

architecture interiors & technology engineering



Integrated Design Solutions

Project Manual

**Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536**

IDS Project No. 03234-2005

June 9, 2008
Bids

Project Manual

**Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536
Troy, Michigan**

for

**Troy School District
4400 Livernois Road
Troy, Mi 48098**

Integrated Design Solutions LLC

Architecture, Engineering, Interiors & Technology
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IDS Project No. 03234-2005

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Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536
Troy, Michigan

IDS Project No. 03234-2005

SECTION 00100 - ADVERTISEMENT FOR BIDS

DATE: June 4, 2008

PROJECT: Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536
Troy, Michigan

OWNER: Troy School District
4400 Livernois
Troy, Michigan 48098

**ENGINEERING/
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

BIDS RECEIVED: Until 3:00 pm local time on June 24, 2008, 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 3:01 pm. A bid tabulation summary will be available.

The Bidding Documents will be on file on and after June 9, 2008 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, MI 48084, (248) 823-2100
Construction Association of Michigan, 43636 Woodward Ave., Bloomfield Hills, MI 48302, (248) 972-1000
McGraw Hill Construction, 20475 Woodingham Dr., Detroit, MI 48221, (313) 342-6449

The Engineer will furnish one (1) sets of documents to the bidders at a \$50 refundable deposit.

A recommended site visit shall be at the bidder's discretion.

Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536
Troy, Michigan

IDS Project No. 03234-2005

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 Engineering Consultant, 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.

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 and Supplementary Conditions of the Contract, Specifications, Drawings and Addenda issued prior to execution of the Contract.
- B. Addenda are written or graphic instruments issued by the Engineer 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 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. Incomplete bidding documents or bidding documents returned later than ten (10) days after receipt of bids will result in a forfeiture of the Bidder's deposit.
- D. Bidding Documents remain the property of the Engineer.

3. PREPARATION AND SUBMISSION OF BIDS

- A. Bids shall be submitted on forms bound in the Project Manual of the Bidding Documents.
- B. All blanks on the Bid Form must be filled in by typewriter or by hand in ink.

- C. Amounts shall be expressed in both words and figures. In case of a discrepancy the amount stated in words shall govern.
- D. Alterations by erasure or interlineations must be initialed by the Bidder.
- E. All Alternates must be bid. If no change in the Base Bid is required, enter "No Change."
- F. 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 SMITH MIDDLE SCHOOL, TRANSFORMER REPLACEMENT, TSD Bid No. 9536, 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. Clearly distinguish the original bid from the duplicated 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.
- G. 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. FAMILIAL DISCLOSURE STATEMENT

- A. Each Bid shall be accompanied by the Familial Disclosure Statement in compliance with MCL.380.1267. The Bid proposal must be accompanied by a sworn and notarized statement disclosing Familial Relationship that exists between the Bidder or any employee of the Bidder and any member of the Board of Education of the School District, or the Superintendent of the School District. The School District will not consider a Bid Proposal that does not include this sworn and notarized Disclosure Statement.

5. 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.

6. 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 over the signature of 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.

7. 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.

8. EXECUTION OF AGREEMENT

- A. The successful Bidder will be required to execute AIA Abbreviated Standard Form of Agreement between Owner and Contractor, AIA Document A107-1997 in conjunction with the Supplementary Conditions and additional conditions as defined within Specification Section 00800. 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 and any required state or local permits before the successful Bidder may proceed with the Work. Failure or refusal to provide Bonds or Certificates of Insurance or required permits 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.

9. 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 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 a written request for interpretation thereof. The person submitting the request shall be responsible for its prompt delivery.

Bids Documents Available:	June 9, 2008
Site Visit:	At Bidder's Discretion
Deadline for RFI Submissions:	June 17, 12:00 pm
Deadline for RFI Responses and Addenda:	June 20, 2008, 4:00 pm
Bids Due:	June 24, 2008, 3:00 pm
Bid Opening:	June 24, 2008, 3:01 pm
Post Bid Interviews:	June 26, 2008
Bid Award:	July 8, 2008 Board of Education Meeting

- B. Interpretation, correction 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.

10. 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.

11. 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's decision of approval or disapproval of a proposed substitution shall be final.
- B. If the Engineer 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.

12. 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.

13. PERMITS AND FEES

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

14. 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.

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.

16. 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.

17. POST BID INFORMATION

- A. Bidders to whom Contract award is under consideration shall submit to the Engineer, upon request, a properly executed AIA Document A305, Contractor's Qualification Statement.

END OF SECTION 00200



STATE OF MICHIGAN

JENNIFER M. GRANHOLM
GOVERNOR

DEPARTMENT OF LABOR & ECONOMIC GROWTH
LANSING

KEITH W. COOLEY
DIRECTOR

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

The Michigan Department of Labor & Economic Growth determines prevailing rates pursuant to the Prevailing Wages on State Projects Act, Public Act 166 of 1965, as amended. The purpose of establishing prevailing rates is to provide minimum rates of pay that must be paid to 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 official 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. Prevailing wage is satisfied when wages plus fringe benefits paid to a worker are equal to or greater than the required rate.

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, **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 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 rates prescribed in a contract.
- Every contractor and subcontractor shall keep certified payrolls, as used in the industry, of each and every construction mechanic, and verification of such certified payroll in writing by either a representative or auditor/certified accountant at the end of such a certified payroll. These records should include the occupation and indicate the hours worked on each project for each classification and the actual wages and benefits paid. 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 & Hour Division. The department will investigate and attempt to resolve the complaint informally. During the course of an investigation, if the requested records and posting certification are not made available in compliance with Section 5 of Act 166, the investigation will be concluded and a referral to the Office of Attorney General for civil action will be made. The Office of Attorney General will pursue costs and fees associated with a lawsuit if filing is necessary to obtain records.

A violation of Act 166 may result in the contractor's name being added to the Prevailing Wage Act Violators List published on the division's website, updated monthly. This list includes the names and addresses of contractors and subcontractors the division has found in violation of Act 166 based on complaints from individuals and third parties. The Prevailing Wage Act Violators List is intended to inform contracting agents of contractors that have violated Act 166 for use in determining who should receive state-funded projects.

WAGE & HOUR DIVISION

P.O. BOX 30476 • LANSING, MICHIGAN 48909-7976

www.michigan.gov/wagehour • (517) 335-0400 • FAX (517) 335-0077

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, Hydro Excavator.
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), Tractor (pneu-tired, other than backhoe or front end loader), Trencher (8' digging capacity and smaller), Vac Truck.
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) Sweeper (Wayne type and similar equipment), Water Wagon, Extend-a-Boom Forklift.

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, Hydro Excavator, Loader, Pug Mill, Pumpcrete Machines, Pump Trucks, Roller, Scraper (self-propelled or tractor drawn), Side Boom Tractor, Slip Form Paver, Slope 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, Water Wagon and Welding Machine.
Revised: 05/23/08	



STATE OF MICHIGAN

JENNIFER M. GRANHOLM
GOVERNOR

DEPARTMENT OF LABOR & ECONOMIC GROWTH
LANSING

KEITH W. COOLEY
DIRECTOR

Michigan Department of Labor & Economic Growth *Wage & Hour Division*
OVERTIME PROVISIONS for MICHIGAN PREVAILING WAGE RATE SCHEDULE

- 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.

- 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

- 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.

XXXHHHHHDY - 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 01/15/08)

WAGE & HOUR DIVISION

P.O. BOX 30476 • LANSING, MICHIGAN 48909-7976

www.michigan.gov/wagehour • (517) 335-0400 • FAX (517) 335-0077



JENNIFER M. GRANHOLM
GOVERNOR

Michigan Department of Labor & Economic Growth
Wage & Hour Division
PO Box 30476
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KEITH W. COOLEY
DIRECTOR

Informational Sheet: Prevailing Wages on State Projects
General Information Regarding Fringe Benefits

Certain fringe benefits may be credited toward the payment of the Prevailing Wage Rate:

- If a fringe benefit is paid directly to a construction mechanic
- If a fringe benefit contribution or payment is made on behalf of a construction mechanic
- If a fringe benefit, which may be provided to a construction mechanic, is pursuant to a written contract or policy
- If a fringe benefit is paid into a fund, for a construction mechanic

When a fringe benefit is not paid by an hourly rate, the hourly credit will be calculated based on the annual value of the fringe benefit divided by 2080 hours per year (52 weeks @ 40 hours per week).

The following is an example of the types of fringe benefits allowed and how an hourly credit is calculated:

Vacation	40 hours X \$14.00 per hour = \$560/2080 =	\$\$.27
Dental insurance	\$31.07 monthly premium X 12 mos. = \$372.84 /2080 =	\$.18
Vision insurance	\$5.38 monthly premium X 12 mos. = \$64.56/2080 =	\$.03
Health insurance	\$230.00 monthly premium X 12 mos. = \$2,760.00/2080 =	\$1.33
Life insurance	\$27.04 monthly premium X 12 mos. = \$324.48/2080 =	\$.16
Tuition	\$500.00 annual cost/2080 =	\$.24
Bonus	4 quarterly bonus/year x \$250 = \$1000.00/2080 =	\$.48
401k Employer Contribution	\$2000.00 total annual contribution/2080 =	\$.96
Total Hourly Credit		\$3.65

Other examples of the types of fringe benefits allowed:

- Sick pay
- Holiday pay
- Accidental Death & Dismemberment insurance premiums

The following are examples of items that **will not** be credited toward the payment of the Prevailing Wage Rate

- Legally required payments, such as:
 - Unemployment Insurance payments
 - Workers' Compensation Insurance payments
 - FICA (Social Security contributions, Medicare contributions)
- Reimbursable expenses, such as:
 - Clothing allowance or reimbursement
 - Uniform allowance or reimbursement
 - Gas allowance or reimbursement
 - Travel time or payment
 - Meals or lodging allowance or reimbursement
 - Per diem allowance or payment
- Other payments to or on behalf of a construction mechanic that are not wages or fringe benefits, such as:
 - Industry advancement funds
 - Financial or material loans

State of Michigan
Department of Labor and Economic Growth

Wage and Hour Division
 6546 Mercantile Way, Suite 5
 PO Box 30476
 793

Official Request
 Lansing, MI 48909-7976

Requestor: TROY SCHOOL DISTRICT
Project Description: ELECTRICAL TRANSFORMER REPLACEMENT
Project Number: SMITH MIDDLE SCHOOL

Telephone: 517-335-0400
 Fax: 517-335-0077
 www.michigan.gov/wagehour

Oakland County
Official 2008 Prevailing Wage Rates for State Funded Projects

Issue Date: 5/27/2008
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<u>Classification</u>		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
=====						
Asbestos & Lead Abatement Laborer						
Asbestos & Lead Abatement Laborer	MLDC	7/31/2007	\$32.65	\$43.39	\$54.13	H H H X X X D Y
Asbestos & Lead Abatement, Hazardous Material Handler						
Asbestos and Lead Abatement, Hazardous Material Handler	AS207	11/28/2007	\$32.65	\$44.75	\$56.85	H H H X X X D Y
Boilermaker						
Boilermaker	BO169	11/5/2007	\$51.27	\$76.00	\$100.74	H H H H H H D Y
Apprentice Rates:						
1st 6 months		\$38.12	\$56.28	\$74.44		
2nd 6 months		\$39.17	\$57.86	\$76.54		
3rd 6 months		\$40.23	\$59.45	\$78.66		
4th 6 months		\$41.29	\$61.04	\$80.78		
5th 6 months		\$42.33	\$62.60	\$82.86		
6th 6 months		\$44.44	\$65.76	\$87.08		
7th 6 months		\$46.54	\$68.91	\$91.28		
8th 6 months		\$48.65	\$72.08	\$95.50		
Bricklayer						
Bricklayer, stone mason, pointer, cleaner, caulker	BR1	12/20/2007	\$48.96	\$73.44	\$97.92	H H D H D D D N
Apprentice Rates:						
First 6 months		\$29.49	\$44.24	\$58.98		
2nd 6 months		\$31.31	\$46.97	\$62.62		
3rd 6 months		\$33.13	\$49.70	\$66.26		
4th 6 months		\$34.95	\$52.43	\$69.90		
5th 6 months		\$36.77	\$55.16	\$73.54		
6th 6 months		\$38.59	\$57.89	\$77.18		
7th 6 months		\$40.41	\$60.62	\$80.82		
8th 6 months		\$42.23	\$63.35	\$84.46		

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Classification							
Name	Description	Last Updated	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

1/9/2008

\$42.24 \$59.86 \$77.47 H H H H D D D D N

Apprentice Rates:

1st 6 months	\$21.10	\$28.15	\$35.19
2nd 6 months	\$24.62	\$33.42	\$42.23
3rd 6 months	\$26.38	\$36.07	\$45.75
4th 6 months	\$28.15	\$38.72	\$49.29
5th 6 months	\$29.91	\$41.36	\$52.81
6th 6 months	\$31.67	\$44.01	\$56.33
7th 6 months	\$33.42	\$46.63	\$59.83
8th 6 months	\$35.19	\$49.28	\$63.37

Carpenter

CA687Z1

1/14/2008

\$46.58 \$66.30 \$86.02 H H D H D D D D Y

Apprentice Rates:

1st Year	\$28.84	\$39.69	\$50.54
3rd 6 months	\$30.81	\$42.64	\$54.48
4th 6 months	\$32.78	\$45.60	\$58.42
5th 6 months	\$34.75	\$48.56	\$62.36
6th 6 months	\$36.73	\$51.53	\$66.32
7th 6 months	\$38.70	\$54.49	\$70.26
8th 6 months	\$40.66	\$57.43	\$74.18

Cement Mason

Cement Mason

CE514

7/20/2007

\$43.95 \$61.87 \$79.78 H H D H H H H D N

Apprentice Rates:

1st 6 months	\$25.64	\$34.60	\$43.56
2nd 6 months	\$27.45	\$37.31	\$47.18
3rd 6 months	\$31.02	\$42.68	\$54.32
4th 6 months	\$34.61	\$48.05	\$61.50
5th 6 months	\$36.40	\$50.74	\$65.08
6th 6 months	\$39.99	\$56.13	\$72.26

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<u>Classification</u>		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
=====						
Drywall						
Drywall Taper		PT-22-D		\$38.45	\$50.90	\$63.35 H H D H D D D D N
		9/1/2006				
	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		
Electrician						
Road Way Electrical Work		EC-17		\$45.37	\$65.63	\$85.90 H H H H H H H D Y
Double time due after 16 hours on any calendar day and all hours Sunday.		11/19/2007				
	Apprentice Rates:					
	1st 6 months	\$29.17	\$41.34	\$53.50		
	2nd 6 months	\$31.19	\$44.36	\$57.54		
	3rd 6 months	\$33.21	\$47.40	\$61.58		
	4th 6 months	\$35.23	\$50.43	\$65.62		
	5th 6 months	\$37.25	\$53.46	\$69.66		
	6th 6 months	\$41.32	\$59.57	\$77.80		
<u>Subdivision of county</u>	Holly not included					
Inside Wireman		EC-58-IW		\$53.62	\$71.49	\$89.36 H H H H H H H D N
		1/7/2008				
	Apprentice Rates:					
	0-1000 hours	\$32.18	\$39.33	\$46.48		
	1000-2000 hours	\$33.97	\$42.02	\$50.06		
	2000-3500 hours	\$35.75	\$44.68	\$53.62		
	3500-5000 hours	\$37.54	\$47.38	\$57.20		
	5000-6500 hours	\$41.12	\$52.74	\$64.36		
	6500-8000 hours	\$44.68	\$58.08	\$71.48		
Sound and Communication Installer/Technician		EC-58-SC		\$32.54	\$44.20	\$55.86 H H H H H H H D N
		1/7/2008				
	Apprentice Rates:					
	Period 1	\$20.88	\$26.71	\$32.54		
	Period 2	\$22.04	\$28.46	\$34.86		
	Period 3	\$23.21	\$30.21	\$37.20		
	Period 4	\$24.38	\$31.96	\$39.54		
	Period 5	\$25.55	\$33.72	\$41.88		
	Period 6	\$26.71	\$35.46	\$44.20		

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
=====						
Elevator Constructor						
Elevator Constructor	EL 36		\$56.46		\$94.99	D D D D D D D Y
Elevator Constructor		8/7/2007				
Apprentice Rates:						
1st Year Apprentice		\$37.74	\$58.93			
2nd Year Apprentice		\$41.90	\$66.94			
3rd Year Apprentice		\$43.98	\$70.95			
4th Year Apprentice		\$48.14	\$78.96			
Glazier						
Glazier	GL-357		\$42.60	\$56.83		H H H H H H H Y
		1/7/2008				
Apprentice Rates:						
1st 6 months		\$28.37	\$35.48			
2nd 6 months		\$29.80	\$37.63			
3rd 6 months		\$32.64	\$41.89			
4th 6 months		\$34.07	\$44.03			
5th 6 months		\$35.49	\$46.16			
6th 6 months		\$36.91	\$48.29			
7th 6 months		\$38.33	\$50.42			
8th 6 months		\$41.18	\$54.69			
Heat and Frost Insulator						
Spray Insulation	AS25S		\$20.14	\$29.14		H H H H H H H N
		3/5/2007				
Heat and Frost Insulator and Asbestos Worker						
Heat and Frost Insulators and Asbestos Workers	AS25		\$48.20	\$62.86	\$77.52	H H H H H H H D Y
		3/5/2007				
Apprentice Rates:						
1st Year		\$29.59	\$37.66	\$45.72		
2nd Year		\$37.60	\$47.13	\$56.66		
3rd Year		\$39.40	\$49.66	\$59.92		
4th Year		\$42.34	\$54.07	\$65.80		
Ironworker						
Fence Erecting	IR-25-F		\$41.03	\$61.26	\$81.49	H H D H H H D D Y
		10/4/2007				

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
Siding, Glazing, Curtain Wall	IR-25-GZ1	3/28/2008	\$39.86	\$59.54	\$79.22	H H D H H D D Y
Apprentice Rates:						
Level 1		\$24.72	\$36.54	\$48.34		
Level 2		\$26.69	\$39.49	\$52.28		
Level 3		\$28.65	\$42.43	\$56.20		
Level 4		\$30.62	\$45.39	\$60.14		
Level 5		\$32.59	\$48.34	\$64.08		
Level 6		\$34.56	\$51.29	\$68.02		
Pre-engineered Metal Work	IR-25-PE-Z1-Z2	5/8/2008	\$41.69	\$52.37	\$63.04	X X H X X X D Y
Apprentice Rates:						
1st level		\$23.47	\$28.51	\$33.55		
2nd level		\$25.12	\$30.85	\$36.58		
3rd level		\$26.78	\$33.19	\$39.61		
4th level		\$28.44	\$35.55	\$42.66		
5th level		\$30.10	\$37.90	\$45.70		
6th level		\$31.36	\$39.65	\$47.93		
Reinforced Iron Work	IR-25-RF	10/4/2007	\$48.78	\$72.95	\$97.11	H H D H D D D D N
Apprentice Rates:						
Level 1		\$30.05	\$44.56	\$59.05		
Level 2		\$32.46	\$48.16	\$63.87		
Level 3		\$34.88	\$51.80	\$68.71		
Level 4		\$37.30	\$55.42	\$73.55		
Level 5		\$39.72	\$59.06	\$78.39		
Level 6		\$42.13	\$62.67	\$83.21		
Rigging Work	IR-25-RIG	10/4/2007	\$53.98	\$80.75	\$107.52	H H H H H H D N
Apprentice Rates:						
Level 1&2		\$30.62	\$45.34	\$60.07		
Level 3		\$33.30	\$49.37	\$65.43		
Level 4		\$35.97	\$53.37	\$70.77		
Level 5		\$38.66	\$57.41	\$76.15		
Level 6		\$41.33	\$61.41	\$81.49		
Decking	IR-25-SD	10/4/2007	\$46.40	\$69.32	\$92.23	H H D H H H D D Y

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
=====						
Structural, ornamental, conveyor, welder and pre-cast	IR-25-STR		\$54.11	\$80.88	\$107.65	H H D H H D D Y
Apprentice rates apply to structural, conveyor, fence, glazing, reinforced, rigging, & siding decking		10/4/2007				
Apprentice Rates:						
Level 1		\$27.34	\$40.73	\$54.11		
Level 2		\$30.02	\$44.74	\$59.47		
Level 3		\$32.70	\$48.77	\$64.83		
Level 4		\$35.37	\$52.77	\$70.17		
Level 5		\$38.05	\$56.80	\$75.53		
Level 6		\$40.73	\$60.81	\$80.89		
Level 7		\$43.39	\$64.80	\$86.21		
Level 8		\$46.08	\$68.83	\$91.59		
Industrial Door erection & construction	IR-25-STR-D		\$35.72	\$47.34	\$58.96	H H D H H D D Y
		3/28/2008				
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		\$37.62	\$53.35	\$69.07	H H D H D D D D Y
		6/5/2007				
Apprentice Rates:						
0-1,000 work hours		\$31.98	\$44.89	\$57.79		
1,001-2,000 work hours		\$33.11	\$46.58	\$60.05		
2,001-3,000 work hours		\$34.24	\$48.28	\$62.31		
3,001-4,000 work hours		\$36.49	\$51.66	\$66.81		
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		\$37.88	\$53.74	\$69.59	H H D H D D D D Y
		6/5/2007				
Lansing Burner, Blaster & Powder Man	L1076-A-C		\$38.37	\$54.47	\$70.57	H H D H D D D D Y
		6/5/2007				
Furnance battery heater tender, burning bar & oxy-acetylene gun, expediter man, top man and/or bottom man (blast furnace work)	L1076-A-D		\$38.12	\$54.10	\$70.07	H H D H D D D D Y
		6/5/2007				
Cleaner/ sweeper laborer, furniture laborer	L1076-A-E		\$32.17	\$45.17	\$58.17	H H D H D D D D Y
		6/5/2007				
Demolition Laborer	L1076-D		\$37.62	\$53.35	\$69.07	H H D H D D D D Y
		6/5/2007				

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
Plasterer Tender, Plastering Machine Operator	LPT-1	7/3/2007	\$39.00	\$55.42	\$71.83	H H D H D D D D N
Apprentice Rates:						
0 - 1,000 hours		\$31.99	\$44.90	\$57.81		
1,001 - 2,000 hours		\$33.11	\$46.58	\$60.05		
2,001 - 3,000 hours		\$34.24	\$48.28	\$62.31		
3,001 - 4,000 hours		\$36.49	\$51.66	\$66.81		
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	10/11/2007	\$37.62	\$53.35	\$69.07	H H H H H H H D Y
Apprentice Rates:						
0-1,000 work hours		\$31.98	\$44.89	\$57.79		
1,001-2,000 work hours		\$33.11	\$46.58	\$60.05		
2,001-3,000 work hours		\$34.24	\$48.28	\$62.31		
3,001-4,000 work hours		\$36.49	\$51.66	\$66.81		
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	10/11/2007	\$38.62	\$54.85	\$71.07	H H H H H H H D Y
Apprentice Rates:						
0-1,000 work hours		\$32.74	\$46.03	\$59.31		
1,001-2,000 work hours		\$33.91	\$47.78	\$61.65		
2,001-3,000 work hours		\$35.09	\$49.56	\$64.01		
3,001-4,000 work hours		\$37.44	\$53.08	\$68.71		
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	9/6/2007	\$33.54	\$44.30	\$55.05	H H H H H H H D Y
Apprentice Rates:						
0-1,000 work hours		\$28.70	\$37.04	\$45.37		
1,001-2,000 work hours		\$29.67	\$38.49	\$47.31		
2,001-3,000 work hours		\$30.64	\$39.95	\$49.25		
3,001-4,000 work hours		\$32.57	\$42.85	\$53.11		

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
Class II - Manhole, headwall, catch basin builder, bricklayer tender, mortar man, material mixer, fence rector, and guard rail builder.	LAUCT-Z1-2	9/6/2007	\$33.65	\$44.46	\$55.27	H H H H H H D Y

Apprentice Rates:

0-1,000 work hours	\$28.79	\$37.17	\$45.55
1,001-2,000 work hours	\$29.76	\$38.74	\$47.71
2,001-3,000 work hours	\$30.73	\$40.09	\$49.43
3,001-4,000 work hours	\$32.68	\$43.01	\$53.33

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	LAUCT-Z1-3	9/6/2007	\$33.71	\$44.55	\$55.39	H H H H H H D Y
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Apprentice Rates:

0-1,000 work hours	\$28.83	\$37.23	\$45.63
1,001-2,000 work hours	\$29.81	\$38.71	\$47.59
2,001-3,000 work hours	\$30.78	\$40.16	\$49.53
3,001-4,000 work hours	\$32.73	\$43.09	\$53.43

Class IV - Tunnel, shaft and caisson mucker, bracer man, liner plate man, long haul dinky driver and well point man.	LAUCT-Z1-4	9/6/2007	\$33.89	\$44.82	\$55.75	H H H H H H D Y
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Apprentice Rates:

0-1,000 work hours	\$28.97	\$37.45	\$45.91
1,001-2,000 work hours	\$29.95	\$38.91	\$47.87
2,001-3,000 work hours	\$30.94	\$40.40	\$49.85
3,001-4,000 work hours	\$32.91	\$43.35	\$53.79

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	9/6/2007	\$34.14	\$45.20	\$56.25	H H H H H H D Y
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Apprentice Rates:

0-1,000 work hours	\$29.16	\$37.73	\$46.29
1,001-2,000 work hours	\$30.15	\$39.21	\$48.27
2,001-3,000 work hours	\$31.15	\$40.71	\$50.27
3,001-4,000 work hours	\$33.14	\$43.70	\$54.25

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision								
Name	Description													
Class VI - Dynamite man and powder man.		LAUCT-Z1-6	9/6/2007	\$34.47	\$45.69	\$56.91	H	H	H	H	H	H	D	Y
Apprentice Rates:														
0-1,000 work hours			\$29.40	\$38.09	\$46.77									
1,001-2,000 work hours			\$30.42	\$39.62	\$48.81									
2,001-3,000 work hours			\$31.43	\$41.13	\$50.83									
3,001-4,000 work hours			\$33.46	\$44.18	\$54.89									
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	9/6/2007	\$27.75	\$35.61	\$43.47	H	H	H	H	H	H	D	Y
Apprentice Rates:														
0-1,000 work hours			\$24.36	\$30.53	\$36.69									
1,001-2,000 work hours			\$25.04	\$31.55	\$38.05									
2,001-3,000 work hours			\$25.72	\$32.57	\$39.41									
3,001-4,000 work hours			\$27.07	\$34.59	\$42.11									
Landscape Laborer														
Landscape Specialist includes air, gas, and diesel equipment operator, lawn sprinkler installer on landscaping work where seeding, sodding, planting, cutting, trimming, backfilling, rough grading or		LLAN-Z1-A	7/3/2007	\$24.38	\$33.81	\$43.24	X	X	H	X	X	X	H	Y
All work pertaining to landscaping where seeding, sodding, planting, cutting, trimming, backfilling, rough grading or maintaining of landscape projects occurs which may include small power tool operator, lawn sprinkler installer helper, material mover, & truck driver.		LLAN-Z1-B	7/3/2007	\$20.16	\$27.48	\$34.80	X	X	H	X	X	X	H	Y
Marble Finisher														
Marble Finisher		TT32-MF	7/25/2007	\$39.57	\$49.90	\$60.23	H	H	D	H	D	D	D	N
Apprentice Rates:														
Level 1			\$19.30	\$24.91	\$30.52									
Level 2			\$20.40	\$26.56	\$32.72									
Level 3			\$24.67	\$31.27	\$37.87									
Level 4			\$26.01	\$33.28	\$40.55									
Level 5			\$27.38	\$34.86	\$42.34									
Level 6			\$28.85	\$36.70	\$44.56									
Level 7			\$30.39	\$38.30	\$46.21									
Level 8			\$31.75	\$39.92	\$48.09									

Official Request #: 793

Requestor: TROY SCHOOL DISTRICT

Project Description: ELECTRICAL TRANSFORMER REPLACEMENT

Project Number: SMITH MIDDLE SCHOOL

County: Oakland

Official Rate Schedule

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Classification									
Name	Description	Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision			

Marble Mason

Marble Mason TT32-MM 7/25/2007 \$45.76 \$59.19 \$72.61 H H D H D D D D N

Apprentice Rates:

Level 1	\$24.86	\$31.89	\$38.93
Level 2	\$27.65	\$35.43	\$43.21
Level 3	\$30.50	\$38.57	\$46.64
Level 4	\$33.00	\$41.96	\$50.92
Level 5	\$35.10	\$44.33	\$53.56
Level 6	\$38.52	\$49.39	\$60.27
Level 7	\$39.37	\$50.53	\$61.69
Level 8	\$40.22	\$51.81	\$63.39

Operating Engineer

Crane with boom & jib or leads 120' or longer EN-324-A120 6/5/2007 \$49.26 \$65.97 \$82.68 H H D H D D D D Y

Crane with boom & jib or leads 140' or longer EN-324-A140 6/5/2007 \$50.08 \$67.20 \$84.32 H H D H D D D D Y

Crane with boom & jib or leads 220' or longer EN-324-A220 6/5/2007 \$50.38 \$67.65 \$84.92 H H D H D D D D Y

Crane with boom & jib or leads 300' or longer EN-324-A300 6/5/2007 \$51.88 \$69.90 \$87.92 H H D H D D D D Y

Crane with boom & jib or leads 400' or longer EN-324-A400 6/5/2007 \$53.38 \$72.15 \$90.92 H H D H D D D D Y

Compressor or welding machine EN-324-CW 6/5/2007 \$38.41 \$49.70 \$60.98 H H D H D D D D Y

Forklift, lull, extend-a-boom forklift EN-324-FL 6/5/2007 \$45.72 \$60.66 \$75.60 H H D H D D D D Y

Fireman or oiler EN-324-FO 6/5/2007 \$37.38 \$48.15 \$58.92 H H D H D D D D Y

Regular crane, job mechanic, concrete pump EN-324-RC 6/5/2007 \$48.40 \$64.68 \$80.96 H H D H D D D D Y

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County: Oakland

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision	
Name	Description						
Regular engineer, hydro-excavator, remote controlled concrete breaker		EN-324-RE	\$47.43	\$63.23	\$79.02	H H D H D D D D Y	

Apprentice Rates:

Period 1	\$37.85	\$48.90	\$59.96
Period 2	\$39.43	\$51.28	\$63.12
Period 3	\$41.02	\$53.66	\$66.30
Period 4	\$42.59	\$56.01	\$69.44
Period 5	\$44.17	\$58.39	\$72.60
Period 6	\$45.76	\$60.77	\$75.78

Operating Engineer - Marine Construction

Diver/Wet Tender, Engineer (hydraulic dredge)	GLF-1	1/8/2008	\$51.76	\$67.91	\$84.06	X X H H H H H D Y
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Holidays paid at \$100.21 per hour

<u>Subdivision of county</u> all Great Lakes, islands therein, & connecting & tributary waters						
Crane/Backhoe Operator, Mechanic/Welder, Assistant Engineer (hydraulic dredge), Leverman (hydraulic dredge), Diver Tender	GLF-2	1/8/2008	\$50.26	\$65.66	\$81.06	X X H H H H H D Y

Holidays paid \$96.46 per hour

<u>Subdivision of county</u> 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	1/8/2008	\$46.91	\$60.64	\$74.36	X X H H H H H D Y

Holidays paid at \$88.08 per hour

<u>Subdivision of county</u> 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	1/8/2008	\$42.26	\$53.66	\$65.06	X X H H H H H D Y

Holidays paid at \$76.46 per hour

<u>Subdivision of county</u>	All Great Lakes, islands therein, & connecting & tributary waters
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Official Request #: 793

Requestor: TROY SCHOOL DISTRICT

Project Description: ELECTRICAL TRANSFORMER REPLACEMENT

Project Number: SMITH MIDDLE SCHOOL

County: Statewide

Official Rate Schedule

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Classification	Name	Description	Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
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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

EN-324-HWCI-Z1A

4/3/2008

\$47.34 \$63.11 \$78.87 H H H H H H D Y

Apprentice Rates:

1st 6 months	\$37.78	\$48.81	\$59.85
2nd 6 months	\$39.36	\$51.19	\$63.01
3rd 6 months	\$40.94	\$53.56	\$66.17
4th 6 months	\$42.52	\$55.92	\$69.33
5th 6 months	\$44.09	\$58.28	\$72.47
6th 6 months	\$45.67	\$60.66	\$75.63

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

4/3/2008

\$46.39 \$61.68 \$76.97 H H H H H H D Y

Apprentice Rates:

1st 6 months	\$37.11	\$47.82	\$58.51
2nd 6 months	\$38.64	\$50.11	\$61.57
3rd 6 months	\$40.17	\$52.40	\$64.63
4th 6 months	\$41.70	\$54.70	\$67.69
5th 6 months	\$43.23	\$57.00	\$70.75
6th 6 months	\$44.76	\$59.29	\$73.81

Level D - Coveralls, safety boots, glasses or chemical splash goggles and hard hats.

EN-324-HWCI-Z1D

3/24/2008

\$45.09 \$59.73 \$74.37 H H H H H H D Y

Apprentice Rates:

1st 6 months	\$36.20	\$46.45	\$56.69
2nd 6 months	\$37.68	\$48.67	\$59.65
3rd 6 months	\$39.14	\$50.86	\$62.57
4th 6 months	\$40.60	\$53.05	\$65.49
5th 6 months	\$42.06	\$55.23	\$68.41
6th 6 months	\$43.53	\$57.44	\$71.35

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County: Oakland

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Official 2008 Prevailing Wage Rates for State Funded Projects

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
=====						
Level D When Capping Landfill Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWCII-Z1DCL		\$44.84	\$59.36	\$73.87	H H H H H H H D Y
	3/24/2008					

Apprentice Rates:

1st 6 months	\$36.03	\$46.19	\$56.35
2nd 6 months	\$37.48	\$48.37	\$59.25
3rd 6 months	\$38.93	\$50.54	\$62.15
4th 6 months	\$40.38	\$52.72	\$65.05
5th 6 months	\$41.84	\$54.91	\$67.97
6th 6 months	\$43.29	\$57.08	\$70.87

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	EN-324-HWCII-Z1A 4/3/2008	\$43.11	\$56.76	\$70.41	H H H H H H H D Y
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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 3/24/2008	\$42.16	\$55.34	\$68.51	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-HWCII-Z1D 3/24/2008	\$40.86	\$53.39	\$65.91	H H H H H H H D Y
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Level D When Capping Landfill Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWCII-Z1DCL 3/25/2008	\$40.61	\$53.01	\$65.41	H H H H H H H D Y
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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	EN-324-HW140-Z1A 4/3/2008	\$49.99	\$67.08	\$84.17	H H H H H H H D Y
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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 3/24/2008	\$49.04	\$65.66	\$82.27	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-HW140-Z1D 3/24/2008	\$47.74	\$63.71	\$79.67	H H H H H H H D Y
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Official Request #: 793
 Requestor: TROY SCHOOL DISTRICT
 Project Description: ELECTRICAL TRANSFORMER REPLACEMENT
 Project Number: SMITH MIDDLE SCHOOL
 County: Oakland

Official Rate Schedule

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Classification Name Description	Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Level D When Capping Landfill Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HW140-Z1DCL 3/25/2008	\$47.49	\$63.33	\$79.17	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	EN-324-HW220-Z1A 4/3/2008	\$50.29	\$67.53	\$84.77	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 3/24/2008	\$49.34	\$66.11	\$82.87	H H H H H H H D Y
Level D Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HW220-Z1D 3/24/2008	\$48.04	\$64.16	\$80.27	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 3/25/2008	\$47.79	\$63.78	\$79.77	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 3/25/2008	\$45.19	\$59.88	\$74.57	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 Operator					
Level D - Coveralls, safety boots, glasses or chemical splash goggles and hard hats.	EN-324-HWRC-Z1D 5/23/2008	\$46.06	\$61.19	\$76.31	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 3/24/2008	\$47.36	\$63.14	\$78.91	H H H H H H H D Y

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
=====						
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	EN-324-HWRC-Z1A	4/3/2008	\$48.31	\$64.56	\$80.81	H H H H H H D Y
Operating Engineer Steel Work						
Forklift, 1 Drum Hoist	EN-324-ef	4/2/2008	\$51.96	\$69.75	\$87.53	H H D H H H D D Y
Crane w/ 120' boom or longer	EN-324-SW120	4/2/2008	\$53.51	\$72.07	\$90.63	H H D H H H D D Y
Crane w/ 120' boom or longer w/ Oiler	EN-324-SW120-O	4/2/2008	\$54.51	\$73.57	\$92.63	H H D H H H D D Y
Crane w/ 140' boom or longer	EN-324-SW140	4/2/2008	\$54.69	\$73.84	\$92.99	H H D H H H D D Y
Crane w/ 140' boom or longer W/ Oiler	EN-324-SW140-O	4/2/2008	\$55.69	\$75.34	\$94.99	H H D H H H D D Y
Boom & Jib 220' or longer	EN-324-SW220	4/2/2008	\$54.96	\$74.25	\$93.53	H H D H H H D D Y
Crane w/ 220' boom or longer w/ Oiler	EN-324-SW220-O	4/2/2008	\$55.96	\$75.75	\$95.53	H H D H H H D D Y
Boom & Jib 300' or longer	EN-324-SW300	4/2/2008	\$56.46	\$76.50	\$96.53	H H D H H H D D Y
Crane w/ 300' boom or longer w/ Oiler	EN-324-SW300-O	4/2/2008	\$57.46	\$78.00	\$98.53	H H D H H H D D Y
Boom & Jib 400' or longer	EN-324-SW400	4/2/2008	\$57.96	\$78.75	\$99.53	H H D H H H D D Y
Crane w/ 400' boom or longer w/ Oiler	EN-324-SW400-O	4/2/2008	\$58.96	\$80.25	\$101.53	H H D H H H D D Y

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
Crane Operator, Job Mechanic, 3 Drum Hoist & Excavator	EN-324-SWCO	4/2/2008	\$53.15	\$71.53	\$89.91	H H D H H D D Y
Apprentice Rates:						
	0-999 hours	\$42.03	\$54.90	\$67.77		
	1,000-1,999 hours	\$43.87	\$57.66	\$71.45		
	2,000-2,999 hours	\$45.71	\$60.42	\$75.13		
	3,000-3,999 hours	\$47.54	\$63.17	\$78.79		
	4,000-4,999 hours	\$49.38	\$65.93	\$82.47		
	5,000 hours	\$51.22	\$68.69	\$86.15		
Crane w/ Oiler	EN-324-SWCO-O	4/2/2008	\$54.15	\$73.03	\$91.91	H H D H H D D Y
Compressor or Welder Operator	EN-324-SWCW	4/2/2008	\$45.70	\$60.36	\$75.01	H H D H H D D Y
Hoisting Operator, 2 Drum Hoist, & Rubber Tire Backhoe	EN-324-SWHO	4/2/2008	\$52.51	\$70.57	\$88.63	H H D H H D D Y
Oiler	EN-324-SWO	4/2/2008	\$44.29	\$58.24	\$72.19	H H D H H D D Y
Tower Crane & Derrick where work is 50' or more above first level	EN-324-SWTD50	4/2/2008	\$54.24	\$73.17	\$92.09	H H D 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	4/2/2008	\$55.24	\$74.67	\$94.09	H H D H H D D Y
Operating Engineer Underground						
Class I Equipment	EN-324A1-UC1	10/8/2007	\$44.84	\$59.33	\$73.82	H H H H H H D Y
Apprentice Rates:						
	0-999 hours	\$36.05	\$46.20	\$56.34		
	1,000-1,999 hours	\$37.50	\$48.37	\$59.24		
	2,000-2,999 hours	\$38.94	\$50.53	\$62.12		
	3,000-3,999 hours	\$40.39	\$52.71	\$65.02		
	4,000-4,999 hours	\$41.84	\$54.88	\$67.92		
	5,000-5,999 hours	\$43.29	\$57.06	\$70.82		
Class II Equipment	EN-324A1-UC2	10/8/2007	\$40.11	\$52.24	\$64.36	H H H H H H D Y
Class III Equipment	EN-324A1-UC3	10/8/2007	\$39.38	\$51.14	\$62.90	H H H H H H D Y
Class IV Equipment	EN-324A1-UC4	10/8/2007	\$38.81	\$50.29	\$61.76	H H H H H H D Y

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
Master Mechanic	EN-324A1-UMM	10/8/2007	\$45.09	\$59.71	\$74.32	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	5/26/2006	\$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, overpasses, tanks or steel, OR spraywork & sandblasting done with a scaffold height of 40' above the floor level	PT-22-S	6/1/2006	\$38.81	\$51.44	\$64.07	H H D H D D D D N
Pipefitter						
Pipefitter	PF-636	6/1/2007	\$55.06	\$74.14	\$89.96	H H D H D D D D N
Apprentice Rates:						
	1st & 2nd periods	\$26.28	\$34.63	\$41.63		
	3rd period	\$28.28	\$37.63	\$45.63		
	4th period	\$29.53	\$39.51	\$48.13		
	5th period	\$30.78	\$41.38	\$50.63		
	6th period	\$32.03	\$43.25	\$53.13		
	7th period	\$33.28	\$45.13	\$55.63		
	8th period	\$34.28	\$46.63	\$57.63		
	9th period	\$35.28	\$48.13	\$59.63		
	10th period	\$36.71	\$50.27	\$62.49		
Plasterer						
Plasterer	BR1P	12/19/2007	\$42.89	\$64.34	\$85.78	H H H H H H H D N
Apprentice Rates:						
	1st 6 months	\$21.97	\$32.96	\$43.94		
	2nd 6 months	\$25.46	\$38.19	\$50.92		
	3rd 6 months	\$28.95	\$43.42	\$57.90		
	4th 6 months	\$32.43	\$48.65	\$64.86		
	5th 6 months	\$35.92	\$53.88	\$71.84		
	6th 6 months	\$39.40	\$59.10	\$78.80		

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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.

Official 2008 Prevailing Wage Rates for State Funded Projects

Issue Date: 5/27/2008

Contract must be awarded by: 8/25/2008

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Classification	Name	Description	Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
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Plasterer	PL67		6/4/2007	\$42.87	\$58.16	\$73.45	H H H X D D D D N
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Apprentice Rates:

1st 6 months	\$24.52	\$30.63	\$36.75
2nd 6 months	\$27.58	\$35.23	\$42.87
3rd 6 months	\$30.64	\$39.81	\$48.99
4th 6 months	\$33.70	\$44.41	\$55.11
5th 6 months	\$36.75	\$48.98	\$61.21
6th 6 months	\$39.81	\$53.57	\$67.33

Plumber

Plumber	PL-98		6/20/2007	\$53.68	\$71.45	\$87.21	H H D H D D D D Y
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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

Roofer

Commercial Roofer	RO-149-WOM		9/4/2007	\$46.81	\$60.92	\$75.02	H H D H H H D D N
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Straight time is not to exceed ten (10) hours per day or forty (40) hours per week.

Apprentice Rates:

Apprentice 1	\$30.97	\$39.16	\$47.34
Apprentice 2	\$35.15	\$43.42	\$51.70
Apprentice 3	\$36.57	\$45.56	\$54.54
Apprentice 4	\$37.60	\$47.10	\$56.60
Apprentice 5	\$38.82	\$48.93	\$59.04
Apprentice 6	\$40.22	\$51.03	\$61.84

Official Request #: 793

Requestor: TROY SCHOOL DISTRICT

Project Description: ELECTRICAL TRANSFORMER REPLACEMENT

Project Number: SMITH MIDDLE SCHOOL

County: Oakland

Official Rate Schedule

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Official 2008 Prevailing Wage Rates for State Funded Projects

Issue Date: 5/27/2008

Contract must be awarded by: 8/25/2008

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
=====						
Sheet Metal Worker						
Sheet Metal Worker	SHM-80	10/2/2007	\$55.37	\$73.66	\$91.95	H H D H D D D D Y
Apprentice Rates:						
First Year		\$36.96	\$46.34	\$55.71		
Second Year		\$38.37	\$48.45	\$58.53		
Third Year		\$39.80	\$50.60	\$61.39		
Fourth Year		\$42.65	\$54.87	\$67.09		
Fifth Year		\$45.52	\$59.18	\$72.83		
Siding & Decking	SHM-80-SD	10/1/2007	\$37.10	\$49.16	\$61.22	H H H H H H H D Y
Sprinkler Fitter						
Sprinkler Fitter	SP 704	12/5/2007	\$55.92	\$75.26	\$94.60	H H D H D D D D Y
Apprentice Rates:						
1st Period		\$22.82	\$30.55	\$38.29		
2nd Period		\$34.65	\$43.36	\$52.06		
3rd Period		\$36.58	\$46.25	\$55.92		
4th Period		\$38.51	\$49.14	\$59.78		
5th Period		\$40.45	\$52.06	\$63.66		
6th Period		\$42.38	\$54.95	\$67.52		
7th Period		\$44.32	\$57.86	\$71.40		
8th Period		\$46.25	\$60.76	\$75.26		
9th Period		\$48.18	\$63.65	\$79.12		
10th Period		\$50.12	\$66.56	\$83.00		
Terrazzo						
Terrazzo Finisher	TT32-TRF	7/25/2007	\$39.97	\$50.50	\$61.03	H H D H D D D D N
Apprentice Rates:						
Level 1		\$20.29	\$26.40	\$32.50		
Level 2		\$21.00	\$27.46	\$33.92		
Level 3		\$24.60	\$31.17	\$37.73		
Level 4		\$25.94	\$33.17	\$40.41		
Level 5		\$27.31	\$34.76	\$42.20		
Level 6		\$28.78	\$36.40	\$44.02		
Level 7		\$30.32	\$38.32	\$46.32		
Level 8		\$31.68	\$39.94	\$48.20		

Official Request #: 793

Requestor: TROY SCHOOL DISTRICT

Project Description: ELECTRICAL TRANSFORMER REPLACEMENT

Project Number: SMITH MIDDLE SCHOOL

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Official 2008 Prevailing Wage Rates for State Funded Projects

Issue Date: 5/27/2008

Contract must be awarded by: 8/25/2008

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Classification	Name	Description	Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
----------------	------	-------------	--------------	-----------------	-----------------	-------------	--------------------

Terrazzo Worker	TT32-TRW	7/25/2007	\$45.29	\$58.48	\$71.67	H H D H D D D D N
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Apprentice Rates:

Level 1	\$24.76	\$31.75	\$38.73
Level 2	\$27.55	\$35.28	\$43.01
Level 3	\$30.40	\$38.42	\$46.44
Level 4	\$32.90	\$41.81	\$50.72
Level 5	\$35.00	\$44.31	\$53.61
Level 6	\$38.34	\$49.13	\$59.91
Level 7	\$39.44	\$50.63	\$61.83
Level 8	\$40.29	\$51.91	\$63.53

Tile

Tile Finisher	TT32-TF	7/25/2007	\$39.59	\$49.93	\$60.27	H H D H D D D D N
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Apprentice Rates:

Level 1	\$19.20	\$24.76	\$30.32
Level 2	\$20.30	\$26.41	\$32.52
Level 3	\$24.57	\$31.12	\$37.67
Level 4	\$25.91	\$33.13	\$40.35
Level 5	\$27.28	\$34.71	\$42.14
Level 6	\$28.75	\$36.56	\$44.36
Level 7	\$30.29	\$38.15	\$46.01
Level 8	\$31.65	\$39.77	\$47.89

Tile Layer	TT32-TL	7/25/2007	\$45.19	\$58.33	\$71.47	H H D H D D D D N
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Apprentice Rates:

Level 1	\$24.76	\$31.75	\$38.73
Level 2	\$27.55	\$35.28	\$43.01
Level 3	\$30.40	\$38.42	\$46.44
Level 4	\$32.90	\$41.81	\$50.72
Level 5	\$34.95	\$44.10	\$53.26
Level 6	\$38.29	\$49.05	\$59.81
Level 7	\$38.89	\$49.81	\$60.73
Level 8	\$39.74	\$51.09	\$62.43

Truck Driver

on all trucks of 8 cubic yard capacity or less	TM-RB1	7/24/2007	\$34.76	\$36.44		H H H H H H H Y
of all trucks of 8 cubic yard capacity or over	TM-RB1A	7/24/2007	\$34.86	\$36.59		H H H H H H H Y
on euclid type equipment	TM-RB1B	7/24/2007	\$35.01	\$36.81		H H H H H H H Y

Official Request #: 793

Requestor: TROY SCHOOL DISTRICT

Project Description: ELECTRICAL TRANSFORMER REPLACEMENT

Project Number: SMITH MIDDLE SCHOOL

County: Oakland

Official Rate Schedule

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Official 2008 Prevailing Wage Rates for State Funded Projects

Issue Date: 5/27/2008

Contract must be awarded by: 8/25/2008

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Classification		Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
Name	Description					
=====						
Underground Laborer Open Cut, Class I						
Construction Laborer	LAUC-Z1-1	9/6/2007	\$33.39	\$44.07	\$54.75	H H H H H H D Y
Apprentice Rates:						
0-1,000 work hours		\$28.59	\$36.87	\$45.15		
1,001-2,000 work hours		\$29.55	\$38.31	\$47.07		
2,001-3,000 work hours		\$30.51	\$39.75	\$48.99		
3,001-4,000 work hours		\$32.43	\$42.63	\$52.83		
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	9/6/2007	\$33.50	\$44.24	\$54.97	H H H H H H D Y
Apprentice Rates:						
0-1,000 work hours		\$28.68	\$37.01	\$45.33		
1,001-2,000 work hours		\$29.64	\$38.45	\$47.25		
2,001-3,000 work hours		\$30.60	\$39.89	\$49.17		
3,001-4,000 work hours		\$32.54	\$42.80	\$53.05		
Underground Laborer Open Cut, Class III						
Air, gasoline and electric tool operator, vibrator operator, drillers, pump man, tar kettle operator, bracers, rodger, 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	9/6/2007	\$33.55	\$44.31	\$55.07	H H H H H H D Y
Apprentice Rates:						
0-1,000 work hours		\$28.71	\$37.05	\$45.39		
1,001-2,000 work hours		\$29.68	\$38.51	\$47.33		
2,001-3,000 work hours		\$30.65	\$39.97	\$49.27		
3,001-4,000 work hours		\$32.58	\$42.86	\$53.13		
Underground Laborer Open Cut, Class IV						
Trench or excavating grade man.	LAUC-Z1-4	9/6/2007	\$33.63	\$44.43	\$55.23	H H H H H H D Y
Apprentice Rates:						
0-1,000 work hours		\$28.77	\$37.15	\$45.51		
1,001-2,000 work hours		\$29.74	\$38.60	\$47.45		
2,001-3,000 work hours		\$30.72	\$40.07	\$49.41		
3,001-4,000 work hours		\$32.66	\$42.98	\$53.29		

Official Request #: 793

Requestor: TROY SCHOOL DISTRICT

Project Description: ELECTRICAL TRANSFORMER REPLACEMENT

Project Number: SMITH MIDDLE SCHOOL

County: Oakland

Official Rate Schedule

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Official 2008 Prevailing Wage Rates for State Funded Projects

Issue Date: 5/27/2008

Contract must be awarded by: 8/25/2008

Page 22 of 22

Classification Name	Description	Last Updated	Straight Hourly	Time and a Half	Double Time	Overtime Provision
=====						
Underground Laborer Open Cut, Class V						
Pipe Layer		LAUC-Z1-5	\$33.69	\$44.52	\$55.35	H H H H H H D Y
		9/6/2007				
Apprentice Rates:						
	0-1,000 work hours	\$28.82	\$37.22	\$45.61		
	1,001-2,000 work hours	\$29.79	\$38.67	\$47.55		
	2,001-3,000 work hours	\$30.77	\$40.15	\$49.51		
	3,001-4,000 work hours	\$32.72	\$43.07	\$53.41		
Underground Laborer Open Cut, Class VI						
Grouting man, top man assistant, audio visual television		LAUC-Z1-6	\$31.14	\$40.70	\$50.25	H H H H H H D Y
operations and all other operations in connection with		9/6/2007				
closed circuit television inspection, pipe cleaning and pipe						
relining work and the installation and repair of water						
service pipe and appurtenances.						
Apprentice Rates:						
	0-1,000 work hours	\$26.90	\$34.34	\$41.77		
	1,001-2,000 work hours	\$27.75	\$35.61	\$43.47		
	2,001-3,000 work hours	\$28.60	\$36.89	\$45.17		
	3,001-4,000 work hours	\$30.29	\$39.43	\$48.55		
Underground Laborer Open Cut, Class VII						
Restoration laborer, seeding, sodding, planting, cutting,		LAUC-Z1-7	\$27.76	\$35.63	\$43.49	H H H H H H D Y
mulching and topsoil grading and the restoration of		9/6/2007				
property such as replacing mail boxes, wood chips, planter						
boxes, flagstones etc.						
Apprentice Rates:						
	0-1,000 work hours	\$24.37	\$30.55	\$36.71		
	1,001-2,000 work hours	\$25.05	\$31.57	\$38.07		
	2,001-3,000 work hours	\$25.73	\$32.59	\$39.43		
	3,001-4,000 work hours	\$27.08	\$34.61	\$42.13		

Official Request #: 793

Requestor: TROY SCHOOL DISTRICT

Project Description: ELECTRICAL TRANSFORMER REPLACEMENT

Project Number: SMITH MIDDLE SCHOOL

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Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536
Troy, Michigan

IDS Project No. 03234-2005

SECTION 00410 - BID FORM

OWNER: Troy School District
4400 Livernois
Troy, Michigan 48098

PROJECT: Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536
Troy, Michigan

ARCHITECT: 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

NAME OF BIDDER: _____

ADDRESS: _____

TELEPHONE: _____

BID

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 Smith Middle School, Transformer Replacement for the TSD Bid No. 9536 Project in accordance with the Drawings and Specifications prepared by Integrated Design Solutions, LLC dated June 9, 2008, and agrees to accept payment as herein provided.

Bidder may submit bids on any or all of the three (3) numbered Base Bids listed below. Award will be for work included in Base Bid No. 1 and Base Bid No. 2 to independent contractors or Base Bid No. 3 to the same contractor. The Owner reserves the right to make the award that the Owner determines is in its best interest.

BASE BID No. 1 – Demolition (PCB Transformer Removal and Disposal, Excluding Purchase and Installation of New Transformer)

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.

Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536
Troy, Michigan

IDS Project No. 03234-2005

BASE BID No. 2 – New Work (Purchase and Installation of New Transformer, Excluding PCB Transformer Removal and Disposal)

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. 3 – Combined Demolition and New Work (Includes all Work Specified in Both Base Bid No. 1 and Base Bid No. 2)

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.

MANDATORY ALTERNATES

The foregoing Base Bids 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.

Alternates must be priced. Failure to indicate alternate prices shall be cause for the Owner to consider the bid nonresponsive.

The Owner reserves the right to accept the alternates and base bids in any order or combination and to determine the low bidder on the basis of the sum of the those accepted.

New Work Mandatory Alternate No. 1: In order to minimize equipment premiums and delivery charges, the alternate project completion shall be prior to the start of school on October 13, 2008 in lieu of September 1, 2008. (Note: Power shut-downs shall not occur during normal building occupancy hours.)

Add/Deduct _____
Dollars (\$_____).

VOLUNTARY ALTERNATES

Voluntary Alternate No. 1:

Add/Deduct _____
Dollars (\$ _____).

Voluntary Alternate No. 2:

Add/Deduct _____
Dollars (\$ _____).

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

The undersigned agrees to complete the Project, including AE punchlists, by September 1, 2008.

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 than 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: Submit one (1) original and two (2) copies to the Owner and retain one (1) copy for the Bidder's records. Clearly label each copy submitted as either "original" or "copy".

END OF BID FORM

SECTION 00450

FAMILIAL DISCLOSURE STATEMENT

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 _____, 2008, by
_____.

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

END OF SECTION



AIA[®] Document A107[™] – 1997

Abbreviated Standard Form of Agreement Between Owner and Contractor for Construction Projects of Limited Scope *where the basis of payment is a STIPULATED SUM*

AGREEMENT made as of the _____ day of _____ in the year _____
(In words, indicate day, month and year)

BETWEEN the Owner:
(Name, address and other information)

and the Contractor:
(Name, address and other information)

the Project is:
(Name and location)

| 00000-00000 Blank Forms

the Architect is:
(Name, address and other information)

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This Document includes abbreviated General Conditions and should not be used with other general conditions.

This document has been approved and endorsed by The Associated General Contractors of America.

ARTICLE 1 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 2 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 2.1 The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

(Insert the date of commencement, if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)

§ 2.2 The Contract Time shall be measured from the date of commencement.

§ 2.3 The Contractor shall achieve Substantial Completion of the entire Work not later than days from the date of commencement, or as follows:

(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. Unless stated elsewhere in the Contract Documents, insert any requirements for earlier Substantial Completion of certain portions of the Work.)

, subject to adjustments of this Contract Time as provided in the Contract Documents

(Insert provisions, if any, for liquidated damages relating to failure to complete on time or for bonus payments for early completion of the Work.)

ARTICLE 3 CONTRACT SUM

§ 3.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be (\$), subject to additions and deletions as provided in the Contract Documents.

§ 3.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If decisions on other alternates are to be made by the Owner subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

§ 3.3 Unit prices, if any, are as follows:

Description	Units	Price (\$ 0.00)
-------------	-------	-----------------

ARTICLE 4 PAYMENTS

§ 4.1 PROGRESS PAYMENTS

§ 4.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents. The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 4.1.2 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment to the Contractor not later than the day of the same month. If an Application for Payment is received by the Architect after the date fixed above, payment shall be made by the Owner not later than () days after the Architect receives the Application for Payment.

§ 4.1.3 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

per annum

(Usury laws and requirements under the Federal Truth in Lending Act, similar state and local consumer credit laws and other regulations at the Owner's and Contractor's principal places of business, the location of the Project and elsewhere may affect the validity of this provision. Legal advice should be obtained with respect to deletions or modifications, and also regarding requirements such as written disclosures or waivers.)

§ 4.2 FINAL PAYMENT

§ 4.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when:

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 17.2, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 4.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follow:

ARTICLE 5 ENUMERATION OF CONTRACT DOCUMENTS

§ 5.1 The Contract Documents are listed in Article 6 and, except for Modifications issued after execution of this Agreement, are enumerated as follows:

§ 5.1.1 The Agreement is this executed 1997 edition of the Abbreviated Standard Form of Agreement Between Owner and Contractor, AIA Document A107-1997.

§ 5.1.2 The Supplementary and other Conditions of the Contract are those contained in the Project Manual dated , and are as follows:

Document	Title	Pages
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§ 5.1.3 The Specifications are those contained in the Project Manual dated as in Section 5.1.2, and are as follows:
(Either list the Specifications here or refer to an exhibit attached to this Agreement.)

Title of Specifications exhibit:
(Table deleted)

§ 5.1.4 The Drawings are as follows, and are dated unless a different date is shown below:
(Either list the Drawings here or refer to an exhibit attached to this Agreement.)

Title of Drawings exhibit:
(Table deleted)

§ 5.1.5 The Addenda, if any, are as follows:

Number	Date	Pages
--------	------	-------

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 5.

§ 5.1.6 Other documents, if any, forming part of the Contract Documents are as follows:
(List any additional documents which are intended to form part of the Contract Documents.)

GENERAL CONDITIONS

ARTICLE 6 GENERAL PROVISIONS

§ 6.1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement with Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to the execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 6.2 THE CONTRACT

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or sub-subcontractor, (3) between the Owner and Architect or (4) between any persons or entities other than the Owner and Contractor.

§ 6.3 THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 6.4 EXECUTION OF THE CONTRACT

Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

§ 6.5 OWNERSHIP AND USE OF ARCHITECT'S DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

The Drawings, Specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect or the Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of them, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or any Subcontractor, sub-subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect and the Architect's consultants. The Contractor, Subcontractors, sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other

documents prepared by the Architect and the Architect's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' copyrights or other reserved rights.

ARTICLE 7 OWNER

§ 7.1 INFORMATION AND SERVICES REQUIRED OF THE OWNER

§ 7.1.1 The Owner shall furnish and pay for surveys and a legal description of the site.

§ 7.1.2 The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 7.1.3 Except for permits and fees which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for other necessary approvals, easements, assessments and charges required for the construction, use or occupancy of permanent structures or permanent changes in existing facilities.

§ 7.2 OWNER'S RIGHT TO STOP THE WORK

If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents, or persistently fails to carry out the Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order is eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity.

§ 7.3 OWNER'S RIGHT TO CARRY OUT THE WORK

If the Contractor defaults or persistently fails or neglects to carry out the Work in accordance with the Contract Documents, or fails to perform a provision of the Contract, the Owner, after 10 days' written notice to the Contractor and without prejudice to any other remedy the Owner may have, may make good such deficiencies and may deduct the reasonable cost thereof, including Owner's expenses and compensation for the Architect's services made necessary thereby, from the payment then or thereafter due the Contractor.

ARTICLE 8 CONTRACTOR

§ 8.1 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR

§ 8.1.1 Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 7.1.1, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of discovering errors, omissions or inconsistencies in the Contract Documents; however, any errors, omissions or inconsistencies discovered by the Contractor shall be reported promptly to the Architect as a request for information in such form as the Architect may require.

§ 8.1.2 Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the Architect, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional unless otherwise specifically provided in the Contract Documents.

§ 8.2 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 8.2.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work under the Contract, unless the Contract Documents give other specific instructions concerning these matters. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences or procedures, the Contractor shall be fully and solely responsible for the jobsite safety thereof unless the Contractor gives timely written notice to the Owner and Architect that such means, methods, techniques, sequences or procedures may not be safe.

§ 8.2.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or on behalf of the Contractor or any of its Subcontractors.

§ 8.3 LABOR AND MATERIALS

§ 8.3.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 8.3.2 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not skilled in tasks assigned to them.

§ 8.3.3 The Contractor shall deliver, handle, store and install materials in accordance with manufacturers' instructions.

§ 8.3.4 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order.

§ 8.4 WARRANTY

The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation or normal wear and tear and normal usage.

§ 8.5 TAXES

The Contractor shall pay sales, consumer, use and other similar taxes which are legally enacted when bids are received or negotiations concluded.

§ 8.6 PERMITS, FEES AND NOTICES

§ 8.6.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for proper execution and completion of the Work.

§ 8.6.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities applicable to performance of the Work. The Contractor shall promptly notify the Architect and Owner if the Drawings and Specifications are observed by the Contractor to be at variance therewith. If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and rules and regulations without such notice to the Architect and Owner, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 8.7 SUBMITTALS

§ 8.7.1 The Contractor shall review for compliance with the Contract Documents, approve in writing and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness. The Work shall be in accordance with approved submittals.

§ 8.7.2 Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents.

§ 8.8 USE OF SITE

The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 8.9 CUTTING AND PATCHING

The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

§ 8.10 CLEANING UP

The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus material.

§ 8.11 ROYALTIES, PATENTS AND COPYRIGHTS

The Contractor shall pay all royalties and license fees; shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for such defense or loss when a particular design, process or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect, unless the Contractor has reason to believe that there is an infringement of patent or copyright and fails to promptly furnish such information to the Architect.

§ 8.12 ACCESS TO WORK

The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.

§ 8.13 INDEMNIFICATION

§ 8.13.1 To the fullest extent permitted by law and to the extent claims, damages, losses or expenses are not covered by Project Management Protective Liability insurance purchased by the Contractor in accordance with Section 16.3, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 8.13.

§ 8.13.2 In claims against any person or entity indemnified under this Section 8.13 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 8.13.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 9 ARCHITECT'S ADMINISTRATION OF THE CONTRACT

§ 9.1 The Architect will provide administration of the Contract and will be an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Section 17.2.

§ 9.2 The Architect, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, except as provided in Section 8.2.1.

§ 9.3 The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 9.4 Based on the Architect's evaluations of the Work and of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 9.5 The Architect will have authority to reject Work that does not conform to the Contract Documents.

§ 9.6 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 9.7 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect will make initial decisions on all claims, disputes and other matters in question between the Owner and Contractor but will not be liable for results of any interpretations or decisions so rendered in good faith.

§ 9.8 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 9.9 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 9.10 CLAIMS AND DISPUTES

§ 9.10.1 Claims, disputes and other matters in question arising out of or relating to this Contract, including those alleging an error or omission by the Architect but excluding those arising under Section 15.2, shall be referred initially to the Architect for decision. Such matters, except those relating to aesthetic effect and except those waived as provided for in Section 9.11 and Sections 14.5.3 and 14.5.4, shall, after initial decision by the Architect or 30 days after submission of the matter to the Architect, be subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.

§ 9.10.2 If a claim, dispute or other matter in question relates to or is the subject of a mechanic's lien, the party asserting such matter may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the matter by the Architect, by mediation or by arbitration.

§ 9.10.3 The parties shall endeavor to resolve their disputes by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Request for mediation shall be filed in writing with the other party to this Agreement and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

§ 9.10.4 Claims, disputes and other matters in question arising out of or relating to the Contract that are not resolved by mediation, except matters relating to aesthetic effect and except those waived as provided for in Section 9.11 and Sections 14.5.3 and 14.5.4, shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect. The demand for arbitration shall be filed in writing with the other party to this Agreement and with the American Arbitration Association and shall be made within a reasonable time after the dispute has arisen. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof. Except by written consent of the person or entity sought to be joined, no arbitration arising out of or relating to the Contract Documents shall include, by consolidation, joinder or in any other manner, any person or entity not a party to the Agreement under which such arbitration arises, unless

it is shown at the time the demand for arbitration is filed that (1) such person or entity is substantially involved in a common question of fact or law, (2) the presence of such person or entity is required if complete relief is to be accorded in the arbitration, (3) the interest or responsibility of such person or entity in the matter is not insubstantial, and (4) such person or entity is not the Architect or any of the Architect's employees or consultants. The agreement herein among the parties to the Agreement and any other written agreement to arbitrate referred to herein shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 9.11 CLAIMS FOR CONSEQUENTIAL DAMAGES

The Contractor and Owner waive claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:

1. damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
2. damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 19. Nothing contained in this Section 9.11 shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

ARTICLE 10 SUBCONTRACTORS

§ 10.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site.

§ 10.2 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of the Subcontractors for each of the principal portions of the Work. The Contractor shall not contract with any Subcontractor to whom the Owner or Architect has made reasonable and timely objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 10.3 Contracts between the Contractor and Subcontractors shall (1) require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by the terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by the Contract Documents, assumes toward the Owner and Architect, and (2) allow the Subcontractor the benefit of all rights, remedies and redress afforded to the Contractor by these Contract Documents.

ARTICLE 11 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS

§ 11.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and to award separate contracts in connection with other portions of the Project or other construction or operations on the site under conditions of the contract identical or substantially similar to these, including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such claim as provided in Section 9.10.

§ 11.2 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's activities with theirs as required by the Contract Documents.

§ 11.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor. The Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly timed activities, damage to the Work or defective construction of a separate contractor.

ARTICLE 12 CHANGES IN THE WORK

§ 12.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Sum and Contract Time being adjusted accordingly. Such changes in the Work shall be authorized by written Change Order signed by the Owner, Contractor and Architect, or by written Construction Change Directive signed by the Owner and Architect.

§ 12.2 The cost or credit to the Owner from a change in the Work shall be determined by mutual agreement of the parties or, in the case of a Construction Change Directive, by the Contractor's cost of labor, material, equipment, and reasonable overhead and profit.

§ 12.3 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

§ 12.4 If concealed or unknown physical conditions are encountered at the site that differ materially from those indicated in the Contract Documents or from those conditions ordinarily found to exist, the Contract Sum and Contract Time shall be equitably adjusted.

ARTICLE 13 TIME

§ 13.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 13.2 The date of Substantial Completion is the date certified by the Architect in accordance with Section 14.4.2.

§ 13.3 If the Contractor is delayed at any time in the commencement or progress of the Work by changes ordered in the Work, by labor disputes, fire, unusual delay in deliveries, abnormal adverse weather conditions not reasonably anticipatable, unavoidable casualties or any causes beyond the Contractor's control, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine, subject to the provisions of Section 9.10.

ARTICLE 14 PAYMENTS AND COMPLETION

§ 14.1 APPLICATIONS FOR PAYMENT

§ 14.1.1 Payments shall be made as provided in Article 4 of this Agreement. Applications for Payment shall be in a form satisfactory to the Architect.

§ 14.1.2 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of liens, claims, security interests or other encumbrances adverse to the Owner's interests.

§ 14.2 CERTIFICATES FOR PAYMENT

§ 14.2.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 14.2.3.

§ 14.2.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluations of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance

of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 14.2.3 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 14.2.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 14.2.1. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 8.2.2, because of:

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or another contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 persistent failure to carry out the Work in accordance with the Contract Documents.

§ 14.2.4 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 14.3 PAYMENTS TO THE CONTRACTOR

§ 14.3.1 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's portion of the Work, the amount to which said Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of such Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to sub-subcontractors in similar manner.

§ 14.3.2 Neither the Owner nor Architect shall have an obligation to pay or see to the payment of money to a Subcontractor except as may otherwise be required by law.

§ 14.3.3 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 14.4 SUBSTANTIAL COMPLETION

§ 14.4.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 14.4.2 When the Architect determines that the Work or designated portion thereof is substantially complete, the Architect will issue a Certificate of Substantial Completion which shall establish the date of Substantial Completion, establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work

and insurance, and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. Upon the issuance of the Certificate of Substantial Completion, the Architect will submit it to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

§ 14.5 FINAL COMPLETION AND FINAL PAYMENT

§ 14.5.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions stated in Section 14.5.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 14.5.2 Final payment shall not become due until the Contractor has delivered to the Owner a complete release of all liens arising out of this Contract or receipts in full covering all labor, materials and equipment for which a lien could be filed, or a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including costs and reasonable attorneys' fees.

§ 14.5.3 The making of final payment shall constitute a waiver of claims by the Owner except those arising from:

- .1 liens, claims, security interests or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents; or
- .3 terms of special warranties required by the Contract Documents.

§ 14.5.4 Acceptance of final payment by the Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 15 PROTECTION OF PERSONS AND PROPERTY

§ 15.1 SAFETY PRECAUTIONS AND PROGRAMS

The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein; and
- .3 other property at the site or adjacent thereto.

The Contractor shall give notices and comply with applicable laws, ordinances, rules, regulations and lawful orders of public authorities bearing on safety of persons and property and their protection from damage, injury or loss. The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor, a sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 15.1.2 and 15.1.3, except for damage or loss attributable to acts or omissions of the Owner or Architect or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 8.13.

§ 15.2 HAZARDOUS MATERIALS

§ 15.2.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner

and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shutdown, delay and start-up, which adjustments shall be accomplished as provided in Article 12 of this Agreement.

§ 15.2.2 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 15.2.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity.

§ 15.2.3 If, without negligence on the part of the Contractor, the Contractor is held liable for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

ARTICLE 16 INSURANCE

§ 16.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located insurance for protection from claims under workers' compensation acts and other employee benefit acts which are applicable, claims for damages because of bodily injury, including death, and claims for damages, other than to the Work itself, to property which may arise out of or result from the Contractor's operations under the Contract, whether such operations be by the Contractor or by a Subcontractor or anyone directly or indirectly employed by any of them. This insurance shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater, and shall include contractual liability insurance applicable to the Contractor's obligations. Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. Each policy shall contain a provision that the policy will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner.

§ 16.2 OWNER'S LIABILITY INSURANCE

The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 16.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

§ 16.3.1 Optionally, the Owner may require the Contractor to purchase and maintain Project Management Protective Liability insurance from the Contractor's usual sources as primary coverage for the Owner's, Contractor's and Architect's vicarious liability for construction operations under the Contract. Unless otherwise required by the Contract Documents, the Owner shall reimburse the Contractor by increasing the Contract Sum to pay the cost of purchasing and maintaining such optional insurance coverage, and the Contractor shall not be responsible for purchasing any other liability insurance on behalf of the Owner. The minimum limits of liability purchased with such coverage shall be equal to the aggregate of the limits required for Contractor's Liability insurance under Section 16.1.

§ 16.3.2 To the extent damages are covered by Project Management Protective Liability insurance, the Owner, Contractor and Architect waive all rights against each other for damages, except such rights as they may have to the proceeds of such insurance. The policy shall provide for such waivers of subrogation by endorsement or otherwise.

§ 16.3.3 The Owner shall not require the Contractor to include the Owner, Architect or other persons or entities as additional insureds on the Contractor's Liability insurance under Section 16.1.

§ 16.4 PROPERTY INSURANCE

§ 16.4.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance on an "all-risk" policy form, including builder's risk, in the amount of the initial Contract Sum, plus the value of subsequent modifications and cost of materials supplied and installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who

are beneficiaries of such insurance, until final payment has been made as provided in Section 14.5 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 16.4 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and sub-subcontractors in the Project.

§ 16.4.2 The Owner shall file a copy of each policy with the Contractor before an exposure to loss may occur. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 16.5 WAIVERS OF SUBROGATION

§ 16.5.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 11, if any, and any of their subcontractors, sub-subcontractors, agents and employees for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to Section 16.4 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 11, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 16.5.2 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their sub-subcontractors in similar manner.

ARTICLE 17 CORRECTION OF WORK

§ 17.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 17.2 In addition to the Contractor's obligations under Section 8.4, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 14.4.2, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty.

§ 17.3 If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may correct it in accordance with Section 7.3.

§ 17.4 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

§ 17.5 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Article 17.

ARTICLE 18 MISCELLANEOUS PROVISIONS

(Paragraph deleted)

§ 18.1 ASSIGNMENT OF CONTRACT

Neither party to the Contract shall assign the Contract without written consent of the other.

§ 18.2 GOVERNING LAW

The Contract shall be governed by the law of the place where the Project is located.

§ 18.3 TESTS AND INSPECTIONS

Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

§ 18.4 COMMENCEMENT OF STATUTORY LIMITATION PERIOD

As between Owner and Contractor, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued:

- .1 not later than the date of Substantial Completion for acts or failures to act occurring prior to the relevant date of Substantial Completion;
- .2 not later than the date of issuance of the final Certificate for Payment for acts or failures to act occurring subsequent to the relevant date of Substantial Completion and prior to the issuance of the final Certificate for Payment; and
- .3 not later than the date of the relevant act or failure to act by the Contractor for acts or failures to act occurring after the date of the final Certificate for Payment.

ARTICLE 19 TERMINATION OF THE CONTRACT

§ 19.1 TERMINATION BY THE CONTRACTOR

If the Architect fails to recommend payment for a period of 30 days through no fault of the Contractor, or if the Owner fails to make payment thereon for a period of 30 days, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner payment for Work executed and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including reasonable overhead, profit and damages applicable to the Project.

§ 19.2 TERMINATION BY THE OWNER

§ 19.2.1 The Owner may terminate the Contract if the Contractor:

- .1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
- .3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 19.2.2 When any of the above reasons exists, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may, without prejudice to any other remedy the Owner may have and after giving the Contractor seven days' written notice, terminate the Contract and take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 19.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 19.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 19.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

ARTICLE 20 OTHER CONDITIONS OR PROVISIONS

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

CONTRACTOR (Signature)

(Printed name and title)

(Printed name and title)

SECTION 00800

SUPPLEMENTARY CONDITIONS AND ADDITIONAL CONDITIONS

PROJECT: Troy School District
Smith Middle School
Transformer Replacement
TSD Bid No. 9536
Troy, Michigan

OWNER: Troy School District
4400 Livernois
Troy, MI 48098

ARCHITECT: Integrated Design Solutions, LLC
888 W. Big Beaver, Suite 200
Troy, MI 48084
(248) 823-2100
(248) 823-2200 (Fax)

THE FOLLOWING SUPPLEMENTS MODIFY THE "GENERAL CONDITIONS" INCLUDED IN THE "ABBREVIATED STANDARD FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION PROJECTS OF LIMITED SCOPE", AIA DOCUMENT A107, 1997 EDITION. WHERE A PORTION OF THE GENERAL CONDITIONS IS MODIFIED OR DELETED BY THESE SUPPLEMENTARY CONDITIONS, THE UNALTERED PORTIONS OF THE GENERAL CONDITIONS SHALL REMAIN IN EFFECT.

EXPLANATION OF NUMBERING: Article 20 shall constitute revisions and additions to and follow the same format of the General Conditions.

ARTICLE 20

OTHER CONDITIONS OR PROVISIONS

20.1 Add new subparagraph 6.6 as follows:

"6.6 The Contractor will be furnished free of charge six (6) copies of Drawings and Project Manuals for execution of the Work."

20.2 Delete subparagraph 12.2 and add the following in its place:

"12.2 The cost or credit to the Owner from a change in the work shall be determined by mutual agreement, by an acceptable estimate and lump sum proposal by the Contractor or by actual cost of all labor and materials and a percentage or fixed fee for all other changes, such as overhead, profit, insurance, taxes and bonds. On any change which involves a net credit to the Owner, no allowance for overhead and profit shall be figured.

12.2.1 If none of the foregoing methods is agreed upon, the Contractor, upon receipt of an order as hereinbefore stated, shall proceed with the work. In such case the Contractor shall keep and present in such form as the Owner may direct, a correct account of the cost, together with vouchers. In any case, the Owner shall certify to the amount including the specified allowance for overhead and profit, due the Contractor.

12.2.2 The allowable fee for added work by Contractor's own forces shall not exceed 15% of additional cost and his fee on work performed by Subcontractors shall not exceed 7-1/2% of additional cost. Quotations by Subcontractors at all times shall be subject to these same limitations."

- 20.3 Modifications to subparagraph 14.1.1
To the end of this subparagraph add the following:

"The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet."

- 20.4 Add new subparagraph 14.1.2 as follows:

"14.1.2 Until final completion, the Owner will pay ninety (90) percent of the amount due the Contractor on account of progress payments. Upon final completion, the Architect will certify payment in full."

- 20.5 Modifications to subparagraph 16.1.
To the end of this subparagraph add the following:

"16.1.1 The insurance by Subparagraph 16.1 shall be written for not less than the following limits, or greater if required by law:

1. Worker's Compensation:

- | | | |
|----|--|--|
| a. | State: | Statutory |
| b. | Applicable Federal
(e.g. Longshoremen's): | Statutory |
| c. | Employer's Liability: | \$1,000,000.00 per Accident
\$1,000,000.00 Disease, Policy Limit
\$1,000,000.00 Disease, Each Employee |

2. Comprehensive or Commercial General Liability (including Premises-Operations; Independent Contractors' Protective; Products and Completed Operations; Broad Form Property Damage);

a. Bodily Injury:

\$1,000,000.00	Each Occurrence
\$1,000,000.00	Aggregate

b. Property Damage:

\$1,000,000.00	Each Occurrence
\$1,000,000.00	Aggregate

c. Products and Completed Operations to be maintained for one (1) year after final payment:

\$1,000,000.00	Aggregate
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d. Broad Form Property Damage Coverage shall include Completed Operations.

3. Contractual Liability:
 - a. Bodily Injury:
\$1,000,000.00 Each Occurrence
\$1,000,000.00 Aggregate
 - b. Property Damage:
\$1,000,000.00 Each Occurrence
\$1,000,000.00 Aggregate
4. Personal Injury, with Employment Exclusion deleted:
\$1,000,000.00 Aggregate
5. Business Auto Liability (including owned, non-owned and hired vehicles):
 - a. Bodily Injury:
\$1,000,000.00 Each Person
\$1,000,000.00 Each Occurrence
 - b. Property Damage:
\$1,000,000.00 Each Occurrence
6. Umbrella Excess Liability \$1,000,000.00
(Bodily Injury and Property Damage
Combined)

"16.1.2" Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:

1. Premises Operations (including X, C, and U coverages as applicable).
2. Independent Contractor's Protective.
3. Products and Completed Operations.
4. Personal Injury Liability with Employment Exclusion deleted.
5. Owned, non-owned and hired motor vehicles.
6. Broad Form Property Damage including Completed Operations.

16.1.3 If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment, certified in accordance with Subparagraph 9.10.2.

- 20.6 Delete paragraph 16.3 and subparagraphs 16.3.1, 16.3.2 and 16.3.3 in their entirety.
- 20.7 Delete paragraph 16.4 and subparagraphs 16.4.1 and 16.4.2 in their entirety.

- 20.8 Modifications to Article 19.
Add the following subparagraphs to the end of Article 19.
- "19.3" Termination by the Owner for Convenience.
- "19.3.1 The Owner may, at any time, terminate the contract for the Owner's convenience and without cause.
- "19.3.2 Upon receipt of written note from the Owner of such termination for the Owner's convenience, the Contractor shall:
1. Cease operations as directed by the Owner in the notice;
 2. Take actions necessary, or that the Owner may direct, for the protection and preservation of the work; and
 3. Except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing Subcontracts and purchase orders and enter into no further Subcontracts and purchase orders.
- 19.3.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment from the Owner on the same basis provided in Subparagraph 20.2."
- 20.9 BONDS
- 20.9.1 The Contractor shall furnish a Performance Bond and a Labor and Material Payment Bond covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds shall be obtained from a company licensed to do business in the State of Michigan and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum.
- 20.9.2 The Contractor shall deliver the required bonds to the Owner not later than three days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.
- 20.10 EQUAL OPPORTUNITY
- 20.10. The Contractor shall maintain policies of employment as follows:
- 20.10.1. 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 affirmative action 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.
- 20.10.2. 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 00800

SECTION 16010 - ELECTRICAL 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 electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 1 Sections.
 - 1. Design requirements.
 - 2. Performance requirements.
 - 3. Substitutions.
 - 4. Permits and fees.
 - 5. Examination of drawings and premises.
 - 6. Submittals.
 - 7. Project record documents.
 - 8. Operation and maintenance manuals and equipment.
 - 9. Quality assurance.
 - 10. Delivery, storage and handling.
 - 11. Warranty.
- B. This Section includes basic requirements for materials and installations for electrical work, including but not limited to:
 - 1. Electrical demolition work.
 - 2. Phasing.
 - 3. Field Quality Control.

1.3 REFERENCES

- A. The electrical and physical properties of all materials, and the design, performance characteristics, and methods of construction of all items of equipment, shall be in accordance with the latest issue of the various, applicable Standard Specifications of the following recognized authorities:
 - 1. ANSI - American National Standards Institute
 - 2. ASTM - American Society for Testing Materials
 - 3. BICSI - Building Industry Consulting Service International
 - 4. FCC - Federal Communication Commission
 - 5. ICEA - Insulated Cable Engineers Association
 - 6. IEEE - Institute of Electrical and Electronics Engineers
 - 7. NEC - National Electrical Code
 - 8. NETA - International Electrical Testing Association
 - 9. NEMA - National Electrical Manufacturer's Association
 - 10. NFPA - National Fire Protection Association
 - 11. UL - Underwriters' Laboratories, Inc.

1.4 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 electrical systems as specified in the Division 16 Sections and as indicated on Drawings.
 - 1. The Electrical Drawings indicate the general design and extent of the electrical 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 Architect/Engineer 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 test required. Upon completion of the Work, obtain and send certificates of inspections and approvals to the Architect/Engineer.
 - 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 and other trades' drawings and specifications.
 - 1. Notify Architect/Engineer should any discrepancies occur between them and the electrical 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 Architect/Engineer who shall determine the course of action to be taken.

1.5 SUBMITTALS

- A. The following is in addition to the requirements for submittals in Division 1.
- B. Material List: Submit a complete list of all materials, equipment, and their manufacturers, for approval by the Architect/Engineer within 15 days after award of contract and prior to submittal of shop drawings.
- C. Provide equipment submittals in the form of letters of intent, product data catalog sheets or shop drawings as hereinafter specified for all materials provided on the project.

- D. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4" x 5" on the label or beside the title block on shop drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on the label for processing and recording action taken.

Project Name
Date
Name and address of Architect/Engineer
Name and address of Contractor
Name and address of Subcontractor
Name and address of Supplier
Name of Manufacturer
Number and title of appropriate Specification Section
Drawing number, identification mark, fixture type, panelboard number, specification section number, and detail references, or as noted on the electrical drawings.
- E. Equipment submittals shall be reviewed by the Electrical Contractor for completeness and accuracy and prior to submitting to the Architect/Engineer for review. Submittals shall be dated and signed by the Electrical Contractor.
- F. Partial submittals for equipment shall not be permitted. Where partial submittals are transmitted to the Architect/Engineer, they will be returned "Rejected".
- G. Where the equipment submittals consist of manufacturer's standard detail drawing or schedules and contain data for a variety of similar equipment, indicate the data pertinent to the equipment furnished for this project only. Standard detail drawings and schedules not clearly indicating which data is associated with this Project shall be returned "Rejected".
- H. Where accessories and/or options are specified and do not appear as part of manufacturer's standard detail drawings, state each accessory that is to be provided with the equipment on the standard detail drawings.
- I. Letter of Intent shall state that the product is exactly as specified with no exceptions, and that the product is being manufactured by one of the specified manufacturers. The Letter of Intent shall include the specification section number, the product description, the name of the selected manufacturer and the catalog number of the product. The aforementioned information shall be typed on the Electrical Contractor's letterhead and submitted with one (1) product data sheet for each product itemized in the Letter of Intent for record.
- J. Shop Drawings: Prepare layout shop drawings drawn to scale and submit one (1) transparency copy and two (2) prints of each to the Architect/Engineer for review, together with required number of additional copies as required by the General Conditions. After the shop drawings are reviewed, the transparency copy will be stamped and returned for printing and distribution. Refer to Division 1 for submittals and quantities.
1. Layout shop drawings shall show building floor plans to scale and shall include lighting and power distribution systems, all details of electrical construction, routing of conduits, wiring, circuiting and related information necessary for the installation and future maintenance of the electrical wiring systems.

- K. No apparatus or equipment shall be shipped from stock or fabricated until equipment submittals for them have been reviewed and approved by the Architect/Engineer. By the review of shop drawings, the Architect/Engineer does not assume responsibility for actual dimensions or for the fit of completed work in position, nor does such review relieve Electrical Trades of full responsibility for the proper and correct execution of the work required.
- L. Submittals shall be provided on all major electrical systems and/or equipment, including the following:

REMARKS LEGEND

In addition to the previously specified, provide the following where indicated:

- | | |
|---------------------------------------|--|
| 1. Factory Test Report | 8. Points List |
| 2. Field Testing Report | 9. Sequence of Operation |
| 3. Record Drawings | 10. Certificate of Inspection |
| 4. Mock-Up | 11. Installer Certificate & Master Label |
| 5. Material & Equip. List/Certificate | 12. Fire Marshal Approval |
| 6. Operation & Maintenance Manuals | 13. Tools/Spare Parts |
| 7. Construction Schedule | 14. _____ |

Section Number	Section Title	Shop Dwgs.	Product Data	Letter of Intent	Samples	Warranty	Remarks
16010	General Requirements					X	6, 7, 10
	Layout Shop Drawings	X					3, 5, 13
	Materials List			X			5
16025	Electrical Systems			X			
16040	Electrical Site and Service						
16041	PCB Removal and Disposal			X			
16060	Grounding						
	Grounding Cable			X			
	Grounding Connections/fittings			X			
16080	Electrical Testing						
	Testing Firm			X			
	Tests on Transformer Insulating Liquids						2
16190	Supporting Devices			X			
16271	Medium-Voltage Transformers	X	X				1,2

1.6 PROJECT RECORD DOCUMENTS

- B. Project Record Documents: Revise layout shop drawings as required during construction to indicate the as-built condition.
 - 1. At the completion of the Project, resubmit to the Owner's Representative the revised sepia's and one set of prints indicating "as-built" conditions for Owner's record. The Drawings shall contain all title block information as originally issued by the Architect/Engineer with the addition of the electrical contractor's company name, address, telephone number, company's project number, date of issuance by the electrical contractor, and issued for "as-built" conditions in title.
 - 2. Furnish and deliver to the Owner's Representative a manual of all shop drawings and product data upon substantial completion. The manual shall consist of a standard hard cardboard, vinyl covered, 3-ring binder, letterhead size, 8-1/2" x 11". Shop drawings shall be folded and punched. All items and pages shall be numbered with typewritten index inserted at front of manual.
 - 3. Submit final project record documents as described in Division 1.

1.7 OPERATION AND MAINTENANCE MANUALS AND EQUIPMENT

- A. Operation and Maintenance Manuals: The manuals shall contain operating instructions, service instructions, parts lists, etc., which are shipped with electrical equipment. On completion of the work, transmit these items to the Architect/Engineer, for the Owner's use. If this information is not shipped with the equipment, obtain from the manufacturer.
- B. Maintenance Materials: Retain all portable and detachable portions of the installation such as keys, tools, manuals, etc., until the completion of the work and then transmit them to the Owner and obtain itemized receipt. This receipt shall be attached to the "Final Application" for payment.
- C. Furnish three (3) sets of bound operation and maintenance manuals to the Architect/Engineer. Each set shall include:
 - 1. One (1) copy of all shop drawings.
 - 2. Operation and maintenance instructions and manuals.
 - 3. One (1) copy of all electrical testing.
 - 4. As-built drawings.

1.8 QUALITY ASSURANCE

- A. Regulatory Requirements:
 - 1. Ordinances and Codes: Perform all work in accordance with applicable Federal, State and local ordinances and regulations, the Rules and Regulations of the National Board of Fire Underwriters, the National Electric Code, and the latest accepted practices of IEEE and NEMA.
 - a. Notify the Architect/Engineer before submitting his 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.
 - b. 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).

- B. Rules of Local Utility Companies:
 - 1. Perform work in accordance with the rules of local utility companies. Before submitting the bid check with each utility supplying services to this Project. Determine from them all equipment and charges which they will require and include the cost in the bid.
- C. 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.
- D. 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.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Storage and Protection: Provide adequate storage space for all electrical equipment, conduit and materials delivered to the job site under a weather protected enclosure. Location of the space will be designated by the Owner's Field Representative. Equipment set in place in unprotected areas must be provided with temporary protection.
 - 1. Be responsible for the care and protection of electrical equipment until it has been fully tested and accepted.
 - 2. Protect materials with permanent factory finish from damage by covering.
 - 3. Protect conduit openings with temporary plugs or caps.

1.10 WARRANTY

- A. Warranty: Provide a one year parts and labor warranty for all equipment and installation. Comply with requirements of the General Conditions.

PART 2 - PRODUCTS

See Specific Sections for Requirements.

PART 3 - EXECUTION

3.1 ELECTRICAL DEMOLITION WORK

- A. General: Perform electrical 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. Where applicable, existing in-place conduit may be reused for new work providing that the installation is in accordance requirements for new work found in Section 16000.
- D. Materials salvaged from this work shall not be reused except where reuse is specifically indicated.

- E. Existing electrical 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.

3.2 PHASING

- A. Identify general power feeder circuits with a visual color code as an integral part of the outer jacket or as a printed color coding the entire length of the insulation in accordance with the NEC.

3.3 FIELD QUALITY CONTROL

- A. Testing Ducts and Conduits: Ducts and conduits which are installed underground or concealed in concrete floor slab, foundations, etc., shall be cleared of foreign material and obstructions after installation and before conductor or pullwires are draw-in, by wire brushing, swabbing and employing an iron or hardwood mandrel which is 1/4" smaller in diameter than the internal diameter of the duct or conduit. Pulling wires shall be left in empty conduits.
- B. Tests and Inspection:
 - 1. When the systems are completed, operate equipment as directed by Architect/Engineer. Replace all faulty equipment. Make necessary adjustments before final acceptance.
 - 2. Perform all tests required by State, City, County and/or other agencies having jurisdiction.
 - 3. Provide all materials, equipment, etc., and labor required for tests.
- C. Cleaning:
 - 1. Keep premises free from accumulation of waste materials and rubbish. At completion of work remove all rubbish from and about the building and leave the electrical systems clean and ready for use.
 - 2. Final clean-up shall include washing of transformers to remove shipping and/or construction dust and debris.
- D. Painting:
 - 1. In general, no painting is required by Electrical Trades other than touch-up of factory-finished electrical equipment.
 - 2. All factory finished electrical equipment shall be cleaned at completion of the job. Equipment showing rust or mars shall be thoroughly cleaned and sanded, prime coated and touched up with enamel of color to match original finish.

END OF SECTION 16010

SECTION 16025 - ELECTRICAL 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

- A. Description of Systems:
 - 1. Type of Electrical Utility Service Contract: Primary Service Rate.
 - 2. Utility Primary Voltage to Site: 13.2 KV, 3 phase, 4 wire, 60 hertz, neutral solidly grounded at the source.
 - 3. Primary Distribution System: 13.2 KV, 3 phase, 4 wire, 60 hertz, neutral solidly grounded.
 - 4. Power and Lighting Systems: 208/120 volts, 3 phase, 4 wire, 60 hertz, neutral solidly grounded at the source.

1.3 WORK SPECIFIED IN DIVISION 16 SECTIONS

- A. Furnish all labor, materials, equipment, technical supervision, and incidental services required to complete, test and leave ready for operation the electrical systems as specified in the Division 16 Sections.
- B. The principal items of electrical work to be furnished and installed shall include but not necessarily be limited to the following items:
 - 1. Primary Electric Service Installation: Include all utility company primary service costs.
 - 2. Primary Electric Service Installations: Outdoor pad-mounted transformer.
 - 3. Testing of transformer.
 - 4. All items incidental to and/or required to complete the installation.

PART 2 - PRODUCTS

See specific sections for requirements.

PART 3 - EXECUTION

See specific sections for requirements.

END OF SECTION 16025

SECTION 16040 - ELECTRICAL SITE AND SERVICE

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. Work required for the electric service installation shall include the following:
 - 1. The utility companies and utility contact personnel for this project are as follows:

Electric Utility:
Company: DTE Energy
Contract Name: Mr. Stan Dembinski
Address: 2000 2nd Avenue, 1245 WCB, Detroit, MI 48226
Telephone No.: (313) 235-6478
Facsimile No.: (313) 235-0293
Mobile No.: (313) 917-5710
Pager No.: (313) 440-2235
E-mail: dembinskis@dteenergy.com
 - 2. The Owner will maintain a primary service contract with the Electric Utility Company.
 - 3. The primary service and primary distribution voltage will be 13,200, 3 phase, 4 wire grounded wye.
 - 4. The secondary service and secondary distribution voltage will be 208/120 volt, 3 phase, 4 wire grounded wye.
 - 5. Disconnection of existing transformer.
 - 6. Removal and disposal of existing PCB transformer and fluids.
 - 7. Provide new pad-mounted transformer.
 - 8. The installation shall include the re-termination of both the primary and secondary cables and all items and connections required for a complete approved operating installation.
 - 9. Coordinate the installation with the Utility Company and provide all work in conformance with their requirements. Equipment shall be approved by Utility and conform to their specifications.

PART 2 - PRODUCTS

See specific sections for requirements.

PART 3 - EXECUTION

See specific sections for requirements.

END OF SECTION 16040

SECTION 16041 – PCB REMOVAL AND DISPOSAL

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. The following specifications shall be considered as minimum requirements. All work will be performed by a licensed, bonded, insured and approved PCB disposal company.
- B. General Scope:
 - 1. Work covered by this section shall consist of furnishing all labor, supervision, materials, tools, equipment and services necessary for PCB removal and disposal as described in the drawings and/or specifications.
- C. Disposal Contractor:
 - 1. The acceptable contractors for the work under this division shall be specialized in this field with the personal experience, training and skill and the organization to provide skillful execution of all required handling of PCBs in strict accordance with all applicable laws. Contractor shall be able to furnish acceptable evidence of having contracted or executed not less than five (5) projects of comparable size and types to this one. The supervisors for this work shall have had experience in supervising not less than 5 such projects and shall be approved before work is begun.
 - 2. Disposal Contractor Shall:
 - a. Coordinate existing transformer removal with new transformer installation in order to minimize Owner downtime.
 - b. Drain PCB liquid from the transformer prior to removal.
 - c. Provide all handling of the PCB fluids once containerized.
 - d. Provide an emergency spill response capability to insure sufficient containment, should an incident occur.
 - e. Proper transportation and disposal of all PCB fluids, carcasses and debris as specified.
- D. Disposal Contractor Qualifications:
 - 1. All PCB service personnel on site will be regular full time employees of the contractor, with a minimum of five (5) years experience in the handling of PCBs.
 - 2. They will have had prior attendance at and satisfactory completion of an examination following a documented formalized training course on regulations and procedures for handling, marking, transportation, disposal, spill prevention/cleanup, safety precautions, and testing of PCB items. Also required is training in and awareness of obligations and responsibilities for protection of people, property and environment from hazardous waste exposure or contamination.

3. The contractor shall provide a qualified PCB Services Supervisor. This designated supervisor shall have all the above qualifications, plus experience with complete awareness of all rules, regulations and procedures regarding the proper handling and disposal of PCB fluids and materials as set forth by the governing authorities.
 4. All PCB related work including draining, flushing, pumping and handling of PCB items or fluids of any type shall be under the supervision of this qualified PCB Services Supervisor.
- E. Disposal Rigging Contractor Shall:
1. Be responsible for the disconnection of existing transformer.
 2. Remove the drained transformer carcasses and miscellaneous equipment from their present locations and load onto the disposal transport trailer under the direction of the disposal contractor's representative.
- F. Disposal Rigging Contractor Qualifications:
1. The contractor shall be able to furnish acceptable evidence of having contracted or executed not less than 5 projects of equal or greater magnitude as this one successfully.
 2. All PCB rigging personnel on site will be regular full time employees of the contractor, with a minimum of 5 years experience in the handling of PCBs.
 3. They will have had prior attendance at and satisfactory completion of an examination following a documented formalized training course on regulations and procedures for handling, marking, transportation, disposal, spill prevention/cleanup, safety precautions and testing of PCB items. Also required is training in and awareness of obligations and responsibilities for protection of people, property and environment from hazardous waste exposure or contamination.
 4. The contract shall provide a qualified PCB Rigging Supervisor. This designated supervisor shall have all the above qualifications, plus experience with complete awareness of all rules, regulations and procedures regarding the proper handling of PCB fluids and materials as set forth by the governing authorities.
 5. All rigging related work shall be under the supervision of this qualified PCB Rigging Supervisor.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Refer to Section 16025, "Electrical Systems".

1.4 PROJECT/SITE CONDITIONS

- A. It is recommended that the contractor visit the site of the proposed work in order that he may fully understand facilities, difficulties and restrictions attending the execution of work. No additional compensation will be allowed for work or items omitted from the original proposal due to failure to inform himself regarding such matters affecting performance of work necessary for the PCB removal and disposal.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL

- A. The transformer PCB fluid must be pumped into DOT 17E drums before the unit is removed. Pumping equipment must be dedicated PCB equipment. No other material other than PCB fluid or flush oil from PCB decommissioning shall be pumped through this equipment. All hoses used for pumping shall be equipped with check valves at all connection points to prevent spillage of PCB fluid when hoses are disconnected from the transformers. Pumps must be set in safety pans to prevent accidental spillage. Contractor will furnish drums.
- B. The contractor will have an emergency response spill team on site during all rigging operations. This team will have on location an emergency spill cleanup kit.
- C. Upon removal of the transformer and drums from the building, the transformer and drums will be loaded onto a disposal transport. The disposal transport must be owned and operated by the PCB disposal contractor. The transport must be equipped to transport PCB material. The bed of the transport must be continuous steel. Seams of the bed will be welded. The transport bed sides must be high enough to contain the total liquid volume of one and one-half times the load. Sides and bed will be welded to form a liquid tight pan. The transport will be equipped with an accidental spill kit. The driver must be knowledgeable in DOT rules and regulations with regard to PCB transportation. A rented or leased transport trailer will not be used.
- D. Upon completion of each servicing, the contractor shall provide a record of such activities and storage data in compliance with 40 CFR 761.180. The following must be included in the documentation provided:
 - 1. Name, telephone number and location of firm(s) responsible for ultimate final disposal of drums and fluid and other materials.
 - 2. Written certification that the items being disposed of were delivered to and accepted by the disposal facility to accept PCB items for disposal.
 - 3. Copies of all manifests.

3.2 DISPOSAL METHOD

- A. The transformer carcasses shall be totally reclaimed.
- B. At the EPA permitted reclamation facility the transformer shall be decommissioned to an acceptable ppm level, then completely disassembled. All components shall be further cleaned of PCBs. The coils are unwound and stripped of paper insulation. The copper, iron laminations, transformer tank and hardware are all decontaminated, smelted and recycled. The insulation material removed from the transformer is shipped to an EPA approved PCB incinerator, along with the askarel and shall be incinerated.
- C. Before award of contract, the apparent low bidder must furnish a complete credential package. This shall include at least the following: complete experience information; including references and five (5) successfully completed PCB disposal projects, on site and on the road spill prevention guidelines and procedures, emergency spill response procedures and general operating and safety procedures.

3.3 GENERAL RIGGING

- A. No cutting of the transformer case or tank before receipt at the transformer reclamation facility will be accepted. Removal of radiators will be permissible when deemed necessary by Owner.
- B. All necessary rigging equipment must be owned and properly maintained by the disposal rigging contractor. Rented rigging equipment will not be used on the PCB removal project, with the exception of necessary cranes and fork trucks.
- C. The disposal rigging contractor is liable for any damage to Owner's equipment or property during the rigging operation. This includes PCB spill. Therefore, the contractor shall carry insurance as noted below in addition to that provided in the General and Supplementary Conditions, and furnish to the Owner a certificate showing additional insurance.
- D. Owner's Responsibilities include:
 - 1. Coordination with the contractors to provide a secure area for drum storage.
 - 2. Proper EPA identification number to allow for proper manifesting of PCB waste.

3.4 REMOVAL AND DISPOSAL

- A. The rules and regulations established by the U. S. Environmental Protection Agency (EPA) and listed in Title 40 of the Code of Federal Regulations, Part 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce and use Prohibitions." (40 CFR 761) shall govern methods of disposal. The contractor is cautioned that he is responsible to ascertain the extent to which these regulations affect the operations resulting from this solicitation and to comply therewith.
- B. Transporting PCB and PCB contaminated materials shall be in accordance with Department of Transportation (DOT) Hazardous Materials Regulations in 49 CFR 171-179 and CFR 390-397, as applicable. The contractor shall also comply with state and local requirements, including obtaining all necessary permits, licenses and approvals.
- C. The contractor will obtain and prepare all required state and/or federal manifests. Completed copies of all manifests will be furnished to the office, whose address appears on the manifest, as well as to the Director of Facilities Planning and Construction.
- D. An operation plan shall be developed and presented to the project coordinator prior to beginning any work, that will include:
 - 1. Vehicles, equipment and personnel to be used in accomplishing the work.
 - 2. Emergency spill plan outlining all steps the contractor will take in the event of a spill or other emergency.
 - 3. Safety procedures covering handling, loading, transporting, securing PCB loads and first-aid procedures.
 - 4. Pick-up schedule indicating the proposed date and time of each individual pick-up.
- E. Contractor will provide on-site, during manned servicing operations, a person responsible for job management to schedule and organize on-site work.
- F. Contractor will provide transportation of PCB liquids and flushing fluids to an EPA approved incinerator and subsequent disposal of PCB liquids and flushing fluids in that incinerator.
- G. Contractor will provide all required permits, manifests and other documents for legal disposal of PCB liquids and solids.

- H. Contractor will provide written confirmation of solid PCB material destruction at an EPA approved incineration facility.
- I. Contractor will provide written confirmation of destruction of liquid PCB material at an EPA approved incineration facility.
- J. Before removing any PCB liquid from any of the transformers, the following applicable precautions shall apply:
 - 1. Prior to commencing any fluid handling operations, the work area shall be properly barricaded and identified.
 - 2. Prior to commencing any pumping operations, the integrity of the pumping equipment shall be confirmed.
- K. Two (2) trained personnel from the contractor's Spill Prevention Control and Countermeasures team shall be present and fully equipped during all pumping and handling of PCB fluids.
- L. Drums shall not be filled in excess of 95% capacity to provide for expansion.
- M. All liquid filled drums shall be loaded on the transport vehicle by one of the following methods:
 - 1. By a hoist or lift truck utilizing a two-point drum lifter.
 - 2. By a hoist or lift truck provided with a band-around type drum lifter.
 - 3. By a lift truck lifting the drums from underneath by a pallet attached to the drum by a banding arrangement.
 - 4. By a hoist or lift truck lifting the drums by means of a specially designed and self-tightening flexible drum harness.

3.5 CONTAINERIZATION AND CLEANUP

- A. All liquids generated as a result of work activities and cleanup operations shall be placed in EPA specified containers.
- B. All solids such as absorbents, rags, disposable protective clothing, solids and other incidentals shall be placed in EPA specified containers.
- C. All drums and article containers where used shall be properly sealed, marked, labeled and dated.
- D. Contractor shall have a written drum labeling procedure.
- E. PCB materials and equipment may be temporarily stored in secured rooms and within Owner's locked fenced areas, as may be arranged with Owner. Spill control must be employed per 4 CFR 761.
- F. Storage of materials shall be minimized. Under no circumstances may storage on Owner's site exceed 14 days.
- G. After completion of on-site work, all hoses, pumps, drip pans, tools and equipment used shall be decontaminated in accordance with the applicable EPA regulations and properly secured.
- H. Any contamination on the exterior surfaces of equipment to be moved which may contaminate the work area during performance of the work shall be removed prior to movement of the equipment.
- I. Should a spill occur during the course of the work, the contractor shall be responsible for the cleanup.

- J. All cleanup shall be per Title 40 CFR 761 part III Sub part G – PCB Spill Cleanup Policy.

3.6 INSURANCE

- A. The PCB disposal contractor will carry the following levels of insurance and provide a certificate of insurance naming the Owner as certificate holder before work commences:
1. Contractor pollution legal liability insurance in the amount of \$1 million per occurrence and \$2 million aggregate to cover sudden and gradual pollution risks at the project site.
 2. Business automobile liability insurance, including pollution coverage, in the amount of \$1 million combined single limit.
 3. Comprehensive general liability insurance in the amount of \$5 million for non-pollution liability.

END OF SECTION 16041

SECTION 16060 - GROUNDING

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 the following:
 - 1. Grounding Conductors:
 - a. For General Use Above and Below Grade: Bare.
 - b. In Ducts in Duct Banks: Insulated.
 - c. In Conduit with Phase Conductors: Insulated.
 - 2. Grounding Connections:
 - a. In Earth or Inaccessible Locations: Exothermic welded type.
 - b. To Structural Steel Used for Main Building Framing: Exothermic welded type.
 - c. To Non-Permanently Fixed Equipment: Lugs bolted to the equipment.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Ground electrical system neutrals and non-current carrying parts of electrical equipment per the minimum requirements of the National Electrical Code, except where additional requirements are indicated or specified.

1.4 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
- B. Submit letter of intent for each item. Coordinate the items, as they relate to the work, prior to submittal. Items shall include:
 - 1. Ground cables
 - 2. Grounding connections and fittings

PART 2 - PRODUCTS

2.1 GROUNDING CONDUCTORS

- A. Bare Grounding Conductors: stranded annealed copper.
- B. Insulated Grounding Conductors: stranded annealed copper insulated with a heat and moisture resistant polyvinyl chloride compound and meeting UL Requirements for Type THWN or XHHW, 75 degC, rated 600 volts, color-coded green. Refer to Section 16120 for manufacturers.

2.2 GROUNDING CONNECTIONS

- A. Exothermic Welding Connection Materials.
 - 1. Manufacturer: Provide the following:
 - a. Cadweld
- B. Copper Compression Grounding
 - 1. Manufacturer: Provide products of one of the following:
 - a. Anderson
 - b. Burndy
 - c. IlSCO
 - d. Panduit
 - e. Penn Union
 - f. Thomas & Betts
- C. Grounding Fittings for Connecting to Water Pipe.
 - 1. Manufacturer: Provide products of one of the following:
 - a. Anderson Type GC
 - b. Burndy GD or GG
 - c. Thomas & Betts Series 2818 to 3821, 3824 and 3890
- D. Grounding Fittings for Bonding a Ground Conductor to Its Own Conduit.
 - 1. Manufacturer: Provide products of one of the following:
 - a. Appleton Type GIB
 - b. Burndy Type NE
 - c. Penn Union Type BD
 - d. O-Z Type GB
 - e. Thomas & Betts Type TIG or 3800 Series

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Thoroughly clean all bonding surfaces of non-conducting materials. Where bolted connections are used, treat surfaces with a corrosion-inhibiting compound.
- B. Where insulated conductors are used, thoroughly tape all exposed splices and connections. Encapsulate below grade splices and connections so that bare conductors are not in contact with earth.
- C. Where metallic conduit is used for mechanical protection of a ground conductor, bond conductor to the conduit at each end.
- D. For electrical system neutral grounding, do not use conductor sizes smaller than No. 8 AWG.
- E. Ground the enclosures of all heavy duty equipment, such as switchboards, transformers, motor control centers, motors above 50 horsepower, with a separate grounding conductor connected to the nearest ground conductor or ground bus comprising a part of the electrical system grounding.
- F. The metallic enclosures and exposed noncurrent-carrying metal parts of all electrical equipment shall be grounded by connection with an equipment grounding conductor. This includes boxes, panels, lighting fixtures, ballasts and poles, receptacles, etc.

END OF SECTION 16060

SECTION 16080 - ELECTRICAL TESTING

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. General Scope:
 - 1. Engage the services of a recognized independent testing firm for the purpose of performing inspections and tests as herein specified. Where this contractor has the qualifications and capabilities of providing these services, it shall be so stated prior to award of contract.
 - 2. The testing firm shall provide all material, equipment, labor, and technical supervision to perform such tests and inspections.
 - 3. It is the intent of these tests to assure that all electrical equipment, both contractor and owner supplied, is operational and within industry and manufacturer's tolerances and is installed in accordance with design specifications.
 - 4. The tests and inspections shall determine suitability for energization.
- B. Applicable Codes, Standards and References
 - 1. All inspections and tests shall be in accordance with the following applicable codes and standards except as provided otherwise herein.
 - a. American National Standards Institute - ANSI
 - 1) ANSI C2: National Electrical Safety Code
 - 2) ANSI Z244-1: American National Standard for Personnel Protection
 - b. American Society for Testing and Materials - ASTM
 - c. Association of Edison Illuminating Companies - AEIC
 - d. Electrical Apparatus Service Association - EASA
 - e. Institute of Electrical and Electronic Engineers - IEEE
 - f. Insulated Cable Engineers Association - ICEA
 - g. International Electrical Testing Association - NETA
 - h. National Electrical Manufacturer's Association - NEMA
 - i. National Electrical Code - NEC
 - j. National Fire Protection Association - NFPA
 - 1) ANSI/NFPA 70B: Electrical Equipment Maintenance
 - 2) NFPA 70E: Electrical Safety Requirements for Employee Workplaces
 - 3) ANSI/NFPA 70: National Electrical Code
 - 4) ANSI/NFPA 78: Lightning Protection Code
 - 5) ANSI/NFPA 101: Life Safety Code

- k. Occupational Safety and Health Administration - OSHA
 - 1) OSHA Part 1910; Subpart S, 1910.308
 - 2) OSHA Part 1926; Subpart V, 1926.950 through 1926.960
 - l. Underwriters Laboratories, Inc. - UL
 - m. State and Local Codes and Ordinances
 - 2. All inspections and tests shall utilize the following references:
 - a. Project Design Specifications.
 - b. Project Design Drawings.
 - c. Manufacturer's instruction manuals applicable to each particular apparatus.
- C. Qualifications of Testing Agency:
 - 1. The testing firm shall be a corporately independent testing organization which can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers, and installers of equipment or systems evaluated by the testing firm.
 - 2. The testing firm shall be regularly engaged in the testing of electrical equipment devices, installations, and systems.
 - 3. The testing firm shall have been engaged in such practices for a minimum of five years.
 - 4. The testing firm shall meet Federal OSHA criteria for accreditation of testing laboratories, Title 29, Parts 2907, 1910, and 1936. Full membership in the InterNational Electrical Testing Association constitutes proof of such criteria.
 - 5. The lead, on site, technical person shall be currently certified by the InterNational Electrical Testing Association (NETA) in Electrical Power Distribution System Testing.
 - 6. Testing firm shall utilize only full-time technicians who are regularly employed by the firm for testing services. Electrically unskilled employees are not permitted to perform testing or assistance of any kind. Electricians and/or linemen may assist, but may not perform testing and/or inspection services.
 - 7. The testing firm shall submit proof of the above qualifications with bid documents when requested.
 - 8. The testing firm shall be an independent organization as defined by OSHA Title 29, Part 1936 and the InterNational Electrical Testing Association.
 - 9. All instruments used by the testing firm to evaluate electrical performance shall meet NETA's Specifications for Test Instruments.
 - 10. The terms used herewithin such as Test Agency, Test Contractor, Testing Laboratory, or Contractor Test Company, shall be construed to mean testing firm.
- D. Division of Responsibility:
 - 1. The Electrical Contractor shall perform routine insulation resistance, continuity and rotation tests for all distribution and utilization equipment prior to and in addition to tests performed by the testing firm specified herein.
 - 2. The Electrical Contractor shall supply a suitable and stable source of electrical power to each test site. The testing firm shall specify the specific power requirements.

3. The Electrical Contractor shall notify the testing firm when equipment becomes available for acceptance tests. Work shall be coordinated to expedite project scheduling.
 4. The testing firm shall notify the engineer prior to commencement of any testing.
 5. Any system, material or workmanship which is found defective on the basis of acceptance tests shall be reported.
 6. The testing firm shall maintain a written record of all tests and upon completion of project, assemble and certify a final test report.
- E. Electrical Tests: Furnish all labor, materials, test equipment, and technical supervision to perform and record the electrical tests as specified, and perform and record all electrical tests as required, including tests on:
1. Tests on Transformers, Liquid-Filled
 2. Tests on Cables, Low Voltage (600V Maximum)
 3. Tests on Cables, Medium and High Voltage (601 V-75 KV)
 4. Grounding Systems
- F. Preliminary Inspections and Tests: Visual inspections of electrical equipment, wire checks of factory wiring and any other preliminary work required to prevent delays during performance of electrical acceptance tests.
- G. Electrical Acceptance Tests: Those inspections and tests required to show that the workmanship, methods, inspections, and materials used in erection and installation of the electrical equipment conforms to accepted engineering practices, IEEE Standards, IPCEA-NEMA Standards, the National Electrical Code, manufacturer's instructions, and Division 16 Sections, and to determine that the equipment involved may be energized for operational tests.
- H. Operating Tests: Those tests performed on all electrical equipment installed under Division 16 Sections, and under other Sections, to show that the electrical equipment will perform the functions for which it was designed.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Refer to Section 16025, "Electrical Systems".
- B. Operating tests on electrical equipment installed under other Sections to prove capability of such equipment to perform as specified in the Section covering specific equipment.
- C. Repair or replacement of equipment installed under other Sections and not meeting acceptance tests specified in this Section and therefore not acceptable.

1.4 PERFORMANCE REQUIREMENTS

- A. Final acceptance of electrical equipment will not only depend on equipment integrity as determined by the electrical acceptance test, but will also depend on complete operational tests, whether performed under this or other Sections.

1.5 SUBMITTALS

A. Test Reports:

1. The test report shall include the following:
 - a. Project Name: Obtain from project manual.
 - b. A/E Firm: Integrated Design Solutions, LLC
 - c. A/E Address: 888 W. Big Beaver, Suite 200, Troy, MI 48084
 - d. A/E Project Number: Obtain from project manual.
 - e. Name of testing organization.
 - f. Address of testing organization.
 - g. Name of individual performing tests.
 - h. Description of tests.
 - i. Test data.
 - j. Analysis and recommendations.
 - k. Description of equipment tested and its number/name.
 - l. Humidity, temperature, and other conditions that may affect the results of the tests and/or calibrations.
 - m. Date of inspections, tests, maintenance, and/or calibrations.
 - n. Identification of the testing technician.
 - o. Indication of inspections, tests, maintenance, and/or calibrations to be performed and recorded.
 - p. Indication of expected results when calibrations are to be performed.
 - q. Indication of "as-found" and "as-left" results, as applicable.
 - r. Sufficient spaces to allow all results and comments to be indicated.
2. Submit test reports, including complete data on actual readings taken and corrected values, to the Architect/Engineer for approval after each test period. Have all test reports signed by the authorized witnesses present at tests prior to submission. Do not energize any equipment or material for operating tests until test data has been approved.

- B. Submit five (5) copies of final approved test reports to the Owner at the completion of the work under this Section.

1.6 PROJECT/SITE CONDITIONS

A. Environmental Requirements:

1. Do not perform megger tests during times of high relative humidity.
2. Do not perform tests on outdoor equipment during inclement weather. Do not perform tests on direct burial bare ground conductors or on ground rods within a 48 hour period following rainfall.

B. Safety Precautions:

1. All parties involved shall be cognizant of applicable safety procedures. This document does not include any procedures, including specific safety procedures. It shall be understood and clear that an overwhelming majority of the tests and inspections recommended in these specifications are potentially hazardous. Individuals performing these tests shall be trained and capable of conducting these tests in a safe manner and with complete knowledge of the hazards involved. Safety practices shall include, but are not limited to, the following requirements:
 - a. All applicable provisions of the Occupational Safety and health Act, particularly OSHA 29CFR 1910.
 - b. Accident Prevention Manual for Industrial Operations, National Safety Council.
 - c. Applicable state and local safety operating procedures.
 - d. Owner's safety practices.
 - e. ANSI/NFPA 70E, Standard for Electrical Safety Requirements for Employee Workplaces.
2. A safety lead person shall be identified prior to commencement of work.
3. A safety briefing shall be conducted prior to the commencement of work.
4. All tests shall be performed with the apparatus de-energized and grounded except where otherwise specifically required to be ungrounded or energized for certain tests.
5. The testing organization shall have a designated safety representative on the project to supervise operations with respect to safety.
6. During cable tests, station a person at each point where cable has exposed connections. Supply each person with a two-way communication device.

C. Suitability of Test Equipment:

1. All test equipment shall meet the calibration requirements found in these specifications and shall be in good mechanical and electrical condition.
2. Field test metering used to check power system meter calibration shall be more accurate than the instrument being tested.
3. Accuracy of metering in test equipment shall be appropriate for the test being performed.
4. Waveshape and frequency of test equipment output waveforms shall be appropriate for the test and the tested equipment.

D. Test Instrument Calibration:

1. The testing organization shall have a calibration program which assures that all applicable test instruments are maintained within rated accuracy for each test instrument calibrated.
2. The firm providing calibration service shall maintain up-to-date instrument calibration instructions and procedures for each test instrument calibrated.
3. the accuracy shall be directly traceable to the National Institute of Standards and Technology (NIST).
4. Instruments shall be calibrated in accordance with the following frequency schedule:
 - a. Field instruments: Analog, 6 months maximum. Digital, 12 months maximum.
 - b. Laboratory instruments: 12 months maximum.
 - c. Leased specialty equipment: 12 months maximum.
5. Dated calibration labels shall be visible on all test equipment.

6. Records, which show date and results of instruments calibrated or tested, must be kept up to date.
7. Calibrating standard shall be of better accuracy than that of the instrument tested.

1.7 SEQUENCE AND SCHEDULING

- A. Schedule sequence of tests so that equipment can be energized immediately after completion of the applicable tests and approval of test reports. Notify the Architect/Engineer of time of test at least 96 hours prior to testing.
- B. Notify vendors and manufacturers of electrical equipment of the time of tests and extend reasonable cooperation to them or their representatives to permit them to witness tests should they so request. Obtain list of manufacturers of Owner furnished equipment from the Architect/Engineer.

1.8 INDEPENDENT TESTING FIRMS

- A. Dymax Services, Inc.
23460 Industrial Park Drive
Farmington Hills, MI 48335
(248) 477-6066
- B. Power Plus Engineering, Inc.
28064 Center Oaks Ct.
Wixom, MI 48393
(248) 344-0200

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Perform preliminary inspections and tests immediately prior to performing acceptance tests. Fuses and fusing devices, such as cable limiters, shall be omitted from cable tests and tests involving cables.

3.2 MEGGER TESTS

- A. Megger readings specified are the minimum readings desired at an ambient temperature of 60 degF (15.56 degC) and at a low relative humidity. When megger readings are taken at other than 60 degF, convert readings to equivalent values at 60 degF.
- B. When megger readings fall below the specified minimum values at 60 degF, devise some means of applying heat for the purpose of drying out the equipment subject to the approval of the Architect/Engineer. If drying is to be done by applying an electric potential to a piece of equipment, do not exceed the continuous voltage or current ratings of the equipment being dried, either directly or by induction.

3.3 CONTINUITY TESTS

- A. Perform continuity tests with a DC type device using a bell or buzzer. Do not use phones for continuity test; use phones only for communication.

3.4 CABLES, LOW-VOLTAGE (600V MAXIMUM)

A. General:

1. Provide visual and mechanical inspection of all cables from transformer to main service disconnect means.
2. Provide a continuity test for all feeders.
3. Provide a megger test for all cables serving loads 200 amperes and above.
4. Provide uniform resistance testing of all parallel conductors.
5. Verify that phase identification was provided and its accuracy for each power feeder cable.

B. Visual and Mechanical Inspection:

1. Inspect and compare cable data including size and quantity of cables with drawings and specifications. Report differences in test report and include on contractor's "as-built" drawings.
2. Inspect exposed sections of cables for physical damage.
3. Inspect bolted electrical connections for high resistance using one of the following methods:
 - a. Use of low-resistance ohmmeter.
 - b. Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data.
 - c. Perform thermographic survey.
4. Inspect compression-applied connectors for correct cable match and indentation.
5. Inspect for correct phase identification and phase arrangements.
6. Inspect jacket and insulation condition.

C. Electrical Tests:

1. Perform resistance measurements through bolted connections with low-resistance ohmmeter.
2. Megger Test: Perform insulation-resistance test for each conductor with respect to ground conductors. Test duration shall be one minute. Applied potential shall be as follows:
 - a. 500 volts DC for 300 volt rated cable.
 - b. 1000 volts DC for 600 volt rated cable. Minimum permissible insulation-resistance.
 - c. Tested value shall be 50 megohm for isolated cables and 5 megohms for non-isolated cables.
3. Perform continuity tests to insure correct cable connection.
4. Verify uniform resistance of parallel conductors.

- D. Connections: Isolate power cables to be megger tested by opening switches or breakers at each end of cable prior to testing where such disconnecting means exists. Where cables are direct connected without a disconnecting means, do not disconnect cables; test as connected.

- E. Acceptance: Cable must pass all inspections and tests.
- F. Records:
 - 1. Include the following information in test report on each 208 volt power cable:
 - a. Complete cable identification and description of isolation means.
 - b. Megger readings, including converted values.
 - c. Approximate average cable temperature.

3.5 CABLES, MEDIUM AND HIGH VOLTAGE (601V-79KV)

- A. General: Provide visual and mechanical inspection of all cables.
 - 1. Provide a dielectric absorption test.
 - 2. Check continuity and phase identification for each cable.
- B. Visual and Mechanical Inspection:
 - 1. Inspect and compare cable data including size and quantity of cables, with drawings and specifications. Report any differences in test report and include on Contractor's "as-built" drawings.
 - 2. Inspect exposed sections of cables for physical damage.
 - 3. Inspect bolted electrical connections for high resistance using one of the following methods:
 - a. Use of low resistance ohmmeter.
 - b. Verify tightness of accessible bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data.
 - c. Perform thermographic survey.
 - 4. Inspect compression-applied connectors for correct cable match and indentation.
 - 5. Inspect for correct phase identification and phase arrangements.
 - 6. Inspect jacket and insulation condition.
 - 7. Inspect shield grounding, cable supports, and termination.
 - 8. Verify that visible cable bends meet or exceed ICEA and/or manufacturer's minimum allowable bending radius.
 - 9. Inspect fireproofing in common cable areas.
 - 10. If cables are terminated through window-type current transformers, inspect to verify that neutral and ground conductors are correctly placed and that shields are correctly terminated for operation of protective devices.
- C. Connections: Isolate cable by opening switches or breakers at each end of cable prior to testing, except where cables are directly connected without disconnecting means, disconnect and fan out cable. Apply dielectrical absorption tests between each conductor and ground with the other two conductors, its shield, lead sheath, conduit or armor grounded to the same ground. Test each conductor in the same manner. Do not include building steel as a necessary part of the test ground circuit.
- D. Dielectric Absorption Tests:
 - 1. Use a 2500 volt megger for each dielectric absorption test. Continue each test for a time sufficient to charge the cable.

2. Take megger readings every 15 seconds during the first three minutes and at one minute intervals thereafter. Continue test until three equal readings one minute apart are obtained.
 3. Megger readings taken during the second test, after the high potential test, must be reasonably parallel with those of the initial test to show no evidence of injury to the cable during the high potential test.
- E. Acceptance: The cable must pass all inspections and tests.
- F. Records:
1. Include the following information in test report on each cable:
 - a. Complete identification of cable, including approximate length.
 - b. Megger readings versus time data, including converted values.
 - c. Approximate average cable temperature.

3.6 TESTS ON GROUNDING

- A. General: Inspect ground conductors and connections for conformance with design specifications and for satisfactory workmanship. Test resistance to earth of each ground rod and each ground grid. Test ground paths for equipment and structural steel grounding.
- B. Connections:
1. Include ground bus on equipment, grid connection, and associated intermediate copper ground conductors in tests on ground paths for electrical equipment.
 2. Include structural steel connection, grid connection and intermediate conductor in tests on ground paths for structural steel.
- C. Tests On Each Ground Grid: Test each isolated ground grid as specified for individual ground rods, except the maximum acceptable resistance to earth is five ohms. In tests on total ground systems, the maximum acceptable resistance to earth is two ohms.
- D. Tests On Ground Paths: Test ground paths for electrical equipment and structural steel for continuity by applying a low voltage DC source of current, capable of furnishing up to 100 amperes. The ground path for electrical equipment using structural steel must conduct 100 amperes. Resistance as calculated from the current and voltage must not exceed 0.010 ohms.
- E. Acceptance: Grounding materials and connections must pass all inspections and must meet all specified maximum and minimum values.
- F. Records: Make complete records of all tests. Include resistance values obtained, calculations of same, and methods of test and calculation.

3.7 TESTS ON TRANSFORMER INSULATING LIQUIDS

- A. General: Clean all liquid-filled transformers including Owner-furnished transformers, with particular care for valves, plugs, gauges, thermometers, relief diaphragms, breathers, tap changers, bushings, fans, air vents, etc., and check for leaks and broken parts. Check liquid

levels in all tanks. Perform dielectric strength tests on liquid prior to energization of transformer and again after the transformer has been continuously energized for a period of four days.

B. Liquid Level Checks:

1. Verify that liquid levels are within required tolerance limits. Add liquid to transformers furnished under this Contract. Inform the Architect/Engineer of any low levels in Owner-furnished equipment and await direction. Do not add liquid to Owner-furnished equipment without the approval of the Architect/Engineer. Furnishing of additional liquid for Owner-furnished equipment is not part of this Contract.
2. Where liquid must be added to transformers furnished or installed under this Contract, check the underside of the manhole cover for condensation. Remove all condensation prior to adding liquid. Add only liquid identical to existing liquid as approved by the Architect/Engineer.
3. Final check liquid levels when liquid temperature reaches 25 degC.

C. Test Equipment:

1. Sample Containers: 16 ounce capacity clear glass type having glass stoppers. Do not use stoppers of rubber or compositions of rubber. Prior to first use of containers in testing, rinse containers and stoppers in dry, lead-free gasoline and dry thoroughly. When thoroughly dry, wash containers and stoppers in strong soap suds, rinse thoroughly with water, and dry in an oven at 105 degC before using. Store cleaned and dried stoppered containers in a warm, dry, protected place between tests. Do not use containers for sampling more than one type of liquid without thoroughly cleaning and drying as specified.
2. Test Set: 1/2 KVA, 35,000 volt rated portable test set, having one inch diameter electrodes in the test cup with a gap of 0.1 inch between adjacent electrode faces. Prior to first use of the test cup in testing, rinse the test cup with dry, lead-free gasoline and dry in an oven at moderate temperature. Store rinsed and dried test cup in warm, dry, protected place between tests. Do not use test cup for sampling more than one type of liquid without rinsing and drying as specified.

D. Taking Samples:

1. Immediately before drawing a sample, carefully clean each sampling valve, then open each valve, allowing sufficient liquid to drain out into a waste container to insure the removal of any moisture which may have collected in the valve. Dispose of waste liquid properly. Take samples from outdoor equipment on a clear day.
2. Before filling any container, rinse the container three times with liquid obtained from the same sample source.
3. Take sufficient sample liquid to perform a minimum of 5 tests. Hold filled stoppered containers in a room having an ambient temperature between 20 degC and 30 degC until sample liquid temperature has stabilized at ambient temperature. Fill each sample container with approximately equal quantities of liquid from sample valves at the top and bottom of a tank.

E. Visual Inspection:

1. Visually inspect each liquid sample to determine that the liquid is essentially clean, free from carbon, clear, contains no obvious water, and is not highly discolored.
2. Inform the Architect/Engineer when visual inspection indicates liquid is not essentially clean.

F. First Dielectric Strength Tests:

1. Perform tests in the same room or ambient temperature in which samples have been held.
2. Immediately before performing each test, rinse the test cup with the liquid to be tested.
3. Mix the sample in the container with a swirling motion to avoid introducing air, and fill the test cup with the sample liquid to a height of not less than 0.79 inches (20 MM) above the top of the electrodes. Gently rock the cup and then allow the liquid to stand in the cup without agitation for three minutes before test voltage is applied, to allow air bubbles to escape.
4. Apply the test voltage gradually at a rate of 3000 volts (RMS) per second until breakdown occurs, as indicated by a continuous discharge across the gap. Open the test circuit immediately after breakdown. After testing, jar the test vessel to loosen particles of carbon adhering to the electrodes, but not with sufficient force to introduce air bubbles. Empty the test cup after each test.
5. Make one breakdown test on each of five fillings of the test cup and average the five breakdown voltages. If the average deviation from the mean exceeds 10% or if any individual test deviates more than 25% from the average, make additional tests. Determine the dielectric strength by averaging the first five tests that conform to the allowable variations.
6. Minimum Acceptable Average Breakdown Voltage: 30 KV. If the average breakdown voltage is less than 30 KV, inform the Architect/Engineer that filtering is required. Filter and retest liquid in transformer tanks furnished under this Contract. Do not filter and retest liquid in Owner-furnished transformer tanks without the approval of the Architect/Engineer. Filtering and retesting of liquid furnished by the Owner is not part of this Contract.

G. Second Dielectric Strength Tests: Four days after each equipment is energized, make a second series of dielectric strength tests on each equipment, observing all necessary precautions and procedures as specified.

H. Acceptance: Each piece of equipment must pass all inspections and tests.

I. Records:

1. Make complete and accurate records of each test. Include the following in each test report:
 - a. Complete identification of each liquid insulated equipment.
 - b. Breakdown voltage on each test sample whether used in determination of average breakdown voltage or not.
 - c. Calculations of average and mean values for each series of tests.
2. Approximate liquid temperature at time of each test.

END OF SECTION 16080

SECTION 16190 - SUPPORTING DEVICES

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 straps, clamps, steel channel, and fastening hardware for supporting electrical work.

1.3 REFERENCES

- A. NECA - National Electrical Contractors Association.
- B. ANSI/NFPA 70 - National Electrical Code.

1.4 SECTION INCLUDES

- A. Conduit and equipment supports.
- B. Anchors and fasteners.

PART 2 - PRODUCTS

2.1 PRODUCT REQUIREMENTS

- A. Materials and Finishes: all material provided shall have a protective zinc coating either Electro-Plated (ASTM B633 SCI or SC3), Pre-Galvanized (ASTM A525 coating designation G90) or Hot-Dip Galvanized after fabrication (ASTM A123). The minimum thickness of zinc coating shall be 0.2 mil (5 micrometers).
- B. Provide materials, sizes, and types of anchors, fasteners and supports to carry the loads of equipment and conduit. Consider weight of wire in conduit when selecting products.
- C. All structural supports and channels shall be manufactured from ASTM A570 grade 33 steel. The minimum gauge of steel shall # 16.
- D. The contractor shall replace all supports and channels that sag, twist, and or show signs of not providing proper structural support, to the equipment, it is intended for, as determined by the Owner and Engineer. All costs associated with replacing supports and steel channels shall be incurred by the contractor.
- E. Anchors and Fasteners:
 - 1. Concrete Structural Elements: Use expansion anchors, powder actuated anchors and preset inserts.
 - 2. Steel Structural Elements: Use beam clamps and steel ramset fasteners.
 - 3. Concrete Surfaces: Use expansion anchors.

4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use hollow wall fasteners.
5. Solid Masonry Walls: Use expansion anchors.
6. Sheet Metal: Use sheet metal screws.
7. Wood Elements: Use wood screws.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation."
- C. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- D. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- E. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- F. In wet and damp locations use steel channel supports to stand cabinets and panelboards one inch (25 mm) off wall.
- G. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

END OF SECTION 16190

SECTION 16271 - MEDIUM-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division I Sections, apply to work in this section. Furnish and install the pad-mounted transformer(s) as specified herein and as shown on the contract drawings.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. One (1) outdoor pad-mounted, less flammable liquid insulated power transformer with primary rated 13.2 KV, 3 Phase, 3 Wire, 60 Hz and secondary rated 208/120 volts, 3 Phase, 4 Wire, solidly grounded neutral.

1.3 REFERENCES

- A. The pad-mounted transformer and all components shall be designed, manufactured and tested in accordance with the latest applicable NEMA and ANSI standards.

1.4 SUBMITTALS - FOR REVIEW/APPROVAL

- A. The following information shall be submitted to the Engineer:
 - 1. Master drawing index.
 - 2. Front view elevation or outline drawings and weight.
 - 3. Floor plan with recommended pad dimensions.
 - 4. Schematic diagrams.
 - 5. Nameplate diagram.
 - 6. Component list.
 - 7. Conduit entry/exit locations.
 - 8. Ratings including:
 - a. KVA
 - b. Primary and secondary voltage.
 - c. Taps.
 - d. Primary and secondary continuous current.
 - e. Basic impulse level.
 - f. Impedance.
 - g. Insulation class and temperature rise.
 - h. Sound level.
 - 9. Cable terminal deadfront elbow information.
- B. Where applicable the following additional information shall be submitted to the Engineer:
 - 1. Underground primary and secondary conduit and wire terminations.
 - 2. Key interlock scheme drawing and sequence of operations.
 - 3. Specified accessories.
- C. Submit five (5) copies of the above information.

1.5 SUBMITTALS - FOR INFORMATION

- A. The following product information shall be submitted:

1. Descriptive bulletins.
2. Product Sheets.

1.6 SUBMITTALS - FOR CLOSEOUT

- A. The following information shall be submitted for record purposes:

1. Final as-built drawings and information for items listed in Section 1.4.
2. Diagrammatic nameplate.
3. Certified production test reports.
4. Installation information.

- B. Submit five (5) copies of the above information.

1.7 QUALIFICATIONS

- A. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirements.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of these instructions shall be included with the equipment at time of shipment.

1.9 FIELD MEASUREMENTS

- A. Measure primary and secondary voltages and make appropriate tap adjustments.

1.10 OPERATION AND MAINTENANCE MANUALS

- A. Five (5) copies of the equipment operation and maintenance manuals shall be provided.

- B. Operation and maintenance manuals shall include the following information:

1. Instruction Books and/or leaflets.
2. Recommended renewal parts list.
3. Drawings and information required by Section 1.6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Cutler-Hammer/Westinghouse.
- B. Cooper.
- C. Siemens.
- D. Square D.

2.2 RATINGS

- A. The ratings of the transformer shall be as follows and as shown on the drawings.

KVA Rating		As indicated on drawings.
Impedance	5.75	± 7-1/2%
HV	13.2 KV	Delta
HV BIL	95 KV	
HV Taps	4 Taps	± 2 - 2-1/2% full capacity
LV	480/277V	Wye
LV BIL	45	KV

2.3 CONSTRUCTION

- A. The unit shall be R-Temp or silicone/high fire point liquid filled and shall be in accordance with the latest edition of the NEC.
- B. The transformer shall carry its continuous rating with average winding or temperature rise by resistance that shall not exceed 55 degrees C rise, based on an average ambient of 30 degreeC over 24 hours with a maximum of 40 degreeC. The insulation system shall allow an additional 12% KVA output at 65 degrees C average winding temperature rise by resistance on a continuous basis, without any decrease in normal transformer life.
- C. The transformer shall be designed to meet the sound level standards for liquid transformers as defined in NEMA and ANSI.
- D. High-voltage and low-voltage windings shall be copper. Insulation between layers of the windings shall be by Insuldur paper or equal.
- E. Each radiator assembly shall be individually welded and receive a quality control pressurized check for leaks. The entire tank assembly shall receive a similar leak test before tanking. A final six-hour leak test shall be performed.
- F. The transformer(s) shall be compartmental-type, self-cooled and tamper resistant for mounting on a pad. The unit shall restrict the entry of water (other than flood water) into the compartments so as not to impair its operation. There shall be no exposed screws, bolts or other fastening devices which are externally removable.
- G. The transformer(s) shall consist of a transformer tank and full height, bolt-on high and low voltage cable terminating compartments located side-by-side separated by a rigid metal barrier. Each compartment shall have separate doors, designed to provide access to the high voltage compartment only after the low voltage has been opened. There shall be at least one additional fastening device accessible only after the low voltage door has been opened, which must be removed to open the high voltage door. Doors shall be mounted flush with the cabinet frame. The low voltage door shall have a handle-operated, three point latching mechanism designed to be secured with a single padlock. A hex-head bolt shall be incorporated into the low voltage door latching mechanism. Both high and low voltage doors shall be incorporated into the low voltage door latching mechanism. Both high and low voltage doors shall be equipped with lift-off type stainless steel hinges and door stops to secure them in the open position.

- H. Compartment sills, doors and covers shall be removable to facilitate cable pulling and installation. The high voltage door shall be on the left with the low voltage door on the right. Compartments shall be designed for cable entry from below and shall be sized to the minimum dimensions of ANSI C57.12.26.
- I. Transformer(s) shall be supplied with a welded main tank cover and be of a sealed tank construction designed to withstand a pressure of 7 psig without permanent distortion. The tank cover shall be domed to shed water and be supplied with a tamper-resistant access handhole sized to allow access to internal bushing and switch connections. Transformers supplied with "less flammable" fluids (silicone), shall be manufactured to withstand 12 psig without rupture. The transformer shall remain effectively sealed for a top-oil temperature of -5 degrees C to 105 degrees C. when necessary to meet the temperature rise rating specified above, flat cooling panels of the common header type shall be provided.
- J. The transformer manufacturer shall certify that the transformer is non-PCB containing no detectable PCBs. Do not provide nonflammable transformer liquids including askarel and insulating liquids containing tetrachloroethylene, perchloroethylene, chlorine compounds, or halogenated compounds.
- K. When high voltage taps are specified above, full capacity taps shall be provided with a tap changing mechanism designed for de-energized operation. The tap changer operator shall be located within one of the compartments.
- L. The coil windings shall be of the two winding type, designed to reduce losses and manufactured with the conductor material as specified above. The windings shall incorporate a secondary sheet conductor for 600V class secondary to maximize short circuit strength. For higher voltage class secondary, strap conductor shall be utilized. All insulating materials shall be rated for 65 degrees C rise, 80 degrees C hot spot operation.
- M. The core material shall be high grade, grain oriented, non-aging silicon core steel with high magnetic permeability, low hysteresis and eddy current losses. Magnetic flux densities are to be kept well below saturation to allow for a minimum of 10 percent overvoltage excitation. The cores shall be properly annealed to reduce stresses induced during the manufacturing processes and reduce core losses.
- N. The core frame shall be designed to provide maximum support of the core and coil assembly. The core frame shall be welded or bolted to ensure maximum short circuit strength.
- O. The core and coil assembly shall be designed and manufactured to meet the short circuit requirements of ANSI C57.12.90. The core and coil assembly shall be baked in an oven prior to tanking to "set" the epoxy coating on the Kraft paper and remove moisture from the insulation prior to vacuum filling.
- P. Transformer shall be vacuum filled with the appropriate fluid as indicated above. The process shall be of sufficient vacuum and duration to insure that the core and coil assembly is free of moisture prior to filling the tank.

2.4 FINISH

- A. Transformer units shall include suitable outdoor paint finish. Each transformer shall be painted utilizing an initial phosphatizing cleaning treatment, followed by manufacturer's standard paint process baked on to a total of three (3) to five (5) mils average thickness. Units shall be painted padmount green, Munsell No. 7GY3.29/15.

2.5 ACCESSORIES

A. Transformer features and accessories shall include:

1. Dial-type thermometer.
2. Liquid level gauge.
3. Pressure vacuum gauge.
4. One (1) inch drain valve with sample valve.
5. Pressure relief valve.
6. Non-PCB label.
7. One (1) inch upper fill/filter press connection.
8. Additional accessories.

2.6 PRIMARY CONNECTIONS

- A. Transformer primary connections shall be deadfront wells, inserts and elbows for cable sizes shown on the drawings. Verify cable sizes prior to ordering transformer.

PART 3 - EXECUTION

3.1 FACTORY TESTING

- A. The following standard factory tests shall be performed on the equipment provided under this Section. All tests shall be in accordance with the latest applicable ANSI and NEMA standards.

1. Resistance measurements of all windings on the rated voltage connection of each unit and at the tap extremes of one unit only of a given rating on this project.
2. Ratio tests on the rated voltage connection and on all tap connections.
3. Polarity and phase relation tests on the rated voltage connections.
4. No load loss at rated voltage on the rated voltage connection.
5. Exciting current at rated voltage on the rated voltage connection.
6. Impedance and load loss at rated current on the rated voltage connection of each unit and on the tap extremes of one unit only of a given rating on this project.
7. Applied potential test.
8. Induced potential tests.

- B. The manufacturer shall provide three (3) certified copies of factory test reports.

- C. The following special factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest applicable ANSI and NEMA standards.

1. Temperature test(s) shall be made on all units. Tests shall not be required when there is available a record of a temperature test on an essentially duplicate unit.
2. Basic impulse test on all windings.

3.2 INSTALLATION

- A. Install all equipment per the manufacturer's recommendations and the contract drawings.

3.3 FIELD QUALITY CONTROL

- A. Provide the services of a qualified factory trained manufacturer's representative to assist the Contractor in installation and start-up of the equipment specified under this section. The manufacturer's representative shall provide technical direction and assistance to the Contractor in general assembly of the equipment, connections and adjustments, and testing of the assembly and components contained herein.
- B. The Contractor shall provide three (3) copies of the manufacturer's field start-up report.

3.4 FIELD TESTING

- A. Measure primary and secondary voltages for proper tap settings.
- B. Megger primary and secondary windings.
- C. Liquid transformers - test liquid for dielectric strength.

3.5 FIELD ADJUSTMENTS

- A. Adjust taps to deliver appropriate secondary voltage.

3.6 MANUFACTURER'S CERTIFICATION

- A. A qualified factory trained manufacturer's representative shall certify in writing that the equipment has been installed, adjusted and tested in accordance with the manufacturer's recommendations.
- B. The Contractor shall provide three (3) copies of the manufacturer's representative's certification.

END OF SECTION 16271



BID TABULATION FORM

Project Name: Troy School District
Smith Middle School
Transformer Replacement
TSD Bid Number 9536
IDS Project No.: 03234-2005

Date: June 24, 2008

Estimate: \$49,500.00

	Metro Electric Engineering Technologies, Inc.	Transformer Inspection Retrofill Corporation	J.B. Electrical Company	Trinity Electric, Inc.	Great Lakes Power & Lighting, Inc.	Bidder 6
Bid Bond	Yes	Yes	Yes	Yes	Yes	
Addendum	n/a	n/a	n/a	n/a	n/a	
Familiar Disclosure	Yes	Yes	Yes	Yes	Yes	
Base Bid No. 1 - Demolition	\$11,440.00	\$7,030.00	\$10,500.00	\$17,000.00	\$18,000.00	
Base Bid No. 2 - New Work	\$23,200.00	-	\$24,250.00	\$26,000.00	\$39,000.00	
Base Bid No. 3 - Demo & New Work	\$32,100.00	-	\$34,750.00	\$43,000.00	\$54,000.00	
Project Completion by Sept. 1	No	No	No	Yes	Yes	
Transformer Drained on Site	No	Yes	No	Yes	Yes	

Mandatory Alternates

1. Completion of Oct 13 in lieu of Sept 1	No Change	\$25,902.80	n/a	\$5,000.00	(\$6,000.00)	
Demo & New Work Complete by Oct. 13	\$32,100.00	\$32,932.80	\$34,750.00	\$48,000.00	\$48,000.00	

Voluntary Alternates

V1. Voluntary Alternate No. 1	-	\$35,918.40	-	-	-	
V2. Voluntary Alternate No. 2	-	-	-	-	-	

Notes:

1. Great Lakes Base Bid No. 2 & No. 3 based on Aluminum Transformer in lieu of Copper.
2. Transformer Inspection Retrofill Voluntary Alternate No. 1 - Remanufactured Transformer in lieu of New; Complete by Sept. 1.

cc: File

ec: M. Adamczak, TSD A. Belardi, TSD F. Lams, TSD
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