



**Department
of
Public Works
Infrastructure
Services Division
Facilities Development
& Management Section**

**MILWAUKEE FIRE DEPARTMENT
ENGINE HOUSE # 28
REROOFING**

**424 North 30th Street
Milwaukee, Wisconsin 53208-4209**

April 2013

Project Number RM5445131106

Official Notice No. 75

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

PROJECT MANUAL

GOVERNING THE

MILWAUKEE FIRE DEPARTMENT
ENGINE HOUSE #28

REROOFING

424 N. 30th Street
MILWAUKEE, WISCONSIN 53208-4209

Project No. RM5445131106

April, 2013



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THIS ENCLOSED PROJECT DOCUMENTS HAVE BEEN REVIEWED FOR BUILDING CODE COMPLIANCE AND GOOD ROOFING PRACTICE. THEY HAVE ALSO BEEN REVIEWED FOR THE FOLLOWING: ROOFING AND CLADDING APPLICATION; WATERPROOFING DESIGN; WIND UPLIFT PRESSURES (2009 IBC) AND ATTACHMENT DESIGN; SIZE OF PRIMARY ROOF DRAINS AND SECONDARY ROOF OVERFLOW DRAINS (2009 IBC); SNOW LOAD AND ROOF SNOW RETENTION DESIGN (2009 IBC). OTHER SERVICES OR WORK, EXPRESSED OR IMPLIED, ARE NOT INCLUDED IN THE ENGINEERING REVIEW. ALL REVIEWS AND CALCULATIONS CONCERNING UPLIFT PRESSURES AND ATTACHMENT DESIGN; SIZE OF PRIMARY ROOF DRAINS AND SECONDARY ROOF OVERFLOW DRAINS; AND SNOW LOAD AND ROOF SNOW RETENTION DESIGN PRESUME THE ADEQUACY AND COMPLIANCE THE STRUCTURES AND ALL PARTS THEREOF TO SUPPORT THE ROOF AND WORK SPECIFIED PER THE OWNER'S EXPRESS AND/OR IMPLIED REPRESENTATIONS. NO STRUCTURAL REVIEW OF THE BUILDING(S) WAS CONDUCTED. THE GARLAND COMPANY NOR ITS REPRESENTATIVES IS NOT RESPONSIBLE FOR THE ADEQUCY AND COMPLIANCE OF THE STRUCTURES AND ALL PARTS THEREOF TO SUPPORT THE ROOF AND WORK SPECIFIED AND ASSUMES NO RESPONSIBILITY THEREFORE. CALCULATIONS WILL BE SUBMITTED SIGNIFYING CODE COMPLIANCE WHEN DOCUMENT IS RELEASED FOR CONSTRUCTION.

00030/1

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
Commissioner of Public Works

Countersigned: W. MARTIN MATSON,
City Comptroller

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CITY OF MILWAUKEE
SPECIFIC OFFICIAL NOTICE NO. 75

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/75-2013>. 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. **IF YOU ONLY PRINT THE DOCUMENTS FROM THE WEBSITE AND WOULD LIKE YOUR COMPANY'S NAME PLACED ON THE PLAN HOLDERS' LIST, PLEASE CALL 414-286-3314.**

Sealed bids will be opened on Monday, May 06, 2013 at 10:30 A.M. for the **MILWAUKEE FIRE DEPARTMENT, ENGINE HOUSE #28-REROOFING**, located at Engine House #28, 424 North 30th Street, Milwaukee, WI.

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 Friday, June 21, 2013.
Contractor shall not begin work on this project prior to Tuesday, May 20, 2013.
Liquidated Damages, per diem: \$233.00

The SBE requirement for this project is 25% of the contract base bid.

For a complete listing of *City of Milwaukee certified SBE firms*, see the Office of Small Business Development (OSBD) website at milwaukee.gov/osbd. If there are any questions regarding SBE certified firms, please contact the OSBD office at 414-286-5553.

The residency requirement for this project is 40% of all hours worked on the project.
The apprenticeship requirements for this project are: N/A

The contractor shall specifically note the SBE, 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 questions 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://mpw.milwaukee.gov/services/bids_home

Mandatory Pre-Bid Meeting: A Mandatory Pre-Bid Meeting is scheduled for **Monday, April 29, 2013, at 10:00 a.m. at Engine House #28 on 424 North 30th Street, Milwaukee, Wisconsin.** Bidder participation is required to become familiar with all aspects of the project and bidding requirements. Contractors not attending the Pre-Bid meeting and field visit shall be ineligible to bid.

Signed,

GHASSAN KORBAN
Commissioner of Public Works

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 lump sum prices 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.

UNIT PRICES:

Each bidder shall provide on the bid proposal the following unit prices that were used in arriving at the base bid. The unit prices will be used for additions or deductions under the contract.

Unit Price No. 1:

Provide a per square foot price for replacement of defective wood decking.

CONTRACT AWARD:

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

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 themselves 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.

CONSTRUCTION START AND COMPLETION DATES:

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 Architect) on the date stated on the Notice to Proceed. The Notice to Proceed will be sent to the contractor directly following the signing of the contract.

BASE BID EXCLUSIONS:

None

00100/2

ADDITIONAL PLANS/PROJECT MANUALS

The successful contractor will be responsible for furnishing all additional copies of plans, project manuals, addenda, etc., as may be needed by the contractor and subcontractors. The City will cooperate by making originals available to the contractor's printer of choice.

END OF SECTION

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 the Department of Public Works General Office, Room 501 Zeidler Municipal Building, 841 North Broadway, Milwaukee, Wisconsin, or from the FACILITIES DEVELOPMENT AND MANAGEMENT SECTION, Room 602, Zeidler Municipal Building.

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

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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 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

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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 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:

International Building Code, as amended and adopted by the State of Wisconsin
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: 01/10/2013
 Amended On: 02/18/2013

DETERMINATION NUMBER: 201300081

EXPIRATION DATE: Prime Contracts MUST Be Awarded or Negotiated On Or Before 12/31/2013. If NOT, You MUST Reapply.

PROJECT NAME: ALL PUBLIC WORKS PROJECTS UNDER SEC 66.0903, STATS - CITY OF MILWAUKEE

PROJECT LOCATION: MILWAUKEE CITY, MILWAUKEE COUNTY, WI

CONTRACTING AGENCY: CITY OF MILWAUKEE-DEPT OF PUBLIC WORKS

CLASSIFICATION:	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: dwd.wisconsin.gov/er/prevailing_wage_rate/Dictionary/dictionary_main.htm .
OVERTIME:	<p>Time and one-half must be paid for all hours worked:</p> <ul style="list-style-type: none"> - over 10 hours per day on prevailing wage projects - over 40 hours per calendar week - Saturday and Sunday - 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; - The day before if January 1, July 4 or December 25 falls on a Saturday; - The day following if January 1, July 4 or December 25 falls on a Sunday. <p>Apply the time and one-half overtime calculation to whichever is higher between the Hourly Basic Rate listed on this project determination or the employee's regular hourly rate of pay. Add any applicable Premium or DOT Premium to the Hourly Basic Rate before calculating overtime.</p> <p>A DOT Premium (discussed below) may supersede this time and one-half requirement.</p>
FUTURE INCREASE:	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.
PREMIUM PAY:	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.
DOT PREMIUM:	This premium only applies to highway and bridge projects owned by the Wisconsin Department of Transportation and to the project type heading "Airport Pavement or State Highway Construction." DO NOT apply the premium calculation under any other project type on this determination.
APPRENTICES:	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.
SUBJOURNEY:	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.

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.

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.

BUILDING OR HEAVY CONSTRUCTION

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.

SKILLED TRADES

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
101	Acoustic Ceiling Tile Installer Future Increase(s): Add \$.75/hr on 6/3/2013. Add \$1.25/hr on 6/2/2014.	32.93	19.81	52.74
102	Boilermaker	31.09	27.23	58.32
103	Bricklayer, Blocklayer or Stonemason Future Increase(s): Add \$1.45/hr on 6/01/2013 Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	35.80	16.87	52.67
104	Cabinet Installer Future Increase(s): Add \$.75/hr on 6/3/2013. Add \$1.25/hr on 6/2/2014.	32.93	19.81	52.74
105	Carpenter Future Increase(s): Add \$.75/hr on 6/3/2013. Add \$1.25/hr on 6/2/2014. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.93	19.81	52.74
106	Carpet Layer or Soft Floor Coverer	33.43	19.21	52.64
107	Cement Finisher	32.57	17.03	49.60
108	Drywall Taper or Finisher	29.87	18.79	48.66
109	Electrician Future Increase(s): Add \$1.60/hr on 6/1/2013. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.20	21.71	53.91
110	Elevator Constructor	41.71	23.88	65.59
111	Fence Erector	28.00	4.50	32.50
112	Fire Sprinkler Fitter	37.45	19.30	56.75

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
113	Glazier	34.19	18.25	52.44
114	Heat or Frost Insulator	33.93	23.26	57.19
115	Insulator (Batt or Blown)	27.47	19.16	46.63
116	Ironworker	31.31	21.99	53.30
117	Lather	33.43	19.31	52.74
118	Line Constructor (Electrical)	37.05	16.94	53.99
119	Marble Finisher	20.00	0.00	20.00
120	Marble Mason	35.58	16.37	51.95
121	Metal Building Erector	18.50	3.20	21.70
122	Millwright	28.28	24.19	52.47
123	Overhead Door Installer	27.30	3.28	30.58
124	Painter	29.27	18.18	47.45
125	Pavement Marking Operator	30.00	0.00	30.00
126	Piledriver Future Increase(s): Add \$.75/hr on 6/3/2013. Premium Increase(s): Add \$.65/hr for Piledriver Loftsmen; Add \$.75/hr for Sheet Piling Loftsmen. DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	29.06	25.46	54.52
127	Pipeline Fuser or Welder (Gas or Utility)	31.18	19.29	50.47
129	Plasterer	32.06	17.68	49.74
130	Plumber Future Increase(s): Add \$1.00/hr 6/1/2013; Add \$1.00/hr 6/1/2014.	36.47	19.47	55.94
132	Refrigeration Mechanic	37.76	19.99	57.75
133	Roofer or Waterproofer	29.40	15.55	44.95
134	Sheet Metal Worker Future Increase(s): Add \$1.41/hour 6/1/2013; Add \$1.56/hour 6/1/2014.	36.17	18.00	54.17
135	Steamfitter	37.76	19.99	57.75
137	Teledata Technician or Installer Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	24.75	16.08	40.83

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
138	Temperature Control Installer	37.31	19.49	56.80
139	Terrazzo Finisher Future Increase(s): Add \$.80 on 6/1/2013	26.57	16.50	43.07
140	Terrazzo Mechanic	29.51	17.63	47.14
141	Tile Finisher	22.27	6.52	28.79
142	Tile Setter	29.70	16.05	45.75
143	Tuckpointer, Caulker or Cleaner	34.35	11.13	45.48
144	Underwater Diver (Except on Great Lakes)	34.16	15.31	49.47
146	Well Driller or Pump Installer Future Increase(s): Add \$.20/hr on 06/01/2013.	25.32	15.45	40.77
147	Siding Installer	37.20	17.01	54.21
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	28.24	15.10	43.34
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	29.64	14.64	44.28
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	24.00	11.57	35.57

TRUCK DRIVERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
201	Single Axle or Two Axle	33.32	17.60	50.92
203	Three or More Axle	18.00	9.50	27.50
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add \$0.75/hour 6/3/2013; Add \$1.00/hour 6/2/2014; Add \$1.50/hour 6/1/2015; Add \$1.60/hour 5/30/2016.	33.52	17.60	51.12
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	18.00	9.50	27.50

LABORERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
301	General Laborer 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.	28.82	16.11	44.93
302	Asbestos Abatement Worker	18.00	0.00	18.00
303	Landscaper	11.00	3.97	14.97
310	Gas or Utility Pipeline Laborer (Other Than Sewer and Water)	19.69	16.03	35.72
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.24	15.03	32.27
314	Railroad Track Laborer	14.50	3.53	18.03
315	Final Construction Clean-Up Worker	28.82	15.61	44.43

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

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
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 \$0.75/hour 6/3/2013; Add \$1.00/hour 6/2/2014; Add \$1.50/hour 6/1/2015; Add \$1.60/hour 5/30/2016.	33.82	17.60	51.42

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked				
CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
		\$	\$	\$
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). Future Increase(s): Add \$0.75/hour 6/3/2013; Add \$1.00/hour 6/2/2014; Add \$1.50/hour 6/1/2015; Add \$1.60/hour 5/30/2016.	33.52	17.60	51.12
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 \$0.75/hour 6/3/2013; Add \$1.00/hour 6/2/2014; Add \$1.50/hour 6/1/2015; Add \$1.60/hour 5/30/2016.	33.52	17.60	51.12
504	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
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. Future Increase(s): Add \$2.19/hr on 01/01/2013; Add \$2.00/hr on 01/01/2014. Premium Increase(s): Add \$.50/hr for Friction Crane, Lattice Boom or Crane Certification (CCO).	38.80	20.17	58.97
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. Future Increase(s): Add \$2.08/hr on 01/01/2013; Add \$2.00/hr on 01/01/2014.	34.50	20.04	54.54
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. Future Increase(s): Add \$1.88/hr on 01/01/2013; Add \$2.00/hr on 01/01/2014.	28.70	19.86	48.56

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

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
508	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 &/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic. 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.	39.16	19.10	58.26
509	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. & Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Pile Driver; Versi Lifts, Tri-Lifts & Gantry (20,000 Lbs. & Over). Premium Increase(s): Crane Operators with CCO certification add \$.50/hr.	38.66	19.10	57.76
510	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & 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 & Gutter Machine; Concrete Spreader & Distributor; Dredge (NOT Performing Work on the Great Lakes); Forklift (Machinery Moving or Steel Erection, 25 Ft & Over); Gradall (Cruz-Aire Type); Hydro-Blaster (10,000 PSI or Over); Milling Machine; Skid Rig; Traveling Crane (Bridge Type). Premium Increase(s): Crane Operators with CCO certification add \$.50/hr.	38.16	19.10	57.26

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
511	Air, Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Bulldozer or Endloader (Over 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Pump (46 Meter & 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).	37.47	19.10	56.57
512	Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Compactor (Self-Propelled 84 Ft Total Drum Width & Under, or Tractor Mounted, Towed & 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 & Derrick NOT Performing Work on the Great Lakes); Grout Pump; Hoist (Tugger, Automatic); Industrial Locomotives; Jeep Digger; Lift Slab Machine; Mulcher; 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 & Under); Winches & A-Frames. Future Increase(s): Add \$0.75/hour 6/3/2013; Add \$1.00/hour 6/2/2014; Add \$1.50/hour 6/1/2015; Add \$1.60/hour 5/30/2016.	33.82	17.60	51.42
513	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & 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 (&/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; Robotic Tool Carrier (With or Without Attachments); Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack.	30.44	19.10	49.54
514	Gas or Utility Pipeline, Except Sewer & Water (Primary Equipment). Future Increase(s): Add \$2/hr on 1/1/2013.	34.89	20.59	55.48
515	Gas or Utility Pipeline, Except Sewer & Water (Secondary Equipment). Future Increase(s): Add \$1.60/hr on 06/01/2013; Add \$1.60/hr on 06/01/2014; Add \$1.65/hr on 06/01/2015	32.26	17.95	50.21
516	Fiber Optic Cable Equipment	20.00	7.88	27.88

SEWER, WATER OR TUNNEL CONSTRUCTION
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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).

SKILLED TRADES

CODE	TRADE OR OCCUPATION	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		
		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
		\$	\$	\$
103	Bricklayer, Blocklayer or Stonemason Future Increase(s): Add \$1.45/hr on 6/01/2013 Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	35.80	16.87	52.67
105	Carpenter Future Increase(s): Add \$.75/hr on 6/3/2013. Add \$1.25/hr on 6/2/2014. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.93	19.81	52.74
107	Cement Finisher	30.68	16.75	47.43
109	Electrician Future Increase(s): Add \$1.60/hr on 6/1/2013. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.20	21.71	53.91
111	Fence Erector	28.00	4.50	32.50
116	Ironworker	30.90	19.11	50.01
118	Line Constructor (Electrical)	37.05	16.94	53.99
125	Pavement Marking Operator	28.10	15.00	43.10
126	Piledriver	29.56	24.96	54.52
130	Plumber	36.97	17.66	54.63
135	Steamfitter	38.26	19.49	57.75
137	Teledata Technician or Installer	24.65	15.67	40.32
143	Tuckpointer, Caulker or Cleaner	34.35	11.13	45.48
144	Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
146	Well Driller or Pump Installer	21.00	2.23	23.23

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	28.24	15.10	43.34
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	29.64	14.64	44.28
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	11.90	33.65

TRUCK DRIVERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
201	Single Axle or Two Axle	25.87	13.00	38.87
203	Three or More Axle	18.00	0.00	18.00
204	Articulated, Euclid, Dumptor, Off Road Material Hauler	31.89	17.98	49.87
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	17.00	0.00	17.00

LABORERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
301	General Laborer 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.	28.95	16.11	45.06
303	Landscaper	26.92	12.51	39.43
304	Flagperson or Traffic Control Person	23.55	13.45	37.00
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.24	15.03	32.27
314	Railroad Track Laborer	14.50	3.53	18.03

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

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
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 &/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/hr on 6/2/2013.</p> <p>Premium Increase(s): Add \$.50/hr for >200 Ton / Add \$1/hr at 300 Ton / Add \$1.50 at 400 Ton / Add \$2/hr at 500 Ton & Over.</p>	35.12	18.46	53.58
522	<p>Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & 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 & Distributor; 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); Milling Machine; Skid Rig; Telehandler; Traveling Crane (Bridge Type).</p> <p>Premium Increase(s): Add \$.25/hr for operating tower crane.</p>	35.36	19.15	54.51
523	<p>Air Track, Rotary or Percussion Drilling Machine &/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 & Under), Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & 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>Premium Increase(s): Add \$.25/hr for operating tower crane.</p>	34.41	19.15	53.56

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
524	Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 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); Concrete Conveyor System; Concrete Finishing Machine (Road Type); Environmental Burner; Fireman (Pile Driver & 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 & Under); Winches & A-Frames.	31.89	18.11	50.00
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. Premium Increase(s): Add \$.25/hr for operating tower crane.	31.96	19.15	51.11
526	Boiler (Temporary Heat); Forklift; Greaser; Oiler.	30.44	19.10	49.54
527	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
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.	37.45	19.45	56.90
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.	27.75	19.15	46.90
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.	27.75	19.15	46.90

AIRPORT PAVEMENT OR STATE HIGHWAY CONSTRUCTION

Includes all airport projects (excluding buildings) and all projects awarded by the Wisconsin Department of Transportation (excluding buildings).

SKILLED TRADES

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
		\$	\$	\$
103	Bricklayer, Blocklayer or Stonemason	35.58	19.20	54.78
105	Carpenter Future Increase(s): Add \$.75/hr on 6/3/2013. Add \$1.25/hr on 6/2/2014. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.93	19.81	52.74
107	Cement Finisher Future Increase(s): 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): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.40/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	30.69	17.53	48.22
109	Electrician	31.54	21.14	52.68
111	Fence Erector	28.00	4.50	32.50
116	Ironworker	31.31	21.99	53.30
118	Line Constructor (Electrical)	31.29	15.34	46.63
124	Painter	29.22	16.69	45.91
125	Pavement Marking Operator	29.22	16.69	45.91
126	Piledriver	29.56	23.86	53.42
133	Rofer or Waterproofer	29.40	15.05	44.45
137	Teledata Technician or Installer	24.65	15.67	40.32
143	Tuckpointer, Caulker or Cleaner	34.35	11.13	45.48
144	Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.64	17.06	46.70

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	<u>TOTAL</u>
<u>CODE</u>	<u>TRADE OR OCCUPATION</u>	\$	\$	\$
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	30.60	14.64	45.24
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	11.90	33.65

TRUCK DRIVERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	<u>TOTAL</u>
<u>CODE</u>	<u>TRADE OR OCCUPATION</u>	\$	\$	\$
201	Single Axle or Two Axle	33.22	18.90	52.12
203	Three or More Axle Future Increase(s): Add \$1.85/hr on 6/1/2013. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	23.31	17.13	40.44
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm .	27.77	19.90	47.67
205	Pavement Marking Vehicle	23.84	14.90	38.74
206	Shadow or Pilot Vehicle	33.22	18.90	52.12
207	Truck Mechanic	22.50	16.19	38.69

LABORERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
301	General Laborer Future Increase(s): 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. / DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) 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).	25.39	18.40	43.79
302	Asbestos Abatement Worker	18.00	0.00	18.00
303	Landscaper Future Increase(s): Add \$1.70/hr on 6/1/13; Add \$1.60/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) 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).	25.39	18.40	43.79
304	Flagperson or Traffic Control Person Future Increase(s): Add \$1.70/hr on 6/1/2013; Add \$1.60/hr on 6/1/2014. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	21.88	18.40	40.28

Fringe Benefits Must Be Paid On <u>All</u> 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>
		\$	\$	\$
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.24	15.03	32.27
314	Railroad Track Laborer	14.50	3.53	18.03

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

Fringe Benefits Must Be Paid On <u>All</u> 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>
		\$	\$	\$
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 \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm .	35.22	19.90	55.12
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 \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm .	34.72	19.90	54.62

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
533	<p>Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Heater, Planer & 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. & Under); Bituminous (Asphalt) Plant & 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 & 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; 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 & A-Frames.</p> <p>Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.</p> <p>Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtml.</p>	34.22	19.90	54.12
534	<p>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 (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; Tining or Curing Machine.</p> <p>Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.</p> <p>Premium Increase(s):</p>	33.96	19.90	53.86

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	<u>TOTAL</u>
<u>CODE</u>	<u>TRADE OR OCCUPATION</u>	\$	\$	\$
	DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm .			
535	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); 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 \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm .	33.67	19.90	53.57
536	Fiber Optic Cable Equipment.	20.00	7.88	27.88
537	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
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.	37.45	19.45	56.90
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.	27.75	19.15	46.90
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.	27.75	19.15	46.90

LOCAL STREET OR MISCELLANEOUS PAVING CONSTRUCTION
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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).

SKILLED TRADES

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
		\$	\$	\$
103	Bricklayer, Blocklayer or Stonemason	33.00	15.00	48.00
105	Carpenter	30.16	15.31	45.47
107	Cement Finisher	28.73	17.03	45.76
109	Electrician Future Increase(s): Add \$1.60/hr on 6/1/2013. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.20	21.71	53.91
111	Fence Erector	28.00	4.50	32.50
116	Ironworker	31.31	21.99	53.30
118	Line Constructor (Electrical)	37.05	16.94	53.99
124	Painter	29.27	18.18	47.45
125	Pavement Marking Operator	28.10	15.00	43.10
126	Piledriver	29.56	24.96	54.52
133	Rofer or Waterproofer	29.40	15.05	44.45
137	Teledata Technician or Installer	24.65	15.67	40.32
143	Tuckpointer, Caulker or Cleaner	34.35	11.13	45.48
144	Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.64	14.55	44.19
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	30.60	14.64	45.24
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	11.90	33.65

TRUCK DRIVERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
201	Single Axle or Two Axle	25.87	13.00	38.87
203	Three or More Axle	17.00	0.00	17.00
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add \$1/hr on 6/2/2013.	32.39	18.46	50.85
205	Pavement Marking Vehicle	20.85	11.02	31.87
206	Shadow or Pilot Vehicle	25.87	13.00	38.87
207	Truck Mechanic	17.00	0.00	17.00

LABORERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
301	General Laborer	22.31	18.64	40.95
303	Landscaper Future Increase(s): Add \$1.70/hr on 6/1/13; Add \$1.60/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) 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).	28.07	13.90	41.97
304	Flagperson or Traffic Control Person Future Increase(s): Add \$1.70/hr on 6/1/2013; Add \$1.60/hr on 6/1/2014. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	24.70	13.90	38.60
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.24	15.03	32.27
314	Railroad Track Laborer	14.50	3.53	18.03

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

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
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. Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm .	35.22	19.90	55.12
542	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. Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm .	34.72	19.90	54.62

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
543	<p>Air Track, Rotary or Percussion Drilling Machine &/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. & 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 & 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; 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 & A-Frames.</p> <p>Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.</p> <p>Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.</p>	34.22	19.90	54.12
544	<p>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.</p> <p>Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.</p> <p>Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm.</p>	33.96	19.90	53.86

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
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.	33.02	17.60	50.62
546	Fiber Optic Cable Equipment.	20.00	7.88	27.88
547	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
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.	37.45	19.45	56.90
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.	27.75	19.15	46.90
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.	27.75	19.15	46.90

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

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
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.	39.16	19.10	58.26
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. Future Increase(s): Add \$1/hr on 6/2/2013.	32.92	18.46	51.38

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
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.	32.67	18.44	51.11
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 \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.	33.67	19.55	53.22
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 \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.	33.67	19.55	53.22
556	Fiber Optic Cable Equipment.	20.00	7.88	27.88

RESIDENTIAL OR AGRICULTURAL CONSTRUCTION

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.

SKILLED TRADES

<u>CODE</u>	<u>TRADE OR OCCUPATION</u>	<u>HOURLY BASIC RATE OF PAY</u>	<u>HOURLY FRINGE BENEFITS</u>	<u>TOTAL</u>
		\$	\$	\$
101	Acoustic Ceiling Tile Installer	19.50	10.98	30.48
102	Boilermaker	31.09	27.23	58.32
103	Bricklayer, Blocklayer or Stonemason	25.00	12.36	37.36
104	Cabinet Installer	26.00	2.61	28.61
105	Carpenter	33.43	7.16	40.59
106	Carpet Layer or Soft Floor Coverer	32.93	21.85	54.78
107	Cement Finisher	23.32	6.27	29.59
108	Drywall Taper or Finisher	29.87	18.79	48.66
109	Electrician	24.50	8.96	33.46
110	Elevator Constructor	41.71	23.88	65.59
111	Fence Erector	13.00	1.07	14.07
112	Fire Sprinkler Fitter	37.45	19.30	56.75
113	Glazier	22.00	2.09	24.09
114	Heat or Frost Insulator	35.00	0.00	35.00
115	Insulator (Batt or Blown)	12.82	0.00	12.82
116	Ironworker	30.90	19.11	50.01
117	Lather	33.43	7.16	40.59
119	Marble Finisher	16.50	2.38	18.88
120	Marble Mason	25.00	12.36	37.36
121	Metal Building Erector	17.00	2.62	19.62
123	Overhead Door Installer	25.00	19.00	44.00
124	Painter	23.50	3.73	27.23
125	Pavement Marking Operator	28.10	15.00	43.10

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
129	Plasterer	20.00	0.00	20.00
130	Plumber	36.97	18.42	55.39
132	Refrigeration Mechanic	24.75	10.42	35.17
133	Roofer or Waterproofer	29.40	15.55	44.95
134	Sheet Metal Worker	28.15	15.14	43.29
135	Steamfitter	38.26	19.49	57.75
137	Teledata Technician or Installer	18.85	5.00	23.85
138	Temperature Control Installer	22.00	1.10	23.10
139	Terrazzo Finisher	26.57	16.00	42.57
140	Terrazzo Mechanic	30.01	17.13	47.14
141	Tile Finisher	20.60	3.53	24.13
142	Tile Setter	20.43	8.03	28.46
143	Tuckpointer, Caulker or Cleaner	32.50	2.84	35.34
146	Well Driller or Pump Installer	27.60	0.00	27.60
147	Siding Installer	16.00	0.62	16.62

TRUCK DRIVERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
201	Single Axle or Two Axle	16.25	4.60	20.85
203	Three or More Axle	17.10	1.78	18.88
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	19.00	1.85	20.85

LABORERS

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
301	General Laborer	18.00	6.16	24.16
302	Asbestos Abatement Worker	18.00	0.00	18.00
303	Landscaper	11.00	0.00	11.00

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.24	15.03	32.27
315	Final Construction Clean-Up Worker	15.00	0.00	15.00

**HEAVY EQUIPMENT OPERATORS
RESIDENTIAL OR AGRICULTURAL CONSTRUCTION**

Fringe Benefits Must Be Paid On <u>All</u> Hours Worked		HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
CODE	TRADE OR OCCUPATION	\$	\$	\$
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, Timberco, 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.	23.35	5.58	28.93
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.	21.10	0.87	21.97

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

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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.

INDEX OF DRAWINGS:

1 of 3	Roof Plan
2 of 3	Roof Details
3 of 3	Roof Details

SECTION 01010: SUMMARY OF WORK:

1. SCOPE:

A. Index:

1. Scope
2. Project Description
3. Work by Others
4. Scheduling of Work
5. Existing and General Conditions
6. Intent of the Specifications
7. Protection of Work and Property
8. Inspection of Work
9. Qualifications
10. Owner Occupancy
11. Shop Drawings
12. Warranty and Guarantee

2. PROJECT DESCRIPTION:

- A. In general, the project includes the furnishing of all equipment, labor, supervision, materials, and appurtenances for and in connection with the demolition and replacement of the roof on Engine House # 28 of Milwaukee Fire Department as shown on the contract drawings and further specified within.
- B. It is 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.
- C. GENERAL DESCRIPTION OF WORK: The work to be performed under the provisions of this contract and as set forth in these documents consists of the supply and installation of all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of every nature, inspection, and rentals for all work involved and described below.
- D. CONTRACT DRAWINGS: The contract drawings are general in nature and are intended to indicate the relative locations of materials specified in the areas indicated. Dimensions and elevations indicated on the drawings in reference to existing structures are the best available data obtainable but are not guaranteed by the City of Milwaukee (City) and the City will not be responsible for their accuracy. Before bidding on any work dependent upon the data involved, the contractor shall field check and verify all dimensions, grades, lines, levels, or other conditions of limitations at the site to avoid construction errors.
- E. Examine Documents and Visit Site:
 1. Before submitting a bid proposal, bidders should carefully examine the drawings and specifications; visit the site of 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. Remove existing ballast, single ply membrane and insulation, underlying built up roof system and insulation down to the wood deck.
2. Contractor to broom clean wood deck and inspect for any defects. Any defective wood decking shall be replaced per an additional square foot price.
3. Remove all flashings, counter-flashings, wood blocking, cant strips, clay tile coping, and related materials and dispose of off- site.
4. Install red rosin base sheet to wood deck.
5. Install one layer of 1.5" Polyisocyanurate insulation mechanically fastened to the deck according to specified fastening patterns in the wind uplift documents and in accordance with the specifications.
6. Install a second layer of 1.5" Polyisocyanurate insulation set in Type III hot asphalt.
7. Install one layer of 0.5" wood fiberboard insulation, asphalt impregnated on six sides, set in Type III hot asphalt in accordance with the specifications.
8. Install two plies of type IV felts set in type III hot asphalt in accordance with the specifications.
9. Install one ply of a high performance modified bitumen membrane set in type III asphalt in accordance with the specifications.
10. All flashings shall be a base ply of a high performance modified base sheet and a final ply of the modified finish ply.
11. All flashing laps shall be three coursed with mesh and mastic.
12. Flood coat roof with a cold process rubber modified flood coat at a rate of five gallons per square and embed pea gravel in accordance with the specifications.
13. Install new metal wall panels on parapets in accordance with the specifications.
14. Install metal coping on parapets in accordance with the specifications. All metal coping shall conform to current building code and ANSI-SPRI ES-1 wind uplift requirements.
15. Install new metal gutter and downspouts in accordance with the specifications.

16. Clean up all debris and damage done to grounds, building and roof top (if any).
17. Issue new two-year (2) labor and workmanship warranty.
18. Issue new thirty-year (30) no dollar limit (NDL) Edge to Edge complete roof system warranty including roof membrane and all underlying components, metal coping caps, all sheet metal, and wall panels.

3. WORK BY OTHERS:

- A. None

4. SCHEDULING OF WORK:

- A. SEQUENCE OF WORK: Work shall take place between the hours of 7:00 AM to 4:00 PM or other agreed upon times approved by the MFD - BUREAU OF CONSTRUCTION AND MAINTENANCE.
- B. PRE-CONSTRUCTION MEETING: After the Notice to Proceed is issued, a date shall be set for the pre-construction meeting to be held at the job site. Construction details of the project will be discussed in the meeting.
- C. JOB SCHEDULE: Within ten (10) days after Notice to Proceed is issued, the contractor shall submit a construction schedule for approval. The schedule shall be made in sufficient detail to indicate expected date of substantial completion. The schedule shall be such that the entire job will be completed within the specified time frame. Microsoft Project 2000 shall be used to create the schedule. Submit an electronic file and hard copy of the schedule.
- D. The contractor shall place all orders for materials promptly after award of the contract. With submittal of the construction schedule, he/she shall include a schedule of delivery of all major equipment and materials for the job.
- E. The contractor shall immediately notify the City, in writing, of any problems with meeting this schedule. If the construction schedule cannot be met because of materials or equipment deliveries, the contractor shall be required to submit purchase orders and confirmations of delivery, showing the date the order was placed and the promised date of delivery.

5. EXISTING AND GENERAL CONDITIONS:

- A. The existing roof system is a ballasted, EPDM roof membrane loose laid over EPS insulation. The underlying roof system is a built-up roof system over a plank wood deck.
- B. The roof is structurally sloped to the gutter and downspouts.

6. INTENT OF THE SPECIFICATIONS:

- A. The intent of these specifications is to describe the material and methods of construction required for the performance of the work. In general, it is intended that the drawings shall delineate the detailed extent of the work. When there is a discrepancy between drawings, referenced specifications, and standards and this specification, this specification shall govern.

7. PROTECTION OF WORK AND PROPERTY:

- A. The contractor shall use every available precaution to provide for the safety of the property owner, visitors to the site, and all connected with the work under the Contract.
- B. All existing facilities both above and below ground shall be protected and maintained free of damage. Existing facilities shall remain operating during the period of construction unless otherwise permitted. All access roadways must remain open to traffic unless otherwise permitted.
- C. Barricades shall be erected to fence off all construction areas from operations personnel.
- D. Safety Requirements:
 - 1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
 - 2. Comply with federal, state, and local and owner fire and safety requirements.
 - 3. Advise owner whenever work is expected to be hazardous to owner employees and/or operations.
 - 4. Maintain a crewman as a floor guard whenever roof decking is being repaired.
 - 5. Maintain proper fire extinguisher within easy access whenever power tools, roofing kettles, and torches are being used. A MINIMUM OF A 2 HOUR FIRE WATCH SHALL BE STRICTLY ADHERED TO WHENEVER PROPANE TORCHES ARE IN USE.
 - 6. ALL SAFETY REQUIREMENTS OF THE BUILDING OWNER MUST BE FOLLOWED. NO EXCEPTIONS WILL BE PERMITTED. SAFETY ORIENTATION MEETING REQUIRED PRIOR TO PERFORMING ANY WORK.
- E. Keep materials neat and orderly.
- F. Remove scrap, waste and debris from the project area.
- G. Maintenance of clean conditions while work is in progress and cleanup when work is completed shall be in strict accordance with the "General Conditions" of this contract.
- H. Fire protection during construction.
- I. Follow all requirements established by the Bureau of Construction and Maintenance and/or the City.

8. INSPECTION OF WORK:

- A. Where drawings or specifications require the inspection and approval of any work in progress by the inspector, the contractor shall give the inspector ample notice to allow for scheduling the inspection, which shall be made promptly to avoid any delay in work. If work has progressed without required inspections or approval by the inspector, it shall be uncovered for the inspection at the contractors' expense.
- B. If directed by the City, the contractor shall cut not more than four (4) cores, of approximately 200 square inches each, from every newly constructed roof area, in order

to establish the amount of materials used per square foot, and shall restore the roof of cut areas to a sound and watertight condition as prior to the core testing.

- C. In the event that such core cuts disclose any deficiency in materials, or soundness of construction, the contractor shall, and his/her own expense, apply additional materials or otherwise correct the deficiencies to the satisfaction of the City.

9. QUALIFICATIONS:

- A. The roof system shall be applied by contractors who have received approval from the material manufacturer who is issuing the system warranty for such installations.

10. OWNER OCCUPANCY:

- A. The Milwaukee Fire Department will occupy the premises during the entire period of construction.
- B. Coordinate with the MFD- Bureau of Construction of Maintenance to minimize conflict and to not interfere with the operation of the Milwaukee Fire Department.
- C. Contractor shall at no time park vehicles, stage materials or equipment, or otherwise interfere with the Engine Houses' apparatus doors or other pertinent equipment.

11. SHOP DRAWINGS

- A. If required, within three (3) weeks after the Notice to Proceed is issued, the contractor shall submit to the City for approval a minimum of three (3) copies of all shop, fabrication, assembly, and other drawings as required by the specifications. All drawings showing essential details of any change in design or construction proposed by the contractor.
- B. Each shop drawing shall bear the City of Milwaukee, the name and location of the structure, job number, the name of the contractor, the date of the drawing, the date of each correction or revision and the specification numbers and plan sheets numbers applicable thereto.
- C. Three (3) revised copies of each drawing shall be submitted each time a drawing is returned to the contractor for revision.
- D. After approval by the City, all such drawings shall become part of the contract documents and the work or equipment shown thereby shall be furnished and installed as shown unless otherwise required by the City. No work shall be performed or equipment manufactured until drawings have been approved. The approval of drawings submitted by the contractor will be for, and will cover only general conformity to the plans and specifications and will not constitute a blank approval of all dimensions, quantities, or details of the material or equipment shown by such drawings, not shall such approval relieve the contractor of responsibility of errors contained therein.
- E. At the completion of work and prior to final payment, the contractor shall provide the City with three (3) sets of "as built" drawings for the completed job showing all new and modified appurtenances. All conduit or similar items shall be located by dimensions and elevations. The contractor will be responsible for the accuracy of these drawings.

12. WARRANTY AND GUARANTEE

- A. The contractor shall furnish a written two (2) year warranty from the date of official acceptance against defective materials or workmanship before the final payment is made.
- B. During the period of two (2) years from and after the date of official acceptance by the City of the work embraced by this contract, the contractor shall make all needed repairs arising out of defective workmanship or materials, or both, which in the judgment of the Commission of Public Works (Commissioner), shall becoming necessary during such period. The contractor shall inspect the roof with the primary material manufacturer and the Milwaukee Fire Department Bureau of Construction and Maintenance twenty-two (22) months after completion, and correct any workmanship defects before the 24th month following the date of official acceptance.
- C. Whenever defective equipment or materials are replaced, the warranty period for the replacement equipment or materials shall be the remaining warranty period for the original, replaced equipment or materials.
- D. If within ten (10) days after mailing of a notice in writing to the contractor, or his agent, the said contractor shall neglect to make, or undertake with due diligence to make, the aforesaid repairs, the City is hereby authorized to make such repair at the contractors' expense; providing, however, that in case of an emergency where, in the judgment of the Commissioner, delay would cause serious loss or damage, repairs may be made without notice being sent to the contractor, and the contractor shall pay the cost thereof.

END OF SECTION

SECTION 01210: PROJECT MEETINGS1. 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, adjacent facilities, environment, and personnel.
 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. 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. Shop drawings required for insulation plan, stepped wall details, retro fit drains, wall flashing, parapet and penetrations.
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.

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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:

REV 1/10

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 (MWSBE, residency, wage requirements), and record job progress and conditions.

REV 1/04

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.

REV 7/99

SECTION 01433 – ROOFING MANUFACTURER’S FIELD SERVICES

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including the Conditions of the Contract and Division 07 Specification Sections apply to this Section.

1.2 SUMMARY

- A.** Section includes Manufacturer’s field services for roofing assemblies.
- B.** Related Work Specified Elsewhere:
 - 1.** Roofing Material: Section 07 52 00 - Modified Bituminous Membrane Roofing.
 - 2.** Roofing Material: Section 07 42 14 – Metal Wall Panels
 - 3.** Roofing Material: Section 07 62 00 – Sheet Metal Flashing and Trim; Metal Coping

1.3 REFERENCES

- A.** International Building Code (current edition) or local authority building code.
- B.** American Society of Civil Engineers (ASCE): ASCE 7, Minimum Design Loads for Buildings and Other Structures.
- C.** Factory Mutual Global (FMG): Roof Assembly Classifications.
- D.** National Roofing Contractors Association (NRCA): Roofing and Waterproofing Manual.

- E.** American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI): ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal

1.4 SUBMITTALS FOR REVIEW

- A.** Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.
- B.** Specimen Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.
- C.** Roofing System Manufacturer's Evaluation: Provide a comprehensive written assessment comparing available roofing solutions with validation of why the roofing system selection for the specific project is suitable and appropriate
- D.** Roofing System Manufacturer's Report Form: Provide a copy of the report form utilized by the roofing system manufacturer for progress inspections to monitor installation and quality.
- E.** Online Reporting Capabilities. Provide a sample of the roofing system manufacturer's online roof inspection report as well as information about how long inspection reports are available to owner.

1.5 SUBMITTALS FOR INFORMATION

- A.** Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.
- B.** Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual Global, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class [A] for external fire and meets local or nationally recognized building codes.
- C.** Manufacturer's Certificate: Certify that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.

- D.** Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.
- E.** Written certification from the roofing system manufacturer certifying the applicator is currently authorized for the installation of the specified roof system.
- F.** Design Loads: Submit copy of manufacturer's minimum design load calculations according to ASCE 7, Method 2 for Components and Cladding. In no case shall the design loads be taken to be less than those detailed in Design and Performance Criteria article of this specification.
- G.** Qualification data for firms and individuals identified in Quality Assurance Article below.
- H.** Test Reports: Submit ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal Products.
- I.** Substitutions: Products proposed as equal to the products specified for this project shall meet all of the requirements in the appropriate Division 7 specifications and shall be submitted for consideration.
 - 1.** Submittals shall be accompanied by a copy of the manufacturer's standard specification Section. That specification Section shall be signed and sealed by a professional engineer licensed in the state in which the installation is to take place. Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.
 - 2.** Manufacturer's checklist will be accompanied with any substitution to verify equal performance characteristics to those specified in Division 7 specification.
 - 3.** The Owner's decision regarding substitutions will be considered final.

1.6 CONTRACT CLOSEOUT SUBMITTALS

- A.** Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
- B.** Roofing Maintenance Instructions: Provide a roof care and maintenance manual of manufacturer's recommendations for maintenance of installed roofing systems.

- C.** Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.
- D.** Inspection Logs: Copy of inspection reports as performed by the manufacturer shall be submitted at project closeout and include photographic documentation of installation progress, weather conditions, and personnel on the project at the time of every inspection.

1.7 QUALITY ASSURANCE

- A.** Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with not less than [12] years documented experience [and have ISO 9001 certification].
- B.** Installer Qualifications: Company specializing in specified roofing installation with not less than [5] years experience and authorized by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- C.** Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress. Maintain proper supervision of workmen.
- D.** Maintain a copy of the roof plans, details, and specifications in the possession of the Supervisor/Foreman and on the roof at all times.
- E.** Source Limitations: Obtain all primary components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
 - 1.** The manufacturer providing the roofing system warranty must verify that they manufacture a minimum of 75% of the products utilized in the roofing system of this project. Products that are private labeled shall not be considered as manufactured by the roofing system supplier.
 - 2.** Upon request of the Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
- F.** Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001.

1.8 PRE-INSTALLATION CONFERENCE

- A.** Pre-Installation Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of roofing system installation and associated work.

- B.** Require attendance of installer of each component of associated work:
installers of deck or substrate construction to receive roofing work:
installers of rooftop units and other work in and around roofing that must precede or follow roofing work (including mechanical work if any):
architect and/or engineer: owner: roofing system manufacturer's full time employee: and other representatives directly concerned with performance of the Work, including (where applicable) owner's insurers, testing agencies and governing authorities. Objectives of conference include:
 - 1.** Review foreseeable methods and procedures related to roofing work, including set up and mobilization areas for stored material and work area.
 - 2.** Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
 - 3.** Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
 - 4.** Review roofing system requirements (drawings, specifications and other contract documents).
 - 5.** Review required submittals both completed and yet to be completed.
 - 6.** Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 - 7.** Review required inspection, testing, certifying and material usage accounting procedures.
 - 8.** Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not a mandatory requirement).

9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish a copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
- C. The Owner's Representative will designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.
- D. The intent of the conference is to resolve issues affecting the installation and performance of roofing work. Do not proceed with roofing work until such issues are resolved to the satisfaction of the owner and [architect and/or engineer] of record. This shall not be construed as interference with the progress of Work on the part of the owner or [architect or engineer] of Record.

1.9 MANUFACTURER'S INSPECTIONS

- A. When the Project is in progress, a full-time employee of the roofing system manufacturer must provide the following:
 1. Report progress and quality of the work as observed. Progress reports must be published to an online system as referenced in Section 1.4.
 2. Provide daily roofing installation inspections: Inspections must include; photographic documentation of work in-progress and written statements of compliance with details/shop drawings.
 3. Report to the owner in writing any failure or refusal of the contractor to correct unacceptable practices called to the contractor's attention.
 4. Confirm after project completion that the manufacturer has observed no application procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.10 WARRANTY

- A. Upon completion of installation, and acceptance by the owner and architect and/or engineer, the manufacturer will supply to the owner the specified warranty. Warranty will be a thirty-year (30) edge to edge no dollar limit

(NDL) warranty. To ensure continuity, multiple warranties will not be accepted.

- B. Installer will submit a two (2)-year workmanship warranty to the membrane manufacturer with a copy directly to the City.
- C. The roofing system manufacturer must have been in continuous business operation for a period of time at least as long as the length of the roof system warranty provided for this project.

1.11 DESIGN AND PERFORMANCE CRITERIA

- A. Uniform Wind Uplift Load Capacity (see attached wind uplift document)

PART 2 — PRODUCTS (NOT USED)

PART 3 — EXECUTION

3.1 EXECUTION, GENERAL

- A. Comply with requirements of related Division 07 Section.

3.2 GENERAL INSTALLATION REQUIREMENTS

- A. Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
- B. Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.

3.3 FIELD QUALITY CONTROL

- A. Roofing Manufacturer Representative shall perform field inspection as specified in Article titled: MANUFACTURER'S INSPECTIONS above. Inspections must include photographic documentation of installation progress, weather conditions, and personnel on the project at the time of inspection
- B. Correct defects or irregularities discovered during field inspection. Issues deemed defective must be re-inspected and determined suitable by the roofing manufacturer

- C. Require attendance of roofing materials manufacturers' representatives at site during installation of the roofing system. A copy of the specification shall also be on site at all times.
- D. Frequent progress meetings shall be conducted during the performance of roof system installation and must be attended by the owner, architect or engineer, roofing system manufacturer's full time employee, and other representatives directly concerned with performance of the work.

3.4 FINAL INSPECTION

- A. At the completion of the roofing installation and associated work, meet with contractor, installer, installer of associated work, owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. Notify the owner upon completion of corrections.
- D. The roofing system manufacturer reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the roofing contractor.
- E. If core cuts verify the presence of damp or wet materials, the roofing contractor shall be required to replace the damaged areas at his own expense.
- F. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.
- G. Immediately correct roof leakage during construction. If the contractor does not respond within twenty four (24) hours, the owner may exercise rights to correct the Work under the terms of the Conditions of the Contract.

END OF SECTION 01433

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. Scaffolding
7. Electrical Power
8. Water
9. Temporary Toilet Facilities
10. Site Security
11. Parking

1. 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.

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.

Outlying buildings are not generally open to the public. Contracted work in these buildings can take place at any time. It is essential that contractors and their City agents understand and abide by security policy.

B. Police Access (General):

1. Access to Milwaukee Police Department facilities requires the contractor to meet the access procedures described below.
2. The Police Department requires that all contractors, vendors, visitors or other who intend to do business at any Police Department site must have a background check performed by the Milwaukee Police Department **PRIOR** to any access.

3. All contractors' staff requiring access to the site, including any subcontractors, suppliers or vendors, will be required to submit their full name (including full middle name) and birth date to allow the Department to perform the necessary background check. The contractor shall provide a staff list two weeks before work begins. At this time, the contractor shall provide a brief outline of the work, project schedule, and company contact information (company name, contact name and title, phone number and address).
4. To add staff during the course of the project, provide the same information as above and allow 48 hours for a response.
5. The Contractor will be notified if the worker does not pass the background check.
6. Sign in and sign out will be required at all Milwaukee Police Department facilities.

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.
 - 6) 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.
 - 7) In the event that keys or cards are not returned daily the contractor in question will have a deduct (security violation) **\$50.00 penalty** for each occurrence, as per the contract. Individuals who loose or fail to return keys will be responsible for the cost of re-keying to the City.
 - 8) 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.
- 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. SCAFFOLDING, SWING STAGES, AND LIFTS:

General Contractor shall provide protective sidewalk scaffolding and any additional measures as required to protect the public and allow safe use of this entrance into the facility during the entire construction period.

All scaffolding, swing stages and lifts as required to perform work defined in this contract document shall be provided and maintained by the General Contractor and shall be removed when no longer needed. The General Contractor is solely responsible for the design, safety and security of any scaffolding erected under this contract for this project. All scaffolding, swing stages and lifts shall be available with operators for access to the project for the Project Engineer, City Liaison and City Inspectors.

Exterior scaffolding access (up & down) shall be provided. Access through to the facility will be strictly limited. Adequate security must be provided by the General Contractor to limit the opportunity of unauthorized access of scaffolding.

Submittals for the scaffolding and egress protection shall be provided and reviewed before proceeding with erection. Scaffolding and egress protection submittals shall be stamped by a professional engineer. The scaffolding engineer shall design any foundations or anchoring points as required. The scaffolding system shall be properly grounded.

All anchors and other attachments into building shall be limited. All anchors and attachment shall be clearly indicated on submittals. All costs for scaffolding including installation of anchoring, foundation, erection and patching of all anchor and attachment points at the conclusion of the project shall be

included in the base bid. At the completion of the project, the Contractor is to patch all anchor and attachment points. Patching of all anchor or attachment points shall match existing façade materials. On site patching sample shall be provided and approved before proceeding with all patch work. Any damage to sidewalks, pavement or landscaped areas shall be restored to existing pre-construction conditions after the removal of the scaffolding.

Contractor is to verify that the parking and grass areas that surround the building are structurally suitable for placement of scaffolding, lifts or other equipment or materials prior to placement thereof. Verify by investigation and record plans the location of pervious pavement, water wells, or other underground structures not capable of supporting scaffolding, lifts, equipment or materials, and avoid placement of equipment and/or materials over these areas.

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:

Hose bibs are available as shown on the drawings. Contractor is to verify that location of existing hose bib is suitable for his work, or provide his own source of water. Contractor is to supply his own hoses. Contractor's hose shall be leak free and contractor is to regulate the flow to limit it to project-related use. The cost of water at the building shall be paid for by the City.

9. TEMPORARY TOILET FACILITIES:

The contractor is responsible for providing their own exterior toilet facilities during construction.

10. SITE SECURITY:

Contractor shall secure all doors and gates prior to leaving site.

11. PARKING:

Parking is available off site, on the streets adjacent to the project.

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 01500 "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 waste reduction 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 50% 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. 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.

G. 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.**

H. 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:

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).
- c.) 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. The premises and the work shall be adequately protected from damage from the commencement of work to the date of final acceptance.
- B. All construction work and traffic shall remain within the construction area.
- C. All damage shall be corrected or repaired by the contractor or contractors causing same at his or their own expense.

01600/3

D. All open pipes, pipe threads, fittings, and insulation must be protected during construction.

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.

END OF SECTION

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, driveways, parking areas, 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. After 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.
- B. Other contractors shall provide one (1) marked up set of prints 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 to FACILITIES DEVELOPMENT AND MANAGEMENT SECTION.

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 two (2) 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.

END OF SECTION

SECTION 01740 - WARRANTY

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and other Division 1 Specification sections, apply to work of this section.
- B. Related Sections
 - 1. Section 01300 - Submittals

1.02 WARRANTY

- A. The specified roof sections will receive the following a thirty year (30) no dollar limit (NDL) Edge-to-Edge Roof Full System labor and material warranty, including all metal panels, metal coping, and sheet metal accessories, by one manufacturer. Multiple warranties are not acceptable.
- B. The material manufacturer shall provide two inspections per year (at no additional cost) for the duration of the Full System warranty.
- C. The warranty shall cover all roof related components installed under this specification and shall not be limited to only those materials supplied by the material supplier issuing the warranty.
- D. Specifically - The warranty submitted by the manufacturer of record will cover:
 - 1. All labor.
 - 2. Materials by the manufacturer of record.
 - 3. Materials by others (as approved by manufacturer)
- E. The contractor shall issue to the material supplier (and copy to building owner) a two (2) year labor warranty upon completion of the roof and acceptance by the material supplier's representative and the City.

1.03 MAINTENANCE REQUIREMENTS (by owner)

- A. Clean all drains, gutters and down spouts.
- B. Check for physical abuse by other trades.
- C. Inspect and confirm weather damage.

1.04 THE MANUFACTURER OF RECORD

- A. Will not charge for any warranty problem inspections nor will any charges be assessed by the contractor of record.
- B. Provide an annual inspection of the roof system at the request of the building owner.

END OF SECTION

SECTION 07 22 00 - ROOF DECK AND INSULATION

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including the Conditions of the Contract and Division 01 Specification Sections apply to this section.

1.2 SUMMARY

- A.** Section includes roof insulation over the properly prepared deck substrate.
- B.** Related Sections:
 - 1.** Section 07 62 00 - Sheet Metal Flashing and Trim.

1.3 REFERENCES

- A.** American Society for Testing and Materials (ASTM):
 - 1.** ASTM A167 Standard Specification for Stainless and Heat-Resisting Chromium Nickel Steel Plate, Sheet and Strip.
 - 2.** ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process.
 - 3.** ASTM B29 Standard Specification for Refined Lead.
 - 4.** ASTM B32 Standard Specification for Solder Metal.
 - 5.** ASTM C165 Standard Test Method for Measuring Compressive Properties of Thermal Insulation.
 - 6.** ASTM C208 Standard Specification for Cellulosic Fiber Insulating Board.
 - 7.** ASTM C209 Standard Test Method for Cellulosic Fiber Insulating Board.
 - 8.** ASTM C272 Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions.
 - 9.** ASTM C1396 Standard Specification for Gypsum Wallboard.

10. ASTM C518 Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
 11. ASTM C578 Standard Specification for Perlite Thermal Insulation Board.
 12. ASTM C728 Standard Test Methods for Fire Test of Roof Coverings.
 13. ASTM C1289 Standard Specification for Faced Rigid Polyisocyanurate Thermal Insulation
 14. ASTM D5 Standard Test Method for Penetration of Bituminous Materials.
 15. ASTM D36 Standard Test Method for Softening Point of Bitumen (Ring and Ball Apparatus).
 16. ASTM D312 Standard Specification for Asphalt Used in Roofing.
 17. ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
 18. ASTM D1621 Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
 19. ASTM D1622 Standard Test Method for Apparent Density of Rigid Cellular Plastics.
 20. ASTM D1863 Standard Specification for Mineral Aggregate Used on Built-Up Roofs.
 21. ASTM D2126 Standard Test Method for Response off Rigid Cellular Plastics to Thermal Humid Aging.
 22. ASTM D2178 Standard Specification for Asphalt Glass Felts used in Roofing and Waterproofing.
 23. ASTM D4601 Standard Specification for Asphalt-Coated Glass Fiber Base Sheet Used in Roofing.
 24. ASTM D5147 Standard Sampling and Testing Modified Bituminous Sheet Material.
- B.** Cast Iron Soil Pipe Institute, Washington, D.C. (CISPI)
- C.** Factory Mutual Research (FM):

- 1.** Roof Assembly Classifications.
- D.** National Roofing Contractors Association (NRCA):
 - 1.** Roofing and Waterproofing Manual.
- E.** Underwriters Laboratories, Inc. (UL):
 - 1.** Fire Hazard Classifications.
- F.** Warnock Hersey (WH):
 - 1.** Fire Hazard Classifications.
- G.** Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
- H.** Steel Deck Institute, St. Louis, Missouri (SDI)
- I.** Southern Pine Inspection Bureau, Pensacola, Florida (SPIB)
- J.** Insulation Board, Polyisocyanurate (FS HH-I-1972)
- K.** Insulation Board, Thermal (Fiberboard) (FS LLL-1-535B)

1.4 SUBMITTALS

- A.** Product Data: Provide manufacturer's specification data sheets for each product in accordance with Division 01 Section 01300: Submittal Procedures.
- B.** Provide approval letters from insulation manufacturer for use of their insulation within this particular roofing system type.
- C.** Provide a sample of each insulation type.
- D.** Shop Drawings
 - 1.** Submit manufacturer's shop drawings indicating complete installation details of tapered insulation system, including identification of each insulation block, sequence of installation, layout, drain locations, roof slopes, thicknesses, crickets and saddles.
 - 2.** Shop drawing shall include: Outline of roof, location of drains, complete board layout of tapered insulation components, thickness and the average "R" value for the completed insulation system.

E. Certification

1. Submit roof manufacturer's certification that insulation fasteners furnished are acceptable to roof manufacturer.
2. Submit roof manufacturer's certification that insulation furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.

1.5 QUALITY ASSURANCE

- A.** Fire Classification, ASTM E-108.
- B.** Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class [A or B or C] for external fire and meets local or nationally recognized building codes.
- C.** Manufacturer's Certificate: Certify that the roof system is adhered properly to meet or exceed the requirements of FM [1-90].
- D.** Pre-installation Meeting: Refer to Division 07 roofing specifications for pre-installation meeting requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- A.** Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B.** Store all insulation materials in a manner to protect them from the wind, sun and moisture damage prior to and during installation. Any insulation that has been exposed to any moisture shall be removed from the project site.
- C.** Keep materials enclosed in a watertight, ventilated enclosure (i.e. tarpaulins).
- D.** Store materials off the ground. Any warped, broken or wet insulation boards shall be removed from the site.

PART 2 — PRODUCTS

2.1 PRODUCTS, GENERAL

- A.** Refer to Division 01 Section "Submittals/Permits."

- B.** Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C.** Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
 - 1.** Proposals shall be accompanied by a copy of the manufacturer's standard specification section. That specification section shall be signed and sealed by a professional engineer licensed in the state in which the installation is to take place. Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.
 - 2.** Include a list of three (3) projects of similar type and extent, located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least five (5) years old and be available for inspection by the Architect, Owner or Owner's Representative.
 - 3.** Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
 - 4.** The Owner's decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

2.2 INSULATION MATERIALS

- A.** Thermal Insulation Properties and Approved Insulation Boards.
 - 1.** Rigid Polyisocyanurate Roof Insulation; ASTM C1289:
 - a.** Qualities: Rigid, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers.
 - b.** Thickness: Minimum [Two layers of 1.5". 3" total].
 - c.** R-Value: Minimum [20]
 - d.** Compliances: UL, WH or FM listed under Roofing Systems

Federal Specification HH-I-1972, Class 1.
 - e.** Acceptable Products:

- 1) ENRGY-3; Johns Manville
- 2) Hytherm; Dow
- 3) GAFTEMP Isotherm R; GAF
- 4) Approved Equivalent

1. High Density Fiberboard Roof Insulation; ASTM C208

- a.** Qualities: Rigid, composed of interlocking fibers factory blended treated with asphalt on the top side.
- b.** Board Size: [Four feet by four feet (4' x 4')]
- c.** Thickness: Minimum [1/2"]
- d.** Compliances: UL, WH, FM listed under Roofing Systems. Federal Specification LLL-I-535-B.
- e.** Acceptable Manufacturers:
 - 1) Celotex
 - 2) Temple Inland
 - 3) GAF Building Materials Corporation
 - 4) Approved Equivalent

2.3 RELATED MATERIALS

- A.** Fiber Cant and Tapered Edge Strips: Performed rigid insulation units of sizes/shapes indicated, matching insulation board or of perlite or organic fiberboard, as per the approved manufacturer.
 - 1.** Acceptable Manufacturers:
 - a.** The Garland Company, Inc. or approved equal.
- B.** Protection Board: Premolded semi-rigid asphalt composition board one half (1/2) inch.

- C.** Roof Board Joint Tape: Six (6) inches wide glass fiber mat with adhesive compatible with insulation board facers.
- D.** Asphalt: ASTM D312, Type III Steep Asphalt.
- E.** Fasteners: Corrosion resistant screw fastener as recommended by roof membrane manufacturer.
 - 1.** Factory Mutual Tested and Approved with three (3) inches coated disc for 1-90 rating, length required to penetrate metal deck one inch.

PART 3 — EXECUTION

3.1 EXECUTION, GENERAL

- A.** Comply with requirements of Division 01 Section 01010: "Summary of Work."

3.2 INSPECTION OF SURFACES

- A.** Roofing contractor shall be responsible for preparing an adequate substrate to receive insulation.
 - 1.** Verify that work which penetrates roof deck has been completed.
 - 2.** Verify that wood nailers are properly and securely installed.
 - 3.** Examine surfaces for defects, rough spots, ridges, depressions, foreign material, moisture, and unevenness.
 - 4.** Do not proceed until defects are corrected.
 - 5.** Do not apply insulation until substrate is sufficiently dry.
 - 6.** Broom clean substrate immediately prior to application.
 - 7.** Use additional insulation to fill depressions and low spots that would otherwise cause ponding water.
 - 8.** Verify that temporary roof has been completed.

3.3 INSTALLATION

- A.** Attachment with Mechanical Fasteners.
 - 1.** Approved insulation board shall be fully attached to the deck with an approved mechanical fastening system. As a minimum, the amount of fasteners shall be in accordance with manufacturer's recommendation for FM 1-90 system. Otherwise, a minimum of one fastener per two square feet shall be installed.
 - 2.** Filler pieces of insulation require at least two fasteners per piece if size of insulation is less than four square feet.
 - 3.** Spacing pattern of fasteners shall be as per manufacturer's recommendations to meet the FM requirements. Placement of any fastener from edge of insulation board shall be a minimum of three inches, and a maximum of six (6) inches.
 - 4.** Minimum penetration into deck shall be as recommended by the fastener manufacturer. There is a one (1) inch minimum for metal, wood and structural concrete decks where not specified by the manufacturer. For gypsum and cement-wood fiber decks, penetration shall be determined from pull-out test results with a minimum penetration of one and one-half (1 ½) inches.

3.4 CLEANING

- A.** Remove debris and cartons from roof deck. Leave insulation clean and dry, ready to receive roofing membrane.

3.5 CONSTRUCTION WASTE MANAGEMENT

- A.** Remove and properly dispose of waste products generated during installation. Comply with requirements of authorities having jurisdiction

END OF SECTION

SECTION 07 42 14 - METAL WALL PANELS

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A.** This Section includes pre-formed metal wall panels with concealed fasteners, factory-finished.
- B.** Related Work Specified Elsewhere:
 - 1.** Division 07 Section - Roof and Deck Insulation
 - 2.** Division 07 Section - Sheet Metal Flashing and Trim

1.3 REFERENCES

- A.** American Iron and Steel Institute (AISI):
 - 1.** SG02-1 2001 Edition of the North American Specification for the Design of Cold Formed Steel Structural Members.
- B.** American Society for Testing and Materials (ASTM):
 - 1.** A653-03 Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip process.
 - 2.** B209-02a Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- C.** Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - 1.** 1993 Architectural Sheet Metal Manual, 5th edition.
- D.** American Society of Civil Engineers (ASCE):
 - 1.** ASCE 7-05 Minimum Design Loads for Buildings and Other Structures

1.4 SUBMITTALS FOR REVIEW

- A.** Shop Drawings: Show wall panels (and roofing system, if applicable) with flashings and accessories in elevations, sections and details. Include metal thickness and finishes, panel lengths, joining details, anchorage details, flashings and special fabrication provisions for termination and penetrations. Indicate relationships with adjacent and interfacing work. Indicate fastener types and spacing; and provide fastener pullout values. Shop drawings must be completed by the wall panel manufacturer's engineering department. Any and/or all changes recommended by the successful bidder must be approved by the manufacturer in writing prior to submittal.
- B.** Product Data: Include manufacturer's detailed material and system description, concealed anchor clips, sealant and closure installation instructions, and finish specifications. Indicate fastener types and spacing; and required fastener pullout values.
- C.** Samples: Provide full-size samples of the following materials and system components. Samples shall be of identical material type, thickness, panel width, and material grade/alloy as the system specified for this project.
 - 1.** Submit sample of panel section, at least 4" long x full panel width showing panel profile and also a sample of color selected.
 - 2.** Submit sample of foam closure strips to fit inside and outside specified panel profile.
 - 3.** Submit sample of panel fasteners.
- D.** Specimen Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.

1.5 SUBMITTALS FOR INFORMATION

- A.** Design and Test Reports: Provide the following certified test reports from an independent testing laboratory:
 - 1.** A letter from an officer of the manufacturing company certifying that the materials furnished for this project are the same as represented in tests and supporting data.
 - 2.** Manufacturer's verifications that the panels are factory roll formed.
- B.** Mill production reports certifying that the steel thicknesses are within allowable tolerances of the nominal or minimum thickness or gauge specified.
- C.** Qualification Data for Installer. Refer to Quality Assurance Article below.

1.6 CONTRACT CLOSEOUT SUBMITTALS

- A.** General: Comply with Requirements of Division 01 Section 01700: Closeout Submittals.
- B.** Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
- C.** Wall Panel Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed systems.

1.7 QUALITY ASSURANCE

- A.** Installer Qualifications: Engage an Installer who has completed the Manufacturer's Approved Contractor course and is currently certified for the installation of the specified system.
- B.** If required, fabricator/installer shall submit work experience and evidence of adequate financial Responsibility. The Owner's representative reserves the right to inspect fabrication facilities in determining qualifications.
- C.** Source Limitations: Obtain all components of the wall panel system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the Manufacturer.
 - 1.** Upon request of the Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
 - 2.** Manufacturer shall have direct authority and control over all fabrication of steel components as well as the raw materials used in their fabrication.
- D.** Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001 approval.
- E.** Engage the Manufacturer's Field Representative to conduct required periodic inspections of work in progress as described herein and shall furnish written documentation of all such inspections.
- F.** Manufacturer shall provide the Owner project with a written statement that they will provide a site inspection daily that confirms that the project is being constructed as specified, by an experienced, full time employee of the company.

1.8 PRE-INSTALLATION CONFERENCE

- A.** Convene a pre-installation conference approximately two (2) weeks before scheduled commencement of modified bituminous roofing system installation and associated work.
- B.** Require attendance of installer of each component of associated work which must precede or follow wall panel work (including mechanical or electrical work if any), Owner, system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, testing agencies and governing authorities.
- C.** Objectives of conference to include:
 - 1.** Review foreseeable methods and procedures related to work, including set up and mobilization areas for stored material and work area.
 - 2.** Tour representative areas of building, inspect and discuss condition of substrates, penetrations and other preparatory work performed by others.
 - 3.** Review structural loading limitations of wall framing and inspect for unacceptable variations in planarity
 - 4.** Review system requirements (drawings, specifications and other contract documents).
 - 5.** Review required submittals both completed and yet to be completed.
 - 6.** Review and finalize construction schedule related to work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.
 - 7.** Review required inspection, testing, certifying and material usage accounting procedures.
 - 8.** Review weather and forecasted weather conditions and procedures for unfavorable conditions, including possibility of temporary wall protection (if not mandatory requirement).
 - 9.** Record discussion of conference including decisions and agreements (or disagreements) reached. Furnish a copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
 - 10.** Review notification procedures for weather or non-working days.

- D.** The Owner's Representative will designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.
- E.** The intent of the conference is to resolve issues affecting the installation and performance of wall panel work. Do not proceed with work until such issues are resolved the satisfaction of the Owner. This shall not be construed as interference with the progress of Work on the part of the Owner of Record.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Manufacturer's responsibilities:

- 1.** All panels shall be shipped from the manufacturer with polystyrene or similar cushioned packaging material separating the individual panels to minimize flexing, stressing, scratching or otherwise damaging the material during transit to the job.
- 2.** Fully cover steel with tarpaulins or similar protective cover during transit to prevent dirt and debris from coming in contact with the finished goods.

B. Installer's responsibilities:

- 1.** Stack pre-finished materials to prevent twisting, bending, abrasion and denting and elevate one end to facilitate moisture run-off.
- 2.** Unload wall panels using a boom or crane, supporting the panels in at least two locations during lifting, and never lift more than three panels at a time.
- 3.** Protect moisture-sensitive materials and water-based from the weather.
- 4.** Inspect materials upon delivery. Reject and remove physically damaged or marred material from project site.

1.10 PROJECT CONDITIONS

A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage and protection requirements for wall panel system.

1. Protection:

- a.** Protect completed work from subsequent construction operations. Comply with Manufacturer's recommendations.
- b.** Do not encumber the site with stored materials or equipment.

- C.** Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
 - 1.** Proposals shall be accompanied by a copy of the manufacturer's standard specification section. That specification section shall be signed and sealed by a professional engineer licensed in the state in which the installation is to take place. Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.
 - 2.** Include a list of three (3) projects of similar type and extent, located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least five (5) years old and be available for inspection by the Architect, Owner or Owner's Representative.
 - 3.** Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
 - 4.** The Owner's decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

2.2 ACCEPTABLE MANUFACTURERS

- A.** The design is based upon metal wall panel systems engineered and manufactured by The Garland Company or approved equals; see Section 01300 Submittals.
- B.** Site Formed Panels: Bidder will not be allowed to supply panels formed at the job-site on portable rollformers; metal panels must be factory pre-manufactured and engineered for this project.

2.3 METAL WALL PANEL SYSTEM

- A.** General.
 - 1.** Product designations for the metal wall panel system and waterproofing materials used in this Section are based on performance characteristics of the R-Mer Line Metal Wall Panel system manufactured by The Garland Company or approved equal; see Section 01300 Submittals.
- B.** Materials.
 - 1.** Panel material: 24 ga., Galvanized steel, type G-90, smooth as per ASTM A653-96.

2. Flashing and flat stock material: Fabricate in profiles indicated on drawings of same material, thickness, and finish as wall panel system, unless indicated otherwise.
- C.** Finish on surfaces:
1. Exposed surfaces for coated panels:
 - a. Two-coat coil-applied, baked-on full-strength (70% resin) fluorocarbon coating system (polyvinylidene fluoride, PVF2), applied by manufacturer's approved applicator.
 - b. Coating system shall provide nominal 1.0 mil dry film thickness, consisting of primer and color coat.
 - c. Color shall be GARLAND [Standard color; owner to choose].
 2. Unexposed surfaces for coated panels shall be baked-on polyester coating with .20 - .30 dry film thickness (TDF).
 3. Exposed and unexposed surfaces for uncoated panels shall be as shipped from the mill.
- D.** Characteristics:
1. Fabrication: Panels shall be factory roll-formed from the specified metal. Field rolled panels will not be allowed.
 2. Configuration: Panel shall have interlocking seams which conceal fasteners.
 3. Panel Length: Full Length without joints.
 4. Panel Coverage Width: 12"
 5. Panel Depth (Concealed Leg Height): 1"
 6. Mechanical Finish: Panel surface shall have two (2) equally spaced vee grooves.
- E.** Accessories:
- Fasteners:

1. Anchor fasteners (Concealed fasteners): Corrosion resistant steel screws, #10 x length appropriate for substrate, pancake head, Phillips or Square drive. Use self-drilling, self-tapping for metal substrate or A-point for plywood substrate.
2. Exposed Trim Fasteners (trim to panel): Trim fasteners shall be #6x1/2" SS410 Teks 1 Round washer head, painted to match panel color. Fastener material shall be stainless steel washer head.

2.4 ACCESSORY PRODUCTS

A. Sealant:

1. Acceptable product:
 - a. Concealed Application: Non-curing butyl sealant or equal.
 - b. Exposed Application: Tripolymer of polyurethane sealant or equal.
2. Colors: As selected by the Architect from sealant manufacturer's standard selection.

B. Underlayment.

1. Underlayment shall be applied over entire wall substrate area.
2. Underlayment shall be one ply of 30 pound saturated building felts. Seams shall be lapped in accordance with manufacturer's recommendations.

2.5 FABRICATION

- A. Shop fabricate metal panels and flashing components to the maximum extent possible, forming metal work with clear, sharp, straight, and uniform bends and rises. Hem exposed edges of flashings.
- B. Form flashing components from full single width sheet in minimum ten (10'-0") feet sections. Provide shop fabricated, mitered corners, joined using closed end pop rivets and joint sealant.
- C. Fabricate panels and related sheet metal work in accordance with approved shop drawings and applicable standards.

PART 3 — EXECUTION

3.1 EXECUTION, GENERAL

- A.** Comply with requirements of Division 01 Section 01010 "Summary of Work."

3.2 PREPARATION

- A.** Inspection: Examine the alignment and placement of the building structure and substrate. Correct any objectionable warp, waves or buckles in the substrate before proceeding with installation of the pre-formed metal panels.
- B.** Pre-installation conference: Prior to beginning metal wall panel work, convene a pre-installation conference as specified in Part 1 of this Specification.

3.3 WALL PANEL INSTALLATION

- A.** All details will be shown on manufacturer's shop drawings to successful bidder; install panels and flashings in accordance with approved shop drawings and manufacturer's product data, within specified erection tolerances.
- B.** Isolate dissimilar metals and masonry or concrete from metals with bituminous coating. Use gasketed fasteners where required to prevent corrosive action between fastener, substrate, and panels.
- C.** Limit exposed fasteners to extent indicated on shop drawings.
- D.** Seal laps and joints in accordance with roofing system manufacturer's product data.
- E.** Coordinate flashing and sheet metal work to provide weather-tight conditions at wall panel terminations. Fabricate and install in accordance with standards of SMACNA Manual.
- F.** Installed system shall be true to line and plane and free of dents, and physical defects. In light gauge panels with wide flat surfaces, some oil canning may be present. Oil canning does not affect the finish or structural integrity of the panel and is therefore not cause for rejection.
- G.** Form joints in linear sheet metal to allow for one fourth (1/4) inch minimum expansion at twenty (20'-0") feet on center maximum and eight (8'-0") feet from corners.
- H.** At joints in linear sheet metal items, set sheet metal items in two (2) one fourth (1/4) inch beads of butyl sealant. Extend sealant over all metal surfaces. Mate components for positive seal. Allow no sealant to migrate onto exposed surfaces.

3.4 CLEANING

- A.** Clean installed work in accordance with the manufacturer's instructions.
- B.** Replace damaged work than cannot be restored by normal cleaning methods.

3.5 CONSTRUCTION WASTE MANAGEMENT

- A.** Remove and properly dispose of waste products generated during construction. Comply with requirements of authorities having jurisdiction

3.6 FINAL INSPECTION

- A.** At completion of installation and associated work, meet with Contractor, installer, installer of associated work, Owner, system manufacturer's representative, and other representatives directly concerned with performance of system.
- B.** Inspect work and flashing of penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C.** Repair or replace deteriorated or defective work found at time above inspection as required to a produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- D.** Notify the City upon completion of corrections.
- E.** Following the final inspection, provide written notice of acceptance of the installation from the system manufacturer.
- F.** Immediately correct roof leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

3.7 DEMONSTRATION AND TRAINING

- A.** At a time and date agreed to by the Owner, instruct the Owner's facility manager, or other representative designated by the Owner, on the following procedures:
 - 1.** Troubleshooting procedures.
 - 2.** Notification procedures for reporting leaks or other problems.
 - 3.** Maintenance.

Milwaukee Fire Department
Bureau of Construction and Maintenance
Engine 28 Roof Replacement

4. The Owner's obligations for maintaining the warranty in effect and force.
5. The Manufacturer's obligations for maintaining the warranty in effect and force.

END OF SECTION 07 42 14 - METAL WALL PANELS

SECTION 07 52 00 - MODIFIED BITUMINOUS MEMBRANE ROOFING - HOT APPLIED

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including the Conditions of the Contract and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

- A.** Section includes modified bituminous roofing system.
- B.** Related Work Specified Elsewhere:
 - 1.** Quality Assurance: Section 01433 – Roofing Manufacturer’s Field Services.
 - 2.** Roof Insulation: Section 07 22 00 - Roof Insulation.

1.3 REFERENCES

- A.** American Society of Civil Engineers (ASCE):
 - 1.** ASCE 7-05, Minimum Design Loads for Buildings and Other Structures.
- B.** American Society for Testing and Materials (ASTM):
 - 1.** ASTM D41 Standard Specification for Asphalt Primer Used in Roofing, Dampproofing and Waterproofing.
 - 2.** ASTM D312 Standard Specification for Asphalt Used in Roofing.
 - 3.** ASTM D451 Standard Test Method for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing Products.
 - 4.** ASTM D1079 Standard Terminology Relating to Roofing, Waterproofing and Bituminous Materials.
 - 5.** ASTM D1227 Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing.
 - 6.** ASTM D1863 Standard Specification for Mineral Aggregate Used as a Protective Coating for Roofing.

7. ASTM D2178 Standard Specification for Asphalt Glass Felt Used as a Protective Coating for Roofing.
 8. ASTM D4586 Standard Specification for Asphalt Roof Cement.
 9. ASTM D2824 Standard Specification for Aluminum-Pigmented Asphalt Roof Coating.
 10. ASTM D4601 Standard Specification for Asphalt Coated Glass Fiber Base Sheet Used in Roofing.
 11. ASTM D5147 Standard Test Method for Sampling and Testing Modified Bituminous Sheet Materials.
 12. ASTM D6162 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
 13. ASTM D6163 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
 14. ASTM E108 Standard Test Methods for Fire Test of Roof Coverings.
- C.** Factory Mutual Research (FM):
1. Roof Assembly Classifications.
- D.** National Roofing Contractors Association (NRCA):
1. Roofing and Waterproofing Manual.
- E.** Underwriters Laboratories, Inc. (UL):
1. Fire Hazard Classifications.
- F.** Warnock Hersey (WH):
1. Fire Hazard Classifications.
- G.** American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI)
1. ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal

1.4 SUBMITTALS FOR REVIEW

- A.** Product Data: Provide manufacturer's technical product data for each type of roofing product specified. Include data substantiating that materials comply with specified requirements.
- B.** Samples: Submit two (2) samples of the following:
 - 1.** 1 lb. sample of roofing aggregate for review.
- C.** Specimen Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.
- D.** Any material submitted as equal to the specified material must be accompanied by a report signed and sealed by a professional engineer licensed by the State of Wisconsin. This report shall show that the submitted equal meets the Design and Performance criteria in this specification. Substitution requests submitted without licensed engineer approval will be rejected for non-conformance.

1.5 SUBMITTALS FOR INFORMATION

- A.** Manufacturer's Installation Instructions: Submit installation instructions and recommendations indicating special precautions required for installing the membrane.
- B.** Manufacturer's Certificate: Certify that roof system furnished is approved by Factory Mutual, Underwriters Laboratories, Warnock Hersey or approved third party testing facility in accordance with ASTM E108, Class [A or B or C] for external fire and meets local or nationally recognized building codes.
- C.** Manufacturer's Certificate: Certify that the roof system is adhered properly to meet or exceed the requirements of FM [1-90].
- D.** Manufacturer's Certificate: Certify that the roof system furnished is approved or accepted by Factory Mutual Approval Standard 4470.
- E.** Manufacturer's Certificate: Certify that materials are manufactured in the United States and conform to requirements specified herein, are chemically and physically compatible with each other, and are suitable for inclusion within the total roof system specified herein.
- F.** Manufacturer's Certificate: Submit a certified copy of the roofing manufacturer's ISO 9001 compliance certificate.
- G.** Test Reports: Submit test reports, prepared by an independent testing agency, for all modified bituminous sheet roofing, indicating compliance with ASTM D5147.

- H. Written certification from the roofing system manufacturer certifying the applicator is currently authorized for the installation of the specified roof system.
- I. Design Loads: Submit copy of manufacturer's minimum design load calculations according to ASCE 7-05, Method 2 for Components and Cladding, sealed by a registered professional engineer. In no case shall the design loads be taken to be less than those detailed in Design and Performance Criteria article of this specification.
- J. Qualification data for firms and individuals identified in Quality Assurance Article below.
- K. Test Reports: Submit third party validation of environmental claims, prepared UL Environment, and for all modified bituminous sheet material containing recycled content and/or bio based content.

1.6 CONTRACT CLOSEOUT SUBMITTALS

- A. General: Comply with Requirements of Division 01 Section - Closeout Submittals.
- B. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
- C. Roofing Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed roofing systems.
- D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.
- E. Demonstration and Training Schedule: Provide a schedule of proposed dates and times for instruction of Owner's personnel in the maintenance requirements for completed roofing work. Refer to Part 3 for additional requirements.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this Section with not less than [12] years documented experience [and have ISO 9001 certification].
- B. Installer Qualifications: Company specializing in modified bituminous roofing installation with not less than [5] years experience and authorized by roofing system manufacturer as qualified to install manufacturer's roofing materials.
- C. Installer's Field Supervision: Maintain a full-time Supervisor/Foreman on job site during all phases of roofing work while roofing work is in progress. Maintain proper supervision of workmen.

- D.** Maintain a copy of the Contract Documents in the possession of the Supervisor/Foreman and on the roof at all times.
- E.** Source Limitations: Obtain all components of roof system from a single manufacturer. Secondary products that are required shall be recommended and approved in writing by the roofing system Manufacturer.
 - 1.** Upon request of the Owner, submit Manufacturer's written approval of secondary components in list form, signed by an authorized agent of the Manufacturer.
- F.** Source Quality Control: Manufacturer shall have in place a documented, standardized quality control program such as ISO-9001.

1.8 PRE-INSTALLATION CONFERENCE

- A.** Pre-Installation Roofing Conference: Convene a pre-roofing conference approximately two (2) weeks before scheduled commencement of modified bituminous roofing system installation and associated work.
- B.** Require attendance of installer of each component of associated work, installers of deck or substrate construction to receive roofing work, installers of rooftop units and other work in and around roofing that must precede or follow roofing work (including mechanical work if any), Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of the Work, including (where applicable) Owner's insurers, testing agencies and governing authorities. Objectives of conference include:
 - 1.** Review foreseeable methods and procedures related to roofing work, including set up and mobilization areas for stored material and work area.
 - 2.** Tour representative areas of roofing substrates (decks), inspect and discuss condition of substrate, roof drains, curbs, penetrations and other preparatory work performed by others.
 - 3.** Review structural loading limitations of deck and inspect deck for loss of flatness and for required attachment.
 - 4.** Review roofing system requirements (drawings, specifications and other contract documents).
 - 5.** Review required submittals both completed and yet to be completed.
 - 6.** Review and finalize construction schedule related to roofing work and verify availability of materials, installer's personnel, equipment and facilities needed to make progress and avoid delays.

7. Review required inspection, testing, certifying and material usage accounting procedures.
 8. Review weather and forecasted weather conditions and procedures for coping with unfavorable conditions, including possibility of temporary roofing (if not mandatory requirement).
 9. Record discussion of conference including decisions and agreements (or disagreements) reached and furnish copy of record to each party attending. If substantial disagreements exist at conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
 10. Review notification procedures for weather or non-working days.
- C. The Owner's Representative will designate one of the conference participants to record the proceedings and promptly distribute them to the participants for record.
 - D. The intent of the conference is to resolve issues affecting the installation and performance of roofing work. Do not proceed with roofing work until such issues are resolved to the satisfaction of the Owner of Record. This shall not be construed as interference with the progress of Work on the part of the Owner of Record.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site with seals and labels intact, in manufacturer's original containers, dry and undamaged.
- B. Store and handle roofing sheets in a dry, well-ventilated, weather-tight place to prevent moisture exposure. Store rolls of felt and other sheet materials on pallets or other raised surface. Stand all roll materials on end. Cover roll goods with a canvas tarpaulin or other breathable material (not polyethylene).
- C. Do not leave unused materials on the roof overnight or when roofing work is not in progress unless protected from weather and other moisture sources.
- D. Secure all material and equipment on the job site. If any material or equipment is stored on the roof, assure that the integrity of the deck is not compromised at any time. Damage to the deck caused by the Contractor's actions will be the sole responsibility of the Contractor, and the deck will be repaired or replaced at his expense.

1.10 MANUFACTURER'S INSPECTIONS

- A. When the Project is in progress, the roofing system manufacturer will provide the following:

1. Report progress and quality of the work as observed.
2. Provide daily job site inspections.
3. Report to the Owner in writing any failure or refusal of the Contractor to correct unacceptable practices called to the Contractor's attention.
4. Confirm after completion that manufacturer has observed no application procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.11 PROJECT CONDITIONS

- A. Proceed with roofing work only when existing and forecasted weather conditions will permit a unit of work to be installed in accordance with manufacturer's recommendations and warranty requirements.
- B. Do not apply roofing insulation or membrane to damp deck surface.
- C. Do not expose materials subject to water or solar damage in quantities greater than can be weatherproofed during same day.
- D. All slopes greater than 2:12 require back-nailing to prevent slippage of the ply sheets. Use ring or spiral-shank one (1) inch cap nails, or screws and plates at a rate of one (1) fastener per ply (including the membrane) at each insulation stop. Place insulation stops at 16 ft o.c. for slopes less than 3:12 and four (4) ft o.c. for slopes greater than 3:12. On non-insulated systems, nail each ply directly into the deck at the rate specified above. When slope exceeds 2:12, install all plies parallel to the slope (strapping) to facilitate backnailing. Install four (4) additional fasteners at the upper edge of the membrane when strapping the plies.

1.12 SEQUENCING AND SCHEDULING

- A. Sequence installation of roofing with related units of work specified in other Sections to ensure that roof assemblies, including roof accessories, flashing, trim and joint sealers, are protected against damage from effects of weather, corrosion and adjacent construction activity.
- B. Complete all roofing field assembly work each day. Phased construction will not be accepted.

1.13 WARRANTY

- A. Upon completion of installation, and acceptance by the Owner, the Manufacturer will supply to the Owner the appropriate warranty.

- B. Installer will submit a [two (2)]-year warranty to the membrane manufacturer with a copy directly to Owner.

1.14 DESIGN AND PERFORMANCE CRITERIA

- A. Uniform Wind Uplift Load Capacity
 - 1. Installed roof system shall withstand negative (uplift) design wind loading pressures complying with the following criteria. Attachment shall be installed exactly as given in Part 3.

**See attached Wind Uplift document included in the specification.

PART 2 — PRODUCTS

2.1 PRODUCTS, GENERAL

- A. Refer to Division 01 Section Common Product Requirements.
- B. Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.
- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
 - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification Section. That specification Section shall be signed and sealed by a professional engineer licensed in the state in which the installation is to take place. Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.
 - 2. Include a list of three (3) projects of similar type and extent, located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least five (5) years old and be available for inspection by the Architect, Owner or Owner's Representative.
 - 3. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
 - 4. The Owner's decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

2.2 ACCEPTABLE MANUFACTURERS

- A. The design is based upon roofing systems engineered and manufactured by The Garland Company or approved equals; see Section 01300 Submittals.

2.3 DESCRIPTION

- A. Modified bituminous roofing work including but not limited to:
 - 1. Minimum two (2) plies of approved ASTM D2178, Type IV glass fiber roofing felt bonded to the prepared substrate with hot bitumen.
 - 2. Hot Bitumen: ASTM D312, Type III steep asphalt having the following characteristics:
 - a. Softening Point 185°F - 205°F
 - b. Flash Point 500°F
 - c. Penetration @ 77°F 15-35 units
 - d. Ductility @ 77°F 2.5 cm
 - 3. Base Flashing Ply: One (1) ply of a double-coated polyester-fiberglass-polyester base sheet covered by an additional layer of modified bitumen membrane and set in bitumen.
 - 4. Modified Membrane: 115 mil SBS and SIS (Styrene-Butadiene-Styrene and Styrene-Isoprene-Styrene) rubber modified membrane incorporating post consumer recycled rubber and reinforced with a fiberglass and polyester composite scrim.
 - 5. Surfacing: Flood coat of cold applied adhesive and ASTM D1863 roofing aggregate consisting of pea gravel.
 - 6. Cold Applied Flood Coat Adhesive: heavy bodied, fiber-reinforced topcoat. Performance Requirements:
 - a. Non-Volatile Content ASTM D4479 75%
 - b. Density ASTM D1475 9.1 lbs./gal. (1 kg/L)

2.5 SHEET MATERIALS

- A. Felt Plies: Fiberglass Felts: ASTM D2178, Type IV
- B. Base Flashing Ply: Double coated Polyester-Fiberglass-Polyester scrim with the following minimum performance requirements according to ASTM D5147.

MINIMUM PERFORMANCE CHARACTERISTICS:

- 1. Tensile Strength (ASTM D5147)
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 315 lbf/in CMD 315 lbf/in
 - b. 50mm/min. @ 23 ± 3°C MD 55kN/m CMD 55kN/m
- 2. Tear Strength (ASTM D5147)
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 550 lbf CMD 550 lbf
 - b. 50mm/min. @ 23 ± 3°C MD 2446N CMD 2446N
- 3. Elongation at Maximum Tensile (ASTM D5147)
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 5.0% CMD 6.0%
 - b. 50mm/min. @ 23 ± 3°C MD 5.0% CMD 5.0%

- C. Modified Membrane Properties (Finished Membranes/Finish Flashing Ply): ASTM D6162, Type III Grade S

MINIMUM PERFORMANCE CHARACTERISTICS:

- 1. Tensile Strength (ASTM D5147):
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 700 lbf/in CMD 750 lbf/in
 - b. 50 mm/min. @ 23 ± 3°C MD 122.5 kN/m CMD 131.2 kN/m
- 2. Tear Strength (ASTM D5147)
 - a. 2 in/min. @ 73.4 ± 3.6°F MD 1300 lbf CMD 1400 lbf

diameter. Omit metal discs when one-piece composite nails or fasteners with heads not less than one (1) inch diameter are used.

- E.** Metal Discs: Flat discs or caps of zinc-coated sheet metal not lighter than twenty eight (28) gauge and not less than one (1) inch in diameter. Form discs to prevent dishing. Bell or cup shaped caps are not acceptable.
- F.** Walkway Pads: Not required.
- G.** Walkway Pad Adhesive: Not required.
- H.** Rust Inhibitive Paint: As recommended and furnished by the membrane manufacturer for mechanical units and other metal surfaces to control and prevent surface rust.
- I.** Urethane Sealant: One part, non-sag sealant as recommended and furnished by the membrane manufacturer for moving joints.
 - 1. Tensile Strength (ASTM D412) 250 psi
 - 2. Elongation (ASTM D412) 950%
 - 3. Hardness, Shore A (ASTM C920) 35
 - 4. Adhesion-in-Peel (ASTM C920) 30 pli
- J.** Sealant: Single component, 100% solids structural adhesive as furnished and recommended by the membrane manufacturer.
 - 1. Elongation (ASTM D412) 300%
 - 2. Hardness, Shore A (ASTM C920) 50
 - 3. Shear Strength (ASTM D1002) 300 psi
- K.** Butyl Tape: 100% solids, asbestos free and compressive tape designed to seal as recommended and furnished by the membrane manufacturer.
- L.** Pitch Pocket Sealer: Two part, 100% solids, self leveling, polyurethane sealant for filling pitch pans as recommended and furnished by the membrane manufacturer.
 - 1. Durometer (ASTM D2240) 40-50 Shore

- 2. Elongation (ASTM D412) 250%
- 3. Tensile Strength (ASTM D412) 200 @ 100 mil
- M. Glass Fiber Cant: Continuous triangular cross Section made of inorganic fibrous glass used as a cant strip as recommended and furnished by the membrane manufacturer.
- N. Flashing Boot: Neoprene pipe boot for sealing single or multiple pipe penetrations adhered in approved adhesives as recommended and furnished by the membrane manufacturer.
- O. Vents and Breathers: Heavy gauge aluminum and fully insulated vent that allows moisture and air to escape but not enter the roof system as recommended and furnished by the membrane manufacturer.
- P. Roof Drains: Drain system as recommended and furnished by the membrane manufacturer.
- Q. Pitch pans, Rain Collar 24 gauge stainless or 20oz (567gram) copper. All joints should be welded/soldered watertight. See details for design.
- R. Drain Flashings should be 4lb (1.8kg) sheet lead formed and rolled
- S. Plumbing stacks should be 4lb (1.8kg) sheet lead formed and rolled.

PART 3 — EXECUTION

3.1 EXECUTION, GENERAL

- A. Comply with requirements of Division 01 Section "General Requirements."

3.2 EXAMINATION

- A. Verify that deck surfaces and project conditions are ready to receive work of this Section.
- B. Verify that deck is supported and secured to structural members.
- C. Verify that deck is clean and smooth, free of depressions, projections or ripples, and is properly sloped to drains.
- D. Verify that adjacent roof substrate components do not vary more than [1/4] inch in height.
- E. Verify that deck surfaces are dry.

- F.** Confirm that moisture content does not exceed [twelve (12)] percent by moisture meter tests. On concrete deck pour hot asphalt on to deck if it bubbles / foams and once cooled does not adhere to the substrate, the moisture levels are too high.
- G.** Verify that openings, curbs, pipes, conduit, sleeves, ducts, and other items which penetrate the roof are set solidly, and that wood cant strips and/or wood nailing strips are set in place.

3.3 DECK PREPARATION

- A.** Wood Deck
 - 1.** Verify that wood decking is flat and has tight joints.
 - 2.** Seal plywood joints with tape.
 - 3.** Fill knot holes with latex filler.

3.4 GENERAL INSTALLATION REQUIREMENTS

- A.** Cooperate with manufacturer, inspection and test agencies engaged or required to perform services in connection with installing the roof system.
- B.** Insurance/Code Compliance: Where required by code, install and test the roofing system to comply with governing regulation and specified insurance requirements.
- C.** Protect other work from spillage of roofing materials and prevent materials from entering or clogging drains and conductors. Replace or restore other work damaged by installation of the coal tar modified bituminous roofing system.
- D.** Coordinate installation of roofing system components so that insulation and roofing plies are not exposed to precipitation or left exposed overnight. Provide cut-offs at end of each day's work to cover exposed ply sheets and insulation with two (2) plies of #15 organic roofing felt set in full moppings of bitumen and with joints and edges sealed with roofing cement. Remove cut-offs immediately before resuming work.
- E.** Asphalt Bitumen Heating: Heat and apply bitumen in accordance with the Equiviscous Temperature (EVT) Method as recommended by National Roofing Contractors Association (NRCA). Do not raise temperature above minimum normal fluid-holding temperature necessary to attain EVT (plus 5°F at point of application) more than one (1) hour prior to time of application. Determine flash point, finished blowing temperature, EVT, and fire-safe handling temperature of bitumen either from information by manufacturer or by suitable test. Do not exceed recommended temperature limits during

bitumen heating. Do not heat to a temperature higher than twenty five degrees (25°F) below flash point. Discard bitumen that has been held at temperature exceeding Finishing Blowing Temperature (FBT) for more than three (3) hours. Keep kettle lid closed except when adding bitumen.

- F.** Asphalt Bitumen Mopping Rate:
 - 1.** Interply Mopping: Apply bitumen at the rate of approximately twenty five (25) lb.(11.3kg) of bitumen per roof square.
 - 2.** Modified Membrane Mopping: Apply bitumen at the rate of approximately thirty (30) lb (13.6kg). of bitumen per roof square.
 - 3.** Flood Coat: Apply bitumen at the rate of approximately sixty (60) to seventy (70) lb.(27-31kg) of bitumen per square (plus or minus twenty five (25) percent on a total job average basis).
- G.** Substrate Joint Penetrations: Prevent bitumen from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- H.** Apply roofing materials as specified by manufacturer's instructions.
 - 1.** Keep roofing materials dry before and during application.
 - 2.** Do not permit phased construction.
 - 3.** Complete application of roofing plies, modified sheet and flashing in a continuous operation.
 - 4.** Begin and apply only as much roofing in one day as can be completed that same day.
- I.** Cut-Offs (Waterstops): At end of each day's roofing installation, protect exposed edge of incomplete work, including ply sheets and insulation. Provide temporary covering of two (2) plies of #15 organic roofing felt set in full moppings of bitumen with joints and edges sealed.
- J.** Broadcast minerals into the bleed out of bitumen while bitumen is at its recommended EVT temperature to achieve uniform color throughout.

3.5 VAPOR RETARDER INSTALLATION – NOT APPLICABLE.

3.6 INSULATION INSTALLATION

- A.** Deck type: WOOD
- B.** Base Sheet attachment: (Red Rosin base sheet) should be attached according to base sheet attachment detail included in these specifications..
- C.** Insulation: refer to insulation section.
- D.** Insulation attachment: refer to insulation section.

3.7 FELT PLY INSTALLATION

- A.** Fiberglass Plies: Install two (2) fiberglass ply sheets in twenty five (25) lbs (11.3kg) per square of bitumen shingled uniformly to achieve two plies over the entire prepared substrate. Shingle in direction of slope of roof to shed water on each area of roof. Do not step on felt rolls until asphalt has cooled, fish mouths should be cut and patched.
- B.** Lap ply sheet ends eight (8) inches (203mm). Stagger end laps twelve (12) inches (304mm) minimum.
- C.** Lightly broom in fiberglass plies to assure complete adhesion.
- D.** Extend plies two (2) inches (50mm) beyond top edges of cants at wall and roof projections and equipment bases.
- E.** Install base flashing ply to all perimeter and projection details after membrane application.

3.8 MODIFIED MEMBRANE APPLICATION

- A.** Solidly bond the modified membrane to the base layers with specified asphalt at the rate of twenty five (25) to thirty (30) lbs. (11-13kg) per 100 square feet.
- B.** The modified membrane roll must push a puddle of asphalt in front of it with asphalt slightly visible at all side laps. Exercise care during application to eliminate air entrapment under the membrane.
- C.** Apply pressure to all seams to ensure that the laps are solidly bonded to substrate.
- D.** Install subsequent rolls of modified membrane across the roof as above with a minimum of four (4) inch (101mm) side laps and eight (8) inch (203mm) end laps. Stagger the end laps. Apply the modified membrane in the same direction as the previous layers but stagger the laps so they do not coincide with the laps of the base layers.

- E.** Apply asphalt no more than five (5) feet (1.5m) ahead of each roll being embedded.
- F.** Extend membrane two (2) inches (50mm) beyond top edge of all cants in full moppings of the specified asphalt [as shown on the drawings].

3.9 FLASHING MEMBRANE INSTALLATION

- A.** Seal all curb, wall and parapet flashings with an application of mastic and mesh on a daily basis. Do not permit conditions to exist that will allow moisture to enter behind, around or under the roof or flashing membrane.
- B.** Prepare all walls, penetrations, expansion joints [and where shown on the drawings] to be flashed with asphalt primer at the rate of one hundred (100) square feet per gallon. Allow primer to dry tack free.
- C.** Use the modified membrane as the flashing membrane. Adhere to the underlying base flashing ply with specified asphalt unless otherwise noted in these specifications. Nail off at a minimum of eight (8) inches o.c. from the finished roof at all vertical surfaces.
- D.** Solidly adhere the entire sheet of flashing membrane to the substrate.
- E.** Seal all vertical laps of flashing membrane with a three-course application of trowel-grade mastic and fiberglass mesh.
- F.** Coordinate counter flashing, cap flashings, expansion joints, and similar work with modified bitumen roofing work [as specified in other Sections].
- G.** Coordinate roof accessories, miscellaneous sheet metal accessory items, including piping vents and other devices with the roofing system work [as specified in other Sections].
- H.** Roof Edge With Gutter:
 - 1.** Inspect the nailer to assure proper attachment and configuration. Increase slope at metal edge by additional degree of slope in first board.
 - 2.** Run one ply over the edge. Assure coverage of all wood nailers. Fasten plies with ring shank nails at eight (8) inches o.c.
 - 3.** Install gutter and strapping.
 - 4.** Install continuous cleat and fasten at six (6) inches o.c.

5. Install new metal edge hooked to continuous cleat and set in bed of roof cement. Fasten flange to wood nailer every three (3) inches o.c. staggered.
 6. Prime metal edge at a rate of one hundred (100) square feet per gallon and allow to dry.
 7. Strip in flange with base flashing ply covering entire flange in bitumen with six (6) inches onto the field of the roof. Assure ply laps do not coincide with metal laps.
 8. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof.
- I. Coping Cap:
1. Minimum flashing height is eight (8) inches. Maximum flashing height is twenty four (24) inches. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.
 3. Attach tapered board to top of wall.
 4. Install base flashing ply covering entire wall and wrapped over top of wall and down face with six (6) inches on to field of roof and set in hot asphalt. Nail membrane at eight (8) inches o.c.
 5. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of mastic and mesh at all seams and allow to cure and aluminize.
 6. Install continuous cleat and fasten at six (6) inches o.c. to outside wall.
 7. Install new metal coping cap hooked to continuous cleat.
 8. Fasten inside cap twenty four (24) inches o.c. with approved fasteners and neoprene washers through slotted holes which allow for expansion and contraction.
- J. Surface Mounted Counterflashing/Coping Cap:
1. Minimum flashing height is eight (8) inches. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.

3. Install base flashing ply covering wall set in bitumen with six (6) inches on to field of roof.
 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of mastic and mesh at all seams and allow to cure and aluminize.
 5. Apply butyl tape to wall behind flashing. Secure termination bar through flashing, butyl tape and into wall.
 6. Secure counterflashing set on butyl tape above flashing. Fasten eight (8) inches o.c. and caulk top of counterflashing.
 7. Attach tapered board to top of wall (minimum slope $\frac{1}{4}$ -12)(Do not use organic fiberboard or perlite).
 8. Cover tapered board and all exposed wood with base flashing ply. Fasten inside and out at eight (8) inches o.c.
 9. Install continuous cleat and fasten at six (6) inches o.c. to outside wall.
 10. Install new metal coping cap hooked to continuous cleat.
 11. Fasten inside of cap twenty four (24) inches o.c. with approved fasteners and neoprene washers.
- к. Surface Mounted Counterflashing:
1. Minimum flashing height is eight (8) inches. Maximum flashing height is twenty four (24) inches. Prime vertical wall at a rate of one hundred (100) square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.
 3. Install base flashing ply covering wall set in bitumen with six (6) inches on to field of the roof.
 4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
 5. Apply butyl tape to wall behind flashing. Secure termination bar through flashing, butyl tape and into wall.

6. Secure counterflashing set on butyl tape above flashing at eight (8) inches o.c. and caulk top of counterflashing.

L. Manufactured Wall Panel W/Modified Roof/Flashing (Slip Flashing):

1. Minimum flashing height is eight (8) inches. Prime vertical wall at a rate of 100 square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all plies over a cant a minimum of two (2) inches.
3. Install base flashing ply covering wall with six (6) inches on to field of the roof.
4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install manufacturer's standard hat channel into the top of the modified membrane to act as a termination bar.
6. Install hat channels at twenty four (24) inches o.c. vertically spaced up the wall.
7. Install the uppermost hat channel at the bottom edge of the coping cap. Insert rigid insulation between the hat channels. Place manufacturer's standard seam tape on top of all hat channels.
8. Fasten the first manufactured wall panel vertically plumb and fasten every six (6) inches o.c.
9. Install adjoining panels by engaging the opposing interlocking seam and fastening as described above.
10. Complete inside and outside corners by installing pre-fabricated corners or job site braking a full width panel to accommodate the corner, so that the sides engage the lock of the panels to the corner areas.
11. Trim excess seam tape and seam raw edges with manufacturer's recommended sealant.
12. Fasten slip flashing to existing coping cap with a waterproof rivet every twenty four (24) inches o.c. to act as a counterflashing over the manufactured wall panel.

M. Equipment Support:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.
3. Install base flashing ply covering curb set in bitumen with six (6) inches on to field of the roof.
4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Attach top of membrane to top of curb and nail at eight (8) inches o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install pre-manufactured cover. Fasten sides at twenty four (24) inches o.c. with fasteners and neoprene washers. Furnish all joint cover laps with butyl tape between metal covers.
6. Set equipment on neoprene pad and fasten as required by equipment manufacturer.

N. Curb Detail/Air Handling Station:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
2. Set cant in bitumen. Run all field plies over cant a minimum of two (2) inches.
3. Install base flashing ply covering curb set in bitumen with six (6) inches on to field of the roof.
4. Install a second ply of modified flashing ply in bitumen over the base flashing ply, nine (9) inches on to the field of the roof. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install pre-manufactured counterflashing with fasteners and neoprene washers or per manufacturer's recommendations.
6. Set equipment on neoprene pad and fasten as required by equipment manufacturer.

O. Pre-manufactured Curb For Equipment Support:

1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.

2. Run all field plies over cant of the pre-manufactured equipment support a minimum of two (2) inches.
 3. Install base flashing ply covering pre-manufactured curb with six (6) inches on to field of the roof.
 4. Install a second ply of modified flashing ply installed over the base flashing ply, nine (9) inches on to field of the roof. Attach top of membrane to top of wood curb and nail at eight (8) inches o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
 5. Install pre-manufactured cover. Fasten sides at twenty four (24) inches o.c. with fasteners and neoprene washers. Furnish all joint cover laps with butyl tape between metal covers.
 6. Set equipment on neoprene pad and fasten as required by equipment manufacturer.
- P. Exhaust Fan:**
1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all plies over cant a minimum of two (2) inches.
 3. Install base flashing ply covering curb with six (6) inches on to field of the roof.
 4. Install a second ply of modified flashing ply installed over the base flashing ply, nine (9) inches on to field of the roof. Attach top of membrane to top of wood curb and nail at eight (8) inches o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
 5. Install metal exhaust fan over the wood nailers and flashing to act as counterflashing. Fasten per manufacturer's recommendation.
- Q. Passive Vent/Air Intake:**
1. Minimum curb height is eight (8) inches. Prime vertical at a rate of one hundred (100) square feet per gallon and allow to dry.
 2. Set cant in bitumen. Run all plies over cant a minimum of two (2) inches.
 3. Install base flashing ply covering curb with six (6) inches on to the field of the roof.

4. Install a second ply of modified flashing ply installed over the base flashing ply, nine (9) inches on to field of the roof. Attach top of membrane to top of wood curb and nail at eight (8) inches o.c. Apply a three-course application of mastic and mesh at all vertical seams and allow to cure and aluminize.
5. Install passive vent/air intake over the wood nailers and flashing to act as counterflashing. Fasten per manufacturers recommendations.

R. Plumbing Stack:

1. Minimum stack height is twelve (12) inches.
2. Run roof system over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
3. Prime flange of new sleeve. Install properly sized sleeves set in (1/4) inch bed of roof cement.
4. Install base flashing ply in bitumen.
5. Install membrane in bitumen.
6. Caulk the intersection of the membrane with elastomeric sealant.
7. Turn sleeve a minimum of one (1) inch down inside of stack.

S. Heat Stack:

1. Minimum stack height is twelve (12) inches.
2. Run roof system over the entire surface of the roof. Seal the base of the stack with elastomeric sealant.
3. Prime flange of new sleeve. Install properly sized sleeves set in (1/4) inch bed of roof cement.
4. Install base flashing ply in bitumen.
5. Install modified membrane in bitumen.
6. Caulk the intersection of the membrane with elastomeric sealant.
7. Install new collar over cape. Weld collar or install stainless steel draw brand.

T. Pitch Pocket Umbrella:

1. Run all plies up to the penetration.
2. Place the pitch pocket over the penetration and prime all flanges.
3. Strip in flange of pitch pocket with one (1) ply of base flashing ply. Extend six (6) inches onto field of roof.
4. Install second layer of modified membrane extending nine (9) inches onto field of the roof.
5. Fill pitch pocket half full with non-shrink grout. Let this cure and top off with pourable sealant.
6. Caulk joint between roof system and pitch pocket with roof cement.
7. Place a watershedding type bonnet over the top of the pitch pocket and clamp the top with a drawband collar. Caulk the upper edge of the band with an elastomeric sealant.

3.10 APPLICATION OF SURFACING

A. Aggregate Surfacing:

1. Apply surfacing materials in quantities specified (five hundred (500) lbs. (226 kg) per square for aggregate, four hundred (400) lbs. (181 kg) per square for slag). Uniformly embed aggregate in a flood coat of cold bitumen at a rate of four (4) to five (5) gallons per square coverage after felt flashings, tests, repairs and corrective actions have been completed and approved.
2. Paint all exposed membrane with manufacturer's Energy Star acrylic coating installed at a rate of one (1) gallon per square per coat in a two coat application.

3.11 FIELD QUALITY CONTROL

- A.** Perform field inspection and [and testing] as required [under provisions of Division 01 Section Quality Requirements].
- B.** Correct defects or irregularities discovered during field inspection.

- C. Require attendance of roofing [and insulation] materials manufacturers' representatives at site during installation of the roofing system. A copy of the specification should also be on site at all times.

3.12 CLEANING

- A. Remove bitumen adhesive drippings from all walls, windows, floors, ladders and finished surfaces.
- B. In areas where finished surfaces are soiled by asphalt or any other sources of soiling caused by work of this Section, consult manufacturer of surfaces for cleaning instructions and conform to their instructions.
- C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.13 CONSTRUCTION WASTE MANAGEMENT

- A. Remove and properly dispose of waste products generated during roofing procedures. Comply with requirements of authorities having jurisdiction.

3.14 FINAL INSPECTION

- A. At completion of roofing installation and associated work, meet with Contractor, installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B. Walk roof surface areas of the building, inspect perimeter building edges as well as flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C. The roofing system manufacturer reserves the right to request a thermographic scan of the roof during final inspection to determine if any damp or wet materials have been installed. The thermographic scan shall be provided by the [Roofing] Contractor.
- D. If core cuts verify the presence of damp or wet materials, the [Roofing] Contractor shall be required to replace the damaged areas at his own expense.
- E. Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- F. Notify the Owner upon completion of corrections.
- G. Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.

- H. Immediately correct roof leakage during construction. If the Contractor does not respond within twenty four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

3.15 DEMONSTRATION AND TRAINING

- A. At a time and date agreed to by the Owner, instruct the Owner's facility manager, or other representative designated by the Owner, on the following procedures:
 1. Roof troubleshooting procedures.
 2. Notification procedures for reporting leaks or other apparent roofing problems.
 3. Roofing maintenance.
 4. The Owner's obligations for maintaining the roofing warranty in effect and force.
 5. The Manufacturer's obligations for maintaining the roofing warranty in effect and force.

END OF SECTION 07 52 00 - MODIFIED BITUMINOUS MEMBRANE
ROOFING - HOT APPLIED

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 — GENERAL

1.1 RELATED DOCUMENTS

- A.** Drawings and general provisions of the Contract, including the Conditions of the Contract and Division 01 Specification Sections apply to this section.

1.2 SUMMARY

- A.** Provide all labor, equipment, and materials to fabricate and install the following.
 - 1.** Edge strip and flashing.
 - 2.** Coping cap at parapets..
 - 3.** Gutters and down spouts.
- B.** Related Work Specified Elsewhere:
 - 1.** Division 07 Section Modified Bituminous Membrane Roofing
 - 2.** Division 07 Section Manufactured Metal Wall Panels.

1.3 REFERENCES

- A.** American Society for Testing and Materials (ASTM)
 - 1.** ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (galvanized) or Zinc-Iron Alloy-Coated (galvannealed) by the Hot-Dip Process.
 - 2.** ASTM A792 Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process.
 - 3.** ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 4.** ASTM B221 Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 5.** ASTM D692 Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.

- B.** American National Standards Institute and Single Ply Roofing Institute (ANSI/SPRI)
 - 1.** ANSI/SPRI ES-1 Testing and Certification Listing of Shop Fabricated Edge Metal.
- C.** Warnock Hersey International, Inc., Middleton, WI (WH)
- D.** Factory Mutual Research Corporation (FMRC)
- E.** Underwriters Laboratories (UL)
- F.** Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 - 1.** 1993 Edition Architectural Sheet Metal Manual
- G.** National Roofing Contractors Association (NRCA)
 - 1.** Roofing and Waterproofing Manual
- H.** American Society of Civil Engineers (ASCE)
 - 1.** ASCE 7-05 Minimum Design Loads for Buildings and Other Structures.

1.4 SUBMITTALS FOR REVIEW

- A.** Product Data:
 - 1.** Provide manufacturer's specification data sheets for each product.
 - 2.** Metal material characteristics and installation recommendations.
 - 3.** Submit color chart prior to material ordering and/or fabrication so that equivalent colors to those specified can be approved.
- B.** Samples: Submit two (2) samples, illustrating typical metal edge, coping, gutters, fascia extenders for material and finish.
- C.** Shop Drawings
 - 1.** For manufactured and ANSI/SPRI approved shop fabricated gravel stops, fascia, scuppers, and all other sheet metal fabrications.
 - 2.** Indicate material profile, jointing pattern, jointing details, fastening methods, flashing, terminations, and installation details.

3. Indicate type, gauge and finish of metal.
- D. Specimen Warranty: Provide an unexecuted copy of the warranty specified for this Project, identifying the terms and conditions required of the Manufacturer and the Owner.

1.5 SUBMITTALS FOR INFORMATION

- A. Design Loads: Any material submitted as equal to the specified material must be accompanied by a report signed and sealed by a professional engineer licensed in the state in which the installation is to take place. This report shall show that the submitted equal meets the wind uplift and perimeter attachment requirements according to ASCE 7-05 and ANSI/SPRI ES-1. Substitution requests submitted without licensed engineer approval will be rejected for non-conformance.
- B. Factory Mutual Research Corporation's (FMRC) wind uplift resistance classification: The roof perimeter flashing shall conform to the requirements as defined by the FMRC Loss Prevention Data Sheet 1-49.
- C. A letter from an officer of the manufacturing company certifying that the materials furnished for this project are the same as represented in tests and supporting data.:
- C. Mill production reports certifying that the steel thicknesses are within allowable tolerances of the nominal or minimum thickness or gauge specified.
- D. Certification of work progress inspection. Refer to Quality Assurance Article below.
- E. Certifications:
 1. Submit roof manufacturer's certification that metal fasteners furnished are acceptable to roof manufacturer.
 2. Submit roof manufacturer's certification that metal furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.

1.6 CONTRACT CLOSEOUT SUBMITTALS

- A. General: Comply with Requirements of Section 01700 – Cleaning & Project Closeout.
- B. Special Project Warranty: Provide specified warranty for the Project, executed by the authorized agent of the Manufacturer.
- C. Roofing Maintenance Instructions. Provide a manual of manufacturer's recommendations for maintenance of installed roofing systems.

- D. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance on roofing and associated work.

1.7 QUALITY ASSURANCE

- A. Engage an experienced roofing contractor specializing in sheet metal flashing work with a minimum of five (5) years experience.
- B. Maintain a full-time supervisor/foreman who is on the job-site at all times during installation. Foreman must have a minimum of five (5) years experience with the installation of similar system to that specified.
- C. Source Limitation: Obtain components from a single manufacturer. Secondary products which cannot be supplied by the specified manufacturer shall be approved in writing by the primary manufacturer prior to bidding.
- D. Upon request fabricator/installer shall submit work experience and evidence of financial responsibility. The Owner's representative reserves the right to inspect fabrication facilities in determining qualifications.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's original, unopened containers or packages with labels intact and legible.
- B. Stack pre-formed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- C. Prevent contact with materials which may cause discoloration or staining.

1.9 PROJECT CONDITIONS

- A. Determine that work of other trades will not hamper or conflict with necessary fabrication and storage requirements for pre-formed metal edge system.

1.10 DESIGN AND PERFORMANCE CRITERIA

- A. Thermal expansion and contraction:
 - 1. Completed metal edge flashing system shall be capable of withstanding expansion and contraction of components caused by changes in temperature without buckling, producing excess stress on structure, anchors or fasteners, or reducing performance ability.

1.11 WARRANTIES

- A.** Owner shall receive one (1) warranty from manufacturer of roofing materials covering all of the following criteria. Multiple warranties are not acceptable.
 - 1.** Pre-finished metal material shall require a written twenty (20)-year non-prorated warranty covering fade, chalking and film integrity. The material shall not show a color change greater than 5 NBS color units per ASTM D2244 or chalking excess of 8 units per ASTM D659. If either occurs material shall be replaced per warranty, at no cost to the Owner.
 - 2.** Changes: Changes or alterations in the edge metal system without prior written consent from the manufacturer shall render the system unacceptable for a warranty.
 - 3.** Warranty shall commence on date of substantial completion or final payment, whichever is agreed by contract.
 - 4.** The Contractor shall provide the Owner with a notarized written warranty assuring that all sheet metal work including caulking and fasteners to be watertight and secure for a period of two years from the date of final acceptance of the building. Warranty shall include all materials and workmanship required to repair any leaks that develop, and make good any damage to other work or equipment caused by such leaks or the repairs thereof.
 - 5.** Installing roofing contractor shall be responsible for the installation of the edge metal system in general accordance with the membrane manufacturer's recommendations.
 - 6.** Installing contractor shall certify that the edge metal system has been installed per the manufacturer's printed details and specifications.
 - 7.** One manufacturer shall provide a single warranty for all accessory metal for flashings, metal edges and copings, along with the warranty for metal roof areas, membrane roof areas, and any transitions between two different material types.

PART 2 — PRODUCTS

2.1 PRODUCTS, GENERAL

- A.** Refer to Division 01 Section "Common Product Requirements."
- B.** Basis of Design: Materials, manufacturer's product designations, and/or manufacturer's names specified herein shall be regarded as the minimum standard of quality required for

work of this Section. Comply with all manufacturer and contractor/fabricator quality and performance criteria specified in Part 1.

- C. Substitutions: Products proposed as equal to the products specified in this Section shall be submitted in accordance with Bidding Requirements and Division 01 provisions.
 - 1. Proposals shall be accompanied by a copy of the manufacturer's standard specification section. That specification section shall be signed and sealed by a professional engineer licensed by the State of Wisconsin. **Substitution requests containing specifications without licensed engineer certification shall be rejected for non-conformance.**
 - 2. Include a list of three (3) projects of similar type and extent, located within a one hundred mile radius from the location of the project. In addition, the three projects must be at least five (5) years old and be available for inspection by the Architect, Owner or Owner's Representative.
 - 3. Equivalency of performance criteria, warranty terms, submittal procedures, and contractual terms will constitute the basis of acceptance.
 - 4. The Owner's decision regarding substitutions will be considered final. Unauthorized substitutions will be rejected.

2.2 ACCEPTABLE MANUFACTURERS

- A. The design is based upon roofing systems engineered and manufactured by The Garland Company or approved equals; see Submittals Section 01300.

2.3 MATERIALS

- A. General: Product designations for the materials used in this section shall be based on performance characteristics of the R-MER Edge System manufactured by the Garland Company, Cleveland, OH, and shall form the basis of the contract documents.
- B. Materials:
 - 1. Minimum gauge of steel or thickness of Aluminum to be specified in accordance with Architectural Sheet Metal Manual, Sheet Metal and Air Conditioning Contractor's National Association, Inc. recommendations
 - 2. Unexposed base metal material:

R-Mer Edge Coping Chairs

- A. Zinc-coated steel, ASTM A653, coating designation G-90, in thickness of 0.0635 nom./ 16 gauge, 36" to 48" by coil length, chemically treated, commercial or lock-forming quality.

3. Exposed base metal material:

R-Mer Edge Coping

- A. Zinc-coated steel, ASTM A653, coating designation G-90, in thickness of 24 gauge, 22 gauge or 20 gauge, 36" to 48" by coil length, chemically treated, commercial or lock-forming quality.
- A. Aluminum, ASTM B209, alloy 3105-H14, in thickness of .032" nom. or .040" nom. or .050" nom. or .063" nom.

C. Finishes:

1. Exposed surfaces for coated panels:

- a. Steel Finishes: fluorocarbon finish. Epoxy primer baked both sides, .2-.25 mils thickness as approved by finish coat manufacturer.

Weathering finish as referred by National Coil Coaters Association (NCCA).

PROPERTY	TEST METHOD	FLUOROCARBON*
Pencil Hardness	ASTM D3363 NCCA II-2	HB-H
Bend	ASTM D-4145 NCCA II-19	O-T
Cross-Hatch Adhesion	ASTM D3359	no loss of adhesion
Gloss (60° angle)	ASTM D523	25+/-5%
Reverse Impact	ASTM D2794	no cracking or loss of adhesion
Nominal Thickness	ASTM D1005	

Primer	0.2 mils
Topcoat	0.8 mils
TOTAL	1.0 mils

* Subject to minimum quantity requirements

b. Color shall be as specified

- 2.** Exposed and unexposed surfaces for mill finish flashing, fascia, and coping cap, shall be as shipped from the mill.
- 3.** Exposed and unexposed surfaces for anodized aluminum flashing, fascia, and coping cap, shall be as shipped from mill.

2.4 RELATED MATERIALS AND ACCESSORIES

- A.** Metal Primer: Zinc chromate type.
- B.** Plastic Cement: ASTM D 4586
- C.** Sealant: Specified on drawings.
- D.** Underlayment: ASTM D2178, No15 asphalt saturated roofing felt.
- E.** Slip Sheet: Rosin sized building paper.
- F.** Fasteners:
 - 1.** Corrosion resistant screw fastener as recommended by metal manufacturer. Finish exposed fasteners same as flashing metal.
 - 2.** Fastening shall conform to Factory Mutual requirements or as stated on section details, whichever is more stringent.
- G.** Gutter and Downspout Anchorage Devices: Material as specified for system.

PART 3 — EXECUTION

3.1 EXECUTION, GENERAL

Not used

3.2 PROTECTION

- A.** Isolate metal products from dissimilar metals, masonry or concrete with bituminous paint, tape, or slip sheet. Use gasketed fasteners where required to prevent corrosive reactions.

3.3 GENERAL

- A.** Secure fascia to wood nailers at the bottom edge with a continuous cleat.
- B.** Fastening of metal to walls and wood blocking shall comply with building code standards.
- C.** All accessories or other items essential to the completeness of sheet metal installation, whether specifically indicated or not, shall be provided and of the same material as item to which applied.
- D.** Allow sufficient clearances for expansion and contraction of linear metal components. Secure metal using fasteners as required by the system. Exposed face fastening will be rejected.

3.4 INSPECTION

- A.** Verify that curbs are solidly set and nailing strips located.
- B.** Perform field measurements prior to fabrication.
- C.** Coordinate work with work of other trades.
- D.** Verify that substrate is dry, clean and free of foreign matter.
- E.** Commencement of installation shall be considered acceptance of existing conditions.

3.5 MANUFACTURED SHEET METAL SYSTEMS

- A.** Furnish and install manufactured fascia and coping cap systems in strict accordance with manufacturer's printed instructions.
- B.** Provide factory-fabricated accessories including, but not limited to, fascia extenders, miters, scuppers, joint covers, etc. Refer to Source limitation provision in Part 1.

3.6 SHOP-FABRICATED SHEET METAL

- A.** Metal work shall be shop fabricated to configurations and forms in accordance with recognized sheet metal practices.

- B.** Hem exposed edges.
- C.** Angle bottom edges of exposed vertical surfaces to form drip.
- D.** Lap corners with adjoining pieces fastened and set in sealant.
- E.** Form joints for gravel stop fascia system, coping cap with a 3/8" opening between sections. Back the opening with an internal drainage plate formed to the profile of fascia piece.
- F.** Install sheet metal to comply with referenced ANSI/SPRI, SMACNA and NRCA standards.

3.7 FLASHING MEMBRANE INSTALLATION

- A.** Snap-On Coping Cap Detail
 - 1.** Install Miters first.
 - 2.** Position base flashing of the Built-Up and/or Modified Roofing membrane over the wall edge covering nailers completely, fastening eight (8) inches on center. Install membrane and cap sheet with proper material and procedure according to manufacturer's recommendations.
 - 3.** Install minimum sixteen (16) gauge, sixteen (16) inch long by specified width anchor chair at [Contact Garland Representative] feet on center.
 - 4.** Install six (6) inch wide splice plate by centering over sixteen (16) inch long by specified width anchor chair. Apply two beads of sealant to either side of the splice plate's center. Approximately two (2) inches from the coping cap joint. Install Coping Cap by hooking outside hem of coping on outside face of anchor chair. Press downward on inside edge of coping until "snap" occurs and hem is engaged on the entire chair.

3.8 CLEANING

- A.** Clean installed work in accordance with the manufacturer's instructions.
- B.** Replace damaged work than cannot be restored by normal cleaning methods.

3.9 CONSTRUCTION WASTE MANAGEMENT

- A.** Remove and properly dispose of waste products generated. Comply with requirements of authorities having jurisdiction

3.10 FINAL INSPECTION

- A.** At completion of installation and associated work, meet with Contractor, Architect, installer, installer of associated work, Owner, roofing system manufacturer's representative, and other representatives directly concerned with performance of roofing system.
- B.** Inspect work and flashing of roof penetrations, walls, curbs and other equipment. List all items requiring correction or completion and furnish copy of list to each party in attendance.
- C.** Repair or replace deteriorated or defective work found at time above inspection as required to produce an installation which is free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- D.** Notify the Owner upon completion of corrections.
- E.** Following the final inspection, provide written notice of acceptance of the installation from the roofing system manufacturer.
- F.** Immediately correct roof leakage during construction. If the Contractor does not respond within twenty-four (24) hours, the Owner will exercise rights to correct the Work under the terms of the Conditions of the Contract.

3.11 DEMONSTRATION AND TRAINING

- A.** At a time and date agreed to by the Owner, instruct the Owner's facility manager, or other representative designated by the Owner, on the following procedures:
 - 1.** Troubleshooting procedures.
 - 2.** Notification procedures for reporting leaks or other apparent roofing problems.
 - 3.** Maintenance.
 - 4.** The Owner's obligations for maintaining the warranty in effect and force.
 - 5.** The Manufacturer's obligations for maintaining the warranty in effect and force.

END OF SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM



Milwaukee Fire Department

Engine 28 Fire House
424 North 30th St.
Milwaukee, WI 53208

WIND UPLIFT and FASTENER CALCULATIONS

April 9, 2013



Calculations are based on a survey drawing and fastener criteria provided to this office by the Garland Company, Inc. including roof area and elevations. THORSON BAKER & Associates, Inc. (TBA) shall be entitled to rely on such information.

The following calculations have been prepared by TBA for component and cladding wind uplift pressures for the roofing membrane and its attachment to the structure. The structure itself was not reviewed and is not within the scope of these calculations. The building owner is responsible for the adequacy of the roof structure for support of all roofing loads including dead, live, and wind loads.



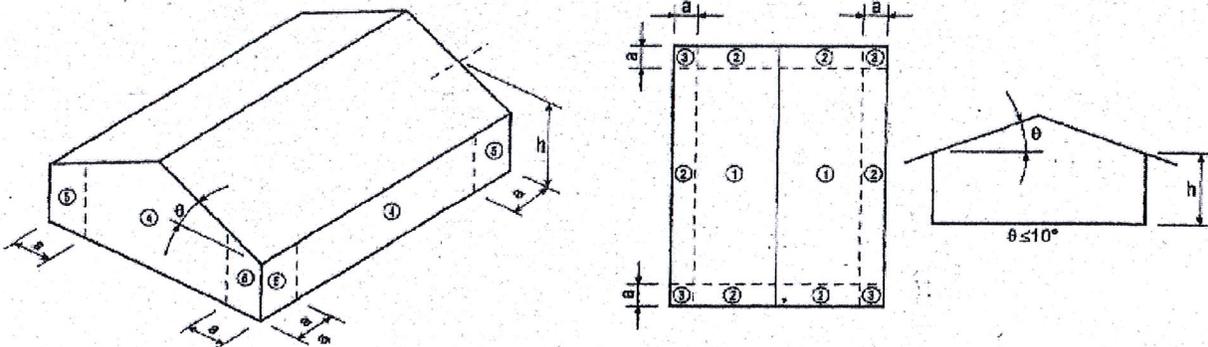
THORSON BAKER & Associates, Inc.

IBC 2009 Wind

Consulting Engineers Project No: 2013-0294 Date: 9-Apr-13
 Project: Mil. Fire Dpmnt Prepared By: MCG
 Project Site: Milwaukee, WI Principal: GRB

Milwaukee Fire Department Wind Uplift Pressure Determination

Roof Pressure 0 to 7 Degrees

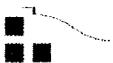


3-Second Gust Wind Velocity		I	Effective Area	Exposure
90	▼	1.15	10	B
Load Direction	Pick One	Height	40	(ft)
Positive (Down)	○	Width	29	(ft)
Negative (Uplift)	⊙	Length	112	(ft)

Roof Pressure				
Height	Adj.	Neg. Press. Zone 1	Neg. Press. Zone 2	Neg. Press. Zone 3
15	1.00	16.79	28.06	42.32
20	1.00	16.79	28.06	42.32
25	1.00	16.79	28.06	42.32
30	1.00	16.79	28.06	42.32
35	1.05	17.63	29.46	44.44
40	1.09	18.30	30.59	46.13
45	1.12	18.80	31.43	47.40
50	1.16	19.48	32.55	49.09
55	1.19	19.98	33.39	50.36
60	1.22	20.48	34.23	51.63

Corner Dim. 3.00 (ft)

- These calculations are based on IBC 2009 and ASCE 7-05
- Component and Cladding wind pressures are based on Method 1
- Occupancy Category IV was used



Project : Milwaukee Fire Department	Date : April 9, 2013
Project Site : Milwaukee , WI	Prepared By : MCG

Milwaukee Fire Department Engine 28 Fire House Fastener Pattern Check

-Check wind uplift on the new roofing attachment fastened to the existing structure-

Connection To The Roof

Deck System Number		W-7
Maximum Design Pressure for System Number W-7		45 psf
Insulation Board Area (4'-0"x8'-0"):		32 ft ²
Design Roof Height:		40 ft
Wind Uplift Pressures:	(Zone 1)	18.3 psf
	(Zone 2)	30.6 psf
	(Zone 3)	46.2 psf

The new decking to be used is system number W-7. This deck is approved for wind uplift pressures of 45 psf. Since Zone 3 has a wind uplift pressure greater than 45 psf, prescriptive enhancements are to be used in these areas (ie Additional fasteners).

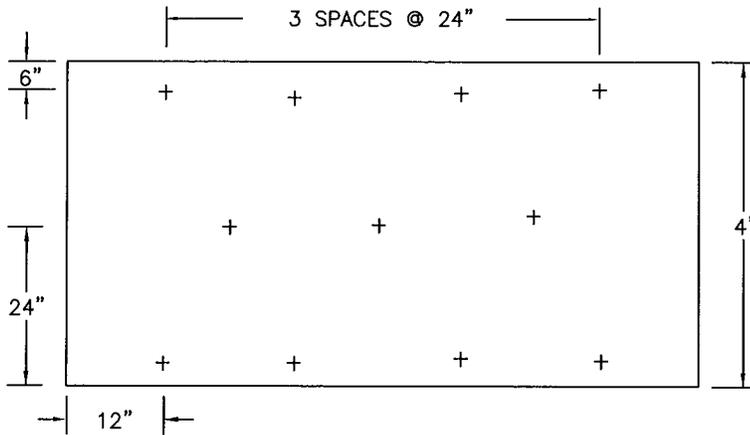
Zone 1:	586 lbs
Zone 2:	979 lbs
Zone 3:	1479 lbs

Zone 1:	11 /board
Zone 2:	17 /board
Zone 3:	22 /board

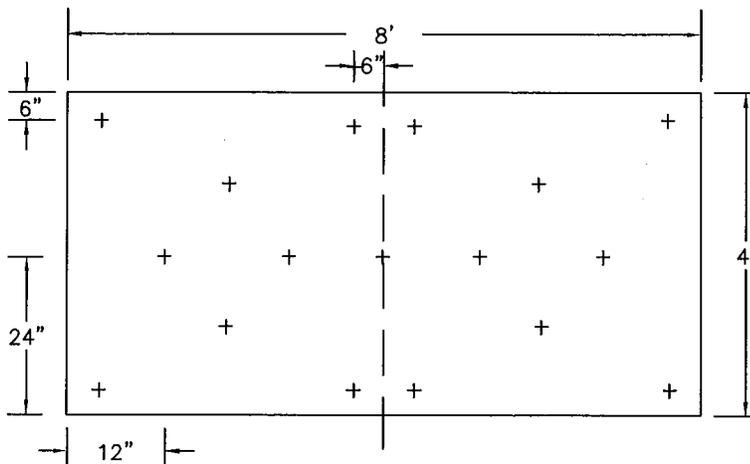
Substrate Thickness:	5/8" Plywood
Fastener Ultimate Pullout Value	460 lbs
Safety Factor (As Provided By Garland)	4
Allowable Pullout Capacity	115 lbs

Zone 1:	1265 lbs	>586 lbs
Zone 2:	1955 lbs	>979 lbs
Zone 3:	2530 lbs	>1479 lbs

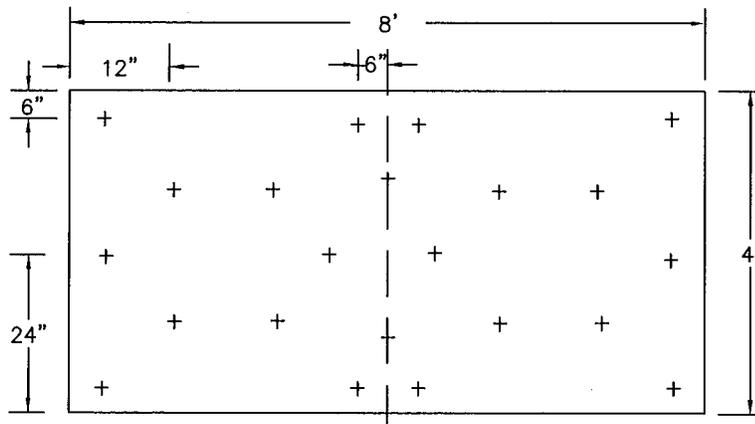
The insulation board and fastener patterns have been shown to be suitable for all roof uplift zones.



ZONE 2 INSULATION BOARD FASTENER PATTERN: 17 FASTENERS PER BOARD



ZONE 3 INSULATION BOARD FASTENER PATTERN: 22 FASTENERS PER BOARD



THE GARLAND COMPANY, INC.

3800 EAST 91st STREET
 CLEVELAND, OHIO 44105-2197
 —PHONE 1-800-321-9336—
 FAX 1-216-641-0633

DETAIL:

4 X 8 BOARD PATTERN

SECTION:

INSULATION BOARD FASTENER PATTERN



153 BOWLES ROAD
 AGAWAM, MA 01001-3824
 413-789-0252
 FAX: 413-789-1069
 www.olyfast.com

TYPICAL PULLOUT VALUES

DECK TYPE	STANDARD	HEAVY DUTY
18 GAUGE STEEL	540 LBS.	585 LBS.
20 GAUGE STEEL	501 LBS.	535 LBS.
22 GAUGE STEEL	456 LBS.	485 LBS.
24 GAUGE STEEL	325 LBS.	360 LBS.
26 GAUGE STEEL	280 LBS.	297 LBS.
28 GAUGE STEEL	245 LBS.	265 LBS.

PULLOUT VALUES FOR STEEL DECKS ARE SUBJECT TO VARIATION DUE TO DECK TOLERANCES AND TENSILE STRENGTH

½" PLYWOOD	364 LBS.	410 LBS.
5/8" PLYWOOD	460 LBS.	502 LBS.
3/4" PLYWOOD	531 LBS.	590 LBS.
7/16" OSB	320 LBS.	346 LBS.
2" SPRUCE PLANK	735 LBS.	820 LBS.

PULLOUT VALUES FOR WOOD DECKS ARE SUBJECT TO VAIATION DUE TO DIFFERENT SPECIES OF WOOD AND PLYWOOD GRADE

OLYLOK FASTENERS

CEMENTITIOUS WOODFIBER	176 LBS.
GYP SUM	262 LBS.

PULLOUT VALUES FOR OLYLOK FASTENERS ARE SUBJECT TO VARIATION DUE TO VARIATIONS IN DECK MANUFACTURERS AND CONDITIONS

3000 PSI CONCRETE **CD-10, FLUTED NAILS AND HD SCREWS WILL ALL ACHIEVE 800 – 1000 LBS. PULLOUT.**

VALUES WILL BE AFFECTED BY AGGREGATE SIZE AND TYPE, AND THE CONDITION / AGE OF THE DECK

THESE ARE TYPICAL VALUES BASED ON INDEPENDENT TEST RESULTS IN NEW DECK MATERIAL. FIELD TEST PER ANSI FX-1 SHOULD BE PERFORMED TO CONFIRM ACTUAL VALUES



TABLE 1B: WOOD DECKS – NEW CONSTRUCTION, REROOF (Tear-Off) or RECOVER

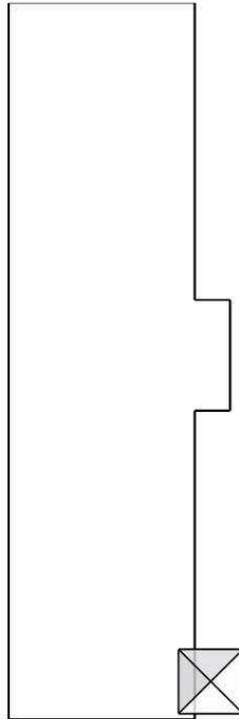
SYSTEM TYPE B: MECHANICALLY ATTACHED BASE INSULATION, BONDED TOP INSULATION, BONDED ROOF COVER

System No.	Deck (See Note 1)	Base Insulation Layer		Top Insulation Layer		Roof Cover			MDP (psf)	
		Type	Fasteners	Attach	Type	Attach	Base	Ply		Cap
CONVENTIONAL SYSTEMS:										
W-6	Min. 23/32-inch plywood attached per Code	Min. 1.5-inch ACFoam II ISO 95+ GL or ENRGY 3	See Note 2	1 per 2.67 ft ²	Min. 0.5-inch FM Approved high density wood fiberboard or min. 0.25-inch DensDeck or DensDeck Prime	IL-II	BP-AA or SBS-AA	(Optional) BP-AA or SBS-AA	SBS-AA	-45.0*
W-7	Min. 23/32-inch plywood attached per Code	Min. 1.8-inch ACFoam II ISO 95+ GL or ENRGY 3	See Note 2	1 per 3 ft ²	Min. 0.5-inch FM Approved high density wood fiberboard or min. 0.25-inch DensDeck or DensDeck Prime	Hot asphalt	BP-AA or SBS-AA	(Optional) BP-AA or SBS-AA	SBS-AA	-45.0*
COLD APPLIED SYSTEMS:										
W-8	Min. 23/32-inch plywood attached per Code	Min. 2-inch ACFoam II Hy-Therm AP, ISO 95+ GL or ENRGY 3	See Note 2	1 per 2 ft ²	Min. 0.5-inch FM Approved high density wood fiberboard	HA, IL-II or IL-HR	BP-CA1 or SBS-CA1	(Optional) BP-CA1 or SBS-CA1	SBS-CA1	-45.0*
W-9	Min. 19/32-inch plywood attached per Code	Min. 1.5-inch ACFoam II ISO 95+ GL or ENRGY 3	See Note 2	1 per 2.67 ft ²	Min. 0.5-inch FM Approved high density wood fiberboard or min. 0.25-inch DensDeck or DensDeck Prime	IL-II	BP-CA1 or SBS-CA1	(Optional) BP-CA1 or SBS-CA1	SBS-CA1	-45.0*
W-10	Min. 19/32-inch plywood attached per Code	Min. 1.8-inch ACFoam II ISO 95+ GL or ENRGY 3	See Note 2	1 per 3 ft ²	Min. 0.5-inch FM Approved high density wood fiberboard or min. 0.25-inch DensDeck or DensDeck Prime	Hot asphalt	BP-CA1 or SBS-CA1	(Optional) BP-CA1 or SBS-CA1	SBS-CA1	-45.0*

**EXISTING
CONDITION
REPORT**



424 North 30th Street, Milwaukee, WI 53208



In this 3D model, facets appear as semi-transparent to reveal overhangs.

Report Details

Report: 4564571

Roof Details

Total Area = 3478 sq ft
Total Roof Facets = 5
Predominant Pitch = 1/12
Number of Stories >1
Total Ridges/Hips = 32 ft
Total Valleys = 0 ft
Total Rakes = 0 ft
Total Eaves = 40 ft
Total Penetrations = 22
Total Penetrations Perimeter = 189 ft
Total Penetrations Area = 105 sq ft

Report Contents

Images1
Length Diagram4
Pitch Diagram5
Area Diagram6
Notes Diagram7
Penetration Diagram8
Report Summary9

Contact: Ryan Owsiany
Company: The Garland Company Inc.
Address: W178S6634 Paige Court
Muskego, WI 53150
Phone: 414-698-7794

Measurements provided by www.eagleview.com



Certified Accurate
www.eagleview.com/Guarantee.aspx

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Images

The following aerial images show different angles of this structure for your reference.



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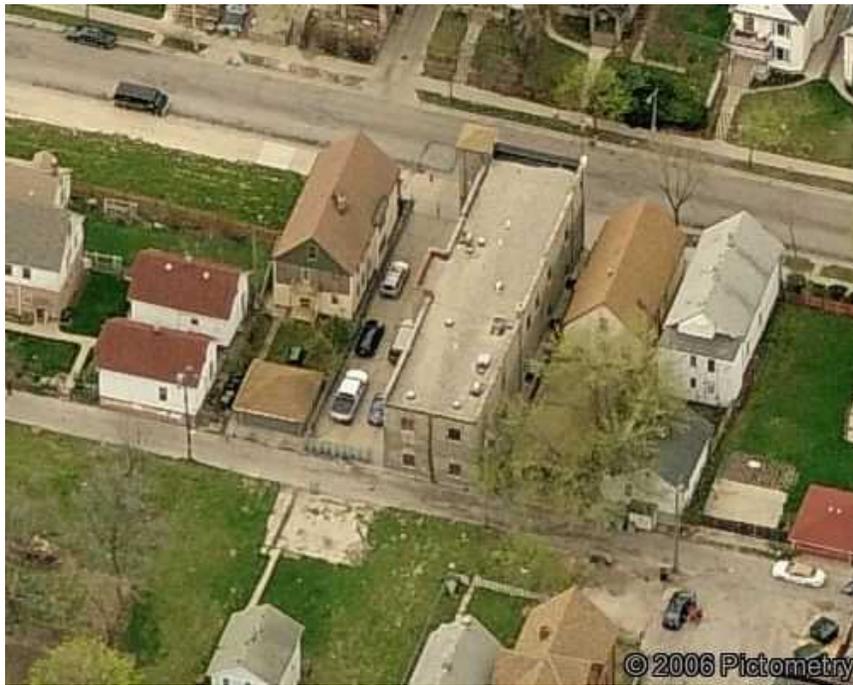
North Side



South Side



East Side



West Side



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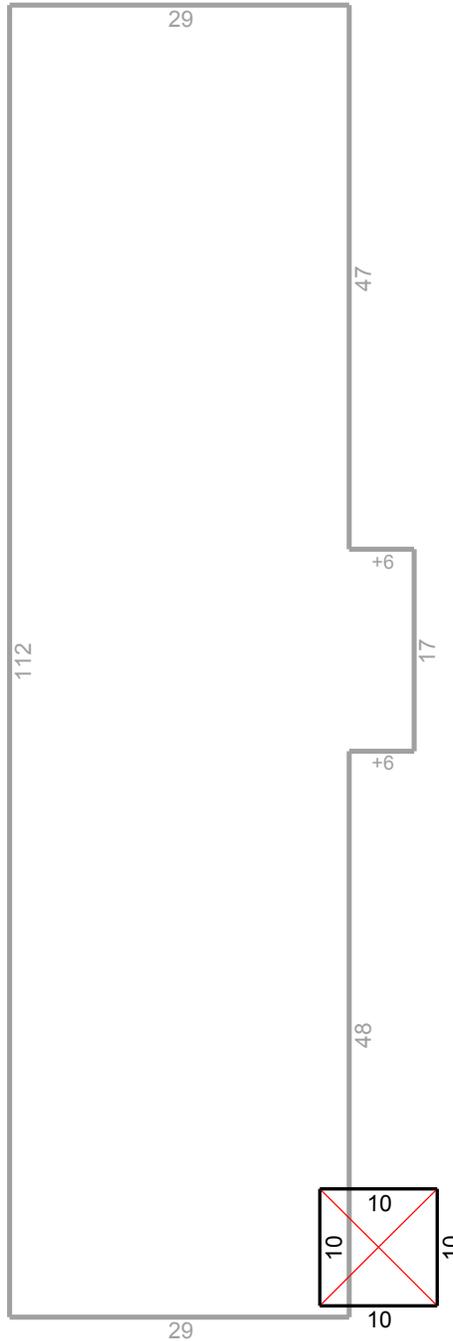
Length Diagram

Total Line Lengths:

Ridges = 0 ft
Hips = 32 ft

Valleys = 0 ft
Rakes = 0 ft
Eaves = 40 ft

Flashing = 0 ft
Step flashing = 0 ft
Parapets = 295 ft



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Note: This diagram contains segment lengths (rounded to the nearest whole number) over 5 feet. In some cases, segment labels have been removed for readability. Plus signs preface some numbers to avoid confusion when rotated (e.g. +6 and +9).

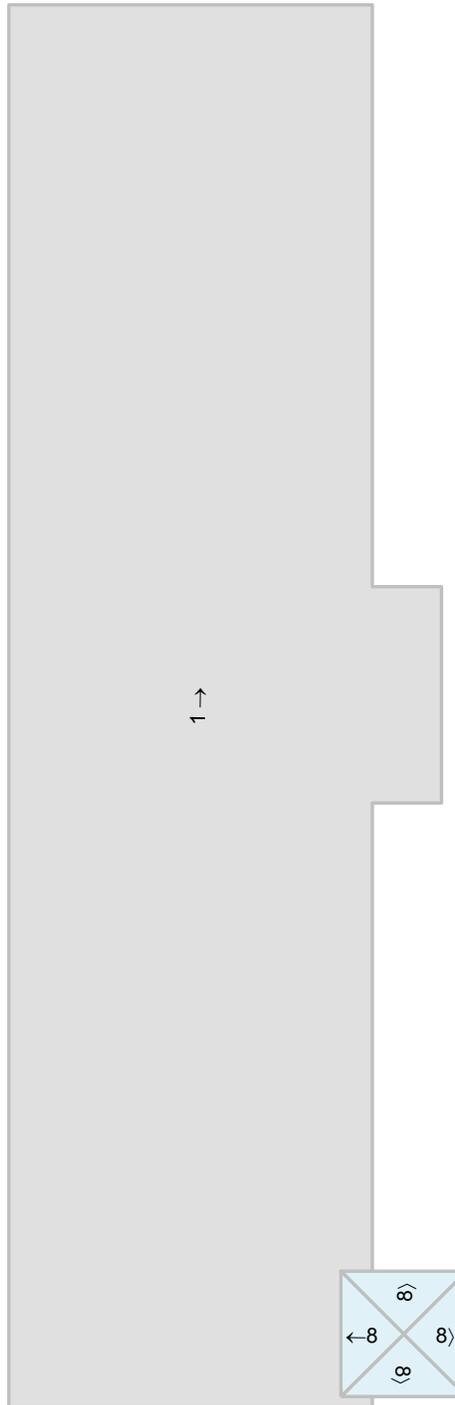


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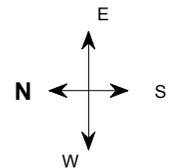


Pitch Diagram

Pitch values are shown in inches per foot, and arrows indicate slope direction. The predominant pitch on this roof is 1/12.



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Note: This diagram contains labeled pitches for facet areas larger than 20 square feet. In some cases, pitch labels have been removed for readability. Blue shading indicates a pitch of 3/12 and greater. Gray shading indicates flat, 1/12 or 2/12 pitches.

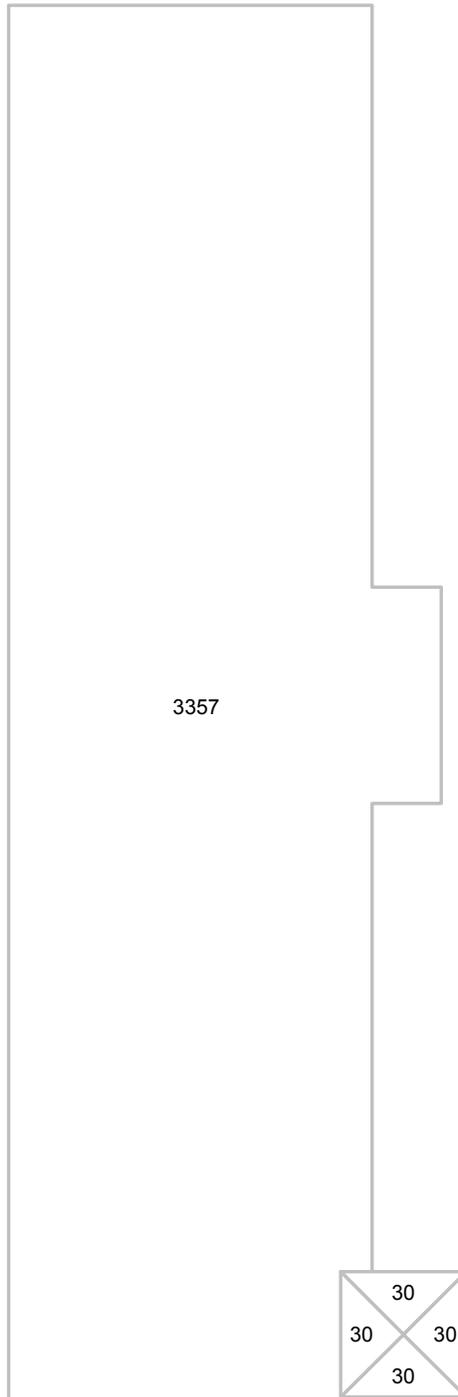


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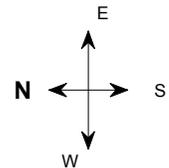


Area Diagram

Total Area = 3478 sq ft, with 5 facets.



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Note: This diagram shows the square feet of each roof facet (rounded to the nearest foot). The total area in square feet, at the top of this page, is based on the non-rounded values of each roof facet (rounded to the nearest square foot after being totaled).

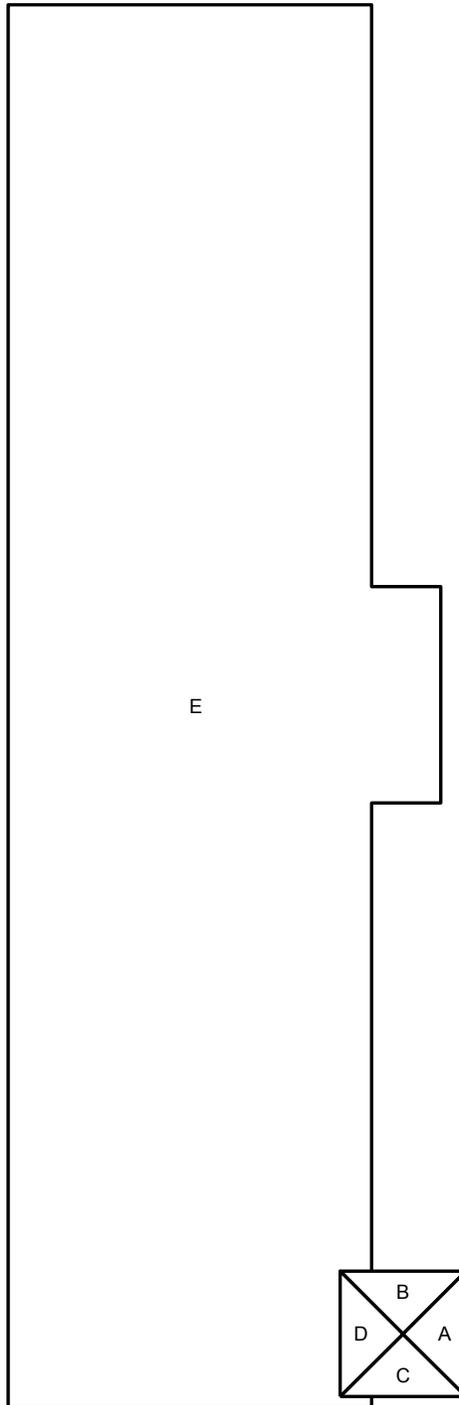


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Notes Diagram

Roof facets are labeled from smallest to largest (A to Z) for easy reference.



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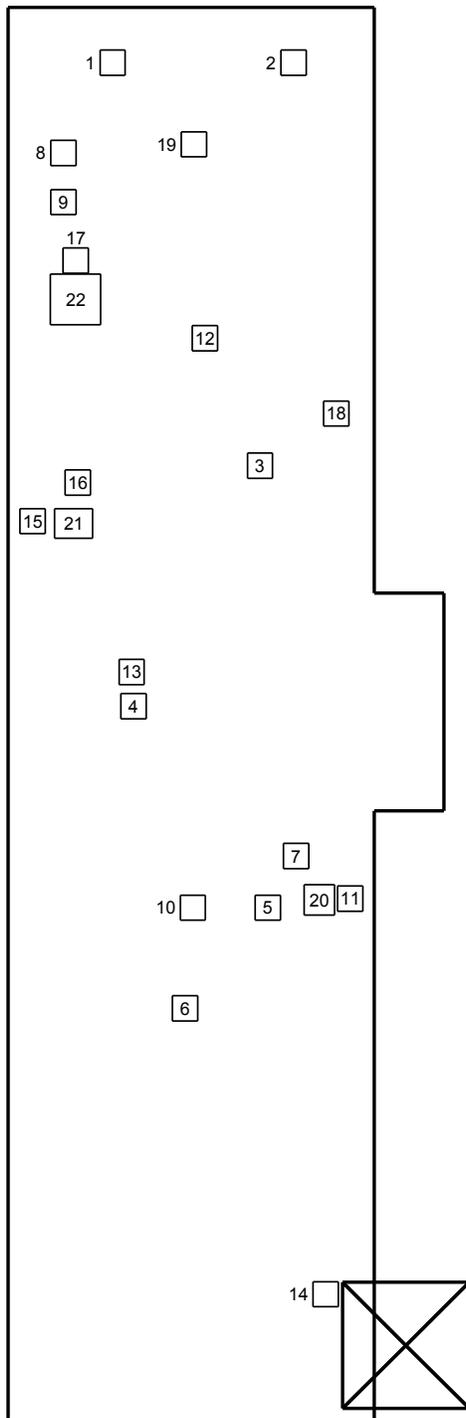


Penetration Notes Diagram

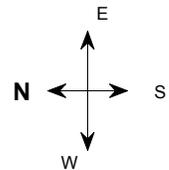
Penetrations are labeled from smallest to largest for easy reference.

Total Penetrations = 22 Total Penetrations Area = 105 sq ft

Total Penetrations Perimeter = 189 ft



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Report Summary

Below is a measurement summary using the values presented in this report.

Areas per Pitch

Roof Pitches	1/12	8/12
Area (sq ft)	3357.1	120.4
% of Roof	96.5%	3.5%

The table above lists each pitch on this roof and the total area and percent (both rounded) of the roof with that pitch.

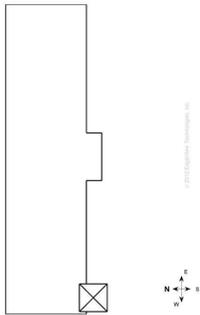
Waste Calculation Table

Waste %	0%	10%	12%	15%	17%	20%	22%
Area (sq ft)	3478	3,826	3,895	4,000	4,069	4,174	4,243
Squares	34.8	38.3	39.0	40.0	40.7	41.7	42.4

This table shows the total roof area and squares (rounded up to the nearest decimal) based upon different waste percentages. The waste factor is subject to the complexity of the roof, individual roofing techniques and your experience. Please consider this when calculating appropriate waste percentages. Note that only roof area is included in these waste calculations. Ridge, hip, valley, and starter lengths may require additional material.

Penetrations	1-19	20	21	22					
Area (sq ft)	4.0	5.7	7.1	16.0					
Perimeter (ft)	8	9.6	10.6	16					

Any measured penetration smaller than 3x3 feet may need field verification. Accuracy is not guaranteed. The total penetration area is not subtracted from the total roof area.



Total Roof Facets = 5
Total Penetrations = 22

Lengths, Areas and Pitches

- Ridges = 0 ft (0 Ridges)
- Hips = 32 ft (4 Hips).
- Valleys = 0 ft (0 Valleys)
- Rakes* = 0 ft (0 Rakes)
- Eaves/Starter** = 40 ft (4 Eaves)
- Drip Edge (Eaves + Rakes) = 40 ft (4 Lengths)
- Parapet Walls = 295 (8 Lengths).
- Flashing = 0 ft (0 Lengths)
- Step flashing = 0 ft (0 Lengths)
- Total Area = 3,478 sq ft
- Predominant Pitch = 1/12
- Total Penetration Perimeter = 189 ft
- Total Penetration Area = 105 sq ft

Property Location

Longitude = -87.9512360
Latitude = 43.0353690

Notes

This was ordered as a commercial property. It was reported to be single structure. There were no changes to the structure in the past four years.

Parapet Wall Area Table

Wall Height (ft)	1	2	3	4	5	6	7
	295	590	885	1180	1475	1770	2065

* Rakes are defined as roof edges that are sloped (not level).
** Eaves are defined as roof edges that are not sloped and level.



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Vertical Wall Area (sq ft)

This table provides common parapet wall heights to aid you in calculating the total vertical area of these walls. Note that these values assume a 90 degree angle at the base of the wall. Allow for extra materials to cover cant strips and tapered edges.

Online Maps

Online map of property

http://maps.google.com/maps?f=g&source=s_q&hl=en&geocode=&q=424+North+30th+Street,Milwaukee,WI,53208



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Additional Property Information**Property Details**

Year Built/Effective Year Built:	N/A N/A
Last Known Roof Permit:	N/A

Effective Year Built is when the property's major components were revised to meet that year's code.

Weather Data

Last Hail Event:	5/3/2012
Hail Count:	18

Last hail event is the date of the last recorded hail event (greater than or equal to 3/4") within a one-mile radius.

Hail count is the number of recorded hail events (greater than or equal to 3/4") within a one-mile radius in the past three years.

Data such as weather and property information has been included to enhance your EagleView experience. The data is provided through strategic partners and is not verified by EagleView for accuracy, completeness or reliability.



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