



MINOR CONSTRUCTION PROJECT BID PACKAGE

Issued by Authority of The Michigan Department of Natural Resources and Environment

This is an invitation for a sealed bid for furnishing labor, material, supplies and equipment to complete the project detailed on the Proposal and Contract Form and in the attached specifications. Bid security performance bond and labor and material bond **are not** required for this project.

The State reserves the right to award to that responsive and responsible bidder offering the best value to the State for the quality of the service to be supplied, conformity with specifications and suitability to the requirements of the State, or to reject any and all bids in whole or in part if the best interest of the State will be served.

It is the vendor's responsibility to read, understand and follow the Instructions To Bidders, General Conditions and General Requirements attached to this packet.

| Questions regarding these terms should be directed to: | | Questions regarding the project should be directed to: | |
|---|---|--|--|
| The Issuing Officer: PATRICK AVENDT | Telephone No.: (517) 373-9902 | Site Contact/Project Manager's Name: MR. ALVIN ELZINGA | Telephone Number: (231) 848-4880 |
| Address: OFFICE OF LAND AND FACILITIES MI DEPT OF NATURAL RESOURCES and ENVIRONMENT STEVENS T. MASON BUILDING – 8TH FLOOR 530 WEST ALLEGAN STREET P.O. BOX 30033 LANSING, MICHIGAN 48909 (This Zip Code for P.O. Box only.) (Street Address Zip Code is 48933.) | | Division/Office Name: DNRE RECREATION DIVISION | |
| | | Field Unit Name: TIPPY DAM RECREATION AREA | |
| | | Street Address of Park Headquarters: 1500 DILLING ROAD | |
| | | City: BRETHREN | State: ZIP: MI 49619 |

- This Bid Package contains:
- A. This instructional cover sheet
 - B. The "Proposal and Contract for DNRE" (Form PR-1625).
 - C. Instructions to Bidders, General Conditions, General Requirements
 - D. Technical specification and other attachments, if any required.

| | | |
|--|---|--|
| THE ATTACHED CONTRACT DOCUMENTS ARE FOR: | | Bid Number: 24-3156 |
| PROJECT LOCATION (location where the work is being done) TIPPY DAM RECREATION AREA | | COUNTY: MANISTEE |
| NAME OF CONSTRUCTION PROJECT: INTERIOR MECHANICAL AND ELECTRICAL WORK | | |
| MANDATORY PRE-BID OPEN HOUSE: NONE SCHEDULED – However, it is highly recommended that potential bidders visit the site prior to bidding. | | |
| BID OPENING: | DATE: FRIDAY, DECEMBER 10, 2010 | TIME (local time): 2:00 P.M. |

TO BID FOR THIS WORK, SUBMIT A PROPOSAL FOLLOWING THE INSTRUCTIONS BELOW.

- 1) Complete the "bidder's" portion on the "Proposal and Contract for DNRE" (Form PR-1625).
 - **DO NOT** change the bid form or qualify the bid. Only bid on the contract as written. If the bidder wishes to alter the bid price, it may be done by sending in the amount of change (addition or reduction) to the original bid by the bid opening time. The original bid sum must not be revealed. Bid prices must be good for sixty days.
- 2) If an Addendum was issued, confirm receipt by returning two signed copies.
- 3) Seal two completed copies of the "Proposal and Contract for DNRE" (Form PR-1625) in an envelope.
- 4) On the mailing envelope, ensure that the following information is completed on the label:
 - a) Bid number b) Bid opening date and time c) That the actual bid is enclosed
- It is the responsibility of the bidder to ensure that correctly identified bids are delivered on time. The Michigan DNRE can not be responsible for mail delivery services.
- On or before the due date and time specified on the "Proposal and Contract for DNRE" (Form PR-1625), sealed bids must be received and time stamped at 530 WEST ALLEGAN STREET-8th FLOOR, LANSING MI 48933, to be considered as on time.
- The bids will be publicly opened and read aloud. Bid results will be available to the public after the opening.

INSTRUCTIONS TO BIDDERS

1. **Preparation of Bid:** Execute bid fully and properly. Submit in duplicate on this form in a sealed envelope to this office.
2. **Signatures:** All bids, notifications, claims, and statements must be signed as follows:
 - a. Corporations: Signature of official shall be accompanied by a certified copy of the resolution of the Board of Directors authorizing the individual signing to bind the corporation.
 - b. Partnerships: Signature of one partner shall be accompanied by a **certified** copy of the power of attorney authorizing the individual signing to bind all partners. If bid is signed by **all** partners, no authorization is required.
 - c. Individual: No authorization is needed. Each signature must be witnessed.
3. The bidder acknowledges the right of the owner to reject any or all bids and to waive any informality or irregularity in any bid received. In addition, the bidder recognizes the right of the owner to reject a bid:
 - a. if the bid is in any way incomplete or irregular;
 - b. if the bidder's performance as a contractor was unsatisfactory under a prior contract for the construction, repair, modification or demolition of a facility with the owner, or a contractor in privity of contract with the owner, which was funded, directly or indirectly, by the owner;
4. It is the intent of the owner to award a contract to the lowest responsible bidder, provided the bid has been submitted in accordance with the requirements of the bidding documents, and does not exceed the funds available.
5. Individuals needing special services to fully participate in the bidding process due to a physical challenge may contact the building superintendent or the facility manager.
6. **Electronic Funds Transfer Payment** Public Act 533 of 2004 requires all vendors doing business with the State of Michigan to receive payment by electronic funds transfer (EFT) for services and goods provided to the State. Please log on to the contractor and payment website at www.michigan.gov/cpexpress to register your company or you may contact the C&P Express Help Desk toll-free at 888-734-9749
7. **Interpretation of Contract Documents:** If any person contemplating submitting a bid for this project is in doubt as to the true meaning of any part of the drawings, specifications or other contract documents, he/she may submit a written request to the director for an interpretation not later than nine days prior to due date of bids. The person submitting the request will be responsible for its prompt delivery. An interpretation of the documents will be made by the requesting office and

an addendum issued and mailed or delivered to each person who has received a set of drawings and specifications. All addenda issued shall be made a part of the contract requirements. The state will not be responsible for any other explanation or interpretation of the contract documents.

8. **Substitution of Materials:** Any bidder wishing to use manufacturers or materials other than those specified shall submit a written request to the director not later than nine days prior to due date for bids. Request shall be accompanied by product data to permit evaluation and comparison with specified products or materials. The person submitting the request will be responsible for its prompt delivery. An examination and evaluation of product data will be made by the state unit and, if found acceptable, an addendum will be issued and mailed or delivered to each person who has received a set of drawings and specifications. All addenda issued shall be made a part of the contract requirements.
9. **Time of Completion:** Upon acceptance by the state of the Proposal and Contract, the contractor agrees to complete all work required in the time frame required on the Proposal and Contract.
10. **Michigan Products and Recycled Products:** All contractors and suppliers are encouraged to provide Michigan-made products and/or recycled products whenever possible where price, quality, and performance are equal to, or superior to, non-Michigan products and the requirements of the contract documents.
11. **Rejection:** The state reserves the right to reject any bids and to waive any defects in bids.
12. **Contract:** Upon acceptance by the state, this document will constitute the contract and the executed duplicate will be returned to the contractor. The contract shall not be in force until the contractor has complied with all of the requirements of insurance.

GENERAL CONDITIONS

1. **Definitions:** "**State**", the State of Michigan; "**Director**", the director of the State Unit or his/her authorized representative; "**State Unit**", any state department, board, commission or institution; "**Contractor**", the bidder whose proposal is accepted by the state; "**Notification**", written notice delivered in person or by mail; "**Contract Documents**", this document and supplemental specifications and drawings.
2. **Unfair Labor Practice:** Public Act No. 278 of 1980 prohibits the state from awarding a contract or subcontract to an employer who has been found in contempt of court by a Federal Court of Appeals, on not less than three occasions involving different violations during the preceding seven years, for failure to correct an unfair labor practice as prohibited by Section 8 of Chapter 372 of the National Labor Relations Act, 29 U.S.C. 158. A contractor for the state may not, in

relation to that contract subcontract with such an employer.

3. **Safety Regulations:** The contractor shall conform to the "General Safety Rules and Regulations" for the construction industry, as prescribed by the Construction Safety Commission, Department of Labor and Economic Growth, Bureau of Safety and Regulations, Lansing, Michigan, and the Occupational Safety and Health Standards of the United States Department of Labor. This shall be made a condition of each subcontract entered into pursuant to the contract.
4. **Taxes:** The contractor shall include and be deemed to have included in the bid and contract price all Michigan sales and use taxes currently imposed by legislative enactment and as administered by the Michigan Department of Treasury's Revenue Division on the bid date.
5. **Nondiscrimination:** For all state contracts for goods or services in amount of \$5,000 or more, or for contracts entered into with parties employing three or more employees; in connection with the performance of work under this contract, the contractor shall comply with all published rules, regulations, directives, and orders of the Michigan Civil Rights Commission relevant to Section 6, 1976 PA 453 as amended, which may be in effect at the time of bidding for any individual State project.
6. **Conflicts and Omissions:** The intent of the contract documents is to provide everything necessary for the proper execution of the work. In case of conflict, the work shall not proceed until a decision has been agreed upon by all parties concerned.
7. **Royalties, Patents, Notices, and Fees:** Contractor shall give all notices and pay all royalties, building permits, and fees. He/she shall defend all suits or claims for infringement of any patent rights and shall save the state harmless from loss on account thereof. He/she shall comply with all laws, ordinances, and codes applicable to any portion of the work.
8. **Examination of Premises:** Bidder shall familiarize himself/herself with local conditions affecting the job. He/she shall take his/her own measurements and be responsible for the correctness of same. Bidder shall be held to have made such examinations and no allowances will be made in his/her behalf by reason of error or omission on his/her part. If any part of the contractor's work depends for proper results upon existing work or the work of another contractor, the contractor shall notify the director before commencing work of any defects that will affect the results. Failure to so notify the director will constitute his/her acceptance of the conditions.
9. **Working Conditions:** All work shall be done in accordance with all regulations governing the state unit wherein the work is to be performed and with minimum possible interference with the proper functioning of the activities of that state unit. Materials, tools, equipment, etc., shall be confined so as not to unduly encumber the

premises. Each bidder shall be held to have visited the site and checked with the authorities the working conditions and the methods of carrying out the work and to have included in his/her proposal all costs for meeting such working conditions.

10. **Materials:** Unless otherwise specified, all materials shall be new and of the best grade of the representative kinds for the purpose.
 - a. Whenever material, an item of equipment, or a system is described by a performance specification, written as a proprietary product, or uses the name of a manufacturer or vendor, the term "or equal" if not inserted, shall be implied.
11. **Permits:** The Contractor is responsible for all necessary permits for this project, unless otherwise indicated on the Bid Form, Technical Specifications, or Drawings.

All work shall be executed in accordance with the State of Michigan's Construction Codes, except where work is specified or shown to be above such standard. The work shall be executed in conformity with the drawings and these specifications.

If the contractor performs any work knowing it to be contrary to the State of Michigan's Construction Codes, the contractor shall assume full responsibility and shall bear all attributable costs.

12. **Employees and Superintendence:** Contractor shall enforce good order among his/her employees and shall not employ on the work any disorderly, intemperate, or unfit person or anyone not skilled in the work assigned to him/her. Contractor or a competent person having authority to act for him/her shall be at the work at all times. He/She shall have the plans and specifications available on the site at all times.
 - a. Michigan Residency: Pursuant to 1988 PA 504, 50 percent of the persons working on this project and employed by the prime contractor or subcontractors shall have been residents of the State of Michigan for not less than one year before beginning work.
13. **Other Contracts:** The state may let other contracts in connection with the work and the contractor shall properly connect and coordinate his/her work with the work of such other contractors. The state shall not be liable for any damages or increased costs occasioned by the failure of other contractors to execute their work as may be anticipated by these documents.
14. **Protection:** The contractor shall be responsible for the protection of state property during the period of construction and shall exercise care to prevent damage to structures, utility services, storm and sanitary drainage systems, lawns, trees, plant material, fences, walks, drives, roadways, and other improvements in and adjacent to the area of work under the contract.
15. **Insurance:** No work connected with this contract shall be started until the contractor has submitted original signed certificates of insurance covering general liability and workers' compensation indicating (a) all workers are

insured to protect him/her from claims for damages for personal injury or death which may arise from operations under this contract as required by Michigan statute and that (b) he/she has the following liability insurance coverage: Commercial General Liability limits shall be \$2,000,000.00 each occurrence, \$2,000,000.00 general aggregate, \$2,000,000.00 products and completed operations aggregate, \$1,000,000.00 personal and advertising injury. Commercial Automobile Liability limits shall be \$2,000,000.00 combined single limit, \$1,000,000 Each Occurrence Limit, \$500,000 Fire Damage Limit (any one fire). All of the above insurance shall be maintained during the life of this contract. Partial payments shall not relieve the contractor from full responsibility for any damage which may result from any cause including fire or other casualty until completion of the contract and final payment. Any casualties shall not relieve the contractor from performing the contract.

Insurance Companies must have a rating of "A—" or better as listed by A.M. Best Company. The State of Michigan must be named as an additional insured.

16. **Michigan Right-to-Know Law:** All contractors must conform to the provisions of the Michigan Right-to-Know Law, 1986 PA 80 which requires employers to:

- a. develop a communication program designed to safeguard the handling of hazardous chemicals through labeling of chemical containers and development and availability of Material Safety Data Sheets;
- b. provide training for employees who work with these chemicals.
- c. develop a written hazard communications program.

17. **Changes:** Contractor shall make changes in the contracted work only as ordered in writing by the director.

18. **Inspection:** Contractor shall at all times permit and facilitate inspection of the work by the director. The state unit will designate an inspector for this contract. It will be the responsibility of this contractor to notify the inspector of the date operations are to start and to contact the inspector periodically during the course of the work to insure that work is being performed in accordance with the conditions of this contract.

19. **Termination for Breach:** The state may terminate this contract when violations are not stopped immediately and corrected within a reasonable length of time after notification by the director or when the approved progress schedule is not met because of failure of the contractor to prosecute the work. In the event of such termination, the state may complete the contracted work and the contractor will be liable for any excess cost occasioned the state thereby and in such case the state may take possession of and utilize in completing the work such materials and equipment as may be on the site and necessary.

20. **Clean Up:** Contractor shall at all times keep the premises free from accumulations of waste material or

rubbish caused by his/her employees or work and at the completion of the work. he/she shall remove all his/her waste, tools, equipment, staging and surplus materials from the structure and grounds and leave his/her work clean and ready for use.

21. **Guarantee:** Contractor shall furnish the state with a written guarantee to remedy any defects due to faulty materials or labor which appear in the work within one year from the date of final acceptance by the state.

22. **Payment:** Payment for the work will be made in one sum at the completion of the contract except that a single progress payment may be made at any time during the construction period for the value of the work completed, except in no case shall the amount of the payment exceed 50 percent of the value of the contract. If contractor expects to request partial payment, he/she shall submit a schedule of costs and quantities of the various parts of the work aggregating the total contract sum, such as the director may request. When requested, the contractor shall submit a statement based upon this schedule, itemized and supported as the director may require. Contract will not be considered complete until the work has been accepted as final by the state unit and the director and the attached "Guarantee and Statement" (DMB-437) has been completed and signed by the contractor. Payments will be made within 30 days after the Director has certified to the Owner that work is in place in the portion of the facility covered by the applicable request for payment in accordance with the Contract documents. Process of progress payments by the Owner may be deferred by the Owner until Work having a prior sequence, as provided in the Contract documents, is in place and is approved. Each Application of Payment shall certify that all monies owed by the Contractor to Subcontractors and Suppliers for which payment previously has been sought have been paid from the payments received.

23. **Prevailing Wage Rates:** The Prevailing Wage Law, Act 166 of the Public Acts of 1965 is applicable to this Contract. By law, prevailing wage rates are the rates contained in collectively bargained agreements covering the location of the state project. The purpose of establishing prevailing wage rates is to provide rates of pay for workers on construction projects for which the state or a school district is the contracting agent and which is financed or supported by the state. The Prevailing Wage Law requires that every contractor and subcontractor shall post a copy of all prevailing wage and fringe benefit rates prescribed in the contract at the construction site. An accurate record showing the name and occupation of and the wages and benefits paid to each construction mechanic must be kept by the employer and available for inspection by the department. Please pay special attention to the overtime requirements. A worker who believes he or she has not been paid the prevailing wage rate on a state project may file a complaint with the Wage Hour Administration, Bureau of Safety and Regulation, Department of Labor and Economic Development, 7150 Harris Drive, P.O.

Box 30476, Lansing, Michigan 48909-7976, Phone: (517) 322-1825.

24. **Protection of Utility Services:** It is a requirement of this Contract, in accordance with Public Act 53 of 1974, as amended, that the Contractor give notice of construction intent to public utilities. "Miss Dig" (telephone number 1-800-482-7171, toll free) shall be notified a minimum of 72 hours (three working days) prior to construction activities. The Contractor shall provide for the protection of all public utility underground and above ground facilities that are to remain. Damage to any such utility services resulting from the Contractor's operations shall be repaired or replaced by the Contractor without additional cost to the State.

GENERAL REQUIREMENTS

1. The state unit will provide the following work:
 - a. **State Salvage:** The state reserves the right to salvage certain items and equipment. Such items will be identified to the bidder at the time of his/her inspection of the proposed work. Salvaged items will be removed by state prior to commencement of work under the contract.
 - b. **Moving Furnishings and Equipment:** The contractor shall give timely notice to state unit of all furnishings, window covering and movable equipment that will interfere with his/her work or which the contractor cannot protect with coverings of paper, plastic, drop cloths or clean tarpaulin. The contractor shall furnish, install, maintain and remove all coverings used to protect furnishings, window coverings and movable equipment.
2. **Project Coordination:**
 - a. Prior to beginning work the contractor shall **meet** with the state unit and arrange the schedule for the project. Once the project is started, it shall be carried to completion without delay.
 - b. Any building utility service interruptions or outages required by the contractor in performing the work shall be prearranged with the staff of the state unit and shall occur only during those scheduled times.
3. **Cutting and Patching:**
 - a. The contractor shall do all cutting, fitting or patching of the work that may be required to make its several parts fit together properly or make new work join with the existing structure. The contractor shall take proper precautions so as not to endanger any existing work. The contractor shall not cut or alter existing structural members or foundations.
 - b. Holes or openings cut in exterior walls and roofs for installation of materials or equipment shall be waterproofed by appropriate, approved materials and methods.
 - c. All adjacent finished surfaces that are damaged by the new work shall be patched with materials matching existing surfaces. Joints between patched and existing material shall be straight smooth and flush. All patching material shall be applied by workers skilled in its installation.
4. **Mechanical Alteration Procedures:**
 - a. All work which will necessitate shutting down of existing mechanical equipment or systems shall be made at such time as will not interfere with the normal use of the existing building.
 - b. Any cutting of floors, walls, roofs or ceilings required to run new work or remove old shall be performed by the contractor requiring same and all patching on his/her work shall be done by the contractor to full satisfaction of the state unit.
 - c. All piping in existing building shall be run concealed as far as practical in pipe spaces, ceiling spaces, tunnels, crawl spaces or similar areas, except as approved or directed by the state unit.
5. **Project Meetings:**
 - a. **Preconstruction Conferences:** The state unit may schedule a preconstruction conference to be attended by the, state unit staff, and the contractors. Once the project has been started, the contractor shall carry it to completion without delay.
 - b. **Meetings:** The state unit may schedule meetings to be held on the job site whenever needed to supply information necessary to prevent job interruptions, to observe the work or to inspect completed work. The contractor shall be represented at each meeting by persons with full authority to act for the contractor in regard to all portions of the work.
6. **Shop Drawings and Project Data:**
 - a. Before the delivery of any material or equipment to the job site, the contractor shall submit to the state unit a complete list of material suppliers, subcontractors, and brand names of all materials proposed to be used in the project.
 - b. The contractor shall check and verify all field measurements and shall submit to the state unit a minimum of five copies of shop drawings, product data catalogs, material schedules, safety data sheets, etc. Following examination by the state unit, three copies will be retained for the state's use and the remaining copies will be returned to the contractor with indication of approval or with notations for correction.
7. **Temporary Utilities:**
 - a. The contractor shall furnish and install all temporary facilities and controls required by the work, shall remove them from state property upon completion of the work, and the grounds and existing facilities shall be restored to their original condition.

- b. Water and electricity will be available in the area where work will be performed. The contractor will not be charged for reasonable use of these services for construction operation. The contractor shall pay costs for installation and removal of any temporary connections including necessary safety devices and controls. Use of services shall not disrupt or interfere with operations of the state unit.
- c. Temporary Sanitary Facilities: The state unit will designate a permanent toilet facility on the premises for use by a personnel employed in the work. The contractor shall repair any damage to the toilet facility caused by his/her employees.
- d. Heating units if required shall be of type approved by the state unit. Equipment and surroundings shall be kept clean and in safe condition All direct fired space heaters, if used, shall be vented directly to the outside. The contractor shall pay for all fuel and/or electricity used for temporary heat.

8. Construction Aids:

- a. The contractor shall furnish, install, and maintain as long as necessary and remove when no longer required, safe and adequate scaffolding, ladders, staging, platforms, chutes, railings, hoisting equipment, etc., as required for proper execution of the work. All construction aids shall conform to federal, state, and local codes or laws for protection of workers and the public.
- b. **Debris Chute:** The contractor shall use a chute to lower debris resulting from his/her work. The chute shall be the enclosed type with its discharge directly into the truck.

9. **Barriers and Enclosures:** The contractor shall furnish, install and maintain as long as necessary and remove when no longer required adequate barriers, warning signs or lights at all dangerous points throughout the work for protection of property, workers and the public. The contractor shall hold the State of Michigan harmless from damage or claims arising out of any injury or damage that may be sustained by any person or persons as a result of the work under the contract.

10. Contract Close Out:

- a. **Substantial Completion:** The contractor shall notify the state unit when the work will be substantially complete and ready for inspection and preparation of a list of minor replacement, correction and adjustment items. The contractor shall be represented on the job site at the time this inspection is made and thereafter shall complete all work by the date set for final acceptance by the owner.

b. Cleaning:

- (1) **Regular Cleaning:** All scrap or removed material, debris or rubbish shall be regularly removed from the project at the end of each working day. No discarded material shall be

deposited on the grounds of the state unit without the express permission of the physical plant engineer or administrative officer. No salvage or surplus material may be sold on the premises of the state unit.

- (2) **Final Cleaning:** Just prior to final acceptance by the state unit, the contractor shall clean all of the work and existing surfaces, building elements and contents that were soiled by his/her operations and make repairs for any damage or blemish that was caused by the work.

11. **Project Record Documents:** The contractor shall furnish to state unit with the request for final payment reproducible drawings or plans, and any sections or details necessary, clearly showing the actual path and location of material and equipment installed in this project.

12. **Warranties:** The contractor shall forward to the state unit Form PR-1628E covering statements concerning guarantee and indebtedness, and any other special warranties or requirements of the contract documents.



STATE OF MICHIGAN

JENNIFER M. GRANHOLM
GOVERNOR

DEPARTMENT OF ENERGY, LABOR & ECONOMIC GROWTH
LANSING

STANLEY "SKIP" PRUSS
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

DELEG is an equal opportunity employer/program.

Auxiliary aids, services and other reasonable accommodations are available upon request to individuals with disabilities.

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.

Michigan Department Energy, Labor & Economic Growth
Wage & Hour Division
Overtime Provisions for MICHIGAN PREVAILING WAGE RATE
COMMERCIAL SCHEDULE

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

| | Monday thru Friday | Saturday | Sunday & Holidays | Four 10s |
|---------------|--------------------|----------|-------------------|----------|
| First 8 Hours | | 4 | 8 | 9 |
| 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

Four Ten Hour Days

The 9th character indicates if an optional 4-day 10-hour per day workweek can be worked **between Monday and Friday without paying overtime after 8 hours worked, unless otherwise noted in the rate schedule. To utilize a 4 ten workweek, notice is required from the employer to employee prior to the start of work on the project.**

2. Overtime Indicators Used in the Overtime Provision:

H - means TIME AND ONE-HALF due

X - means TIME AND ONE-HALF due after 40 HOURS worked

D - means DOUBLE PAY due

Y - means YES an optional 4-day 10-hour per day workweek can be worked without paying overtime after 8 hours worked

N - means NO an optional 4-day 10-hour per day workweek *can not* be worked without paying overtime after 8 hours worked

3. EXAMPLES:

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

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

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.



Michigan Department of Energy, Labor & Economic Growth

Wage & Hour Division

PO Box 30476

Lansing , MI 48909-7976

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JENNIFER M.
GRANHOLM
GOVERNOR

STANLEY "SKIP" PRUSS
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

Official Request #: 1450

Requestor: DEPT. OF NATURAL RESOURCES & ENVIRONMENT

Project Description: Mechanical and Electrical Construction

Project Number: Tippy Dam Recreation Office

Manistee County
Official 2010 Prevailing Wage Rates for State Funded Projects

Issue Date: 11/15/2010

Contract must be awarded by: 2/13/2011

| <u>Classification</u> Name Description | Last Updated | Straight Hourly | Time and a Half | Double Time | Overtime Provision |
|---|--------------|-----------------|-----------------|-------------|--------------------|
| Asbestos & Lead Abatement Laborer | | | | | |
| Asbestos & Lead Abatement Laborer MLDC 4 ten hour days @ straight time allowed Monday-Saturday, must be consecutive calendar days | 8/3/2010 | \$37.05 | \$49.60 | \$62.14 | H H H X X X X D Y |
| Bricklayer | | | | | |
| Bricklayer BR9-40 | 8/23/2010 | \$39.25 | \$51.97 | \$64.68 | H H H X H H H D Y |
| Apprentice Rates: | | | | | |
| 0-749 hours | | \$29.08 | \$36.71 | \$44.34 | |
| 750-1499 hours | | \$30.35 | \$38.62 | \$46.88 | |
| 1500-2249 hours | | \$31.62 | \$40.52 | \$49.42 | |
| 2250-2,999 hours | | \$32.89 | \$42.42 | \$51.96 | |
| 3000-3749 hours | | \$34.16 | \$44.33 | \$54.50 | |
| 3750-4499 hours | | \$35.44 | \$46.25 | \$57.06 | |
| 4500-5249 hours | | \$36.71 | \$48.16 | \$59.60 | |
| 5250-6000 hours | | \$37.98 | \$50.06 | \$62.14 | |
| Caulker, Pointer, Cleaner, Plasterer, Tile Setter, Terrazzo Worker BR9-40-BL | 8/23/2010 | \$39.25 | \$51.97 | \$64.68 | H H H X H H H D Y |
| Apprentice Rates: | | | | | |
| 0-749 hours | | \$30.35 | \$38.62 | \$46.88 | |
| 750-1499 hours | | \$31.62 | \$40.52 | \$49.42 | |
| 1500-2249 hours | | \$32.89 | \$42.42 | \$51.96 | |
| 2250-2999 hours | | \$34.16 | \$44.33 | \$54.50 | |
| 3000-3749 hours | | \$35.44 | \$46.25 | \$57.06 | |
| 3750-4499 hours | | \$36.71 | \$48.16 | \$59.60 | |
| Carpenter | | | | | |
| Carpenter and Floor Layer CA202 Four 10s allowed Monday-Thursday. Friday make up day for inclement weather. Hours worked on Friday except for inclement weather make up shall be paid at time and one half. | 8/11/2010 | \$33.57 | \$43.76 | \$53.94 | H H H H H H H D Y |
| Apprentice Rates: | | | | | |
| 1st year | | \$23.38 | \$28.47 | \$33.56 | |
| 2nd year | | \$25.42 | \$31.53 | \$37.64 | |
| 3rd year | | \$28.48 | \$36.12 | \$43.76 | |
| 4th year | | \$30.51 | \$39.16 | \$47.82 | |

Official Request #: 1450
 Requestor: DEPT. OF NATURAL RESOURCES & ENVIRONMENT
 Project Description: Mechanical and Electrical Construction
 Project Number: Tippy Dam Recreation Office
 County: Manistee

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.

Cement Finisher

| | | | | | | |
|-----------------|-----------|-----------|---------|---------|---------|-------------------|
| Cement Finisher | BR9-40-CF | 8/23/2010 | \$35.31 | \$46.29 | \$57.27 | H H D X H H D D Y |
|-----------------|-----------|-----------|---------|---------|---------|-------------------|

Apprentice Rates:

| | | | |
|-----------------|---------|---------|---------|
| 0-749 hours | \$27.62 | \$34.75 | \$41.89 |
| 750-1499 hours | \$28.72 | \$36.41 | \$44.09 |
| 1500-2249 hours | \$29.82 | \$38.05 | \$46.29 |
| 2250-2999 hours | \$30.92 | \$39.71 | \$48.49 |
| 3000-3749 hours | \$32.02 | \$41.35 | \$50.69 |
| 3750-4499 hours | \$33.11 | \$42.99 | \$52.87 |

Cement Mason

| | | | | | | |
|--------------|---------|----------|---------|---------|---------|-----------------|
| Cement Mason | PL16-13 | 6/1/2010 | \$34.12 | \$45.27 | \$56.41 | H H H H H H D Y |
|--------------|---------|----------|---------|---------|---------|-----------------|

Four 10s allowed Monday-Thursday with Friday or Saturday inclement weather make up days. Saturday hours for inclement weather make up shall be paid straight rate unless over 40 hours worked.

Apprentice Rates:

| | | | |
|----------|---------|---------|---------|
| 1st year | \$26.32 | \$33.57 | \$40.81 |
| 2nd year | \$28.55 | \$36.91 | \$45.27 |
| 3rd year | \$30.78 | \$40.25 | \$49.73 |

Drywall

| | | | | | | |
|------------------|------------|-----------|---------|---------|---------|-----------------|
| Drywall Finisher | PT-1803-DF | 10/9/2009 | \$34.54 | \$45.94 | \$57.33 | H H H H H H D Y |
|------------------|------------|-----------|---------|---------|---------|-----------------|

4 10 hour days allowed on consecutive days, Monday-Friday. Make up day allowed M-F for work missed due to holidays or inclement weather.

Apprentice Rates:

| | | | |
|-------------------|---------|---------|---------|
| 0 - 900 hours | \$23.15 | \$28.85 | \$34.55 |
| 901- 1800 hours | \$26.56 | \$33.97 | \$41.37 |
| 1801 - 2700 hours | \$29.98 | \$39.09 | \$48.21 |
| 2701 - 3600 hours | \$32.26 | \$42.51 | \$52.77 |

Electrician

| | | | | | | |
|----------------|-----------|-----------|---------|---------|---------|-------------------|
| Inside Wireman | EC-498-IW | 3/28/2008 | \$38.74 | \$55.07 | \$71.40 | H H H H H H D D Y |
|----------------|-----------|-----------|---------|---------|---------|-------------------|

Double time pay required after 12 hours worked Monday - Friday

Apprentice Rates:

| | | | |
|----------|---------|---------|---------|
| Period 1 | \$16.41 | \$22.02 | \$27.63 |
| Period 2 | \$17.79 | \$24.10 | \$30.39 |
| Period 3 | \$20.71 | \$28.48 | \$36.23 |
| Period 4 | \$22.13 | \$30.60 | \$39.07 |
| Period 5 | \$25.31 | \$35.37 | \$45.43 |
| Period 6 | \$28.20 | \$39.71 | \$51.21 |

| | | | | | | |
|---|--------|------------|---------|---------|---------|-----------------|
| Lineman/Technician outside utility and commercial power and high voltage pipe type cable work and electrical underground. | EC-876 | 11/18/2009 | \$47.05 | \$68.11 | \$89.17 | H H H H H H D Y |
|---|--------|------------|---------|---------|---------|-----------------|

Four 10s allowed Monday-Thursday with Friday makeup or Tuesday-Friday with Monday makeup.

Apprentice Rates:

| | | | |
|------------|---------|---------|---------|
| 1st period | \$30.20 | \$42.69 | \$55.26 |
| 2nd period | \$32.32 | \$46.02 | \$59.70 |
| 3rd period | \$34.42 | \$49.16 | \$63.90 |
| 4th period | \$36.53 | \$52.33 | \$68.12 |
| 5th period | \$38.63 | \$55.47 | \$72.32 |
| 6th period | \$40.74 | \$58.64 | \$76.54 |
| 7th period | \$42.84 | \$61.79 | \$80.74 |

Official Request #: 1450
 Requestor: DEPT. OF NATURAL RESOURCES & ENVIRONMENT
 Project Description: Mechanical and Electrical Construction

Project Number: Tippy Dam Recreation Office
 County: Manistee

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.

Glazier

| | | | | | | |
|---------|--------|--|---------|---------|---------|-------------------|
| Glazier | GL-826 | | \$40.12 | \$53.94 | \$67.75 | H H H H D D D D Y |
|---------|--------|--|---------|---------|---------|-------------------|

10/7/2009

Apprentice Rates:

| | | | |
|--------------|---------|---------|---------|
| 1st 6 months | \$29.07 | \$37.36 | \$45.65 |
| 2nd 6 months | \$30.45 | \$39.43 | \$48.41 |
| 3rd 6 months | \$31.83 | \$41.50 | \$51.17 |
| 4th 6 months | \$33.21 | \$43.57 | \$53.93 |
| 5th 6 months | \$34.59 | \$45.64 | \$56.69 |
| 6th 6 months | \$35.98 | \$47.73 | \$59.47 |
| 7th 6 months | \$37.36 | \$49.79 | \$62.23 |
| 8th 6 months | \$38.74 | \$51.87 | \$64.99 |

Heat and Frost Insulator

| | | | | | | |
|------------------|-------|--|---------|---------|--|-------------------|
| Spray Insulation | AS25S | | \$20.14 | \$29.14 | | H H H H H H H H N |
|------------------|-------|--|---------|---------|--|-------------------|

3/5/2007

Heat and Frost Insulator and Asbestos Worker

| | | | | | | |
|--|------|--|---------|---------|---------|-------------------|
| Heat and Frost Insulator and Asbestos Worker | AS47 | | \$43.95 | \$58.16 | \$72.37 | H H H H H H H D Y |
|--|------|--|---------|---------|---------|-------------------|

4 ten hour work days shall be either Monday thru Thursday

or Tuesday thru Friday

8/3/2010

Apprentice Rates:

| | | | |
|----------|---------|---------|---------|
| 1st year | \$25.55 | \$32.66 | \$39.76 |
| 2nd year | \$29.23 | \$37.76 | \$46.28 |
| 3rd year | \$32.91 | \$42.86 | \$52.80 |
| 4th year | \$36.59 | \$47.96 | \$59.33 |
| 5th year | \$40.27 | \$53.06 | \$65.85 |

Ironworker

| | | | | | | |
|--|-----------|--|---------|---------|---------|-------------------|
| Fence, Sound Barrier & Guardrail erection/installation and Exterior Signage work | IR-340-F2 | | \$26.80 | \$36.63 | \$46.45 | X X H X X X H D Y |
|--|-----------|--|---------|---------|---------|-------------------|

7/8/2010

Four ten hour work days may be worked during Monday-Saturday.

Apprentice Rates:

| | | | |
|-----------|---------|---------|---------|
| 60% Level | \$18.70 | \$24.59 | \$30.49 |
| 65% Level | \$19.71 | \$26.10 | \$32.48 |
| 70% Level | \$20.73 | \$27.61 | \$34.49 |
| 75% Level | \$21.74 | \$29.11 | \$36.48 |
| 80% Level | \$22.75 | \$30.61 | \$38.47 |
| 85% Level | \$23.76 | \$32.11 | \$40.46 |

Laborer

| | | | | | | |
|---|----------|--|---------|---------|---------|-------------------|
| Class A Laborer - all construction on buildings, pumps, well wheels, air, electric or gasoline tools, motor driven buggies, fire watch duty, working on swing scaffolds, heavy construction work, carpenter tender, cement finisher tender, heater tender & flagperson. | L355-2-A | | \$28.86 | \$37.54 | \$46.21 | H H H H H H H D Y |
|---|----------|--|---------|---------|---------|-------------------|

6/16/2010

Cleaning and clearing of all debris, including wire brushing of windows, scraping of floors, removal of surplus material from all fixtures within confines of structure and cleaning all debris in building and construction area. The general cleanup, including sweeping, cleaning, washdown and wiping of construction facility, equipment and furnishings and removal and loading or burning of all debris including crates, boxes, packaging waste material. Washing and cleaning of walls, partitions, ceilings, windows, bathrooms, kitchens, laboratory, and all fixtures and facilities therein. Cleanup, mopping, washing, waxing and polishing or dusting of all floors or areas.

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Official Rate Schedule

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Four 10s allowed if consecutive days Monday-Friday. Must begin Monday except in the event of inclement weather or holiday. Friday and Saturday inclement weather make-up day allowed. In order for Saturday to be a make-up day, work must be scheduled for Friday.

Apprentice Rates:

| | | | |
|--------------------------|---------|---------|---------|
| 0 - 1,000 work hours | \$24.52 | \$31.03 | \$37.53 |
| 1,001 - 2,000 work hours | \$25.39 | \$32.33 | \$39.27 |
| 2,001 - 3,000 work hours | \$26.26 | \$33.63 | \$41.01 |
| 3,001 - 4,000 work hours | \$27.99 | \$36.23 | \$44.47 |

Class B Laborer - jackhammer operators, crocklayers and caisson worker in buildings. L355-2-B 6/16/2010 \$29.11 \$37.91 \$46.71 H H H H H H H D Y

Apprentice Rates:

| | | | |
|------------------------|---------|---------|---------|
| 0-1,000 work hours | \$24.71 | \$31.31 | \$37.91 |
| 1,001-2,000 work hours | \$25.59 | \$32.63 | \$39.67 |
| 2,001-3,000 work hours | \$26.47 | \$33.95 | \$41.43 |
| 3,001-4,000 work hours | \$28.23 | \$36.59 | \$44.95 |

Class C Laborer - top men on chimneys or towers over thirty feet in height, material mixers, portable mixer operator, plasterer tender, mason tender, and demolition burner. L355-2-C 6/16/2010 \$29.61 \$38.66 \$47.71 H H H H H H H D Y

Apprentice Rates:

| | | | |
|------------------------|---------|---------|---------|
| 0-1,000 work hours | \$25.09 | \$31.88 | \$38.67 |
| 1,001-2,000 work hours | \$25.99 | \$33.23 | \$40.47 |
| 2,001-3,000 work hours | \$26.90 | \$34.59 | \$42.29 |
| 3,001-4,000 work hours | \$28.71 | \$37.31 | \$45.91 |

Class D Laborer - concrete specialist when no cement finishers are available; troweling, finishing, screeding, patching, cutting, curing of cast in place or precast concrete by any and all methods. L355-2-D 6/16/2010 \$33.42 \$43.78 \$54.13 H H H H H H H D Y

Apprentice Rates:

| | | | |
|------------------------|---------|---------|---------|
| 0-1,000 work hours | \$28.24 | \$36.01 | \$43.77 |
| 1,001-2,000 work hours | \$29.28 | \$37.57 | \$45.85 |
| 2,001-3,000 work hours | \$30.31 | \$39.11 | \$47.91 |
| 3,001-4,000 work hours | \$32.38 | \$42.21 | \$52.05 |

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 maintenance of landscape projects occurs. LLAN-Z2-A 6/25/2010 \$25.35 \$34.89 \$44.43 X X H X X X H D Y
Sundays paid at time & one half. Holidays paid at double time.

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-Z2-B 6/25/2010 \$21.15 \$28.59 \$36.03 X X H X X X H D Y
Sundays paid at time & one half. Holidays paid at double time.

Operating Engineer

Class C- Regular equipment operator, crane, stiff leg derrick, scraper dozer, grader, front end loader, hoist, job mechanic, head grease man, concrete pump truck & hydro excavators. EN-324-BH1C 6/15/2010 \$46.65 \$60.47 \$74.29 H H H H H H H D Y

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Project Description: Mechanical and Electrical Construction
Project Number: Tippy Dam Recreation Office
County: Manistee

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.

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unable to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Apprentice Rates:

| | | | |
|---------------------|---------|---------|---------|
| 0 - 999 hours | \$37.86 | \$47.53 | \$57.21 |
| 1,000 - 1,999 hours | \$39.24 | \$49.61 | \$59.97 |
| 2,000 - 2,999 hours | \$40.62 | \$51.67 | \$62.73 |
| 3,000 - 3,999 hours | \$42.00 | \$53.75 | \$65.49 |
| 4,000 - 4,999 hours | \$43.39 | \$55.83 | \$68.27 |
| 5,000 - 5,999 hours | \$44.77 | \$57.90 | \$71.03 |

Class D- Air tugger (single drum), material hoist, boiler operator, sweeping machine, winch truck, Bob Cat & similar equipment, elevators (when operated by an operating engineer), and fork truck over 20' lift EN-324-BH1D 6/15/2010 \$41.55 \$52.82 \$64.09 H H H H H H D Y

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unable to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Class E- Pump 6" or over, well points, freeze systems, boom truck (non-swinging), end dumps and laser/power screed, concrete wire saw 20 h.p. and over, & brokk concrete breaker EN-324-BH1E 6/15/2010 \$40.95 \$51.92 \$62.89 H H H H H H D Y

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unable to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Class F- Air compressor, welder, generators, conveyors, pumps under 6", Grease man, and fork truck 20' or less lift EN-324-BH1F 6/15/2010 \$38.50 \$48.25 \$57.99 H H H H H H D Y

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unable to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Class G- Oiler, fireman and heater operator EN-324-BH1G 6/15/2010 \$36.85 \$45.77 \$54.69 H H H H H H D Y
 Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unable to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Class A- Crane w/ main Boom & Jib 220' or longer EN-OSA 6/15/2010 \$47.40 \$61.60 \$75.79 H H H H H H D Y
 Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unable to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Class A- Crane w/ main Boom & Jib 300' or longer EN-OSA3 6/15/2010 \$48.90 \$63.85 \$78.79 H H H H H H D Y
 Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unable to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Class A- Crane w/ main Boom & Jib 400' or longer EN-OSA4 6/15/2010 \$50.40 \$66.10 \$81.79 H H H H H H D Y
 Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work not performed due to weather, Monday-Thursday may be scheduled on Friday.

Class B- Crane Operator with main boom and jib 140' or longer, tower cranes, gantry crane, whirley derrick EN-OSB 6/15/2010 \$47.15 \$61.22 \$75.29 H H H H H H D Y

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 County: Manistee

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.

Four 10 hour days may be scheduled Monday-Thursday or Tuesday-Friday. Work unable to be performed due to weather, Monday-Thursday may be scheduled on Friday.

Painter

Painter PT-1803-P 10/9/2009 \$32.68 \$43.57 \$54.46 H H H H H H D Y

4 10 hour days allowed on consecutive days, Monday-Friday. Make up day allowed M-F for work missed due to holidays or inclement weather.

Apprentice Rates:

| | | | |
|----------|---------|---------|---------|
| 1st year | \$20.90 | \$25.90 | \$30.90 |
| 2nd year | \$25.06 | \$32.14 | \$39.22 |
| 3rd year | \$28.32 | \$37.03 | \$45.74 |

Plasterer

Plasterer PL16-1 6/1/2010 \$32.36 \$42.60 \$52.84 H H H H H H D N

Apprentice Rates:

| | | | |
|----------|---------|---------|---------|
| 1st year | \$25.19 | \$31.84 | \$38.50 |
| 2nd year | \$27.24 | \$34.92 | \$42.60 |
| 3rd year | \$29.29 | \$38.00 | \$46.70 |

Plumber, Pipefitter, Welder, HVAC & Refrigeration

Plumber, Pipefitter, Welder, HVAC & Refrigeration PL-174-PP 6/23/2010 \$47.63 \$67.57 \$87.51 H H D H H H D D Y
4 tens may be worked Monday-Thursday or Tuesday-Friday @ the straight time rate

Apprentice Rates:

| | | | |
|----------|---------|---------|---------|
| 1st year | \$22.55 | \$29.95 | \$37.35 |
| 2nd year | \$28.72 | \$39.21 | \$49.69 |
| 3rd year | \$30.63 | \$42.08 | \$53.51 |
| 4th year | \$34.44 | \$47.79 | \$61.13 |
| 5th year | \$38.25 | \$53.51 | \$68.75 |

Roofer

Commercial Roofer RO-149-NL 8/18/2008 \$29.18 \$38.00 \$46.81 X X X X X X D Y

Straight time is not to exceed ten (10) hours per day or forty (40) hours per week.

Apprentice Rates:

| | | | |
|--------------|---------|---------|---------|
| Apprentice 1 | \$18.02 | \$23.08 | \$28.14 |
| Apprentice 2 | \$21.34 | \$26.68 | \$32.02 |
| Apprentice 3 | \$22.55 | \$28.45 | \$34.35 |
| Apprentice 4 | \$23.76 | \$30.23 | \$36.69 |
| Apprentice 5 | \$24.97 | \$32.00 | \$39.02 |
| Apprentice 6 | \$26.20 | \$33.79 | \$41.39 |

Sheet Metal Worker

Sheet Metal Worker SHM-7-3 8/4/2010 \$44.28 \$57.76 \$71.23 H H D H H H D D Y
4 10s allowed as consecutive days, M-Th or T-F

Apprentice Rates:

| | | | |
|--------------|---------|---------|---------|
| 1st 6 months | \$14.82 | \$19.95 | \$25.09 |
| 2nd 6 months | \$17.23 | \$23.01 | \$28.79 |
| 3rd 6 months | \$19.01 | \$25.43 | \$31.85 |
| 4th 6 months | \$21.39 | \$28.45 | \$35.51 |
| 5th 6 months | \$23.17 | \$30.88 | \$38.58 |
| 6th 6 months | \$25.57 | \$33.92 | \$42.26 |
| 7th 6 months | \$27.35 | \$36.34 | \$45.33 |
| 8th 6 months | \$29.73 | \$39.36 | \$48.99 |

Official Request #: 1450
Requestor: DEPT. OF NATURAL RESOURCES & ENVIRONMENT
Project Description: Mechanical and Electrical Construction

Project Number: Tippy Dam Recreation Office
County: Manistee

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.

| | | | | | | |
|--|-----------|-----------|---------|---------|---------|-------------------|
| Tile Finisher Tile, Terrazzo, Marble Finisher | BR9-40-TW | 8/23/2010 | \$32.12 | \$41.27 | \$50.42 | H H H X H H H D Y |
| Apprentice Rates: | | | | | | |
| 0-749 hours | | | \$25.72 | \$31.67 | \$37.62 | |
| 750-1499 hours | | | \$26.63 | \$33.04 | \$39.44 | |
| 1500-2249 hours | | | \$27.54 | \$34.40 | \$41.26 | |
| 2250-2999 hours | | | \$28.46 | \$35.78 | \$43.10 | |
| 3000-3749 hours | | | \$29.38 | \$37.16 | \$44.94 | |
| 3750-4499 hours | | | \$30.29 | \$38.52 | \$46.76 | |
| Truck Driver of all trucks of 8 cubic yd capacity or over | TM-RB2 | 9/17/2009 | \$36.84 | \$36.44 | | H H H H H H H Y |
| of all trucks of 8 cubic yard capacity or less | TM-RB2A | 9/17/2009 | \$36.74 | \$36.29 | | H H H H H H H Y |
| on euclid type equipment | TM-RB2B | 9/17/2009 | \$36.99 | \$36.66 | | H H H H H H H Y |
| Underground Laborer Open Cut, Class I Construction Laborer | LAUC-Z4-1 | 9/1/2010 | \$29.79 | \$38.93 | \$48.07 | H H H H H H H D Y |
| Apprentice Rates: | | | | | | |
| 0-1,000 work hours | | | \$25.59 | \$32.63 | \$39.67 | |
| 1,001-2,000 work hours | | | \$26.43 | \$33.89 | \$41.35 | |
| 2,001-3,000 work hours | | | \$27.27 | \$35.15 | \$43.03 | |
| 3,001-4,000 work hours | | | \$28.95 | \$37.67 | \$46.39 | |
| 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-Z4-2 | 9/1/2010 | \$29.92 | \$39.13 | \$48.33 | H H H H H H H D Y |
| Apprentice Rates: | | | | | | |
| 0-1,000 work hours | | | \$25.69 | \$32.78 | \$39.87 | |
| 1,001-2,000 work hours | | | \$26.54 | \$34.06 | \$41.57 | |
| 2,001-3,000 work hours | | | \$27.38 | \$35.32 | \$43.25 | |
| 3,001-4,000 work hours | | | \$29.07 | \$37.85 | \$46.63 | |
| Underground Laborer Open Cut, Class III Air, gasoline and electric tool operator, vibrator operator, drillers, pump man, tar kettle operator, bracers, rodder, reinforced steel or mesh man (e.g. wire mesh, steel mats, dowel bars, etc.), cement finisher, welder, pipe jacking and boring man, wagon drill and air track operator and concrete saw operator (under 40 h.p.), windlass and tugger man, and directional boring man. | LAUC-Z4-3 | 9/1/2010 | \$30.03 | \$39.29 | \$48.55 | H H H H H H H D Y |
| Apprentice Rates: | | | | | | |
| 0-1,000 work hours | | | \$25.77 | \$32.90 | \$40.03 | |
| 1,001-2,000 work hours | | | \$26.63 | \$34.19 | \$41.75 | |
| 2,001-3,000 work hours | | | \$27.48 | \$35.46 | \$43.45 | |
| 3,001-4,000 work hours | | | \$29.18 | \$38.02 | \$46.85 | |
| Underground Laborer Open Cut, Class IV Trench or excavating grade man. | LAUC-Z4-4 | 9/1/2010 | \$30.10 | \$39.40 | \$48.69 | H H H H H H H D Y |
| Apprentice Rates: | | | | | | |
| 0-1,000 work hours | | | \$25.83 | \$32.99 | \$40.15 | |
| 1,001-2,000 work hours | | | \$26.68 | \$34.26 | \$41.85 | |
| 2,001-3,000 work hours | | | \$27.54 | \$35.56 | \$43.57 | |
| 3,001-4,000 work hours | | | \$29.25 | \$38.12 | \$46.99 | |
| Underground Laborer Open Cut, Class V Pipe Layer | LAUC-Z4-5 | 9/1/2010 | \$30.22 | \$39.58 | \$48.93 | H H H H H H H D Y |

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County: Manistee

Official Rate Schedule
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Apprentice Rates:

| | | | |
|------------------------|---------|---------|---------|
| 0-1,000 work hours | \$25.92 | \$33.12 | \$40.33 |
| 1,001-2,000 work hours | \$26.78 | \$34.42 | \$42.05 |
| 2,001-3,000 work hours | \$27.64 | \$35.70 | \$43.77 |
| 3,001-4,000 work hours | \$29.36 | \$38.28 | \$47.21 |

Underground Laborer Open Cut, Class VI

Grouting man, top man assistant, audio visual television operations and all other operations in connection with closed circuit television inspection, pipe cleaning and pipe relining work & the installation and repair of water service pipe and appurtenances. LAUC-Z4-6 9/1/2010 \$27.44 \$35.41 \$43.37 H H H H H H D Y

Apprentice Rates:

| | | | |
|------------------------|---------|---------|---------|
| 0-1,000 work hours | \$23.83 | \$29.99 | \$36.15 |
| 1,001-2,000 work hours | \$24.55 | \$31.07 | \$37.59 |
| 2,001-3,000 work hours | \$25.28 | \$32.16 | \$39.05 |
| 3,001-4,000 work hours | \$26.72 | \$34.32 | \$41.93 |

Underground Laborer Open Cut, Class VII

Restoration laborer, seeding, sodding, planting, cutting, mulching and topsoil grading and the restoration of property such as replacing mail boxes, wood chips, planter boxes, flagstones etc. LAUC-Z4-7 9/1/2010 \$25.78 \$32.92 \$40.05 H H H H H H D Y

Apprentice Rates:

| | | | |
|------------------------|---------|---------|---------|
| 0-1,000 work hours | \$22.59 | \$28.13 | \$33.67 |
| 1,001-2,000 work hours | \$23.23 | \$29.09 | \$34.95 |
| 2,001-3,000 work hours | \$23.86 | \$30.04 | \$36.21 |
| 3,001-4,000 work hours | \$25.14 | \$31.96 | \$38.77 |

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**TIPPY DAM FIELD OFFICE
MECHANICAL AND ELECTRICAL BUILD OUT**

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| | |
| DIVISION 16 | ELECTRICAL |
| 16050 | Electrical Basic Materials & Methods |

**TIPPY DAM FIELD OFFICE
MECHANICAL AND ELECTRICAL BUILD OUT**

SECTION 15400

PLUMBING

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide plumbing where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, and not necessarily limited to:
1. Domestic hot and cold water piping system;
 2. Drain, waste, and vent systems;
 3. Gas piping system;
 4. Plumbing fixtures and trim.

1.02 QUALITY ASSURANCE

- A. Codes and Regulations:
1. In addition to complying with the specified requirements, comply with pertinent regulations of governmental agencies having jurisdiction.
- B. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement will govern when so directed by the Architect/Engineer.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Division One.
- B. Shop Drawings:
1. Submit shop drawings for approval before purchase on all items listed under the following sections in Part Two - Products:
 - a. 2.07 Thermometers
 - b. 2.09 Fixtures and Equipment
 2. If the Contractor provides equipment (approved equal by the engineer) other than that upon which the design is based, it shall be his responsibility to coordinate its installation with the space available. He shall also pay for any changes caused as a result of this substitution.
- C. Sterilization Certificate:
1. Upon completion of water line sterilization, deliver to the Architect/Engineer two copies of an acceptable "Certificate of Performance" for that activity.
- D. Plumbing Final Inspection Certificate:
1. Upon completion of the work of this Section, deliver to the Architect/Engineer, two copies of a State of Michigan Plumbing Final Inspection Certificate.
- E. Upon completion of the work of this Section, deliver to the Architect/Engineer two copies of an operation and maintenance manual and complete wiring diagrams, where applicable, for the following items:
1. Water Heater

**TIPPY DAM FIELD OFFICE
MECHANICAL AND ELECTRICAL BUILD OUT**

2. Plumbing Fixtures

PART TWO - PRODUCTS

2.01 PIPE SCHEDULE

A. Drain, waste, and vent system:

1. Below slab or underground:

- a. Service weight Cast Iron Hub-and-Spigot Soil pipe and fittings.
- b. Service weight Cast Iron Hubless soil pipe and fittings.
- c. PVC-DWV, Schedule 40, pipe and fittings.

2. Above ground:

- a. Service weight Cast Iron Hub-and-Spigot soil pipe and fittings.
- b. Service weight Cast Iron Hubless soil pipe and fittings.
- c. Schedule 40 Galvanized steel pipe with galvanized cast-iron, drainage pattern fittings.
- d. PVC-DWV, Schedule 40, pipe and fittings.

B. Building Water System (domestic piping):

1. Above ground: Type "L" hard copper with sweated connections
2. Below ground, (2-inch and smaller): Type "K" soft copper with no fittings or couplings.
3. Below ground (1-inch and smaller),: Polyethylene (PE) water plastic tubing, iron pipe size.
4. Below ground (1-1/2-inches and larger),: Polyvinyl Chloride (PVC), (SDR 26).

C. Gas Piping:

1. Above Ground: Schedule 40 seamless black steel pipe except provide galvanized where pipe or fittings are exposed to the weather.
2. Gas Service Piping: Gas Utility Company Standard Materials.

2.02 MATERIALS

A. Cast Iron Hub-and-Spigot soil pipe and fittings:

1. Service weight cast iron pipe and fittings conforming to ASTM A74
2. Service weight compression gaskets conforming to CISPI standard HSN.

B. Cast Iron Hubless soil pipe and fittings:

1. Service weight cast iron pipe and fittings conforming to CISPI 301 and CISPI 310.

C. Galvanized Steel Pipe, (Drainage):

1. Schedule 40 galvanized steel pipe conforming to ASTM A 53.
2. Class 125, galvanized cast-iron, drainage pattern fittings with screwed joints conforming to ANSI B16.4 and ANSI B2.1.

D. PVC-DWV:

**TIPPY DAM FIELD OFFICE
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1. Schedule 40, pipe and fittings complying with ASTM D-2665 and ASTM D-2729.
 2. Solvent cement joints complying with ASTM D-2564.
- E. Polyethylene Underground Water Service Plastic Tubing:
1. Polyethylene (PE) water service plastic pipe, iron pipe size, bearing the NSF seal of approval. Working pressure of 160 psi at 73.4 degrees F. Pipe shall meet ASTM D2239, PE 3408, and SDR 7.
- F. Polyvinyl Chloride PVC Underground Water Service Pipe
1. Polyvinyl Chloride (PVC) Type 1 pressure rated pipe 160 pounds per square inch (SDR 26) with coupling integrated with the barrel and meeting ASTM D1785, D2241 and D2672. Pipe shall be tested and approved, bearing the NSF seal of approval.
 2. Joints - Push on type with rubber baskets conforming to ASTM D1869.
 3. Fittings - Polyvinyl Chloride meeting same requirements as pipe.
- G. Copper Tubing:
1. Type K, soft copper tubing conforming to ASTM B88
 2. Type L, hard copper tubing conforming to ASTM B88
 3. Wrought - Copper solder joint pressure fittings conforming to ANSI B16.22
 4. Standard product copper tube unions as recommended by the manufacturer for use in service indicated.
 5. Tin-antimony lead free solder joints conforming to ASTM B32.
- H. Steel Pipe:
1. Schedule 40 seamless black steel pipe conforming to ASTM A53
 2. 150 pound malleable iron, screwed fittings conforming to ASA B16.3
 3. Schedule 80 X-Tru-Coat plastic coated seamless black steel pipe and fittings with welded joints. Pipe and joints shall be wrapped and primed. See Pipe Wrapping, Section 2.12.
- I. Schedule 40 seamless galvanized steel pipe and fittings with screwed joints conforming to ASTM A53.

2.03 VALVES

- A. Packing:
1. Select valves designed for repacking under pressure when fully opened, equipped with packing suitable for domestic water service. Select valves designed so back seating protects packing and stem threads from fluid when valve is fully opened, and equipped with gland follower.
- B. Gate Valves 2" and Smaller:
1. Class 125 WOG, bronze body, screwed bonnet, solid wedge, rising stem, with soldered ends. Nonrising stem may be used where there is insufficient clearance.
 2. Class 125 WOG, bronze body, screwed bonnet, solid wedge, rising stem, with threaded ends.

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- C. Ball Valves :
 - 1. Class 125 WOG, bronze 2 piece body, bronze ball, bronze stem, with soldered ends.
 - 2. Class 125 WOG, bronze 2 piece body, bronze ball, bronze stem, with threaded ends.
- D. Drain Valves 2" and Smaller:
 - 1. Class 125 WOG, bronze body, screwed bonnet, rising stem, composition disc, 3/4" hose outlet connection with vacuum breaker and soldered ends.
 - 2. Class 125 WOG, bronze body, screwed bonnet, rising stem, composition disc, 3/4" hose outlet connection with vacuum breaker and threaded ends.
- E. Partition stop valves: Provide Chicago Faucet #1771, loose key type.
- F. Temperature and Pressure Relief Valve:
 - 1. ASME relief valve suitably sized for heater capacity as manufactured by A.W. Cash or Watts Regulator Company
- G. Gas cocks:
 - 1. 2-inch and smaller: Provide 250-lb., bronze, screwed, square head, 125#.

2.04 FLASHING

- A. Where pipes of this Section pass through the roof, flash with Semco #110-4 seamless 4-lb. flashing, with steel reinforced "Vari-Pitch" boot and cast iron counterflashing sleeve.

2.05 EQUIPMENT SUPPORT

- A. Where equipment is required to be suspended from ceilings, walls, or above floor, the Contractor shall furnish and install all inserts, rods, structural steel frames, brackets, and platforms required.

2.06 PIPE HANGERS

- A. Water piping:
 - 1. Provide Fee and Mason #212 split ring hangers with supporting rods. (Provide copper clad hangers for copper piping.)
 - 2. Provide Semco "trisulators."
- B. Gas piping:
 - 1. Provide Fee and Mason #212 split ring hangers with supporting rods.

2.07 THERMOMETERS

- A. Provide Powers #P/N 894-3709, or approved equal white face with 3 color temperature indication dual scale 0 degrees to 200 degrees F. Install with a 3/4" x 3/4" x 1/2" tee with temperature probe in the water flow stream being measured.

2.08 WATER HAMMER ARRESTERS

**TIPPY DAM FIELD OFFICE
MECHANICAL AND ELECTRICAL BUILD OUT**

- A. Provide Smith, Josam, Wade or Zurn arresters which conform to ASSE 1010. Install arresters within an effective range of quick-closing valves and locate to provide access. Size arresters according to the fixture unit method as determined by the Plumbing and Drainage Institute.

2.09 FIXTURES AND EQUIPMENT

A. Water Closet - Fixture No. 1 (ADA)

- 1. Kohler #K-3427 Highline floor mounted, gravity fed elongated bowl and vitreous china tank, float valve, tank cover, volt caps and left hand polished chrome trip lever. Provide with K-3427-U insuliner tank lining. . Color: White
- 2. Kohler #K-4652 Lustra Heavy duty white seat and cover.
- 3. Kohler #K7637 3/8" angle supply with stop

B. Lavatory - Fixture No. 2 (ADA)

- 1. Kohler K-2861 Hudson 20" x 18" wall mounted, cast iron lavatory, with drillings for 4-inch faucet centers: Color White.
- 2. Chicago Faucet 802A-369 faucet with 4" centers, 4" spout, 369 handles with color coded index, and E12 aerator, 2.0 GPM @ 80 PSI.
- 3. Kohler #K-8998 P-Trap.
- 4. Kohler #K-7605-P, 3/8" angle supplies with loose key stops.
- 5. Watts #USG-B, thermostatic control valve. Valve shall conform to ASSE 1016, to meet barrier free requirements.

C. Shower - Fixture No. 3 (ADA)

- 1. Florestone Model 40-40H, one piece gel-coated fiberglass shower stall for barrier-free use.
- 2. Zurn #Z 7100-SS-LH-MT-HW6-VB, Temp Guard Pressure Balancing Valve with metal trim, service stops, metal hose and inline vacuum breakers.

D. Service Sink - Fixture No. 4

- 1. Kohler #K-6719 , acid-resistant, cast iron service sink, stainless steel rim guard and #K-6673 enameled inside trap.
- 2. Chicago Faucet #835-RCF, service sink faucet, with vacuum breaker spout, bucket hook, 3/4-inch hose thread, 1/2-inch female unions, #633 handles, and quatern cartridge. Provide with an adjustable top brace and rough chrome finish.

E. Drinking Fountain – Fixture No. 5

- 1. Elkay #EDFP-214C, wall mounted, barrier-free 14 gauge, stainless steel fountain with self closing feather touch push button valve with automatic stream regulation, 1/2-inch IPS screwdriver stop, chrome plated waste strainer, 1-1/4-inch IPS trap and vandal resistant bottom plate.

F. Pedestal Eyewash – Fixture No. 6

- 1. Chicago Faucet #9003-9402, Pedestal Eyewash, complete with stainless steel receptor, dual soft-flo ABS plastic anti-surge heads, push flag and foot treadle wash activator, and 1-1/4-inch galvanized steel pipe pedestal with 9-inch diameter floor flange.

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- G. Wall Hydrant - Fixture No. 7
1. Zurn #1320 Encased Ecolotrol "anti-siphon" automatic draining wall hydrant for flush installation. Complete with non-freeze integral backflow preventer, copper casing, all bronze interior parts, non turning operating rod with hemispherical neoprene plunger and 3/4-inch solder inlet. Stainless steel box and hinged cover with operating key lock and "WATER" stamped on cover.
- H. Interior Hose Bibb – Fixture No. 8
1. Chicago Faucet #952 sill faucet with vacuum breaker, drain plug, 3/4" hose thread outlet and #293-6 tee handle.
- I. Floor Cleanout – Fixture No. 9
1. Wade #W-7030, Cast-iron floor cleanout with serrated cutoff ferrule.
 2. Provide cleanout plugs of extra heavy bronze.
- J. Floor Drain – Fixture No. 10
1. Zurn #ZN 415, Cast-Iron floor drain with flange, integral clamping collar, #Y sediment bucket with #SS stainless steel fine mesh liner and square hole ADA grate. Furnish with Zurn #Z-1000 deep seal P trap with 1/2" trap primer connection.
 2. Zurn #Z-1022-DU2 Floor Drain Trap Primer with Distribution Unit.
- K. Water Heater (Electric) – Fixture No. 11
1. Lochinvar Model No. ETA030KK with a 30 gallon storage tank. Rated at 4.5 KW upper element and 4.5 KW lower element, 240 Volts, Single Phase. Tank shall be glass lined with high density fiberglass insulation, a heavy gauge steel jacket with baked enamel finish, and tested at 300 PSI to permit a rated 150 PSI working pressure. Unit shall be furnished with factory installed Dielectric Nipples, tin coated, copper sheathed immersion type heating elements, thermostat, drain valve and relief valve tapping SET WATER LEAVING TEMPERATURE @ 115 DEGREES FAHRENHEIT.

2.010 PIPE SLEEVES AND SLEEVE SEALS

- A. Pipe Sleeves - Where pipe pass through walls, floors, ceilings, roofs and foundations, provide and install proper size pipe sleeves of one of the following:
1. Sheet-Metal: Fabricate from galvanized sheet metal; round tube closed with snaplock joint, welded spiral seams, or welded longitudinal joint. Fabricate from the following gages: 3" and smaller, 20 gage; 4" to 6", 16 gage; over 6", 14 gage.
 2. Steel-Pipe: Schedule 40 galvanized steel pipe.
 3. Iron-Pipe: Cast-iron or ductile-iron pipe, with anchor flange.
- B. Sleeve Seals - Provide sleeve seals for sleeves located in concrete slab floors, foundation walls below grade, or in exterior walls, of one of the following:
1. Oakum: Packed between sleeve and pipe.
 2. Mechanical Sleeve Seals: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing

**TIPPY DAM FIELD OFFICE
MECHANICAL AND ELECTRICAL BUILD OUT**

elements to expand when tightened, providing watertight seal and electrical insulation; similar to "Link/Seal" as manufactured by Thunderline Corp.

2.011 PIPE ESCUTCHEONS

- A. General: Provide pipe escutcheons as specified herein with inside diameter closely fitting pipe outside diameter, or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheons to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extension, if any. Furnish pipe escutcheons with nickel or chrome finish for occupied areas, prime paint finish or unoccupied areas.
- B. Pipe Escutcheons for Moist Areas: For water proof floors, and where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split hinged.
- C. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged.

2.012 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect/Engineer.

PART THREE - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 PLUMBING SYSTEM LAYOUT

- A. Lay out the plumbing system in careful coordination with the Drawings, determining proper elevations for all components of this system and using only the minimum number of bends to produce a satisfactorily functioning system.
- B. Follow the general layout shown on the Drawings in all cases except where other work may interfere.

3.03 TRENCHING AND BACKFILLING

- A. Perform trenching and backfilling associated with the work of this Section in strict accordance with the provisions of Division Two, Site Work Section of these Specifications.
- B. Cut bottom of Trenches to grade excavated to a depth 4-inches deeper than the final grade line of the pipe. Make trenches 12-inches wider than the greatest dimension of the pipe.
- C. Before laying pipe, prepare bottom of trench to secure grade.
- D. Shoring, when necessary, shall be placed and properly braced by the Contractor. The Contractor shall be responsible for damage resulting from inadequate or omitted shoring. The Contractor shall repair all damage and remove all earth resulting from cave-ins or washings.

**TIPPY DAM FIELD OFFICE
MECHANICAL AND ELECTRICAL BUILD OUT**

E. Bedding and backfilling:

1. Install pipes on a 4-inch bed of approved tamped bank run sand.
2. Backfill trenches only after pipe lines have been tested, inspected and approved. Remove all trash or foreign materials before backfilling. Backfill with materials approved by the Architect/Engineer. Fill trenches to finished grade and maintain at grade. Materials shall not include frozen or large clods of earth, large stones, or broken concrete.
3. Cover all types of pipe with one-foot of approved sand and gravel or bank-run gravel, deposited in 6-inch layers and carefully tamped or puddled.
4. From one-foot above piping to finished grade, approved excavated materials may be used for backfilling, puddled when necessary and thoroughly compacted in an approved manner.
5. Where piping is under floor slab, walks or other similar surfaces, the backfill material shall be approved sand and gravel or bank run gravel for the full depth of the excavation, compacted in 6-inch layers to a specified AASHTO T-99 density of 90 percent.

3.04 INSTALLATION OF PIPING AND EQUIPMENT, GENERAL

A. General:

1. All piping shall be installed parallel or perpendicular to walls, floors and ceilings.
2. Cut pipe accurately, and work into place without springing or forcing, properly clearing windows, doors, and other openings. Excessive cutting or other weakening of the building will not be permitted.
3. Show no tool marks or threads on exposed plated, polished, or enameled connections from fixtures. Tape all finished surfaces to prevent damage during construction.
4. Make changes in directions with fittings; make changes in main sizes with eccentric reducing fittings. Unless otherwise noted, install water supply and return piping with straight side of eccentric fittings at top of the pipe.
5. All tubing bends shall be made with a minimum radius of five times the tubing diameter.
6. Provide sufficient swing joint, ball joints, expansion loops, and devices necessary for a flexible piping system, whether or not shown on the Drawings.
7. All piping shall be supported so that there will be no undue strain or sagging. Hangers shall have means for adjusting the lengths of the hanger rod. Where pipe is supported on rollers, covering shall be protected by saddles welded to the pipe.
8. Securely bolt all equipment, isolators, hangers, and similar items in place.
9. Support each item independently from other pipes. Do not use wire for hanging or strapping pipes.
10. Provide complete dielectric isolation between ferrous and non-ferrous metals.

B. Domestic Water System

1. Minimum depth of bury for water service piping outside the building shall be 5-feet 0-inches below grade unless otherwise indicated on the plans.
2. Install horizontal water piping with an adequate pitch upwards in direction of flow to insure the system is completely drainable, with drain valves at all low points in the system.

C. Soil and Waste Piping

**TIPPY DAM FIELD OFFICE
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1. Grade Horizontal Waste Lines as indicated on the Drawings--Connections between mains and laterals shall be made with wyes and 1/8 bends. Make changes in direction with long radius ells except in stacks where sanitary tees may be used and short radius 1/4 bends may be used in changes from horizontal to vertical.
2. Flash all vent stacks at the roof with 4-pound lead. Flashing shall extend up and be turned over the top of the vent pipe at least 1 (one) inch and fit tightly against the side of the vent pipe. flashing shall extend out 8 inches or more on the roof surface, overlapped by, and cemented by the roofing. Each vent stack shall extend above the roof a minimum of 12 inches. Painting, see Section 09900.
3. No vent outlet terminals at the roof shall be installed within 20-feet of ventilating air intakes or within 10-feet of windows.

D. Plumbing Fixtures:

1. Fixtures shall be installed complete with all waste, drain, vent piping and supplies as indicated on the drawings. All supplies shall be provided with stops.
2. Each fixture shall be installed in the location as shown on the drawings and at heights indicated on the plumbing fixture schedule and in accordance with fixture manufacturer's written instructions, roughing-in drawings, and with recognized industry practices. Fixtures when installed shall be plumb, level and rigid and shall be watertight and erected so no part of the fixture shall be subjected to strains of loads. All accessories shall be installed as specified or required to make each fixture a complete and satisfactory operating unit.
3. Upon completion of the work, the Contractor shall go over the whole work, clean and polish fixtures and equipment and remove surplus material and rubbish of every description incidental to his work from the owner's property, leaving the work in neat and clean order and complete working condition.

3.05 PIPE JOINTS

A. Copper tubing:

1. Cut square, remove burrs, and clean inside of female fitting to a bright finish.
 - a. Apply solder flux with brush to tubing.
 - b. Remove internal parts of solder-end valves prior to soldering.
2. Provide dielectric unions at points of connection of copper tubing to ferrous piping and equipment.
3. For joining copper tubing, use:
 - a. Water piping 3-inch and smaller: 95-5 solder;
 - b. Water piping larger than 3-inch: "Sil-fos" brazing;
 - c. Underground: "Sil-fos" brazing.

B. Screwed piping:

1. Deburr cuts.
 - a. Do not ream exceeding internal diameter of the pipe.
 - b. Thread to requirements of ANSI B2.1.
2. Use teflon tape on male thread prior to joining other services.
3. Use litharge and glycerin on joint prior to cleaning for air and oil piping.

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2. Mechanical Sleeve Seals: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation. Subject to compliance with requirements, provide mechanical sleeve seals of the following or equal: Thunderline Corp.

3.09 PIPE ESCUTCHEONS

- A. Install pipe escutcheons on each pipe penetration through floors, walls, partitions, and ceilings where penetration is exposed to view; and on exterior of building. Secure escutcheon to pipe or insulation so escutcheon covers penetration hole, and is flush with adjoining surface.

3.010 CLEANOUTS

- A. Cleanouts shall be installed where required by code, shown on the plans, and specified here in. They shall be accessibly located and set flush with the finish surface.
- B. After pressure tests are made and approved, thoroughly graphite the cleanout threads.

3.011 WATER HAMMER ARRESTERS

- A. Provide water hammer arresters on hot water lines and cold water lines.
 1. Install in upright position at all quick closing valves, solenoids, isolated plumbing fixtures, and supply headers at plumbing fixture groups.
 2. Locate and size in accordance with Plumbing and Drainage Institute Standard WH-201.
- B. Where fixtures are not protected by water hammer arresters, provide 48-inch high air chambers on each water supply, properly sized and designed for maintenance and drainage. Air chambers may not be used at top of risers.

3.012 BACKFLOW PREVENTION

- A. Protect plumbing fixtures, faucets with hose connections, and other equipment having plumbing connection, against possible back-siphonage.
- B. Arrange for testing of backflow devices as required by the governmental agencies having jurisdiction.

3.013 CLEANING, TESTING AND DISINFECTION OF WATER SYSTEMS

- A. Flush all waterlines very thoroughly to remove solids which may have accumulated during construction before installing valves. After installing valves and fixtures and testing several times equal to normal usage, disassemble and check for metallic deposits on seats, cylinders, and diaphragms to ascertain serviceable condition.
- B. Testing of the water system shall consist of the following and in accordance with the Michigan State Plumbing Code:
 1. Domestic Water Piping -- 100 pounds per square inch per gage hydrostatic test held tightly for 48 hours.

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2. Joint test shall be done with soap suds made by thoroughly dissolving (1) one ounce castile soap in 8 ounces water and 4 ounces glycerin. Wipe all joints clean after the test.
 3. Gauges, controls, and other appurtenances which may be damaged by the tests shall be valved off or removed before testing.
- C. All potable water lines installed under this Contract, after they have been acceptable tested and cleaned shall be flushed and disinfected by the Contractor. Flushing and disinfection shall be performed in accordance with the current State of Michigan Plumbing Code..

3.014 BUILDING DRAINAGE AND VENT WATER TEST

- A. A water test shall be applied to the drainage system either in its entirety or in sections
1. If applied to the entire system, all openings in the piping shall be tightly closed, except the highest opening, and the system shall be filled with water to point of overflow.
 2. If the system is tested in sections, each opening shall be tightly plugged except the highest openings of the section under test, and each section shall be filled with water, but no section shall be tested with less than a 10-foot head of water. In testing successive sections, at least the upper 10 feet of the next preceding section shall be tested so that no joint or pipe in the building, except the uppermost 10 feet of the system, shall have been submitted to a test of less than a 10-foot head of water.
- B. The water shall be kept in the system, or in the portion under test, for at least 1-hour or as required by the field engineer, before the inspection starts. The system shall be tight at all points.
- C. Where tests show materials or workmanship to be deficient, replace or repair as directed by the field engineer, and repeat test until the specified standards are achieved.

3.015 OTHER TESTING AND ADJUSTING

- A. Provide personnel and equipment, and arrange for and pay the costs of, all required tests and inspections required by governmental agencies having jurisdiction.
- B. Where tests show materials or workmanship to be deficient, replace or repair as necessary, and repeat the tests until the specified standards are achieved.
- C. Adjust the system to optimum standards of operation.

3.016 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. The contractor shall provide the facility manager or his representative, with on site instructions for the operation and maintenance of Fixtures and Equipment listed in Part Two of this section.

END OF SECTION

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SECTION 15550

VENTILATION

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide complete heating and ventilation systems where shown on the Drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
1. L.P. Gas Fired Make-Up Air Unit
 2. Exhaust Fan
 3. Intake Air Louver
 4. Supply Air Grille
- B. Related work elsewhere:
1. Section 15900 – Controls
 2. Section 15980 Testing and Balancing
 3. Section 16500 - Electrical

1.02 QUALITY ASSURANCE

- A. Codes and Standards - In addition to complying with the specified requirements, pertinent regulations of governmental agencies having jurisdiction, comply with all pertinent recommendations contained in "Duct Manual and Sheet Metal Construction for Ventilating and Air Conditioning Systems" latest edition, as published by the Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
- B. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement will govern when so directed by the Architect/Engineer.

SUBMITTALS

- C. Comply with pertinent provisions of Division One.
- D. Shop Drawings:
1. Submit shop drawings for approval before purchase on all items listed under the following sections in Part Two - Products:
 - a. 2.01 Equipment
 - b. 2.02 Intake Air Louver
 - c. 2.03 Supply Air Grilles
 2. Upon completion of the work of this Section, deliver to the Architect/Engineer, two copies of an operation and maintenance manual and complete wiring diagrams where applicable, for Equipment listed in Part Two of this Section.
 3. If the Contractor provides equipment (approved equal by the engineer) other than that upon which the design is based, it shall be his responsibility to coordinate its installation with the space available. He shall also pay for any changes caused as a result of this substitution.
- E. Mechanical Final Inspection Certificate:

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1. Upon completion of the work of this Section, deliver to the Architect/Engineer, two copies of a State of Michigan Mechanical Final Inspection Certificate.

PART TWO - PRODUCTS

2.01 EQUIPMENT

A. Make Up Air Unit:

1. Reznor, Model SDH-125 LP Gas, indoor separated combustion, power vented, horizontal, Make-Up Air Unit, electronic ignition, channel base, and 24 volt controls. Unit shall be rated 101,250 BTUH output. Required Blower Rating: 230 volt-single phase, 1/3 HP Motor, 1000 CFM, 119 RPM, @ 0.5" ESP – 0.648" TSP.
2. Unit Options shall include but not be limited to:
 - a. AA2 LP Gas
 - b. AB1 0 to 2000 ft Elevation
 - c. AC2 409 Stainless Steel Heat Exchanger
 - d. AJ1 Left hand controls (standard)
 - e. AK3 230/1 voltage
 - f. AL3 1/3 HP ODP Motor
 - g. AM11 950 rpm, 1000 CFM, 0.50" ESP, 0.65" TSP
 - h. AN2 Motor Contactor, 24v coil
 - i. AW10 Filter Rack w/1" Pleated Filters
 - j. AY2 Cabinet Insulation, Single Wall
 - k. BA6 Flush mounted nonfused lockable disconnect
 - l. BG9 Exhaust Fan Interlock Relay
 - m. CC2 Vertical vent Terminal Kit
 - n. DG6 Digital H/C Modul disch tmp w/Remote
 - o. GD1 100% Air Horizontal Opening in Back
 - p. GE3 2 pos. motorized 100% O/A damper
 - q. MXB1 Mix Box, O/A or R/A Plenum, add GD Opt
 - r. PC4 Rubber-in-shear Vibration Isolation
 - s. RC9 Panel w/Blower, Burner, Cool Lights Only
 - t. RD4 Mount Remote Command Module on Panel
 - u. SH2 Crate Unit for LTL Shipment Only
 - v. XW3 10 year heat exchanger warranty
3. Unit shall have a baked enamel finish and be designed for indoor installation with full blower compartment insulation. The unit shall be completely factory assembled with the fresh air intake in back.
4. The natural gas heating section shall be separated combustion. The unit shall have intermittent spark pilot with timed lockout. The unit shall be A.G.A. approved, and have an air plow proving switch in the circuit before burner controls are activated.
5. All wiring shall be joined at numbered terminal strips with color coded wiring. A wiring diagram and parts list shall be permanently affixed to the inside of the gas control compartment.
6. The air inlet system shall have low leak (less than 5 CFM per sq ft.) dampers.

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B. Exhaust Fans:

1. Heated Garage; Loren Cook Catalog No. 12SP10D, Steel Wall Exhaust Fan. Powered by a direct drive 1/10 HP, 1350 RPM, 115 Volt, single phase motor with over-temperature protection. Unit shall be capable of exhausting 1000 CFM @ 1/10" static pressure. Provide with a removable intake screen, automatic exhaust louver, and fan speed controller.
2. Cold Storage; Loren Cook Catalog No. 16SP10D, Steel Wall Exhaust Fan. Powered by a direct drive 1/6 HP, 950 RPM, 115 Volt, single phase motor with over-temperature protection. Unit shall be capable of exhausting 1800 CFM @ 1/10" static pressure. Provide with a removable intake screen, automatic exhaust louver, and fan speed controller.
3. Bath, Broan No. 696 Bathroom exhaust fan with light. 90 watt, horsepower fan motor, 100 CFM exhaust @ 1/8-inch static pressure.

2.02 INTAKE AIR LOUVER

- A. Ruskin Model ELF6375DX, Drainable Stationary Louver. Frame shall be constructed of 6" deep, 6063T5 extruded aluminum, .125 nominal wall thickness. Blades shall be constructed of 6063T5 extruded aluminum, .081 nominal wall thickness. Unit shall be Mill finished. Provide aluminum bird screen in removable frame. Size shall be as detailed on the plans.

2.03 SUPPLY AIR GRILLES

A. Garage

1. Titus Model JFA-L, Pole Operated, Commercial/Industrial Louvered Supply Grille with individually adjustable extruded aluminum front blades parallel to the long dimension, steel rear blades gang operated parallel to the short dimension and a pole operator handle for adjusting rear blades. Size and location shall be as indicated on the plans.

2.04 DUCTWORK

A. General:

1. Ductwork shall be fabricated from 24 gauge galvanized sheet metal in accordance with SMACNA Standards.
2. Transverse Joint connection shall be S-Drive, pocket or bar slips on 7-foot centers
3. Duct work shall be true to dimensions on drawings which indicate the clear inside dimensions required. All elbows shall have center line radius equal to one and one-half time the width or diameter of the duct.

PART THREE - EXECUTION

3.01 INSTALLATION OF EQUIPMENT

A. General:

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1. All equipment shall be installed in accordance with the manufacturers recommendations. Provide flexible connections between air distribution equipment and the air distribution ductwork to prevent transmission of equipment vibration.
- B. Ductwork / Supply Air Grilles:
1. Ductwork, and Supply Air Grilles shall be securely anchored to building construction in an approved manner so as to be free of vibration under all conditions of operations and in accordance with SMACNA standards.
- C. Dampers:
1. All necessary splitters and volume dampers, shall be provided to afford control of air flow. Dampers shall be so arranged that they may be set and fixed in position with suitable markings made after the distribution system has been adjusted so that the dampers may be returned to right position, if for any reason they should have been changed. Dampers shall be provided with an approved adjusting device where necessary. All adjustors shall be properly and securely fastened on the ducts and to the dampers.

3.02 OPERATING AND MAINTENANCE INSTRUCTIONS

- A. The contractor shall provide the facility manager or his representative, with on site instructions for the operation and maintenance of Equipment listed in Part Two of this Section.

END OF SECTION

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SECTION 15900

CONTROLS AND INSTRUMENTATION

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Work Included: The work covered by this section consists of furnishing all labor, materials, equipment and services necessary for the proper installation of an electrically operated, automatic control system for the heating and ventilating systems.
- B. Related Work Elsewhere:
 - 1. Section 15550 Heating and Ventilation
 - 2. Section 16050 Electrical

1.02 QUALITY ASSURANCE

- A. Codes and Regulations:
 - 1. In addition to complying with the specified requirements, comply with pertinent regulations of governmental agencies having jurisdiction.
- B. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement will govern when so directed by the Architect/Engineer.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. The Contractor shall submit for approval, complete diagrams of control systems, together with a detailed description of all instruments and specialties to be used and a description of how the control system operates.

PART TWO - PRODUCTS

2.01 CONTROL DEVICES

- A. General - For ease of maintenance and parts replacement to the maximum extent possible, use equipment of a single manufacturer except where control devices are an integral part of equipment supplied under other sections.
- B. Make Up Air Unit – Control Unit is provided as accessory equipment with the Make UP Air Unit and is described in Section 15550 as part of the Make UP Air Unit Specification.
- C. Infrared Heater Thermostat - Reznor 24 volt single stage heating thermostat.

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- D. Carbon Monoxide Sensor – Honeywell or equal.

PART THREE - EXECUTION

3.01 SEQUENCE OF OPERATION

A. Make Up Air Unit (Heated Work Area)

1. Unit shall be electrically interlocked to operate when the exhaust fan is running and shall be manually cycled on and off by the exhaust fan motor starter.
2. Two Stage Gas Valve provides modulated heat output at 50% or 100%. Ignition is at low fire (50% input) and discharge temperature sensing ductstat located in the discharge duct modulates the gas input from 100% to 50% rated input to maintain duct stat setting. Discharge temperature shall be set to 70 degrees Fahrenheit. Ductstat capillary tube shall be extended as far as possible downstream into to discharge duct after installation.
3. The unit shall have an Outside air damper system with a two position motor to provide Outside air quantities as scheduled on the plans. The Outside air damper shall be in full open position when unit is operating and in full closed position when unit is shut down. Dampers shall be electrically powered open and spring returned closed.
4. Summer - Off - Winter switch in the remote control console shall cycles blower motor to operate in conjunction with heating cycle in the winter mode and as fan only in the summer mode.

B. Infrared Heater (Heated Work Area)

1. The room thermostat shall automatically index the blower to operate in conjunction with the heating cycle to maintain thermostat setting. When the thermostat setting is satisfied the heating cycle and blower operation shall cease.

C. Exhaust Fan (Heated Work Area)

1. Manually operated motor starter shall cycle the exhaust fan on and off.
2. Exhaust fan shall be electrically interlocked with the Make Up Air Unit so that Ventilators and MUA operate together.

D. Exhaust Fan (Cold Storage Area)

1. Exhaust fan shall be interlocked with the carbon monoxide sensor and shall automatically cycle on when the sensor detects concentrations of carbon monoxide of 25 parts per million.

E. Toilet Exhaust Fan

1. Room single pole light switch shall cycle exhaust fan on and off.

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3.02 TESTING OF CONTROLS

- A. Upon completion, the entire control installation shall be subjected to test under normal conditions of use for a sufficient period of time to permit a complete examination and inspection.
- B. All wiring or tubing placed within construction or concealed shall be carefully tested before being permanently covered up.
- C. All defects in material or workmanship which appear during the test shall be promptly remedied, and the test again applied.

END OF SECTION

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SECTION 15980

TESTING, ADJUSTING AND BALANCING

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Work Included: Extent of testing, adjusting and balance work is defined to include Heating and Ventilation system, and all associated equipment and apparatus of mechanical work.. The work consists of setting speed and volume (flow), adjusting facilities provided for systems, recording data, conducting tests, preparing and submitting reports, and recommending modifications to work if necessary.
- B. Related Work Elsewhere:
 - 1. Section 15550 Heating and Ventilation
 - 2. Section 15900 Controls and Instrumentation
 - 3. Section 16050 Electrical

1.02 QUALITY ASSURANCE

- A. Qualifications of Contractor:
 - 1. A firm with at least three years of successful testing, adjusting and balancing experience. The installer of the system may be the balancing contractor if criteria of the section are complied with.
- B. Codes and Standards:
 - 1. General - Comply with one of the following standards:
 - a. NEBB's "Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems"
 - b. AABC's Manual MN-1 "AABC National Standards"
 - c. SMACNA Manual "Testing, Balancing, and Adjusting of Environmental Systems"

1.03 JOB CONDITIONS

- A. Do not proceed with testing, adjusting and balance until work has been completed and is operable. Ensure that there is no latent residual work still to be completed. Do not proceed until work schedule for testing, adjusting and balancing is clean and free from debris, dirt, and discarded building materials.

PART TWO - PRODUCTS

2.01 SUBMITTALS

- A. Test Reports
 - 1. Submit certified test reports signed by Test and Balance Supervisor who performed the work.

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PART THREE - EXECUTION

3.01 TESTING, ADJUSTING AND BALANCING

- A. Test, adjust, and balance environmental systems and components as indicated in accordance with procedures outlined in applicable standards. All air flows shall be balanced within plus or minus 10 per cent of design quantities indicated on the plans.
- B. Test, adjust, and balance system during winter season for heating system, including at least one period of operation at outside conditions within 10 degrees Fahrenheit dry bulb temperature of minimum winter design condition (minus 10 degrees Fahrenheit). When seasonal operation does not permit measuring final temperatures, then take final temperature readings when seasonal operation does permit.
- C. Prepare report of test results including instrumentation calibration reports in form recommended by applicable standard.
- D. Patch holes in insulation, ductwork, and housing which have been cut or drilled for test purposes, in manner recommended by original installer.
- E. Mark equipment settings including damper control positions, fan speed control levers, and similar controls and devices to show final settings at completion of Testing, Adjusting and Balancing work. Provide markings with paint or other suitable permanent identification materials.

END OF SECTION

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SECTION 16050

ELECTRICAL BASIC MATERIAL AND METHODS

PART ONE - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide a complete electrical service where shown on the drawings, as specified herein, and as needed for a complete and proper installation including, but not necessarily limited to:
 - 1. Installation of a 120/240-volt, single phase, service as indicated on the plans and specified herein.
 - 2. Installing branch circuit wiring as indicated on the plans and specified herein.
 - 3. Installation of electrical equipment indicated on the plans and specified herein and in sections specifying related work.
 - 4. Electrical equipment and system testing, adjustments, marking, tagging, cleaning, painting, etc.

- B. Related Work Elsewhere
 - 1. Section 15550 Ventilation
 - 2. Section 15600 Heating System.

1.02 QUALITY ASSURANCE

- A. Codes, Standards and Regulations:
 - 1. Provide electrical equipment and wiring devices which have been UL listed and labeled
 - 2. Comply with NEMA standards for general and specific purpose electrical equipment and wiring devices
 - 3. Comply with pertinent regulations of governmental agencies having jurisdiction.
 - 4. In the event of conflict between or among specified requirements and pertinent regulations, the more stringent requirement will govern when so directed by the Field Engineer.

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Division One.

- B. Shop Drawings
 - 1. Submit shop drawings for approval before purchase on all items listed under the following sections in Part Two - Products:
 - a. 2.03 Boxes
 - b. 2.04 Wiring Devices
 - c. 2.06 Panelboards
 - d. 2.07 Exhaust Fan Disconnect & Over current Protection
 - e. 2.08 Time Clock
 - f. 2.09 Lighting Fixtures and Lamps

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2. If the Contractor provides equipment other than that upon which the design is based, it shall be his responsibility to coordinate its installation with the space available. He also shall pay for any changes caused as a result of this substitution.
- C. Operations and Maintenance Manual:
1. Upon completion of the work of this Section, the Contractor shall deliver to the Engineer two copies of an Operation and Maintenance Manual complete with equipment description, operating instructions, repair parts lists, and control and wiring diagrams for equipment listed in Part Two of this Section

PART TWO - PRODUCTS

2.01 RACEWAYS

A. General:

1. All conduit concealed above ceilings, or exposed shall be rigid metal conduit, intermediate metal conduit or electric metallic tubing.
2. All connections to Motors and other vibrating equipment or other applications requiring flexibility shall be made with flexible steel conduit.

B. Rigid Metal Conduit:

1. Rigid metal conduit shall conform to UL Standard UL6, Federal Specification WW-C-581 and American Standards Institute (ANSI) specifications C.80.1. Zinc coating shall be applied inside and out by hot-dip galvanizing after threading. Each length of conduit shall be furnished with a coupling assembled on one end and a plastic thread protector on the other end.

C. Intermediate Metal Conduit:

1. Intermediate metal conduit shall be hot-dip galvanized and manufactured in accordance with UL Standard UL1242, Federal Specification WW-C-581 and Article 345 of the National Electric Code.

D. Electrical Metallic Tubing:

1. Electrical metallic tubing shall be hot-dip galvanized and manufactured in accordance with Federal Specification WW-C-563 and American Standards Institute (ANSI) specification C80.3.

E. Flexible Steel Conduit

1. Flexible steel conduit shall be of the single strip interlocked type, galvanized inside and outside, UL listed and manufactured in accordance with Federal Specification WW-C-566.

2.02 RACEWAY FITTINGS

- A. General - Fittings shall be suitable for the application and designed for the purpose for which they are used. Hot-dipped galvanized fittings and parts shall be used for RGS conduits.
- B. Unions - Threaded unions shall be Crouse-Hinds Types UNF and UNY.

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- C. Locknuts - Extra heavy, hot-dipped galvanized steel.
- D. Bushings – Hot-dipped galvanized iron with insulating collar.
- E. Hubs - Appleton Uni-Seal for connection of conduit to sheet steel enclosures.
- F. Conduit Supports - One hole type, hot-dipped galvanized malleable iron.
- G. Electrical metallic tubing conduit fittings shall be set screw type. Cast body or indentor fittings are not permitted.

2.03 BOXES

- A. Device Boxes - Galvanized stamped steel with conduit knockouts. Where surface mounted devices are shown, cast metal boxes with a corrosion resistant finish shall be used. Do not use stamped steel boxes for these applications. Where more than one device is shown at a location, single piece multigang boxes shall be used.
- B. Outlet Boxes - 4-inch square or 4-inch octagonal stamped galvanized steel with conduit knockouts.
- C. Junction and Pull Boxes (Building) - Galvanized steel units with screwed-on covers, sized and located as per current State of Michigan Electrical Code.
- D. Weather Proof Device Boxes - Bell Weatherproof Die Cast Aluminum Boxes with threaded hubs for rigid metal or intermediate metal conduit systems. Provide boxes with Bell Rayntite, Die Cast Aluminum Covers with neoprene gasket and corrosion resistant screws.

2.04 WIRING DEVICES

- A. All wiring devices of a single type (switches, plates, receptacles, etc.) shall be of one manufacturer unless specified with manufacturer and model number. Devices shall be in accordance with the Electrical Symbol Legend.
- B. Switches - Wall switches shall be Allen Bradley, Appleton, Bryant, Cutler-Hammer, Leviton, Hubbell or Pass & Seymour "AC Only" "Quiet Switches" rated 20 amps, 120/277-volt, brown toggle handle switches of the heavy-duty specification grade type meeting National Electrical Manufacturers Association (NEMA)WD-1 2.03 through 2.06 "heavy-duty" performance requirements, UL listed per UL 20 standards.
- C. Occupancy Sensors (Office and Labs lighting control) – Leviton #osc10-u0w, All digital self-adjusting Ultrasonic Ceiling-Mount Occupancy Sensor. Provide with Leviton #osp20-0d0, power pack
- D. Office Receptacles – General purpose receptacles as manufactured by Allen Bradley, Appleton, Bryant, Cutler-Hammer, Leviton, Hubbell or Pass & Seymour, brown "T" Slot, NEMA 5-20R configuration, rated 20 amps at 125 volts. The receptacles shall be U/L listed and meet NEMA WD-1 "Heavy Duty" performance standards.
- E. Restroom & Storage Area Ground Fault Receptacles - Hubbell industrial heavy duty specification grade GFCI Receptacle #GF5362, rated 20 amps (NEMA 5-20R), 120 Volts, with built-in Class A, Group 1, ground fault protection. **The receptacles shall be wired for end-of-line type configuration.** Built-in test and reset buttons shall be provided with visible ground trip indication. **Receptacle shall include an all glass circuit board, and solid silver cadmium oxide control contacts with overlap design power contacts.** The receptacles shall be UL listed per UL Standard 498 and 943.

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F. Cover Plates:

1. Wall plates shall be Type A1S1 302 stainless steel. Where wiring devices are mounted in multigang boxes, one-piece combination plates specifically manufactured for the combination shall be provided.
2. Duplex weather proof cover plates for exterior receptacles shall be equal to Bell Electric, Weatherproof Die Cast Aluminum Covers with neoprene gaskets and corrosion resistant screws, or approved equal.

2.05 WIRE AND CABLE

A. Provide factory-fabricated wire of sizes, ratings, materials and types indicated here in and on the drawings. All conductors shall be insulated for min. 75 degrees C. Rated for minimum of 600 volts. Wire and copper conductors of the following types are as follows:

1. General Building Interior: Type THHN or THWN, suitable for operations of 600 volts as specified in the National Electric Code, at conductor temperatures not to exceed 90-degrees C. in dry locations. Conductors shall be annealed copper, insulated with high-heat and moisture resistant PVC, jacketed with abrasion, moisture, gasoline and oil resistant nylon.
2. Service Entrance: Type USE, suitable for operations at 600 volts or less in wet or dry locations. Conductors shall be annealed copper, insulated with high-heat and moisture resistant PVC, jacketed with abrasion, moisture, gasoline and oil resistant nylon.
3. Grounding Conductors
 - a. In metallic conduit: Insulated green copper conductors (green in color for sizes 12 and 10 and approved green markings for larger sizes).
 - b. Isolated ground: Insulated green copper conductors only.

B. Wire Connectors: "Sta Kon" as manufactured by Thomas and Betts, or approved equal.

2.06 PANELBOARDS

A. Panelboards - Square D, Type QO load center with bus bar internal connections. Door, trim, and cabinet shall be galvanized steel with a grey baked enamel finish. Door shall include a cylinder tumbler-type lock. Unit shall be UL rated for service entrance.

1. Breakers - Square D type QO thermal magnetic, molded case circuit breakers, plug on or bolt on as applicable. Breakers shall be 1, 2 or 3-pole as indicated on the plans with an integral crossbar to assure simultaneous opening of all poles in multipole circuit breakers. Breakers shall have a overcenter, trip-free, toggle-type operating mechanism with quick-make, quick-break action and positive handle indication. Handles shall have "ON", "OFF" and "TRIPPED" positions. In addition, Trip indication shall include a visible trip indicator in the window of the breaker case.

2.07 STORAGE AREA EXHAUST FAN MOTOR DISCONNECT AND OVER CURRENT PROTECTION

A. Where single-phase motors operating at 150 volts or less to ground are shown with fusible switch protection, provide Bussman Box Cover Units with Type S time delay fuses sized for motor running overload protection in accordance with National Electric Code (NEC) requirements and manufacturers' selection tables.

2.08 TIME CLOCK

**TIPPY DAM FIELD OFFICE
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- A. Time Clock (Exterior Lighting)
 - 1. Intermatic Model Number ET100C, Twenty Four Hour, single circuit, 120-volt, electronic time switch. Switch shall be rated for 1 HP @ 120-volts. Timed switch shall be housed in a NEMA-1R, lockable, steel enclosure.

2.09 LIGHTING FIXTURES AND LAMPS

- A. Lighting Fixtures - As listed in the "Lighting Fixture Schedule" on the construction plans.
- B. Lamps - General Electric, Sylvania, or Westinghouse.

2.010 GROUNDING MATERIALS

- A. Ground Rods - 3/4 inch x 10 foot copper-clad steel, UL listed, manufactured by Copperweld, Weaver, or approved equal.
- B. Rod Clamps - J. A. Weaver, U-Bolt clamp, Type UG, Square D, Type GC 110/111, or approved equal.
- C. Water Pipe Clamps - J. A. Weaver, Type J or approved equal.
- D. Reinforcing Bar Connection - Cadweld exothermic grounding connection Type RJ or approved equal.
- E. Ground Cables (Not Grounding Conductors) - Shall be bare, stranded copper of 98 percent conductivity. Grounding electrode conductor shall be Number 6 AWG minimum and Bonding connections No. 6 AWG minimum or sized per current State of Michigan Electrical Code.

PART THREE - EXECUTION

3.01 RACEWAYS AND FITTINGS

- A. Conduit - Conceal in building construction where possible. Exposed conduit shall be installed in neat symmetrical lines parallel with the center lines of the structure, walls, etc. Provide locknuts and insulated throat bushings at enclosures
- B. Rigid galvanized steel or intermediate metal conduit shall be used in all applications where installed embedded in concrete or masonry construction, exposed in areas of building subject to abuse, and all exterior applications.
- C. Electric metallic tubing shall be used concealed above ceilings or in stud walls, exposed in areas where not subject to physical damage, and in compliance with NEC limitations.
- D. Flexible liquid tight conduit or flexible steel conduit shall be used for final connections to motors and other vibrating equipment or other applications requiring flexibility and as shown on the plans.

3.02 PULL BOXES

- A. Install where necessary to terminate, tap off, or redirect multiple conduit runs. Locate so that covers are accessible after completion of construction. Support pull boxes independently of conduits entering them.

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3.03 WIRE CONNECTORS AND TERMINATING DEVICES

- A. Joints will be permitted only in junction and outlet boxes. All joints shall be firmly bonded together and taped or shall be made with mechanical connectors.

3.04 LIGHTING FIXTURES

- A. Maintain alignment, spacing, layout, and general arrangement shown on the plans. Fixtures shall be securely mounted and shall not rotate on single box connections.

3.05 IDENTIFICATION AND MARKING

- A. Equip electrical panel with a typewritten directory accurately indicating rooms and/or equipment being serviced.
- B. Branch circuits shall be identified as to phase with the following colors as standard:
 - 1. 150 volts or less to ground - black, red, white.
- C. Feeders shall be identified as to phase at all terminals with tape colors corresponding to branch circuit colors.
- D. When wires of different systems junction in a common box, each cable shall be grouped with its own system and identified using tags or identification strips.
- E. Identify stations controlling remote equipment.

3.06 GROUNDING AND BONDING

- A. Service Grounding - The service neutral conductor shall be grounded by establishing a grounding electrode system as required by current State of Michigan Electrical Code. The grounding electrode connection to the reinforcing bar at the bottom of the building footing shall be made with a "Cadwell" Type RJ thermal fusion connector. Additionally, a 3/4-inch x 10-foot copper-clad ground rod shall be driven and bonded to the grounding electrode conductor. In no case shall an underground metallic cold water piping system serve as the sole service grounding means. Measured resistance of the grounding electrode system to absolute earth shall not exceed 5 ohms. If necessary, additional ground rods shall be driven at 10-foot spacing to obtain a ground resistance of less than 5 ohms.
- B. Equipment Grounding - Motors, receptacles, lighting fixtures, etc. shall be grounded by means of a separate green insulated equipment grounding conductor run in the conduit with the phase conductors. The panelboard shall be provided with a grounding bus for connection of equipment grounding conductors.

3.07 TESTING

- A. All wiring shall be proof-tested for shorts, opens, and ground as a completed system.

END OF SECTION



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STATE OF MICHIGAN
DEPARTMENT OF
TECHNOLOGY, MANAGEMENT AND BUDGET
LANSING



KENNETH D. THEIS
DIRECTOR

April 14, 2010

Qualified Disabled Veterans Preference

Act 91 of the Public Acts of 2005
Act 22 of the Public Acts of 2010

In awarding contracts under MCL 18.1241 and MCL 18.1261, the department shall give a preference of up to 10% of the amount of the contract to a qualified disabled veteran.

MCL 18.1241 Applies to “contracts for construction, repair, remodeling, or demolition of a facility.”

MCL 18.1261 applies to “the purchase of, the contracting for, and the providing of supplies, materials, services, insurance, utilities, third party financing, equipment, printing, and all other items as needed by state agencies for which the legislature has not otherwise expressly provided.”

The request to have the preference applied to a bid and the required documentation showing eligibility for the preference must be submitted as part of the bid, otherwise the preference will not be applied.

Definitions:

1. “Qualified Disabled Veteran” (QDV) means a business entity that is 51% or more owned by one or more veterans with a service-connected disability.
2. “Service Connected Disability” means a disability incurred or aggravated in the line of duty in the active military, naval, or air service as described in 38 USC 101(16).
3. “Veteran” means a person who served in the active military, naval, or air service and who was discharged or released from his or her service under conditions other than dishonorable.

Required Documentation:

1. Proof of service and conditions of discharge: DD 214
2. Proof of service-connected disability: DD 214 if the disability was documented at discharge or a Veterans Administration (VA) Rating Decision letter if the disability was documented after discharge.
3. Proof of Ownership: Appropriate legal documents setting forth the ownership of the business entity submitting the bid.

Application of the Preference: For the purpose of evaluating and determining the low responsive bid, 10% of the lowest responsive bid (the bid that would otherwise receive the contract award if the preference were not being considered) will be deducted from all QDV bids. If the low responsive QDV bid, less the 10% preference, is less than the lowest responsive bid, then the QDV bid will be declared the official low responsive bid. The original QDV bid amount will be the basis of the contract award.

Example:

| | |
|---|---------------------------------|
| Lowest Responsive Bid | \$100,000 |
| Lowest Responsive QDV Bid | \$109,000 |
| Preference (10% of Lowest Responsive Bid) | \$10,000 |
| Lowest Responsive QDV Bid Less Preference | \$99,000 (\$109,000 - \$10,000) |
| Official Low Responsive Bid | \$109,000 |

Determining 51% or more Ownership: The business entity holding the contract must be 51% or more owned by one or more veterans (natural persons) with a service-connected disability. For example, a joint venture between two companies is owned by the companies and not a natural person, regardless of the ownership of either company.

Bonds, Insurance, and Certificate of Awardability: These items shall be issued in the name of the business entity bidding.

Loss of Preference: If during the term of the contract the contractor no longer qualifies for the preference, or if the contract is assigned to a business entity that does not qualify for the preference, they will be required to discount their contract price by the amount of the preference they received.