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**City  
of  
Milwaukee**  
**Department  
of  
Public Works  
Infrastructure  
Services  
Division  
Facilities  
Development  
and  
Management Section**

**INSTALLATION OF PHOTOVOLTAIC POWER SYSTEM  
AT THE CENTRAL REPAIR GARAGE**

2142 West Canal Street  
Milwaukee, Wisconsin

July, 2011

Project Number BU110110601  
Official Notice No. 150

CITY OF MILWAUKEE, WISCONSIN  
DEPARTMENT OF PUBLIC WORKS  
INFRASTRUCTURE SERVICES DIVISION  
FACILITIES DEVELOPMENT AND MANAGEMENT SECTION

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PROJECT MANUAL  
GOVERNING THE  
INSTALLATION OF PHOTOVOLTAIC POWER SYSTEM  
AT THE  
CENTRAL REPAIR GARAGE  
2142 WEST CANAL STREET  
MILWAUKEE, WISCONSIN

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Project No. BU110110601

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CITY OF MILWAUKEE  
GENERAL OFFICIAL NOTICE  
TO CONTRACTORS

Separate sealed bids for each project will be received until 10:30 A.M. of the bid opening date at which time bids will be publicly opened and read for furnishing all material and doing all work for each project in accordance with the requirements of the respective Official Notice on the bid form furnished in accordance with plans, specifications, contract documents, and proposed form of contract on file in the office of the Department of Public Works, Municipal Building, 841 N. Broadway, Room 506, Milwaukee, Wisconsin, 53202.

PROSPECTIVE BIDDERS ARE TO CAREFULLY EXAMINE AND REVIEW ALL CONTRACT DOCUMENTS AND MATERIALS IN SAID OFFICE BEFORE SUBMITTING BID.

AFFIDAVITS OF NO INTEREST MUST ACCOMPANY THE BIDS, AND THE FAILURE OF PROSPECTIVE BIDDERS TO COMPLY WITH THESE REQUIREMENTS MAY DISQUALIFY THE BID.

THE CONTRACTOR/LESSEE AGREES TO COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT OF 1990, 42 U.S.C. § 12101, ET. SEQ. THE TDD NUMBER FOR PUBLIC WORKS IS (414) 286-2025.

As part of the bid each bidder shall submit a list of anticipated subcontractors and the class of work to be performed by each, which list should not be added to nor altered without the written consent of the Commissioner of Public Works.

All contractor(s) and subcontractor(s) are required to furnish or have on file a certificate of insurance in accordance with the insurance provisions of the General Specifications.

All contractor(s) and subcontractor(s) are subject to the prevailing wage rates and hours of labor as prescribed by the Common Council of the City of Milwaukee consistent with provisions of Section 66.293 of the Wisconsin Statutes.

Copies of the actual work classifications and wage and fringe benefit rates enforced on this project are available in Room 506 of the Municipal Building.

Corporate surety will be required on performance and payment bonds for all projects listed in the following Official Notices. All applicable charter and Statutory provisions and ordinances, all the provisions of this official notice, invitation to bid, general and detailed specifications, special provisions, proposal, schedule of fixed prices, addendum and plans for this project and all other contract documents set forth in the invitation to bid will be incorporated and made part of the contract as if therein set forth in full.

Tie bids, when the lowest ones, will be decided by the Commissioner of Public Works.

The Commissioner of Public Works reserves the right to reject any or all bids.

Signed: GHASSAN KORBAN,  
Special Deputy Commissioner of Public Works

Countersigned: W. MARTIN MORICS,  
City Comptroller

00031/1

CITY OF MILWAUKEE  
SPECIFIC OFFICIAL NOTICE NO. 150

**Important Notice:**

The Invitation to Bid, all bid documents and the Plans & Specifications for the project listed will be available electronically to prospective bidders via <http://www.mpw.net/bids/docs/150-2011>. Any required addenda or responses related to the listed projects will be posted on said website.

Bidders are encouraged to utilize this electronic method of obtaining bid documents as the Department of Public Works intends to solely use this method for future projects. At this time however, a limited number of hard copies of the above documents will also be available at address listed below.

Sealed bids will be opened on Friday, August 12, 2011 at 10:30 A.M. for the **INSTALLATION OF PHOTOVOLTAIC POWER SYSTEM**, located at the Central Repair Garage, 2142 West Canal Street, Milwaukee, Wisconsin 53233.

Bid Security Required: Bond, Certified Check, Cashier's Check, or Cash to accompany bid: 10% of Contractor's Base Bid

Time for Completion: All work on this project shall be completed by Monday, October 31, 2011.  
Contractor shall begin work on this project no earlier than Monday, August 15, 2011.

Liquidated Damages, per diem: \$150.00  
The EBE requirement for this project is 0% of the contract base bid.  
The residency requirement for this project is 0% of all hours worked on the project.

The apprenticeship requirements for this project are:

Apprentice from N/A of the following trade(s) are to be employed:

N/A

The contractor shall specifically note the EBE, residency, and apprenticeship forms for this project. If the forms are not filled out properly, it will be cause for rejection of the bid.

Plans and project manual will be furnished to the prospective bidders upon payment of a \$10.00 non-refundable fee in room 506, Frank P. Zeidler Municipal Building, 841 North Broadway, Milwaukee, Wisconsin 53202. For general question call 414-286-3314.

A \$10.00 per set additional non-refundable fee is required to obtain bid documents by mail. Plans are sent via U.S. mail unless other arrangements are made by the contractor.

Contractor must comply with all provisions of the CITY OF MILWAUKEE GENERAL OFFICIAL NOTICE TO CONTRACTORS published herein and at [http://www.mpw.net/services/bids\\_home](http://www.mpw.net/services/bids_home)

**Pre-Bid Meeting:** A Pre-Bid Meeting is scheduled for Wednesday, Friday, August 5<sup>th</sup>, 2011, at 2:30 p.m. in Room 606 of the Frank P. Zeidler Municipal Building, 841 North Broadway, Milwaukee, Wisconsin. Bidder participation is urged to become familiar with all aspects of the project and bidding requirements.

Signed

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GHASSAN KORBAN  
Special Deputy Commissioner of Public Works

PUBLISH SIX (6) TIMES INSERTION WITHOUT FAIL, Friday, July 29, 2011

SECTION 00100: INSTRUCTIONS TO BIDDERS

See also Instructions to Bidders in the "General Specifications" of the Department of Public Works, City of Milwaukee, Wisconsin, dated January 31, 1992, and all subsequent addenda.

BID FORM:

Submit a lump sum price for the work as indicated on the drawings and specified herein, complete in every respect.

Bids will not be accepted in any form except on the bid form included with this project manual.

The contractor must recognize and abide by the right of the Owner (City of Milwaukee) to accept or reject any or all bids in the best interests of the City.

CONTRACT AWARD:

The Commissioner of Public Works will award the contract on the basis of the Base Bid only as funds permit.

BASE BID EXCLUSIONS:

1. City Forces installs the Ethernet cables to the inverters.
2. City Forces removes the abandoned compressors and electrical controls on the wall where the inverters are installed.

CONTRACT BREAKDOWN:

Shortly after the award of the contract, each contractor shall submit a list showing the cost breakdown of the items in his contract. This list will be used as a basis for estimates of work completed for partial payment.

SITE VISIT:

All contractors shall visit the site, consult the drawings and project manual, be familiar with the work of other contractors and determine for himself all conditions affecting the work.

Failure by a contractor to be familiar with the project shall not release him from any obligation under this contract to complete the work in strict conformity with the plans and project manual and all City, State and Federal Codes or regulations pertaining to the work.

TIME FOR COMPLETION:

The start and completion dates are stated in the Specific Official Notice. The contractor may begin procuring materials and off-site fabricating (as appropriate and approved by Engineer) on the date on the Notice to Proceed. The Notice to Proceed will be sent to the contractor directly following the signing of the contract.

ADDITIONAL PLANS/PROJECT MANUALS:

These will be available at: <http://www.mpw.net/bids/docs/150-2011>

SECTION 00700: GENERAL CONDITIONS1. SCOPE:A. Index:

1. Scope
2. DPW General Specifications
3. Definitions
4. Control of Work and Materials
5. Samples and Tests
6. Project Coordination
7. Supervision of Work
8. Technical Specifications and Drawings
9. Safety Regulations
10. Code Rules

2. Department of Public Works General Specifications:

Provisions of the Department of Public Works General Specifications dated January 31, 1992, and subsequent addenda except as may be modified or expanded upon in this project manual, shall apply to all contractors and subcontractors working on the project. Copies of the General Specifications may be obtained from [http://www.mpw.net/services/bids\\_home](http://www.mpw.net/services/bids_home).

3. Definitions:

- A. Owner: City of Milwaukee.
- B. Facilities Manager: The Facilities Manager of FACILITIES DEVELOPMENT AND MANAGEMENT SECTION.
- C. Project Inspector: The authorized representative of the Commissioner assigned to make detailed inspection of any or all portions of the work and materials thereof. These inspections are not a substitute to those required by the Department of Neighborhood Services for permit and code compliance.
- D. Addenda: Written or graphic instruments issued prior to the execution of the contract which modify or interpret the bidding documents, including drawings and project manual by additions, deletions, clarifications or corrections. Addenda will become part of the contract documents when the contract is executed.
- E. Contract Drawings: Drawings of the work to be done as listed hereafter in Section 00850 Drawing Schedule and/or Section 00870 Plans and Details.
- F. Utility: WE Energies.
- G. End User: City of Milwaukee.

4. Control of Work and Materials:

- A. Detail and Shop Drawings: Shop drawings and other additional drawings which may be required for each contract of the work shall be prepared by each respective contractor unless otherwise directed by the Facilities Manager. Prints shall be the same size as contract documents when practical. Prints of each drawing shall be submitted to the Facilities Manager

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for approval before proceeding with the work. Changes ordered by the Facilities Manager shall be made and revised prints submitted as above. The Facilities Manager's approval of drawings shall not relieve the contractor of responsibility for errors.

- B. Primary Lines and Grades: The City of Milwaukee will mark two building corners along a line and will establish a benchmark, with a relative elevation, within close proximity to the site. Once established by the City, the contractor shall preserve all points and benchmark as long as needed during construction. The contractor will bear all costs associated with re-establishing points and benchmark.
- C. Construction Lines and Grades: The contractor must bear sole responsibility for the correct transfer of all construction lines and grades from the primary lines and grades points. He shall take such measurements from existing work as may be necessary to insure the proper construction of his work.
- D. Material Orders and Shipping Statements: The contractor shall furnish to the Facilities Manager at least two (2) copies of all material orders and shipping statements. Itemized weights of the materials and individual units of finished work shall be shown.
- E. Weighing of Materials and Fabricated Units: The weighing of materials and fabricated units such as structural steel, casings, etc., when required, shall be done in the presence of the Commissioner's representative. The contractor shall be responsible for the satisfactory weighing of such materials and units.
- F. Consignment and Delivery of Materials: The materials for the work shall be consigned to the contractor and he shall be responsible for the delivery of all materials required for the completion of the contract.

5. Samples and Tests:

- A. Method of Sampling: Samples of the materials proposed or furnished for the work may be taken by the Commissioner at any time; at the point of manufacture, point of delivery or site of work. They will be selected, as far as practicable, in accordance with standard methods of sampling such materials as specified in the standard of the American Society for Testing Material. All sampling shall be done by authorized representatives of the Commissioner. Selections will be in an orderly and systematic manner, insuring samples representative of the lot.
- B. A.S.T.M. Standards: Wherever the abbreviation A.S.T.M. is used in connection with the number of a standard specification, the specification referred to shall be the Standard of the American Society for Testing Materials, designated by that number, including all revisions in effect on the date of award of the contract. Should a revised or amended standard be issued by the American Society for Testing Materials which, in the opinion of the Commissioner, conflicts with or causes undesirable changes in the standards referred to herein, the Commissioner reserves the right, by means of addenda to the project manual, to continue under the provisions of the pertinent standard referred to herein.
- C. Cost of Test Specimens and Samples: All test specimens of metals and all samples of non-metals required for tests shall be furnished by the contractor without cost to the City.
- D. Costs of Tests: All tests on test specimens of metals will be made at the expense of the contractor and the original test on samples of non-metals will be made at the expense of the City. In all cases, the testing procedure will be in accordance with Standard A.S.T.M. tests for such materials. Subsequent tests of non-metals requested by the contractor, when such tests

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are permitted by A.S.T.M. Specifications and approved by the Commissioner or subsequent tests ordered by the Commissioner will be made at the expense of the contractor.

6. Project Coordination:

- A. Contractors are required, so far as possible; to arrange work and to dispose of materials so as not to interfere with the work or storage of materials of other contractors or City forces engaged upon the work.
- B. Contractors shall give full cooperation to other trades and furnish any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.
- C. Where the work of a contractor will be installed in close proximity to the work of other trades, or where there is evidence that the work of a contractor will interfere with the work of other trades, he shall assist in working out space conditions to make satisfactory adjustments.
- D. If a contractor installs work before coordinating it with other trades or so as to cause interference with work of other trades, he shall make necessary changes in his work to correct the condition without extra charge.
- E. Contractors are required to join their work to that of others in a proper manner, and in accordance with the spirit of the plans and project manual, and to perform the work in the proper sequence in relation to that of other contractors, and as may be directed by the Project Inspector.

7. Supervision of Work:

- A. Contractors shall furnish the services of an experienced engineer or superintendent.
- B. He shall be constantly in charge of the installation of the work together with all subcontractors, skilled workers, helpers, and labor required to unload, transfer, erect, connect up, adjust, start, operate and test each system.
- C. He shall be thoroughly acquainted with and be responsible for the various subcontractors' work so that it is properly coordinated and supervised to the satisfaction of the Commissioner of Public Works or his representative.
- D. Upon written notice to a contractor of the lack of such coordination and supervision, the Commissioner of Public Works may authorize such services as may be required and deduct the cost of this service at an hourly rate of \$60.00 per hour per worker from the contract for the work.

8. Technical Specifications and Drawings:

A. Governing order of Contract Documents:

- 1. The following provision modifies DPW General Specifications Item 2.1.3.1:

Anything mentioned in the Technical Specifications and not shown on the drawings or shown on the drawings and not mentioned in the Technical Specifications, shall be as if shown on or mentioned in both. In case of difference between drawings and Technical Specifications, the Technical Specifications shall govern. In case of any discrepancy in drawings or Technical Specifications, the matter shall be immediately submitted to

FACILITIES DEVELOPMENT AND MANAGEMENT SECTION for decision. Said discrepancy shall not be adjusted by the contractor.

B. All contractors shall have complete sets of plans and project manuals on the job site at all times.

9. Safety Regulations:

All work shall be done in accordance with the safety requirements referenced in the International Building Code, as adopted and amended by the State of Wisconsin and OSHA standards.

10. Code Rules:

The rulings, regulations and laws of the following shall be complied with in the completion of this project:

- IBC Existing Building Code, as amended and adopted by the State of Wisconsin (Renovations/Remodeling)
- International Building Code, as amended and adopted by the State of Wisconsin (New Construction)
- Plumbing and Drainage Codes of the City of Milwaukee
- Ordinances of the City of Milwaukee
- National Board of Fire Underwriters
- OSHA
- NFPA
- FAA
- NEC
- IEEE
- UL

00821/1

SECTION 00821: INSPECTION CHARGES

The contractor will be charged a fee for inspection for each and every day such inspection is required after the time allowed for completion has expired.

The amount of the fee for inspection shall be \$325.00 per day.

The time allowed for completion is stated in the Specific Official Notice and shall start with the date on the Notice to Proceed which will be sent to the contractor directly following the signing of the contract. The time allowed includes the time required for fabricating and procuring material and doing the work at the building site.

## PREVAILING WAGE RATE DETERMINATION

Issued by the State of Wisconsin  
Department of Workforce Development  
Pursuant to s. 66.0903, Wis. Stats.  
Issued On: 01/14/2011  
Last Amended On: 06/26/2011

**DETERMINATION NUMBER:** 201100110

**EXPIRATION DATE:** Prime Contracts MUST Be Awarded or Negotiated On Or Before 12/31/2011. If NOT, You MUST Reapply.

**PROJECT NAME:** ALL PUBLIC WORKS CONSTRUCTION PROJECTS SUBJECT TO SEC. 66.0903, STATS.-CITY OF MILWAUKEE

**PROJECT LOCATION:** MILWAUKEE CITY, MILWAUKEE COUNTY, WI

**CONTRACTING AGENCY:** CITY OF MILWAUKEE - DEPT OF PUBLIC WORKS

<b>CLASSIFICATION:</b>	Contractors are responsible for correctly classifying their workers. Either call the Department of Workforce Development (DWD) with trade or classification questions or consult DWD's Dictionary of Occupational Classifications & Work Descriptions on the DWD website at: <a href="http://dwd.wisconsin.gov/er/prevailing_wage_rate/Dictionary/dictionary_main.htm">dwd.wisconsin.gov/er/prevailing_wage_rate/Dictionary/dictionary_main.htm</a> .
<b>OVERTIME:</b>	Time and one-half must be paid for all hours worked: <ul style="list-style-type: none"><li>- over 10 hours per day on prevailing wage projects</li><li>- over 40 hours per calendar week</li><li>- Saturday and Sunday</li><li>- on all of the following holidays: January 1; the last Monday in May; July 4; the 1st Monday in September; the 4th Thursday in November; December 25;</li><li>- The day before if January 1, July 4 or December 25 falls on a Saturday;</li><li>- The day following if January 1, July 4 or December 25 falls on a Sunday.</li></ul>
<b>FUTURE INCREASE:</b>	When a specific trade or occupation requires a future increase, you MUST add the full hourly increase to the "TOTAL" on the effective date(s) indicated for the specific trade or occupation.
<b>PREMIUM PAY:</b>	If indicated for a specific trade or occupation, the full amount of such pay MUST be added to the "HOURLY BASIC RATE OF PAY" indicated for such trade or occupation, whenever such pay is applicable.
<b>APPRENTICES:</b>	Pay apprentices a percentage of the applicable journey person's hourly basic rate of pay and hourly fringe benefit contributions specified in this determination. Obtain the appropriate percentage from each apprentice's contract or indenture.
<b>SUBJOURNEY:</b>	Subjourney wage rates may be available for some of the trades or occupations indicated below with the exception of laborers, truck drivers and heavy equipment operators. Any employer interested in using a subjourney classification on this project MUST complete Form ERD-10880 and request the applicable wage rate from the Department of Workforce Development PRIOR to using the subjourney worker on this project.
<b>ELECTRONIC CERTIFIED: PAYROLL REPORTS:</b> <div style="border: 1px solid red; padding: 2px; display: inline-block; color: red;">N/A</div>	<del>Every contractor working on this project MUST file monthly certified payroll reports in an electronic format that meets the Wisconsin Department of Workforce Development's reporting requirements. These certified payroll reports must be filed by the 7th of the month following the month in which the contractor performed work on this project at the following website: <a href="http://dwd.wisconsin.gov/er/prevailing_wage_rate/default.htm">http://dwd.wisconsin.gov/er/prevailing_wage_rate/default.htm</a>.</del>

This document **MUST BE POSTED** by the **CONTRACTING AGENCY** in at least one conspicuous and easily accessible place **on the site of the project**. A local governmental unit may post this document at the place normally used to post public notices if there is no common site on the project. This document **MUST** remain posted during the entire time any worker is employed on the project and **MUST** be physically incorporated into the specifications and all contracts and subcontracts. If you have any questions, please write to the Equal Rights Division, Labor Standards Bureau, P.O. Box 8928, Madison, Wisconsin 53708 or call (608) 266-6861.

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**The following statutory provisions apply to local governmental unit projects of public works and are set forth below pursuant to the requirements of s. 66.0903(8), Stats.**

**s. 66.0903 (1) (f) & s. 103.49 (1) (c) "PREVAILING HOURS OF LABOR"** for any trade or occupation in any area means 10 hours per day and 40 hours per week and may not include any hours worked on a Saturday or Sunday or on any of the following holidays:

1. January 1.
2. The last Monday in May.
3. July 4.
4. The first Monday in September.
5. The 4th Thursday in November.
6. December 25.
7. The day before if January 1, July 4 or December 25 falls on a Saturday.
8. The day following if January 1, July 4 or December 25 falls on a Sunday.

**s. 66.0903 (10) RECORDS; INSPECTION; ENFORCEMENT.**

(a) Each contractor, subcontractor, or contractor's or subcontractor's agent performing work on a project of public works that is subject to this section shall keep full and accurate records clearly indicating the name and trade or occupation of every person performing the work described in sub. (4) and an accurate record of the number of hours worked by each of those persons and the actual wages paid for the hours worked.

**s. 66.0903 (11) LIABILITY AND PENALTIES.**

(a) 1. Any contractor, subcontractor, or contractor's or subcontractor's agent who fails to pay the prevailing wage rate determined by the department under sub. (3) or who pays less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor is liable to any affected employee in the amount of his or her unpaid wages or his or her unpaid overtime compensation and in an additional amount as liquidated damages as provided under subd. 2., 3., whichever is applicable.

2. If the department determines upon inspection under sub. (10) (b) or (c) that a contractor, subcontractor, or contractor's or subcontractor's agent has failed to pay the prevailing wage rate determined by the department under sub. (3) or has paid less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor, the department shall order the contractor to pay to any affected employee the amount of his or her unpaid wages or his or her unpaid overtime compensation and an additional amount equal to 100 percent of the amount of those unpaid wages or that unpaid overtime compensation as liquidated damages within a period specified by the department in the order.

3. In addition to or in lieu of recovering the liability specified in subd. 1. as provided in subd. 2., any employee for and in behalf of that employee and other employees similarly situated may commence an action to recover that liability in any court of competent jurisdiction. If the court finds that a contractor, subcontractor, or contractor's or subcontractor's agent has failed to pay the prevailing wage rate determined by the department under sub. (3) or has paid less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor, the court shall order the contractor, subcontractor, or agent to pay to any affected employee the amount of his or her unpaid wages or his or her unpaid overtime compensation and an additional amount equal to 100 percent of the amount of those unpaid wages or that unpaid overtime compensation as liquidated damages.

5. No employee may be a party plaintiff to an action under subd. 3. unless the employee consents in writing to become a party and the consent is filed in the court in which the action is brought. Notwithstanding s. 814.04 (1), the court shall, in addition to any judgment awarded to the plaintiff, allow reasonable attorney fees and costs to be paid by the defendant.

<b>BUILDING OR HEAVY CONSTRUCTION</b>
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Includes sheltered enclosures with walk-in access for the purpose of housing persons, employees, machinery, equipment or supplies and non-sheltered work such as canals, dams, dikes, reservoirs, storage tanks, etc. A sheltered enclosure need not be "habitable" in order to be considered a building. The installation of machinery and/or equipment, both above and below grade level, does not change a project's character as a building. On-site grading, utility work and landscaping are included within this definition. Residential buildings of four (4) stories or less, agricultural buildings, parking lots and driveways are NOT included within this definition.

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**SKILLED TRADES**

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<u>CODE</u>	<u>TRADE OR OCCUPATION</u>	<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		
		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
		\$	\$	\$
101	Acoustic Ceiling Tile Installer	31.38	18.16	49.54
102	Boilermaker	31.09	23.75	54.84
103	Bricklayer, Blocklayer or Stonemason Future Increase(s): Add \$1.95 6/06/2011	35.53	15.92	51.45
104	Cabinet Installer	28.31	14.91	43.22
105	Carpenter Future Increase(s): Add \$2.65 on 6/6/11	31.68	18.41	50.09
106	Carpet Layer or Soft Floor Coverer Future Increase(s): Add \$2.65 on 6/6/11	31.68	18.41	50.09
107	Cement Finisher	29.72	15.23	44.95
108	Drywall Taper or Finisher	28.17	15.39	43.56
109	Electrician Future Increase(s): Add \$1/hr on 6/1/2011. Add \$1.40/hr on 6/1/2012. Add \$1.60/hr on 6/1/2013.	31.10	20.39	51.49
110	Elevator Constructor	40.46	23.33	63.79
111	Fence Erector	22.50	3.65	26.15
112	Fire Sprinkler Fitter	36.82	19.03	55.85
113	Glazier Future Increase(s): Add \$2.10/hr on 6/1/2011; Add \$2.15/hr on 6/1/2012.	32.25	15.94	48.19
114	Heat or Frost Insulator	33.28	21.37	54.65
115	Insulator (Batt or Blown)	17.11	17.69	34.80
116	Ironworker	31.31	21.79	53.10
117	Lather	31.38	16.11	47.49

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
118	Line Constructor (Electrical)	31.66	13.94	45.60
119	Marble Finisher	29.40	14.31	43.71
120	Marble Mason	34.58	14.92	49.50
121	Metal Building Erector	13.00	6.86	19.86
122	Millwright	28.30	23.06	51.36
123	Overhead Door Installer	17.25	3.00	20.25
124	Painter Future Increase(s): Add \$2.10/hr on 6/1/2011; Add \$2.20/hr on 6/1/2012. Premium Increase(s): Add \$.20/hr for paperhanging; Add \$.35/hr for bridge, iron and drywall; Add \$.75/hr for spraying and sandblasting; Add \$.60/hr for EIFS work; Add \$1.00/hr for lead based paint removal.	28.47	16.74	45.21
125	Pavement Marking Operator	25.65	13.10	38.75
126	Piledriver Future Increase(s): Add \$2.65/hr on 6/6/11. Premium Increase(s): Add \$.65/hr for Piledriver Loftzman; Add \$.75/hr for Sheet Piling Loftzman.	28.11	23.76	51.87
127	Pipeline Fuser or Welder (Gas or Utility)	29.85	17.34	47.19
129	Plasterer	29.31	15.83	45.14
130	Plumber	37.42	17.02	54.44
132	Refrigeration Mechanic	34.41	17.59	52.00
133	Roofer or Waterproofer	28.85	14.60	43.45
134	Sheet Metal Worker	37.20	16.41	53.61
135	Steamfitter	37.21	19.04	56.25
137	Teledata Technician or Installer	24.65	15.17	39.82
138	Temperature Control Installer	35.81	16.98	52.79
139	Terrazzo Finisher	29.40	14.31	43.71
140	Terrazzo Mechanic	29.40	14.31	43.71
141	Tile Finisher	15.05	9.43	24.48
142	Tile Setter	29.95	15.64	45.59
143	Tuckpointer, Caulker or Cleaner Future Increase(s): Add \$1.95 06/06/2011	34.30	15.47	49.77

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
144	Underwater Diver (Except on Great Lakes)	32.31	14.91	47.22
146	Well Driller or Pump Installer Future Increase(s): Add \$1.60/hr on 6/1/11. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	24.22	14.80	39.02
147	Siding Installer	36.60	15.48	52.08
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	26.88	13.71	40.59
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	27.66	0.00	27.66
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	17.00	8.50	25.50
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.44	0.00	25.44
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	17.41	9.80	27.21

#### TRUCK DRIVERS

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
201	Single Axle or Two Axle	21.42	5.62	27.04
203	Three or More Axle	26.62	17.81	44.43
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add \$1.85/hr on 5/31/2011. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	32.32	16.75	49.07
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	26.62	17.81	44.43

**LABORERS**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
301	General Laborer Future Increase(s): Add \$2.25/hr on 6/1/2011. Premium Increase(s): Add \$.11 for mortar mixer, fork lift operator, air and electric equipment and power buggy operators; Add \$.22 for jackhammer operator, certified welder, gunite machineman.	27.17	15.01	42.18
302	Asbestos Abatement Worker	23.25	13.91	37.16
303	Landscaper Future Increase(s): Add \$1.00/hr on 6/1/2011; Add \$1.00/hr on 6/1/2012: Add \$1.00/hr on 6/1/2013; Add \$1.00/hr on 6/1/2014.	13.80	15.10	28.90
310	Gas or Utility Pipeline Laborer (Other Than Sewer and Water) Future Increase(s): Add \$1.00/hr. on 6/1/2011	18.74	14.93	33.67
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	15.00	3.09	18.09
314	Railroad Track Laborer	12.50	3.96	16.46

**HEAVY EQUIPMENT OPERATORS  
SITE PREPARATION, UTILITY OR LANDSCAPING WORK ONLY**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
501	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Milling Machine; Boring Machine (Directional, Horizontal or Vertical); Backhoe (Track Type) Having a Mfgr's Rated Capacity of 130,000 Lbs. or Over; Backhoe (Track Type) Having a Mfgr's Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bulldozer or Endloader (Over 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Crane, Shovel, Dragline, Clamshells; Forklift (Machinery Moving or Steel Erection, 25 Ft & Over); Gradall (Cruz-Aire Type); Grader or Motor Patrol; Master Mechanic; Mechanic or Welder; Robotic Tool Carrier (With or Without Attachments); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Tractor (Scraper, Dozer, Pusher, Loader); Trencher (Wheel Type or Chain Type Having Over 8 Inch Bucket). Future Increase(s): Add \$1.85/hr on 5/31/2011. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	32.32	16.75	49.07

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
502	Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Environmental Burner; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Jeep Digger; Screed (Milling Machine); Skid Rig; Straddle Carrier or Travel Lift; Stump Chipper; Trencher (Wheel Type or Chain Type Having 8 Inch Bucket & Under).	33.24	17.61	50.85
503	Air Compressor (&/or 400 CFM or Over); Augers (Vertical & Horizontal); Compactor (Self-Propelled 84 Ft Total Drum Width & Under, or Tractor Mounted, Towed & Light Equipment); Crusher, Screening or Wash Plant; Farm or Industrial Type Tractor; Forklift; Generator (&/or 150 KW or Over); Greaser; High Pressure Utility Locating Machine (Daylighting Machine); Mulcher; Oiler; Post Hole Digger or Driver; Pump (3 Inch or Over) or Well Points; Refrigeration Plant or Freeze Machine; Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add \$1.85/hr on 5/31/2011. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	32.32	16.75	49.07
504	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	35.05	18.08	53.13
505	Work Performed on the Great Lakes Including Crane or Backhoe Operator; Assistant Hydraulic Dredge Engineer; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder; 70 Ton & Over Tug Operator. Premium Increase(s): Add \$.50/hr for friction crane, lattice boom or crane certification (CCO). On Sunday & holidays, pay two times the hourly basic rate.	37.45	19.45	56.90
506	Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or More); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	33.35	19.33	52.68
507	Work Performed on the Great Lakes Including Deck Equipment Operator, Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under); Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks - Great Lakes ONLY.	32.20	18.69	50.89

**HEAVY EQUIPMENT OPERATORS  
EXCLUDING SITE PREPARATION, UTILITY, PAVING LANDSCAPING WORK**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
508	<p>Boring Machine (Directional); Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &amp;/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic.</p> <p>Future Increase(s): Add \$2.10/hr on 6/1/11</p> <p>Premium Increase(s): Crane Operators with CCO certification add \$.50/hr. Cranes with boom length over 200 ft. not exceeding 300 ft. OR lifting capacity over 200 ton not exceeding 300 ton add \$.50/hr. Over 300 ton OR 300 ft. add \$.01/hr. per foot OR ton whichever is greater. On Sunday &amp; holidays, pay two times the hourly basic rate.</p>	38.06	18.10	56.16
509	<p>Backhoe (Track Type) Having a Mfgr's Rated Capacity of 130,000 Lbs. or Over; Boring Machine (Horizontal or Vertical); Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With A Lifting Capacity Of 4,000 Lbs. &amp; Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &amp;/or Jib Lengths Measuring 175 Ft or Under; Pile Driver; Versi Lifts, Tri-Lifts &amp; Gantrys (20,000 Lbs. &amp; Over).</p> <p>Future Increase(s): Add \$2.10/hr on 6/1/2011.</p> <p>Premium Increase(s): Crane Operators with CCO certification add \$.50/hr. On Sunday &amp; holidays, pay two times the hourly basic rate.</p>	37.56	18.10	55.66
510	<p>Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. &amp; Under); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump (Over 46 Meter), Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb &amp; Gutter Machine; Concrete Spreader &amp; Distributor; Dredge (NOT Performing Work on the Great Lakes); Forklift (Machinery Moving or Steel Erection, 25 Ft &amp; Over); Gradall (Cruz-Aire Type); Hydro-Blaster (10,000 PSI or Over); Milling Machine; Skid Rig; Traveling Crane (Bridge Type).</p> <p>Future Increase(s): Add \$2.10/hr on 6/1/11.</p> <p>Premium Increase(s): Crane Operators with CCO certification add \$.50/hr. On Sunday &amp; holidays, pay two times the hourly basic rate.</p>	37.06	18.10	55.16

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
511	<p>Air, Track, Rotary or Percussion Drilling Machine &amp;/or Hammers, Blaster; Bulldozer or Endloader (Over 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width &amp; Over, or Tractor Mounted, Towed &amp; Light Equipment); Concrete Pump (46 Meter &amp; Under), Concrete Conveyor (Rotec or Bidwell Type); Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Environmental Burner; Gantrys (Under 20,000 Lbs.); Grader or Motor Patrol; High Pressure Utility Locating Machine (Daylighting Machine); Manhoist; Material or Stack Hoist; Mechanic or Welder; Railroad Track Rail Leveling Machine, Tie Placer, Extractor, Tamper, Stone Leveler or Rehabilitation Equipment; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yd or More Capacity; Screed (Milling Machine); Sideboom; Straddle Carrier or Travel Lift; Tining or Curing Machine; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type Having Over 8-Inch Bucket).</p> <p>Future Increase(s): Add \$2/hr on 6/1/11.</p> <p>Premium Increase(s): On Sunday &amp; holidays, pay two times the hourly basic rate.</p>	36.47	18.10	54.57
512	<p>Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Compactor (Self-Propelled 84 Ft Total Drum Width &amp; Under, or Tractor Mounted, Towed &amp; Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Finishing Machine (Road Type); Fireman (Pile Driver &amp; Derrick NOT Performing Work on the Great Lakes); Grout Pump; Hoist (Tugger, Automatic); Industrial Locomotives; Jeep Digger; Lift Slab Machine; Mulcher; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Screw or Gypsum Pumps; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Stump Chipper; Trencher (Wheel Type or Chain Type Having 8-Inch Bucket &amp; Under); Winches &amp; A-Frames.</p> <p>Premium Increase(s): On Sunday &amp; holidays, pay two times the hourly basic rate.</p>	29.82	17.96	47.78
513	<p>Air Compressor (&amp;/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical &amp; Horizontal); Boatmen (NOT Performing Work on the Great Lakes); Boiler (Temporary Heat); Crusher, Screening or Wash Plant; Elevator; Farm or Industrial Type Tractor; Fireman (Asphalt Plant NOT Performing Work on the Great Lakes); Forklift; Generator (&amp;/or 150 KW or Over); Greaser; Heaters (Mechanical); Loading Machine (Conveyor); Oiler; Post Hole Digger or Driver; Prestress Machine; Pump (3 Inch or Over) or Well Points; Refrigeration Plant or Freeze Machine; Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack.</p> <p>Future Increase(s): Add \$2/hr on 6/1/11.</p> <p>Premium Increase(s): On Sunday &amp; holidays, pay two times the hourly basic rate.</p>	29.44	18.10	47.54
514	Gas or Utility Pipeline, Except Sewer & Water (Primary Equipment).	34.89	19.68	54.57

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b><u>TOTAL</u></b>
<b><u>CODE</u></b>	<b><u>TRADE OR OCCUPATION</u></b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
515	Gas or Utility Pipeline, Except Sewer & Water (Secondary Equipment). Future Increase(s): Add \$1.60/hr on 6/1/2011.	30.21	16.85	47.06
516	Fiber Optic Cable Equipment Future Increase(s): Add \$1.75/hr on 2/1/11.	24.39	15.45	39.84

<b>SEWER, WATER OR TUNNEL CONSTRUCTION</b>
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Includes those projects that primarily involve public sewer or water distribution, transmission or collection systems and related tunnel work (excluding buildings).

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**SKILLED TRADES**

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<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		
		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
		\$	\$	\$
103	Bricklayer, Blocklayer or Stonemason	34.58	14.92	49.50
105	Carpenter	31.38	16.03	47.41
107	Cement Finisher	24.00	18.63	42.63
109	Electrician	32.53	18.34	50.87
111	Fence Erector	22.50	3.65	26.15
116	Ironworker	31.31	21.79	53.10
118	Line Constructor (Electrical)	31.66	13.94	45.60
125	Pavement Marking Operator	25.65	13.10	38.75
126	Piledriver Future Increase(s): Add \$2.65/hr on 6/6/11. Premium Increase(s): Add \$.65/hr for Piledriver Loftsman; Add \$.75/hr for Sheet Piling Loftsman.	28.11	23.76	51.87
130	Plumber	34.45	15.50	49.95
135	Steamfitter	31.65	15.04	46.69
137	Teledata Technician or Installer	24.09	14.48	38.57
143	Tuckpointer, Caulker or Cleaner	33.35	14.47	47.82
144	Underwater Diver (Except on Great Lakes)	32.31	14.91	47.22
146	Well Driller or Pump Installer	24.22	14.80	39.02
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	26.88	13.71	40.59
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	27.66	0.00	27.66
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	17.00	8.50	25.50
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.44	0.00	25.44
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	17.41	9.80	27.21

**TRUCK DRIVERS**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
201	Single Axle or Two Axle	21.42	5.62	27.04
203	Three or More Axle	17.03	12.89	29.92
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	31.89	17.96	49.85
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	17.03	12.89	29.92

**LABORERS**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
301	General Laborer Future Increase(s): Add \$1.67/hr on 6/6/2011; Add \$1.73/hr on 6/4/2012. Premium Increase(s): Add \$1.92 for bottomman; Add \$2.03 for concrete manhole builder, bracer, jointman, or pipelayer; Add \$4.83 for blaster. Add \$2.00 for all tunnel work under 15 lbs. compressed air; Add \$2.00 for 0-30 lbs. compressed air; Add \$3.00 for over 30 lbs. compressed air.	26.65	15.01	41.66
303	Landscaper	13.40	14.50	27.90
304	Flagperson or Traffic Control Person	19.83	15.65	35.48
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	12.50	0.00	12.50
314	Railroad Track Laborer	12.50	3.96	16.46

**HEAVY EQUIPMENT OPERATORS  
SEWER, WATER OR TUNNEL WORK**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
521	<p>Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &amp;/or Jib Lengths Measuring 176 Ft or Over; Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Master Mechanic; Pile Driver.</p> <p>Future Increase(s): Add \$1.90/hr on 6/6/2011; Add \$2.05/hr on 6/4/2012.</p> <p>Premium Increase(s): Add \$.25/hr for operating tower crane. On Sunday &amp; holidays, pay two times the hourly basic rate except pump/generator operators when employed on non-productive projects.</p>	33.59	17.75	51.34
522	<p>Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. &amp; Under); Boring Machine (Directional); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump (Over 46 Meter), Concrete Conveyor (Rotec or Bidwell Type); Concrete Spreader &amp; Distributor; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &amp;/or Jib Lengths Measuring 175 Ft or Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity of 4,000 Lbs. &amp; Under; Dredge (NOT Performing Work on the Great Lakes); Milling Machine; Skid Rig; Telehandler; Traveling Crane (Bridge Type).</p> <p>Future Increase(s): Add \$1.90/hr on 6/6/2011; Add \$2.05/hr on 6/4/2012.</p> <p>Premium Increase(s): Add \$.25/hr for operating tower crane. On Sunday &amp; holidays, pay two times the hourly basic rate except pump/generator operators when employed on non-productive projects.</p>	32.81	17.75	50.56

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
523	<p>Air Track, Rotary or Percussion Drilling Machine &amp;/or Hammers, Blaster; Boring Machine (Horizontal or Vertical); Bulldozer or Endloader (Over 40 hp); Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Concrete Pump (46 Meter &amp; Under), Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb &amp; Gutter Machine; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Hydro-Blaster (10,000 PSI or Over); Manhoist; Material or Stack Hoist; Mechanic or Welder; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yd or More Capacity; Screed (Milling Machine); Sideboom; Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type Having Over 8-Inch Bucket).</p> <p>Future Increase(s): Add \$1.90/hr on 6/6/2011; Add \$2.05/hr on 6/4/2012.</p> <p>Premium Increase(s): Add \$.25/hr for operating tower crane. On Sunday &amp; holidays, pay two times the hourly basic rate except pump/generator operators when employed on non-productive projects.</p>	31.86	17.75	49.61
524	<p>Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width &amp; Over, or Tractor Mounted, Towed &amp; Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Finishing Machine (Road Type); Environmental Burner; Fireman (Pile Driver &amp; Derrick NOT Performing Work on the Great Lakes); Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Hoist (Tugger, Automatic); Grout Pump; Jeep Digger; Lift Slab Machine; Mulcher; Power Subgrader; Pump (3 Inch or Over) or Well Points; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Screw or Gypsum Pumps; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Stump Chipper; Tining or Curing Machine; Trencher (Wheel Type or Chain Type Having 8-Inch Bucket &amp; Under); Winches &amp; A-Frames.</p> <p>Future Increase(s): Add \$1.90/hr on 6/6/2011; Add \$2.05/hr on 6/4/2012.</p> <p>Premium Increase(s): Add \$.25/hr for operating tower crane. On Sunday &amp; holidays, pay two times the hourly basic rate except pump/generator operators when employed on non-productive projects.</p>	30.81	17.75	48.56

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
525	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Compactor (Self-Propelled 84 Ft Total Drum Width & Under, or Tractor Mounted, Towed & Light Equipment); Crusher, Screening or Wash Plant; Farm or Industrial Type Tractor; Fireman (Asphalt Plant NOT Performing Work on the Great Lakes); Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Loading Machine (Conveyor); Post Hole Digger or Driver; Refrigeration Plant or Freeze Machine; Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add \$1.90/hr on 6/6/2011; Add \$2.05/hr on 6/4/2012. Premium Increase(s): Add \$.25/hr for operating tower crane. On Sunday & holidays, pay two times the hourly basic rate except pump/generator operators when employed on non-productive projects.	29.41	17.75	47.16
526	Boiler (Temporary Heat); Forklift; Greaser; Oiler. Future Increase(s): Add \$1.90/hr on 6/6/2011; Add \$2.05/hr on 6/4/2012. Premium Increase(s): Add \$.25/hr for operating tower crane. On Sunday & holidays, pay two times the hourly basic rate except pump/generator operators when employed on non-productive projects.	29.41	17.75	47.16
527	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	35.05	18.08	53.13
528	Work Performed on the Great Lakes Including 70 Ton & Over Tug Operator; Assistant Hydraulic Dredge Engineer; Crane or Backhoe Operator; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder.	35.05	18.08	53.13
529	Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or More); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery.	32.20	18.69	50.89
530	Work Performed on the Great Lakes Including Deck Equipment Operator; Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under), Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks - Great Lakes ONLY.	32.20	18.69	50.89

<b>AIRPORT PAVEMENT OR STATE HIGHWAY CONSTRUCTION</b>
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Includes all airport projects (excluding buildings) and all projects awarded by the Wisconsin Department of Transportation (excluding buildings).

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**SKILLED TRADES**

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<u>CODE</u>	<u>TRADE OR OCCUPATION</u>	<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		
		<u>HOURLY BASIC RATE OF PAY</u> \$	<u>HOURLY FRINGE BENEFITS</u> \$	<u>TOTAL</u> \$
103	Bricklayer, Blocklayer or Stonemason	33.80	20.37	54.17
105	Carpenter	31.38	16.19	47.57
107	Cement Finisher Future Increase(s): Add \$1.86 on 6/1/11; Add \$1.86 on 6/1/12; Add \$1.87 on 6/1/13; Add \$1.87 on 6/1/14; Add \$1.87 on 6/1/15; Add \$1.75 on 6/1/16. Premium Increase(s): Effective 6/1/2011 for "Airport Pavement or State Highway Construction" project type only, add \$1.40/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night to avoid peak traffic volumes under artificial illumination with traffic control. The work is completed after sunset and before sunrise.	28.17	16.33	44.50
109	Electrician	31.64	21.45	53.09
111	Fence Erector	33.90	21.81	55.71
116	Ironworker	31.31	21.79	53.10
118	Line Constructor (Electrical)	31.66	13.94	45.60
124	Painter	26.54	13.40	39.94
125	Pavement Marking Operator	26.54	13.40	39.94
126	Piledriver	28.11	21.34	49.45
133	Roofer or Waterproofer	28.85	13.60	42.45
137	Teledata Technician or Installer	24.09	14.48	38.57
143	Tuckpointer, Caulker or Cleaner	33.35	14.47	47.82
144	Underwater Diver (Except on Great Lakes)	32.31	14.91	47.22
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	33.23	15.04	48.27
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	28.21	14.71	42.92
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.68	12.41	37.09
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	22.92	11.87	34.79

154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	26.75	10.29	37.04
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**TRUCK DRIVERS**

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<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>				
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
		\$	\$	\$
201	Single Axle or Two Axle	21.00	14.51	35.51
203	Three or More Axle	25.09	13.60	38.69
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate. For "Airport Pavement or State Highway Construction" project type only, add \$1.50/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	32.07	18.10	50.17
205	Pavement Marking Vehicle	20.06	11.55	31.61
206	Shadow or Pilot Vehicle	21.00	14.51	35.51
207	Truck Mechanic	25.09	13.60	38.69

**LABORERS**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
301	General Laborer Future Increase(s): Add \$1.60/hr on 6/1/2011; Add \$1.60/hr on 6/1/2012; Add \$1.70/hr on 6/1/2013; Add \$1.60/hr on 6/1/2014. Premium Increase(s): Add \$.15/hr for air tool operator, joint sawer and filler (pavement), vibrator or tamper operator (mechanical hand operated), chain saw operator and demolition burning torch laborer; Add \$.35/hr for bituminous worker (raker and luteman), formsetter (curb, sidewalk and pavement) and strike off man; Add \$.50/hr for line and grade specialist; Add \$.65/hr for blaster and powderman; Add \$2.01/hr for topman; Add \$2.46/hr for bottomman; Add \$3.23/hr for pipelayer. "Airport Pavement or State Highway Construction" project type only, add \$1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	23.71	16.88	40.59
302	Asbestos Abatement Worker	23.25	13.91	37.16
303	Landscaper Future Increase(s): Add \$1.60/hr on 6/1/11; Add \$1.60/hr on 6/1/12; Add \$1.70/hr on 6/1/13; Add \$1.60/hr on 6/1/14. Premium Increase(s): Effective 6/1/09 for "Airport Pavement or State Highway Construction" project type only, add \$1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	23.71	16.88	40.59
304	Flagperson or Traffic Control Person Future Increase(s): Add \$1.60/hr on 6/1/2011; Add \$1.60/hr on 6/1/2012; Add \$1.70/hr on 6/1/2013; Add \$1.60/hr on 6/1/2014. Premium Increase(s): "Airport Pavement or State Highway Construction" project type only, add \$1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	20.20	16.88	37.08
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	15.00	3.09	18.09
314	Railroad Track Laborer	12.50	3.96	16.46

**HEAVY EQUIPMENT OPERATORS  
AIRPORT PAVEMENT OR STATE HIGHWAY CONSTRUCTION**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
531	Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Traveling Crane (Bridge Type). Future Increase(s): Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate. For "Airport Pavement or State Highway Construction" project type only, add \$1.50/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	33.07	18.10	51.17
532	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With A Lifting Capacity Of 4,000 Lbs., & Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver. Future Increase(s): Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate. For "Airport Pavement or State Highway Construction" project type only, add \$1.50/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	32.57	18.10	50.67

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
533	<p>Air Track, Rotary or Percussion Drilling Machine &amp;/or Hammers, Blaster; Asphalt Heater, Planer &amp; Scarifier; Asphalt Milling Machine; Asphalt Screed; Automatic Subgrader (Concrete); Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. &amp; Under); Bituminous (Asphalt) Plant &amp; Paver, Screed; Boatmen (NOT Performing Work on the Great Lakes); Boring Machine (Directional, Horizontal or Vertical); Bridge (Bidwell) Paver; Bulldozer or Endloader; Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb &amp; Gutter Machine; Concrete Spreader &amp; Distributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane Wlth a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches &amp; A-Frames.</p> <p>Future Increase(s):                      Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.</p> <p>Premium Increase(s):                      On Sunday &amp; holidays, pay two times the hourly basic rate. For "Airport Pavement or State Highway Construction" project type only, add \$1.50/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).</p>	32.07	18.10	50.17

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
534	<p>Belting, Burlap, Texturing Machine; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed &amp; Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Asphalt Plant, Pile Driver &amp; Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Hoist (Tugger, Automatic); Jeep Digger; Joint Sawyer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler; Tining or Curing Machine.</p> <p>Future Increase(s): Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.</p> <p>Premium Increase(s): On Sunday &amp; holidays, pay two times the hourly basic rate. For "Airport Pavement or State Highway Construction" project type only, add \$1.50/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).</p>	31.81	18.10	49.91
535	<p>Air Compressor (&amp;/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical &amp; Horizontal); Automatic Belt Conveyor &amp; Surge Bin; Boiler (Temporary Heat); Concrete Proportioning Plant; Crusher, Screening or Wash Plant; Generator (&amp;/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oiler; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack.</p> <p>Future Increase(s): Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.</p> <p>Premium Increase(s): On Sunday &amp; holidays, pay two times the hourly basic rate. For "Airport Pavement or State Highway Construction" project type only, add \$1.50/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).</p>	31.52	18.10	49.62
536	Fiber Optic Cable Equipment.	22.79	15.30	38.09
537	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	35.05	18.08	53.13
538	Work Performed on the Great Lakes Including 70 Ton & Over Tug Operator; Assistant Hydraulic Dredge Engineer; Crane or Backhoe Operator; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder.	35.05	18.08	53.13

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
539	Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or More); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery.	32.20	18.69	50.89
540	Work Performed on the Great Lakes Including Deck Equipment Operator, Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under); Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks-Great Lakes ONLY.	32.20	18.69	50.89

<b>LOCAL STREET OR MISCELLANEOUS PAVING CONSTRUCTION</b>
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Includes roads, streets, alleys, trails, bridges, paths, racetracks, parking lots and driveways (except residential or agricultural), public sidewalks or other similar projects (excluding projects awarded by the Wisconsin Department of Transportation).

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**SKILLED TRADES**

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<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		
		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
		\$	\$	\$
103	Bricklayer, Blocklayer or Stonemason	34.58	14.92	49.50
105	Carpenter	31.38	16.29	47.67
107	Cement Finisher	27.12	16.07	43.19
109	Electrician Future Increase(s): Add \$1/hr on 6/1/2011. Add \$1.40/hr on 6/1/2012. Add \$1.60/hr on 6/1/2013.	31.10	20.39	51.49
111	Fence Erector	22.50	3.65	26.15
116	Ironworker	31.31	21.79	53.10
118	Line Constructor (Electrical)	31.66	13.94	45.60
124	Painter	27.82	15.39	43.21
125	Pavement Marking Operator	23.46	9.45	32.91
126	Piledriver	28.11	21.16	49.27
133	Rofer or Waterproofer	28.85	13.60	42.45
137	Teledata Technician or Installer	24.09	14.48	38.57
143	Tuckpointer, Caulker or Cleaner	33.35	14.47	47.82
144	Underwater Diver (Except on Great Lakes)	32.31	14.91	47.22
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	26.88	13.71	40.59
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	28.21	14.30	42.51
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.68	16.16	40.84
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	22.92	11.87	34.79
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	29.06	15.39	44.45

**TRUCK DRIVERS**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
201	Single Axle or Two Axle	21.42	5.62	27.04
203	Three or More Axle	13.00	13.60	26.60
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	31.89	17.96	49.85
205	Pavement Marking Vehicle	20.85	11.02	31.87
206	Shadow or Pilot Vehicle	21.42	5.62	27.04
207	Truck Mechanic	13.00	13.60	26.60

**LABORERS**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
301	General Laborer	23.34	17.30	40.64
303	Landscaper	22.00	5.20	27.20
304	Flagperson or Traffic Control Person	17.19	15.32	32.51
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	15.00	3.09	18.09
314	Railroad Track Laborer	12.50	3.96	16.46

**HEAVY EQUIPMENT OPERATORS  
CONCRETE PAVEMENT OR BRIDGE WORK**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
541	Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic.	31.97	16.96	48.93

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
542	<p>Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity of 4,000 Lbs. &amp; Under; Crane, Tower Crane Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &amp;/or Jib Lengths Measuring 175 Ft or Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver.</p> <p>Future Increase(s):                      Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.</p> <p>Premium Increase(s):                      On Sunday &amp; holidays, pay two times the hourly basic rate. For "Airport Pavement or State Highway Construction" project type only, add \$1.50/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).</p>	32.57	18.10	50.67
543	<p>Air Track, Rotary or Percussion Drilling Machine &amp;/or Hammers, Blaster; Automatic Subgrader (Concrete); Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. &amp; Under); Boring Machine (Directional, Horizontal or Vertical); Bridge (Bidwell) Paver; Bulldozer or Endloader; Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb &amp; Gutter Machine; Concrete Spreader &amp; Distributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches &amp; A-Frames.</p>	30.97	16.98	47.95

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
544	Backfiller; Belting, Burlap, Texturing Machine; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Jeep Digger; Joint Sawyer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler; Tining or Curing Machine. Future Increase(s): Add \$1.85/hr on 5/31/2011. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	32.32	16.75	49.07
545	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Automatic Belt Conveyor & Surge Bin; Boiler (Temporary Heat); Concrete Proportioning Plant; Crusher, Screening or Wash Plant; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oiler; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add \$1.85/hr on 5/31/2011. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	30.97	16.75	47.72
546	Fiber Optic Cable Equipment.	22.79	15.30	38.09
547	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	35.05	18.08	53.13
548	Work Performed on the Great Lakes Including 70 Ton & Over Tug Operator; Assistant Hydraulic Dredge Engineer; Crane or Backhoe Operator; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder.	35.05	18.08	53.13
549	Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or more); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery.	32.20	18.69	50.89
550	Work Performed on the Great Lakes Including Deck Equipment Operator; Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under); Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks - Great Lakes ONLY.	32.20	18.69	50.89

**HEAVY EQUIPMENT OPERATORS  
ASPHALT PAVEMENT OR OTHER WORK**

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
551	Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self Erecting Tower Crane With a Lifting Capacity of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads and/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic.	31.97	17.35	49.32
552	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity Of 4,000 Lbs. & Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver.	30.42	17.05	47.47
553	Air, Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boring Machine (Directional, Horizontal or Vertical); Bulldozer or Endloader; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Laser/Screed; Concrete Slipform Placer Curb & Gutter Machine; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Railroad Track Rail Leveling Machine, Tie Placer, Extractor, Tamper, Stone Leveler or Rehabilitation Equipment; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A-Frames. Future Increase(s): Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	31.52	17.75	49.27

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
554	Backfiller; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Asphalt Plant, Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Hoist (Tugger, Automatic); Jeep Digger; Joint Sawyer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Self-Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler. Future Increase(s): Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	31.52	17.75	49.27
555	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Automatic Belt Conveyor & Surge Bin; Boiler (Temporary Heat); Crusher, Screening or Wash Plant; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oiler; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add \$1.95/hr on 6/1/11; Add \$2/hr on 6/1/12; Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	31.52	17.75	49.27
556	Fiber Optic Cable Equipment.	22.79	15.30	38.09

<b>RESIDENTIAL OR AGRICULTURAL CONSTRUCTION</b>
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Includes single family houses or apartment buildings of no more than four (4) stories in height and all buildings, structures or facilities that are primarily used for agricultural or farming purposes, excluding commercial buildings. For classification purposes, the exterior height of a residential building, in terms of stories, is the primary consideration. All incidental items such as site work, driveways, parking lots, private sidewalks, private septic systems or sewer and water laterals connected to a public system and swimming pools are included within this definition. Residential buildings of five (5) stories and above are NOT included within this definition.

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**SKILLED TRADES**

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<u>CODE</u>	<u>TRADE OR OCCUPATION</u>	<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		
		<u>HOURLY BASIC RATE OF PAY</u> \$	<u>HOURLY FRINGE BENEFITS</u> \$	<u>TOTAL</u> \$
101	Acoustic Ceiling Tile Installer	35.28	14.02	49.30
102	Boilermaker	31.09	21.82	52.91
103	Bricklayer, Blocklayer or Stonemason	23.56	13.33	36.89
104	Cabinet Installer	26.00	7.06	33.06
105	Carpenter	31.38	5.03	36.41
106	Carpet Layer or Soft Floor Coverer	18.00	0.00	18.00
107	Cement Finisher	23.50	17.24	40.74
108	Drywall Taper or Finisher	25.95	14.52	40.47
109	Electrician	23.10	11.03	34.13
110	Elevator Constructor	40.46	23.33	63.79
111	Fence Erector	17.00	1.19	18.19
112	Fire Sprinkler Fitter	36.82	19.03	55.85
113	Glazier	30.24	14.84	45.08
114	Heat or Frost Insulator	15.00	0.00	15.00
115	Insulator (Batt or Blown)	10.00	3.10	13.10
116	Ironworker	20.00	0.40	20.40
117	Lather	16.00	1.60	17.60
119	Marble Finisher	29.40	14.31	43.71
120	Marble Mason	34.58	14.92	49.50
121	Metal Building Erector	16.75	6.50	23.25
123	Overhead Door Installer	22.00	4.62	26.62
124	Painter	17.87	0.96	18.83
125	Pavement Marking Operator	25.65	13.10	38.75

<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
129	Plasterer	25.00	0.00	25.00
130	Plumber	35.93	15.69	51.62
132	Refrigeration Mechanic	23.00	4.81	27.81
133	Roofer or Waterproofer	28.85	6.23	35.08
134	Sheet Metal Worker	27.83	14.28	42.11
135	Steamfitter	21.00	3.66	24.66
137	Teledata Technician or Installer	8.00	0.00	8.00
138	Temperature Control Installer	22.00	2.92	24.92
139	Terrazzo Finisher	29.40	14.31	43.71
140	Terrazzo Mechanic	29.40	14.31	43.71
141	Tile Finisher	18.00	0.92	18.92
142	Tile Setter	17.50	0.74	18.24
143	Tuckpointer, Caulker or Cleaner	32.50	2.44	34.94
146	Well Driller or Pump Installer	26.76	0.00	26.76
147	Siding Installer	16.00	0.00	16.00

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**TRUCK DRIVERS**

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<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
201	Single Axle or Two Axle	16.00	2.25	18.25
203	Three or More Axle	18.00	1.25	19.25
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	15.00	15.00	30.00

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**LABORERS**

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<b>Fringe Benefits Must Be Paid On <u>All</u> Hours Worked</b>		<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
<b>CODE</b>	<b>TRADE OR OCCUPATION</b>	<b>\$</b>	<b>\$</b>	<b>\$</b>
301	General Laborer	23.50	6.22	29.72
302	Asbestos Abatement Worker	17.00	7.07	24.07
303	Landscaper	15.00	5.25	20.25

311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	15.00	3.09	18.09
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**HEAVY EQUIPMENT OPERATORS  
RESIDENTIAL OR AGRICULTURAL CONSTRUCTION**

**Fringe Benefits Must Be Paid On All Hours Worked**

<u>CODE</u>	<u>TRADE OR OCCUPATION</u>	<u>HOURLY BASIC RATE OF PAY</u> \$	<u>HOURLY FRINGE BENEFITS</u> \$	<u>TOTAL</u> \$
557	Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Backhoe (Track Type); Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boring Machine (Directional, Horizontal or Vertical); Bulldozer or Endloader; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & Distributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Crane, Shovel, Dragline, Clamshells; Forestry Equipment, Tlmbco, Tree Shear, Tub Grinder, Processor; Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type); Winches & A-Frames.	31.32	8.17	39.49
558	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Backfiller; Belting, Burlap, Texturing Machine; Boiler (Temporary Heat); Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Farm or Industrial Type Tractor; Forklift; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Jeep Digger; Lift Slab Machine; Mulcher; Oiler; Post Hole Digger or Driver; Power Subgrader; Pump (3 Inch or Over) or Well Points; Robotic Tool Carrier (With or Without Attachments); Rock, Stone Breaker; Roller (Rubber Tire, 5 Tons or Under); Screed (Milling Machine); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Stump Chipper; Telehandler; Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add \$1.85/hr on 5/31/2011. Premium Increase(s): On Sunday & holidays, pay two times the hourly basic rate.	32.32	16.75	49.07

\*\*\*\*\* END OF RATES \*\*\*\*\*

SECTION 00850: DRAWING SCHEDULE

The following listed drawings accompany and form a part of the project contract documents along with this project manual and generally illustrate the nature of the work.

<u>Sheet No.</u>	<u>Title</u>
G000	Sheet Index
E100	Roof PV Layout Plan
E101	Partial First & Second Floor Plan

SECTION 01010: SUMMARY OF WORK:

1. SCOPE:

A. Index:

1. Scope
2. Project Description
3. Work by Others
4. Scheduling of Work

2. PROJECT DESCRIPTION:

- A. In general, the project includes the Installation of Photovoltaic Power System at the Central Repair Garage as described in the plans and as specified herein.
- B. The City will occupy and use the site during construction. The contractor is required to coordinate with City Forces on site, to minimize impact to City operations and to ensure the safety of City employees and property.
- C. The contractor must coordinate all work with the City, utilities, and all other work forces on site.
- D. It is also understood that the submittal of a proposal shall include furnishing all labor, materials, equipment, and incidentals necessary for completion of the work required, including that which may not be directly shown on the drawings or in the specifications, but are necessary for proper operation and approval.
- E. Examine Documents and Visit Site:
  1. Before submitting a bid proposal, bidders should carefully examine the drawings and project manual, visit the site of the work, fully inform themselves as to all existing conditions and limitations including those of labor, and shall include in the bid proposal a sum sufficient to cover the cost of all items contemplated by the construction documents.
  2. Each sub-bidder further represents that he has inspected the site of the proposed work to ascertain any obstacles that might be encountered and other matters and conditions relevant to this work.
  3. The nature of the work required demands thorough review of all drawings and the project manual, and diligent and careful site inspection by all prospective sub-bidders as a means of determining the extent of work and conditions under which the work is to be performed.
  4. Additional charges will not be as considered for work which, prior to bidding, could reasonably be inferred as appropriate by examination of the drawings and specifications, visiting the site, and closely reviewing the work as indicated above. No representations as to subsurface conditions are made.
- F. The following outline is intended to serve as a general guide only and not as a complete listing of work, operations, or materials. Consult the Table of Contents for complete listing of items included.

1. Electrical:

- a. This project involves the installation of a new photovoltaic system for the building.
  - b. The photovoltaic panels are to be roof and wall mounted as indicated on the drawings.
  - c. Solar electric (photovoltaic) system installers must be NABCEP-certified.
2. Provide all required penetrations through interior walls, exterior walls and floors where shown on plans. Provide curbs, curb adapters, and safing and seal air and water tight.
  3. Provide warranty, start-up services, O & M manuals, record as-built drawings and all other specified documentation.
  4. All required approvals and necessary permits and fees shall be obtained for this project.
  5. Make all necessary connections to existing systems.
  6. Coordinate with the Building Manager for all systems tie-ins.
  7. All work of this project shall comply with City of Milwaukee and State of Wisconsin codes, NEC and the NFPA.
  8. Attend regularly scheduled construction meeting until project completion as required.
  9. Demolition, Removal, and Disposal:
    - a. Contractor shall be responsible for all costs associated with demolition, removal, and disposal of indicated equipment and material.
    - b. Contractor shall be responsible for repairing any damage caused to building or building components through demolition and removal process.
    - c. Contractor shall follow all Wisconsin Department of Natural Resources and Environmental Protection Agency, as well as any other state or national regulations, regarding disposal of equipment or materials removed from building.
  10. Contractors shall maintain any special security procedures that are in place at the site.
  11. Contractors shall maintain access to parking lot at all times.
3. WORK BY OTHERS:
    - A. City Forces installs the Ethernet cables to the inverters.
    - B. City Forces removes the abandoned compressors and electrical controls on the wall where the inverters are installed.
4. SCHEDULING OF WORK:
    - A. All of the work on this project shall be accomplished between 7:00 AM and 5:00 PM on regular work days, unless it will be disruptive to City personnel (excessive noise, welding, soldering, torching, domestic water shutdown, etc.) then it must be accomplished between 6:00 PM and 6:00 AM on workdays or on weekends. Work may also be scheduled on evenings and

weekends as necessary to meet project schedule.

- B. The contractor shall provide a construction schedule which includes all phases of construction, indicating the anticipated start and completion times for each of those phases. The contractor shall provide that complete schedule at the Pre-Construction Meeting arranged by the City.
- C. This contractor shall protect existing equipment by covering, moving, and/or relocating this equipment from all construction debris.
- D. The contractor shall sign in and identify all personnel working at the site on a daily basis with the supervisor in charge at the site.
- E. Work is scheduled to be completed in the time shown on the Official Notice.
- F. The City reserves the right of not allowing the contractor to work when special events are scheduled for the building. These changes in work schedule shall be done at no additional cost to the City.
- G. Shut downs of existing equipment and connections to existing equipment must be arranged in advance with the Project Inspector from DPW, ISD - Facilities Development and Management Section. Power outages must be scheduled for Saturdays.
- H. The normal hours of operation at this facility are 2:00 AM to Midnight, Monday thru Friday.
- I. Dispose of all removed materials in legal manner.

SECTION 01210: PROJECT MEETINGS

1. SCOPE:

A. Index:

1. Scope
2. Pre-Construction Meeting
3. Progress Meetings

2. PRE-CONSTRUCTION MEETING:

- A. Soon after the award of the contract and prior to the start of construction, the contractor shall attend a pre-construction conference with representatives of the City.
- B. The contractor shall have at the meeting responsible representatives from subcontractors who are to perform major work on the project.
- C. The purpose of the meeting is to discuss in detail the plans and specifications. The discussion shall include:
  1. Schedule
  2. Equipment/Delivery Dates
  3. Material Storage
  4. Inspection Requirements
  5. Protection Procedures for the structure
  6. Hours of Work
- D. The contractor shall submit the construction schedule to the architect/engineer at this meeting and a listing of subcontractors and their work. The contractor shall describe, in detail, when each portion of the work is expected to be accomplished. The subcontractors shall participate in the discussion. The architect/engineer will serve to interpret the contract documents should such questions arise.
- E. Any other questions that the contractor or his subcontractors have about the work or its scheduling shall be raised at these meetings.
- F. Requirements for contract administration and construction operations will be defined for participants.
- G. The architect/engineer will determine time, date, and place of the meeting.

3. PROGRESS MEETINGS:

- A. Bi-weekly meetings will be held for the purpose of coordinating and expediting the work.
- B. Attendance at project meetings by the contractor is mandatory. These meetings shall also be attended by representatives of each subcontractor who is either working at the site or is affected by work being done at the site. The contractor shall submit an updated construction schedule at these meetings and a short narrative should be written, describing the cause of any delays and intended action to remedy these delays.
- C. Contractors shall give a verbal report of progress on the project, discuss the work schedule for the coming period, and present all conflicts, discrepancies, or other difficulties for resolution.

SECTION 01300: SUBMITTALS/PERMITS

1. SCOPE:

A. Index:

1. Scope
2. Submittals
3. Permits
4. Inspection

2. SUBMITTALS:

A. Comply with the requirements of the General Conditions and as follows:

1. Forward Submittals not more than 20 calendar days after the Notice to Proceed date. No work, as indicated on any shop drawing, samples, hardware list, etc., shall be started until those submittals have been reviewed and work authorized.
2. All submittals must be thoroughly reviewed by the prime contractor for conformance to contract documents, prior to submission to the City, or its agents, for review. Shop drawings and catalog information shall be stamped "Reviewed By" and signed by the contractor's reviewer. The prime contractor shall review all subcontractor submittals prior to submittal to the City for compliance with contract documents and to coordinate all work.
3. Include with each submittal a transmittal letter signed and dated by the prime contractor containing the following:
  - a. Name of Contractor
  - b. Name of Project
  - c. List of Submittals
  - d. Name of Manufacturer or Supplier
  - e. Additional information as required for the items being provided.

B. Shop Drawings, Catalog Information, Calculations, and Samples:

1. Shop Drawings: Submit four blue/black line print review. The City will notify the contractor in writing and return one copy marked "REVIEWED - NO EXCEPTIONS TAKEN" with minor or no notations. The City will also notify the contractor in writing and return one copy, along with comments, when the drawings are marked either "REJECTED" or "REVISE AND RESUBMIT". For those shop drawings, the contractor will be responsible for resubmitting a new print.
2. Catalog Information and Calculations: Submit four copies for City's record and additional numbers of copies required for the contractor's purpose. The City will notify the contractor in writing and return the contractor's copies, with or without notation, marked either "REVIEWED - NO EXCEPTIONS TAKEN", "REVISE AND RESUBMIT", OR "REJECTED". Catalog information or calculations marked "REVISE AND RESUBMIT" or "REJECTED" must be resubmitted in the same quantities as originally required.

3. Samples: Submit two samples of requested materials for the City's records and additional samples, if desired, to be returned to the contractor. The City will notify the contractor in writing, whether the samples are approved or rejected. If they are rejected, new samples must be resubmitted as originally required.
  4. Corrections or comments made on the submittals during the review do not relieve the contractor from compliance with requirements of the contract documents. The check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. Contractors are responsible for conforming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating their work with that of all other trades; and performing their work in a safe manner.
- C. "Or Equal": Whenever the words "or equal" or similar term is used, it shall mean as determined by the Commissioner of Public Works or agent. All drawings, data and bulletins necessary to make an "or equal" determination shall be submitted to the Facilities Manager of FACILITIES DEVELOPMENT AND MANAGEMENT SECTION. Such review shall apply to design only and shall in no way relieve the contractor from the responsibilities as outlined in Item 2B above. Evaluation of "or equal" products will be made at the time of shop drawing submission. Any change required in design and coordination between all contractors, subcontractors, or trades due to the use of "or equal" materials shall become the contractor's responsibility. Any costs for detailed engineering reviews and/or any costs to incorporate "or equal" products will be borne by the contractor.
3. PERMITS:
    - A. The City of Milwaukee will provide the general construction and occupancy permits.
    - B. Contractors shall obtain, from the City of Milwaukee Department of City Development and/or other government or private agencies, all special permits as may be necessary in their work.
    - C. Contractors shall obtain all permits to occupy or work in the public way as may be necessary for their work.
    - D. Contractors shall notify the City and/or appropriate utilities when making utility connections as part of the project.
  4. INSPECTION:
    - A. FACILITIES DEVELOPMENT AND MANAGEMENT SECTION will provide daily inspection to verify compliance with contract documents, identify contractors and crews on the job, verify compliance with contract conditions (EBE, residency, wage requirements), and record job progress and conditions.
    - B. **Contractors shall arrange with the Department of Neighborhood Services/Construction Trades Division and permit issuing agencies for all code compliance inspections as required by all permits including, but not limited to, the general building and all special permits issued by that agency.**
    - D. **Contractors shall arrange with the appropriate City agency for compliance inspections, as required, for all permits including, but not limited to, curb and pavement cuts and patches, and public way occupancy and utility connections.**

SECTION 01500: JOB SITE UTILITIES, FACILITIES, AND SECURITY

1. SCOPE:

A. Index:

1. Scope
2. Building Security
3. Temporary or Trial Usage
4. Occupancy During Construction
5. Temporary Hoists, Lifts
6. Temporary Ladders, scaffolds
7. Electrical Power
8. Water
9. Toilet Facilities
10. Bulletin Board
11. Construction Reference and Storage Area
12. Safety
13. Parking

2. BUILDING SECURITY:

A. General:

The Downtown Complex is open to the public from 8:00 AM until 4:45 PM, Monday through Friday, excluding holidays. Since most contracted work takes place outside normal business hours, it is essential that contractors and their City agents understand and abide by security policy.

B. Scope:

The following building security policy and procedure statement has been provided in this project manual for bid consideration and shall be distributed at the Pre-Construction Meeting. All City agents/officials responsible for engaging contractors, all contractors, and all subcontractors shall be held responsible for following the procedures.

C. City Agents/Officials:

1. Any City agents/officials who commission outside contractors to work in any of the facilities managed by FACILITIES DEVELOPMENT AND MANAGEMENT SECTION shall provide the following information no less than twenty-four (24) hours in advance of the work:

- a. The names of any contract or subcontract employees who will be present in the facilities (for the purpose of designing badges appropriate to their work area):

Green – Zeidler Municipal Building, 841 North Broadway  
Red – City Hall, 200 East Wells Street  
Yellow – 809 North Broadway  
Gold – Any outlying buildings

These names must be listed on a sign-in sheet available in the Zeidler Municipal Building, Room 602 (FACILITIES DEVELOPMENT AND MANAGEMENT SECTION support staff – Extension 8222). City

agents/officials shall be responsible to ensure the sheet and badges are transported to the appropriate location where the work is to be completed (in the Downtown Complex it would go to the City Hall Information Center, for outlying buildings to the person responsible for controlling access in the facility) the day before work is to begin.

- b. A list of keys and/or access cards required for access only to the areas necessary for work involved in the project. The keys and card will be received from the Security Manager or his designee and signed out to the City agents/officials responsible for the contracted work. The City employee will take the keys and/or access cards to the City Hall Information Center or the person responsible for controlling access in the outlying building where they shall be logged under the name of the contractor's company. When a project is complete, the City agents/officials must retrieve the keys/cards and return them to FACILITIES DEVELOPMENT AND MANAGEMENT SECTION support staff in Room 602 of the Zeidler Municipal Building.
- c. The City agents/officials are responsible for communicating the security policy and procedures to contractors. The City agents/officials shall act as liaison for all communication between FACILITIES DEVELOPMENT AND MANAGEMENT SECTION and the contractor.

D. Contractors:

- 1. Contractors shall abide by City security policy and procedures at all times during the scope of their participation in a project. Failure to comply will result in the contracted employee being escorted from the premises and the resulting lost time and expense shall be deducted from the contractor's invoice or penalties of \$50.00 per occurrence as determined by the contracting City agent/official.
  - a. All access should be provided in advance through the City agent/official. Contractors shall enter and exit only through those doors designated by City agents/officials (the Market Street entrance to City Hall and the doors established by the person responsible for access at outlying buildings). All other exterior doors are locked and alarmed and are not to be used as delivery points unless the City agent/official has been provided 24 hour notification to provide additional security coverage at that point while the delivery is in progress.
  - b. All of the contractor's employees and all of the employees of any of his subcontractors shall wear at all times while on the site, in a clearly visible location, an identification card. The identification card is to have a minimum 1" x 1" color photo of the head and shoulders. The photo is to have been taken no more than one year previously. The card is to be laminated with clear plastic and is to contain the company name, employee's name, and the employee's signature, and is to be furnished by the contractor or respective subcontractor.
  - c. **Effective October 1, 2004 – City of Milwaukee Policy Change**

The following policy has been established to maintain control of City Property and to ensure the physical protection of the City Hall Complex.

**Anyone** signing out access cards and/or keys from the Information Center will be following the steps below.

- 1) Sign in on the sheet assigned to the project you are working on and pull that sheet and provide it to the Operator noting that you will need to sign out City property to access the building.
- 2) Provide the Operator your driver's license as collateral for the return of City property.
- 3) Sign out the property in the sign out book as per current policy.
- 4) The Operator will file your driver's license until such time as you sign in and return the City property at which time your license will be returned.
- 5) Sign out at the end of your workday on the sign out sheet.

**Under NO circumstances will keys or cards be disbursed without the user signing for the property and providing the City Hall Operator their driver's license as collateral.**

In the event that keys or cards are not returned daily the contractor in question will have a deduct (security violation) as per the contract. Individuals who loose or fail to return keys will be responsible for the cost of re-keying to the City.

Contractors will sign in on pre-approved forms and also wear the City identification badges (also to be worn at all times on the premises). Keys or access cards will be signed out as provided by the City agent/official and required for the work. These keys, cards, and badges must be returned at the end of each shift before signing out. Failure to do so will result in a \$50.00 penalty for each occurrence.

- d. Contractors shall not ask custodians or mechanics to unlock doors. All access should be provided in advance through the City agent/official. In the rare case where access is not provided, the City Hall Operator may be contacted to assist in providing access. The contractor shall cooperate with security personnel at all times. The contractor should be prepared to allow searches of equipment when leaving, and should remain only in the areas designated on the sign-in sheets. Security will question a contractor who has an identification badge that indicates a work area other than the area he or she is in.
- e. If the contractor requires use of the loading dock in Upper Parking, 24 hour advance notice shall be given to the City agent/official to make arrangements to provide additional security coverage while the delivery is in progress. The contractor or subcontractor shall meet the delivery driver and take delivery at that point. At no time shall a driver be allowed in the facilities without following the access procedure stated above.
- f. If after normal business hours work is required in the outlying buildings, all subcontractors and trades will arrange appropriate security measures and lock-up procedures with the contractor in writing. Any work completed at night shall be left "open" for City inspection of the work. The contractor shall notify the City agent/official 24 hours in advance of after-hours work in writing, indicating the type of work to be done and the security measures to be taken by the contractor.
- g. The contractor shall provide plywood door and window closures during construction to secure the structure from weather and damage from vandalism. The contractor is responsible to maintain the security of the space

where they are working during construction.

- h. If proper notification is not provided to the contractor, the subcontractor or trades shall be liable for any subsequent damage/vandalism/inspection cost, etc., due to lack of security/inspection coordination.
- i. Use of City materials is strictly prohibited unless pre-arranged through the City employee contact.
- j. At no time shall any interior doors that control access or exterior doors be propped open.

3. TEMPORARY OR TRIAL USAGE:

The owner shall have the right to make temporary or trial usage of any mechanical device, machinery, apparatus, equipment, work, material or construction supplied under contract before final completion or acceptance of the work, and the same shall not be construed as evidence of acceptance of the work by the owner.

4. OCCUPANCY DURING CONSTRUCTION:

The owner will occupy the premises while work is in progress. Contractor is to coordinate his work as to not interfere with the owner's operation or compromise building security.

5. TEMPORARY HOISTS, LIFTS:

Contractors and subcontractors requiring hoists or lifts shall provide their own and remove upon completion of work.

6. TEMPORARY LADDERS, SCAFFOLDING:

- A. Contractors and subcontractors requiring scaffolds, chutes, and ladders shall provide their own and remove them upon completion of their work.
- B. Each contractor shall furnish and maintain equipment such as fixed ladders, chutes, and the like as required for proper execution of their work.

7. ELECTRICAL POWER:

Contractor may use existing outlets for power. Contractor to verify power available at site. Contractor is to supply his own lines. OSHA regulations require that employers use either ground fault circuit interrupters or an assured equipment grounding conductor program in addition to any other regulations for equipment grounding conductors. The cost of the current used will be paid for by the City.

8. WATER:

Water may be obtained from any existing fixture.

9. TOILET FACILITIES:

Designated toilet facilities will be available for contractor's use. Toilets shall be kept in a clean condition at all times.

10. BULLETIN BOARD:

The contractor to furnish and maintain a 4'-0" x 4'-0" bulletin board for the posting of wage rates,

employment data, etc.

11. CONSTRUCTION REFERENCE AND STORAGE AREA:

The contractor is to provide desks or other suitable surfaces for himself, his subcontractors, and the City Project Inspector for the purpose of viewing plans, project manuals, and other construction related documents. The contractor is also to provide filing cabinets or document boxes or other suitable containers for himself, his subcontractors, and the City Project Inspector for the purpose of storing plans, project manuals, shop drawings, and other construction related documents that he is required by this contract to keep on site.

12. SAFETY:

Contractors will have proper safety equipment inclusive but not limited to safety glasses with side guards, hard hat, hearing protection, proper clothing, safety harness, and trade specific safety equipment; i.e., welding curtains, fire extinguishers, etc.

13. PARKING:

Parking on site is available.

SECTION 01505: CONSTRUCTION WASTE MANAGEMENT

**PART 1 - GENERAL**

1.1 SCOPE:

- A. This section specifies requirements for salvaging, recycling and disposing of construction waste for purposes of protecting the environment and reducing project cost.

Requirements include the following:

1. Developing a Construction Waste Management Plan including waste management goals and provisions for waste reduction and recycling.
2. Implementing, monitoring and documenting the waste management plan.
3. Incorporating special programs.
4. Evaluating construction waste management.

1.2 RELATED DOCUMENTS AND SECTIONS:

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

B. Related documents include the following

1. Section 01010 "Summary of Work"
2. Section 01300 "Submittal & Permits"
3. Section 001500 "Utilities, Facilities, and Security" for environmental-protection measures during construction.

1.3 PRECONSTRUCTION MEETING:

- A. After award of Contract and prior to the commencement of the Work, schedule and conduct a meeting with the Owner and Architect to discuss the proposed Construction Waste Management Plan and to develop a mutual understanding regarding details of environmental protection.

1.4 CONSTRUCTION WASTE MANAGEMENT PLAN:

A. Construction Waste Management Plan

1. The purpose of the Construction Waste Management Plan is to identify construction wastereduction goals, identify targeted materials, and explain specific waste reduction actions to be taken, by whom, and when.
2. The Contractor shall develop a Construction Waste Management Plan for this Project within 15 working days after Contract award or prior to any waste removal. The Owner and the Architect will furnish the Contractor with information that will assist in the development of the Construction Waste Management Plan. Submit the Construction Waste Management Plan (include document/report form) to the Architect for approval prior to implementing the Plan.

**B. The Plan, which should be entered into and generated by WasteCapTRACE, shall include the following:**

1. **A list of the waste materials expected to be generated from the Project debris.**
  2. **A list of each material proposed to be salvaged, reused, recycled and discarded. Identify applicable markets for reuse and recycling. At a minimum, all materials required by state law to be recycled shall be recycled (e.g., cardboard, cans, bottles, office paper, fluorescent tubes, refrigerants, mercury, etc.) and scrap metal shall be recycled.**
  3. **Separation and materials handling procedures: Description of how waste materials identified above will be separated, cleaned (if necessary) and protected from contamination.**
  4. **Educational and Motivational Procedures: Meetings to be held and other proposed methods for educating construction personnel regarding waste reduction and recycling. Construction waste management requirements should be discussed at least monthly at project site meetings.**
  5. **Waste Auditing Procedures: Methods of monitoring and enforcing the Plan.**
  6. **Documentation Procedures: Methods of documenting materials leaving the Project site as waste, for the reuse or recycling to allow Summary of Waste Progress Reports to be submitted with Applications for Payment.**
  7. **The Lead contractor shall distribute copies of the Construction Waste Management Plan to DPW's Project manager.**
- C. Progress Documentation: Document solid waste disposal and diversion. Include the date of removal, type of waste removed, quantity by weight and volume, final destination and use (recycled, reused or landfilled), and net cost or income.
1. Document on the Form acceptable to the Owner and Architect.
  2. With each Application for Payment, submit updated documentation identifying solid waste disposal and diversion.
  3. With each Application for Payment, submit manifests, weight tickets, receipts and invoices identifying the Project and construction waste material.
- D. Record Submittals: Submit the following:
1. Summary of solid waste disposal and diversion. Submit on form acceptable to the Owner and Architect.
  2. End-of-Project recycling rates and landfill rates demonstrating the percentage of construction waste that was recycled or reused.

#### 1.5 WASTE MANAGEMENT GOALS:

- A. Develop Construction Waste Management Plan that results in end-of-Project rates for the reuse/recycling of **100%** percent by weight or volume of total waste generated by the Project. Record the total construction waste reduction goal on the Construction Waste Management Plan Form.
- B. Reduce: The Project shall generate the least amount of waste and methods shall be used that minimize waste due to error, poor planning, breakage, mishandling, contamination, or similar factors. Promote the resourceful use of materials to the greatest extent possible.
- C. Reuse: The Contractor and Subcontractors shall reuse materials to the greatest extent possible. Reuse includes the following:
  1. Salvage reusable materials for resale, for reuse on this Project, or for storage for use on future projects.

2. Return reusable items (e.g., pallets or unused products) to the material suppliers.
- D. Recycle: As many of the waste materials not able to be eliminated in the first place or salvaged for reuse shall be recycled. Waste disposal in landfills shall be minimized to greatest extent possible.

#### 1.6 MATERIALS HANDLING AND SORTING:

##### A. Handling:

1. Materials that are contaminated prior to placing in collection containers shall be properly cleaned. Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling processes.
2. Cover materials with tarps and keep truckloads level so as to prevent spillage.
3. Arrange for collection by or delivery to the appropriate recycling or reuse facility.
4. Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations. If encountered, such waste and materials shall be abated under separate contract.

##### B. The following sorting methods are acceptable:

1. Sorting recyclable materials at the Project site and transporting them to recycling markets directly from the Project site.
2. Employing haulers who make use of a materials-recovery facility or a transfer station where recyclable materials are sorted from the waste and recycled before disposing of the remainder. If using a hauler or recycling facility to sort out recyclables, verify that the hauler sorts out all construction waste loads and is not limited to those that are not acceptable at the landfill. Also, verify that the hauler or recycling facility recycles at least three types of materials.

#### 1.7 WASTE MANAGEMENT PLAN IMPLEMENTATION:

- A. The Contractor shall designate a party (or parties) who shall be responsible for instructing construction personnel and overseeing and documenting results of the Construction Waste Management Plan.
- B. Distribution: The Contractor shall distribute copies of the Construction Waste Management Plan to the Project Foreman, each Subcontractor, the Owner, and the Architect
- C. Instruction: The Contractor shall provide on-site instruction regarding appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all construction personnel at the appropriate phases of the Project.
- D. Separation Facilities: The Contractor shall lay out and identify a specific area on the Project site to facilitate separation of materials for recycling, salvage, reuse, and return. Recycling and waste bin areas shall be kept neat and clean, and clearly marked to avoid contamination of materials. Materials for recycling include concrete, non-fibrous wallboard, paper, clean corrugated cardboard (no pizza boxes), non-treated wood, metals (steel, aluminum and copper), and glass bottles (no windows). Provide separate containers, preferably near the job trailer, with smaller containers located at convenient places throughout the job site. Empty smaller containers into larger containers every night or when full. Cover outdoor containers to keep out rain, snow, and wind-driven debris. Lock containers whenever site is not in use to prevent illegal dumping.
- E. Hazardous Waste: Hazardous waste shall be separated, stored, and disposed of according to applicable regulations.

- F. Application for Payments: With each Application for Payment, the Contractor shall submit a Summary of Waste generated by the Project. **This reporting shall take place using WasteCapTRACE, an online documentation system. There is a fee, to be included in the bid, of two cents per square foot of gross construction for use of WasteCapTRACE.** Failure to submit this information shall render the Application for Payment void, thereby delaying the Progress Payment. The Summary of Waste shall contain the following information:
1. The amount (in tons and/or cubic yards) of material landfilled from the Project, the identity of the landfill, and the related disposal cost. Include corresponding manifests, weight tickets, receipts, and invoices.
  2. For each material recycled from the Project, the amount (in tons and/or cubic yards), the date removed from the Project site, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of recycling. Include corresponding manifests, weight tickets, receipts, and invoices.
  3. **Final Payment: Prior to application for Final Payment, the Lead Contractor shall submit a Final Summary of Waste: reuse and recycling results for all prime and subcontractors, including the quantity of each material recycled, reused, or salvaged, the receiving party and the applicable diversion rates. The final report will be generated by WasteCapTRACE based on information entered throughout the project by the Lead Contractor.**
- G. Implementing the Plan: The Contractor shall designate a party (or parties) responsible for implementing the Construction Waste Management Plan. This party (or parties) shall explain to Contractor's and Subcontractor's construction personnel, the Plan's goals and methods for achieving those goals.

1.8 SPECIAL PROGRAMS:

- A. The Contractor shall be responsible for final implementation of programs involving tax credits, rebates, or similar incentives related to recycling, if applicable to the Project. Revenues or other savings obtained for recycling or returns shall accrue to the Contractor.
- B. The Contractor shall be responsible for obtaining information packets related to the special programs prior to commencing Work.
- C. The Contractor shall document work methods, recycled materials, etc., as required for the tax credits, rebates, or other savings described above.

**END OF SECTION**

SECTION 01600: MATERIALS AND EQUIPMENT

1. SCOPE:

A. Index:

1. Scope
2. Materials
3. Equipment
4. Hazardous Material Requirements
5. Material Storage
6. Protection
7. Revisions

2. MATERIALS:

- A. Furnish materials of the type, qualities, and characteristics specified. The specification of a trade name and catalog number is intended to establish quality, type, character, and operating characteristics of the material required. Materials by other manufacturers of equal specifications will be accepted, excepting as may be specifically stated otherwise.
- B. Materials shall be delivered adequately protected, in merchantable condition, and in original unbroken packages if normally packaged. They shall be stored and handled so as to protect and maintain their merchantable condition.
- C. The Commissioner of Public Works or his representative shall have the right to reject material not in compliance with the project manual, as well as damaged material, and the contractor shall remove such material from the construction site when and as directed.

3. EQUIPMENT:

- A. Internal combustion engine and compressor shall be equipped with mufflers to reduce noise to a minimum and shall not be operated in enclosed areas without adequate ventilation.
- B. All materials and work procedures used shall be in accordance with all air pollution control regulations in effect at the work site.

4. HAZARDOUS MATERIAL REQUIREMENTS:

- A. The requirements set forth in the OSHA Hazard Communication Standard, 29CFR19101.1200, U.S. Environmental Protection Agency (EPA), and Wisconsin Department of Natural Resources in the Wisconsin Administrative Code NR600, shall be met by each on-site contractor.

1. Material Safety Data Sheets (M.S.D.S.):

- a. All contractors, which may/may not include the City of Milwaukee, shall provide the M.S.D.S. for all hazardous chemicals to which any person may be exposed at the work site.
- b. A master list will be kept in the office of the Project Supervisor/Construction Manager and updated as materials are delivered.

2. Container Labeling:

- a. Each container of hazardous material at the work site shall be clearly labeled with:
  - (1) Identity of the hazardous chemical(s).
  - (2) Appropriate hazard warning(s).
  - (3) Name and address of the manufacturer.

B. The City of Milwaukee reserves the right to stop the work of a contractor if compliance with OSHA regulations is inadequate. Work will not proceed until all applicable safety and health procedures are implemented by the contractor.

5. MATERIAL STORAGE:

- A. The storage areas shall be kept in good order and free of all rubbish and debris.
- B. Coordinate the delivery and storage of all materials and equipment with the FACILITIES DEVELOPMENT AND MANAGEMENT SECTION Project Inspector.
- C. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- D. Store and protect products in accordance with manufacturer's instructions.
- E. Store with seals and labels intact and legible.
- F. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
- G. For exterior storage of fabricated products, place on sloped supports above ground.
- H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

6. PROTECTION:

A. GENERAL:

- 1. The premises and the work shall be adequately protected from damage from the commencement of work to the date of final acceptance.
- 2. All construction work and traffic shall remain within the construction area.

3. All damage shall be corrected or repaired by the contractor or contractors causing same at his or their own expense.
4. All open pipes, pipe threads, fittings, and insulation must be protected during construction.
5. The Contractor shall assume full responsibility for the protection and safekeeping of products stored on the premises. Construction equipment, tools, etc., shall not be stored in areas of the Owner's continued use.

7. REVISIONS:

The right is reserved to make modifications to a reasonable extent as building conditions may require, or as may be required to conform to code rulings, or manufacturer's standards without extra cost to the City.

SECTION 01700: CLEANING AND PROJECT CLOSE-OUT

1. SCOPE:

A. Index:

1. Scope
2. General
3. Safety Cleaning
4. Progress Cleaning
5. Disposal
6. Final Cleaning
7. Charges
8. Record Drawings
9. Operating Instructions & Maintenance Manuals
10. Guarantees

2. GENERAL:

Article 2.5.4 of the General Requirements of City of Milwaukee Department of Public Works shall be supplemented as specified hereinafter.

3. SAFETY CLEANING:

Safety cleaning: Each contractor is responsible for safety cleaning, which includes but is not limited to the following:

- A. Keep work areas, passageways, ramps, stairs, free of debris and scrap.
- B. Form and scrap lumber shall have nails withdrawn or bent over and lumber shall be stacked or removed.
- C. Remove spills of oil, grease, or other liquids immediately.
- D. Hazardous material shall be handled in accordance with Section 01600. Each container of hazardous material at the work site shall be clearly labeled with:
  - a. Identity of the hazardous chemical(s)
  - b. Appropriate hazard warning(s).

4. PROGRESS CLEANING:

- A. Prime Contractor and subcontractor shall remove his rubbish and debris from building site promptly upon its accumulation, and prior to the contractor's regular Friday general clean up. Contractor shall perform broom cleaning of all appropriate surfaces each Friday afternoon.
- B. Combustible waste shall be stored in fire resistive containers and disposed of regularly.
- C. Oily, flammable or hazardous wastes such as caustics, acids, harmful dusts, etc., shall be stored in appropriate covered containers.
- D. All solvents and cleaners used on this project must be rated as containing low or no volatile organic compounds (VOC's).

5. DISPOSAL:

- A. No burning of rubbish or debris will be allowed at site. No rubbish shall be thrown through opening or from heights without proper protection. Where dust will be generated or flying debris is likely to occur, provide dust tight chutes or other means to control dust.
- B. Containers: Contractor shall provide mobile industrial type waste containers in the number and size required, placed at adequate locations to handle debris or provide other methods of disposing of debris.
- C. Oil, flammable or hazardous wastes such as, but not limited to, caustics, acids, harmful dusts, etc., shall be placed in properly marked containers as necessary and disposed of at a site designed for such wastes.

6. FINAL CLEANING:

- A. Immediately prior to substantial completion.
- B. Contractors shall expedite or perform thorough cleaning, sweeping, washing and polishing of work to remove from work and equipment provided under his contract, all foreign matter, spots and soil, so as to put all such work and equipment, including finishes, in a complete and finished condition ready for acceptance and use intended.
- C. The contractor is responsible for final sweeping and dusting not covered by other subcontractors. This general cleaning shall include all areas and floors of the building, including the site outside the building.
- D. All solvents and cleaners used on this project must be rated as containing low or no volatile organic compounds (VOC's).

7. CHARGES:

- A. If prime contractor does not remove rubbish or clean building as specified above, the owner reserves right to have work done by others at contractor's expense.
- B. Employees or contracted services of the owner who are required to clean up any rubbish or to sweep any floors because prime contractor failed to do so will record all hours involved to complete such work. The cost incurred by the owner for this special cleaning and sweep-up work shall be charged against the contract price of the contractor as determined by owner.

8. RECORD DRAWINGS:

- A. If the completion of work and prior to final payment, the mechanical and electrical contractors shall provide FACILITIES DEVELOPMENT AND MANAGEMENT SECTION with three (3) marked up sets of prints showing all changes or variations from contract drawings, and not specified on change order drawings theretofore issued. Contractors providing buried or concealed piping, conduit, or similar items shall locate such items by dimensions and elevations. Additionally, provide one (1) electronic copy (pdf) of the record drawings,
- B. Other contractors shall provide one (1) marked up set of prints and one (1) electronic copy (pdf) showing all changes or variations from contract drawings.
- C. Drawings shall show complete layout of revised piping, equipment, etc., as actually installed.

9. OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS:

- A. The contractor shall, upon completion of all work, furnish the necessary skilled labor to instruct City personnel in the operation, adjustment, and maintenance of all equipment furnished.
- B. At termination of work, the contractor shall submit maintenance and operating manuals presenting full details of care and maintenance and operation of mechanical and electrical equipment of every nature. See specific requirements in relevant sections as applicable.
- C. The manual shall include manufacturer's instructions for maintenance and operation and shall be completely indexed, including the spare parts list. See specific requirements in relevant sections.
- D. Submit three (3) final copies in hard bound cover and one (1) electronic (pdf) to FACILITIES DEVELOPMENT AND MANAGEMENT SECTION.
- E. Contractor shall provide qualified personnel onsite to provide a minimum of four (4) hours of training to Owner's representatives.

10. GUARANTEES:

- A. Each contractor shall guarantee to replace or repair promptly at his own expense, as directed by the Commissioner of Public Works or his agent, all workmanship or materials in which defects may develop within one (1) year from the date of final acceptance of his work. This guarantee includes all damage done to the City due to faulty equipment, poor installation or poor construction.
- B. Guarantee periods other than the one year time period are indicated in specific specification sections.

SECTION 01820: TRAINING1. SCOPE:A. Index:

1. Scope
2. Training, Operations Instructions, and Maintenance Manuals

2. TRAINING, OPERATIONS INSTRUCTIONS, AND MAINTENANCE MANUALS:

A. This contractor shall, upon completion of the work, instruct City personnel in the operation, adjustment, and maintenance of the HVAC equipment, HVAC controls, fire protection, and life/safety (fire alarms) systems, and lighting controls (by City of Milwaukee).

1. Training for HVAC equipment.
2. Training for HVAC controls.
3. Training for fire protection and life/safety (fire alarms) systems.
4. Training for electrical lighting controls (by City of Milwaukee).

B. Training for HVAC Equipment:

Two levels of on-site training exist for the Downtown Complex Facilities Management staff. In addition to two levels of training, off-site training is appropriate for advanced subjects and particular employees. In total, there are three types of training. The number of training hours varies and is dependent on the scope of the project and complexity of the equipment.

1. On-Site Training:

- a. Factory certified trainer to provide training for managers, engineers, mechanics, electricians, and technicians.
- b. Service representative to provide operations and maintenance training.

2. Training Hours and Frequency (On-Site Training):a. Level I:

To be provided upon the completion of the project. Training will be a 1 day minimum. Use of O & M manuals is required. Training is administered in a classroom and field setting (no more than 4 hours at a given session). Reference manufacturer's course offerings for details. This project will require a minimum of 8 hours of training. Level I training is administered to managers, engineers, mechanics, electricians, technicians, and others who interact with HVAC equipment and facilities maintenance.

b. Level II:

Two hour segments, 1 time per year, 2<sup>nd</sup> shift only, 2 hours per year (depending in complexity) total. This training serves as both a review and a

systems development preview.

C. Training for HVAC Controls:

Two levels of on-site training exist for the Downtown Complex Facilities Management staff. In addition to the two levels of training, off-site training is appropriate for advanced subjects and particular employees. In total, there are three types of training. The number of training hours varies and is dependent on the scope of the project and complexity of the equipment.

1. On-Site Training:

- a. Factory certified trainer to provide training for managers, engineers, mechanics, electricians, technicians, and support staff.
- b. Service representative to provide operations and maintenance training.
- c. Training for switchboard operators and facility supervisors.

2. Off-Site Training:

- a. Off-site training is reserved for complex applications where the factory has a technical training schedule specific to troubleshooting, systems diagnostics, maintenance, and operations. Typically, there will be beginning, intermediate, and advanced level courses offered by the manufacturer. **The course will be selected by the Operations and Maintenance Manager.**

3. Training Hours and Frequency (On-Site Training):

a. Level I:

To be provided upon the completion of the project. Training will be a 1 day minimum. Use of O & M manuals is required. Training is administered in a classroom setting (no more than 4 hours at a given session). Reference manufacturer's course offerings for details. This project will require a minimum of 8 hours of training. Level I training is administered to managers, engineers, mechanics, electricians, technicians, support staff, and others who interact with equipment, hardware, software, and facilities maintenance.

b. Level II:

Two hour segment, 1 time per year, 2<sup>nd</sup> shift, 2 hours per year total. This training serves as both a review and a systems development preview.

D. Training for Fire protection and Life/Safety (Fire Alarm) Systems:

Two levels of on-site training exist for the Downtown Complex Facilities Management staff. In addition to the two levels of training, off-site training is appropriate for advanced subjects and particular employees. In total, there are three types of training. The number of training hours varies and is dependent on the scope of the project and complexity of the equipment.

1. On-site Training:

- a. Factory certified trainer to provide training for managers, engineers, mechanics, electricians, technicians, and support staff.
- b. Service representative to provide operations and maintenance training.
- c. Training for switchboard operators and facility supervisors.

2. Off-Site Training:

- a. Off-site training is reserved for complex applications where the factory has a technical training schedule specific to troubleshooting systems diagnostics, maintenance, and operations. Typically, there will be beginning, intermediate, and advanced level courses offered by the manufacturer. **The Operations and Maintenance Manager will select classes.**

3. Training Hours and Frequency (On-Site Training):

a. Level I:

To be provided upon the completion of the project. Training will be a 2 day minimum. Use of O & M manuals is required. Training is administered in a classroom setting (no more than 4 hours at a given session). Reference manufacturer's course offerings for details. This project will require a minimum of 8 hours training. Level I training is administered to managers, engineers, mechanics, electricians, support staff, and others who interact with equipment, hardware, software, and facilities maintenance.

b. Level II:

Two hour segment 1 time per year, 2<sup>nd</sup> shift and 3<sup>rd</sup> shift, 2 hours per year total. This training serves as both a review and a systems development preview.

E. Training for Electrical Lighting Controls (City of Milwaukee):

Provide two levels of on-site training for the Downtown Complex Facilities Management staff and tenants.

1. On-Site Training:

- a. Factory certified trainer to provide training for managers, engineers, mechanics, electricians, and technicians.
- b. Service representative to provide operations and maintenance training.

2. Training Hours and Frequency:

a. Level I:

To be provided upon the completion of the project. Training will be a 2 hour minimum administered on-site. Level I training is administered to the tenant, managers, engineers, mechanics, electricians, technicians, and others who interact with equipment, hardware, software, and facilities maintenance.

b. Level II:

Two hour segment once per year. This training serves as both a review and a systems development preview.

F. Verification and Validation of Training:

1. An outline of the training and test materials shall be provided to the City's facility O & M Manager two weeks prior to the training sessions. Corrections, additions, and deletions will be at the discretion of the O & M Manager within a week of receiving the test. All written materials, graphs, cue cards, trainer's notes, and phone numbers will accompany the outline for preview.
2. A ½ hour test shall be provided to the City's operations staff. This test shall be given after each of the HVAC equipment, HVAC controls, and fire protection and life/safety (fire alarms) systems Level I on-site training sessions. This test shall include written true and false, essay questions, and hands-on field work performance.

G. Materials:

1. An edited videotape of the training will be provided.
2. All prepackaged videotapes, training software, and textbooks from the manufacturer, specific to the training, will be provided.

H. At the submittal stage, the contractor shall submit maintenance and operating manuals presenting full details of care and maintenance and operation of mechanical and electrical equipment of every nature.

I. The manual shall include manufacturer's instructions for maintenance and operation and shall be completely indexed, including the spare parts list.

J. Submit three (3) final copies in hardbound cover and one (1) electronic copy (pdf) to DPW, ISD - Facilities Development and Management Section.

K. Contractor shall provide to the City a video recording (DVD) of all equipment installed under this contract. Tape shall be provided prior to the installation of any ceilings.

L. Contractor shall video record (DVD) one training session and turn over to the City for future reference.

## SECTION 26 05 00

## COMMON WORK RESULTS FOR ELECTRICAL

## PART 1 GENERAL

## 1.01 SCOPE

- A. The requirements of the Contract Documents, including the General Conditions, Supplementary Conditions, and Division 01, apply to this section except as modified herein.
- B. Installation schedule : Project shall be complete and commissioned by October 31, 2011

## 1.02 DESCRIPTION

- A. Work Included:
  - 1. The work covered by this Division of the specifications includes the furnishing of all labor, materials, tools, equipment, permits, certificates and temporary protection necessary for or incidental to executing and completing the electrical work, and work on related systems. All work shall be as specified and indicated on the drawings unless specifically excepted on the drawings or herein.
  - 2. Contractors shall read all other Divisions of the Specifications which are applicable to this work, including the General Conditions section applicable to all bidders. The Electrical Contract Requirements section is a supplement to and not a replacement for the project General Conditions section. In cases of conflict, the more stringent of the contract requirements shall be considered applicable.
  - 3. Prior to submitting his bid, Contractor shall call to the attention of the Engineer any material or apparatus he believes to be inadequate or any necessary items or work omitted. The Contractor shall address any questions regarding the interpretation of the plans and/or specifications at least 7 days before the bid opening. The Engineer reserves the right to interpret his own specifications and plans after bids are received, and to demand that the installation conform to his intent. Failure of the Contractor to acquaint himself with existing conditions at the site shall in no way relieve the Contractor of the responsibility for making installation in conformance with plans and specifications without additional cost to the owner.
- B. Codes, Permits, and Inspection Fees
  - 1. All work and materials shall conform in every respect to the current rules and requirements of the National Fire Protection Association, National and State Electrical Codes, Local Codes and Ordinances, Local Utility Regulations and OSHA.
  - 2. Give to the proper authorities all required notices relating to the project, obtain all official permits and licenses required, pay all fees incidental thereto, deliver upon completion of the work and without cost to the Owner all required certificates of inspection and approval.
- C. Definitions:
  - 1. Where the words "THE ELECTRICAL CONTRACTOR", "EC", "CONTRACTOR" or "THIS CONTRACTOR" appear in this division of the specifications or drawings they apply specifically to the electrical contractor.

## 1.03 EXAMINATION OF PLANS, SPECIFICATIONS AND SITE

- A. Before submitting a bid, the contractor shall familiarize himself with all features of the building and site which may affect the execution of his work. No extra payment will be allowed for the failure to obtain this information. If, in the opinion of the contractor, there are omissions or errors in the plans or specifications, the contractor shall clarify these points with the architect before submitting his bid.

**1.04 DRAWING SCHEDULES AND DETAILS**

- A. The electrical drawings include a number of standard and job specific details. These details may be referenced specifically on the drawings and in the specification, however they may not be specifically referenced. The contractor shall assume that even if the detail is not specifically referenced, that it shall apply to this project.
- B. Review of schedules and details. Details and schedules are shown as a means to aid the electrical contractor and are not meant to be all inclusive of all devices. The electrical contractor is charged with the responsibility of making his own takeoff for equipment required, (i.e., additional circuit breakers, motor connections, etc.) and ancillary equipment and appurtenances for a complete connection or circuit. Contractor shall verify all sizes of electrical equipment with shop drawings and nameplate rating of the equipment it serves.

**1.05 ADDITIONAL ITEMS**

- A. Include in bid the cost to provide the following additional items:
  - 1. Two PV Modules provide these to the owner in original boxes.

**1.06 CONTRACTOR RECORD DRAWINGS**

- A. The Contractor shall maintain at least one copy each of the specifications and drawings on the job site at all times.
- B. At completion of the project, the Contractor shall submit the marked-up record drawings to the Architect prior to final payment. In addition to this requirement the Contractor shall ask for the .dwg files from Muermann Engineering and shall incorporate all the changes onto a new electronic "record set" of drawings and forward those in .dwg format on a CD prior to final payment.

**PART 2 PRODUCTS****2.01 MATERIALS**

- A. It is the intent of these specifications that the Contractor shall provide all the necessary material, apparatus, and devices to complete the installation as specified herein, except such parts as are specifically excepted. If an item is either shown on the plan or called for in these specifications, it shall be considered sufficient of said item in this contract.
- B. All sizes given are as minimum. Material and labor shall be first class and workmanlike and to the satisfaction of the Engineer and shall be subject to his inspection test and approval at all times from commencement until acceptance of completed work.
- C. Manufacturer's shall be responsible for providing material listed by U.L. or other approved agencies, and all governing codes and ordinances. All material must bear U.L. and/or other approved labels where possible. Items specified by catalog number or brand name and approval of shop drawings will not relieve the manufacturer of this responsibility.

**2.02 MATERIAL ON SITE AND STORAGE**

- A. The contractor shall be responsible for the proper care and storage of material and equipment on site. Any material damaged by rust corrosion, warping, breakage, finish damage, etc. shall be replaced by the Contractor to the satisfaction of the Engineer.
- B. The contractor shall store materials off site and shall bring materials on site as they are needed for installation
- C. The Contractor is responsible and disposal for removal of all packaging and other similar materials

**PART 3 EXECUTION****3.01 INSTALLATION**

- A. Equipment Access & Location.
1. All equipment, junction and pull boxes, and accessories shall be installed to permit access to equipment for maintenance. Any relocation of conduits, equipment, or accessories required to provide maintenance access shall be accomplished by the CONTRACTOR at no additional cost.
  2. Equipment shall be installed with ample space allowed for removal, repair or changes to the equipment. Ready accessibility to equipment and wiring shall be provided without moving other equipment which is to be installed or which is already in place.
  3. Locate electrical outlets and equipment to fit the details, panels, decorating or finish at the space. The Engineer shall reserve the right to make minor position changes up to 10' of the outlets before the work has been installed.
- B. Attachments and supports.
1. The Contractor has responsibility for proper fittings and support for each item of equipment and materials installed under his contract. He shall be responsible for the proper application, installation and location of all necessary and required inserts, supports and anchor bolts. Where same are to be installed by other trades, the EC shall supply same to the contractor in whose work they occur with instructions for placement and proper installation.
  2. The E.C. shall establish method and nature and select accessories necessary for proper support appropriate to item and point of attachment with due consideration given to ambient/environmental conditions and service duty. Attachments, supporting devices and accessories shall be specifically designed for the application, suitable for the duty imposed in service and acceptable to the engineer
  3. Attachments shall be made to structural components of the structure in such manner not to jeopardize the integrity of the structure and otherwise consistent with trade practices.
  4. Generally, anchors shall be expansion type in concrete and drilled expansion type in precast concrete. Powder actuated anchors shall not be used in concrete work.
  5. The contractor shall provide all mounting backboards as required to mount electrical and electronic equipment. That equipment which is normally assumed to be mounted on some type of a backboard shall be mounted on backboards provided by the electrical contractor.
  6. All mounting backboards used by the contractor shall be 3/4" AC grade fire rated plywood. All plywood shall be painted on both sides and edges with two coats of fire resistant gray enamel paint. The electrical contractor shall have his subcontractors provide back mounting panels to meet this specification.
  7. Exterior conduit mounting channel shall be stainless steel.
  8. All sleeves to be furnished and installed by electrical contractor.

**3.02 COOPERATION/COORDINATION**

- A. The Contractor is required to coordinate and cooperate with other contractors and owner by scheduling and installing his work as the construction progresses and the owners use of the building. Any deviation from contract plans shall be approved by the Engineer before proceeding.

**3.03 FINISH AND PAINTING**

- A. Equipment and materials such as transformers, panels and switches, shall be furnished with the manufacturer's standard finishes, consisting of a prime coat and baked enamel finish coat, unless otherwise noted.
- B. Finish painting on the job site is not required by the electrical contractor, except where noted.

**3.04 BID DRAWINGS**

- A. It must be understood that electrical drawings and details are diagrammatic. They are not intended to be shop drawings. It is expected that it may be necessary to move conduit, outlets and/or equipment in some cases to get coordinated installation and such changes are considered a part of the Contract obligation without cost to the Owner. No outlets or equipment shall be located where the usefulness and/or operation will be affected by the work of other trades, door swing, counter, equipment, etc.

**END OF SECTION**

## SECTION 26 05 04

## CLEANING AND TESTING

**PART 1 - GENERAL****1.01 SCOPE**

- A. The work under this section includes the required cleaning, repair, adjustment, calibration, maintenance and testing of electrical equipment, as specified herein. This applies only to new electrical and existing electrical equipment being furnished, modified, worked on or serviced by this contractor for this project.

**PART 2 - PRODUCTS****2.01 Not Used****PART 3 - EXECUTION****3.01 General Inspection and Cleaning of all Electrical Equipment**

- A. Inspect for physical damage and abnormal mechanical and electrical conditions.
- B. Any item found to be out of tolerance, or in any other way defective as a result of the required testing, shall be reported to the Engineer. Procedure for repair and/or replacement will be outlined. After appropriate corrective action is completed the item shall be re-tested.
- C. Compare equipment nameplate information with the latest single line diagram and report any discrepancies.
- D. Verify proper auxiliary device operation and indicators.
- E. Check tightness of accessible bolted electrical joints. Use torque wrench method.
- F. Make a close examination of equipment and remove any shipping brackets, insulation, packing, etc. that may not have been removed during original installation.
- G. Make a close examination of equipment and remove any dirt or other forms of debris that may have collected in existing equipment or in new equipment during installation.
- H. Clean All Equipment:
- I. Vacuum inside of panelboards and inverters.
- J. Loosen attached particles and vacuum them away.
- K. Inspect equipment anchorage.
- L. Lubricate non electrical equipment per manufacturer's recommendations.

**3.02 GROUNDING SYSTEMS**

- A. Inspect the ground system for adequate termination at all devices.

**3.03 PANELBOARDS**

- A. Verify circuit breaker operation.
- B. Verify the directory.
- C. All doors, panels and sections shall be inspected for paint, dents, scratches, and fit.
- D. Vacuum inside of enclosure
- E. All indicating devices shall be inspected for proper operation.

- F. Provide new updated typewritten directory

**3.04 Electrical Tests -- Below 600 Volts:**

- A. Visually inspect cables, lugs, connectors and all other components for physical damage and proper connections
- B. Check all cable connectors for tightness(with a torque wrench) and clearances. Torque test conductor and bus terminations to manufacturer's recommendations.
- C. Check for proper grounding resistance at all services and at transformers. Resistance shall be 2 ohms maximum.

**3.05 INVERTER**

- A. Confirm operation of the unit per the manufacturers spec.
- B. Verify operation of monitoring software

**END OF SECTION**

## SECTION 26 05 19

## ELECTRICAL POWER CONDUCTORS

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Single conductor building wire.
- B. Wire and cable for 600 volts and less.
- C. Wiring connectors.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 05 53 - Identification for Electrical Systems: Identification products and methods.

**1.03 REFERENCE STANDARDS**

- A. ASTM B 3 - Standard Specification for Soft or Annealed Copper Wire; 2001 (Reapproved 2007).
- B. ASTM B 8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2004.
- C. ASTM B 787/B 787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2009).
- D. NECA 1 - Standard for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2006.
- E. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; National Electrical Manufacturers Association; 2009 (ANSI/NEMA WC 70/ICEA S-95-658).
- F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- H. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- I. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- J. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide for each cable assembly type.
- C. Test Reports: Indicate procedures and values obtained.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Project Record Documents: Record actual locations of components and circuits.

**1.05 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.

**PART 2 PRODUCTS****2.01 CONDUCTOR AND CABLE APPLICATIONS**

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. MC cable may not be used
- D. Above Accessible Ceilings: Use only building wire in raceway.or other wiring methods allowed by code.
- E. Wet or Damp Interior Locations: Use only building wire in raceway.
- F. Exterior Locations: Use only building wire in raceway.
- G. Use conductor not smaller than 12 AWG for power and lighting circuits.
- H. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- I. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.

**2.02 ALL CONDUCTORS AND CABLES**

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed and classified by Underwriters Laboratories Inc. as suitable for the purpose indicated.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductor Material:
  - 1. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B 3, ASTM B 8, or ASTM B 787/B 787M unless otherwise indicated.
- H. Conductor Color Coding:
  - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
  - 2. Color Coding Method: Integrally colored insulation.
  - 3. Color Code:
    - a. Equipment Ground, All Systems: Green.
    - b. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.

**2.03 SINGLE CONDUCTOR BUILDING WIRE**

- A. Description: Stranded conductor insulated wire.
- B. Conductor Stranding:
  - 1. Feeders and Branch Circuits:

- a. Size 10 AWG and Smaller: Solid.
  - b. Size 8 AWG and Larger: Stranded.
- C. Insulation Voltage Rating: 600 V.
- D. Insulation:
- 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2, except as indicated below.

## 2.04 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that raceway installation is complete and supported.
- E. Verify that field measurements are as shown on the drawings.
- F. Verify that conditions are satisfactory for installation prior to starting work.

### 3.02 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

### 3.03 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.
- C. Installation in Raceway:
  - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
  - 2. Pull all conductors and cables together into raceway at same time.
  - 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
  - 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- D. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- E. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
- F. Install conductors with a minimum of 12 inches of slack at each outlet.
- G. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- H. Make wiring connections using specified wiring connectors.
  - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.

2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
  3. Do not remove conductor strands to facilitate insertion into connector.
  4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
- I. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
    1. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
      - a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
      - b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
  - J. Insulate ends of spare conductors using vinyl insulating electrical tape.
  - K. Color Code Legend: Provide identification label identifying color code for ungrounded conductors at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
  - L. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 26 05 34.
  - M. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.
  - N. Install wire and cable securely, in a neat and workmanlike manner, as specified in NECA 1.
  - O. Route wire and cable as required to meet project conditions.
    1. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
    2. Include wire and cable of lengths required to install connected devices within 10 ft of location shown.
  - P. Use wiring methods indicated.
  - Q. Pull all conductors into raceway at same time.
  - R. Use suitable wire pulling lubricant for building wire 4 AWG and larger.
  - S. Neatly train and lace wiring inside boxes, equipment, and panelboards.
  - T. Clean conductor surfaces before installing lugs and connectors.
  - U. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
  - V. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
  - W. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
  - X. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.

- Y. Identify and color code wire and cable under provisions of Section 26 05 53. Identify each conductor with its circuit number or other designation indicated.

**3.04 FIELD QUALITY CONTROL**

- A. Correct deficiencies and replace damaged or defective conductors and cables.

**END OF SECTION**

**SECTION 26 05 26**

**GROUNDING AND BONDING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Grounding and bonding components.
- B. Provide all components necessary to complete the grounding and bonding system consisting of:
  - 1. Collector panels and supports

**1.02 RELATED REQUIREMENTS**

**1.03 REFERENCE STANDARDS**

- A. NETA STD ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems; International Electrical Testing Association; 2007.
- B. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

**PART 2 PRODUCTS**

**2.01 CONNECTORS AND ACCESSORIES**

- A. Wire: Stranded copper.
- B. Collectors and supports: Bond per manufacturers requirements and per NEC 70

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify existing conditions prior to beginning work.

**3.02 INSTALLATION**

- A. Provide bonding to meet requirements described in Quality Assurance.
- B. Equipment Grounding Conductor: Provide separate, insulated conductor within each feeder and branch circuit raceway. Terminate each end on suitable lug, bus, or bushing.

**END OF SECTION**

## SECTION 26 05 29

## HANGERS AND SUPPORTS

**PART 1 GENERAL****1.01 SECTION INCLUDES**

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

**1.02 REFERENCE STANDARDS**

- A. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2006.
- B. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.03 SUBMITTALS**

- A. Product Data: Provide manufacturer's catalog data for fastening systems.
- B. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

**1.04 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

**PART 2 PRODUCTS****2.01 MATERIALS**

- A. Hangers, Supports, Anchors, and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.
- B. Supports: Fabricated of structural steel or formed steel members; galvanized.
- C. Anchors and Fasteners:
  - 1. Obtain permission from Engineer before using powder-actuated anchors.
  - 2. Concrete Structural Elements: Use precast inserts, expansion anchors, powder-actuated anchors, or preset inserts.
  - 3. Steel Structural Elements: Use beam clamps, steel spring clips, steel ramset fasteners, or welded fasteners.
  - 4. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
  - 5. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts or hollow wall fasteners.
  - 6. Solid Masonry Walls: Use expansion anchors or preset inserts.
  - 7. Sheet Metal: Use sheet metal screws.
  - 8. Wood Elements: Use wood screws.
- D. Roof Supports
  - 1. On roof supports shall be rubberized gravity type
  - 2. Erico Caddy Pyramid 50 with stainless steel conduit straps

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install hangers and supports as required to adequately and securely support electrical system components, in a neat and workmanlike manner, as specified in NECA 1.
  - 1. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.
  - 2. Obtain permission from Engineer before drilling or cutting structural members.
- B. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- C. In wet and damp locations use stainless steel channel supports to stand cabinets and panelboards 1 inch off wall.
- D. For exterior installations use stainless steel supports and attachment devices
- E. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

**END OF SECTION**

## SECTION 26 05 34

## CONDUIT

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Conduit, fittings and conduit bodies.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- C. Section 26 05 53 - Identification for Electrical Systems.
- D. Section 26 05 37 - Boxes.

**1.03 REFERENCE STANDARDS**

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2005.
- B. ANSI C80.3 - American National Standard for Steel Electrical Metallic Tubing (EMT); 2005.
- C. NECA 1 - Standard Practices for Good Workmanship in Electrical Contracting; National Electrical Contractors Association; 2006.
- D. NECA 101 - Standard for Installing Steel Conduit (Rigid, IMC, EMT); National Electrical Contractors Association; 2006.
- E. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; National Electrical Manufacturers Association; 2007.
- F. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.
- B. Products: Listed and classified by Underwriters Laboratories Inc. as suitable for purpose specified and shown.

**1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Accept conduit on site. Inspect for damage.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

**PART 2 PRODUCTS****2.01 CONDUIT REQUIREMENTS**

- A. Conduit Size: Comply with NFPA 70.
  - 1. Minimum Size: 3/4 inch unless otherwise specified.
- B. Roof Installations; Use rigid steel conduit, intermediate metal conduit, or plastic coated conduit.
- C. Outdoor Locations Above Grade: Use rigid steel conduit, rigid aluminum conduit, or intermediate metal conduit.

- D. Dry Locations:
  - 1. Concealed: Use rigid steel conduit, rigid aluminum conduit, intermediate metal conduit, or electrical metallic tubing.
  - 2. Flexible metallic conduit 1/2" and larger no longer than 3',
  - 3. Exposed: Use rigid steel conduit, rigid aluminum conduit, intermediate metal conduit, or electrical metallic tubing.

## 2.02 METAL CONDUIT

- A. Minimum size 3/4"
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Rigid Aluminum Conduit: ANSI C80.5.
- D. Intermediate Metal Conduit (IMC): Rigid steel.
- E. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

## 2.03 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Description: Interlocked steel construction with PVC jacket.
- B. Fittings: Steel Insulated throat.
- C. Minimum size 1/2"

## 2.04 ELECTRICAL METALLIC TUBING (EMT)

- A. Description: ANSI C80.3; galvanized tubing.
- B. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron compression type.
- C. Connectors: Steel Set screw, insulated
- D. Couplings: Steel set screw
- E. Minimum size 3/4"

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify routing and termination locations of conduit prior to rough-in.

### 3.02 INSTALLATION

- A. All conduit shall be run exposed except in First aid room where it shall be concealed in wall and above grid ceiling.
- B. Conduits may be run under floor for the pump pit conduits, these shall be PVC with Rigid steel radiuses and Rigid steel where they are exposed stubbed u from the floor
- C. Install conduit securely, in a neat and workmanlike manner, as specified in NECA 1.
- D. Install steel conduit as specified in NECA 101.
- E. Install nonmetallic conduit in accordance with manufacturer's instructions.
- F. Arrange supports to prevent misalignment during wiring installation.
- G. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

- H. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.
- I. Fasten conduit supports to building structure and surfaces under provisions of Section 26 05 29.
- J. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
- K. Do not attach conduit to ceiling support wires.
- L. Arrange conduit to maintain headroom and present neat appearance.
- M. Route exposed conduit parallel and perpendicular to walls.
- N. Route conduit installed above accessible ceilings parallel and perpendicular to walls.
- O. Route conduit in and under slab from point-to-point.
- P. Maintain adequate clearance between conduit and piping.
- Q. Maintain 12 inch clearance between conduit and surfaces with temperatures exceeding 104 degrees F.
- R. Cut conduit square using saw or pipecutter; de-burr cut ends.
- S. Bring conduit to shoulder of fittings; fasten securely.
- T. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.
- U. Use conduit hubs to fasten conduit to sheet metal boxes in damp and wet locations.
- V. Install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one shot bender to fabricate bends in metal conduit larger than 2 inch size.
- W. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- X. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic.
- Y. Provide suitable pull string in each empty conduit except sleeves and nipples.
- Z. Use suitable caps to protect installed conduit against entrance of dirt and moisture.
- AA. Ground and bond conduit under provisions of Section 26 05 26.
- AB. In general conduit shall not be run across roof, penetrate roof at each equipment location, where conduit is allowed to be run on roof it shall not be PVC.
- AC. Firestopping:
  - 1. FIRE AND/OR SMOKE RATED PENETRATIONS:
    - a. Manufacturers: 3M, STI/SpecSeal, Tremco, Hilti or approved equal.
    - b. All firestopping systems shall be by the same manufacturer.
    - c. Submittals: Contractor shall submit product data for each firestop system. Submittals shall include product characteristics, performance and limitation criteria, test data, MSDS sheets, installation details and procedures for each method of installation applicable to this project. For non-standard conditions where no UL tested system exists, submit manufacturer's drawings for UL system with known performance for which an engineering judgement can be based upon.
    - d. Product: Firestop systems shall be UL listed or tested by an independent testing laboratory.

- e. Use a product that has a rating not less than the rating of the wall or floor being penetrated.
  - f. Contractor shall use firestop putty, caulk sealant, intumescent wrapstrips, intumescent firestop collars, firestop mortar or a combination of these products to provide a UL listed system for each application required for this project. Provide mineral wool backing where specified in manufacturer's application detail.
2. NON-RATED PENETRATIONS:
- a. Conduit Penetrations: At conduit penetrations of non-rated interior partitions, floors and exterior walls above grade, use urethane caulk in annular space between conduit and sleeve, or the core drilled opening.
- 3.

### 3.03 INTERFACE WITH OTHER PRODUCTS

- A. All flexible equipment connections shall be via liquid tight flexible metal conduit
- B. Install conduit to preserve air plenum rating of underfloor system and other elements, using materials and methods

**END OF SECTION**

**SECTION 26 05 53****IDENTIFICATION FOR ELECTRICAL SYSTEMS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Nameplates and labels.
- B. Wire and cable markers.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less.

**1.03 REFERENCE STANDARDS**

- A. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

**1.04 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.

**PART 2 PRODUCTS****2.01 MANUFACTURERS**

- A. Brady Corporation: [www.bradycorp.com](http://www.bradycorp.com).
- B. HellermannTyton: [www.hellermanntyton.com](http://www.hellermanntyton.com).

**2.02 NAMEPLATES AND LABELS**

- A. Nameplates: Engraved three-layer laminated plastic, black letters on white background.
- B. Locations:
  - 1. Inverter and termination enclosure.
- C. Letter Size:
  - 1. Use 1/8 inch letters for identifying individual equipment and loads.
  - 2. Use 1/4 inch letters for identifying grouped equipment and loads.

**2.03 WIRE MARKERS**

- A. Manufacturers:
  - 1. Panduit PLL or Equal by Brady.
- B. Description: Vinyl cloth type self-adhesive wire markers.
- C. Description: tape type wire markers.

**PART 3 EXECUTION****3.01 INSTALLATION**

- A. Install nameplates and labels parallel to equipment lines.
- B. Panelboards: Labeling
  - 1. Panelboard Directory:
    - a. Prepare and affix a typewritten directory to the inside cover of each panelboard indicating loads controlled by each circuit.

- C. For each branch circuit outlet, receptacles, lighting, and any other device requiring 120/208/277 or 480 volt power, the contractor shall:
  - 1. Provide circuit, written in pencil or non-washable ink, inside of outlet box in an area that can be easily viewed when removing outlet faceplate.
  - 2. Write circuit number in ink on device mounting strap under plate.
  - 3. Provide electronically generated label (not dyno label) for each circuit attached to device plate.
  - 4. Label each junction box outlet cover in non-washable marker as to circuit number routed through junction box.
- D. Secure nameplates to equipment front using screws.
- E. Secure nameplates to inside surface of door on panelboard that is recessed in finished locations.

**END OF SECTION**

## SECTION 26 31 00

## PHOTOVOLTAIC COLLECTORS AND INVERTERS

**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Photovoltaic modules complete with frames, junction box and cables.
- B. Photovoltaic Inverter
- C. String Combiners
- D. System web based Monitoring
- E. Collector array roof and canopy mounted support frames.
- F. System commissioning, WE energies coordination

**1.02 REFERENCE STANDARDS**

- A. IEC 61215 - Crystalline Silicon Terrestrial Photovoltaic (PV) Modules - Design Qualification and Type Approval; 2005.
- B. UL 1703 - Flat Plate Photovoltaic Modules and Panels; Current Edition, Including All Revisions.

**1.03 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.

**1.04 WARRANTY**

- A. 10 Year product warranty
- B. Submit manufacturer's power output warranty with terms as indicated.

**PART 2 PRODUCTS****2.01 MANUFACTURERS**

- A. Photovoltaic Collectors:
  - 1. SolarWorld
  - 2. MAGE Solar
  - 3. Or other Premium approved equal
- B. Photovoltaic Inverter
  - 1. Solectria
  - 2. Or other approved equal providing same functions of specified unit, monitoring via Fat Spaniel technology not allowed
- C. String Combiners
  - 1. Solectria
  - 2. Or other approved equal

**2.02 COLLECTOR SYSTEM DESIGN**

- A. Collectors are designed to power AC load, net metering is not required.
- B. Total Array:
  - 1. STC Power Output: 20000 W, plus/minus 5 percent.
  - 2. Warranted Maximum Power Output: After 30 years in use not less than 80.0 percent of nominal maximum power output .

- C. Individual Modules:
  1. Nominal Maximum Power Output: 215 W, plus/minus 5 percent.
  2. Current at Nominal Maximum Power Output: 6.37 A.
  3. Voltage at Nominal Maximum Power Output: 28.1 V.
- D. Series Fuse Rating: 15 A.

### 2.03 COLLECTOR MODULES

- A. Photovoltaic Collector Modules: Monocrystalline or Polycrystalline Silicon photovoltaic cells in frame, factory assembled; with junction box, cables for connection in series, and bypass diodes; complying with IEC 61215.
  1. Entire assembly UL listed under UL 1703.
  2. Rated for maximum system voltage of 600 V DC.
  3. Frame: Anodized aluminum, natural satin finish; predrilled mounting holes.
  4. Cables: Polarized; minimum 12 AWG with Multi-Contact connectors.
  5. Factory mounted junction box allowing field replacement of diodes and cable assemblies.
  6. Size: Manufacturer's standard size for capacity specified.
  7. Acceptable Product(s):
    - a. Design was based on SolarWorld Sunmodule SW 245 Mono, 65.94" x 39.41" x 1.34", 48.5 Lbs string sizing.
    - b. MAGE Powertec
    - c. Other approved premium grade

### 2.04 PHOTOVOLTAIC INVERTER

- A. Provide (2) Inverter each to carry 1/2 load
  1. Commercial grade, Grid tie
  2. Transformer Isolated
  3. Provide with front mounted disconnects for input and output power
  4. User interactive LCD display front mounted
  5. Provide Web based monitoring option with 10 year web hosting
  6. Owner will provide Ethernet cabling connection, contractor shall utilize the services of the inverter manufacturer so set up system for remote monitoring
  7. 13 KW, 480 volt three phase
  8. Acceptable products
    - a. Solectria Renewables PVI13KW Grid Tied PV Commercial Inverter with Solrenview Inverter direct standard data Monitoring package.

### 2.05 COLLECTOR ARRAY SUPPORT

- A. contractor is responsible for designing and providing roof mounted and wall mounted collector array supports
- B. Provide CMU High Density ASCE-7 blocks for ballast
- C. Provide structural aluminum extrusion frame and aluminum pan with solid bottom and drain hole system for mounting directly on rubber roof, all attachments shall be stainless steel. Provide rubber roof material between support and roof. Prior to installation contractor shall set up a meeting with the owners warranty roofing contractor to go over installation.
- D. Wall mounted collectors shall be mounted using a structural aluminum extruded frame with stainless steel attachments

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Do not begin installation until collector array have been properly prepared.

**3.02 PREPARATION**

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the mounting surface under the project conditions.

**3.03 INSTALLATION**

- A. Install in accordance with manufacturer's instructions.
- B. Install in series strings of voltage compatible with input voltage of inverter or other power conditioning equipment. Provide string Combiners where required
- C. Provide the services of a manufacturer-trained electrical engineer to inspect and commission the system and provide formal handover to Owner's personnel.
- D. Provide all paper work required by WE energies and Focus on Energy for grant.
- E. Provide WE energies coordination and connection information as required and complete all paperwork

**3.04 PROTECTION**

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

**END OF SECTION**