roofer		RO-149-WOM	$45.01	$58.72	$72.42	H H D H H H D D N
Straight time is not to exceed ten (10) hours per day or forty (40) hours per week.						
	Apprentice Rates:					
	Apprentice 1		$29.78	$36.88	$44.64	
	Apprentice 2		$33.80	$41.54	$49.52	
	Apprentice 3		$35.16	$43.50	$52.14	
	Apprentice 4		$36.15	$44.94	$54.06	
	Apprentice 5		$37.33	$46.64	$56.32	
	Apprentice 6		$38.67	$48.58	$58.90	
Sheet Metal Worker						
Sheet Metal Worker		SHM-80	$51.82	$69.04	$86.25	H H D H D D D D Y
	Apprentice Rates:					
	First Year		$34.61	$43.22	$51.83	
	Second Year		$35.98	$45.27	$54.57	
	Third Year		$37.36	$47.34	$57.33	
	Fourth Year		$40.11	$51.47	$62.83	
	Fifth Year		$42.86	$55.59	$68.33	
Siding & Decking		SHM-80-SD	$34.58	$46.03	$57.48	H H H H H H H D Y
Sound & Communication						
Installer/Technician		EC-58-SC	$29.33	$41.30	$53.26	H H H H H H H D N
	Apprentice Rates:					
	Period 1		$17.16	$23.04	$28.93	
	Period 2		$18.38	$24.88	$31.37	
	Period 3		$19.59	$26.69	$33.79	
	Period 4		$20.81	$28.53	$36.23	
	Period 5		$22.02	$30.33	$38.65	
	Period 6		$23.24	$32.17	$41.09	

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Sprinkler Fitter						
Sprinkler Fitter		SP 704	$54.02	$72.89	$91.75	H H D H D D D D Y
	Apprentice Rates:					
	1st Period		$31.38	$38.93	$46.47	
	2nd Period		$33.27	$41.76	$50.25	
	3rd Period		$35.15	$44.58	$54.01	
	4th Period		$37.04	$47.41	$57.79	
	5th Period		$38.93	$50.25	$61.57	
	6th Period		$40.81	$53.07	$65.33	
	7th Period		$42.70	$55.91	$69.11	
	8th Period		$44.59	$58.74	$72.89	
	9th Period		$46.47	$61.56	$76.65	
	10th Period		$48.36	$64.39	$80.43	
Terrazzo						
Terrazzo Finisher		TT32-TRF	$38.77	$49.06	$59.34	H H D H D D D D N
	Apprentice Rates:					
	Level 1		$19.72	$25.71	$31.69	
	Level 2		$20.39	$26.71	$33.03	
	Level 3		$23.86	$30.27	$36.69	
	Level 4		$25.16	$32.23	$39.29	
	Level 5		$26.49	$33.74	$41.00	
	Level 6		$27.92	$35.33	$42.74	
	Level 7		$29.41	$37.18	$44.96	
	Level 8		$30.73	$38.74	$46.76	
Terrazzo Worker		TT32-TRW	$43.79	$56.59	$69.38	H H D H D D D D N
	Apprentice Rates:					
	Level 1		$24.11	$30.98	$37.86	
	Level 2		$26.83	$34.42	$42.00	
	Level 3		$29.60	$37.44	$45.28	
	Level 4		$32.00	$40.68	$49.36	
	Level 5		$34.08	$43.15	$52.21	
	Level 6		$37.34	$47.85	$58.35	
	Level 7		$38.42	$49.33	$60.25	
	Level 8		$39.25	$50.58	$61.91	

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Classification Name	Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Tile						
Tile Finisher		TT32-TF	$38.39	$48.49	$58.58	H H D H D D D D N
	Apprentice Rates:					
	Level 1		$18.63	$24.07	$29.51	
	Level 2		$19.69	$25.66	$31.63	
	Level 3		$23.83	$30.23	$36.63	
	Level 4		$25.13	$32.18	$39.23	
	Level 5		$26.46	$33.70	$40.94	
	Level 6		$27.89	$35.48	$43.08	
	Level 7		$29.38	$37.01	$44.65	
	Level 8		$30.70	$38.57	$46.45	
Tile Layer		TT32-TL	$43.69	$56.44	$69.18	H H D H D D D D N
	Apprentice Rates:					
	Level 1		$24.11	$30.98	$37.86	
	Level 2		$26.83	$34.42	$42.00	
	Level 3		$29.60	$37.44	$45.28	
	Level 4		$32.00	$40.68	$49.36	
	Level 5		$34.03	$42.94	$51.86	
	Level 6		$37.29	$47.77	$58.25	
	Level 7		$37.87	$48.51	$59.15	
	Level 8		$38.70	$49.75	$60.81	
Truck Driver						
on all trucks of 8 cubic yard capacity or less		TM-RB1	$32.62	$35.55		H H H H H H H H Y
of all trucks of 8 cubic yard capacity or over		TM-RB1A	$32.72	$35.70		H H H H H H H H Y
on euclid type equipment		TM-RB1B	$32.87	$35.93		H H H H H H H H Y
Underground Laborer Open Cut, Class I						
Construction Laborer		LAUC-Z1-1	$32.39	$42.99	$53.58	H H H H H H H D Y
	Apprentice Rates:					
	0-1,000 work hours		$27.59	$35.78	$43.98	
	1,001-2,000 work hours		$28.55	$37.22	$45.90	
	2,001-3,000 work hours		$29.51	$38.66	$47.82	
	3,001-4,000 work hours		$31.43	$41.54	$51.66	

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Underground Laborer Open Cut, Class II					
Mortar and material mixer, concrete form man, signal man, well point man, manhole, headwall and catch basin builder, guard rail builders, headwall, seawall, breakwall, dock builder and fence erector.	LAUC-Z1-2	$32.50	$43.15	$53.80	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$27.68	$35.92	$44.16	
1,001-2,000 work hours		$28.64	$37.36	$46.08	
2,001-3,000 work hours		$29.60	$38.80	$48.00	
3,001-4,000 work hours		$31.54	$41.71	$51.88	
Underground Laborer Open Cut, Class III					
Air, gasoline and electric tool operator, vibrator operator, drillers, pump man, tar kettle operator, bracers, rodder, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars, etc.), cement finisher, welder, pipe jacking and boring man, wagon drill and air track operator and concrete saw operator (under 40 h.p.), windlass and tugger man, and directional boring man.	LAUC-Z1-3	$32.55	$43.23	$53.90	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$27.71	$35.96	$44.22	
1,001-2,000 work hours		$28.68	$37.42	$46.16	
2,001-3,000 work hours		$29.65	$38.88	$48.10	
3,001-4,000 work hours		$31.58	$41.77	$51.96	
Underground Laborer Open Cut, Class IV					
Trench or excavating grade man.	LAUC-Z1-4	$32.63	$43.35	$54.06	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$27.77	$36.06	$44.34	
1,001-2,000 work hours		$28.74	$37.51	$46.28	
2,001-3,000 work hours		$29.72	$38.98	$48.24	
3,001-4,000 work hours		$31.66	$41.89	$52.12	
Underground Laborer Open Cut, Class V					
Pipe Layer	LAUC-Z1-5	$32.69	$43.44	$54.18	H H H H H H H D Y
Apprentice Rates:					
0-1,000 work hours		$27.82	$36.13	$44.44	
1,001-2,000 work hours		$28.79	$37.58	$46.38	
2,001-3,000 work hours		$29.77	$39.06	$48.34	
3,001-4,000 work hours		$31.72	$41.98	$52.24	

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Classification Name	Description		Straight Hourly	Time and a Half	Double Time	Overtime Provision
Underground Laborer Open Cut, Class VI						
Grouting man, top man assistant, audio visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work.		LAUC-Z1-6	$30.14	$39.61	$49.08	H H H H H H H D Y
	Apprentice Rates:					
	0-1,000 work hours		$25.90	$33.25	$40.60	
	1,001-2,000 work hours		$26.75	$34.52	$42.30	
	2,001-3,000 work hours		$27.60	$35.80	$44.00	
	3,001-4,000 work hours		$29.29	$38.34	$47.38	
Underground Laborer Open Cut, Class VII						
Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes, flagstones etc.		LAUC-Z1-7	$26.76	$34.54	$42.32	H H H H H H H D Y
	Apprentice Rates:					
	0-1,000 work hours		$23.37	$29.46	$35.54	
	1,001-2,000 work hours		$24.05	$30.48	$36.90	
	2,001-3,000 work hours		$24.73	$31.50	$38.26	
	3,001-4,000 work hours		$26.08	$33.52	$40.96	

Official Request #: 101
Requestor: TROY SCHOOL DISTRICT
Project Description: Wirless Network Infrastructure & Laptop Computers

Project Number: DISTRICT WIDE
County: Oakland

Official Rate Schedule

Every contractor and subcontractor shall keep posted on the construction site, in a conspicuous place, a copy of all prevailing wage and fringe benefit rates prescribed in a contract.

SECTION 00410 - BID FORM

OWNER: Troy School District
4400 Livernois
Troy, Michigan 48098

PROJECT: Troy School District
School Technology Systems
Wireless Network Infrastructure
TSD Bid No. 9380
Troy, Michigan

ENGINEER/ TECHNOLOGY DESIGNER: Integrated Design Solutions, LLC
Architecture, Engineering, Interiors & Technology
888 W. Big Beaver Road, Suite 200
Troy, Michigan 48084
(248) 823-2100
(248) 823-2200 fax

DESIGNER: Wright & Hunter, Inc
Technology Advisors, Innovative and Independent
330 Hamilton, Suite 200
Birmingham, Michigan 48009
(248) 594-5850
(248) 594-5851 fax

NAME OF BIDDER: _____

ADDRESS: _____

_____

TELEPHONE: _____

BID

Bidders may submit a complete bid for work described in Base Bid No. 1 or Base Bid No. 2. Bidders need not submit a bid for work described in both Base Bid No. 1 and Base Bid No. 2. Bidders submitting bids for work described in Base Bid No. 1 shall include all work described in both sections 16740 and 16790.

Pursuant to and in compliance with your Advertisement for Bids, Instructions to Bidders and other documents relating thereto, the undersigned proposes and agrees to furnish equipment, materials, and labor and perform all work necessary to complete the Troy School District Contract for Wireless Network Infrastructure and Laptop Computers, Laptop Carts, and Printers, TSD Bid No. 9380 Project in accordance with the Drawings and Specifications prepared by Integrated Design Solutions, LLC and Wright & Hunter, Inc. dated February 6, 2007, and agrees to accept payment as herein provided.

BASE BID NO. 1 – WIRELESS NETWORK INFRASTRUCTURE – SECTION 16740 AND 16790

Lump sum bid for all work specified and shown on the Drawings as indicated for base bid _____

_____ Dollars ($_____).

NOTE: The amount shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.

BASE BID NO. 2 – LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS – SECTION 16795

Lump sum bid for all work specified and shown on the Drawings as indicated for base bid _____

_____ Dollars ($_____).

NOTE: The amount shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern.

SEPARATE PRICES

Provide the following separate prices for accounting purposes and bid evaluation only. Award will be based on the lump sum amount. Include bond costs, overhead, and profit for each school.

School	Division 16740/16790 Trades
Leonard Elementary School	$_____
Morse Elementary School	$_____
Schroeder Elementary School	$_____
Hill Elementary School	$_____
Troy Union Elementary School	$_____
Barnard Elementary School	$_____
Bemis Elementary School	$_____
Costello Elementary School	$_____
Hamilton Elementary School	$_____
Martell Elementary School	$_____
Wass Elementary School	$_____
Wattles Elementary School	$_____
Baker Middle School	$_____
Boulan Park Middle School	$_____
Larson Middle School	$_____
Smith Middle School	$_____
Troy Athens High School	$_____
Troy High School	$_____
Niles	$_____
Services Building	$_____
Rankin	$_____
Total Lump Sum	$_____

School	Division 16795 Trades
Twelve (12) Elementary Schools	$_____
Four (4) Middle Schools	$_____
Two (2) High Schools	$_____
High School Science	$_____
Niles	$_____
Services Building	$_____
Spares	$_____
TRC	$_____
Itinerant	$_____

BASE BID BREAKDOWN – WIRELESS NETWORK INFRASTRUCTURE – SECTION 16740 AND 16790

The award of the Contract shall be based on the base bid amount. This Contractor shall provide separate prices for accounting purposes only.

Material and installation cost of the wireless infrastructure including: wireless access points, wireless controllers, spare equipment, IAS or other RADIUS servers, additional servers and/or hardware appliances, cages, mounts, antennas and other miscellaneous appurtenances including OH & P. $_____

Material and installation cost of the wired infrastructure including: cabling, jacks, faceplates, patch panels, wire management, patch cables, testing, tagging and other miscellaneous appurtenances including OH & P. $_____

Material and installation cost of the network access control system, AirMagnet Laptop Analyzer, Proxim ORINOCO NIC's and miscellaneous appurtenances including OH & P. $_____

Bid Bond Cost: $_____

Total Lump Sum Bid: $_____

MANDATORY ALTERNATES – WIRELESS NETWORK INFRASTRUCTURE – SECTION 16740 AND 16790

The foregoing Base Bid may be increased or decreased by the amounts herein quoted for Alternates. The following alternate prices shall include all charges for labor, material, and equipment, bonds, overhead and profit, general conditions, supervision, insurance, taxes, and incidental expenses.

Mandatory Alternate No. 1: Delete the requirement to provide, install, configure, and program the network access control system including the training requirements.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 2: Delete the requirement to provide one (1) wireless engineer and two (2) wireless technicians to provide on-site support and/or consulting for 120 hours (3 staff x 40 hours) within 6 months after Owner acceptance of the wireless network.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 3: Delete the requirement to provide, install, configure, and program two (2) AirMagnet Laptop Analyzer licenses and two (2) Proxim ORINOCO ComboCard Gold NIC's including off-site training courses.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 4: Delete the requirement to provide, install, configure, and program wireless network controller N+1 redundancy. Provide a non-redundant wireless network controller solution as base bid.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 5: Provide, install, configure and program two (2) AirMagnet Spectrum Analyzer licenses on two (2) District provided notebook computers including three (3) years of support and major and minor software updates. Provide licensing, original installation media and manuals.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 6: Provide, install, configure and program two (2) AirMagnet Survey and Planner licenses on two (2) District provided notebook computers including three (3) years of support and major and minor software updates. Provide licensing, original installation media and manuals.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 7: Delete the requirement to provide, install, program and configure the wireless network infrastructure including all cabling, faceplates, connectors, patch panels, wire management, patch cables, wireless access points, mounts, antennae, cages and other miscellaneous appurtenances in the old Baker Middle School building (refer to drawing 3.13A).

Add/Deduct _____

_____ Dollars ($_____).

MANDATORY ALTERNATES – LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS – SECTION 16795

The foregoing Base Bid may be increased or decreased by the amounts herein quoted for Alternates. The following alternate prices shall include all charges for labor, material, and equipment, bonds, overhead and profit, general conditions, supervision, insurance, taxes, and incidental expenses.

Mandatory Alternate No. 1: Delete the requirement to transfer salvage ownership from the Owner to the Contractor based on the inventory listed in Section 16795 - 3.1.M.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 2: Delete the requirement to provide roundtrip delivery of laptop carts to the District buildings from the central District from the base bid, as defined in Section 16795-3.1.O.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 3: Remove the requirement to provide one (1) laptop computer and printer technician in District during three (3) consecutive school days from 7:00 a.m. to 3:00 p.m. that school is in session after the cutover of the laptop computer and printers.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 4: Replace the base bid laptop computers, as defined in Section 16795-2.1.A.2,a, with a base bid processor utilizing the AMD Turion 64 X2 processor – meeting all other minimum requirements listed. State as a unit add or deduct, to include services as specified in the base bid.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 5: Replace the base bid laptop computers, as defined in Section 16795-2.1.A.2,a, with a base bid processor utilizing the Intel Core Duo ultra-low voltage processor, a minimum 12-inch diagonal WXGA display – meeting all other minimum requirements listed. State as a unit add or deduct, to include services as specified in the base bid.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 6: Replace the base bid laptop computers, as defined in Section 16795-2.1.A.2,a, with a tablet PC, as defined in Section 16795-2.1.A.2, to include the stated alternate– meeting all other minimum requirements listed. State as a unit add or deduct, to include services as specified in the base bid.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 7: Provide one (1) external battery charger unit in each of the twelve (12) elementary schools and Niles. Provide four (4) external battery charger units in each of the four (4) middles schools and in each of the two (2) high schools for a total of twenty (20) external battery charger units.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 8: Provide, install, and deliver a new cart in lieu of re-using a cart.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 9: Provide, install, configure and deliver forty (40) laptop carts with fourteen (14) laptop computers and one (1) printer each in lieu of forty (40) laptop carts with fifteen (15) laptop computers and one (1) printer in the Middle and High Schools.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 10: Provide, install, configure and deliver one (1) laptop cart with fourteen (14) laptop computers, and printer.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 11: Provide, install, configure and deliver one (1) laptop cart with fifteen (15) laptop computers, and printer.

Add/Deduct _____

_____ Dollars ($_____).

Mandatory Alternate No. 12: Provide a four (4) year battery replacement warranty in lieu of the spare batteries, as defined in base bid.

Add/Deduct _____

_____ Dollars ($_____).

ALTERNATES - WIRELESS NETWORK INFRASTRUCTURE - SECTIONS 16740 AND 16790

The foregoing Base Bid may be increased or decreased by the amounts herein quoted for Alternates. The following alternate prices shall include all charges for labor, material, and equipment, bonds, overhead and profit, general conditions, supervision, insurance, taxes, and incidental expenses.

Alternate No. 1: Provide, install, configure and program a Cisco Security Monitoring, Analysis, and Response System (MARS) solution. Include three (3) years of warranty and support including all major and minor software/firmware updates and manufacturer certified training for two (2) District personnel. The MARS solution shall be rack mounted and be capable of supporting 3000 events per second. Install and program the MARS appliance in the District Head end located at the Services Building with Owner provided IP addressing and network configuration parameters. Consult with District personnel to determine any requirements needed to configure the MARS appliance. Configure and program the MARS appliance to process events and mitigate threats for all devices on the District's network including but not limited to switches, routers, firewalls, intrusion detection systems, anti-virus and servers. Training shall include the Cisco MARS - Implementing Monitoring, Analysis and Response System or approved equivalent. Only one (1) person may attend the training at a time. If training is to be provided off-site, training facility must be located within reasonable driving distance to the District.

Add/Deduct _____

_____ Dollars ($_____).

Alternate No. 2: Utilize an existing data drop in each space that a wireless access point shall be installed in lieu of providing a new data drop. For each existing data drop that is reused, this Contractor shall relabel the jack at both ends utilizing the labeling scheme as defined by these bid specifications. If the existing data drop is to be relocated, this Contractor shall provide and install a blank keystone cover for the old location and provide a new backbox and faceplate for the new location. The relocated data drop shall be toned, tested, tagged and recertified.

Add/Deduct _____

_____ Dollars ($_____).

ALTERNATES – LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS – SECTION 16795

The foregoing Base Bid may be increased or decreased by the amounts herein quoted for Alternates. The following alternate prices shall include all charges for labor, material, and equipment, bonds, overhead and profit, general conditions, supervision, insurance, taxes, and incidental expenses.

NONE

VOLUNTARY ALTERNATES – WIRELESS NETWORK INFRASTRUCTURE – SECTION 16740 AND 16790

Voluntary Alternate No. 1: _____

Add/Deduct _____

_____ Dollars ($_____).

Voluntary Alternate No. 2: _____

Add/Deduct _____

_____ Dollars ($_____).

Voluntary Alternate No. 3: _____

Add/Deduct _____

_____ Dollars ($_____).

VOLUNTARY ALTERNATES – LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS – SECTION 16795

Voluntary Alternate No. 1: _____

Add/Deduct _____

_____ Dollars ($_____).

Voluntary Alternate No. 2: _____

Add/Deduct _____

_____ Dollars ($_____).

Voluntary Alternate No. 3: _____

Add/Deduct _____

_____ Dollars ($_____).

UNIT PRICES – WIRELESS NETWORK INFRASTRUCTURE – SECTION 16740 AND 16790

The Bidder proposes unit prices in accordance with the following schedule. Said unit prices shall include all charges for labor, materials and equipment, overhead and profit, general conditions, supervision, insurance, taxes and incidental expenses.

		ADD	DEDUCT
UP-1:	Cost to provide and install a category 6 data outlet including labor, wire, jacks, terminations, connectors, testing and tagging.	$_____	$_____
UP-2:	Cost to provide and install a 48 port category 6 patch panel.	$_____	$_____
UP-3:	Cost to provide and install a 2 rack unit (RU) wire management guide.	$_____	$_____
UP-4:	Cost to provide and install a 15' plenum rated wireless access point category 6 patch cable.	$_____	$_____
UP-5:	Cost to provide and install a category 6 patch cable within a equipment closet.	$_____	$_____
UP-6:	Cost to provide and install a Cisco 3750G-24PS 24-port 10/100/1000MB PoE switch.	$_____	$_____
UP-7:	Cost to provide and install a Cisco 3560-24PS 24-port 10/100MB PoE switch.		
UP-8:	Cost to provide and install a Proxim ORINOCO ComboCard Gold NIC	$_____	$_____
UP-9:	Cost to provide and install a three (3) year AirMagnet laptop analyzer license including support on a District provided notebook computer.	$_____	$_____
UP-10:	Cost to provide, install and program a wireless access point including mount.	$_____	$_____
UP-11:	Cost to provide and install a wireless access point protective cage.	$_____	$_____
UP-12:	Cost to provide a wireless network controller equivalent to the wireless network controller(s) being provided with your bid submission.	$_____	$_____
UP-13:	Cost to provide an HP DL380-G5 server as defined in section 16740, paragraph 2.3 including an operating system excluding installation.	$_____	$_____
UP-14:	Cost to install and configure an HP DL380-G5 server as defined in UP-12.	$_____	$_____

UNIT PRICES – LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS – SECTION 16795

The Bidder proposes unit prices in accordance with the following schedule. Said unit prices shall include all charges for labor, materials and equipment, overhead and profit, general conditions, supervision, insurance, taxes and incidental expenses.

Said unit prices shall be applicable to the pricing of additions to, or deletions from, the work indicated in the Contract Documents.

		ADD	DEDUCT
UP-1:	Cost to provide and install one (1) laptop computer.	$_____	$_____
UP-2:	Cost to provide and install one (1) laptop cart.	$_____	$_____
UP-3:	Cost to provide and install one (1) laptop cart printer.	$_____	$_____
UP-4:	Cost to provide one (1) laptop computer.	$_____	$_____
UP-5:	Cost to provide one (1) laptop cart.	$_____	$_____
UP-6:	Cost to provide one (1) laptop cart printer.	$_____	$_____
UP-7:	Cost to provide one (1) laptop cart with fourteen (14) laptop computers, and one (1) printer.		
UP-8:	Cost to provide one (1) laptop cart with fifteen (15) laptop computers, and one (1) printer.	$_____	$_____
UP-9:	Cost to provide and install one (1) laptop cart with fourteen (14) laptop computers, and one (1) printer.	$_____	$_____
UP-10:	Cost to provide and install one (1) laptop cart with fifteen (15) laptop computers, and one (1) printer.	$_____	$_____
UP-11:	Cost to provide one (1) external battery charger unit.	$_____	$_____
UP-12:	Cost to provide one (1) set of batteries to supply six (6) hours of laptop computer operation.	$_____	$_____
UP-13	Cost to provide one (1) Altiris 6 Software Virtualization System node license	$_____	$_____

TAXES

For the purposes of this bid, the Troy School District is tax exempt. Do not include Federal, State or local taxes in the Bid. The Owner's federal and state tax-exempt number is B38.600.3099. Usage taxes shall be included in the base bid price.

BID SECURITY

Accompanying this Bid is a certified check, cashier's check, money order or bid bond (cross out those not applicable) made payable to Troy School District in the amount of five percent (5%), of Base Bid, which shall be retained by the Owner as liquidated damages, if the undersigned fails to execute the contract within ten (10) days of award of the Contract.

ADDENDA

The undersigned acknowledges the receipt of the following addenda:

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

TIME OF COMPLETION – WIRELESS NETWORK INFRASTRUCTURE – SECTION 16740 AND 16790

The undersigned agrees to substantially complete the project by the following:

Task	Expected Completion
Pilot building (middle school)	May 1, 2007
Owner acceptance testing pilot building	May 31, 2007
Full District installation:	August 15, 2007
High schools	June 30, 2007
Elementary school	July 27, 2007
Middle schools and other buildings	August 15, 2007
Owner acceptance testing District-wide	August 16, 2007 – November 1, 2007

TIME OF COMPLETION – LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS – SECTION 16795

The undersigned agrees to substantially complete the project by the following:

Task	Expected Completion
Pilot building (middle school)	May 1, 2007
Owner acceptance testing pilot building	May 31, 2007
Full District installation:	August 15, 2007
High schools	July 13, 2007
Elementary school	August 10, 2007
Middle schools and other buildings	August 29, 2007
Owner acceptance testing District-wide	August 16, 2007 – November 1, 2007

WITHDRAWAL OF BIDS

The undersigned agrees that his Bid shall not be withdrawn for a period of sixty (60) days after the date set for receipt of Bids.

NON-COLLUSION

The undersigned certifies that the bid has not been prepared in collusion with any other bidder and that the prices, discounts, terms and conditions thereof have not been directly or indirectly communicated by or on behalf of the Bidder to any such person other then the recipient of such bid, and will not be communicated to any such person prior to the official opening of said bid. The undersigned fully understands that no premiums, rebates, or gratuities are permitted either with, prior to or after signing the Contract.
This certification may be treated as if it were a sworn statement made under oath, and is made subject to the provisions of 18 U. S. C., 1001, relating to the making of false statements.

SIGNATURE AND LEGAL STATUS OF BIDDER

Signed and sealed this _____ day of _____, 20____.

_____
(Individual, Partnership, Corporation)

_____
State of Incorporation

Affix Corporate Seal

By: _____
(Authorized Signature of Bidder)

_____
(Print or Type Name of Bidder)

_____
Title

_____
Business Address

Instructions: Eight (8) copies of this form are supplied for the use of Bidders. Submit seven (7) copies to Owner and retain one (1) copy.

AFFIDAVIT OF BIDDER

The undersigned, the owner or authorized officer of _____ (the "Bidder"), pursuant to the familial disclosure requirement provided in the _____ (the "School District") advertisement for construction bids, hereby represent and warrant, except as provided below, that no familial relationships exist between the owner(s) or any employee of _____ and any member of the Board of Education of the School District or the Superintendent of the School District.

List any Familial Relationships:

BIDDER:

_____

By: _____

Its: _____

STATE OF MICHIGAN)
)ss.
COUNTY OF _____)

This instrument was acknowledged before me on the ____ day of _____, 2005, by _____.

_____
, Notary Public
_____ County, Michigan
My Commission Expires:_____
Acting in the County of :_____

END OF BID FORM

SECTION 07841 - THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes through-penetration firestop systems for penetrations through the following fire-resistance-rated assemblies, including both empty openings and openings containing penetrating items:

1. Floors.
2. Walls and partitions.
3. Construction enclosing compartmentalized areas.

1.3 PERFORMANCE REQUIREMENTS

A. General: For the following constructions, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of assembly penetrated.

1. Fire-resistance-rated non-load-bearing walls, including partitions, with fire-protection-rated openings.
2. Fire-resistance-rated floor assemblies.

B. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, as determined per ASTM E 814, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

C. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, as determined per ASTM E 814, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:

1. Penetrations located in construction containing fire-protection-rated openings.
2. Penetrating items larger than 4-inch- diameter nominal pipe or 16 sq. in. in overall cross-sectional area.

D. For through-penetration firestop systems exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.

1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.

2. For floor penetrations with annular spaces exceeding 4 inches in width and exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved either by installing floor plates or by other means.
3. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.

E. For through-penetration firestop systems exposed to view, provide products with flame-spread ratings of less than 25 and smoke-developed ratings of less than 450, as determined per ASTM E 84.

1.4 SUBMITTALS

A. Product Data: For each type of through-penetration firestop system product indicated.

B. Shop Drawings: For each through-penetration firestop system, show each kind of construction condition penetrated, relationships to adjoining construction, and kind of penetrating item. Include firestop design designation of testing and inspecting agency acceptable to authorities having jurisdiction that evidences compliance with requirements for each condition indicated.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed through-penetration firestop systems similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Fire-Test-Response Characteristics: Provide through-penetration firestop systems that comply with the following requirements and those specified in "Performance Requirements" Article:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL ITS or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.
2. Through-penetration firestop systems are identical to those tested per ASTM E 814. Provide rated systems complying with the following requirements:

    a. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by the following:

        1) UL in "Fire Resistance Directory."
        2) ITS in "Directory of Listed Products."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.

B. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limits permitted by firestop system manufacturers or when substrates are wet.

B. Ventilate firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

1.8 COORDINATION

A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.

B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Hilti Construction Chemicals, Inc.
2. Nelson Firestop Products.
3. RectorSeal Corporation (The).
4. Specified Technologies Inc.
5. 3M Fire Protection Products.
6. Tremco.

2.2 FIRESTOPPING, GENERAL

A. Compatibility: Provide through-penetration firestop systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.

B. Accessories: Provide components for each through-penetration firestop system that are needed to install fill materials and to comply with "Performance Requirements" Article. Use only components specified by through-penetration firestop system manufacturer and approved by the qualified testing and inspecting agency for firestop systems indicated. Accessories include, but are not limited to, the following items:

1. Permanent forming/damming/backing materials, including the following:

   a. Slag-/rock-wool-fiber insulation.
   b. Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.

c. Fire-rated form board.
d. Fillers for sealants.

2. Temporary forming materials.
3. Substrate primers.
4. Collars.
5. Steel sleeves.

2.3 FILL MATERIALS

A. General: Provide through-penetration firestop systems containing the types of fill materials indicated by reference to the types of materials described in this Article. Fill materials are those referred to in directories of the referenced testing and inspecting agencies as fill, void, or cavity materials.

B. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer metallic sleeve lined with an intumescent strip, a radial extended flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.

C. Latex Sealants: Single-component latex formulations that after cure do not re-emulsify during exposure to moisture.

D. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.

E. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized steel sheet.

F. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.

G. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.

H. Mortars: Prepackaged, dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

I. Pillows/Bags: Reusable, heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives.

J. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.

K. Silicone Sealants: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:

1. Grade: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces and nonsag formulation for openings in vertical and other surfaces requiring a nonslumping, gunnable sealant, unless indicated firestop system limits use to nonsag grade for both opening conditions.

2.4 MIXING

A. For those products requiring mixing before application, comply with through-penetration firestop system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning: Clean out openings immediately before installing through-penetration firestop systems to comply with written recommendations of firestop system manufacturer and the following requirements:

1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of through-penetration firestop systems.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with through-penetration firestop systems. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by through-penetration firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent through-penetration firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.3 THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION

A. General: Install through-penetration firestop systems to comply with "Performance Requirements" Article and firestop system manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

C. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
3. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 CLEANING AND PROTECTION

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not damage materials in which openings occur.

B. Provide final protection and maintain conditions during and after installation that ensure through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce through-penetration firestop systems complying with specified requirements.

END OF SECTION 07841

SECTION 16050 - TECHNOLOGY GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

1.2 SUMMARY

A. This Section includes general administrative and procedural requirements for technology installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 1 Sections.

1. Specifications and Drawings.
2. Related work provided by others.
3. Design requirements.
4. Performance requirements.
5. Substitutions.
6. Permits and fees.
7. Examination of drawings and premises.
8. Job conditions.
9. Submittals – Bid Proposal Requirements.
10. Project record documents.
11. Quality assurance.
12. Delivery, storage and handling.
13. Warranty.

B. This Section includes basic requirements for materials and installations for technology work, including but not limited to:

1. General installation requirements.
2. Ceiling removal and replacement.
3. Sealing of openings.
4. Sleeves.
5. Expansion fittings.
6. Technology demolition work.
7. Cutting and patching.
8. Coordination with other trades.

1.3 DRAWINGS AND SPECIFICATIONS

A. Drawings pertaining to this specification shall be considered as a part of said specification and shall be a part of the bid documents.

B. The following sections specifically list the acceptable equipment types and items for this project. Where quantities are not noted, they may be obtained from the Drawings. In the event of a discrepancy between the Specifications and the Drawings, the greater quantity or better quality shall be furnished.

1.4 RELATED WORK PROVIDED BY OTHERS

A. The buildings and the associated building switches are connected to the existing School District WAN. However, this contractor shall provide all fiber and copper patch panels, fiber and copper patch cables, and electronic equipment necessary to accept and maintain connectivity to both the WAN and LAN as part of this contract.

1.5 SYSTEM DESCRIPTION

A. Design Requirements: Furnish all labor, materials, equipment, technical supervision, and incidental services required to complete, test and leave ready for operation the technology systems as specified in the Division 16 Sections and as indicated on Drawings.

1. The Technology Drawings indicate the general design and extent of the technology system. Comply with the Drawings as closely as actual construction of the building and the work of other Trades permit.

B. Performance Requirements: Perform all work in a first class and workmanlike manner, in accordance with the latest accepted standards and practices for the Trades involved.

1. All equipment of the same or similar systems shall be by the same manufacturer.

C. Substitutions: Base Bid must be in accordance with materials or products specified. Any exceptions to this must be approved in writing by the Engineer/Technology Designer ten (10) days or more prior to bidding.

1. Voluntary alternates may be submitted for consideration, with listed addition or deduction to the Bid, but will not affect the awarding of the Contract.

D. Permits and Fees: Obtain all permits, licenses, inspections and tests required. Upon completion of the Work, obtain and send certificates of inspections and approvals to the Engineer/Technology Designer.

1. Pay all fees and expenses for permits, licenses, tests and inspections.

E. Examination of Drawings and Premises: Before submitting Bids, examine the site, architectural, mechanical, electrical and other trades' drawings and specifications.

1. Notify Engineer/Technology Designer should any discrepancies occur between them and the technology work.
2. No additional charges will be allowed because of failure to make this examination, or to include all materials and labor required for the Work.
3. Before submitting Bids, examine the premises to determine existing conditions for performing the Work. No additional charges will be allowed because of failure to make this examination or to include all materials and labor to complete the Work.

4. The Architectural Drawings take precedence in all matters pertaining to the building structure, Mechanical drawings in all matters pertaining to Mechanical trades and Electrical drawings in all matters pertaining to Electrical trades installation. However, where there are conflicts or differences between the Drawings for the various trades, report such conflicts or differences to the Engineer/Technology Designer who shall determine the course of action to be taken.

1.6 JOB CONDITIONS

A. Keep the job adequately staffed at all times. Unless illness, loss of personnel or other circumstances beyond the control of the contractor, maintain the same individual in charge throughout.

B. Cooperate with all appropriate parties in order to achieve well-coordinated progress with the overall construction completion schedule and satisfactory final results.

C. Watch for conflicts with work of other contractors on the job and execute, without claim for extra payment, moderate moves or changes as are necessary to accommodate other equipment or to preserve symmetry and aesthetically pleasing appearance.

D. Immediately report to the Engineer/Technology Designer any design or installation irregularities, so that appropriate action may be taken.

E. Do all cutting, patching and painting necessary for proper and finished installation of the system and repair any damage done as a result of such installation. Cleanup and dispose of trash from all work areas.

1.7 SUBMITTALS – BID PROPOSAL REQUIREMENTS

A. Provide a separate bid submittal package for Base Bid No. 1 and/or Base Bid No. 2.

B. Provide a complete bill of materials depicting quantities, model numbers, catalog cuts, operating characteristics, physical characteristics, and equipment configuration for all equipment, connectors, faceplates, patch panels, wiring, and miscellaneous appurtances included in this bid.

C. The information shall be assembled in three ring binders complete with Table of Contents. All pages shall have page numbers, which shall be included in the Table of Contents.

D. The Table of Contents shall be as follows:

1. Tab No. 1 Cover Letter
2. Tab No. 2 Bid Proposal Form
3. Tab No. 3 Voluntary Alternates
4. Tab No. 4 Names and Company Profiles for Prime Contractors, Major Subcontractors and Major Suppliers
5. Tab No. 5 Organizational Chart / Schedule / Manpower
6. Tab No. 6 Data Wiring and Wireless Network Equipment
7. Tab No. 7 Maintenance Agreements and Service Agreements and Warranties
8. Tab No. 8 Miscellaneous (Optional)

E. Description of Contents:

1. Tab No. 1, Cover Letter, shall include an executive overview of the project and depicting this contractor's complete understanding of the project.
2. Tab No. 2, Bid Proposal Form shall include a completed bid proposal as found in Section 00410, and the bid bond as a requirement to submit a qualified bid.
3. Tab No. 3, Voluntary Alternates, in a section, which is optional and made available to permit all bidders to submit alternates to the bid documents. These voluntary alternates shall clearly define the intent of the alternate, cost impact to implement the alternates, and a description of the deviation in functions and features between the alternates and the base bid documents. Include catalog cuts in this section for each alternate product required. The catalog cuts shall be keyed to the description of the alternate. Each alternate shall be independent of any alternate and shall be uniquely identified i.e. TAL -1 (Technology Alternate No. 1) TAL-2, TAL-3, etc.
4. Tab No. 4, List the names and company profiles for Prime Contractor, Major Subcontractors and Major Suppliers. In addition to the above information, describe each of the following:

    a. The roles of the Prime Contractor, Subcontractors and Suppliers.
    b. Description of corporate history for the Prime Contractor and planned Subcontractors, including dates of incorporation/founding, dates of any corporate mergers and/or acquisitions of Contractors and all present and former subsidiaries.
    c. The number of years installing similar systems in schools.
    d. List of Michigan schools utilizing similar systems.
    e. Name of active projects, their sites and scope of work.
    f. Provide recent customer references for similar work performed during the past twelve (12) months and provide documentation on installation staff training and certification.
    g. Indicate whether Prime Contractor or any planned Subcontractor are currently in litigation over other projects or have been involved in litigation over other projects in the previous five (5) years.

5. Tab No. 5, Organizational Chart, shall depict the prime contractor, the subcontractors, major suppliers, trainers, project managers, name of project leader, superintendents, executive staff of each firm, service staff, the names of the individuals occupying those positions, telephone numbers, facsimile numbers, and E-mail addresses of all individuals on the organizational chart.

    a. Provide a detailed schedule on a building-by-building basis indicating specific dates that you would plan to be working within the buildings. This detailed schedule shall be based upon the District event schedule supplied at the pre-bid conference. This schedule shall include major milestones required to achieve the completion dates previously specified. Typical Base Bid No. 1 milestone events are as follows:

        1) Completion date of wiring above the ceilings.
        2) Delivery date and installation date of the wireless network equipment.
        3) Start-up/debug time for the wireless network.
        4) Training dates.
        5) Provide an estimate of anticipated manpower required at each building to meet the specified completion dates.

b. Typical Base Bid No. 2 milestone events are as follows:

1) Completion of training district personnel on imaging services and systems.
2) Delivery dates and installation dates of imaging support systems.
3) Delivery dates and installation dates for laptop computers, laptop carts and printers.
4) Estimated manpower requirements for each building to meet the specified substantial completion dates.

6. Tab No. 6, Wiring and equipment shall include the following information:

a. Description of system operation.
b. Complete bill of materials indicating quantities, take-offs for the products being provided: antennae, wireless access points, mounts, controllers, cabling, patch cables, connectors, laptop computer systems, laptop carts, printers, support software, etc. The bill of materials shall separate labor and materials cost on a building-by-building basis.
c. Equipment model numbers.
d. Catalog cuts for all equipment being provided: wireless access points, mounts, antennae, controllers, horizontal cabling, patch panels, patch cables, connectors, faceplates, laptop computers, laptop cars, printers, etc.
e. Manufacturer's product specifications and installation instructions.
f. A complete itemization of software products with catalog cuts.
g. Software product specifications and installation instructions.
h. System interconnection drawings or flow diagrams.
i. Windows XP Profession and Windows Server 2003 CAL license certification for all laptop computers.

7. Tab Nos. 7 and 8 are self-descriptive as to their intended content.

1.8 PROJECT RECORD DOCUMENTS - GENERAL

A. Upon project close-out, provide the following:

1. Hard and soft copies of the system configuration including:

a. Two (2) sets of prints indicating "as-built" conditions for Owner's record. Where IDS drawings are used for development of base files, IDS will provide the CAD files for this Contractor's use at no cost. These base files shall be updated to indicate "as-built" conditions and submitted with the two (2) sets of prints. The Drawings shall contain all title block information as originally issued by the Engineer/Technology Designer with the addition of the contractor's company name, address, telephone number, company's project number, date of issuance by the address, telephone number, company's project number, date of issuance by the contractor, and issued for "as-built" conditions in title.

2. Operating manuals and original installation media for all hardware, software and components installed under this contract.
3. Warranty, support and licensing documentation organized in a 3-ring binder including a table of contents.

1.9 QUALITY ASSURANCE

A. Regulatory Requirements:

1. The system shall be registered under the most current applicable rulings of the Federal Communications Commission (FCC). Provide the FCC registration number with the equipment submittal. All components and installations shall bear an Underwriters' Laboratories (UL) listing.
2. Ordinances and Codes: Perform all work in accordance with applicable Federal, State and local ordinances and regulations and in accordance with the Rules, Regulations and Accepted Practices of the following Agencies:

   a. ANSI American National Standards Institute
   b. ASTM American Society for Testing and Materials
   c. BICSI Building Industry Consulting Service International
   d. EIA Electronics Industries Association
   e. FCC Federal Communications Commission
   f. ICEA Insulated Cable Engineers Association
   g. IEEE Institute of Electrical and Electronics Engineers
   h. ISO International Organization for Standardization
   i. NEC National Electrical Code
   j. NEMA National Electrical Manufacturer's Association
   k. NFPA National Fire Protection Association.
   l. TIA Telecommunications Industry Association
   m. UL Underwriters Laboratories, Inc.

3. Notify the Engineer/Technology Designer before submitting this proposal should any changes in Drawings or Specifications be required to conform to the above codes, rules or regulations. After entering into Contract, make all changes required to conform to above ordinances, rules and regulations without additional expense to the Owner.

4. Barrier-Free Regulations: All materials and installations shall comply with the requirements of the State of Michigan Handicapped Barrier-Free Regulations and with the Americans With Disabilities Act (ADA).

5. Comply with federal, state and local labor regulations and applicable union regulations.

B. Equipment Manufacturer Qualifications: The equipment shall be built and tested by a manufacturer who has regularly engaged in the production of said equipment for a minimum of five years to assure one source of supply and responsibility.

C. Equipment Supplier Qualifications: The supplier of the equipment shall maintain permanent service facilities within 30 miles of the installation (Troy School District). The facilities shall include a permanent source of factory-trained service technicians on 24-hour call experienced in servicing this type of equipment and shall provide warranty and routine maintenance service to afford the Owner maximum coverage. He shall also provide a central source of support to warranty immediate answers to Owner's problems resulting from misunderstanding of the operation of the equipment.

D. Equipment Installer Qualifications: The installation of the equipment shall be performed by fully qualified personnel, having had experience on the installation of this type and able to certify that they have had no less than five years of continuous experience in this area and have made installation similar to this and of this size or larger.

E. Project Management Qualifications: The Contractor Project Manager shall have the Microsoft MCSE certification. Each installation team leader shall have the Microsoft MCSE certification. Contractor will provide a resume for all staff assigned to these positions.

F. Field Measurements:

1. Drawings are not intended to be scaled for roughing-in or to serve as shop drawings. Take all field measurements required for fitting the installation to the building.

G. Sequencing and Scheduling: Sequence and schedule work so as to avoid interference with the work of other Trades. Be responsible for removing and relocating any work, which in the opinion of the Owner's Representatives causes interference.

H. Parts listed shall be complete, accurate part/model numbers and equipment furnished shall conform to manufacturer's specifications.

I. All materials shall be new and shall conform to applicable provisions of Underwriters Laboratories and the American Standards Association.

1.10 DELIVERY, STORAGE AND HANDLING

A. Store technology equipment, at the vendor's location, as recommended in manufacturer's written instructions and in manufacturer's protective packages until time of installation.

B. Protect technology equipment from damage and theft.

1.11 WARRANTY

A. Warranty: Refer to Section 16740, 16790 and 16795 for specific warranty requirements.

PART 2 - PRODUCTS

2.1 GENERAL

A. During the installation, make provisions for all equipment included in the base bid and any alternates, whether taken or not, so that items which are to be provided as alternates may be added to the system without rewiring or additional construction.

B. All miscellaneous equipment required for a complete, professional installation shall be included in the base bid. No allowances for any additional equipment, hardware, cabling, or miscellaneous will be considered unless specifically excluded from the base bid.

C. Time shall be allocated in the job for the purpose of training school personnel in the proper use and maintenance of the provided equipment.

D. No exposed cabling shall be permitted in the wiring of any functions of the provided system. All cable shall be housed in appropriate raceways suitable and designed for such purposes.

E. All work materials shall be removed at the end of the workday and the work area left in the same condition as found.

F. The technology bidder supplying the equipment shall show satisfactory evidence, upon request, that they maintain a fully equipped service organization capable of furnishing adequate inspection and service to the system, including replacement parts. The vendor shall be prepared to offer a service contract for the maintenance of the system after the guarantee period. The bidder shall produce evidence that they have a fully experienced and established service organization for at least five years and proven satisfactory installations during that time.

G. While classes are in session, work in classroom areas and corridors shall be performed after normal school hours or during periods in which building is not occupied by students (i.e. holiday breaks, parent/teacher conferences, half days, etc.). Adherence to a schedule of working hours, which is agreeable with the Owner, will be required.

H. The Owner reserves the right to reject any or all alternate equipment bids and to select the bid that is considered to serve "THE BEST INTEREST OF THE OWNER."

2.2 CEILING REMOVAL AND REPLACEMENT

1. The removal and reinstallation of the acoustical ceiling panels on a daily basis shall be the work of the trades requiring same.
2. This trade shall be responsible for the replacement of all damaged or soiled acoustical panel and cleaning the metal grid upon completion of all work.

2.3 SEALING OF OPENINGS

A. Seal openings around materials (Conduit, raceways, cable trays, panels, etc.) where floors, fire rated walls and smoke barriers are penetrated. (Fiberglass is not acceptable.) Fire and/or smoke barriers shall be UL Listed fire and smoke stop fittings and shall have fire rating equal to or greater than the penetrated barrier. Refer to Section 07841 “Through Penetration Firestop Systems”.

2.4 SLEEVES

A. Provide sleeves where wiring passes through concrete floors, walls, beams and ceilings.

B. Sleeves shall be galvanized rigid steel conduit with plastic bushings, both ends. Do not use aluminum or PVC conduit. Where specific sizes are not indicated on the Drawings, sleeves shall be sized to provide one-half (1/2) inch clearance around the outside surface of the item for which they were installed. They shall be cut flush with wall surfaces, and shall extend one inch, or as directed through floor. Sleeves shall be packed with approved non-combustible packing material and sealed with sealant to prevent passage of air, liquid or fumes from one area to another. The filler and sealant materials used shall be rated at least equal in fire resistance to the construction material being penetrated. Floor sleeves shall be sealed between floor and sleeve with concrete grout.

2.5 EXPANSION FITTINGS

A. Provide expansion fittings in all conduits, cable trays, and raceways that cross building expansion joints, both in concrete slabs and where exposed.

PART 3 - EXECUTION

3.1 INSTALLATION USER ACCOUNTS

A. The Contractor shall provide evidence that all installation and temporary passwords and accounts have been disabled and removed at the conclusion of the project.

3.2 TECHNOLOGY DEMOLITION WORK

A. General: Perform technology demolition work in a systematic manner. Use such methods as outlined below to complete Work indicated on the Drawings.

B. Obtain approval from the Owner prior to interrupting existing services. All service interruptions shall be at a time suitable to the Owner. Where the Owner approves service interruptions at times resulting in premium time work to this Contractor, this Contractor shall include the premium time in his Base Bid.

C. The associated conduit, raceway, wire, junction boxes, supports, etc., of demolished equipment shall be removed from the utilization equipment back to the source panel or backboard. All associated wiring shall be removed back to the "sources" as noted below:

1. Telephone: Remove wiring back to communication room or other source.
2. Data system: Remove wiring back to communication room or other source.
3. Conduit in walls to remain: Abandon in place. Install blank coverplates.
4. Conduit accessible above ceilings and/or other location: Remove conduit.

D. Conduit in floor slabs shall be cut 1/2 inch below the floor and patched.

E. Where applicable, existing in-place conduit and raceway may be reused for new work providing that the installation is in accordance with requirements for new work.

F. Where equipment is removed, outlets shall be properly blanked-off, and conduits capped. After alterations are completed, the entire installation shall present a "finished" look, as approved by the Engineer/Technology Designer. The original function of the present technology systems shall not be changed unless required by the specific revisions to the system as specified or as indicated.

G. Materials salvaged from this work shall not be reused except where reuse is specifically indicated.

H. Existing technology equipment removed, not reused and not specifically indicated to be turned over to the Owner, shall be legally and properly disposed of off Owner's property.

I. Existing technology equipment specifically indicated to be turned over to the Owner shall be disconnected, removed and turned over to the Owner in an undamaged condition to an on site storage area as directed by the Owner.

3.3 CUTTING AND PATCHING

A. Refer to Division 1 for requirements for cutting, patching and refinishing work necessary for the installation of Technology Work.

B. Direct miscellaneous cutting and patching of the existing building construction for the installation of the Technology Work.

C. The cutting of holes through the existing building construction shall only be done by the use of abrasive saws and rotary coring machines. The use of hammer and drill points will not be permitted. The openings shall not be cut larger than necessary for the installation of the technology work. Openings shall then be grouted in. Where existing piping, etc. is removed; the unused openings shall be grouted in.

D. The drilling or punching of structural members, such as holes through beams or columns, shall not be done without the specific permission of the Engineer/Technology Designer.

E. Cutting of holes through floors and walls shall be done only at such locations as may be directed by the Engineer/Technology Designer.

F. Cooperate with the other Contractors so that all cutting and repairing in any given area will be done simultaneously.

3.4 COORDINATION WITH OTHER TRADES

A. Install Work so as to avoid interferences with the Work of other trades. Be responsible for removing and relocating any work, which, in the opinion of the Owner's Representative, causes interferences.

B. Should construction conditions prevent the installation of technology equipment at locations shown on the drawings, minor deviations may be permitted and shall be as directed by the Engineer/Technology Designer, and shall be made without additional cost to Owner.

C. The Technology Trades will be responsible for all damage to other Work caused by their Work or through the neglect of their workers.

1. All patching and repairing of any such damaged Work shall be performed by the trades that installed the Work, but the cost shall be paid by the Technology Trades.

END OF SECTION 16050

SECTION 16740 – WIRELESS NETWORK EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

1.2 SUMMARY

A. This Section includes wireless network equipment, software, associated peripherals, installation, and training including, but not limited, to the following:

1. Wireless network access points.
2. Wireless network controllers.
3. Servers and/or hardware appliances.
4. Site surveys.
5. Software.
6. Licensing.
7. Program, configure and test all equipment.
8. Provide record drawings and documented configuration.
9. Provide on-site project management and support for equipment and software.
10. Training of personnel on use of the system.

1.3 SYSTEM DESCRIPTION

A. This contract consists of providing, installing, configuring and validating a wireless network in each building district-wide. The wireless network shall be centrally managed and administered at the Services Building. The wireless network shall be 802.11a/b/g compliant. The District's resources will operate primarily on the 802.11a band with future guest access and legacy District devices operating on the 802.11b/g band. The District is replacing its entire laptop computer fleet concurrently with this project. This contractor shall be responsible for working with the laptop computer contractor to ensure that the replacement laptop computers connect and operate per the requirements of the bid specifications.

B. Wireless voice services will not be utilized at this time. The wireless network shall be configured with a minimum signal strength of -75dBm and a minimum signal to noise ratio of 20dB. The District utilizes laptop computer carts with approximately 14 laptops per cart. The wireless network shall be configured to service two laptop carts (a total of 28 laptop computers) located within one classroom with each laptop computer maintaining a minimum connection rate of 512Kbps. It is common for student end users to sit on the floor under desks, in the corner of the classroom and/or out in adjoining hallways. Signal strength, signal to noise ratio and connection rates shall be maintained from floor to ceiling including these common educational environment obstacles.

C. The wireless network shall be configured for device roaming between access points within each building, network access control, unauthorized device remediation, monitoring and logging and centralized management. The wireless network shall be capable of authenticated guest access with monitoring and logging. Centralized management shall include but not be limited to: wireless configuration, rogue access point detection and remediation, interference detection and avoidance, historic and real-time reporting and logging, real time and historic device location awareness, self healing, load balancing, SNMP and RF coverage visualization utilizing contractor imported CAD files.

D. The Owner's LAN/WAN consists of redundant Cisco 6509 switches in the core located in the District head end at the Services building. Each of the Owner's buildings connects at a minimum of 1Gb on the backbone in a star configuration to the District head end via single mode fiber. Each building utilizes Cisco 3750's or 3560's for Power over Ethernet (PoE) and Cisco 2948's and/or 2960's for classroom connectivity. Each closet at each building contains at least one 24 port PoE switch that is reserved for this project. The Owner utilizes Cisco Works for the management of its network. Where possible, the management of the wireless network shall be integrated into Cisco Works in order to minimize the management interfaces required to maintain the wired and wireless networks.

E. This contractor shall perform pre-installation and post installation building surveys to ensure that the installed system meets operational expectations as described in Section 16740, paragraph 1.3.B and document and deliver the results to the Owner. This contractor shall perform density and throughput testing and document results to the Owner.

F. This contractor shall install the wireless network into one pilot building for testing and debugging purposes. The pilot building shall be in full compliance with the requirements of the bid specifications before installation into the rest of the Owner's buildings can continue.

G. Increases or decreases to the quantities of wireless access points (wap's) required to meet the bid specification performance requirements will be made after pre-installation surveys are completed. Quantity changes will be made utilizing the Change Order process and unit pricing.

H. This contractor shall document the equipment, software and methodology to be used for pre and post installation surveys. All surveys, testing and troubleshooting shall be performed utilizing the Owner's end user devices wherever possible in order to provide accurate, real world results.

I. All miscellaneous hardware and software required for a complete, professional installation shall be included in the base bid. No allowances for any additional equipment, software, hardware, cabling, or miscellaneous will be considered unless specifically excluded from the base bid. Include all server and/or hardware appliances required in order to meet the bid specification requirements. The Owner currently utilizes HP blade servers (Proliant BL20p G3) and 2U, rack mounted HP Proliant DL380 servers and HP EVA 5000 SAN solution in the District head end.

J. The Owner has organized their network utilizing a private IP scheme. Typically each building has at least two (2) Class B IP subnets. Consult with the Owner and provide an IP addressing plan for all devices installed under this bid. The Owner must approve the IP addressing plan prior to implementation.

K. This contractor shall be responsible for all network infrastructure configuration changes (VLAN creation, switch programming and configuration, active directory changes, etc.) necessary for this installation. This contractor shall make the changes in such a way as to avoid interfering with the Owner's wired operations or weakening the Owner's current security configuration.

L. All work shall be in accordance with the true intent of these Specifications, and as required to leave the network equipment complete and in satisfactory operating condition.

1. The Owner reserves the right to reject any or all alternate equipment bids and to select the bid that is considered to serve "THE BEST INTEREST OF THE OWNER."

1.4 WARRANTY/SERVICE

A. Warranty: All products shall be warranted to be free from defects in material and workmanship upon installation.

B. A three (3) year warranty period covering all items in this bid including all hardware, firmware, software and major and minor software updates shall commence after all the systems have been placed in working operation and accepted by the Owner by formal written acceptance. The Contractor shall register all equipment in the name of the Owner and activate all warranties upon Owner acceptance as required by the equipment manufacturer.

C. Systems and components shall be repaired or replaced within twenty-four (24) hours following report of defects by the Owner. Service will be provided on-site at the Troy School District.

D. The network equipment Contractor (Vendor) shall be available and shall respond on-site within four (4) hours notice and without cost to the Owner during the duration of the warranty period.

E. The date of acceptance shall be defined as the date the Certificate of Substantial Completion is signed by the Engineer/Technology Designer and the Owner.

F. Provide to the Owner direct access to all equipment manufacturers' technical support structures for hardware and software support.

1.5 MAINTENANCE CONTRACT

A. Submit a maintenance and service contract proposal with service rates for the wireless network infrastructure covering all labor and materials necessary to repair damages to the system after the initial thirty-six (36) month guarantee. The contract shall include a differentiation between and definitions of "emergency" and "non-emergency" service with applicable rates for each.

1.6 TRAINING/SUPPORT

A. The equipment Contractor (Vendor) shall have one (1) wireless Engineer and two (2) wireless Technicians in the District during three (3) consecutive business days from 7:00 a.m. to 3:00 p.m. during the Owner's acceptance period to assure proper operation of the wireless network systems. The Owner will provide 48 hours notice to the Contractor.

B. Training:

1. The network equipment supplier shall provide a minimum of forty (40) hours of instruction and training on the operation, administration and the maintenance of the system to the Troy School District technical staff. This training shall include but not be limited to: wireless network hardware, wireless network management interface, IAS/RADIUS administration, network access control, Cisco Security Monitoring, Analysis and Response System and troubleshooting with the AirMagnet tools. The instruction shall be broken down in four (4) hour blocks of time.
2. All training will be coordinated with the Technology Director and training shall take place at a Troy School District facility.
3. Provide off-site Air Magnet training for two (2) District personnel.

   a. Only one (1) person may attend the training at a time.
   b. Training facility must be located within reasonable driving distance to the District.
   c. This training shall include the Air Magnet class AM-103 Wireless LAN Administration or approved equivalent.

C. Support:

1. The wireless network supplier shall make available to the District, one (1) wireless Engineer and two (2) wireless Technicians to provide on-site support and/or consulting to be used at the schools discretion following the acceptance of the system.

   a. Provide a total of one hundred and twenty (120) hours (3 staff x 40 hours)
   b. Services shall be provided during the first six (6) months of full-scale operation following the acceptance of the system
   c. The District will provide twenty four (24) hours notice for request of services.

1.7 SPARE PARTS

A. Provide three (3) sets of system hardware and software manuals.

B. Provide the following spare parts:

1. Ten (10) wireless access points including mounting hardware with integrated and external antennae in proportion to the installed base.
2. Three (3) access point protective cages.

PART 2 - PRODUCT

2.1 WIRELESS ACCESS POINTS

A. Wireless access points located within high foot traffic, low supervisory locations (corridors, cafeterias, gymnasiums, etc.) shall utilize integrated antennas. Wireless access points located in cafeterias, gymnasiums and other similar spaces shall be enclosed within a protective cage.

B. Wireless access points located within low foot traffic, high supervisory locations(classrooms, office spaces, etc.) shall utilize integrated or external antennas in order to meet the bid specification requirements.

C. Wireless access points shall meet the following minimum specifications:

1. Minimum dual radios (2.4GHz and 5GHz) providing concurrent operation of 802.11a and 802.11b/g services.
2. Variable power transmit settings.
3. Automatic power and channel selection.
4. Wall or ceiling mountable. Access points mounted above the ceiling grid shall be plenum rated.
5. PoE compatible with the District's existing Cisco 3750G-24PS and Cisco 3560G-24PS PoE switches.
6. Auto sensing 10/100BASE-T Ethernet uplink.
7. Power, link, and activity status LEDs.
8. 802.1x and 802.11i certified and compliant.
9. WEP, WAP and WAP2 certified and compliant.
10. PKIP, MS-CHAPv2, PEAP, EAP-TLS certified and compliant.
11. Remote management by a central controller.
12. Fully compatible with contractor provided NAC solution.
13. Fully compatible with AirMagnet Laptop Analyzer, Spectrum Analyzer, and Survey/Planner tools.
14. Subject to compliance with requirements, provide wireless access points as manufactured by one of the following or engineer-approved equal:

    a. Aruba Networks
    b. Cisco
    c. Meru Networks

D. Wireless access point final quantities will be determined based upon building surveys. Building quantities to be included with base bid shall be as follows:

Building	Qty Wireless Access Points
Barnard Elementary	25
Bemis Elementary	25
Costello Elementary	25
Hamilton Elementary	25
Hill Elementary	25
Leonard Elementary	25
Martell Elementary	25
Morse Elementary	25
Schroeder Elementary	25
Troy Union Elementary	25
Wass Elementary	25
Wattles Elementary	25
Baker Middle School	40
New Baker Middle School	40

Building	Qty Wireless Access Points
Boulan Park Middle School	40
Larson Middle School	40
Smith Middle School	40
Athens High School	125
Troy High School	125
Niles Continuing Education	20
Administration Building	15
Services Building	15
Rankin	10

2.2 WIRELESS NETWORK CONTROLLERS

A. The wireless network controllers shall be installed in an N+1 configuration for failover redundancy.

B. The wireless network controllers shall be capable of supporting the final quantity of wireless access points required to meet these performance specifications plus an additional 10% for future growth of the District's network.

C. Wireless network controllers shall meet the following minimum specifications.

1. Dynamic channel assignment.
2. Interference detection and avoidance.
3. Client load balancing based upon number of clients and bandwidth utilization.
4. Dynamic power control.
5. Rogue wireless access point detection, location and containment.
6. Device location awareness (real time and historic).
7. Building RF visualization utilizing contractor imported CAD floor plans.
8. Multiple SSID and multiple VLAN support.
9. Client handoff and full roaming. Must maintain authentication and security parameters in a roaming state.
10. 802.1x and 802.11i certified and compliant.
11. WEP, WAP and WAP2 certified and compliant.
12. TKIP, MS-CHAPv2, PEAP, EAP-TLS certified and compliant.
13. QoS (voice, data, per application, per user, bandwidth allocation)
14. AAA handoff utilizing an external Microsoft IAS/RADIUS server.
15. Authenticated guest access utilizing a captive portal.
16. SNMP MIB's
17. System wide event logging and reporting (real time and historical)
18. Authenticated and guest user policies based upon , time of day, length of usage.
19. Fully compatible with contractor provided NAC solution.
20. Fully compatible with AirMagnet Laptop Analyzer, Spectrum Analyzer, and Survey/Planner tools.
21. Subject to compliance with requirements, provide wireless network controllers as manufactured by one of the following or engineer-approved equal:

    a. Aruba Networks
    b. Cisco
    c. Meru Networks

2.3 IAS/RADIUS SERVERS

A. Provide two (2) HP DL380-G5 servers with two (2) Microsoft Windows 2003 Enterprise licenses. These servers shall be configured as Microsoft IAS or other RADIUS servers with sufficient RADIUS licenses. Install servers with the latest service packs and security patches. Servers shall meet the following minimum specifications:

IAS/RADIUS Server	Minimum Base System
Form Factor	Rack Mount 2U
Processor	Single - Dual-Core Intel Xeon 5130 Processor (2.00 GHz, 65W, 1333 FSB) 4 MB Level 2 Cache
Memory	2 GB PC2-5300 DDR2 Fully Buffered DIMMs (2 x 1GB)
Expansion Slots	4 PCI-express
Disk Controllers	HP Smart Array P400/256MB Controller (RAID 0/1/1+0/5)
Hard Disk	72 GB 3G SAS 10K, hot Swappable Quantity 3 (RAID 5)
DVD Drive	8X
Video	32 MB RAM, SVGA
Network Card	Copper Gigabit, Quantity 2
Power	Redundant Power Supply with Dual Cords
Certification	FCC, Windows 2003
Software	Windows Server 2003 enterprise
Input Voltage	120 volts, 800 W

2.4 NETWORK ACCESS CONTROL

A. The District currently utilizes a Cisco Security Agent (CSA) infrastructure.

B. The District utilizes Trend Micro as its anti-virus solution.

C. The network access control system shall be capable of identifying and validating end users and devices and enforcing identity based policies.

D. The network access control system shall be capable of validating end user/device security policies and quarantining and remediation of noncompliant users/devices.

E. The network access control system shall be sized to accommodate all of the District's devices including 4500 desktop and 1400 laptop computers. The network access solution shall be deployed for all of its wired and wireless devices.

F. The network access control system shall integrate with the District's Active Directory and provide for a single logon for the District's users. Microsoft IAS or other RADIUS solution shall be used for the District's wireless users.

G. All necessary configuration and programming including but not limited to custom logon pages, captive portal design, device and end user discovery, database population, AD links, policy configuration, configuration of existing user accounts, switch programming, etc. shall be included in the base bid.

H. The network access control system shall be compatible with the District's existing hardware and software infrastructure which includes but is not limited to: Cisco network equipment, HP server and SAN infrastructure, Dell desktop computers, Trend Micro Anti-Virus Suite, and Altiris Client Management Suite. The network access control system shall also be compatible with the laptop computers being bid under Section 16795 of this document. Approved laptop manufacturers include Dell, Gateway and HP.

I. The network access control system shall provide real-time alerting functions and real-time and historical logging of noncompliant users/devices.

1. Subject to compliance with requirements, provide a network access control system as manufactured by one of the following or engineer-approved equal:

a. Bradford Networks
b. Cisco
c. Engineer approved equal

2.5 AIRMAGNET

A. Provide two (2) licenses for AirMagnet Laptop Analyzer. These licenses shall include support and major and minor software upgrades for a period of three (3) years. Licensing, original installation media and software manuals shall be provided.

B. Provide two (2) Proxim ORiNOCO 11 a/b/g ComboCard Gold (8480-XX) NIC's including original installation media and manuals.

2.6 MISCELLANEOUS HARDWARE AND SOFTWARE

A. The Owner utilizes HP Data Protector to backup to tape all of the District's data. This contractor shall provide, install and configure additional HP Data Protector agents/license, as necessary, in order to integrate and backup additional data storage devices (i.e. servers, hardware appliances) provided under this contract. HP Data Protector licenses for contractor provided data storage devices are required as follows:

1. Stand alone file server – no additional license required.
2. File server attached to the Owner's SAN – HP Data Protector SAN agent required.
3. Database server – HP Data Protector on-line extension agent required (part no. B6965BA).

B. All hardware, software, licensing and miscellaneous appurtenances shall be included to provide a complete system that meets or exceeds the requirements of this bid. For example, if a SQL server is required for a functional requirement, include with this bid response a physical server (HP DL380-G5), SQL Server license(s), HP Data Protector on-line extension license, configuration, overhead, profit and any miscellaneous items necessary for the required SQL server.

2.7 LABELING

A. The contractor shall install Owner supplied asset tags on each piece of equipment provided under this bid which exceeds a unit price of $500.00.

B. The contractor shall create, populate and provide a Microsoft Excel spreadsheet with the following information for all equipment installed under this contract:

1. IP address
2. Identification label
3. Host name
4. Manufacturer serial number
5. Install date
6. MAC address
7. Firmware version
8. Owner supplied asset tag number

C. The contractor shall provide and apply a mechanically produced identification label on each piece of equipment provided under this bid. The label shall follow the following District standards:

1. Wireless network controllers, network switches, servers and/or hardware appliances:

a. Building Name – Closet No. –Model No.– Switch No. (i.e.; THS-2-3750-01)
b. IP Address XXX.XXX.XXX.XXX
c. This label shall be programmed into each device. The District will review and approve the label.

2. Wireless access points:

a. Consult with the Owner to develop a labeling scheme.
b. This label shall be programmed into each device. The District will review and approve the label.

PART 3 - EXECUTION

3.1 INSTALLATION-GENERAL

A. Configure all equipment identically with the latest stable firmware and software available at the time of installation following Owner acceptance of the pilot building.

B. Unpack, assemble and program equipment. The Owner will provide IP addressing standards. Consult with the Owner to determine VLAN assignments, and other necessary configuration parameters.

C. Remove all trash at the end of each workday. The District dumpsters may not be used for trash removal.

D. Install, configure, program and test the systems.

E. Support the final installation at the Troy School District location to insure defect free installation.

3.2 INSTALLATION-WIRELESS ACCESS POINTS

A. This contractor is responsible for performing pre-installation and post installation site surveys to determine exact wireless access point quantities and placement in order to meet the bid requirements.

B. Refer to the drawings for specific end-user device density requirements. This contractor shall use the density requirements to determine wireless access point placement. The following are general requirements for coverage:

1. Each individual classroom shall support two (2) laptop carts for a total of 28-30 devices with a sustained throughput of 512Kbps for each device.
2. Each office, receiving, kitchen, other administrative areas, Elementary and Middle School gymnasiums and stages shall support 1-5 devices with a sustained throughput of 1024Kbps for each device.
3. Conference rooms, work rooms, staff lounges and locker rooms shall support 10-15 devices with a sustained throughput of 512Kbps.
4. Cafeterias and High School gymnasiums shall support 35-45 devices with a sustained throughput of 512Kbps.
5. Each one hundred feet (100') of corridor space shall support 10-15 devices with a sustained throughput of 512Kbps.
6. It is common for students to sit on the floor, under desks and in the corners of the classroom. This contractor shall provide access point coverage to accommodate these unique educational environment usage scenarios.

C. Wireless access points located within high foot traffic, low supervisory locations (corridors, cafeterias, gymnasiums, etc.) shall utilize integrated antennas. Wireless access points located in cafeterias, gymnasiums and other similar spaces shall be enclosed within a protective cage.

D. Wireless access points located within low foot traffic, high supervisory locations (classrooms, office spaces, etc.) shall utilize integrated or external antennas in order to meet the bid specification requirements.

E. All ceiling pad penetrations shall be dressed out using a grommet or escutcheon ring in order to provide a neat and professional finish.

F. All access points shall be installed utilizing the District's existing PoE switch ports which have been reserved for this purpose. Each telecommunication closet contains at least one 24 port PoE switch. In closets where more PoE ports are required, this contractor will supply and install an additional switch utilizing unit pricing. Switch configuration files will be installed by District personnel. This contractor is responsible for installation, testing, asset tagging and labeling of the new switch.

G. All wireless access points shall be securely mounted utilizing manufacturer provided mounts suitable for the application (i.e. ceiling grid mounts, wall mounts, etc.)

H. The wireless access points shall be installed and configured with both "a" radios and "b/g" radios. The District's resources will operate primarily on the "a" band and legacy devices and guest access will operate on the "b/g" band.

3.3 INSTALLATION-WIRELESS NETWORK CONTROLLERS

A. Provide, install, configure and program the wireless network controllers.

B. Configure controllers and access points channel assignments and power levels. The wireless network shall be configured with a minimum signal strength of -75dBm and a minimum signal to noise ratio of 20dB. Refer to the drawings for expected end user device densities and required minimum throughput per device.

C. Contractor to consult with the Owner and configure network settings, VLANS, SSID's, and other required settings for the wireless network infrastructure. This contractor shall be responsible for any required changes to the District's existing network infrastructure. Any changes to the existing infrastructure shall be made in such a way as to not weaken the District's security structure or disrupt existing operating parameters.

D. Import building map CAD files provided by the Technology Designer/Owner.

E. The network access controllers shall maintain IP address, authentication and security parameters while the end user device is in a roaming state.

F. Configure controllers and access points for interference detection and avoidance, device location awareness, rogue access point detection, location and containment and RF heat map visualization.

G. Configure controllers and access points for client load balancing based upon density and bandwidth utilization. Configure client handoff, full roaming and QoS.

H. Configure SNMP.

I. Provide, install, configure and program management interfaces. This contractor shall provide, install, configure and program any additional servers, hardware appliances, software and/or licenses required to provide a complete and operational wireless network as required by these bid specifications.

J. Contractor to consult with District personnel and configure real time and historical event logging. If an external database is required, this contractor shall provide the hardware, software and configuration service necessary.

K. Contractor to consult with District personnel and configure authenticated and guest user access policies based upon role, time of day, length of usage, bandwidth allowance, etc.

L. The system shall not interfere with or degrade the performance or disrupt the operation of similar wireless network systems operating in buildings, homes or facilities adjacent to Owner property.

M. Contractor to consult with District personnel and configure a captive portal for guest access. Guest users shall be isolated from the District's production network and allowed Internet access only.

N. Integrate the wireless controllers with the contractor provided Microsoft IAS or other RADIUS server, Network Access Control solution, and the District's existing Active Directory, Trend Micro solution and Cisco CSA solution.

3.4 INSTALLATION-AUTHENTICATION/ENCRYPTION

A. The District utilizes Windows 2003 with Active Directory. This contractor shall provide, install, configure and program the hardware, media and licensing necessary to install a primary and secondary IAS or other RADIUS server to be used for authentication to the wireless network. This contractor shall work with the District and the laptop replacement contractor to configure secure wireless authentication for the District's end user devices.

B. Authentication/encryption shall be configured utilizing WPA2 with PEAP - MS-CHAPv2 and AES encryption against the Microsoft IAS or other RADIUS server for the Owner's new laptop devices and WPA with EAP and TKIP against the Microsoft IAS or other RADIUS server for legacy devices.

3.5 INSTALLATION-NETWORK ACCESS CONTROL (NAC)

A. The NAC system shall be configured to support all of the Owner's devices both wired and wireless.

B. This contractor shall consult with the Owner to determine specific policies, rules and validations required.

C. The NAC system shall be configured to identify and authorize end users and switch them into the proper VLAN based upon Owner defined rules. The NAC system shall maintain IP address, authorization and security state when the wireless device is in a roaming state. Unauthorized and/or unknown devices shall be quarantined with no access.

D. The NAC system shall be configured to perform security scans utilizing the Owner's existing Cisco CSA and Trend Micro anti virus systems. Devices found to be noncompliant shall be quarantined for remediation.

E. This contractor is required to make any and all adjustments to the Owner's infrastructure that is required for this installation. For example, the District's VLANS are mapped at the switch level, not at the port level. If port level mapping is required, this contractor shall be required to make the changes. Any adjustments must be approved by the Owner prior to any changes being made.

F. The NAC system shall be configured to track usage by user for Owner's devices and MAC addresses for unknown devices.

G. The NAC system shall be configured to provide VLAN switching based upon user access policies and rules.

H. The NAC system shall be capable of providing guest access utilizing a captive portal which requires guests to fill out an electronic form and agree to the Owner's acceptable use policy before granting access to the Internet. The guest access shall be capable of being limited by bandwidth, time of day, and length of usage. The captive portal shall be configured in a "disabled" state. The Owner may enable guest access at a future date.

I. The District devices shall be pre-registered within the NAC system and any agent software shall be provided to the District to be preinstalled on the District's new laptop devices.

3.6 INSTALLATION – AIRMAGNET

A. Install and configure two (2) contractor provided Proxim ORiNOCO 11 a/b/g ComboCard Gold NIC's into two (2) Owner provided laptop computers.

B. Install, configure, and program AirMagnet Laptop Analyzer on two (2) Owner provided laptop computers as defined in Section 16795. These installations shall be keyed to the contractor provided Proxim ORiNOCO 11 a/b/g ComboCard Gold NIC's.

C. The AirMagnet installation shall be completed concurrently with the pilot building installation.

3.7 INSTALLATION-TIMELINE

A. The installation of the wireless network infrastructure will occur concurrently with a laptop computer replacement project. This contractor shall work closely with the laptop computer replacement contractor to help insure proper wireless connectivity and functionality. This contractor shall perform a complete and functioning installation at one (1) District designated middle school as a pilot building. Upon completion of the pilot installation, the District will test the installation for a period of 30 days during which this contractor shall be available to make adjustments to the installation in order to meet Owner requirements. Upon District acceptance of the pilot building, this contractor shall complete the installations at the remaining buildings. The following is a summary of the timeline for this project:

Task	Expected Completion
Pilot building (middle school)	May 1, 2007
Owner acceptance testing pilot building	May 1, 2007 – May 31, 2007
Full District installation:	June 1, 2007 – August 15, 2007
High Schools	June 30, 2007
Elementary Schools	July 27, 2007
Middle Schools and other buildings	August 15, 2007
Owner acceptance testing District-wide	August 16, 2007 – November 1, 2007

B. The Owner will have various construction projects and events occurring in their buildings throughout the duration of this project. This contractor shall provide an installation schedule with their bid submission that accommodates these projects and events. This detailed installation schedule must be provided for Owner approval within five (5) days of bid award and will be immediately integrated into Owner's construction and operational schedules. Because of tight timelines for multiple projects, building availability must be coordinated among multiple contractors, construction crews and District instructional and community events. This Contractor must adequately staff crews, order equipment and schedule work in conjunction with other contractors in this bid document to adhere as exactly as possible to its submitted schedule in order to provide a cohesive and systematic installation, testing, cutover and Owner acceptance. Evening and weekend work shall be pre-approved with the Owner at the beginning of the project as the hours of operations of the buildings changes during the Summer break. A list of known events at the time that these bid specifications were published will be provided to potential bidders at the pre-bid conference. This contractor shall be flexible with their schedule and coordinate with other events as they become known.

3.8 TESTING

A. 10% Sample testing shall be performed within each building that this contractor has installed wireless network equipment. The following shall be tested and documented:

1. Device density throughput requirements
2. Single sign-on and authentication utilizing the Microsoft IAS/RADIUS server
3. Device roaming while maintaining authentication and security parameters

B. The methodology and the tools used to perform tests shall be documented and delivered to the Owner.

C. This contractor shall use District owned equipment for testing where possible to best simulate the results the Owner will experience.

D. All test results shall be documented and delivered to the owner.

E. The following performance specifications shall be tested and documented through post-installation surveys and management tools:

1. Signal strength: -75dBm
2. Signal to noise ratio: 20dB
3. Building RF visualization
4. Rogue access point detection, location and containment
5. Device location awareness
6. NAC identification, validation, policy enforcement, quarantine, and remediation

3.9 PROJECT RECORD DOCUMENTS

A. This Contractor must document all changes and additions to the Owner's network configuration including, but not limited to:

1. VLAN assignments
2. IP address assignments
3. Final switch configurations
4. Equipment passwords
5. Changes to Active Directory including: groups, policies, security settings, user accounts
6. IAS/RADIUS server settings and configuration

B. Completely document the wireless network configuration and settings including controller(s), access points, SSID's, authentication, security, etc.

C. Completely document the NAC configuration and settings including policies, rules, VLAN assignments, remediation settings, programming, captive portal settings, etc.

D. Completely document the MARS configuration and settings.

E. Provide pre and post survey documentation.

F. Document device density throughput test results.

G. Refer to specifications section 16050 for additional general project record document requirements.

END OF SECTION 16740

SECTION 16790 - DATA COMMUNICATION SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

1.2 SUMMARY OF WORK

A. This Specification, in conjunction with the Drawings, establishes the requirements necessary to achieve the intended performance and function of the Data Communications Systems (DCS)

B. The DCS consists of data information storage, information processing, and/or information delivery and distribution equipment integrated together to form a cohesive integrated Data communication system.

C. Provide as part of the bid proposal a complete bill of materials, including catalog cuts and equipment configuration for the data system.

D. Provide the services necessary to furnish, install, train, and to provide maintenance to support the DCS including an integrated system of peripheral apparatus conforming to acceptable industry standards. All work shall be in accordance with the true intent of these Drawings and Specifications, and as required to leave the DCS complete and in satisfactory operating condition, excluding those items listed under “Work by Others.”

E. The DCS shall be comprised of new and existing equipment that is of modern design, and current standard production of the manufacturer.

F. Verify dimensions and conditions at the job site prior to installation, and perform installation in accordance with these Specifications, Manufacturers recommendations and the latest edition or revision of all applicable codes and standards.

G. The DCS includes providing and integrating the following principal systems:

1. Data Distribution Equipment
2. Data Wiring
3. LAN Hardware
4. Power over Ethernet (POE) Devices
5. Ethernet Switches
6. Training

H. Furnish and install a DCS system incorporating the hardware, software, Ethernet LAN, and appropriate testing equipment to perform testing as hereinafter described.

I. Furnish and install all system specialty back boxes.

J. Provide any additional items, not specifically mentioned herein, necessary to meet system requirements as specified, without claim for additional payment.

1.3 GUARANTEE, SERVICE AND TRAINING

A. All systems and components shall be guaranteed free of defects in materials and workmanship for a period of three (3) years from the date of acceptance or manufacturer's warranty, whichever is longer, and shall be repaired or replaced within twenty-four (24) hours following report of such defects by the Owner. The date of acceptance shall be defined as the date the Certificate of Substantial Completion is signed by the Architect/Engineer and the Owner.

B. The DCS Contractor, this includes the data communications system provider or his representative, shall be available on call and shall respond on site within four (4) hour notice, and without cost to the Owner, during the first thirty-six (36) months of full scale operation, following acceptance of the system, to assist the Owner and/or his representatives in any problems that may arise.

1.4 MAINTENANCE CONTRACT

A. Submit a maintenance and service contract with service rates for the DCS covering all labor and materials necessary to repair damages to the system after the initial thirty-six (36) month guarantee. The contract shall include a differentiation between and definitions of "emergency" and "non-emergency" service with applicable rates for each.

1.5 SPARE PARTS

A. None required.

PART 2 - PRODUCTS

2.1 GENERAL

A. Refer to specifications section 16050.

2.2 DATA WIRING

A. Description of System:

1. The DCS shall include providing complete operational and tested data wiring to support the wireless network infrastructure in each building. Provide, install, test and tag one (1) data drop for each wireless access point installed in Section 16750 of these bid specifications. The DCS will consist of providing new equipment and utilizing existing equipment as they pertain to the following principle features:

    a. Horizontal cable
    b. Copper patch cables
    c. Media outlets and connectors
    d. Cable termination equipment
    e. Ethernet switches
    f. Testing
    g. Documentation
    h. Training

2. This contract will consist of providing all of the necessary equipment and labor needed to maintain the existing DCS, reuse existing DCS equipment, and provide new DCS equipment where required at each building in accordance to the drawings and specifications. Where hardware or software upgrades are required to connect the backbone switch or LAN devices to the School District WAN, this contractor shall provide all necessary upgrades at no cost to the Owners.
3. This contractor is responsible for providing a complete and operational wireless data system for the each building. Provide the following principal items for each building.

   a. Providing new category 6 patch panels where required.
   b. Providing new Ethernet data switches where required.
   c. Providing new Category 6 unshielded twisted pair cabling.
   d. Tone, test, label and certify all new data drops at each end of the run.
   e. Providing data outlets and LAN equipment.
   f. The contractor shall provide an operational DCS including LAN equipment, wiring and terminations as indicated on the drawings and within this specification.

B. Products:

1. Horizontal Cable:

   a. Data Cable Indoor: Blue, plenum rated, four (4) pair, 24 AWG, UTP, rated Category 6. Functionally equivalent to Berk-Tek Lanmark 1000 or Mohawk AdvanceNet.
   b. If not existing, the Contractor shall install a two-inch (2") conduit sleeve for all cables passing through walls, ceilings or floors, and fill the void between sleeve and cables, including the outside perimeter, with sealant, flush with the end of the sleeve to seal the opening. Comply with requirements of Section 16050, Article 2.4 "Technology General Requirements - Sleeves".

      1) For conduit sleeves passing through fire rated walls, floors or ceilings, comply with requirements of Section 07841 "Through-Penetration Firestop Systems".

   c. Approved Manufacturers:

      1) Uniprise
      2) Berk-Tek
      3) Hubbell
      4) Belden/CDT
      5) Mohawk
      6) General
      7) Panduit
      8) Engineer approved equal

2. Copper Patch Cables:

   a. Category 6 compliant per EIA/TIA 568-B.
   b. Compliant per EIA/TIA 568-B and 606 for cable management and administration.
   c. Blue patch cables will be used for connections between the patch panel and the Ethernet switch port.
   d. Blue patch cables will be used to make the connection between a switch port and a wireless access point.

e. Patch cables within the equipment closets shall be a minimum of three feet (3') in length and have a maximum of two feet (2') access coil length to avoid excess cable in the rack. The contractor shall install the cable to provide neat and organized patches to equipment. The contractor is required to review site conditions to ensure the proper cable lengths are installed in all District buildings.

f. Patch cables for the wireless access points shall be plenum rated and fifteen feet (15') in length and secure with Velcro ties suitable for plenum environments to accommodate relocation of the access points as needed. Coil excess length to provide neat and organized patches of the access points.

g. Approved Manufacturers:

1) Uniprise
2) Berk-Tek
3) Hubbell
4) Belden/CDT
5) Mohawk
6) General
7) Panduit
8) Engineer approved equal

3. Media Outlets and Connectors:

a. For Data: Red, eight (8) position, eight (8) conductor, 110 IDC, modular snap-in jacks, certified Category 6, T568B jack pin assignment.

4. Cable Termination Equipment

a. Horizontal Cable: Horizontal data cables will be terminated in the telecommunications closet on rack mounted, 48-port patch panels with 110 style termination block, rated Category 6.

1) Patch panels will have a rear mounted strain relief bar to organize cables and maintain Category 6 bend radius.
2) 2U Panduit horizontal wire manager shall be located above and below every 48-port patch panel. All horizontal wire managers shall be capable of front and rear cable management. All horizontal wire managers shall have front and rear removable covers.

5. Ethernet Switches:

a. The District's existing wired LAN/WAN is a star configuration with all buildings connected back to the Troy Services Building with a minimum of 1Gb on the fiber backbone.

b. At least one power over Ethernet (PoE) switch exists in each data closet at each building with the exception of IDF3 located at the Troy Union Elementary School.

c. The District utilizes Cisco manufactured switches throughout its network. The District utilizes 3750 PoE switches within its MDF's and 3560 PoE switches within its IDF's.

d. The DCS shall be installed utilizing the District's existing PoE switches with the exception of IDF3 located at the Troy Union Elementary School. Unit pricing will be used if it is determined that additional PoE capacity is required.

e. Provide, install and configure the following in IDF3 at the Troy Union Elementary School:

1) One (1) Cisco 3560-24PS 24-port 10/100MB PoE switch.
2) One (1) white Cat6 patch cable.
3) One (1) 2U Panduit wire management guide.

PART 3 - EXECUTION

3.1 GENERAL

A. This Contractor shall have a minimum of five years of experience in the specific application of the equipment proposed of these systems.

B. All conductive communications cabling installed outdoors shall be properly grounded and bonded and lightning protected per the NEC®.

C. All cables must be routed and managed for a neat and aesthetically pleasing appearance. All work must be installed in a neat and workman like manner.

D. Communication bonding and grounding shall be in accordance with the NEC® and NFPA. Horizontal cables shall be grounded in compliance with ANSI/NFPA 70 and local requirements and practices. Horizontal equipment includes cross connect frames, patch panels and racks, active telecommunication equipment and test apparatus and equipment.

E. The contractor shall not place any distribution cabling alongside power lines, or share the same conduit, channel or sleeve with electrical apparatus.

F. The contractor shall provide any necessary screws, anchors, clamps, tie wraps, distribution rings, miscellaneous grounding and support hardware, etc., necessary to facilitate the installation of the system.

G. It shall be the responsibility of the contractor to furnish any special installation equipment or tools necessary to properly complete the system. This may include, but is not limited to, tools for terminating cables, testing and splicing equipment for copper/fiber cables, communication devices, jack stands for cable reels, or cable wenches.

H. Refer to specification section 16050 for further general requirements.

3.2 INSTALLATION-TROY UNION ELEMENTARY SCHOOL IDF3

A. Deliver the Cisco 3560-24PS switch to the Owner. The Owner will load the switch configuration file and return the switch to this contractor.

B. Install the Cisco 3560-24PS switch in IDF3 at the Troy Union Elementary School.

C. Install the Panduit 2U wire management guide directly below the Cisco 3560-24PS switch.

D. Interconnect the Cisco 3560-24PS switch to the existing Cisco 2960G-48TC switch using a contractor provided Cat6 copper patch cable (white).

3.3 INSTALLATION-CABLING

A. Provide, install, test and tag one (1) data drop for each wireless access point installed under Section 16750 of these bid specifications.

B. Category 6 cables shall be continuous from MDF or IDF to media outlet and free from splices, reverses, grounds or other connections. Provide a 5-foot minimum service loop, above accessible ceiling, for each terminated cable, to accommodate future changes.

C. Terminate Category 6 cable according to T568B jack pin assignments.

1. Remove only the amount of cable jacket necessary for termination. Maintain wire twist for all pairs of Category 6 cable to within 0.5 inches maximum from termination point.

D. Do not run cable longer than maximum 90 meter EIA/TIA recommended length.

E. Copper splices in the horizontal distribution are prohibited.

F. All cables installed in ceiling spaces shall be plenum-rated.

G. All cables shall be installed using "J" hooks, conduits, cable tray or an approved raceway system. Where cable tray is not available, horizontal cable will be supported every five feet with "J" hooks sufficient in size to handle all bundled cables while minimizing crushing. Copper and fiber optic cables will be divided into separate bundles and run in separate "J" hooks. If cable slack exceeds twelve (12) inches between supports, additional supports will be installed to take up slack ad relieve cable stress.

H. Carefully lay all cable with appropriate radius of curvature and protect at bends and corners. Observe minimum bend radius and tension limitations as specified by EIA/TIA for Category 6 and fiber optic cables.

I. Loosely bundle cables with Velcro© ties, suitable for Plenum environments, every twenty feet.

J. Patch panels shall be arranged to allow for natural wiring progression in functional fields, minimize crossing of wires and allow for the easy access to each component.

K. The contractor shall assure that at the completion of cable installation, cables are free from twists, kinks, sharp bends, cuts, gouges or any other physical damage that might cause alterations to the electrical or optical characteristics of the cables.

L. All entrance and intra-building cable penetration, conduit, cores, wall and ceiling penetrations will be sealed with a 3M type fire retardant.

3.4 LABELING

A. All cable designations and color-coding shall be in full compliance with EIA/TIA 606.

B. Clearly label all cables, including patch cables at both ends with permanently applied, mechanically printed labels. Hand written labels will not be acceptable. Use standardized colors and alphanumeric codes. All patch cables shall be numbered sequentially on both ends of the cable. Engineer will approve labeling system and method.

C. In work areas, place cable ID labels around each cable in outlet box, on front of faceplate and on front of jack.

D. In the MDF and IDF, place ID labels around each cable. Labels shall be located within six inches of the termination.

E. Front label each patch panel port and faceplates with a mechanically produced identification label utilizing the Owner's existing labeling scheme:

1. Closet No. – Room No. –Data Port – "W" (i.e.; 2-300A-07W)

3.5 CATEGORY 6 (Data) UTP CABLE TESTING.

A. The Contractor shall, at all times, permit and facilitate work inspection by the Owner's Representative and by public authorities having jurisdiction. The Owner's Representative shall have the authority to stop the work, if required, to insure proper execution.

B. Each Category 6 UTP cable pair shall be tested end to end from the data outlet termination to the IDF closet patch panel.

C. Test shall be performed with connectors installed.

D. Cable performance shall meet the standards outlined in EIA/TIA-568 A/Bus or minimum.

E. Each cable shall be tested for infinite resistance between cables and ground.

F. Tone, verify and certify cable and jack/connectors as free from shorted pairs, open pairs, reversed pairs, crossed pairs and grounded pairs. One hundred percent of all pairs must be in good working condition.

G. Check cable length and labeling at both ends.

H. Cables and connectors comprising Category 6 must be certified compliant with the performance requirements listed in EIA TSB36 (cables) and TSB40 (connectors).

1. As a minimum, test documentation will include:

a. Cable Identification Number
b. Worst Case Near End Cross Talk (NEXT)
c. Attenuation
d. PSNEXT
e. Return Loss
f. PSELFEXT
g. Signal-to-Noise Ratio
h. Ambient Noise
i. Loop Resistance
j. Equal Level Far-End Crosstalk (EL-FEXT)
k. Return Loss

l. Propagation Delay
m. Propagation Delay Skew
n. Cable Length
o. Test Date

2. Each data circuit, including all connectors shall be tested to verify all bandwidth performance and crosstalk specifications as outlined Category 6. Any cables not in one hundred percent compliance with the minimum performance criteria relating to Category 6 will be replaced with no additional cost to Owner.

I. Cable testing will be conducted by a programmable micro-computer based tester capable of testing all specific standard requirements and generating completed printed test results.

1. Test equipment shall be a Microtest, Fluke, or approved equivalent. Equipment will be designed, and of such grade, so as to provide reliable certification and testing.

J. A detailed copy of all test reports shall be provided to the Owner in CD format. Additionally, this contractor shall provide hardcopy documentation indicating cable length and the pass/fail test results for each Category 6 cable installed.

K. Any outlet, cable or component that does not meet the required operational tests or fails to meet installation standards as specified shall be repaired or replaced by the contractor as directed by the School District and at no expense to the School District.

3.6 PROJECT RECORD DOCUMENTS

A. Fully detailed documentation and record drawings of installation layout and performance shall be submitted for review within thirty (30) days of completion of work and shall include as a minimum:

1. Marked drawings showing distance and routing of all inside cable with gauge, type and numbering scheme.
2. Location of outlets with their identification number prepared on most recent installation drawing.
3. Drawings showing distribution frame layouts, cross connect locations, cable routing from rooms.
4. Drawings showing layout of panels and equipment in cabinets.
5. Drawings shall accurately record actual locations of each item of fixed equipment, and show interconnecting wiring. Drawings will indicate location of equipment and tagged circuits. A functional block diagram will also be required.

B. Documentation Requirements

1. Drawings, whenever submitted, shall be submitted with three (3) copies to the Owner.
2. Cable and outlet identification, locations, performance and test results will be entered into Excel or approved PC based spreadsheet. The Contractor spreadsheet template and format will be approved by the Owner.
3. Final record drawings shall be submitted as one (1) ANSI C color laminated drawing, two (2) sets of scaled 20# bond drawings and two (2) CD-ROM in PDF format. Drawings shall be professionally done. Hand drawings and notations will not be accepted.

C. Cable Record Book

1. The Contractor shall prepare and deliver complete and accurate cable records entered into Excel or approved PC based spreadsheet. Minimum information to be included for each cable in the Cable Record Book is:

   a. Location (room number)
   b. Jack Number
   c. Serving Closet
   d. Patch Panel Number
   e. Patch Panel Port
   f. Cable Type and Use (Cat 6, voice)

D. Refer to specifications section 16050 for additional general project record document requirements.

E. All drawings and the information contained therein become the sole property of the Owner.

END OF SECTION 16790

SECTION 16795 – LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work under Section 16050.

1.2 SUMMARY

A. This Section includes laptop computers, laptop carts, and printers, software and installation, including, but not limited, to the following:

1. Laptop computers and associated peripherals.
2. Laptop carts and printers.
3. Coordination with Owner personnel to obtain all relevant information to install equipment.
4. Providing all cables necessary to connect all peripheral devices to laptop computers, laptop carts, and printers.
5. Unpacking and assembly, asset tagging, engraving and labeling of laptop computers, laptop carts and printers.
6. Installation of software images as defined and provided by the Owner on all new computers.
7. Removing all packing material from all building properties.
8. Relocation of de-commissioned laptop computers, laptop carts and printers to a central district staging location.

1.3 SYSTEM DESCRIPTION

A. Provide the services necessary to furnish, install and provide maintenance support for Owner laptop computers, laptop carts, and printers according to acceptable industry standards. All work shall be in accordance with the true intent of these Specifications, and as required to leave the laptop computers, laptop carts, and printers complete and in satisfactory operating condition.

1. The Owner reserves the right to reject any or all alternate equipment bids and to select the bid that is considered to serve "the best interest of the owner."

1.4 SUBMITTALS

A. Provide one (1) complete laptop unit, as proposed the Contractor under base bid specification, mandatory alternate specification, or voluntary alternate specification within forty-eight (48) hours of bid submission to the Owner for evaluation and review.

1.5 DELIVERY

A. Deliver laptop computers, laptop carts, and printers to Owner designated staging and assembly location prior to final building deployment, based on a schedule provided to the successful contractor at the time of contract award.

1.6 PROJECT/SITE CONDITIONS

A. Verify conditions at the job site prior to installation. Any site visitation during the bidding process with be verified and coordinated in advance with the Owner.

B. Site walkthroughs of "typical" buildings, e.g. elementary, middle and high school, will be conducted by the Owner on the day of the pre-bid conference.

C. Contractor will meet with Owner personnel prior to commencement of installation activities to review the following implementation details:

1. Installation timelines
2. Imaging process and wireless access setting requirements for each laptop
3. De-commissioning and equipment removal requirements at each site
4. Installation process
5. Verify site requirements and building access schedule

1.7 WARRANTY

A. Warranty: All products shall be guaranteed to be free from defects in material and workmanship upon installation.

B. Warranty period shall commence after all laptop computers, laptop carts, and printers have been placed in working operation and accepted by the Owner by formal written acceptance of Substantial Completion.

C. All components shall be guaranteed free of defects in materials and workmanship for a period of four (4) years or manufacturer warranty, whichever is longer, from the date of Substantial Completion. Components shall be repaired or replaced within twenty-four (24) hours or next business day, following report of defects by the Owner. Warranty labor for the warranty period will be provided on-site at the Troy School District during normal business hours – 7 AM to 4 PM EST, Monday through Friday.

D. Systems integrator responsible for the installation of all equipment under this project shall remain as the warranty service provider to the Owner at no additional expense to the Owner, for the full warranty period.

1.8 MAINTENANCE

A. The Vendor shall submit a maintenance and service contract proposal with service rates covering all labor and materials necessary to repair damages to the components after expiration of the warranty period. Contract submission does not obligate the Owner to acceptance at time of bid award.

1.9 SPARE UNITS

A. Provide the following spare units:

1. Laptop computers, as listed in Paragraph 2.1.A, quantity of twenty (20). These units will be unboxed, asset tagged, engraved, inventoried, imaged with a base hardware image and re-packaged in the manufacturers original packaging (noting spare identification on the outside of the box) and delivered as spares as noted in paragraph 1.10.B. These units will not require identification stenciling.
2. Laptop computer power bricks, compatible with equipment as defined in paragraph 2.1, as loose equipment, quantity of forty (40)
3. Laptop cart printer, as listed in Paragraph 2.1.B, as loose equipment, quantity of five (5)
4. External USB 2.0 optical DVD-ROM drives, as loose equipment, quantity of twenty (20).
5. Ballistic cloth or fabric laptop carrying cases, as loose equipment, quantity of fifty-five (55).

B. Deliver spare units to the Troy School District Services Building, 4420 Livernois, Troy MI 48098.

C. All spare units will be delivered in original manufacturer's packaging.

PART 2 - PRODUCT

2.1 LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS

A. Laptop Computers:

1. Laptop computers shall employ the same components, where similar architectures are specified.
2. Laptop computer systems will meet or exceed the following platform configurations and requirements:

a. Laptop Computers

1) Intel Core Duo chipset, 1.6 GHz or better
2) 1 GB RAM
3) 40 GB HDD minimum
4) No optical drives required or requested
5) Minimum of two (2) USB 2.0 ports
6) IEEE 1394 optional
7) Minimum of 15-inch diagonal XGA display (enhanced backlighting)
8) Provide battery or battery configuration to provide a minimum of six (6) hours of continuous laptop operation (non-hibernation or standby modes)
9) Integrated 802.11 a/b/g wireless network adaptor
10) Integrated 10/100/1000 network adaptor
11) Integrated internal audio speakers
12) Microsoft Windows XP Professional
13) Windows Server 2003 Client Access License (CAL)
14) Altiris Client Management agent
15) Altiris 6 Software Virtualization node license

16) Four (4) year, next business day parts and labor warranty
17) All computers of this type shall be manufactured with identical components to ensure unified imaging of all computers of this type

b. Contractor will specify a mandatory alternate of the base bid processor utilizing the AMD Turion 64 X2 processor, with the following base requirements:

1) Minimum processor speed of 1.6 GHz
2) 1 GB RAM
3) 40 GB HDD minimum
4) No optical drives required or requested
5) Minimum of two (2) USB 2.0 ports
6) IEEE 1394 optional
7) Minimum of 15-inch diagonal XGA display (enhanced backlighting)
8) Provide battery or battery configuration to provide a minimum of six (6) hours of continuous laptop operation (non-hibernation or standby modes)
9) Integrated 802.11 a/b/g wireless network adaptor
10) Integrated 10/100/1000 network adaptor
11) Integrated internal audio speakers
12) Microsoft Windows XP Professional
13) Windows Server 2003 Client Access License (CAL)
14) Altiris Client Management agent
15) Altiris 6 Software Virtualization node license
16) Four (4) year, next business day parts and labor warranty
17) All computers of this type shall be manufactured with identical components to ensure unified imaging of all computers of this type

c. Contractor will specify a mandatory alternate of the base bid processor utilizing the Intel Core Duo ultra-low voltage processor, with the following base requirements:

1) 1 GB RAM
2) 40 GB HDD minimum
3) No optical drives required or requested
4) Minimum of two (2) USB 2.0 ports
5) IEEE 1394 optional
6) Minimum of 12-inch diagonal WXGA display (enhanced backlighting)
7) Provide battery or battery configuration to provide a minimum of six (6) hours of continuous laptop operation (non-hibernation or standby modes)
8) Integrated 802.11 a/b/g wireless network adaptor
9) Integrated 10/100/1000 network adaptor
10) Integrated internal audio speakers
11) Microsoft Windows XP Professional
12) Windows Server 2003 Client Access License (CAL)
13) Altiris Client Management agent
14) Altiris 6 Software Virtualization node license
15) Four (4) year, next business day parts and labor warranty
16) All computers of this type shall be manufactured with identical components to ensure unified imaging of all computers of this type

d. Contractor will specify a mandatory alternate of the base bid laptop computer utilizing the following base requirements:

1) Intel Core Duo processor, minimum processor speed of 1.6 GHz
2) 1 GB RAM
3) 40 GB HDD minimum
4) No optical drives required or requested
5) Minimum of two (2) USB 2.0 ports
6) IEEE 1394 optional
7) Minimum of 12-inch diagonal XGA display with tablet digitizer and enhanced backlighting, alternate is a 17-inch WXGA display with tablet digitizer and enhanced backlighting
8) Provide battery or battery configuration to provide a minimum of six (6) hours of continuous laptop operation (non-hibernation or standby modes)
9) Integrated 802.11 a/b/g wireless network adaptor
10) Integrated 10/100/1000 network adaptor
11) Integrated internal audio speakers
12) Microsoft Windows XP Tablet PC 2005 Professional
13) Windows Server 2003 Client Access License (CAL)
14) Altiris Client Management agent
15) Altiris 6 Software Virtualization node license
16) Four (4) year, next business day parts and labor warranty
17) External USB 2.0 DVD-RW +/-R with USB cable and power adapter. Alternate is an internal DVD-RW +/-R
18) Carrying case with form factor appropriate to display size
19) All computers of this type shall be manufactured with identical components to ensure unified imaging of all computers of this type

B. Laptop Carts:

1. Laptop carts will meet or exceed the following minimum platform configurations and requirements:

a. Datamation model DS-NSC-16
b. Carts shall be keyed to each building standard. Key codes shall be provided by the Owner to the awarded contractor.

C. Laptop Cart Printers:

1. Laptop cart printers will meet or exceed the following minimum platform configurations and requirements:

a. Laptop Cart Printers

1) Monochrome Laser
2) 22 pages per minute printed output
3) 600 x 600 DPI minimum resolution for printed documents
4) 2 MB installed RAM
5) 2000 page yield cartridge (installed)

6) Monthly duty cycle of 3000 pages
7) Integrated 10/100 network port, must be operationally certified under Windows Server 2003

2. Provide all current manufacturer-provided drivers, firmware revisions and software.
3. Provide all cables, including a power cord and a twenty (20) foot Category 6 patch cable for laptop cart printers.
4. Provide four (4) year, next business day warranty parts and labor on all printers.

2.2 APPROVED MANUFACTURERS

A. Subject to compliance with requirements, Contractor will provide laptop computers as manufactured by one of the following:

1. Dell Computers
2. Hewlett-Packard
3. Gateway

B. Subject to compliance with requirements, Contractor will provide laptop carts as manufactured by one of the following:

1. Datamation

C. Subject to compliance with requirements, Contractor will provide laptop cart printers as manufactured by one of the following:

1. Dell Computers
2. Hewlett-Packard

D. Subject to compliance with requirements, Contractor will provide Altiris Client Management Suite workstation agents and Altiris Software Virtualization Solution node licenses under the terms and conditions of the existing Owner licensing agreement with Altiris. Contract information may be obtained by contacting the Owner representative at:

1. Altiris, Inc.
Contact: Steve Stinson – Great Lakes Education and Government
TEL: 734 456 2286
REF: Troy School District – Client Management Suite and AUP

PART 3 - EXECUTION

3.1 INSTALLATION-GENERAL

A. All miscellaneous equipment required for a complete, professional installation shall be included in the base bid. No allowances for any additional equipment, hardware, cabling, or miscellaneous will be considered unless specifically excluded from the base bid.

B. Contractor will meet with Owner personnel prior to commencement of installation activities to review the following implementation details:

1. Installation timelines

2. Imaging process and drive mapping requirements
3. De-commissioning of equipment and removal requirements at each site
4. Installation process
5. Verify site requirements

C. Contractor will provide warehousing for all equipment and materials until scheduled time of configuration and installation.

D. Owner personnel will provide site maps for all installation locations to be included in site implementations.

E. Owner personnel will assist with the locating of existing laptop computers, laptop carts, and printers.

F. Owner will provide adequate space at the Troy Services Building for the de-commissioning of old laptop computers, laptop carts, and printers and the assembly of new equipment.

G. Contractor will remove existing laptop computers and laptop cart printers and deliver to a central location specified by the Owner.

H. Contractor will label all laptop computers, laptop carts, and printers with stenciling, to be designated by the Owner:

1. Stencil provider shall be Visual Identity Solutions, 43602 Elizabeth Rd, Clinton Township, Michigan 48308.
2. Transfer Labeling provider contact is Dave Kargol (586)-792-8337

I. Contractor will label all laptop computers and laptop cart printers with asset tags provided by the Owner.

J. Contractor will provide engraved asset information on each laptop computers, laptop carts, and printer, in a location to be designated by the Owner. Contractor will be responsible for providing their own engraving device.

K. Contractor will stage, connect, and integrate all laptop computers, laptop carts and printers in a manner prescribed by Owner personnel. Owner will provide cable management instructions to Contractor prior to site implementations.

L. Contractor will load and validate a Owner provided and approved base hardware image and appropriate software installation packages on each laptop computer.

M. Contractor will provide data erasure services for all laptop hard drives being de-commissioned. Contractor will provide a description of the method and tools to be used for the erasure of data from all hard drives being de-commissioned. The method used must leave the de-commissioned hard drive in a re-usable state while ensuring that the data has been completely and thoroughly removed.

N. Contractor will remove all Troy School District asset tags and existing stenciling from de-commissioned equipment. Asset tag, service tag, host name and MAC address information for each de-commissioned laptop computer shall be recorded in an Excel spreadsheet prior to removal, and provided to the Owner prior to delivery of new equipment to each building. Asset tags removed will be returned to the Owner for audit purposes. Contractor will provide the Owner with the full inventory of de-commissioned equipment at the completion of the project.

O. Contractor will stack, wrap, and palletize de-commissioned equipment and deliver to a central location to be determined by the Owner. Contractor will also specify a mandatory alternate to this requirement that indicates a credit to the Owner for removal from the premises and transfer of ownership to the Contractor. Inventory of all equipment to be decommissioned is defined as follows:

1. Five hundred eighty-eight (588) Dell C800 laptop computers

    a. Processor – Pentium 3, 800 MHz
    b. Memory – 128 MB
    c. Storage – 20 GB HDD
    d. Display – 15" TFT

2. Two hundred forty-eight (248) Dell C840 laptop computers

    a. Processor – Pentium 4, 1.6 GHz
    b. Memory – 128 MB
    c. Storage – 20 GB HDD
    d. Display – 15" TFT

3. One hundred two (102) Dell D600 laptop computers

    a. Processor – Pentium 4, 1.6 GHz
    b. Memory – 512 MB
    c. Storage – 30 GB HDD
    d. Display – 14" TFT

P. Contractor will install and configure new print queues on all new laptop cart printers. The Owner will provide print server designations for each new laptop cart printer for all buildings to the Contractor.

3.2 INSTALLATION-TIMELINE

A. The installation of the laptop computers will occur concurrently with the installation of a wireless network infrastructure project. This Contractor shall work closely with the wireless network infrastructure Contractor to help insure proper wireless connectivity and functionality. This Contractor shall perform a complete and functioning installation at one (1) Owner designated middle school as a pilot building. Upon completion of the pilot installation, the Owner will test the installation for a period of thirty (30) days during which this Contractor shall be available to make

adjustments to the installation in order to meet Owner requirements. Upon Owner acceptance of the pilot building, this Contractor will complete the installations at the remaining buildings. The following is a summary of the timelines for this project.

Task	**Expected Completion**
Pilot building (middle school)	April 30, 2007
Owner acceptance testing of pilot building	May 31, 2007
District installation	August 15, 2007
• High schools	• June 30, 2007
• Elementary schools	• August 1, 2007
• Middle schools and other buildings	• August 15, 2007
Owner acceptance testing district-wide	August 16, 2007 – November 1, 2007

B. The Owner will have various construction projects and events occurring in their buildings throughout the duration of this project. This Contractor shall provide an installation schedule with their bid submission that accommodates these projects and events. Prior to installation, this Contractor shall coordinate their schedule with the Owner and the wireless network infrastructure Contractor in order to provide a cohesive and systematic installation, testing, cutover, and Owner acceptance. Evenings and weekend work shall be pre-approved with the Owner at the beginning of the project as the hours of operations of the building changes during summer break. A comprehensive list of scheduled events and building usage per district building will be provided to all perspective bidders at the designated pre-bid meeting for review.

3.3 INSTALLATION- LAPTOP COMPUTERS, LAPTOP CARTS, AND PRINTERS

A. The following matrix represents the planned implementation quantities for all buildings during the installation timeline, as defined in paragraph 3.2. A detailed installation schedule must be provided for owner approval within five (5) days of bid award and will be immediately integrated into Owner's construction and operational schedules. Because of tight timelines for multiple projects, building availability must be coordinated among multiple contractors, construction crews and District instructional and community events. This Contractor must adequately staff crews, order equipment and schedule work in conjunction with other contractors in this bid document to adhere as exactly as possible to its submitted schedule.

Elementary Schools	• 36 existing laptop carts • 12 new laptop carts	• 672 laptop computers - 14 laptop computers per cart	• 48 new laptop cart printers
Middle Schools	• 17 existing laptop carts • 7 new laptop carts	• 360 laptop computers - 15 laptop computers per cart	• 24 new laptop cart printers
High Schools	• 10 existing laptop carts • 6 new laptop carts	• 240 laptop computers - 15 laptop computers per cart	• 16 new laptop cart printers
HS Science	• 4 existing laptop carts • 0 new laptop carts	• 32 laptop computers - 8 laptop computers per cart	• 4 new laptop cart printers

Niles	• 2 existing laptop carts • 0 new laptop carts	• 28 laptop computers - 14 laptop computers per cart	• 2 new laptop cart printers
Services Building	• 1 existing laptop carts • 0 new laptop carts	• 14 laptop computers - 14 laptop computers per cart	• 1 new laptop cart printers
Spares	• No laptop carts	• 20 laptop computers	• 5 new laptop cart printers
TRC	• No laptop carts	• 12 laptop computers	• No printers
Itinerant	• No laptop carts	• 45 laptop computers	• No printers

3.4 INSTALLATION-SOFTWARE

A. Contractor shall provide an allowance of $51,000 for an imaging consultant defined solely by the Owner.

B. The Owner shall provide the Contractor a base image and applicable software application installation packages for each installed laptop computer, to be installed by the Contractor.

C. The Contractor shall provide five (5) copies of the volume licensed operating system media to the Owner.

D. The Contractor shall provide five (5) copies on compact disc of the most current device drivers, BIOS settings, configuration utilities and documentation used in configuring the laptop computers and printers to the Owner. The "most current" software, settings and drivers are defined as those used to configure the laptop computers at the time of acceptance of the pilot wireless network infrastructure site.

3.5 INSTALLATION-SITE REQUIREMENTS

A. Owner will demonstrate the labeling, stenciling, engraving, mounting and asset tagging method to be used by the Contractor prior to site implementations.

B. Owner will provide asset tags to Contractor for each building prior to physical implementation.

C. Owner will provide the Contractor with an electronic copy of the intended inventory for this project. The Contractor will be required to enter all asset and service information for each item to be installed. The electronic copy of the intended inventory will be in an Excel spreadsheet format.

D. Contractor shall test each laptop computer and laptop cart printer for a "Dead on Arrival" condition prior to stenciling, labeling, engraving or tagging. Any system or component that fails during installation will be replaced within twenty-four (24) hours of failure. Contractor will notify Owner of replacement MAC address of replacement laptop computers prior to implementation.

E. Contractor shall configure the BIOS on each laptop computer per specifications provided by the Owner after contract award.

F. Contractor shall connect all laptop cart printers and provide a test print copy as evidence of connectivity.

G. Contractor shall staff each building with adequate resources to complete the site implementations as noted in the schedule detailed in paragraph 3.3.A.

H. Owner will provide building access to all site locations as detailed in paragraph 3.3.A, and will designate an appropriate staging area(s) for each building to be used by the Contractor.

3.6 TESTING

A. Laptop Computers

1. For each laptop computer:

   a. Enable PXE-Boot
   b. Energize laptop computer and attach to the wireless network infrastructure
   c. Validate BIOS-level password settings, BIOS settings and BIOS administration password
   d. Validate client management software installation and initiation of image synchronization to image management server
   e. Network login
   f. Verify base network policies

2. For ten (10) percent of laptop computers:

   a. Test wireless connectivity to the Internet within each building. Contractor shall be expected to initiate wireless connectivity from a media center location within the building, activate a video stream from a district video server, and walk a single corridor to verify a persistent connection to the video stream.
   b. Print test page from laptop computers to the corresponding laptop cart printer.

3.7 TRAINING/SUPPORT

A. The Contractor shall have one (1) laptop computer technician in the District during the acceptance period to be scheduled after school commences and as defined by the Owner. The Contractor technician will be available at the Troy School District Services Building for (3) consecutive school days from 7:00 a.m. to 3:00 p.m. after the cutover of the wireless network infrastructure to assure proper operation of the laptop computers and laptop cart printers.

B. Laptop Computers and Laptop Cart Printers

1. Contractor will provide for a technician training and certification program for three district technicians that provides service and self-maintenance education on:

   a. Laptop computers
   b. Laptop cart printers

2. Remuneration program to the District for all service activities on certified laptop computers and laptop cart printers

C. All training and support shall be coordinated with the Technology Director and all training shall take place at a Troy School District facility.

END OF SECTION 16795

Integrated Design Solutions

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MEETING ATTENDANCE RECORD

Date: February 13, 2007

Time: 9:00 am

Project Name: Troy School District
School Technology Systems
Wireless Network Infrastructure and Laptop Computers, Laptop Carts and Printers
TSD Bid No. 9380

Place: Troy School District
Administration Building

IDS Project No.: 03234-1000 BP20

Reason for Meeting: Pre Bid Conference

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MEETING MINUTES

Meeting Number:	1	**Project:**	Wireless Network & Laptops, Carts & Printers
Meeting Date:	February 13, 2007	**W&H Project #:**	06-TSD-PWD-01
Meeting Type:	Pre-Bid Meeting	**ids Project #:**	03234-1000BP20
Meeting Location:	Administration Bld		

Attendees: See sign-in sheet

Item	Description
1.01	The project dates and bid delivery process were reviewed.
1.02	The specifications book and drawings are available at the offices of ids for a $50 refundable deposit. The specifications book only and all RFI's and addenda will be available on the Troy School District ("TSD") purchasing website and at the specified plan houses. RFI's and addenda will be posted without notification to bidders, please check the website regularly
1.03	The bid security, bond requirements, and withdrawal of bids were reviewed. All bonds must be delivered within (3) three days of award. This is a prevailing wage project.
1.04	The district retains the right to reject any bid response.
1.05	All blanks must be filled out on the bid forms. "No change" and "no bid" are valid responses.
1.06	This is an AIA project governing the contract and payment application process. Contract documents must be signed by the successful vendor(s) within (7) seven days of award.
1.07	The project schedule and the pilot building requirement were reviewed.
1.08	All vendors must be available on March 7, 2007 and March 8, 2007 for post-bid interviews.
1.09	TSD is tax exempt. All usage tax and permit fees must be included in the base bid amount.
1.10	Bidders may submit a bid for either the Wireless Network or the Laptop Computers or both.
1.11	Section 16050 applies to both the Wireless Network and the Laptop Computers.
1.12	The Wireless Network vendor and Laptop Computer vendor must work together to insure the network and laptops are operational and meet the bid requirements.

1.13 Wireless specifications for coverage, bandwidth, and user density were reviewed. The requirement for pre- and post-surveys were reviewed.

1.14 Site visits were scheduled for February 13th in the afternoon and available to all bidders.

1.15 The requirement, schedule and intent of the middle school pilot building was reviewed. The wireless network and laptop computer vendors must work together to insure specified requirements operational and reliable.

1.16 Approved manufacturers were reviewed.

1.17 Requirement for protective cages for access points in high activity areas outlined.

1.18 Radius authentication requirements and hardware preference by the district were outlined.

1.19 Review of installation – laptop installations will follow wireless implementations in each building by one week.

1.20 Category 6 cabling requirement for each wireless access point with an alternate for the reuse of existing classroom drops was reviewed.

1.21 Most buildings have extensive cable trays in place. Where not, standards-based cable support will be used.

1.22 Sleeves exist into most classrooms. Contractor will be required to replace any existing firestop material upon removal.

1.23 Laptops, carts and printers portion of the project will entail wholesale replacement of all existing carts for all buildings, with the addition of fully populated carts as outlined in the bid specifications.

1.24 Building access schedule distributed at pre-bid meeting. Schedule was not published in bid specification for building security purposes.

1.25 First article of laptop proposed is due to the district within 48 hours of bid submissions.

1.26 Contractor will propose equipment and installation schedule logistics.

1.27 All requests for information will be directed to Scott Smith at IDS (ssmith@ids-troy.com) . Responses will be posted to the Troy School District Purchasing web page. Each Contractor is responsible for periodic review of the web site for up to date information, due to the non-mandatory attendance policy prescribed by the district.

1.28 A review of the cart configuration expectations – retrieval, build, cable management, labeling, decommissioning of existing equipment, return delivery to buildings, testing requirements – was provided by Wright & Hunter and district staff.

1.29 The alternate for salvage value was reviewed.

1.30 District requirement for logistics warehousing during the project implementation phase was reviewed – no drop shipments to district allowed. Contractor will store equipment in manufacturer-approved warehousing facility until readiness date for

each building.

1.31 The requirement for the systems integrator to also be the warranty service provider at no additional cost to the district was reviewed.

1.32 Under Section 00410 for project 16975, Mandatory Alternates. A response of "No Bid" is acceptable. A response of "$0" implies no additional costs for the alternate specified. A response of "N/A" is not acceptable.

1.33 Approved manufacturers for laptops, carts and printers were reviewed.

1.34 The requirement for an allowance for a district imaging consultant was reviewed.

1.35 The process of de-commissioning existing equipment was reviewed, along with the mandatory alternate to provide salvage transfer of ownership to the contractor.

1.36 Testing requirements, as outlined in the bid specifications, were reviewed.

1.37 Contractor coordination during the overlapping phases of wireless infrastructure deployment and laptop cart deployment was outlined. The expectation is such that the wireless infrastructure provider and the laptop cart provider will perform their own implementation and testing coordination.

1.38 All laptop carts will be keyed alike on a per-building basis. The district will provide the applicable key codes for each building to the successful contractor.

1.39 A review of the mandatory alternates for Section 16975 was discussed.

Pre-Bid Conference Questions/Answers

Q Will cable abatement be required of the Contractor?
A No cable abatement is expected.

Q Will the district provide a matrix of open ports and patch panels in each building?
A The district anticipates adequate ports and patch panel access for each building. Bid specifications provide for unit pricing should additional space or ports be required.

Q Assuming wireless infrastructure pilot to be completed by May 1, 2007, should the contractor expect "after hours" scheduling? What hours are available in the pilot middle school?
A After hours scheduling will be required. The select middle school will have access between 3 PM and 10:30 PM EST.

Q Is it assumed that, for the two projects, that there are a prime contractor and a sub-contractor?
A The bid package is for two distinct projects. Each project will have a prime contractor. Each project may have sub contractors, but each project will have a prime contractor with a separate AIA contract negotiated.

Q Will the laptop wireless access cards/chipsets require Cisco CCX extensions?
A If required by the district, it will be stated in an addendum.

Q Will guest access to the wireless infrastructure be authenticated against Active Directory?

A Guest access will not be authenticated against Active Directory. A separate database of guest access users will be provided by the contractor.

Q Is the intent that all new laptops will require only 802.11a connectivity, and guest access provided by 802.11b/g?
A Correct.

Q Will laptop imaging be allowed at the contractor or manufacturer site?
A The district utilizes Altiris Deployment Server v6 for image deployment. It is a requirement that all laptops be imaged at the prescribed district configuration location. No remote access to the district imaging server will be provided.

Q The requirement for a -75dbm signal on the wireless access points, coupled with an SNR of +20 seems extremely high.
A Contractor may specify recommended levels and SNR in their proposal.

Q Is it the intent that all laptops in the new fleet be the same device and configuration?
A Yes. Some quantity of other models are specified in the bid specifications.

The above minutes are Wright & Hunter's understanding of the items discussed at the meeting. If you have any comments or corrections, please respond within five (5) business days of receipt, otherwise these notes will become the official record of the project.

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CONTRACTOR REQUEST FOR INFORMATION NO. 01

Project Name:	Troy School District School Technology Systems Wireless Network Infrastructure and Laptop Computers, Laptop Carts and Printers TSD Bid No. 9380 Troy, Michigan
IDS Project No.:	03234-1000 BP20
W&H Project No.:	06-TSD-PWD-02
Date:	February 15, 2007
Attention:	R. Morey

The Contractor requests that IDS, LLC and/or W&H supply to them the following information/ clarification relating to the above project.

1. With regard to the Laptop bid response, are we allowed to submit Lexmark printers as long as they meet/exceed the specification for the laser printers? Or can we no bid on the printer piece and still be considered for the Laptops?

Mike Skelly	Gateway	February 13, 2007
Name	Company	Date

W&H Response:

1. Refer to Section 16795, Paragraph 2.2.C, Dell and HP are the approved printer manufacturers for Base Bid No. 2. Refer to the Bid form Section 00410, Base Bid No. 2 shall include all requirements as specified under Section 16795.

Rock Morey	W&H	February 15, 2007
Name	Company	Date

ec: F. Lams, TSD
S. Bryan, TSD
Construction Association of Michigan Plan Room
McGraw Hill Construction Plan Room
S. Brune, W&H
R. Morey, W&H
R. Bracci, ids
S. Smith, ids

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CONTRACTOR REQUEST FOR INFORMATION NO. 02

Project Name:	Troy School District School Technology Systems Wireless Network Infrastructure and Laptop Computers, Laptop Carts and Printers TSD Bid No. 9380 Troy, Michigan
IDS Project No.:	03234-1000 BP20
W&H Project No.:	06-TSD-PWD-02
Date:	February 14, 2007
Attention:	R. Morey

The Contractor requests that IDS, LLC and/or W&H supply to them the following information/ clarification relating to the above project.

1. How many images will be needed for the Laptops?

2. Can we as a manufacturer install the image in the factory? Does it have to be done on site or can it be validated on site instead?

3. Does the district have a separate supplier for toner etc. after the purchase (laptop/printer/cart) occurs or will the winner also get the subsequent Toner and supplies business?

4. Under section 3.7 it notes that the winner needs to provide certification training on the printers and laptops but the main section of the bid notes that the installer will provide service. Can you clarify what is the goal with regard to service on the laptops and printers?

Mike Skelly	Gateway	February 13, 2007
Name	Company	Date

W&H Response:

1. One base image, and applicable software installation packages, will be provided by the Owner for each building.

2. The Owner will engage an imaging consultant to assist in the image development. The Owner utilizes Altiris Deployment Server at an enterprise level. The Contractor will be required to load the base images and applicable software packages at the Owner-designated site, to confirm and synchronize each laptop device with the Altiris server. No methods of remote access to the Owner's Altiris implementation will be allowed.

3. The Owner does not have a preferred supplier of general toner cartridges for subsequent consumption beyond the duty cycle of the toner cartridge provided with the unit at implementation.

4. The Owner is seeking the ability to enter into an authorized self-maintainer program. For service related items outside the terms and conditions of normal maintenance and serviceable items, the Contractor would assume primary responsibility.

Rock Morey	W&H	February 14, 2007
Name	Company	Date

ec: F. Lams, TSD
S. Bryan, TSD
Construction Association of Michigan Plan Room
McGraw Hill Construction Plan Room
S. Brune, W&H
R. Morey, W&H
R. Bracci, ids
S. Smith, ids

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CONTRACTOR REQUEST FOR INFORMATION NO. 03

Project Name:	Troy School District School Technology Systems Wireless Network Infrastructure and Laptop Computers, Laptop Carts and Printers TSD Bid No. 9380 Troy, Michigan
IDS Project No.:	03234-1000 BP20
W&H Project No.:	06-TSD-PWD-02
Date:	February 21, 2007
Attention:	S. Smith

The Contractor requests that IDS, LLC and/or W&H supply to them the following information/ clarification relating to the above project.

1. The floor plans seem to indicate the installation of X AP's per building. Example: Barnard Elementary - 52 locations. Section 16740, page 5 indicates that Barnard gets 25 AP's installed.

   Section 16790, page 6 (A) indicates "Provide, install, test and tag one (1) data drop for each wireless access point installed under Section 16750 of these bid specifications. This is not a Section 16750 in the bid specifications.

   If they meant to reference Section 16740 then a clarification on the floor plan is required. As in the Barnard Elementary building there seems to be an indication that 52 AP's will be installed but Section 16740 indicates only 25 AP's. Where are the 25 to be located?

Jeff Hipchen	RFConnect	February 21, 2007
Name	Company	Date

IDS Response:

1. The drawings indicated required density and throughput requirements. Locating the access points to provide the required density and throughput requirements is the bidder's responsibility.

   Section 16740, Paragraph 2.1.D indicates the estimated quantity of access points required to provide the required density and throughput requirements as specified in the drawings. The awarded bidder will perform any necessary pre-installation surveys and engineering and the quantity of access points will be adjusted utilizing unit pricing and the Change Order process (refer to Section 16740, Paragraph 1.3.G).

"Provide, install, test and tag one (1) data drop for each wireless access point installed under Section 16750 of these bid specifications. This is not a Section 16750 in the bid specifications." The reference to Section 16750 is incorrect. The reference should be to Section 16740.

Section 16790, Paragraph 3.3.A should read as follows:

"Provide, install, test and tag one (1) data drop for each wireless access point installed under Section ~~16750~~ **16740** of these bid specifications."

Scott Smith	Integrated Design Solutions	February 22, 2007
Name	Company	Date

ec: S. Bryan, TSD
F. Lams, TSD
Construction Association of Michigan Plan Room
McGraw Hill Construction Plan Room
S. Brune, W&H
R. Morey, W&H
R. Bracci, ids
S. Smith, ids

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CONTRACTOR REQUEST FOR INFORMATION NO. 04

Project Name:	Troy School District School Technology Systems Wireless Network Infrastructure and Laptop Computers, Laptop Carts and Printers TSD Bid No. 9380 Troy, Michigan
IDS Project No.:	03234-1000 BP20
W&H Project No.:	06-TSD-PWD-02
Date:	February 26, 2007
Attention:	S. Smith

The Contractor requests that IDS, LLC and/or W&H supply to them the following information/ clarification relating to the above project.

1. How many slots are open in the Cisco 6509 core switches?

2. During the first owner acceptance testing period (May 1st thru May 31st) at the pilot building will the other schools be available for surveying?

3. What are the access hours for the high schools during the summer break?

Colleen Totty	Analysts International	February 22, 2007
Name	Company	Date

IDS Response:

1. Four (4) open slots in the core 6509 and four (4) open slots in the redundant 6509.

2. Yes.

3. Access hours for the high schools are 6:30 am to 10:30pm.

Scott Smith	Integrated Design Solutions	February 23, 2007
Name	Company	Date

ec: S. Bryan, TSD
F. Lams, TSD
Construction Association of Michigan Plan Room
McGraw Hill Construction Plan Room
S. Brune, W&H
R. Morey, W&H
R. Bracci, ids
S. Smith, ids

Integrated Design Solutions
Architecture, Engineering, Interiors & Technology

BID TABULATION FORM

Project Name: Troy School District
School Technology Systems
Wireless Network Infrastructure (Section 16740 and 16790)
TSD Bid Number 9380
IDS Project No.: 03234-1000BP20

Date: March 1, 2006
Estimate:

	Dyntek	NETech	Analysts International	Relational Technology Services	Wireless Resources	AT & T
Bid Bond	Yes	Yes	Yes	Check	Check	Yes
Addendum	None Issued	None Issued	None Issued	None Issued	None Issued	None Issued
Familiar Disclosure	Yes	Yes	Yes	Yes	Yes	Yes
Base Bid	$578,131.76	$699,823.41	$808,051.75	$831,341.17	$852,304.58	$960,429.00
Mandatory Alternates						
1. Delete Network Access Control	($58,647.00)	($15,588.00)	($91,736.10)	($72,456.20)	($6,500.00)	($5,478.00)
2. Delete 120 hrs. Support	($10,800.00)	($2,500.00)	($7,800.00)	($15,000.00)	($19,800.00)	($19,565.00)
3. Delete AirMagnet & NIC's	($13,697.00)	($15,588.00)	($10,896.16)	($20,478.00)	($12,304.60)	($122,826.00)
4. Delete Controller Redundancy	($19,473.00)	($16,282.53)	($19,309.07)	($25,723.00)	($7,190.00)	($24,160.00)
5. Provide Spectrum Analyzer Lics.	$11,027.00	$17,184.00	$9,230.68	$20,478.00	$12,127.30	$7,726.00
6. Provide Survey & Planner Lics.	$9,920.00	$17,184.00	$6,343.66	N/A	$16,940.30	$6,828.00
7. Delete Wireless Network at Baker	($65,750.00)	($41,020.00)	($27,003.89)	($25,615.30)	($48,689.20)	($3,209.00)
Alternates						
1. Provide Cisco MARS	$44,279.00	$50,005.00	$51,992.34	N/A	No Alt	No Bid
2. Use existing network drops	$0.00	$75.00	($100.00)	167.00/Drop	No Alt	No Bid
Voluntary Alternates						
Voluntary Alternate No. 1		$196,941.86	$27,180.23	N/A	N/A	$46,957.00
Voluntary Alternate No. 2		$393,674.40	$79.66	N/A	N/A	$22,820.00
Voluntary Alternate No. 3		$592,946.97	$231.77	N/A	N/A	N/A

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Integrated Design Solutions
Architecture, Engineering, Interiors & Technology

BID TABULATION FORM

Project Name: Troy School District
School Technology Systems
Laptop Computers, Laptop Carts & Printers (Section 16795)
TSD Bid Number 9380
IDS Project No.: 03234-1000BP20

Date: March 1, 2006
Estimate:

	Dyntek	Analysts International	Gateway		
Bid Bond	Yes	Yes	Yes		
Addendum					
Familiar Disclosure	Yes	Yes	Yes		
Base Bid	$1,540,446.97	$1,994,646.23	$2,281,389.00		
Mandatory Alternates					
1. Delete Salvage Ownership	$70,000.00	($106,470.00)	TBD		
2. Delete Roundtrip delivery of Carts	($4,000.00)	($6,600.00)	No Change		
3. Delete three Days of Support	($750.00)	($1,584.00)	($2,760.00)		
4. Substitute AMD in Lieu of Intel Processors	($142,618.81)	($269.43)	No Bid		
5. Substitute Low Volt. Procs. & 12" Screen	$162,748.00	$176.16	$163,850.00		
6. Substitute Tablet PC for std. Laptop	$566,812.00	$1,080.98	No Bid		
7. Provide Battery Charger Units	$1,960.00	$26,922.20	$35,000.00		
8. Provide New Carts	$1,581.76	$1,077.72	$1,699.00		
9. Delete One Laptop per Cart	($39,680.00)	($52,185.40)	$898,580.00		
10. Provide One Cart w/ Fourteen Laptops	$14,729.76	$19,714.11	$22,464.50		
11. Provide One (1) Cart w/ Fifteen Laptops	$15,696.76	$21,018.74	$23,913.50		
12. Provide Four yr. Battery Warranty	refer to bid response	No Bid	$54/unit		
Voluntary Alternates					
Voluntary Alternate No. 1		($10,000.00)	No Bid		
Voluntary Alternate No. 2		($62.18)	No Bid		
Voluntary Alternate No. 3			No Bid		

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