Hand Carry

Contract Routing Form

ROUTING: Urgent Rush printed on: 10/23/2013

==========

Contract between: H & H Electric Co., Inc.
and Dept. or Division: Engineering Division
Name/Phone Number:

Project: Traffic Engineering Electrical Upgrades - 2013

Contract No.: 7172 File No.: 31715
Enactment No.: ~~RES-13-00794~~
Enactment Date: 10/17/2013
Dollar Amount: 123,873.00

(Please DATE before routing)

Signatures Required	Date Received	Date Signed
City Clerk	10/23/13	10/23/13
Director of Civil Rights	10-23-13	10/31/13
Risk Manager	10/31/13	10/31/13
Finance Director	10/31/13	10-31-13
City Attorney 1595	10-31-13	10-31-13
Mayor	11-1-13	11-4-13

Please return signed Contracts to the City Clerk's Office
Room 103, City-County Building for filing.

PO # B1537172

Original + 2 Copies

10/23/2013 14:40:06 enjls - Design Engineer: Kay Schindel, 266-4668. Please call Johanna Johnson, 264-9274, when this contract has been reviewed/signed and is ready to continue routing for signatures. Thank you.

Dis Rights: OK / ~~N/A~~ / Problem Hold
Prev Wage: ~~AA~~ / Agency / No
Contract Value: see above
AA Plan: Approved
Amendment / Addendum #
Type: POS / Dvlp / Sbdv / Gov't / Grant / ~~PW~~ / Goal / Loan / Agrmt

File #:	31715 Version: 1	Name:	Awarding Public Works Contract No. 7172, Traffic Engineeering Electrical Upgrades - 2013.
Type:	Resolution	Status:	Passed
File created:	9/24/2013	In control:	BOARD OF PUBLIC WORKS
On agenda:	10/15/2013	Final action:	10/15/2013
Enactment date:	10/17/2013	Enactment #:	RES-13-00794
Title:	Awarding Public Works Contract No. 7172, Traffic Engineeering Electrical Upgrades - 2013.		
Sponsors:	BOARD OF PUBLIC WORKS		
Attachments:	1. Cont 7172.pdf		

Fiscal Note
Budget authority is available in the Acct. Nos. listed on the attached.
Title
Awarding Public Works Contract No. 7172, Traffic Engineeering Electrical Upgrades - 2013.
Body
BE IT RESOLVED, that the following low bids for miscellaneous improvements be accepted and that the Mayor and City Clerk be and are hereby authorized and directed to enter into a contract with the low bidders contained herein, subject to the Contractor's compliance with Section 39.02 of the Madison General Ordinances concerning compliance with the Affirmative Action provisions **and subject to the Contractor's compliance with Section 33.07 of the Madison General Ordinances regarding Best Value Contracting:**

BE IT FURTHER RESOLVED, that the funds be encumbered to cover the cost of the projects contained herein.

See attached document (Contract No. 7172) for itemization of bids.

PROJECT	CONTRACTOR	AMOUNT OF BID

CONTRACT NO. 7172
TRAFFIC ENGINEERING ELECTRICAL UPGRADES - 2013

	H & H ELECTRIC CO., INC.	$123,873.00
Acct. No. CB53-58401-810698-00-53W1671	$92,904.75	
Contingency 8%±	7,435.25	
Sub-Total	$100,340.00	
Acct. No. EP01-58401-810416-00-53W1671	$30,968.25	
Contingency 8%±	2,481.75	
Sub-Total	$33,450.00	
GRAND TOTAL	$133,790.00	

$123,873.00
FILE

BID OF H & H ELECTRIC CO., INC.

2013

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013

CONTRACT NO. 7172

IN

MADISON, DANE COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL
MADISON, WISCONSIN ON **OCTOBER 15, 2013**

CITY ENGINEERING DIVISION
1600 EMIL STREET
MADISON, WISCONSIN 53713

www.cityofmadison.com/business/pw

https://bidexpress.com/login

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

INDEX

This Proposal, and Agreement have
been prepared by:

CITY ENGINEERING DIVISION
CITY OF MADISON
MADISON, DANE COUNTY, WISCONSIN

Robert F. Phillips, P.E., City Engineer

SECTION A: ADVERTISEMENT FOR BIDS AND INSTRUCTIONS TO BIDDERS

REQUEST FOR BID FOR PUBLIC WORKS CONSTRUCTION
CITY OF MADISON, WISCONSIN

A BEST VALUE CONTRACTING MUNICIPALITY

PROJECT NAME:	TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO.:	7172
SBE GOAL	20%
BID BOND	5%
PRE BID MEETING (1:00 P.M.)	SEPT. 13, 2013
PREQUALIFICATION APPLICATION DUE (1:00 P.M)	SEPT., 13, 2013
BID SUBMISSION (1:00 P.M.)	SEPT. 20, 2013
BID OPEN (1:30 P.M.)	SEPT. 20, 2013
PUBLISHED IN WSJ	9/6/13 & 9/13/13

PRE BID MEETING: Representatives of the Affirmative Action Department will be present to discuss the Small Business Enterprise requirements at 1600 Emil Street, Madison Wisconsin.

PREQUALIFICATION APPLICATION: Forms are available on our website, www.cityofmadison.com/business/pw/forms.cfm. If not currently prequalified in the categories listed in Section A, an amendment to your Prequalification will need to be submitted prior to the same due date. Postmark is not applicable.

BIDS TO BE SUBMITTED by hand to 1600 EMIL ST., MADISON, WI 53713 or online at www.bidexpress.com.

THE BID OPENING is at 1600 EMIL ST., MADISON, WI 53713.

Plans and Specifications are also available at 1600 Emil St., Madison, WI, 53713; (608) 267-1197.

STANDARD SPECIFICATIONS

The City of Madison's Standard Specifications for Public Works Construction - 2013 Edition, as supplemented and amended from time to time, forms a part of these contract documents as if attached hereto.

These standard specifications are available on the City of Madison Public Works website, www.cityofmadison.com/Business/PW/specs.cfm.

The Contractor shall review these Specifications prior to preparation of proposals for the work to be done under this contract, with specific attention to Article 102, "BIDDING REQUIREMENTS AND CONDITIONS" and Article 103, "AWARD AND EXECUTION OF THE CONTRACT." For the convenience of the bidder, below are highlights of three subsections of the specifications.

SECTION 102.1: PRE-QUALIFICATION OF BIDDERS

In accordance with Wisconsin State Statutes 66.0901 (2) and (3), all bidders must submit to the Board of Public Works proof of responsibility on forms furnished by the City. The City requires that all bidders be qualified on a biennial basis.

Bidders must present satisfactory evidence that they have been regularly engaged in the type of work specified herein and they are fully prepared with necessary capital, materials, machinery and supervisory personnel to conduct the work to be contracted for to the satisfaction of the City. All bidders must be pre-qualified by the Board of Public Works for the type of construction on which they are bidding prior to the opening of the bid.

In accordance with Section 39.02(9)(a)I. of the General Ordinances, all bidders shall submit in writing to the Affirmative Action Division Manager of the City of Madison, a Certificate of Compliance or an Affirmative Action Plan at the same time or prior to the submission of the proof of responsibility forms.

The bidder shall be disqualified if the bidder fails to or refuses to, prior to opening of the bid, submit a Certificate of compliance, Affirmative Action Plan or Affirmative Action Data Update, as applicable, as defined by Section 39.02 of the General Ordinances (entitled Affirmative Action) and as required by Section 102.11 of the Standard Specifications.

SECTION 102.4 PROPOSAL

No bid will be accepted that does not contain an adequate or reasonable price for each and every item named in the Schedule of Unit Prices.

A lump sum bid for the work in accordance with the plans and specifications is required. The lump sum bid must be the same as the total amounts bid for the various items and it shall be inserted in the space provided.

All papers bound with or attached to the proposal form are considered a part thereof and must not be detached or altered when the proposal is submitted. The plans, specifications and other documents designated in the proposal form will be considered a part of the proposal whether attached or not.

A proposal submitted by an individual shall be signed by the bidder or by a duly authorized agent. A proposal submitted by a partnership shall be signed by a member/partner or by a duly authorized agent thereof. A proposal submitted by a corporation shall be signed by an authorized officer or duly authorized registered agent of such corporation, and the proposal shall show the name of the State under the laws of which such corporation was chartered. The required signatures shall in all cases appear in the space provided thereof on the proposal.

Each proposal shall be placed, together with the proposal guaranty, in a sealed envelope, so marked as to indicate name of project, the contract number or option to which it applies, and the name and address of the Contractor or submitted electronically through Bid Express (www.bidexpress.com). Proposals will be accepted at the location, the time and the date designated in the advertisement. Proposals received after the time and date designated will be returned to the bidder unopened.

The Bidder shall execute the Disclosure of Ownership form. REFER TO SECTION F.

SECTION 102.5: BID DEPOSIT (PROPOSAL GUARANTY)

All bids, sealed or electronic, must be accompanied with a Bid Bond equal to at least 5% of the bid or a Certificate of Annual/Biennial Bid Bond or certified check, payable to the City Treasurer. Bid deposit of the successful bidders shall be returned within forty-eight (48) hours following execution of the contract and bond as required.

PREVAILING WAGE RATES

Prevailing Wage Rates may be required and are attached in Section J of the contract. See Special Provisions to determine applicability.

Bidders for this Contract(s) must be Pre-Qualified for at least one of the following type(s) of construction denoted by an ☒

Building Demolition

101 ☐ Asbestos Removal
120 ☐ House Mover
110 ☐ Building Demolition

Street, Utility and Site Construction

201 ☐ Asphalt Paving
205 ☐ Blasting
210 ☐ Boring/Pipe Jacking
215 ☐ Concrete Paving
220 ☐ Con. Sidewalk/Curb & Gutter/Misc. Flat Work
221 ☐ Concrete Bases and Other Concrete Work
225 ☐ Dredging
230 ☐ Fencing
235 ☐ Fiber Optic Cable/Conduit Installation
240 ☐ Grading and Earthwork
241 ☐ Horizontal Saw Cutting of Sidewalk
242 ☐ Infrared Seamless Patching
245 ☐ Landscaping, Maintenance
250 ☐ Landscaping, Site and Street
251 ☐ Parking Ramp Maintenance
255 ☐ Pavement Sealcoating and Crack Sealing
260 ☐ Petroleum Above/Below Ground Storank Tank Removal/Install
265 ☐ Retaining Walls, Precast Modular Units
270 ☐ Retaining Walls, Reinforced Concrete
275 ☐ Sanitary, Storm Sewer and Water Main Construction
280 ☐ Sewer Lateral Drain Cleaning/Internal TV Insp.
285 ☐ Sewer Lining
290 ☐ Sewer Pipe Bursting
295 ☐ Soil Borings
300 ☐ Soil Nailing
305 ☐ Storm & Sanitary Sewer Laterals & Water Svc.
310 ☐ Street Construction
315 ☐ Street Lighting
318 ☐ Tennis Court Resurfacing
320 ☐ Traffic Signals
325 ☐ Traffic Signing & Marking
332 ☐ Tree pruning/removal
333 ☐ Tree, pesticide treatment of
335 ☐ Trucking
340 ☐ Utility Transmission Lines including Natural Gas, Electrical & Communications
399 ☐ Other_____

Bridge Construction

501 ☐ Bridge Construction and/or Repair

Building Construction

401 ☐ Floor Covering (including carpet, ceramic tile installation, rubber, VCT
402 ☐ Building Automation Systems
403 ☐ Concrete
404 ☐ Doors and Windows
405 ☒ Electrical - Power, Lighting & Communications
410 ☐ Elevator - Lifts
412 ☐ Fire Suppression
413 ☐ Furnishings - Furniture and Window Treatments
415 ☒ General Building Construction, Equal or Less than $250,000
420 ☐ General Building Construction, $250,000 to $1,500,000
425 ☐ General Building Construction, Over $1,500,000
428 ☐ Glass and/or Glazing
429 ☐ Hazardous Material Removal
430 ☐ Heating, Ventilating and Air Conditioning (HVAC)
433 ☐ Insulation - Thermal
435 ☐ Masonry/Tuck pointing
437 ☐ Metals
440 ☐ Painting and Wallcovering
445 ☐ Plumbing
450 ☐ Pump Repair
455 ☐ Pump Systems
460 ☐ Roofing and Moisture Protection
461 ☐ Solar Photovoltaic/Hot Water Systems
465 ☐ Soil/Groundwater Remediation
466 ☐ Warning Sirens
470 ☐ Water Supply Elevated Tanks
475 ☐ Water Supply Wells
480 ☐ Wood, Plastics & Composites - Structural & Architectural
499 ☐ Other_____

State of Wisconsin Certifications

1 ☐ Class 5 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for quarries, open pits and road cuts.
2 ☐ Class 6 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for trenches, site excavations, basements, underwater demolition, underground excavations, or structures 15 feet or less in height.
3 ☐ Class 7 Blaster - Blasting Operations and Activities for structures greater than 15 ' in height, bridges, towers, and any of the objects or purposes listed as "Class 5 Blaster or Class 6 Blaster".
4 ☐ Petroleum Above/Below Ground Storage Tank Removal and Installation (Attach copies of State Certifications.)
5 ☐ Hazardous Material Removal (Contractor to be certified for asbestos and lead abatement per the Wisconsin Department of Health Services, Asbestos and Lead Section (A&LS).) See the following link for application: www.dhs.wisconsin.gov/Asbestos/Cert. State of Wisconsin Performance of Asbestos Abatement Certificate must be attached.
6 ☐ Certification number as a Certified Arborist or Certified Tree Worker as administered by the International Society of Arboriculture
7 ☐ Pesticide application (Certification for Commercial Applicator For Hire with the certification in the category of turf and landscape (3.0) and possess a current license issued by the DATCP)
8 ☐ Other_____
9 ☐ Other_____

SECTION B: PROPOSAL

Please refer to the Bid Express Website at https://bidexpress.com look up contract number and go to Section B: Proposal Page

You can access all City of Madison bid solicitations for FREE at www.bidexpress.com

Click on the "Register for Free" button and follow the instructions to register your company and yourself. You will be asked for a payment subscription preference, since you may wish to bid online someday. Simply choose the method to pay on a 'per bid' basis. This requires no payment until / unless you actually bid online. You can also choose the monthly subscription plan at this time. You will, however, be asked to provide payment information. Remember, you can change your preference at anytime. You will then be able to complete your free registration and have full access to the site. Your free access does not require completion of the 'Digital ID' process, so you will have instant access for viewing and downloading. To be prepared in case you ever do wish to bid online, you may wish to establish your digital ID also, since you cannot bid without a Digital ID.

If you have any problems with the free registration process, you can call the bidexpress help team, toll free at 1-888-352-2439 (option 1, option1).

SECTION C: SMALL BUSINESS ENTERPRISE

Instructions to Bidders
City of Madison
SBE Program Information

2 Small Business Enterprise (SBE) Program Information

2.1 Policy and Goal

The City of Madison reaffirms its policy of nondiscrimination in the conduct of City business by maintaining a procurement process which remains open to all who have the potential and ability to sell goods and services to the City. It is the policy of the City of Madison to allow Small Business Enterprises (SBE) maximum feasible opportunity to participate in City of Madison contracting. The bidder acknowledges that its bid has been submitted in accordance with the SBE program and is for the public's protection and welfare.

Please refer to the "ADVERTISEMENT FOR BIDS" for the goal for the utilization of SBEs on this project. SBEs may participate as subcontractors, vendors and/or suppliers, which provide a commercially useful function. The dollar value for SBE suppliers or 'materials only' vendors shall be discounted to 60% for purposes of meeting SBE goals.

A bidder which achieves or exceeds the SBE goal will be in compliance with the SBE requirements of this project. In the event that the bidder is unable to achieve the SBE goal, the bidder must demonstrate that a good faith effort to do so was made. Failure to either achieve the goal or demonstrate a good faith effort to do so will be grounds for the bidder being deemed a non-responsible contractor ineligible for award of this contract.

A bidder may count towards its attainment of the SBE goal only those expenditures to SBEs that perform a commercially useful function. For purposes of evaluating a bidder's responsiveness to the attainment of the SBE goal, the contract participation by an SBE is based on the percentage of the total base bid proposed by the Contractor. The total base bid price is inclusive of all addenda.

Work performed by an SBE firm in a particular transaction can be counted toward the goal only if it involves a commercially useful function. That is, in light of industry practices and other relevant considerations, does the SBE firm have a necessary and useful role in the transaction, of a kind for which there is a market outside the context of the SBE Program, or is the firm's role a superfluous step added in an attempt to obtain credit towards goals? If, in the judgment of the Affirmative Action Division, the SBE firm will not perform a commercially useful function in the transaction, no credit towards goals will be awarded.

The question of whether a firm is performing a commercially useful function is completely separate from the question of whether the firm is an eligible SBE. A firm is eligible if it meets the definitional criteria and ownership and control requirements, as set forth in the City of Madison's SBE Program.

If the City of Madison determines that the SBE firm is performing a commercially useful function, then the City of Madison must then decide what that function is. If the commercially useful function is that of an SBE vendor / supplier that regularly transacts business with the respective product, then the City of Madison will count 60% of the value of the product supplied toward SBE goals.

To be counted, the SBE vendor / supplier must be engaged in selling the product in question to the public. This is important in distinguishing an SBE vendor / supplier, which has a regular trade with a variety of customers, from a firm which performs supplier-like functions on an ad hoc basis or for only one or two contractors with whom it has a special relationship.

A supplier of bulk goods may qualify as an eligible SBE vendor / supplier if it either maintains an inventory or owns or operates distribution equipment. With respect to the distribution equipment; e.g., a fleet of trucks, the term "operates" is intended to cover a situation in which the supplier leases the equipment on a regular basis for its entire business. It is not intended to cover a situation in which the firm simply provides drivers for trucks owned or leased by another party; e.g., a prime contractor, or leases such a party's trucks on an ad hoc basis for a specific job.

If the commercially useful function being performed is not that of a qualified SBE vendor / supplier, but rather that of delivery of products, obtaining bonding or insurance, procurement of personnel, acting as a broker or manufacturer's representative in the procurement of supplies, facilities, or materials, etc., only the fees or commissions will apply towards the goal.

For example, a business that simply transfers title of a product from manufacturer to ultimate purchaser; e. g., a sales representative who re-invoices a steel product from the steel company to the Contractor, or a firm that puts a product into a container for delivery would not be considered a qualified SBE vendor / supplier. The Contractor would not receive credit based on a percentage of the cost of the product for working with such firms.

Concerning the use of services that help the Contractor obtain needed supplies, personnel, materials or equipment to perform a contract: only the fee received by the service provider will be counted toward the goal. For example, use of a SBE sales representative or distributor for a steel company, if performing a commercially useful function at all, would entitle the Contractor receiving the steel to count only the fee paid to the representative or distributor toward the goal. This provision would also govern fees for professional and other services obtained expressly and solely to perform work relating to a specific contract.

Concerning transportation or delivery services: if an SBE trucking company picks up a product from a manufacturer or a qualified vendor / supplier and delivers the product to the Contractor, the commercially useful function it is performing is not that of a supplier, but simply that of a transporter of goods. Unless the trucking company is itself the manufacturer or a qualified vendor / supplier in the product, credit cannot be given based on a percentage of the cost of the product. Rather, credit would be allowed for the cost of the transportation service.

The City is aware that the rule's language does not explicitly mention every kind of business that may contribute work on this project. In administering these programs, the City would, on a case-by-case basis, determine the appropriate counting formula to apply in a particular situation.

2.2 Contract Compliance

Questions concerning the SBE Program shall be directed to the Contract Compliance Officer of the City of Madison Department of Civil Rights, Affirmative Action Division, 210 Martin Luther King, Jr. Blvd., Room 523, Madison, WI 53703; telephone (608) 266-4910.

2.3 Certification of SBE by City of Madison

The Affirmative Action Division maintains a directory of SBEs which are currently certified as such by the City of Madison. Contact the Contract Compliance Officer as indicated in Section 2.2 to receive a copy of the SBE Directory or you may access the SBE Directory online at www.cityofmadison.com/dcr/aaTBDir.cfm.

All contractors, subcontractors, vendors and suppliers seeking SBE status must complete and submit the **Targeted Business Certification Application** to the City of Madison Affirmative Action Division by the time and date established for receipt of bids. A copy of the Targeted Business Certification Application is available by contacting the Contract Compliance Officer at the address and telephone indicated in Section 2.2 or you may access the Targeted Business Certification Application online at www.cityofmadison.com/dcr/aaTBDir.cfm. Submittal of the Targeted Business Certification Application by the time specified does not guarantee that the applicant will be certified as a SBE eligible to be utilized towards meeting the SBE goal for this project.

2.4 Small Business Enterprise Compliance Report

2.4.1 Good Faith Efforts

Bidders shall take all necessary affirmative steps to assure that SBEs are utilized when possible and that the established SBE goal for this project is achieved. A contractor who self performs a portion of the work, and is pre-qualified to perform that category of work, may subcontract that portion of the work, but shall not be required to do so. When a bidder is unable to achieve the established SBE goal, the bidder must demonstrate that a good faith effort to do so was made. Such a good faith effort should include the following:

2.4.1.1 Attendance at the pre-bid meeting.

2.4.1.2 Using the City of Madison's directory of certified SBEs to identify SBEs from which to solicit bids.

2.4.1.3 Assuring that SBEs are solicited whenever they are potential sources.

2.4.1.4 Referring prospective SBEs to the City of Madison Affirmative Action Division for certification.

2.4.1.5 Dividing total project requirements into smaller tasks and/or quantities, where economically feasible, to permit maximum feasible SBE participation.

2.4.1.6 Establishing delivery schedules, where requirements permit, which will encourage participation by SBEs.

2.4.1.7 Providing SBEs with specific information regarding the work to be performed.

2.4.1.8 Contacting SBEs in advance of the deadline to allow such businesses sufficient time to prepare a bid.

2.4.1.9 Utilizing the bid of a qualified and competent SBE when the bid of such a business is deemed reasonable (i.e. 5% above the lowest bidder), although not necessarily low.

2.4.1.10 Contacting SBEs which submit a bid, to inquire about the details of the bid and confirm that the scope of the work was interpreted as intended.

2.4.2 Reporting SBE Utilization and Good Faith Efforts

The Small Business Enterprise Compliance Report is to be submitted by the bidder with the bid: This report is due by the specified bid closing time and date. Bids submitted without a completed SBE Compliance Report as outlined below

shall be deemed non-responsible and the bidder ineligible for award of this contract.

2.4.2.1 If the Bidder meets or exceeds the goal established for SBE utilization, the Small Business Enterprise Compliance Report shall consist of the following:

2.4.2.1.1 **Cover Page,** Page C-6; and
2.4.2.1.2 **Summary Sheet,** C-7.

2.4.2.2 If the bidder does not meet the goal established for SBE utilization, the Small Business Enterprise Compliance Report shall consist of the following:

2.4.2.2.1 **Cover Page,** Page C-6;
2.4.2.2.2 **Summary Sheet,** C-7; and
2.4.2.2.3 **SBE Contact Report,** C-8 and C-9. (A separate Contact Report must be completed for each applicable SBE which is not utilized.)

2.5 Appeal Procedure

A bidder which does not achieve the established goal and is deemed non-responsible for failure to demonstrate a good faith effort to achieve such goal and subsequently denied eligibility for award of contract may, within 72 hours of receiving such notification, appeal that decision to a special appeals committee composed of three (3) members of the Affirmative Action Commission, three (3) members of the Board of Public Works and a seventh member appointed by the Mayor. All appeals must be made in writing to the City Engineer and received within 72 hours of City of Madison's notice. Postmark not applicable.

2.6 SBE Requirements After Award of the Contract

The successful bidder shall identify SBE subcontractors, suppliers and vendors on the subcontractor list in accordance with the specifications. The Contractor shall submit a detailed explanation of any variances between the listing of SBE subcontractors, vendors and/or suppliers on the subcontractor list and the Contractor's SBE Compliance Report for SBE participation.

No change in SBE subcontractors, vendors and/or suppliers from those SBEs indicated in the SBE Compliance Report will be allowed without prior approval from the Engineer and the Affirmative Action Division. The contractor shall submit in writing to the City of Madison Affirmative Action Division a request to change any SBE citing specific reasons which necessitate such a change. The Affirmative Action Division will use a general test of reasonableness in approving or rejecting the contractor's request for change. If the request is approved, the Contractor will make every effort to utilize another SBE if available.

The City will monitor the project to ensure that the actual percentage commitment to SBE firms is carried out.

2.7 SBE Definition and Eligibility Guidelines

A Small Business Enterprise is a business concern awarded certification by the City of Madison. For the purposes of this program a Small Business Enterprise is defined as:

A. An independent business operated under a single management. The business may not be a subsidiary of any other business and the stock or ownership may not be held by any individual or any business operating in the same or a similar field. In determining whether an entity qualifies as a SBE, the City shall consider all factors relevant to being an independent business including, but not limited to, the date the business was established, adequacy of its resources for the work in which it proposes to involve itself, the degree to which financial, equipment leasing and other relationships exist with other ineligible firms in the same or similar lines of work. SBE owner(s) shall enjoy the customary incidents of ownership and shall share in the risks and profits commensurate with their enjoyment interests, as demonstrated by an examination of the substance rather than form or arrangements that may be reflected in its ownership documents.

B. A business that has averaged no more than $4.0 million in annual gross receipts over the prior three year period and the principal owner(s) do not have a personal net worth in excess of $1.32 million.

Firm and/or individuals that submit fraudulent documents/testimony may be barred from doing business with the City and/or forfeit existing contracts.

SBE certification is valid for one (1) year unless revoked.

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

Small Business Enterprise Compliance Report

This information may be submitted electronically through Bid Express or submitted with bid in sealed envelope.

Cover Sheet

Prime Bidder Information

Company:_____

Address:_____

Telephone Number:_____ Fax Number:_____

Contact Person/Title:_____

Prime Bidder Certification

I, _____, _____ of
Name Title

_____ certify that the information
Company

contained in this SBE Compliance Report is true and correct to the best of my knowledge and belief.

_____ _____
Witness' Signature Bidder's Signature

_____
Date

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

Small Business Enterprise Compliance Report

Summary Sheet

SBE Subcontractors Who Are NOT Suppliers

Name(s) of SBEs Utilized	Type of Work	% of Total Bid Amount
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%

Subtotal SBE who are NOT suppliers: _____ %

SBE Subcontractors Who Are Suppliers

Name(s) of SBEs Utilized	Type of Work	% of Total Bid Amount
		%
		%
		%
		%
		%
		%

Subtotal Contractors who are suppliers: _____ % x 0.6 = _____ % (discounted to 60%)

Total Percentage of SBE Utilization: _____%.

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

Small Business Enterprise Compliance Report

SBE Contact Report

Submit separate copy of this form for each SBE which you are not able to utilize towards meeting the SBE goal for this project. Attach separate sheets if necessary.

SBE Information

Company:_____

Address:_____

Telephone Number:_____

Contact Person/Title:_____

1. Outline below all efforts to solicit a bid from the above SBE. Include date, means of contact, who from your company made this contact and the result.

_____

_____

_____

2. Describe the information provided to the aforementioned SBE regarding the scope of work for which he/she was to provide a bid.

_____

_____

_____

Is this the same scope of work on which the subcontractor you intend to utilize based his/her bid?

☐ Yes ☐ No

3. Did this SBE submit a bid? ☐ Yes ☐ No

4. Is the General Contractor pre-qualified to self-perform this category of work?

☐ Yes ☐ No

5. If you responded "Yes" to Question 3, please check the items below which apply and provide the requested detail. If you responded "No" to Question 3, please skip ahead to item 6 below.

☐ The SBE listed above is unavailable for work on this project for the following reasons. Provide specific detail for this conclusion.

_____

_____

☐ The SBE listed above is unqualified for work on this project. Provide specific details for this conclusion.

_____

_____

☐ The SBE listed above provided a price that was unreasonable (i.e. more than 5% above the lowest bidder). Provide specific detail for this conclusion including the SBE's price and the price of the subcontractor you intend to utilize.

_____

_____

☐ A contract with the SBE listed above may constitute a breach of the bidder's collective bargaining agreements. Provide specific detail for this conclusion including, but not limited to, correspondence from the SBE indicating it will not sign a project labor agreement and/or correspondence from the applicable trade union indicating a project labor agreement will not be allowed at the time of project bidding.

_____

_____

☐ Other; please specify reason(s) other than listed above which made it impossible for you to utilize this SBE on this project.

_____

_____

6. Describe any other good faith efforts:

_____

_____

SECTION D: SPECIAL PROVISIONS

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

It is the intent of these Special Provisions to set forth the final contractual intent as to the matter involved and shall prevail over the Standard Specifications and plans whenever in conflict therewith. In order that comparisons between the Special Provisions can be readily made, the numbering system for the Special Provisions is equivalent to that of the Specifications.

Whenever in these Specifications the term "Standard Specifications" appears, it shall be taken to refer to the City of Madison Standard Specifications for Public Works Construction and Supplements thereto.

SECTION 102.10: MINIMUM RATE OF WAGE SCALE

For this project, payment of prevailing wages (white sheet) shall be required.

The wages and benefits paid on the contract shall not be less than those specified in the Prevailing Wage Determination included with these contract documents for the following types of work:

- ☒ Building and Heavy Construction
- ☐ Sewer, Water, and Tunnel Construction
- ☐ Local Street and Miscellaneous Paving Operations
- ☐ Residential and Agricultural Construction

All bidders are notified that all labor employed on City contracts must be paid in accordance with the minimum rate of wage scale included in the Contract Documents.

For the information of the employees working on the project, a copy of the wage scale included in the contract documents and the provisions of Section 66.0903(8) of the Wisconsin Statutes shall be kept posted by the employer and in at least one conspicuous and easily accessible place at the site of the project.

The Contractor shall keep weekly payroll records setting forth the name, address, telephone number, classification, wage rate and fringe benefit package of each employee who worked on such City project and all other projects the employee worked in the same period, and the Contractor must keep records of the individual time each employee worked on the project and for each day of the project. Records shall include employee demographics or contractor can submit a one-time report of all employee demographics that can be matched up with weekly payrolls. Reports shall only include last four social security digits. Such records shall also set forth the total number of hours of overtime credited to each such employee for each day and week and the amount of overtime pay received in that week. Such records shall, in addition, set forth the full weekly wages earned by each such employee and the actual hourly wage paid to that employee. The Contractor shall submit payroll records to the Engineer every week for those periods when work is being done on the project. Said submittal shall be within twenty-one (21) calendar days of the end of the Contractor's weekly pay period.

The Contractor shall ensure that employees shall be paid unconditionally and shall receive the full amounts accrued at the time of payment, computed at rates not less than those stated in the City of Madison "Minimum Rate of Wage Scale" and that each employee's rate shall be determined by the work that is done within the trade or occupation classification which should be properly assigned to such employee. Questions regarding an employee's classification or rate of pay within that classification, shall be resolved by the practice that predominates in the industry and on which the trade or occupation rate/classification is based. Therefore, rate of pay, classification and work jurisdiction disputes shall be resolved by relying upon practices established by collective bargaining agreements and guidelines used in such determinations by appropriate recognized trade unions operating within the City of Madison.

The Contractor shall agree that the normal rate of wage paid to the Contractor's employees on other projects shall not be reduced or otherwise diminished as a result of the requirement to pay no less than the minimum rate of wage scale on a City project. Mulcting of employees on City projects by contractors, such as by kickbacks or other such devices, is prohibited.

These contract provisions shall apply to all work performed on the contract by the Contractor with its own organization and with assistance of laborers under its immediate superintendency and to all work performed by piecework or by subcontract. No laborer, worker, or mechanic shall be employed directly upon the site of the work except on a wage basis, but this shall not be construed to prohibit the rental of equipment from individuals.

In the event of a refusal by the Contractor to submit payroll records as required by the contract, the City of Madison shall have the option to cancel this contract and request the Surety to perform or to re-let the balance of the work for bids, and in that event, to charge the Contractor for any loss which the City may incur thereby.

SECTION 102.12: BEST VALUE CONTRACTING

This Contract shall be considered a Best Value Contract if the Contractor's bid is equal to or greater than $53,000 for a single trade contract; or equal to or greater than $257,500 for a multi-trade contract pursuant to MGO 33.07(7).

SECTION 105.1: AUTHORITY OF THE ENGINEER

The Engineer shall resolve all questions which arise as to the quality and acceptability of materials furnished, work performed, manner of performance, rate of progress of the work, interpretation of the plans and Specifications, acceptable fulfillment of the contract, compensation, and disputes and mutual rights between Contractors under the Specifications. The Engineer shall determine the amount and quantity of work performed and materials furnished.

All decisions of the Engineer shall, when so requested, be rendered in writing. They shall be final and conclusive in all matters unless within ten (10) days after such decision the Contractor applies in writing to the Board of Public Works for a review of such decision.

Any change proposed by a Contractor in SBE subcontractors, vendors or suppliers from those SBEs indicated on the SBE Compliance Report must be approved by the Engineer and the City's Manager of the Affirmative Action Division (hereafter, AAD). When requested, such decision shall be rendered in writing. Such decisions shall be final and conclusive in all matters unless within ten (10) days after such decision the Contractor or the affected SBE applies in writing to the Board of Public Works for a review of such decision.

In the event the Engineer and the AAD disagree over the proper decision to be made regarding an SBE, the Mayor shall appoint a third person to resolve the disagreement, within 30 days of appointment. The decision thus rendered may be reviewed by the Board of Public Works upon request of the Contractor or the affected SBE as set forth in Sections 105.1 and 105.2 of the City's standard specifications.

SECTION 107.4(I): INSURANCE FOR THE CONSTRUCTION OF BUILDINGS

The City will effect and maintain, Builder's Risk Insurance on a replacement cost basis in an amount equal to the estimated project cost. Coverage includes the building as well as materials stored on the site to be incorporated in the building, including form work in place, form lumber on site, temporary structures, equipment and supplies incidental to the construction of the building. The City's Builders Risk coverage is written on a per building basis and contains a $25,000 per occurrence deductible. If a loss under the City's Builders Risk policy is caused by the negligence of the Contractor or its Subcontractor(s), the Contractor will be responsible for paying the City's $25,000 deductible. The City Engineer has the authority to withhold such deductible from payments due to Contractor. In addition, City Engineer, in

his/her sole authority, will determine whether the Contractor was negligent in causing the loss and therefore is responsible for the City's deductible.

The insured loss, if any, is to be adjusted with and payable to the City

SECTION 109.7

The contractor shall begin work on or before October 28, 2013. The total time of completion of the contract shall be ONE HUNDREDTWENTY (120) CALENDAR DAYS. Work shall begin only after start work letter is received. If it is desirable to begin work before the above-mentioned date, the contractor shall establish a mutually acceptable date with the City Engineer."

SECTION 01 00 00
GENERAL REQUIREMENTS

Contents

PART 1 – GENERAL

1.1. SCOPE

A. The work under this section includes general rules for the project. Included are the following topics:
   1. Electrical work in Traffic Engineering Operations Center (1120 Sayle St. in Madison, WI) including but not limited to:
      a. Replace electrical service
      b. Replace Panels and wiring
      c. Part of work during off-hours as described in electrical specifications

1.2. PRE-BID INFORMATION

A. There will be a pre-bid tour of the existing building on September 12th, 2013 at 10:00 at the job site to provide bidders the opportunity to acquaint themselves with the project. A representative from the designer's office will be present to take questions that will be answered by addendum.
B. Arrange additional site visits with owner project manager. the designer won't be present during these extra visits!

1.3. CONTACTS

A. Send all pre-bid inquiries in email to the owner's project manager. Only responses per addendum issued by owner are binding.
B. The owner's designee for project management:
   1. Kay Schindel
   2. Company: City of Madison
   3. Address: 1600 Emil St, Madison, WI 53713
   4. Phone: 608-266-4668
   5. Email: kschindel@cityofmadison.com
C. The owner's designee for architecture and engineering is:
   1. Paul Zouski
   2. Company: Clark Dietz, Inc.
   3. Address: 510 N 17th Ave., Wausau, WI 54401
   4. Phone: 715-845-1333x26
   5. Email: Paul.Zouski@clarkdietz.com

1.4. QUALIFICATIONS OF BIDDER

A. By submitting the bid, the bidder and each subcontractor certifies as to meeting the following requirements:
   1. Has completed one projects of at least 50% of the size or value of the division of work being bid and the type of work completed is similar to that being bid. Additional requirements will be described in the appropriate technical section of these specifications.
   2. Has access to all necessary equipment and has organizational capacity and technical competence necessary to do the work properly and expeditiously.
   3. Maintains a permanent place of business.

1.5. WORK BY THE OWNER AND OWNER FURNISHED EQUIPMENT

A. All asbestos removal will be performed by separate owner -hired asbestos contractor and contractor needs to accommodate asbestos contractor's work.
B. Trenching, backfill and blacktop for underground wiring to Building C will be performed by owner.

1.6. SALVAGE MATERIALS

A. No materials removed from this project shall be reused except as specifically noted below. All materials removed shall become the property of and shall be disposed of by the Contractor.
B. All removed copper wiring shall be turned over to owner.

1.7. PROVISIONS FOR FUTURE WORK

A. NA

1.8. SPECIAL SITE CONDITIONS

A. Unless otherwise noted, construction operations shall be limited to the hours between 7:00 a.m. and 10:00 p.m., Mondays through Fridays, except for holidays. A request must be made to the owner forty-eight hours in advance for approval of work days or hours other than those stated above. Compliance is required with applicable Noise Ordinances.
B. A temporary field office and temporary toilets are not required. The Contractor's labor force may use owner facilities upon approval by the owner. The Contractor shall maintain the toilets and other spaces provided by the owner in clean and sanitary condition at all times.

1.9. ALTERNATES

A. Not applicable

1.10. STANDARD SPECIFICATIONS

A. The City of Madison Standard Publications for Public Works Construction (Edition at publication date of this bid) forms a part of these contract documents as if attached hereto. These Standard Specifications are available from the City Engineer, City Engineering Division, Room 115, City County Building, 210 Martin Luther King Jr. Blvd., Madison, WI 53710 or electronically from the City Website http://www.cityofmadison.com/business/pw/specs.cfm. The Contractor shall review these standard specifications prior to preparation of proposal for the work to be done under this contract. Failure to do so does not relive the Contractor from meeting all requirements.

1.11. GENERAL REQUIREMENTS

A. All articles in these General Requirements are applicable to all Divisions fully as if repeated within that Division. The Conditions of the Contract, General and Supplementary General Conditions, and these General Requirements shall apply to the Contractor engaged in this work. Items listed under Scope of Work are not necessarily all inclusive. These specifications and drawings are intended to include everything necessary to perform the entire work properly. Every item necessarily required might not be specifically mentioned or shown. Unless expressly stated, all systems and equipment shall be complete and operable. All devices and installation methods necessary for a functioning system are considered included in this contract even if a detail is missing or unclear. The words "furnish", "install", "as required", and "provide" shall mean the same in a sense that the Contractor shall furnish and install all the necessary materials, apparatus, and devices to complete the equipment and systems installation herein specified, except such parts as are specifically exempted herein. This also includes that the contractor demolishes and disposes of an existing item if demolition is required to install the new item, even if demolition drawings or specification don't mention demolition of the specific item. If an item is either called for in the specifications or shown on the plans, it shall be considered sufficient for the inclusion of said item in this contract.

B. The terms "city", "owner", city engineer" and "project manager" are used interchangeably. The terms "contractor", "subcontractor" and "general contractor" are used interchangeably.

C. Portions of these specifications are of the abbreviated, simplified type and may include incomplete sentences. Omissions of words or phrases such as "the Contractor shall", "in conformity with", "shall be", "as noted on the drawings", "in accordance with details", are intentional. Omitted words or phrases shall be supplied by inference in the same manner, as they are when a note occurs on the drawings. Such terms as approved, reviewed, equal, as directed, as permitted, acceptable, satisfactory mean by or to the owner.

D. If a conflict exists within the Specifications or exists within the Drawings, the Contractor shall furnish the item, system, or workmanship, which is the highest quality, largest, largest quantity or most closely fits the owner's intent. Whenever a particular manufacturer's product is named, it is intended to establish a level of quality and performance requirements unless more explicit restrictions are stated to apply. It must be understood that the details and drawings are diagrammatic. The Contractor shall verify all dimensions at the site and be responsible for their accuracy. If items are too large to fit into existing space Contractor shall provide smaller model of same type upon approval by owner at no cost to owner. The area to be set aside for the work under this contract is shown on the drawings, and the Contractor shall confine the construction to the immediate area within the construction limits. The Contractor shall immediately upon entering the site for purpose of beginning work, locate general reference points and take such action as is necessary to prevent their destruction. The Contractor shall lay out its work and be responsible for all lines, elevations and measurements of the building and other work executed under its Contract. The Contractor must exercise proper precaution to verify dimensions on the drawings before laying out work and will be held responsible for any error resulting from failure to exercise such precaution. The Contractor shall verify grades, lines, levels, locations, and dimensions as shown on drawings and report any errors or inconsistencies to owner before commencing work. Starting of work by the Contractor shall imply acceptance of existing conditions. Confine all operations, equipment, apparatus and storage of materials, to the immediate area of work to the greatest possible extent. Contractor shall ascertain, observe and comply with all rules and regulations in effect on the project site, including but not limited to parking and traffic regulations, use of walks, security restrictions and hours of allowable ingress and egress. Any special traffic control during construction involving lane closures shall be in accordance with the federal standard, Manual of Uniform Traffic Control Devices.

E. The work site shall be kept clean and neat at all times. Accumulation of debris shall be avoided and all new equipment and material shall be stored neatly and protected. Failure to comply will result in the contractor responsible for the disorderly conditions to be removed from job site.

F. Owner will not furnish Watchpersons. The Contractor shall provide such precautionary measures, to include the furnishing of watchpersons if deemed necessary, to protect persons and property from damage or loss where the Contractor's work is involved. The contractor is responsible for securing any material stored on site. In case of theft or damage

1.12. CONTRACTOR'S RESPONSIBILITY PRIOR BIDDING

A. Bidders shall bring inadequacies, omissions or conflicts to owner's attention at least ten (10) days before the date set for bid submission. Prompt clarification will be supplied to all bidders of record by addendum. Failure to request clarification or interpretation of the drawings and specifications will not relieve the successful Bidder of responsibility. Signing of the contract will be considered as implicitly denoting that the Contractor has thorough understanding of the scope of work, existing conditions, and comprehension of the contract documents. Owner is not responsible for verbal instructions.

B. During bidding time owner will allow contractors to visit the site to familiarize themselves with the existing conditions and to ask questions for clarification. Failure to attend the scheduled walkthrough implies that the contractor accepts all existing conditions and includes all work to handle existing conditions in his bid price.

C. Prior bidding, bidder must obtain information on payment conditions, discounts, shipping charges, and other cost from vendor and/or manufacturer of the products specified.

1.13. PAYMENT AND CHANGE ORDERS

A. PAYMENTS: will be made based on progress of work including required paperwork. No payments will be made for occurred overhead cost that did not materialize in actual installation. Examples of cost to the contractor that is not part of partial payment are project management cost, bond cost etc. These cost will be covered proportionally for actual work done on site. No payments shall be made for material that is not installed.

B. PAY APPLICATION: The Contractor is responsible for providing form AIA Document G702 Application for Payment and AIA Document G703 Continuation Sheet (with schedule of values). Before the first Application for Payment, the Contractor shall submit a schedule of values of the various portions of the Work, including quantities. Prepare a schedule of values in such form and supported by such substantiating data as the Owner may require. Each item in the schedule of values shall include its proper share of overhead and profit. Values include the complete OM manual, Waste management documents, commissioning and training. Owner may withhold portions of payment if not all required documents are provided.

C. CHANGE ORDERS: Changes only will be accepted if approved prior work done. No payment shall be made if contractor commences work before cost is agreed on. In case of field change orders a price range has to be agreed on at minimum. If contractor does not provide cost before the additional work is done, it is assumed the contractor agreed that this work was part of the original contract.

D. CHANGE ORDER MARKUP: Contractor shall supply all documentation for evaluation of reasonableness of change order price. These include but are not limited to subcontractor quotes, supplier quotes, time estimates and others. Markup on subcontractor price (inc. markup on sub to sub prices) shall not exceed the value allowed by the Standard Specifications referenced in this contract. This markup will cover all the contractor expenses including added bond, insurance and other cost.

1.14. COOPERATION AND RESPONSIBILITIES BETWEEN TRADES

A. The Contractor assumes responsibility for all work specified in this contract except for work explicitly noted as be done by owner or a Contractor separately hired by owner. The Contractor coordinates the work of all trades. If plans or specifications designate parts of the work to be done by a specific trade it is meant as a suggestion only. It is up to the trades to agree on division of work and cost. Any work not done by a subcontractor will be the responsibility of the contractor.

B. All Contractors shall work in cooperation with the Contractor and with each other, and fit their work into the structure as job conditions may demand. Owner shall make all final decisions as to the right-of-way and run of pipe, ducts, etc., at pre-arranged meetings with responsible representatives of the Contractors involved. Contractor(s) shall coordinate the work with adjacent work with other Contractors prior to installation and shall cooperate with all other trades to facilitate the general progress of the work. The Contractor shall coordinate and schedule the work of all its subcontractors, and shall furnish all information required by them for proper scheduling and execution of the work. In the same manner, the Contractor shall coordinate the work with that of owner, and any other Contractor operating in the area, including reasonable adjustments of schedule in order to allow other Contractors or the owner to do their work. Any installed work that is not coordinated and that interferes with other Contractor's work shall be removed or relocated at the Contractor's expense.

1.15. SUBMITTALS

A. Any material, device or part that is specified by either model-number or quality has to be submitted and approved before it is ordered and installed. This includes items not specifically mentioned to be submitted, and items the owner requests to be submitted for any reason.

B. Documents have to be submitted in electronic form (PDF) via email, ftp-site or other means described by the owner. Hard-copies and material samples are required if requested by owner. Electronic documents shall be original manufacturer PDF (no scanned copies), legible and informative. Each submittal shall be provided together with a transmittal letter with transmittal number and reference to specification or plan detail. Re-submittals shall indicate the same number with numerical suffix in sequence.

C. Submit no later than 3 business days after start work letter is issued unless owner agrees to extension. Owner will review, and process shop drawings and other required submittals with reasonable promptness. No delay will be allowed in the progress of the job attributable to Contractor's failure to supply acceptable submittals in time.

D. Submittals shall enable verification that design intent is met. Minimum Information shall include: installation and application instructions, OM documents, the specific model, shop drawings, brochures, catalogs, material lists, wiring diagrams, Material Safety Data Sheets (MSDS), samples, erection drawings, equipment layouts recycled content, VOC, certified wood, disposal certificates and transportation distance.

E. Owner's favorable review of shop drawings and other submittals shall not relieve the Contractor of responsibility for deviations from drawings or specifications, unless the Contractor has in writing called the owner's attention to such deviations at the time of submission, and the owner has acknowledged in writing such deviations; nor shall it relieve the Contractor from responsibility for errors of any sort in such drawings. If deviations, discrepancies, or conflicts between shop drawing submittals and the drawings and specifications are discovered either prior to or after the shop drawing submittals are reviewed by owner, the drawings and specifications shall control and shall be followed. The Contractor shall be responsible for and shall check the correctness of all documents including those subcontractors prior to submitting them to owner for review.

1.16. GUARANTEES

A. All work, material and equipment is guaranteed by the Contractor to be free of faults for at least one year or longer if specified elsewhere. Warranty starts at the date of final acceptance from owner. The Contractor agrees to return to the project and commence work as directed upon notification by owner and will furnish at his own expense all necessary labor and material to make proper repairs or corrections made necessary by defective material or inferior workmanship furnished or performed under this contract. If a subcontractor is not complying, the Contractor is held responsible.

B. All corrections and repairs are to be made no more than 30 days after notification of the Contractor for equipment and material that is not critical to the operation of the building. Critical equipment and material, including but not limited to HVAC, roofing, electrical, elevator, shall be repaired or brought into temporary and safe working condition in less than 7

days and temporary alternatives have to be provided by the Contractor if function is critical for use of the facility. If Contractor fails to do so the owner reserves the right to perform the work himself or subcontract a different Contractor and charge the Contractor the full cost of the repair and correction and cost of any material, rental fee, labor and equipment to provide temporary relief and protection to enable safe operation of the building.

C. All equipment and material warranty for longer than one year requires sufficient documentation acceptable by the manufacturer to honor the warranty. Documents required may include manufacturer's warranty certification, vendor invoices or any other documents that will be required beyond the first year for the manufacturer to honor warranty.

1.17. SCHEDULE OF OPERATIONS

A. Within 5 calendar days after the effective date of Start Work Letter, the Contractor shall provide a critical path method (CPM) network diagram and a preliminary construction progress schedule. The diagram shall show the order in which the Contractor proposes to accomplish the work. The CPM shall show interdependence and duration, along with installation man-hours by craft of each activity. Any work element longer than 15 days shall be broken down into component parts. The critical path and float for each activity shall also be shown. The diagram or bar chart shall be neatly lettered and legibly drawn to a time scale. This initial network diagram and all consecutive versions shall include preliminary dates throughout the end of the project. Include obtaining of all permits, tests and other commissioning activities in schedule.

B. Install work in phases and schedule outages to accommodate owner's occupancy requirements.

C. After the initial submittal, the Contractor shall update the schedule monthly by entering actual progress for the period and submit copies as part of the payment request. Contractor shall maintain and provide a 6-week construction schedule that is compatible and complimentary to the general construction schedule, and shall include detail of daily tasks over a 6-week period to be updated weekly and communicated and coordinated at the weekly Trade Meetings by the Contractor's field supervisor.

1.18. DRAWINGS, SPECIFICATIONS AND OTHER DESIGN DOCUMENTS

A. Drawings indicate approximate locations of the various items and may not be all inclusive. These items are shown approximately to scale and attempt to show how these items should be integrated with building construction. All sizes are approximations and have to be field-verified by contractor. In case of a discrepancy within and between the drawings that would cause and awkward or improper installation the engineer has to be notified for clarification prior to installation. Before locating items, confer with the owner as to desired location in the various areas. Items shall not be located by scaling drawings. Contractor must relocate items and bear cost of redoing work or other trades' work necessitated by failure to comply with this requirement.

B. Information pertaining to existing conditions that are described in the specifications or appear on the drawings is based on available records. While such data has been collected with reasonable care, there is no expressed or implied guarantee that conditions indicated are entirely representative of those actually existing. This information is provided to inform the Contractor of known, existing conditions so that due diligence is taken by the Contractor to avoid damage. Where site observation or documents indicate existing underground or covered utilities/services in close proximity (within four feet horizontally and/or vertically) to necessary new construction work, the Contractor shall be responsible to test, probe or otherwise determine exact locations so as to prevent damage to such utilities/services.

C. Standard References such as ANSI, AASHO, AWWA, AISC, Commercial Standards, Federal Specifications, NEMA, UL, and the like incorporated in the requirements by reference shall be those of the latest edition at time of receiving bids, unless otherwise specified. The manufacturers, producers and their agents of required materials shall have such specifications available for reference and are fully familiar with their requirements as pertains to their product or material.

D. The Contractor shall not take advantage of any apparent error or omission in the plans or specifications. The owner may correct documents for the fulfillment of the intent of the plans and specifications.

E. Each trade shall keep one set of plans and specifications on site. In addition approved submittals, construction bulletins, change orders etc. as applicable to the trades shall be on site.

F. Contractor shall mark-up changes daily fully illustrating all revisions made by all the crafts in the course of the work. The completely marked-up set will be submitted to owner no more than ten (10) days after final inspection. This shall include all field changes, adjustments, variances, substitutions and deletions, whether covered by Change Order or not.

G. Contractor shall check all Specifications including the Drawings for possible interference with electrical, mechanical, and structural details, as well as interference with existing building or equipment, and shall notify the owner of the interference for resolution of the interference before commencing work. Any completed work that interferes shall be corrected by Contractor at Contractor expense so that the original design can be followed.

H. Electronic design files may be provided by the owner at its digression as they are needed for the contractor to perform the work. Contractor shall use electronic design files on their own risk and assume all liability. Electronic documents are not contract documents and significant discrepancies may exist between these electronic files and contract documents and actual site conditions. Signing of a liability waiver may be required.

I. The contractor shall provide detailed information about equipment installed and labor provided to third party institutions, such as Focus on Energy, as required.

J. Using datum, the lot lines and present levels have been established as shown on the drawings. Other grades, lines, levels and benchmarks, shall be established and maintained by the Contractor, who shall be responsible for them. As work progresses, the Contractor shall lay out on forms and floor, the locations of all partitions, walls and fix column centerlines as a guide to all trades. The Contractor shall make provision to preserve property line stakes, benchmarks, or datum point. Contractor responsible shall pay the cost of restoration.

1.19. QUALITY ASSURANCE

A. Materials and labor shall be new (unless noted or stated otherwise), first class, clean, undamaged, and workmanlike, and shall be subject at all times to the owner's inspections, tests and approval from the commencement until the acceptance of the completed work.

B. Any items or methods not meeting the specification requirements must be replaced with material that meets these specifications without additional cost to owner.

C. Welding procedures, welders, and welding operators shall be in accordance with certified welding procedures of the National Certified Pipe Welding Bureau and Section 927.5 of ASME B31.9 Building Services Piping or AWS 10.9 Qualification of Welding Procedures and Welders for Piping and Tubing. Before any metallic welding is performed, contractor shall submit Standard Welding Procedure Specification together with the Procedure Qualification Record as required by Section 927.6 of ASME B31.9 Building Services Piping, and/or Section IX of the ASME Boiler and Pressure Vessel Code and/or the National Certified Pipe Welding Bureau. Before any polyethylene fusion welding is performed, Contractor to submit certification that the welders to be used on this project have successfully demonstrated proper welding procedures in accordance with the Code of Federal Regulations, Title 49, Part 192, Section 192.285.

D. Contractor shall assume the responsibility for the protection of all finished construction under the Contract and shall repair and restore any and all damage of finished work to its original state.

E. Contractor shall obtain complete data at the site and inspect surfaces that are to receive the Work before proceeding with fabricating, assembling, fitting or erecting any work. Contractor shall notify owner in writing in case of discrepancies between existing work and drawings, and of any defects in such surfaces that are to receive the Contractor's work. Owner will evaluate the notice and direct what remedial action will be taken. Starting of work implies acceptance of existing work or the work of others. Removal and replacement of work applied to defective surfaces shall be done at the expense of the Contractor.

F. Owner can request additional protection of property, material, structures and other elements at any time. Repair any damaged property to the satisfaction of owner or remove and replace with new work at contractor's expense.

G. For outdoor work the Contractor shall:
   1. Provide, erect and maintain all required planking, barricades, guard rails, temporary walkways, etc., of sufficient size and strength necessary for protection of stored material and equipment; paved surfaces, walks, curbs, gutters and drives; streets adjacent to or within project area; adjoining property and all project work to prevent accidents to the public and the workmen at the job site.
   2. Notify adjacent property owners if their property interferes with the work so that arrangements for proper protection can be made.
   3. Provide and maintain proper shoring and bracing to prevent earth from caving or washing into any excavation (inc. existing work). Provide temporary protection around openings through floors and roofs, including elevator openings, stairwells, and edge of slabs.
   4. Provide protection against rain, snow, wind, ice, storms, or heat to maintain all work, materials, apparatus, and fixtures, incorporated in the work or stored on the site, free from injury or damage. Cover all work and Remove snow and ice as necessary for safety and proper execution of the work.
   5. Protect the building and foundations from damage at all times from rain, ground water and back up from drains or sewers. Provide all equipment and enclosures as necessary to provide this protection.
   6. Repair work outside of property line in accordance with the requirements of the owner or authority having jurisdiction.
   7. Protect trees and other vegetation indicated on the drawings to remain and in locations that would not interfere with new construction, from all damage. Do not injure trunks, branches, or roots of plants that are to remain. Do cutting and trimming only as approved and as directed by owner. The value of trees destroyed or damaged will be charged to the Contractor responsible for the damage in an amount equal to the expense of replacing the trees with those of similar kind and size.

H. The contractor shall be fully responsible for inspecting the work of its suppliers, and subcontractors to assure that the work complies with the standards for materials and workmanship required by the contract documents.

I. The Contractor shall:
   1. Monitor quality of subcontractors, suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of the quality specified in the contract documents.
   2. Request clarification from owner before proceeding with work when manufacturers' instructions or reference standards conflict with contract documents.
   3. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or manufactures instructions require more precise workmanship.
   4. Ensure that work is performed by persons specializing in the specific trade and class of work required, and qualified to produce workmanship of specified quality.
   5. Secure products in place with positive anchorage devices designed and sized to withstand seismic, static and dynamic loading, vibration, physical distortion or disfigurement.

J. Inspection or testing performed by the owner shall not relieve the Contractor from responsibility for performing his own quality control and for complying with the requirements of the contract Documents.

1.20. CODES AND PERMITS

A. Applicable provisions of Public Law, the Constitution and Laws and Statutes of the State of Wisconsin and the codes and regulations of governmental departments are hereby referred to and made a part of this contract. All work performed shall be in accordance with such laws, regulations and the latest edition or supplement or amendment thereto in effect at the time of submittal of bid shall be considered to be the issue in effect (unless shown otherwise) of all applicable codes including, but not limited to:
   1. Wisconsin Building Code
   2. Wisconsin Electrical Code
   3. Wisconsin Mechanical Code
   4. Wisconsin Plumbing Code
   5. Wisconsin Energy Code
   6. Wisconsin Fire Code
   7. NFPA 70 National Electrical Code
   8. General Services Administration 41 CFR Part 101-19
   9. Americans with Disabilities Act (ADA)
   10. Energy Conservation Performance Standards,
   11. Local Codes
   12. Occupational Safety and Health Act (OSHA)
   13. Occupational Safety and Health Standards, Department of Labor
   14. Safety and Health Regulations for Construction, Department of Labor
   15. Wisconsin Fire Code
   16. National Electrical Safety Code, ANSI C2
   17. Environmental Protection Agency regulations
   18. Clean Air Act
   19. Clean Water Act
   20. Resource Conservation and Recovery Act
   21. Toxic substances Control Act
   22. Wisconsin Department of Health and Family Services
   23. State and Regional Water Quality Control Boards
   24. County and Municipal ordinances

B. The newest version of the a code or standard shall apply even if an older version is adopted by the Jurisdiction Having Authority.

C. If necessary, file and maintain Notification of Demolition and/or Renovation and Application for Permit Exemption (WDNR Form 4500-113) in accordance with the Wisconsin Administrative Code Chapter NR447.

D. Contractor is expected to know or to ascertain, in general and in detail, the requirements of all codes and ordinances, and all rulings and interpretations of code requirements being made by all authorities having jurisdiction over the work performed by them.

E. Contractor shall pay all cost for items and procedures necessary to satisfy requirements of all applicable codes, ordinances and authorities, whether or not these are specifically covered by drawings or specifications. All cases of serious conflict or omission between the drawings, specifications, and codes shall be brought to the owner's attention as herein before specified. The Contractor shall carry out work and complete construction as required by applicable codes and ordinances and in such a manner as to obtain approval of all authorities whose approval is required.

F. Contractor is responsible for obtaining permits at its own cost including expenses for supporting documents. Deliver original permits to the owner before work starts. Apply for, arrange and pay for all required installation inspections required and correct all deficiencies at no cost to owner.

G. The Contractor must maintain all licenses required for the work performed and required by authorities. The Contractor must submit proof of holding the license or certificate upon request. If a Contractor loses a license for whatever reason he must inform the owner immediately.

H. In case of conflict or overlap of the above references, the most stringent provision shall apply.

1.21. ENVIRONMENT, SAFETY AND HEALTH (EHS)

A. The owner can request additional safety or environmental protection measures at any time. If contractor does not follow safety or environmental protection requirements, the owner can hire a different contractor or self-perform to ensure compliance and charge the original contractor for the cost. Failure to correct or eliminate violation(s) might result in the order to stop all or any part of the work.

B. Contractor shall provide all labor, materials, equipment, services and supervision required to maintain work sites that meet the environment, safety and health (ES&H) requirements of all applicable federal, state, and local regulations and protect the environment and the safety and health of all visitors and staff on site and the general public.

C. The contractor shall provide a qualified onsite EHS Representative with the authority to enforce all of the safety requirements and implement the contractor's Injury and Illness Prevention Program and Hazard Abatement Plan. The contractor shall remove and replace its Health and Safety Representative at the request of the owner, if the Safety Representative is unsuccessful in enforcing the EHS requirements. The contractor's EHS representative shall conduct safety inspections of the project operations, materials, and equipment frequently throughout the day to ensure that all safety deficiencies are identified and corrected. The owner reserves the right to enforce measures if the contractor's onsite EHS representative does not

enforce all requirements. Inspection findings and corrective actions taken shall be documented, and the record shall be kept on the construction work site and be made available to owner upon request.

D. Reporting: regardless of perceived severity, all unsafe acts, conditions, damage, spills, accidents, injuries and near-misses must be immediately reported to the owner.

E. EVACUATION AND STORM SHELTER: Designate meeting/rally points for evacuation and designate severe weather shelters.

F. Personal Protective Equipment (PPE) such as hard hats, ear plugs and dust masks, shall be provided to all employees and use shall be enforced by the onsite EHS Representative. PPE also shall be provided to site visitors near the main entrances to the jobsite. PPE shall be provided in sufficient numbers to outfit typical number of visitors (i.e. designers, inspectors, shipment workers)
   1. Hard hats must be worm 100% of time. Employee hard hats shall display name in front
   2. Eye protection must be worn 100% of time. Dark glasses are not allowed indoors
   3. Face Protection shall be worn during all cutting or grinding operations
   4. Hearing protection must be worn when sound levels are at or above 85 dB(A)
   5. Long pants and sturdy footwear shall be worn at all times.
   6. Respirators shall be used when dry-cutting or other dusty activities occur. This is in addition to all other duct-control measures.

G. WORK SITE SAFETY ORIENTATION: Each employee shall receive initial EH&S orientation prior to performing any work on the project. The contractor shall maintain on the work site a detailed outline of the orientation and a roster of all employees who have completed the project EHS indoctrination. The orientation shall, at a minimum, cover the following points:
   1. Employee rights and responsibilities.
   2. Construction contractor responsibilities.
   3. Alcohol and drug abuse policy
   4. Contractor's disciplinary procedures.
   5. First aid and medical facilities.
   6. Site and project specific hazards.
   7. Hazard recognition and procedures for reporting or correcting unsafe conditions or practices.
   8. Procedures for reporting accidents and incidents.
   9. Fire fighting and other emergency procedures to include local warning and evacuation systems.
   10. Hazard Communication Program.
   11. Access to employee exposure monitoring data and medical records.
   12. Protection of the environment, including air, water, and storm drains from construction pollutants.
   13. Location of and access to reviewed project Illness and Injury Prevention Program, Hazard Analysis and Hazard Abatement Plan
   14. Location and contents of required postings

H. A comprehensive EH&S program shall be established including but not be limited to:
   1. Confined Space Entry
   2. Site specific Emergency Response, First Aid, & Medical Services. Identify employees with CPR/First Aid certification available at the work site.
   3. Fire Protection and Prevention
   4. Hazard Communications
   5. Hazardous Waste Operations
   6. Hazardous Work Permits
   7. Toxic and Hazardous substances
   8. Inspection, Maintenance, and Certification of Heavy Equipment, Cranes, and Motor Vehicles
   9. Lock Out/Tag Out (LOTO) Subcontractors are required to include LOTO
   10. Personal Protective and Life Saving Equipment
   11. Radiation Protection
   12. Construction Safety Training
   13. Control of silica dust released during demolition or drilling of concrete or released from work with other materials that contain silica.

I. A comprehensive activity hazard analysis and hazard abatement plan shall be established including but not be limited to:
   1. Description of work phase or activity
   2. Identification of potential hazards associated with the activity
   3. A list of the contractor's planned controls to mitigate the identified hazards
   4. Name of the contractor's employee responsible for inspecting the activity and ensuring that all proposed safety measures are followed
   5. Construction activities for which an Activity Hazard Analysis and Hazard Abatement Plan may be required include, but are not limited to:
      a. Roofing
      b. Hoisting and handling of materials
      c. Excavations
      d. Trenching and drilling
      e. Concrete placement and false work
      f. Welding

g. Steel erection
h. Work performed six feet or higher above ground
i. Electrical work
j. Demolition
k. Work in confined spaces
l. Work that causes the release of silica such as demolition or drilling of concrete or work with materials that contain silica.
m. Work with epoxy coatings
n. Work with or around hazardous materials
o. Work on hilly terrain
p. Use and handling of flammable materials

J. ELECTRICAL WORK:
1. Energized electrical work within panels and equipment is not allowed.
2. Workers shall be qualified to perform electrical tasks in accordance with OSHA 29 CFR 1910 and 1926 requirements.
3. Work practices must be compliant with NFPA 70E, newest edition – Standard for Electrical Safety in the Workplace.

K. Rubbish, debris and scrap shall not be thrown through any window or other opening, or dropped from any great height; it shall be conducted to the ground, to waiting truck(s) or removable container(s) by means of approved chutes or other means of controlled conveyance.

L. Form and scrap lumber shall have all nails withdrawn or bent over; shall be neatly stacked, placed in trash bins, or removed from the premises.

M. Take all necessary precautions while dismantling piping containing gas, gasoline, oil or other explosive or toxic fluids or gases. Purge lines and contain materials in accordance with all applicable regulations. Store such piping outdoors until fumes are removed. Verify that all gas and electrical utilities have been abandoned or disconnected and associated hazards mitigated, prior to beginning any demolition.

N. All material classified by authorities to be a material that needs special treatment must be recycled, reused or disposed of by a special contractor that holds a valid license to work with such material. If hazardous materials are not anticipated, but encountered, terminate operations and contact owner immediately.

O. CONTROL OF CRYSTALLINE SILICA DUST: The subcontractor shall provide all necessary control measures at the work site to keep worker exposure to crystalline silica dust within the OSHA Established Permissible Exposure Limits (PEL's). Dust control measures may require spraying of water or engineering controls at the dust generating points. It also may include the use of respirators, industrial grade HEPA vacuums, and HEPA filtered locally exhausted tools. Construction operations known to cause the release of silica dusts include, but are not limited to:
1. Chipping, sawing, grinding, hammering, and drilling of concrete, rock, or brick.
2. Work with cementitious materials such as grout, mortar, stucco, gunnite, etc.
3. Dry sweeping of dust originating from concrete or rock

P. CONSTRUCTION ACTIVITY POLLUTION PREVENTION:
1. Follow Requirements in Storm Water Pollution Prevention Plan (SWPPP) and Erosion and Sedimentation Control (ESC) Plan
2. Stabilize any relocated and moved soil with fast growing grasses and place mulch (hay, woodchips, straw) on it to cover and hold soil
3. Divert surface runoff from distributed areas into sediment basin or sediment traps with a mound of stabilized soil
4. Construct posts with filter fabric media to remove sediment from stormwater leaving the site.
5. Follow requirements in site development plan and don't disturb areas beyond the marked areas

Q. CLEANLINESS: The construction site shall be kept in clean and safe manner. The Contractor shall clean up and remove on a daily basis accumulation of surplus materials, rubbish, debris and scrap and shall repair all damage to new and existing equipment resulting from its work. When job is complete, this Contractor shall remove all tools, excess material and equipment, etc., from the site. Contractors or subcontractors found to be in violation may be required to leave the jobsite until their staff is trained in orderly, clean and safe construction site work. Clean and safe construction site includes but is not limited to:
1. All trades keep a separate and neat area for material, equipment etc.
2. Equipment and material not needed anymore is removed from the jobsite
3. Demolition material and equipment is removed from jobsite daily
4. All material and equipment is sorted and stored properly
5. Spreading of dirt, dust and other construction related material must be kept to a minimum. Occupied and work areas must be separated by seals. Such seals shall be inspected and repaired frequently as needed to ensure proper sealing at all times. Minimize dust and constantly sprinkle rubbish and debris with water. Use dust collection with equipment whenever feasible.
6. Keep streets, walks and all other adjacent paved areas clean and swept clear of dirt, mud and debris deposited as a result of this operation. Protect surrounding area from dust. Control rodents, and other vermin associated with demolition operations.

R. INDOOR AIR QUALITY:
1. During construction the recommended control measures of the Sheet Metal and Air Conditioning Contractors National Association (SMACNA) IAQ guidelines for occupied buildings under construction, (1995, chapter 3) must be met or exceeded.

2. In case permanent air handlers are used, filtration media with a Minimum efficiency Reporting Value (MERV) of 8 shall be used at each return air grille. Contractor shall replace all filtration media immediately prior occupancy.
3. All to be installed ductwork, air handlers and other equipment later connected to the indoor air path are to be protected from dirt and debris.

S. Fall Protection needs to be used for any work 6' or higher above ground:
1. Lifts: full body harness must be worn 100% of time
2. Extension ladders must extend 3 feet past the landing point. Step Ladders must be used in open position. The two top steps of any ladder shall not be used to stand or sit at any time.
3. Scaffolding systems needs to be inspected and documented before use. No riding or surfing on rolling scaffolds is allowed.

T. FIRE PROTECTION AND PREVENTION:
1. The contractor shall develop and maintain an effective fire protection and prevention program at the job site through all phases of demolition, alteration, repair, and construction work. Contractor shall ensure the accessibility and availability of fire protection and suppression equipment.
2. Smoking is be prohibited everywhere on the job site – no exceptions. Signs shall be posted. In visible locations.
3. No burning of rubbish or debris will be allowed at the site. Combustible waste shall be removed immediately or stored in fire resistive containers until disposed of in an approved manner.
4. The Contractor shall provide and maintain in working order during the entire construction period, a minimum of three (3) fire extinguishers on each floor level, including basement of the building, and one (1) in temporary office. Extinguishers shall be nonfreezing type such as A-B-C rated dry chemical, of not less than 10-pound capacity each. In addition, any subcontractor who maintains an enclosed shed on the site shall provide and maintain, in an accessible location, one or more similar nonfreezing type fire extinguisher in each enclosed shed.
5. Fire watch personnel shall be provided by contractor in sufficient number to continuously monitor all locations where fire is used. The fire watch personnel shall remain on the job at least thirty minutes after such operations are completed. Fire safety personnel may be installers or welders.
6. Noncombustible shields or covers shall be provided by the contractor on tables, floors, walls, around the workstation, and over equipment to protect building structures, equipment and personnel from sparks and fragments of hot metal. Contractor shall also take these precautions to protect against sparks and hot metallic oxides generated by grinding, drilling or sawing operations.

U. ACCIDENTS AND SPILLS:
1. For OSHA recordable injuries, the subcontractor shall also furnish a copy of the OSHA Form 301(or equivalent) to the owner within five days of the injury.
2. In the event a job site accident occurs, the contractor shall immediately implement controls and restrictions on the accident site to ensure the site remains undisturbed until released in writing by the owner to resume work. The contractor shall provide accident investigation follow-up and shall support Owner's accident Investigation and reporting protocol.
3. The contractor shall promptly report to owner any spill, deposit, leak, drainage, debris, residue, spoil, residual, and/or by-product, whether its presence at the jobsite is occasioned by accident, inadvertence, intent, discarding, or abandonment by the contractor. This reporting requirement applies to petroleum products, oil, lubricants, chemical substances, waste materials, and waste substances, which are in such quantities as to constitute a hazardous substance or hazardous waste. All such occurrences of any quantity involving paints, solvents, thinners, degreasers, PCBs, halogenated hydrocarbons, volatile organic compounds, and/or asbestos shall be deemed a reportable event. All removal, cleanup, and associated costs, which result from contractor, material man, or supplier presence at the jobsite, shall be at the contractor's sole expense.

V. WASTE MANAGEMENT:
1. Recycle all recyclable material. This includes any material for which there is a recycling facility in Wisconsin.
2. Keep track of volume and weight of each material and track if it was recycled, reused, donated or disposed otherwise.
3. Contractor shall develop and submit a Waste Management Plan to owner prior to demolition or construction activities. Priority is given to reuse, followed by recycling followed by disposal including proper land filling or incineration. Disposal only will be acceptable if other methods are not commercially available. The Waste Management Plan includes but is not limited to the following:
    a. A list of each material proposed to be salvaged, reused, or recycled, Materials to be included, at a minimum, are the following:
        i. Concrete: Clean concrete, concrete with rebar, asphalt concrete.
        ii. Metals: Steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass or bronze, including banding, ductwork, framing, roofing and siding, flashing, piping and rebar.
        iii. Clean Fill: Earth, rocks, and gravel.
        iv. Wood: Clean dimensional wood, wood pallets, engineered wood products including plywood, particleboard, I joist.
        v. Biodegradable landscaping materials.
        vi. Cardboard, paper, packaging.
        vii. Masonry: Brick, ceramic tile, CMU.
        viii. Roofing: Clay or concrete tiles, asphalt shingles.
        ix. Gypsum board.

x. Acoustic ceiling panels.
xi. Carpet and pad.
xii. Paint.
xiii. Insulation.
xiv. Plastics: ABS, PVC
xv. Beverage containers
xvi. Cardboard.
xvii. Concrete
xviii. Brick and concrete masonry units (CMU).
xix. Metals from banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
xx. Gypsum wallboard.
xxi. Clean dimensional wood
xxii. Wood doors
xxiii. Acoustical ceiling tiles/panels
xxiv. Glass

b. Separation and Materials Handling Procedures: How waste materials (as identified above), will be separated, cleaned (if necessary) and protected from contamination.
c. Waste Material Estimating Sheet
d. Proposed Alternatives to Land filling: List each material planned to be salvaged or recycled, quantities, and proposed destination.

4. The contractor shall provide separation, bins for temporary onsite storage, handling, transportation, recycling, salvage, and land filling for all demolition and waste materials and keep recycling and waste bins areas neat, clean and clearly marked in order to avoid contamination or mixing materials and maintain logs onsite for each load of materials removed from site. It is permissible to separate waste off-site by specialized recycling contractor. This contractor needs to be provide proof of recycling and needs to be WASTECAP certified as "Accredited Professional in Construction and Demolition Debris Recycling".
5. During the progress and at end of the work, the General Contractor shall report to owner the quantity of each material recycled, reused, or salvaged, and the receiving party. All contractors shall maintain a record of weight tickets, manifests, receipts, and invoices for review by owner on request. At a minimum the documentation needs to meet the current LEED requirements and requirements set by the EPA and federal government for federally funded projects.
6. Immediately Inform the owner if hazardous materials are encountered or suspected, and stop work in the suspect area. Do not proceed with work in the suspect area until approved by the owner.
7. The following resources are provided for information only, to aid the Contractor in managing the construction waste:
   a. The Wisconsin DNR, Bureau of Waste Management http:/www.dnr.state.wi.us/org/aw/wm/
   b. The UW-Extension's Solid and Hazardous Waste Education Center http://www1.uwex.edu/ces/shwec/
   c. WasteCap Wisconsin, Inc. http://www.wastecapwi.org or telephone: 414-961-1100 or 608-245-1100

1.22. STAIRS, SCAFFOLDS, HOISTS, ELEVATORS OR CRANES

A. The Contractor shall furnish and maintain equipment such as temporary stairs, fixed ladders, ramps, chutes, runways and the like as required for proper execution of work by all trades, and shall remove them on completion of the work. The Contractor shall erect permanent stair framing as soon as possible. Provide stairs with temporary treads, handrails, and shaft protection.
B. Contractor shall provide and pay for its own hoist/crane or other apparatus necessary for unloading/setting or moving their equipment and materials.
C. Existing elevators may be used on a limited basis with the owner's permission and agreement. The Contractor will pay costs of warranty extensions and additional service work required. Appropriate protection must be provided by contractor and contractor shall be responsible for any structural, mechanical or finish damage to the elevator and its parts and to adjoining building finishes and components.

1.23. SAFEGUARDS - EXISTING EQUIPMENT, UNDERGROUND UTILITIES AND ARTIFACTS

A. Existing utilities, including those listed as abandoned, shall not be moved or otherwise disturbed without written verification by the owner that the utility is abandoned.
B. When altering existing facilities, the Contractor shall take every precaution to preserve and protect existing facilities, both those to be altered and those to remain unaltered that are within the limits of the work.
C. The Contractor shall notify the owner of structural members, piping, conduit, or equipment not indicated for removal that may cause interference with the work. Work shall not proceed in the affected area until instructions have been issued. Do not drill or penetrate existing structures without prior permission. The removal of existing work shall be by methods that will not jeopardize the integrity of structures or systems that are to remain.
D. Existing utilities, including but not limited to roof drainage systems, underground cables, ducts, roadways, manholes, building fire alarm, electrical services, public address or telecommunications wiring shall not be moved or otherwise disturbed.

E. If bones or artifacts are encountered during digging, the owner requires that the Contractor stop work within a 50-foot radius of the find and immediately notify the owner. Work may continue only with approval from the owner.

1.24. OPERATION AND MAINTENANCE DATA

A. Submit all O&M manuals in original electronic form (searchable PDF) at the time the respective equipment is delivered. No hardcopy shall be provided until the OM manuals are approved.
B. After approval, submit one set bound in 8-1/2 x 11 inch (A4) text pages, Use three D side rings if necessary and binders with durable plastic covers. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project and subject matter of binder when multiple binders are required.
C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs. Provide table of content. Identify the following:
D. Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, subcontractors, and major equipment suppliers.
E. Summary list of maintenance items indicating frequency and type of maintenance required for all systems covered in this contract.
F. List of equipment (including assigned equipment numbers).
G. A description of recommended replacement parts and materials, which the owner should stock.
H. Parts list for each component.
I. A summary of equipment vendors, or location where replacement parts can be purchased.
J. List indicating types and grades of oil and/or grease, packing materials, normal and abnormal tolerances for devices, and method of equipment adjustment.
K. Copies of all approved submittals.
L. Operating instructions.
M. Maintenance instructions for equipment and systems, preventative maintenance recommendations.
N. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
O. Manufacturer's wiring diagrams for electrically powered equipment.
P. A complete set of record control drawings.
    1. Copies of all checkout tests and calibrations performed by the Contractor (not commissioning tests).
    2. The manual shall be organized and subdivided with permanently labeled tabs for each of the following data in the given order:
        a. Sequences of operation including points and schematics of operations
        b. Control drawings
        c. Points lists
        d. Controller / module data
        e. Maintenance instructions, including sensor calibration requirements and methods by sensor type
        f. Thermostats and timers
        g. Sensors and switches
        h. Valves and valve actuators
        i. Dampers and damper actuators
        j. Program setups (software program printouts)
Q. Additional information as indicated in the technical specification sections
R. Product data.
S. Air and water balance reports.
T. Certificates.
U. Photocopies of warranties, Name, address, and telephone of contact for service during the warranty period.
V. Name, address, and telephone number of the person or service organization to be contacted for service after the warranty period.
W. Submit 1 draft copy of completed volumes 15 [fifteen] days after approval of applicable submittal or receipt of the product. Revise content of all document sets as required prior to final submission. Submit 2 [two] sets of revised final volumes, within 10 [ten] days after final inspection.

1.25. ACCESS PANELS AND DOORS

A. All serviceable and replaceable devices, including but not limited to valves, boxes, and dampers shall receive an access at a location and in a size that enables proper servicing and repair of the device without removal of other material. Sizes described are minimum sizes and might be increased if the type and size of device requires it. Install all piping, conduit, ductwork, and accessories to permit access to equipment for maintenance. Coordinate the exact location of wall and ceiling access panels and doors with the owner making sure that access is available for all equipment and specialties. Relocate access panel or door if equipment is not properly accessible to perform all maintenance and repair at no cost to the owner. Minimum size is 12" by 12". Use "Cendrex" products or approved equal.
B. LAY-IN CEILINGS: if 2 X 2 foot is not suffieient for access (i.e. VAV boxes require larger access), the grid shall be arranged in a manner to allow easy removal of grid sections.

1.26. LOOSE AND DETACHABLE PARTS

A. Contractor shall retain all loose and small detachable parts of apparatus and equipment furnished under this Contract, until completion of the work and shall turn them over to the owner to receive them.

B. Furnish one can of touch-up paint for each different color factory finish furnished by the Contractor. Deliver touch-up paint with other "loose and detachable parts".

PART 2 – PRODUCTS

2.1. SPECIFIED ITEMS - SUBSTITUTES

A. Wherever catalog numbers and specific or trade names are used in conjunction with a designated material, product, item, or service mentioned in these Specifications, they are used to establish the standards of quality, utility, and appearance required. Substitutions will be approved, subject to the following provisions:

   a. Contractors or manufacturers may request listing of their product in the bid documents up to 10 calendar days prior bid due date. All requests must be accompanied by sufficient information to judge its suitability for this project.

   b. Owner may reject any substitute request without providing specific reasons.

   c. Owner may accept substitution requests after contract award, but reserves the right to refuse review or acceptance of any requests without providing specific reasons. Such acceptance shall not relieve the Contractor from complying with the requirements of the drawings and specifications, and the Contractor shall be responsible at Contractor's own expense for any changes resulting from Contractor proposed substitutions which affect the other parts of Contractor's own work or the work of others.

   d. Failure of the Contractor to submit proposed substitutions for approval in the manner described above and within the time prescribed shall be sufficient cause for disapproval by owner of any substitutions otherwise proposed.

B. Specifications may mention other manufacturers than the specific device specified. Those are manufacturers that in general are acceptable, but may not have a product for this specific project. Those manufacturers still may be rejected without providing specific reasons. The bidder only can rely on using items specifically mentioned in the contract documents.

2.2. APPROVED TESTING LABORATORIES

A. The following laboratories are approved for providing electrical product safety testing and listing services as required in these specifications:

   1. Underwriters Laboratories Inc.
   2. Electrical Testing Laboratories, Inc.

2.3. HAZARDOUS SUBSTANCES

A. The Subcontractor shall submit to the Project Representative, for review by the EH&S Division, any proposed procurement, stocking, installing, or other use of materials containing asbestos, cadmium, chromates, or lead.

B. No materials outlawed in any of the 50 US states are to be used. Only equipment and material legal in all 50 states is to be used. All Federal, state, county and local codes and ordinances regarding are to be considered deciding if a piece of equipment or material is to be used.

C. The contractor assumes responsibility for proper removal, collection and storage of hazardous substances on site and disposal of those if hazardous substances were known to be present. If hazardous substances are not known to be present and are found, the owner assumes responsibility for additional cost due to removal, collection and storage on site. All hazardous substances are to be disposed in accordance with all federal, state and local laws, codes and regulations. It is the contractor's responsibility to recognize typical hazardous substances not known to be present. This includes all substances that were used in buildings of that type in the period since original construction.

D. Contractor will assume that all electronic components, machinery, refrigeration devices and other common devices contain hazardous substances and include disposal of such in bid price, even if those substances are not mentioned separately. If special tests are necessary the owner assumes responsibility for such unless noted otherwise.

E. ASBESTOS:

   1. Contractor's shall follow guidelines in WAC NR 447, WAC HSS 159 and the Occupational Safety and Health Act (OSHA) in general, part 1926.1101--ASBESTOS in particular. Contractor is responsible for compliance with all applicable regulations when the work includes fastening to or coring through Asbestos Containing Materials (ACM) and disturbance of asbestos containing caulking and mastics.

   2. Unless otherwise indicated, all caulking, sealants, glazing compounds, gaskets, asphalt roofing materials and miscellaneous adhesives are assumed to contain asbestos and are considered to be Category I non-friable ACM as defined in NR 447.

   3. If Contractor's demolition and work methods cause non-friable ACM to become friable, the Contractor is responsible for the disposal of the friable asbestos waste at a landfill specifically approved by DNR to accept friable asbestos. The regulations referenced above require removal of friable ACM and Category II non-friable ACM prior to demolition of a building. Category I non-friable ACM does not need to be removed from a building prior to demolition if the waste generated from the demolition is taken to a DNR approved C & D waste landfill.

   4. If the contractor chooses to recycle building materials from a building to be demolished, the contractor is responsible for removal and disposal of all Category I non-friable ACM in accordance with applicable regulations prior to demolition.

5. The asbestos abatement contractor will require sole occupancy of the workspace during asbestos abatement work. Contractor shall communicate with the asbestos abatement contractor and make adequate allowance for the asbestos abatement work in the work schedule

F. LEAD BASED PAINT: Conform with OSHA and EPA recommended worker safety requirements when removing lead based paint or material bearing lead based paint or material contaminated with lead by the demolition process. Follow Occupational Safety and Health Act (OSHA) in general and particularly to 29 CFR 1910 (LEAD STANDARD) and to CFR 1926 (LEAD EXPOSURE IN THE CONSTRUCTION INDUSTRY). For OSHA compliance and regulation interpretations, contractors may contact the area OSHA office for this project. [Milwaukee, telephone (414) 297-3315; Appleton, telephone (414) 734-4521; Eau Claire, telephone (715) 832-9019]. Dispose of refuse containing lead based paint or contaminated with lead by the demolition process in conformance with State of Wisconsin Hazardous Waste Regulations set forth by the Department of Natural Resources and in conformance with OSHA and EPA recommended worker safety requirements.

G. PCB'S: Contractor shall assume all ballasts and transformers not specifically labeled as "no PCB" type to contain PCB and to dispose properly meeting all regulatory requirements

H. MERCURY-CONTAINING DEVICES: Mercury containing devices including but not limited to building controls and switches, thermometers, and lamps shall be recycled by certified contractor. Lamps are stored in accordance with Environmental Protection Agency universal waste regulation 40 CFR part 273 including storing them in containers with labels describing the contents and the start date of accumulation.

I. PAINT AND RELATED PRODUCTS: The oil-based paints are disposed of as hazardous waste

J. USED APPLIANCES AND BUILDING EQUIPMENT: Used appliances include microwaves, refrigerators, and ice machines. Smaller pieces of building equipment include items such as water heaters and variable-drive motors. All of these items are recycled by a certified contractor at the contractor's expense.

K. VOC: Volatile Organic Compounds in materials shall be limited to these maximum values:

1. Adhesives and Sealants:
2. Wood Glues: 30 g/L.
3. Metal-to-Metal Adhesives: 30 g/L.
4. Adhesives for Porous Materials (Except Wood): 50 g/L.
5. Subfloor Adhesives: 50 g/L.
6. Plastic Foam Adhesives: 50 g/L.
7. Carpet Adhesives: 50 g/L.
8. Carpet Pad Adhesives: 50 g/L.
9. VCT and Asphalt Tile Adhesives: 50 g/L.
10. Cove Base Adhesives: 50 g/L.
11. Gypsum Board and Panel Adhesives: 50 g/L.
12. Rubber Floor Adhesives: 60 g/L.
13. Ceramic Tile Adhesives: 65 g/L.
14. Multipurpose Construction Adhesives: 70 g/L.
15. Fiberglass Adhesives: 80 g/L.
16. Contact Adhesive: 80 g/L.
17. Structural Glazing Adhesives: 100 g/L.
18. Wood Flooring Adhesive: 100 g/L.
19. Structural Wood Member Adhesive: 140 g/L.
20. Single-Ply Roof Membrane Adhesive: 250 g/L.
21. Special Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, rubber, or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.
22. Top and Trim Adhesive: 250 g/L.
23. Plastic Cement Welding Compounds: 250 g/L.
24. ABS Welding Compounds: 325 g/L.
25. CPVC Welding Compounds: 490 g/L.
26. PVC Welding Compounds: 510 g/L.
27. Adhesive Primer for Plastic: 550 g/L.
28. Sheet Applied Rubber Lining Adhesive: 850 g/L.
29. Aerosol Adhesive, General Purpose Mist Spray: 65 percent by weight.
30. Aerosol Adhesive, General Purpose Web Spray: 55 percent by weight.
31. Special Purpose Aerosol Adhesive (All Types): 70 percent by weight.
32. Other Adhesives: 250 g/L.
33. Architectural Sealants: 250 g/L.
34. Non-membrane Roof Sealants: 300 g/L.
35. Single-Ply Roof Membrane Sealants: 450 g/L.
36. Other Sealants: 420 g/L.
37. Sealant Primers for Nonporous Substrates: 250 g/L.
38. Sealant Primers for Porous Substrates: 775 g/L.
39. Modified Bituminous Sealant Primers: 500 g/L.
40. Other Sealant Primers: 750 g/L.
41. Inside Paints and Coatings:

42. Flat Paints, Coatings, and Primers: VOC not more than 50 g/L.
43. Nonflat Paints and Coatings: VOC not more than 150 g/L.
44. Dry-Fog Coatings: VOC not more than 400 g/L.
45. Primers, Sealers, and Undercoaters: VOC not more than 200 g/L.
46. Anticorrosive and Antirust Paints applied to Ferrous Metals: VOC not more than 250 g/L.
47. Zinc-Rich Industrial Maintenance Primers: VOC not more than 340 g/L.
48. Pretreatment Wash Primers: VOC not more than 420 g/L.
49. Clear Wood Finishes, Varnishes: VOC not 1 more than 350 g/L.
50. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
51. Floor Coatings: VOC not more than 100 g/L.
52. Shellacs, Clear: VOC not more than 730 g/L.
53. Shellacs, Pigmented: VOC not more than 550 g/L.
54. Stains: VOC not more than 250 g/L.

2.4. BARRICADES, SIGNS, WARNING DEVICES, AND TEMPORARY PLASTIC BARRIERS

A. Traffic barricades, traffic signs, and warning devices shall meet the requirements of applicable OSHA standards and the FHA Manual of Uniform Traffic Control Devices (MUTCD).
B. UV stabilized high-density polyethylene barrier fence free of holes tears and other defects. Provide 4' tall fence in diamond or rectangular pattern. Fencing shall be "safety orange" color, unless otherwise noted.
C. Posts for temporary plastic barrier fencing shall be 5' tall, minimum 12 gauge, painted metal posts.

2.5. SEALING AND FIRESTOPPING

A. Manufacturers: 3M, Hilti, Rectorseal, STI/SpecSeal, Tremco, or approved equal.
B. All firestopping systems shall be provided by the same manufacturer and shall be UL listed.
C. Submittals: Contractor shall submit product data for each firestop system. Submittals shall include product characteristics, performance and limitation criteria, test data, MSDS sheets, installation details and procedures for each method of installation applicable to this project. For non-standard conditions where no UL tested system exists, submit manufacturer's drawings for UL system with known performance for which an engineering judgement can be based upon.
D. Install approved product in accordance with the manufacturer's instructions where an installation penetrates a fire/smoke rated surface. Use a product that has a rating not less than the rating of the wall or floor being penetrated. When pipe or duct is insulated, use a product, which maintains the integrity of the insulation and vapor barrier. Verify that sufficient space is available for the penetration to be effectively fire and smoke stopped. Provide 4" sheet metal escutcheon around duct on both sides of partition or floor to cover annular space.

PART 3 – EXECUTION

3.1. PROJECT MEETINGS

A. Project meetings will be held at the time designated by the owner. A responsible representative of the Contractor who can bind the Contractor to a decision at the meetings shall attend. The contractor will write a report covering all items discussed and decisions reached. Report shall be distributed to all parties involved within 3 business days. All contractors, sub-contractors and other related parties shall attend. Attendance especially is required if such contractor is scheduled to perform work within the next 6 weeks.
B. PRE-CONSTRUCTION MEETING: Owner, design representatives and all contractor and sub-contractors attend.
C. PRE-INSTALLATION MEETING: prior installation, layout or other activities related to major systems, separate meetings will be held to ensure proper coordination and quality. These meetings will be initiated by the contractor and coordinated with owner. Not initiating these meetings doesn't relieve the contractor from coordination responsibilities. The owner may set up such meetings as needed.

3.2. CONTINUITY OF SERVICE, TRAFFIC, SHUTDOWN AND ACCESS

A. BUILDING ACCESS: Unless otherwise shown or directed, maintain existing access and egress to the facility throughout construction. Maintain ANSI A117 compliant access for disabled persons, delivery access, emergency vehicle access, and emergency egress. Do not interrupt access and egress without prior written approval by owner.
B. TRAFFIC:
   1. Do not interrupt or change existing traffic, delivery, or parking without prior written approval from owner. When interruption is required, coordinate schedule with the Owner agency to minimize disruptions. When working in public right-of-way, obtain all necessary approvals and permits from applicable municipalities and WISDOT.
   2. When Contractor's activities impede or obstruct traffic flow, Contractor shall provide traffic control devices, signs and flaggers in accordance with other Contract Documents and the current version of the MUTCD, or as shown on the Drawings.
C. UTILITIES: Verify the locations of any water, drainage, gas, sewer, electric, drainage, gas, sewer, electric, telephone/communication, fuel, steam lines or other utilities and site features which may be encountered in any excavations or other sitework. All lines shall be properly underpinned and supported to avoid disruption of service.
D. No outages shall be permitted on existing systems except at the time and during the interval specified by the owner. Any outage must be scheduled 72 hours in advance and when the interruption causes the least interference with normal sched-

ules and business routines and might be scheduled during after-hours if regular business hours are not acceptable to the owner. No extra costs will be paid to the Contractor for such outages, which must occur outside of regular weekly working hours. Cost to the utility is paid by Contractor. The Contractor shall provide temporary utility services and bypasses for any disruptions not completed within this period. The Contractor shall restore any circuit interrupted as a result of this work to proper operation as soon as possible.

E. HVAC: If the building is occupied and continues operation during construction, retrofit or demolition, Contractor must maintain ventilation, heating and air conditioning for as large parts of the building as technically feasible. Where maintaining space conditioning is not feasible with the existing system, the Contractor shall provide temporary sufficient air conditioning, heating and ventilation in coordination with the owner. Heating to prevent freeze damage is required for all construction activity regardless of occupancy.

F. SHUTDOWN: Contractor shall provide and maintain continuous service (power, controls, alarms, communication, elevators, HVAC, roads etc.) during the entire construction period. Shutdowns need to be conform to the following:
   1. Shutdown schedules shall have been reviewed and approved by the owner at least 72 hours prior to date of shutdown. Postponement of scheduled shutdowns by the owner shall not constitute a basis for additional charges to the owner.
   2. Prior to the shutdown the Contractor shall provide the following:
      a. Proof of receipt of all materials required for the shutdown or a written commitment from the responsible suppliers that the required materials will be available at the time of the shutdown.
      b. A list of the qualified Contractor personnel assigned to perform the work.
      c. Analysis of any affect on the utility or building energy system(s) and the estimated duration of the shutdown.
      d. A twenty-four-hour emergency callback phone number to be used by the owner in the event of any problems or concerns with the modifications made to the building system(s) after the Contractor has left the site.

3.3. DEMOLITION

A. Perform all demolition as indicated on the drawings to accomplish new work. Demolition Drawings are based on casual field observation and/or existing record documents. Verify field measurements and circuiting arrangements as shown on Drawings, verify that abandoned wiring, piping, ducting and equipment serve only abandoned facilities. Report discrepancies to the owner before disturbing existing installation. Beginning of demolition means contractor accepts existing conditions.

B. Demolition all abandoned services and devices in areas affected by this contract, even if not shown on plans. This includes but is not limited to wiring, conduits, piping, and equipment.

C. Coordinate work with owner to minimize disruption to the existing building occupants.

D. All pipe, wiring and associated conduit, insulation, ductwork, and similar items demolished, abandoned, or deactivated are to be removed from the site by the Contractor.

E. Maintain the condition of material and/or equipment that is indicated to be reused equal to that existing before work began.

F. Patch holes and openings caused by removal of material and equipment, or formerly covered by such, with like material and texture of surrounding surface. Paint to match surroundings.

G. Disconnect all services in a manner which allows for future connection to that service. Disconnect services to equipment at unions, flanges, valves, or fittings wherever possible.

H. All disconnected wiring shall be removed from all raceway systems, panels, enclosures pull boxes, junction boxes etc. irrespective of whether the removal is specified in the construction documents or not. The empty raceway systems shall be tagged spare on both ends of each termination.

I. Don't demolition or damage equipment and material that is to stay in place. Replace and repair any equipment and installations that get damaged during demolition. The Contractor shall restore all disturbed areas in accordance with the drawings and specifications. If plans and specifications do not address restoration of specific areas, these areas will be restored to pre-construction conditions as approved by owner.

J. Verify the locations of, and protect, any buildings, structures, utilities, paved surfaces, signs, streetlights, utilities, landscaping and all other such facilities that are intended to remain or be salvaged. Make such explorations and probes as necessary to ascertain any required protection measures that shall be used before proceeding with demolition.

K. Explosives shall not be used for demolition.

L. Remove all equipment, fixtures and other materials scheduled for salvage prior to beginning demolition operations. Report damage of any facilities or items scheduled for salvaging to owner.

M. Abandon gas, electric and communication utilities in accordance with local utility company requirements, or applicable substantive requirements if considered private.

N. Dismantle each structure in an orderly manner to provide complete stability of the structure at all times. Provide bracing and shoring where necessary to avoid premature collapse of structure.

O. Where necessary to prevent collapse of any construction, install temporary shores, underpinning, struts or bracing. Do not commence demolition work until all temporary construction is complete.

P. Masonry and concrete shall be demolished in small sections. Use braces and shores as necessary to support the structure of the building or structure and protect it from damage. Where limits of demolition are exposed in the finished work, cutting shall be made with saws, providing an absolutely straight line, plumb, true and square. Operate equipment so as to cause a minimum of damage to plaster which is to remain, and so as to keep dust and dirt to a minimum.

Q. BUILDING DEMOLITION:
   1. Proceed with demolition in a systematic manner, from top of structure to ground. Complete demolition work above each floor or tier before disturbing supporting members on lower levels.

2. Remove structural framing members and lower to ground by hoists, derricks or other suitable means.
3. Locate demolition equipment and remove structure so as to not impose excessive loads to supporting walls, floors or framing.
4. Break up and remove concrete slabs-on-grade, unless otherwise shown to remain.

R. DEMOLITION BELOW GRADE:
1. Demolish foundation walls and other below grade features in accordance with the plans. Unless otherwise noted, remove all below grade features to a point 4' below adjoining existing grade, or proposed grade, whichever is lower. Basement and/or lowest level floors more than 4' below existing grade need not be removed, but must be broken up to permit drainage.
2. Backfill and compact below grade areas and voids resulting from demolition of structures and other abandonment and demolition. Backfilling shall not begin until demolition and abandonment has been approved and documented by owner. Prior to placement of fill materials, ensure that areas to be filled are free of standing water, frost, frozen materials, trash and debris.

S. DRAIN TILE:
1. Carefully protect and/or replace drain tiles encountered during demolition which are necessary to maintain site drainage conditions. Immediately repair or replace any drain tiles not scheduled for demolition, but damaged. Report damage to owner.
2. Repairs to drain tile or replacement drain tile shall be comparable or better than the existing drain tile system.
3. Test drain lines with water to assure free flow before covering. Remove all obstructions which may be found, retest until satisfactory.

3.4. TEMPORARY CONSTRUCTION

A. Temporary construction shall conform to all requirements and laws of state and local authorities, which pertain to operation, safety, and fire hazards. Contractor shall furnish and install all items necessary for conformance with such requirements.

B. Employ temporary crossovers and bypass to utilities, electrical connections, traffic and footbridges, and walkways used to maintain services or communications, which cannot be interrupted or curtailed.

C. Provide temporary rigging, scaffolding, shoring, hoisting equipment, and all other temporary work as required for this project.

D. TEMPORARY LIGHTING: shall be supplied and maintained by the Contractor so that construction work can be safely performed. Illumination shall be 5 foot-candles minimum in all areas and, in addition, shall meet or exceed the requirements of 29 CFR 1926.56 Illumination (OSHA regulations) or be higher if the type of work requires more lighting for quality control.

E. TEMPORARY HEATING AND COOLING
1. All heating and cooling including fuel required after enclosure of the building shall be provided by the Contractor. It shall be the responsibility of the Contractor to to prevent unnecessary escape of heat. A minimum temperature of 45 degrees and a maximum temperature of 65 degrees for the building shall be maintained. For a period of at least ten days prior to the placing of interior woodwork and throughout the placing of this and other finish, varnishing, painting, tiling etc., and until substantial completion to provide sufficient heat to insure a temperature in the spaces involved of not less than 70 degrees nor more than 80 degrees. Temperatures must be checked during nighttime and on weekends. Restitution shall be made by Contractor responsible for damage to building and contents caused by overheating, freezing, fumes, soot or residue given off by temporary heating or lack of thereof.
2. Permanent heating and cooling system may be used for temporary heating at owners discretion. Warranty period may not be affected by use of permanent heating. Temporary filters shall be used in the permanent system. If the permanent heating system appears to be dirty after use, owner may require cleaning at contractor's expense.
3. Provide bases, shields, etc., around heating elements to prevent too rapid drying of adjacent concrete, masonry or plaster. Surfaces and structure shall be patched as required.
4. The use of temporary units whose product of combustion will damage fresh concrete, mortar or other building materials, will not be allowed. Use of coke or oil salamanders is prohibited. All portable temporary heating units shall be properly ventilated to prevent combustion gases from remaining in the heating area.
5. Cooling shall be provided to all occupied areas that have permanent cooling installed. Such areas include but are not limited to offices, server rooms etc. Temperatures maintained must be equal to what the existing permanent system was able to maintain or what the new designed system is capable of delivering.
6. Cooling capacity shall be sufficient and have spare capacity as required to account for diminished performance during temporary operation. Performance can be diminished by infiltration, bent hoses, dirt etc. Plans may or may not show specific capacities. Those are approximations and more cooling may be required.

F. TEMPORARY ELECTRICAL SERVICE:
1. The Contractor shall make all arrangements with the local utility company for metered electrical service, pay for the installation of all temporary service to utility point of termination shown on drawings, and upon completion of project, pay for removal of temporary service. The meter shall be taken out in the Contractor's name. The Contractor shall patch surfaces and structure after services have been removed. The Contractor shall pay for all electrical energy consumed for construction purposes for all trades including temporary offices, for operation of ventilating equipment, for heating of building, and for testing and operating of all equipment. The Contractor shall continue to pay for energy used until substantial completion even though equipment has been connected to the permanent wiring.

2. Contractor shall provide and maintain electrical services in single phase or multiphase as required by equipment to be used. Provide at multiple services to ensure service to run at less than 75% of its capacity at all times and to enable short cable runs of less than 300 ft to equipment to be used.
3. All temporary electrical circuits for construction purposes shall be equipped with combination ground fault interrupter and circuit breakers meeting the requirements of UL for Class A, Group 1 devices.

G. TEMPORARY WATER, SEWER AND PUMPS:
1. The Contractor shall supply all water required for construction and other purposes until the permanent water supply system is accepted and in operation. As soon as possible Contractor shall install and pay for permanent water mains into new building, provide temporary gate valve and freezing protection and extend piping. Permanent lines may be used.
2. Sewer work shall be started and finished as soon as possible. Including backfill.

3.5. INSTALLATION

A. Install in accordance with manufacturer's instructions and all code requirements.
B. Install in accordance with recognized industry practices and the manufacturer's latest recommendations.
C. Startup and test equipment and adjust operating and safety controls for proper operation.
D. Contractor shall coordinate work with existing equipment, piping, ductwork, conduit and equipment of other trades so that all systems, equipment and other components will fit the available space, and will allow proper service and repair. Each location needs to be approved by owner. This also applies to existing equipment if newly installed equipment interferes with its accessibility.
E. The Contractor shall cooperate in reducing objectionable noise or vibration. Abnormal buzzing is not acceptable.
F. Provide carpentry, cutting, patching, and core drilling required for installation of material and equipment.
G. WATERPROOF CONSTRUCTION: Maintain waterproof integrity of penetrations of materials intended to be waterproof. Provide flashings at exterior roof penetrations. Caulk penetrations of foundation walls and floors watertight. Provide membrane clamps at penetrations of waterproof membranes.
H. PAINTING OF EQUIPMENT AND HARDWARE: Provide moisture resistant paint for all exterior painting. Colors shall be as shown on the drawings unless specified. All exposed conduits, raceways and gutters inside (finished spaces) and outside the building shall be painted to match the wall color.
I. Lubricate all bearings with lubricant as recommended by the manufacturer before the equipment is operated for any reason. Once the equipment has been run, maintain lubrication in accordance with the manufacturer's instructions until the work is accepted by owner. Maintain a log of all lubricants used and frequency of lubrication.

3.6. DELIVERY, STORAGE AND HANDLING OF MATERIALS

A. Contractor must be present to accept delivery of all equipment and material shipments. Owner will not knowingly accept, unload or store anything delivered to the site for the Contractor's use. Inadvertent acceptance of delivered items by owner shall not constitute acceptance or responsibility for any of the materials or equipment. Contractor assumes responsibility and liability for equipment or material delivered to the job site.
B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Packaged units shall be delivered in their original crates.
C. Promptly inspect shipments to insure that the material is undamaged and complies with specifications. Immediately Inform owner of shipment for owner-inspection. Materials or equipment, which do not conform to the Specifications or are damaged shall not be incorporated in the work and shall be immediately removed from the site.
D. Arrange for the necessary openings in the building to allow for admittance of all apparatus. When the building access was not previously arranged and must be provided by this Contractor, restore any opening to its original condition after the apparatus has been brought into the building.
E. Contractor shall confine equipment, apparatus, storage of materials and operations to limits indicated on the drawings or by specific direction of owner. Storage of materials within the building shall at no time exceed the design carrying capacity of the structural system. The Contractor assumes full responsibility for damage due to the storage of materials.
F. Material shall be stored according to manufacturer's recommendations as a minimum. Provide and maintain watertight storage sheds on the premises where directed, for storage of materials that might be damaged by weather. Sheds shall have wood floors raised at least 6" above the ground. Materials, construction sheds, and earth stockpiles shall be located so as not to interfere with the installation of the utilities nor cause damage to existing lines.
G. If necessary, material will be stored off site at the Contractor's expense. Offsite storage agreements will not relieve the Contractor from using proper storage techniques. Storage and protection methods must allow owner-inspection to verify products.

3.7. QUALITY MANAGEMENT (QM)

A. The owner will employ QM-inspectors, Commissioning Authority (CxA) and others to ensure installation and functionality are per contract plans and specifications. These tests and inspections do not substitute for any other inspections and tests required by authorities or other parties.
B. Contractor's duties:
1. Contractor shall arrange inspection within reasonable time. Failure to do so may result in re-work, unearthing, delay or other expenses to be carried by the contractor.
2. Failed tests have to be repeated. Failed inspection items need to be corrected before proceeding with work.
3. Contractor shall have supporting documents available on site for review by inspector. At minimum those include:

a. Approved submittals
b. Manufacturer Installation manual
c. Marked up plans for as-built on a daily basis

4. Contractor shall provide all measurement devices, test equipment and other instruments and devices necessary to perform tests and inspections. Instruments shall be calibrated according to manufacturer's recommendation.
   a. Calibration certificates meeting the manufacturer's requirements need to be provided prior any testing.
   b. Testing equipment needs to be of sufficient precision and accuracy in the expected value ranges
5. Contractor shall accommodate the inspection and commissioning process by allowing scheduled time, providing staff, and other assistance required.
6. Owner shall be informed of all changes to equipment, systems, control etc.
7. Tests and startups performed by manufacturer are part of the commissioning and owner shall be notified in advance to witness such tests. Failure to give proper notice can result in repeated tests to be paid for by the Contractor.
8. Tests are acceptable on properly working equipment only and have to be repeated as often as required by the City at no cost to owner. If tests have to be repeated by an owner-hired Contractor due to equipment not installed or working properly, the Contractor shall reimburse owner for additional testing expenses and additional staff time.
9. Accommodate seasonally deferred testing even after project closeout.
10. Inform owner of any onsite planning meetings or other planning activities to be able influence and correct planned layouts of equipment, duct, piping, walls and other installations. Contractor shall review plans for all trades to avoid potential conflicts. Other trades shall be invited to layout planning as needed. Owner can setup planning meetings and the invited contractors shall to attend. Examples of layout planning include but are not limited to:
    a. VAV box service accessibility
    b. Electrical panel layout
    c. Ceiling layout
    d. Sensor Layout

C. PRE-INSTALLATION CONFERENCE:
1. Well before new system or material type is installed, a meeting with the owner trades, and other required parties will be held to discuss:
   a. Approved submittals and the materials used
   b. Means and methods for installation and inspection
   c. Mockup and review. Owner can request mockup at any time.
   d. Any suggestions given by the owner or it representatives don't relieve the contractor from its responsibilities to install as required by other parts of the specifications and plans.

D. QM INSPECTION:
1. Delivery: owner will inspect material and storage
2. Installation: owner will periodically inspect work
   a. All phases of work will be inspected and contractor shall not cover up work before approval
   b. Contractor schedules milestone and other required inspections as required by owner

E. WITNESSING OF PREPARATION WORK, STARTUPS AND TESTS:
1. Reasonable notice of all tests (i.e. flushing, pressure tests) must be given in advance.
2. Startup plan must be provided to and approved by owner
3. Installations, procedures and tests that were not done with owner will have to be repeated at contractor's expense
4. Startup equipment or system per manufacturer recommendation and maintain startup documentation
5. Verify installation and operation per plans and specifications (inc. calibration for i.e. flow stations)
6. Testing after the contractor tested equipment and verifies full functionality
7. Contractor shall notify owner of any problems that occurred regardless of if they were resolved or not
8. Test shortly after installation of specific equipment
9. Additional test procedures will be provided by owner and performed by contractor.
10. Testing of complete system shall be at normal capacity
11. Repeated seasonally deferred testing
12. Delays and re-testing caused by deficient installations won't relieve the contractor from his obligation to meet the contract deadline.

3.8. CONCRETE WORK

A. Provide all layout drawings, anchor bolts, metal shapes, and/or templates required to be cast into concrete or used to form concrete for support or installation of electrical, mechanical, plumbing piping, fixtures, specialties and equipment. This includes but is not limited to piping thrust restraints, pipe supports, hydrant supports, manholes, catch basins, grease traps, septic tanks, distribution boxes, valve pits, meter pits, cleanout cover pads, yard hydrant pads, etc. Coordinate locations of equipment, pipe penetrations in wet areas, etc. with other trades.

B. Unless noted otherwise provide cast in place concrete for equipment pads, manhole bases and thrust blocks. Concrete to be 3,000 psi at 28 days, 3/4 inch aggregate, five bags cement, three inch slump, air entraining admixture. The ACI 614 Recommended Practice for Measuring, Mixing and Placing of Concrete shall constitute the execution requirements.

C. Concrete delivered to site must not have spent more than one hour from time of leaving vendor to time of casting. Delivery trucks must provide leaving time from vendor and will be rejected if the on-hour limit is exceeded.

3.9. OPENINGS, SLEEVES, CUTTING, STRUCTURAL ATTACHMENT, PATCHING AND PAINTING

A. Before any drilling, cutting or other type of opening the contractor shall verify that no conduits, wires, pipes or other items are in or near opening area. X-ray or ground-penetrating radar technology shall be employed to survey ceilings, slabs or walls when potentially damaging opening techniques are employed. Existing available data and records may not be accurate regarding exact location of structural steel, pipes or conduit. This work shall be performed at least a week prior to give owner the opportunity to resolve any issues by rebar or other obstacles in unexpected locations.

B. Openings shall be the responsibility of the Contractor requiring the openings even if such openings are not shown on drawings. The Contractor shall install sleeves for all openings and shall submit to the owner for review and approval, layout drawings of all such required sleeves and openings. Sleeve and opening sizes and locations shall be dimensioned from column lines and floor elevations or from a point of reference approved by owner.

A. All openings shall be made as airtight, watertight, fireproof, smoke-tight, thermally insulated as the wall they are in. Patch wall around sleeve to match adjacent wall construction and finish. In finished spaces where penetration through wall is exposed to view, sheet metal sleeve shall be installed flush with face of wall. Grout area around sleeve in masonry construction. Paint the surface to match existing surface including texture.

B. Penetrations through floors in mechanical rooms and wet locations (all rooms with water tap or connection, Parking ramps, kitchens, food service areas, pumping stations, swimming pools, chemical storage, storage of liquids or locations that can get wet by accident or failure of a component etc.), shall receive extended sleeves 2" above floor to prevent water penetration. Provide urethane caulk between sleeve and floor and fasten sleeve to floor. Seal corners water tight with urethane caulk. Size sleeve to allow insulation and paint the sleeve.

C. SLEEVES:

1. Provide galvanized sheet metal sleeves for pipe or duct penetrations through interior and exterior walls to provide a backing for sealant or firestopping. Pipe sleeves shall be schedule 40 steel pipe (sized to allow insulated pipe to run through sleeve) and duct sleeves shall be equivalent rectangular material.
2. Provide sleeve required for fire dampers in fire-rated partitions and floors.

D. NON-RATED PENETRATIONS:

1. Conduit Penetrations Through Below Grade Walls: In exterior wall openings below grade, use a modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill the annular space between the uninsulated conduit and the cored opening or a water-stop type wall sleeve.
2. Conduit and Cable Tray Penetrations: At conduit and cable tray penetrations of non-rated interior partitions, floors and exterior walls above grade, use urethane caulk in annular space between conduit and sleeve, or the core-drilled opening.
3. In exterior wall openings below grade, assemble rubber links of mechanical seal to the proper size for the pipe and tighten in place, in accordance with manufacturer's instructions.

E. Do not pierce beams or columns without owner's permission and then only as directed in writing.

F. No devices or materials shall be attached to non-structural or structural members or parts of the building without approval by owner. All items shall be attached to structurally stable building parts only. Provide all supporting devices as required for the installation of mechanical equipment and materials. All supports and installation procedures are to conform to the latest requirements of the ANSI Code for building piping. Do not hang any mechanical item directly from a metal deck or run piping so its rests on the bottom chord of any truss or joist. Fasteners depending on soft lead for holding power or requiring powder actuation will not be accepted. Support apparatus and material under all conditions of operation, variations in installed and operating weight of equipment and piping, to prevent excess stress, and allow for proper expansion and contraction.

G. Provide all supporting steel required for the installation of mechanical equipment and materials, including angles, channels, beams, etc. to suspended or floor supported tanks and equipment. All of this steel may not be specifically indicated on the drawings.

3.10. IDENTIFICATION

A. All labels shall be permanent, and machine generated. NO HANDWRITTEN OR NON-PERMANENT LABELS ARE ALLOWED.

B. Identify all equipment with engraved name plates (White letters on a black background, 1/16 inch thick plastic laminate, beveled edges, screw mounting, Setonply Style 2060 by Seton Name Plate Company or Emedolite Style EIP by EMED Co., or equal by W. H. Brady).

C. Identify interior piping with >1" stencils or snap-around pipe marker Equal to Seton Setmark not less than once every 25 feet, not less than once in each room, not less than once per 6' (or larger) section, adjacent to each access door or panel, and on both side of the partition where accessible piping passes through walls or floors. Place flow directional arrows at each pipe identification location. Label all pipes with name of loop and arrows for flow direction with permanent label. Mark pipes based on served system as "hot", "cold", and as "boiler", "chilled", "geothermal" and also as "glycol", "hard", "soft" or "water". All supply water shall be labeled per code as "potable" (green background / white letters) or "non-potable" (yellow background / black letters). Label all gauges. Use one coat of black enamel against a light background or white enamel against a dark background.

D. Identify valves with brass tags bearing a system identification and a valve sequence number. Use round brass tags with 1/2 inch numbers, 1/4 inch system identification abbreviation, 1-1/4 inch minimum diameter, with brass jack chains, brass "S" hooks or one piece nylon ties around the valve stem, available from EMED Co., Seton Name Plate Company, or W. H. Brady. Valve tags are not required at a terminal device unless the valves are greater than ten feet from the device, located in an-

other room or not visible from device. Provide a typewritten valve schedule and pipe identification schedule indicating the valve number and the equipment or areas supplied by each valve and the symbols used for pipe identification; locate schedules in mechanical room and in each Operating and Maintenance manual. Schedule in mechanical room to be framed under clear plastic.

E. Identify balancing valves like valves above and in addition include balancing chart for the specific balancing valve and detail the setting and flow set at time of balancing.

F. Label fire, smoke and combination fire smoke dampers on the exterior surface of ductwork directly adjacent to access doors using a minimum of 0.5 inch height lettering reading, "SMOKE DAMPER" or "FIRE DAMPER". Smoke and combination fire smoke dampers shall also include a second line listing the individual damper tag. The tags must be coordinated with the mechanical schedules. Utilize stencils or manufactured labels. All other forms of identification are unacceptable. All labels shall be clearly visible from the ceiling access point.

G. Label all conductors. Size shall be appropriate for the conductor or cable size(s), outlet faceplate layout and patch panel design. All labels shall be self-laminating, white/transparent vinyl and be wrapped around the cable or sheath. Flag type labels are not allowed. The labels shall be of adequate size to accommodate the circumference of the cable being labeled and properly self-laminate over the full extent of the printed area of the label.

H. Provide all buried utilities, conduit and pipes with detectable underground warning tape, 5.0 mil overall thickness, 6" width, .0035" thick aluminum foil core with polyethylene jacket bonded to both sides. Color code tape and print caution along with name of buried service in bold letters on face of tape. Manufacturers: Thor Enterprises Magnatec or equal by Carlton, MSI Marking Services, Seton. Extend tape to surface at building entrances, meters, hydrants and valves. Where existing underground warning tape is broken during excavation, replace with new tape identifying appropriate service and securely spliced to ends of existing tape.

I. All underground non-metallic sewers/mains and water services/mains shall be provided with tracer wire installations. Tracer wire installations shall conform with code. Tracer wire shall be continuous solid copper or steel plastic coated with split bolt or compression-type connectors.

J. Underground Installation marking:

1. Owner will perform own locating with GPS. Owner needs to be notified 2 business days prior backfill.
2. Contractor will install marker balls at start, end , bends, at least every 20 ' and at other significant locations. Balls shall not be installed deeper than 3'. Multiple lines in parallel (i.e. geothermal laterals) exceeding 3'in installation width shall receive markers at each side. Owner will verify proper marker function:

Utility	Markertype	Ball
Power	Power	3M 1402-XR
Water	Water	3M 1403-XR
Sanitary	Wastewater	3M 1404-XR
Storm	Wastewater	3M 1404-XR
Gas	Gas	3M 1405-XR
Fiber	Communication	3M 1407-XR
Telephone	Telephone	3M 1421-XR/iD
CATV	CATV	3M 1427-XR/iD
Geothermal	General Purpose	3M 1408-XR

3.11. TRAINING AND DEMONSTRATION

A. The owner's facility staff (and occupants and service Contractors as needed), shall receive orientation and training on features, systems and equipment in this facility requisite with the complexity and criticality of the system and the owner's needs. Additional training requirements may be found in specific equipment sections. Owner may video-record all training sessions.

B. Only training on equipment that is commissioned and works as designed and with approved Operations and Maintenance manual is acceptable. If system fails, training will be repeated.

C. The Contractor shall be responsible for training coordination and scheduling and ultimately for ensuring that training is completed on all equipment per the Specifications. Unless otherwise required and approved by owner, the training shall be given during regular business hours during a regular work week.

D. Training team shall consist of, as needed and at the discretion of the owner, the installing technician, installing Contractor and the appropriate trade or manufacturer's representative. Practical building operating expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment as installed in this project is required by the person training. If owner determines training was not adequate, it will be repeated in improved form.

E. Follow the outline in the table of contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference. Training Shall Include the Following:

1. Use of the printed installation, operation and maintenance instruction material included in the O&M manuals.

2. A review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, and special tools needed and spare parts inventory suggestions. The training shall include start-up, operation in all modes possible, shutdown, seasonal changeover, as applicable, and any emergency procedures.
3. Discussion of relevant health and safety issues and concerns.
4. Discussion of warranties and guarantees.
5. Common troubleshooting and maintenance issues, problems and solutions.
6. Explanatory information included in the O&M manuals and the location of all related plans and manuals in the facility.
7. Discussion of any peculiarities of equipment installation or operation.

F. The format and training agenda in The HVAC Commissioning Process, ASHRAE Guideline 1 is recommended, as applicable.

G. Hands-on training shall include start-up, operation in all modes possible, including manual, shutdown and any emergency procedures and preventative maintenance for all pieces of equipment.

H. Training shall occur after functional testing and piping and equipment labeling are complete unless approved otherwise by Owner.

I. HVAC CONTROL SYSTEMS:
1. For the primary HVAC equipment, the controls Contractor shall provide a short discussion of the control of the equipment during the mechanical or electrical training conducted by others.
2. The standard operating manual for the system and any special training manuals shall be provided for and retained by each trainee. In addition, the system technical manual shall be demonstrated during training. Manuals shall include detailed description of the subject matter for each session. The manuals shall cover all control sequences and have a definitions section that fully describes all relevant words used in the manuals and in all software displays.
3. The trainings will be tailored to the needs and skill-level of the trainees and be oriented to the specific system installed in this project.
4. The session shall include instruction on:
   a. A review of the as-built drawings and O&M manuals, a walk-through of the facility to identify control panels and device locations.
   b. Specific hardware configuration of installed systems in this building and specific instruction for operating the installed system, including HVAC systems, lighting controls and any interface with security and communication systems.
   c. Security levels, alarms, system start-up, shut-down, power outage and restart routines, changing set points and alarms and other typical changed parameters, overrides, freeze protection, manual operation of equipment, optional control strategies that can be considered, energy savings strategies and set points that if changed will adversely affect energy consumption, energy accounting, procedures for obtaining vendor assistance, etc.
   d. All trending and monitoring features (values, change of state, totalization, etc.), including setting up, executing, downloading, viewing both tabular and graphically and printing trends. Trainees will actually set-up trends in the presence of the trainer.
   e. Every screen shall be completely discussed, allowing time for questions.
   f. Use of keypad or plug-in laptop computer at the zone level.
   g. Use of remote access to the system via phone lines or networks.
   h. Setting up and changing an air terminal unit controller.
   i. Graphics generation.
   j. Point database entry and modifications.
5. Deferred On-Site Training will be conducted on-site 6 months after occupancy and consist addressing specific topics that trainees need to discuss and to answer questions concerning operation of the systems.

J. FIRE ALARM SYSTEM:
1. Provide 2 hours of training to operate primarily, Level 1 and Level 2 system operators / users.
2. A 2 hour session for the purpose of training personnel who will need to administrate and maintain the system. This training session shall familiarize these "power-users" with High-Level functions, and shall also familiarize Electrical Department personnel with an overview of the as-built drawings and equipment configuration / basic troubleshooting.
3. The above training shall include, but not be limited to, providing and reviewing all programming software, access codes, and licenses that allow the Owner to add or to delete any points (i.e.: The mapping of devices), and to change a heat detector to a smoke detector. To meet this requirement, provide the necessary configuration and/or access code (hardware and/or software key). If the Vendor can not meet this requirement, the product is not acceptable

K. Testing Adjusting and Balancing: The Contractor shall have the following special training responsibilities relative to the testing, adjusting and balancing (TAB) work:
1. The TAB technician shall meet with facility staff after completion of TAB and instruct them on the following:
   a. Go over the final TAB report, explaining the layout and meanings of each data type.
   b. Discuss any outstanding deficient items in control, ducting or design that may affect the proper delivery of air or water.
   c. Identify and discuss any terminal units, duct runs, diffusers, coils, fans and pumps that are close to or are not meeting their design capacity.
   d. Discuss any temporary settings and steps to finalize them for any City-furnished, City-installed equipment.
   e. Other salient information that may be useful for facility operations, relative to TAB.

3.12. TESTS, PUNCH LIST AND FINAL ACCEPTANCE

A. The complete installation consisting of the several parts and systems and all equipment installed according to the requirements of the Contract Documents, shall be ready in all respects for use by owner and shall be subjected to a test at full operating conditions and pressures for normal conditions of use.

B. Contractor shall make all necessary adjustments and replacements affecting the work, which is necessary to fulfill owner's requirements and to comply with the directions and recommendations of the manufacturer of the several pieces of equipment, and to comply with all codes and regulations, which may apply to the entire installation. Contractor shall also make all required adjustments to comply with all provisions of the drawings and specifications.

C. Prior to acceptance, all elements of operating equipment, including those of mechanical nature and those that slide, swing, turn, or are intended to move in any way and those of an electrical nature, shall be given an operating test to assure to the satisfaction of owner that such equipment operates as required. Contractor shall make all adjustments, replacements, and such other modifications as needed. If it is necessary to run equipment in order to complete the work, for periods that exceed the manufacturer's recommended maintenance interval, the Contractor will provide such required maintenance at no additional cost to owner.

D. Notice that the work is ready for final inspection and acceptance shall be given after the Contractor has carefully inspected all portions of the work, has reviewed in detail the drawings and specifications, and that to the best of the Contractor's knowledge all conditions of the contract documents have been fulfilled. The owner and the Contractor shall make a joint inspection of the work and owner will issue a punchlist.

1. Multiple punch lists can be submitted and neither punchlist may be considered final. Punchlist can be submitted throughout the entire warranty period.
2. If Contractor fails to perform required corrective work in less than 30 days upon receipt of punch list by Contractor, owner can perform corrections or hire a separate contractor and charge the Contractor the full cost.
3. Contractor shall advice owner that the necessary work has been performed. If punch list items were not resolved and the work was not performed in less than 30 days upon receipt of punch list by Contractor, the Contractor shall be required to compensate the owner for additional site visits of project manager, design professional and other related staff at a rate of $ 100/hour plus mileage. The amount shall be paid to the owner prior to processing the final payment. Payment may be processed as deductive change order.

E. After deficiencies, if any, have been corrected or accounted for, and after all work is satisfactorily complete, the City will accept the work; and Notice of Completion will be filed by owner. The contractor shall test equipment before claiming completion. Prior to final acceptance, filing of the Notice of Completion or processing of final payment, the following shall be done and submitted reviewed and accepted by owner:

1. Certificates of compliance and guarantees required under various Sections
2. Operating and maintenance manuals
3. Instruction to City personnel, as required
4. Test reports (TAB, fire alarm, elevator etc.)
5. Certifications and registrations (boiler etc.)
6. All keys
7. Replacement material as required in specifications
8. All required operations tests
9. All documents required by commissioning, LEED certification and other project related documents
10. Satisfy all commissioning requirements
11. As –built documents
12. All punch list items resolved
13. All training provided (except deferred seasonal training)
14. All warranty issues brought to Contractor's attention so far resolved
15. Warranty documents signed by representative of manufacturer, guarantee documents, roofing agreement and other warranty related documents

3.13. CLEANING

A. All installed items shall be cleaned at time of installation, and all lens exteriors shall be cleaned just prior to final inspection. Equipment shall be thoroughly cleaned of all stains, paint, spots, dirt and dust. All temporary labels not used for instruction or operation shall be removed. Dust, dirt and other foreign matter shall be removed completely from all internal surfaces of all mechanical and electrical units, cabinets, ducts, pipes, etc. Dirt, soil, fingerprints, stains and the like, shall be completely removed from all exposed finished surfaces.

B. Contractor shall wash all glass immediately prior to the occupancy of this project. Work shall include the removal of labels, paint splattering, glazing compound and sealant. Surfaces shall include mirrors and both sides of all glass in windows, borrowed lights, partitions, doors and sidelights. In addition to the above, the Contractor shall be responsible for the general "broom" cleaning of the premises and for expediting all of the cleaning, washing, waxing and polishing required within the technical sections of the specifications governing work under this Contract. The Contractor shall also perform "final" cleaning of all exposed surfaces to remove all foreign matter, spots, soil, construction dust, etc., so as to put the project in a complete and finished condition ready for acceptance and use intended.

END OF SECTION

1

SECTION 26 00 00
ELECTRICAL INDEX

BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 08/24/07

SECTION 26 05 00
BASIC ELECTRICAL REQUIREMENTS
BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 03/09/05

PART 1 - GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Basic Electrical Requirements that are applicable to all Division 26 sections. This section includes information common to two or more technical specification sections or items that are of a general nature, not conveniently fitting into other technical sections.

1.3 REFERENCE STANDARDS

A. Abbreviations of standards organizations referenced in this and other sections are as follows:

ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
EIA	Electronics Industries Alliance
EPA	Environmental Protection Agency
ETL	Electrical Testing Laboratories, Inc.
IBC	International Building Code
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
ISA	Instrument Society of America
NBS	National Bureau of Standards
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
TIA	Telecommunications Industry Association
UL	Underwriters Laboratories, Inc.

1.4 REGULATORY REQUIREMENTS

A. All work and materials are to conform in every detail to applicable rules and requirements of the Wisconsin Enrolled Commercial Building Code, the Wisconsin State Electrical Code Volumes 1 and 2, the National Electrical Code (ANSI/NFPA 70), other applicable National Fire Protection Association codes, the National Electrical Safety Code, and present manufacturing standards (including NEMA).

1.5 QUALITY ASSURANCE

A. All Division 26 work shall be accomplished under the direction and supervision of a currently certified State of Wisconsin Certified Master Electrician.

B. Where equipment or accessories are used which differ in arrangement, configuration, dimensions, ratings, or engineering parameters from those indicated on the contract documents, the contractor is responsible for all costs involved in integrating the equipment or accessories into the system and the assigned space, and for obtaining the performance from the system, into which these items are placed.

C. All materials shall be listed by and shall bear the label of an approved electrical testing laboratory. If none of the approved electrical testing laboratories has published standards for a particular item, then other national independent testing standards, if available, applicable, and approved by A/E, shall apply and such items shall bear those labels. Where one of the approved electrical testing laboratories has an applicable system listing and label, the entire system, except for medium voltage equipment and components, shall be so labeled. The following laboratories are approved for providing electrical product safety testing and listing services as required in these specifications:

Underwriters Laboratories, Inc.
Electrical Testing Laboratories, Inc.

1.6 CONTINUITY OF EXISTING SERVICES AND SYSTEMS

A. Outages will be permitted on existing systems at the time and during the interval specified. Any outage must be scheduled when the interruption causes the least interference with normal institutional schedules and business routines. No extra costs will be paid to the Contractor for such outages that must occur outside of regular weekly working hours as specified. See specifications for details on when outages can occur.

B. Any circuit interrupted as a result of this work shall be restored to proper operation by this Contractor as soon as possible.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site.

B. Store and protect products according to instructions of respective manufacturer.

C. Accept products on-site. Inspect and record damage.

D. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

E. Handle in accordance with respective manufacturer's written instructions.

1.8 SEALING AND FIREPROOFING

A. Sealing and fireproofing of sleeves/openings between conduits, wireways, troughs, cable, etc. and the structural or partition opening shall be the responsibility of the contractor whose work penetrates the opening. The contractor responsible shall hire individuals skilled in such work to do the sealing and fireproofing. Individuals hired shall normally and routinely be employed in the sealing and fireproofing occupation.

1.9 INTENT

A. The Contractor shall furnish and install all the necessary materials, apparatus, and devices to complete the electrical equipment and systems installation herein specified, except such parts as are specifically exempted herein.

B. If an item is either called for in the specifications or shown on the plans, it shall be considered sufficient for the inclusion of said item in this contract. If a conflict exists within the Specifications or exists within the Drawings, the Contractor shall furnish the item, system, or workmanship which is the highest quality, largest, or most closely fits the Owner's intent (as determined by the A/E).

C. It must be understood that the details and drawings are diagrammatic. The Contractor shall verify all dimensions at the site and be responsible for their accuracy.

D. All sizes as given are minimum except as noted.

E. Materials and labor shall be new (unless noted or stated otherwise), first class, and workmanlike, and shall be subject at all times to the A/E's inspections, tests, and approval, from commencement to acceptance of the completed work.

F. Whenever a particular manufacturer's product is named, provide the named product. Substitutions are not allowed. Whenever products are specified by reference standards, provide any product meeting the standards.

1.10 OMISSIONS

A. The Contractor shall call the attention of the A/E to any materials or apparatus the Contractor believes to be inadequate, and to any necessary items of work omitted, no later than ten (10) days prior to bid opening.

1.11 SUBMITTALS

A. The successful bidder shall furnish submittals to the A/E. See the list below, as well as individual technical sections, for items requiring submittal.

Panelboards	Sealing and firestopping
Switchboards	Disconnect switches
Enclosed circuit breakers	Transient voltage surge suppressors
Wire and cable	Wiring devices
Fuses	Metering

B. Submit information for all equipment and systems as indicated in the respective specification sections, marking each submittal with that specification section number. Mark general catalog sheets and drawings to indicate specific items being submitted and proper identification of equipment by name and/or number, as indicated in the contract documents. Failure to do this may result in the submittal(s) being returned to the Contractor for correction and resubmission. Failing to follow these instructions does not relieve the Contractor from the requirement of meeting the project schedule.

C. On request from the A/E, the successful bidder shall furnish additional drawings, illustrations, catalog data, performance characteristics, etc.

D. Submittals shall be grouped to include complete submittals of related systems, products, and accessories in a single submittal. Mark dimensions and values in units to match those specified. Include wiring diagrams of electrically powered equipment.

E. Submittals must be approved before fabrication is authorized.

F. Provide sufficient quantities of submittals, in excess of the quantity requirement stated in Division 1, to allow the following distribution:

Operating and Maintenance Manuals	2 copies
Owner	2 copies
A/E	2 copies
Contractor(s)	as required

1.12 WORK BY OTHER TRADES

A. Every attempt has been made to indicate in this trade's specifications and drawings all work required of this Contractor. However, there may be additional specific paragraphs in other trade specifications and addenda, and additional notes on drawings for other trades which pertain to this Trade's work, and thus those additional requirements are hereby made a part of these specifications and drawings.

B. Electrical details on drawings for equipment to be provided by others is based on preliminary design data only. This Contractor shall lay out the electrical work and shall be responsible for its correctness to match equipment actually provided by others.

1.13 SALVAGED MATERIALS

A. No materials removed from this project shall be reused except as specifically noted. All materials removed shall become the property of, and shall be disposed of by, the Contractor.

1.14 CERTIFICATES AND INSPECTIONS

A. Obtain and pay for all required State and local installation permits, certificates, and inspections. Include copies of obtained documents in the Operating and Maintenance Manual.

1.15 OPERATING AND MAINTENANCE MANUAL

A. See Division 1 for additional requirements.

B. Assemble material in three-ring or post binders, using an index at the front of each volume and tabs for each system or type of equipment. In addition to the data indicated in Division 1, include the following information:

Copies of all approved submittals.
Manufacturer's wiring diagrams for electrically powered equipment.
Records of tests performed to certify compliance with system requirements.
Certificates of inspection by regulatory agencies.
Parts lists for manufactured equipment.
Preventive maintenance recommendations.
Warranties.
Additional information as indicated in the technical specification sections
Copies of required State and local permits, certificates, and inspections.

1.16 RECORD DRAWINGS

A. The Contractor shall maintain at least one copy each of the specifications and drawings on the job site at all times.

B. The A/E will provide the Contractor with a suitable set of contract drawings on which daily records of changes and deviations from contract shall be recorded. All buried or concealed piping, conduit, and similar items shall be located by dimensions and elevations on the record drawings.

C. The daily record of changes shall be the responsibility of Contractor's field superintendent. No arbitrary mark-ups will be permitted.

D. At completion of the project, the Contractor shall submit the marked-up record drawings to the A/E prior to final payment.

PART 2 - PRODUCTS

2.1 IDENTIFICATION

A. See Electrical Section 26 05 53 – Electrical Identification.

2.2 SEALING AND FIREPROOFING

A. Manufacturers: All firestopping systems shall be provided by the same manufacturer

1. 3M, STI/SpecSeal, Tremco, or approved equal.

B. Product:

1. Firestop systems shall be UL listed or tested by an independent testing laboratory.
2. Use a product that has a rating not less than the rating of the wall or floor being penetrated. Reference architectural drawings for identification of fire and/or smoke rated walls and floors.

C. Contractor shall use firestop putty, caulk sealant, intumescent wrapstrips, intumescent firestop collars, firestop mortar, or a combination of these products to provide a UL listed system for each application required for this project. Provide mineral wool backing where specified in manufacturer's application detail.

D. Submittals: Submit product data for each firestop system. Submittals shall include product characteristics, performance and limitation criteria, test data, MSDS sheets, and installation details and procedures for each method of installation applicable to this project. For non-standard conditions where no UL tested system exists, submit manufacturer's drawings for UL system with known performance for which an engineering judgment can be based upon.

2.3 NON-RATED PENETRATIONS:

A. Conduit and Cable Tray Penetrations:

1. At conduit and cable tray penetrations of non-rated interior partitions, floors and exterior walls above grade, use urethane caulk in annular space between conduit and sleeve, or the core drilled opening.
2. Install escutcheons or floor/ceiling plates where pipe penetrates non-fire rated surfaces in occupied spaces. Occupied spaces for this paragraph include only those rooms with finished ceilings and the penetration occurs below the ceiling

2.4 ACCESS PANELS AND DOORS

A. Plaster and Gypsum Board Walls and Ceilings: 16 gauge frame with not less than a 20 gauge hinged door panel, prime coated steel for general applications, stainless steel for use in toilets, showers, and similar wet areas, concealed hinges, screwdriver operated cam latch for general applications, key lock for use in public or secured areas, UL listed for use in fire rated partitions if required by the application. Use the largest size access opening possible, consistent with the space and the item needing service; minimum size is 12" by 12".

PART 3 - EXECUTION

3.1 CUTTING AND PATCHING

A. Each trade shall perform cutting and patching necessary for installation of their respective work, unless otherwise noted. Cutting and patching shall be performed by skilled technicians experienced with the procedures, equipment, and materials required. Patch disturbed surfaces and structures with materials and finishes matching adjacent surfaces and structures.

3.2 BUILDING ACCESS

A. Arrange for the necessary openings in the building to allow for admittance of all apparatus. When the building access was not previously arranged and must be provided by this contractor, restore any opening to its original condition after the apparatus has been brought into the building.

3.3 EQUIPMENT ACCESS

A. Install all piping, conduit, ductwork, and accessories to permit access to equipment for maintenance. Where access is required in plaster or gypsum board walls or ceilings, furnish and install access panels or doors. Coordinate the exact location of wall and ceiling access panels and doors with other trades, making sure that access is available for all equipment and specialties.

3.4 COORDINATION

A. The Contractor shall cooperate with other trades in locating work in a proper manner. Should it be necessary to raise or lower or move longitudinally any part of the electrical work to better fit the general installation, such work shall be done at no extra cost to the Owner, provided such decision is reached prior to actual installation. The Contractor shall check location of electrical outlets with respect to other installations before installing.

B. The Contractor shall verify that all devices are compatible for the surfaces on which they will be used. This includes, but is not limited to, light fixtures, panelboards, devices, etc. and recessed or semi-recessed heating units installed in/on architectural surfaces.

C. Coordinate all work with other contractors prior to installation. Any installed work that is not coordinated and that interferes with other contractor's work shall be removed or relocated at the installing contractor's expense.

3.5 SLEEVES

A. Pipe sleeves for conduit 6" in diameter and smaller, in new poured concrete construction, shall be Schedule 40 steel pipe, plastic removable sleeve or sheet metal sleeve, all cast in place.

B. In wet area floor penetrations, top of sleeve to be 2 inches above the adjacent floor. In existing wet area floor penetrations core drill sleeve openings large enough to insert Schedule 40 sleeve and grout the area around the sleeve. If the pipe penetrating the sleeve is supported by a pipe clamp resting on the sleeve, weld a collar or struts to the sleeve that will transfer weight to the existing floor structure. Wet areas for this paragraph are rooms or spaces containing air handling unit coils, converters, pumps, chillers, boilers, and similar waterside equipment.

C. Pipe penetrations in existing concrete floors that are not in wet areas may omit the use of Schedule 40 sleeve and use the core drilled opening as the sleeve.

3.6 SEALING AND FIREPROOFING

A. Fire and/or Smoke Penetrations: Install approved product in accordance with the manufacturer's instructions where a pipe (i.e. bus, cable bus, conduit, wireway, trough, etc.) penetrates a fire rated surface.

B. Where firestop mortar is used to infill large fire-rated floor openings that could be required to support weight, provide permanent structural forming. Firestop mortar alone is not adequate to support any substantial weight.

C. Non-Rated Surfaces:

1. When the opening is through a non-fire rated wall, floor, ceiling, or roof the opening must be sealed using an approved type of material.
2. Use galvanized sheet metal sleeves in hollow wall penetrations to provide a backing for the sealant. Grout area around sleeve in masonry construction.
3. Install escutcheons or floor/ceiling plates where pipe penetrates non-fire rated surfaces in occupied spaces. Occupied spaces for this paragraph include only those rooms with finished ceilings and the penetration occurs below the ceiling.

D. In exterior wall openings below grade, assemble rubber links of mechanical seal to the proper size for the pipe and tighten in place, in accordance with the manufacturer's instructions.

E. At interior partitions, pipe penetrations are required to be sealed for all computer rooms, tele/data/com rooms and similar spaces where the room pressure must be controlled. Apply sealant to both sides of the penetration in such a manner that the annular space between the pipe sleeve and the pipe is completely filled.

3.7 HOUSEKEEPING AND CLEAN UP

A. The Contractor shall clean up and remove from the premises, on a daily basis, all debris and rubbish resulting from its work, and shall repair all damage to new and existing equipment resulting from its work. When job is complete, this Contractor shall remove all tools, excess material and equipment, etc., from the site.

END OF SECTION

SECTION 26 05 01
PROJECT OVERVIEW AND OUTAGE SCHEDULE

SCOPE

All electrical equipment shall be furnished and installed by the Contractor except as noted.

The bidder shall include the costs of furnishing and installing the electrical systems as specified on the drawings, in other specification sections and herein.

This outline provides an overview of the electrical work required for this project. The work as listed is not intended to be a complete listing. The Contractor shall be responsible for reviewing the Drawings and specifications to determine the equipment, materials and labor required to furnish complete and operating systems.

SUMMARY OF WORK INCLUDED

The following is a summary of the work included:

- Construction of new electrical service and distribution.
- Demolition of two existing electrical services and distribution.

This Contract includes electrical construction that must be time coordinated with Traffic Engineering.

The Contractor is responsible for all materials and labor that may be necessary to relocate existing equipment in order to install the new electrical service equipment specified and detailed herein.

The existing electrical panels must be maintained and in service while the new systems are constructed except for planned and scheduled outages.

OUTAGES AND LOAD CUTOVERS

Required outages in connection with the construction of this project and the cutover of loads to the new electrical service must be kept to a minimum and are to be time coordinated by the Contractor with Traffic Engineering.

PROPOSED PROCEDURE FOR CUTOVER OF NEW ELECTRICAL SYSTEM

Main Electrical Service/Distribution (All work to occur on off hours):

1. Coordinate with MGE to remove the existing (2) electrical services de-energized and the service conductors pulled out of the existing service entrance conduits.
2. Remove existing service equipment as required for installation of the new service entrance switchboard and distribution section.
3. Install new service entrance switchboard and distribution section.
4. Install grounding per code.
5. Install new conductors as required to re-energize all existing feeders.
6. Install new meter socket.
7. Coordinate with Electrical Inspection to have the new service inspected.
8. Coordinate with MGE to have new meter installed.
9. Coordinate with MGE to have new service entrance conductors installed and terminated.
10. Return power to the building and re-energize all electrical panels.

Panels "PA Left", "PA Right", "Sign Room B", "B Lighting":

1. Install new feeder conduit from new distribution to a new pull box sized per NEC near the location of the existing panel during regular business hours.
2. During a coordinated off hours building power outage, pull new feeder conductors from the new distribution to the new pull box described above. Pull conductors with enough length to allow termination at the new panel without splicing at the new pull box. Terminate new conductors at the new breaker serving this panel and lock in the off position.
3. During a coordinated regular hours outage for the loads served from the existing panel, remove the existing panel interior and tub. Protect existing branch circuits for reconnection to the new panel. Install the new panel tub and interior. Extend new feeder conduit to new panel. Complete pull of new feeder wire from the pull box to the new panel and terminate. Provide new conduit, wire, and junction boxes as required to extend the existing branch circuits to the new panel. No splices shall occur inside the new panel tub.
4. Restore power to the new panel and loads.

Panel "A":

1. Remove block wall above existing flush mount tubs as required to provide new overhead feeder to the existing panel tubs.
2. Install new feeder conduit from new distribution to near the location of the existing panel during regular business hours.
3. During a coordinated off hours building power outage, remove the existing panel interior. Protect existing branch circuits for reconnection to the new panel interior. Install new panel interiors in the existing tubs. Extend the new feeder conduit to the panel. Pull new feeder conductors from the new distribution to the new panel interior and terminate. Reconnect existing branch circuits to the new panel.
4. Restore power to the new panel and loads.

Panels "C" and "D":

1. Install new panel tub, interior, and feeder conduit at the new location shown during regular business hours.
2. During a coordinated off hours building power outage, pull new feeder conductors from the new distribution to the new panel location. Terminate new conductors at the new breaker serving this panel and lock in the off position.
3. During a coordinated regular hours outage for the loads served from the existing panel, remove the existing panel interior and tub. Protect existing branch circuits for reconnection to the new panel. Provide new conduit, wire, and junction boxes as required to extend the existing branch circuits to the new panel. No splices shall occur inside the new panel tub. Existing panel tub shall not be used as a junction box.
4. Restore power to the new panel and loads.

Panel "F":

1. Install new feeder conduit from new distribution to the existing panel location. Install junction boxes and/or condulets as required to transition from overhead to underground feeders and to allow for a majority of the conductors to be pulled during regular business hours.
2. During a coordinated off hours building power outage, pull new feeder conductors into the new distribution. Terminate new conductors at the new breaker serving this panel and lock in the off position.
3. During a coordinated regular hours outage for the loads served from the existing panel, remove the existing panel interior and tub. Protect existing branch circuits for reconnection to the new panel. Provide new conduit, wire, and junction boxes as required to extend the existing branch circuits to the new panel. All new junction boxes and fittings to be listed for wet locations. No splices shall occur inside the new panel tub.
4. Restore power to the new panel and loads.

Panel "P.U.":

1. Install new feeder conduit from new distribution to a new junction box sized per NEC at a location near the existing panel P.U. feeder during regular business hours.
2. During a coordinated off hours building power outage, reroute the existing feeder conduit and wire to the new pull box described above. Pull new feeder conductors from the new distribution to the new pull box and splice with the existing conductors. Terminate new conductors at the new breaker serving this panel.
3. Restore power to the panel and loads.

Panel "Radio Shop":

1. During a coordinated regular hours outage for the loads served from existing panel "Radio EM", reroute existing "Radio EM" feeder from the load side of the manual transfer switch to the regular power breaker in the existing panel "Radio Shop". Restore power to existing panel "Radio EM.
2. Disconnect and remove the existing manual transfer switch, install new panel tub, interior, and feeder conduit at the new location shown during regular business hours.
3. During a coordinated off hours building power outage, pull new feeder conductors from the new distribution to the new panel location. Terminate new conductors at the new breaker serving this panel and lock in the off position.
4. During a coordinated off hours outage for the loads served from the existing panel "Radio Shop", remove the existing panel interior and tub. Protect existing branch circuits for reconnection to the new panel. Provide new conduit, wire, and junction boxes as required to extend the existing branch circuits to the new panel. No splices shall occur inside the new panel tub. Existing panel tub shall not be used as a junction box.
5. Restore power to the new panel and loads.

Panels "Maint Office" and "Radio Comm"

1. During a coordinated regular hours outage for the loads served from the existing panel, remove the existing panel interior and tub. Protect existing branch circuits for reconnection to the new panel. Install the new panel tub and interior. Extend the load side of the existing feeder conduit to the new panel and the line side of the existing feeder conduit to the new panel "Radio Shop". Pull new feeder wire from panel "Radio Shop" to the new panel and terminate at the new panel. Provide new conduit, wire, and junction boxes as required to extend the existing branch circuits to the new panel. No splices shall occur inside the new panel tub.
2. Restore power to the new panel and loads.

Panel "Standby"

Regular Business hours:

1. Install new panel tub and interior for new panel "Standby".
2. Install new control conduit and wire from the existing generator to the new location of the automatic transfer switch.
3. Install new generator power feeder conduit from the new disconnect to the new location of the automatic transfer switch.
4. Run new normal power feeder conduit from the new distribution to the new location of the automatic transfer switch.
5. Prepare the new tub for load side conduit connection to the relocated automatic transfer switch.
6. Provide new conduit, wire, and junction boxes as required to extend the existing branch circuits of panel "Emergency" to the new panel "Standby". No splices shall occur inside the new panel tub. Existing panel tub shall not be used as a junction box.

Panel "Standby" (CONT)

Off hours:

1. Disconnect and remove the automatic transfer switch from service. Reinstall the automatic transfer switch at the new location.
2. Complete termination of control wires.
3. Complete generator power feeder conduit. Pull and terminate new generator power feeder conductors.
4. Complete normal power feeder conduit. Pull and terminate new normal power feeder conductors.
5. Complete load side conduit to new panel. Pull and terminate new load side feeder conductors.
6. Restore power to the new panel and loads.

Panels "Radio Standby" and "Boiler":

1. Install new panel tub, interior, and feeder conduit at the new location shown during regular business hours.
2. Pull new feeder conductors from the new panel "Standby" to the new panel.
3. During a coordinated regular hours outage for the loads served from the existing panel, remove the existing panel interior and tub. Protect existing branch circuits for reconnection to the new panel. Provide new conduit, wire, and junction boxes as required to extend the existing branch circuits to the new panel. No splices shall occur inside the new panel tub. Existing panel tub shall not be used as a junction box.
4. Restore power to the new panel and loads.

END OF SECTION

SECTION 26 05 02
ELECTRICAL DEMOLITION FOR REMODELING
BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 12/13/01

PART 1 - GENERAL

1.1 GENERAL

A. All removed copper wire shall be turned over to the owner. Contractor is responsible for disposal of all other removed equipment and material.

1.2 SCOPE

A. Demolition, removal, abandonment, and revision to electrical systems to accommodate the project.

PART 2 - PRODUCTS

A. MATERIALS AND EQUIPMENT

1. Materials and equipment for patching work: As specified in individual Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify field measurements and circuiting arrangements are as shown on Drawings.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition Drawings are based on casual field observation and existing record documents. Report discrepancies to Architect/Engineer before disturbing existing installation.

D. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.

B. Coordinate utility service outages with Owner, Architect, Engineer, and Utility Company.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits use personnel experienced in such operations. In particular, all security and safety systems must be maintained in operation at all times as required by the Owner. This includes security and safety lighting.

D. Existing Electrical Service: Maintain existing system until new system components are ready for install. Disable system only to make switchovers and connections. Obtain permission from Owner at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

3.3 DEMOLITION OF EXISTING ELECTRICAL WORK

A. Demolish and extend existing electrical work to meet all requirements of these specifications.

B. If certain raceways and boxes are abandoned but not scheduled for removal, those items must be shown on the As Built Drawings as for "future use".

C. Remove, relocate, and extend existing installations to accommodate new construction.

D. Remove abandoned wiring to source of supply or nearest remaining equipment on same circuit.

E. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

F. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank covers for abandoned outlets that are not removed.

G. Disconnect and remove abandoned panelboards and distribution equipment.

H. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

I. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories. Dispose of lamps in accordance to National, State, and Local ordinances.

J. Repair adjacent construction and finishes damaged during demolition and extension work.

K. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

L. Extend existing installations using materials and methods as specified. This includes the extension of the circuit from the last active device to the next device in the system to be activated.

3.4 CLEANING AND REPAIR

A. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION

SECTION 26 05 19
WIRE AND CABLE
(Below 600 Volts)

BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 01/07/05

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Building wire and wiring connectors.

1.3 SHOP DRAWING SUBMITTALS

A. Submit under provisions of Section 26 05 00.

B. Submit manufacturer's installation instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.

1.5 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.

B. Conductor sizes are based on copper.

C. Wire and cable routing shown on Drawings is approximate unless dimensioned. Route wire and cable as required to meet Project Conditions.

D. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

PART 2 – PRODUCTS

2.1 GENERAL

A. All wire shall be new, delivered to the site in unbroken cartons and shall be less than one year old out of manufacturer's stock.

B. All conductors shall be copper.

C. Insulation shall have a 600 volt rating.

D. All conductors shall have insulation rated 90 degrees C.

E. All conductors must be suitable for the application intended. Conductors #10 and larger must be stranded. Conductors #12 and smaller may be solid or stranded with the following requirements or exceptions:

1. All conductors terminated with crimp type devices must be stranded.
2. Stranded conductors may only be terminated with UL OR ETL Listed type terminations or methods: e.g. stranded conductors may not be wrapped around a terminal screw but must be terminated with a crimp type device.

2.2 BUILDING WIRE

A. Description: Single conductor insulated wire.

B. Insulation: Type THHN, THWN-2, XHHW insulation for feeders and branch circuits.

2.3 WIRING CONNECTORS

A. Split Bolt Connectors: Not acceptable.

B. Insulation piercing or displacement connectors: not acceptable.

C. Solderless Pressure Connectors: High copper alloy terminal. May be used only for cable termination to equipment pads or terminals. Not approved for splicing.

D. Spring Wire Connectors: Solderless spring type pressure connector with insulating covers for copper wire splices and taps. Use for conductor sizes 10 AWG and smaller.

E. All wire connectors used in underground or exterior pull boxes shall be gel filled twist connectors or a connector designed for damp and wet locations.

F. Mechanical Connectors: Bolted type tin-plated; high conductivity copper alloy; spacer between conductors; beveled cable entrances.

G. Compression (crimp) Connectors: Long barrel; seamless, tin-plated electrolytic copper tubing; internally beveled barrel ends. Connector shall be clearly marked with the wire size and type and proper number and location of crimps.

PART 3 – EXECUTION

3.1 GENERAL WIRING METHODS

A. All wire and cable shall be installed in conduit.

B. Do not use wire smaller than 12 AWG for power and lighting circuits; 14 AWG for control wiring greater than 60 volts; or #18 AWG for voltages less than 60 volts; all sizes subject to NEC 725 requirements.

C. All conductors shall be sized to prevent excessive voltage drop at rated circuit ampacity. As a minimum use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 100 feet (30 m), for emergency lighting and exit sign wiring, and for 20 ampere, 277 volt branch circuit home runs longer than 200 feet (61 m).

D. Make conductor lengths for parallel conductors equal.

E. Splice only in junction or outlet boxes.

F. No conductor less than 10 AWG shall be installed in exterior underground conduit.

G. Identify all low voltage (600v and lower) wire per section 26 05 53.

H. Neatly train and lace wiring inside boxes, equipment, and panelboards

3.2 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Use Listed wire pulling lubricant for pulling 4 AWG and larger wires and for other conditions when necessary.

B. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.

C. Completely and thoroughly swab raceway system before installing conductors.

D. Place all conductors of a given circuit (this includes phase wires, neutral (if any), and ground conductor) in the same raceway. If parallel phase and/or neutral wires are used, then place an equal number of phase and neutral conductors in same raceway or cable.

3.3 WIRING CONNECTIONS AND TERMINATIONS

A. Splice only in accessible junction boxes.

B. Wire splices and taps shall be made firm, and adequate to carry the full current rating of the respective wire without soldering and without perceptible temperature rise.

C. All splices shall be so made that they have an electrical resistance not in excess of 2 feet (600 mm) of the conductor.

D. Use solderless spring type pressure connectors with insulating covers for wire splices and taps, 10 AWG and smaller.

E. Use mechanical or compression connectors for wire splices and taps, 8 AWG and larger. Tape uninsulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor.

F. Thoroughly clean wires before installing lugs and connectors.

G. At all splices and terminations, leave tails long enough to cut splice out and completely re-splice.

3.4 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 26 05 04.

3.5 WIRE AND CABLE INSTALLATION SCHEDULE

A. Interior Locations: Building and control wire in raceways.

B. Above Accessible Ceilings: Building wire in raceways.

C. Exterior Locations: Building wire in raceways.

D. Underground Locations: Underground wire in raceways, buried a minimum of 24".

E. High Temperature Areas (light fixtures and mechanical rooms): Building wire rated 90 degrees C. in raceways.

3.6 WIRE COLOR

A. Conductors of size 10 AWG and smaller -- conductor insulation jacket shall be colored as indicated below. Conductors of size 8 AWG and larger - apply colored tape to conductors at all terminals, splices, and boxes, using color scheme indicated below:

1. Use black, red, and blue for circuits at 120/208 volts single or three phase.

B. Neutral Conductors: White for size 6 AWG and smaller. Size 4 AWG and larger, identify with white tape at both ends and at all access points, such as panelboards, motor starters, disconnects and junction boxes. Where there are two or more neutral conductors in one conduit, each shall be individually identified with the proper circuit.

C. Branch Circuit Conductors: Three or four wire home runs shall have each phase uniquely color-coded.

D. Feeder Circuit Conductors: Each phase shall be uniquely color coded.

E. Ground Conductors: Green for size 6 AWG and smaller. Size 4 AWG and larger, identify with green tape at both ends and at all access points, such as panelboards, motor starters, disconnects and junction boxes. See requirements of NEC 210-5 and 310-12. When isolated grounds are required, contractor shall provide green with yellow tracer.

3.7 BRANCH CIRCUIT NEUTRAL CONDUCTORS

A. The use of multi-wire branch circuits with a common neutral is not permitted. Each branch circuit shall be furnished and installed with an accompanying neutral conductor sized the same as the phase conductor.

3.8 EMERGENCY CIRCUITS

A. All emergency system wiring shall be installed in raceways separate from all other systems.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING

BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 10/29/03

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Grounding electrodes and conductors, equipment grounding conductors, and bonding.

1.3 GROUNDING ELECTRODE SYSTEM

A. Metal underground water pipe.

B. Metal frame of the building.

C. Rod electrode.

1.4 PERFORMANCE REQUIREMENTS

A. Grounding System Resistance: 5 ohms maximum.

1.5 SUBMITTALS

A. Submit under provisions of Section 26 05 00.

B. Test Reports: Indicate overall resistance to ground and resistance of each electrode.

1.6 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of grounding electrodes.

PART 2 – PRODUCTS

2.1 ROD ELECTRODE

A. Material: Copper-clad steel.

B. Diameter: 3/4 inch (19 mm) minimum.

C. Length: 10 feet (3 m) minimum. Rod shall be driven at least 9' 6" deep.

D. Provide the number of rods required to obtain proper ground resistance. This applies to manholes, padmount switches, transformers, service entrances, etc.

2.2 MECHANICAL CONNECTORS

A. The mechanical connector bodies shall be manufactured from high strength, high conductivity, cast copper alloy material. Bolts, nuts, washers and lockwashers shall be made of silicon bronze and supplied as a part of the connector body and shall be of the two bolt type.

B. Split bolt connector types are not allowed.

C. The connectors shall meet or exceed UL 467 and be clearly marked with the catalog number, conductor size and manufacturer.

2.3 COMPRESSION CONNECTORS

A. The compression connectors shall be manufactured from pure wrought copper. The conductivity of this material shall be no less than 99% by IACS standards.

B. The connectors shall meet or exceed the performance requirements of IEEE 837, latest revision.

C. The installation of the connectors shall be made with a compression tool and die system recommended by the manufacturer of the connectors. The die number shall be imprinted on the installed connector.

D. The connectors shall be clearly marked with the manufacturer, catalog number, conductor size and the required compression tool settings.

E. Each connector shall be factory filled with an oxide-inhibiting compound.

F. Compression connector system shall be Burndy (Hyground series). Equal by Ilsco.

2.4 EXOTHERMIC CONNECTIONS

A. Coordination: Determine weld type and configuration. Provide proper mold.

B. Description: Molecular weld.

C. Catalyst: Powdered copper oxide

D. Procedure: Follow manufacturer's recommendations.

2.5 WIRE

A. Material: Stranded copper (aluminum not permitted).

B. Grounding Electrode Conductor: Size as shown on drawings, specifications or as required by NFPA 70, whichever is larger.

C. Feeder and Branch Circuit Equipment Ground: Size as shown on drawings, specifications or as required by NFPA 70, whichever is larger. Differentiate between the normal ground and the isolated ground when both are used on the same facility.

2.6 GROUNDING BUS

A. Material: Copper (aluminum not permitted).

B. Size: 1/4" x 4" minimum.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that final backfill and compaction has been completed before driving rod electrodes.

3.2 GENERAL

A. Install Products in accordance with manufacturer's instructions.

B. Remove bond between neutral and ground, as applicable, in utility metering enclosures.

C. Mechanical connections shall be accessible for inspection and checking. No insulation shall be installed over mechanical ground connections.

D. Ground connection surfaces shall be cleaned and all connections shall be made so that it is impossible to move them.

E. Attach grounds permanently before permanent building service is energized.

F. Install rod electrodes at locations indicated or as required by Code, whichever requires the most rods. Install additional rod electrodes as required to achieve specified resistance to ground.

G. Provide bonding to meet Regulatory Requirements.

H. Bond together metal siding not attached to grounded structure; bond to ground.

I. All separate ground conductors shall be enclosed in Schedule 80 PVC conduit.

3.3 LESS THAN 600 VOLT SYSTEM GROUNDING

A. Provide code-sized copper grounding electrode conductor from each separately derived system neutral, secondary service system neutral to street side of water meter, building steel, ground rod, and any other electrodes at the site. Provide bonding jumper around water meter. Install conductor in separate Schedule 80 PVC conduit.

B. Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing systems.

C. Equipment Grounding Conductor: Provide separate, insulated green conductor within each raceway and cable tray, sized per NEC or as indicated in the contract documents whichever is larger. Terminate each end on suitable lug, bus, enclosure or bushing, per NEC. Provide a ground wire from each device to the respective enclosure.

3.4 FIELD QUALITY CONTROL

A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.

B. Use suitable test instrument to measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using the fall-of-potential method. Resistance shall not exceed 5 ohms.

END OF SECTION

SECTION 26 05 29
SUPPORTING DEVICES
BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 1/17/02

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Conduit and equipment supports, straps, clamps, steel channel, etc, and fastening hardware for supporting electrical work.

1.3 COORDINATION

A. Coordinate size, shape, and location of concrete pads with applicable equipment submittals.

1.4 QUALITY ASSURANCE

A. Support systems shall be adequate for weight of equipment and conduit, including wiring, which they carry.

PART 2 – PRODUCTS

2.1 MATERIAL

A. Support Channel: Galvanized steel, sized to support the load. Fittings and accessories shall be of the same manufacturer as the support channel.

B. Expansion Anchors: All steel construction.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using beam clamps.

B. File and de-bur cut ends of support channel and spray paint with cold galvanized paint to prevent rusting.

C. Use toggle bolts or hollow wall fasteners in hollow masonry, plaster, or gypsum board partitions and walls; expansion anchors in solid masonry walls; self-drilling anchors or expansion anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

D. Do not fasten supports to piping, ductwork, mechanical equipment, cable tray or conduit.

E. Do not use power-actuated or plastic anchors.

F. Do not drill structural steel members unless approved by A/E.

G. Fabricate supports from galvanized structural steel or steel channel, rigidly welded or bolted to present a neat appearance. Use hexagon head bolts with spring lock washers under all nuts.

H. Wet locations, mechanical rooms, and electrical rooms: install free-standing electrical equipment on nominal four (4) inch (100 mm) thick concrete pads.

I. Install surface-mounted cabinets and panelboards with minimum of four anchors. Provide steel channel supports to stand cabinet one inch (25 mm) off wall.

J. Bridge studs top and bottom with channels to support flush-mounted cabinets and panelboards in stud walls.

K. Furnish and install all supports as required to fasten all electrical components required for the project, including free standing supports required for those items remotely mounted from the building structure, catwalks, walkways etc.

L. Minimum sized threaded rod for supports shall be 3/8".

M. Conduit clamps, straps, supports, etc., shall be steel or malleable iron. One-hole straps shall be heavy duty type. All straps shall have steel or malleable backing plates when conduit is installed on the interior or exterior surface of any exterior building wall.

END OF SECTION

SECTION 26 05 33
CONDUIT
BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 10/29/03

PART 1 - GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Raceways shall be installed as a complete system continuous from service to outlet or equipment, mechanically and electrically connected, constituting a continuous ground system.

PART 2 - PRODUCTS

2.1 RIGID METAL CONDUIT AND FITTINGS

A. Conduit: ANSI C80.1, heavy wall, galvanized steel, Schedule 40, threaded.

B. Fittings and Conduit Bodies: NEMA FB 1, all steel threaded fittings and conduit bodies.

2.2 ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS

A. Conduit: ANSI C80.3, steel, galvanized tubing.

B. Fittings: ANSI C80.3, insulated throat; all steel construction, set screw or compression type. No push-on or indenter types permitted.

C. Conduit Bodies: ANSI C80.3, all steel conduit bodies.

2.3 FLEXIBLE METAL CONDUIT AND FITTINGS

A. Conduit: steel, galvanized, spiral strip.

B. Fittings and Conduit Bodies: NEMA FB 1, all steel, galvanized, or malleable iron.

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT AND FITTINGS

A. Conduit: flexible, steel, galvanized, spiral strip with an outer liquidtight, nonmetallic, sunlight-resistant jacket.

B. Fittings and Conduit Bodies: NEMA FB 1, compression type. There shall be a metallic cover/insert on the end of the conduit inside the connector housing to seal the cut conduit end.

2.5 RIGID NONMETALLIC CONDUIT AND FITTINGS

A. Conduit: NEMA TC 2, Schedule 40 PVC minimum, sunlight resistant, rated for 90° C conductors.

B. Fittings and Conduit Bodies: NEMA TC 2, Listed.

2.6 CONDUIT SUPPORTS

A. See Section 26 05 29.

2.7 GENERAL

A. All fittings and conduit bodies for steel conduit shall be galvanized. Cast metal, split or gland type fittings will not be permitted.

B. Condulets larger than 2 inch (50 mm) will not be permitted except as approved or detailed.

C. All condulet covers must be fastened to the condulet body with screws and be of the same manufacture.

D. Wireways and gutters shall not be used in lieu of pull boxes and condulets.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install conduit in accordance with NECA Standard of Installation No. 5055.

3.2 CONDUIT SIZING, ARRANGEMENT, AND SUPPORT

A. EMT is permitted to be used in sizes 4" (100 mm) and smaller for power and telecommunication systems. See CONDUIT INSTALLATION SCHEDULE below for other limitations for EMT and other types of conduit.

B. Size power conductor raceways for conductor type installed or for Type THW conductors, whichever results in larger conduit. Conduit size shall be 3/4-inch (19 mm) minimum except as specified elsewhere or with specific Engineer's approval for each application. Conduit for all other wiring, including but not limited to data, control, security, fire alarm, telecommunications, signal, video, etc. shall be sized per number of conductors pulled and their cross-sectional area. Maximum conduit fill shall be 40%.

C. Arrange conduit to maintain headroom and present a neat appearance.

D. Route exposed conduit, and conduit above accessible ceilings, parallel and perpendicular to walls and adjacent piping.

E. Maintain minimum 6-inch (150 mm) clearance between conduit and piping. Maintain 12-inch (300 mm) clearance between conduit and heat sources such as flues, steam pipes, and heating appliances.

F. Arrange conduit supports to prevent distortion of alignment by wire pulling operations. Fasten conduit using galvanized pipe straps, conduit racks (lay-in adjustable hangers), clevis hangers, or bolted split stamped galvanized hangers.

G. Conduits stubbed as spare or used for wiring of low voltage systems shall be attached within 3-feet of the associated device box, and within 3-feet of the end of the stubbed conduit.

H. Group conduit in parallel runs where practical and use conduit rack (lay-in adjustable hangers) constructed of steel channel with conduit straps or clamps. Provide space for 25 percent additional conduit.

I. Do not fasten conduit with wire or perforated pipe straps. Before conductors are pulled, remove all wire used for temporary conduit support during construction.

J. Support and fasten metal conduit at a maximum of 8 feet (2.4 m) on center.

K. Conduit supports shall be independent of the installations of other trades (e.g. ceiling support wires, HVAC pipes, etc.), unless so approved or detailed.

L. In general, all conduit shall be concealed except where noted on the drawings or approved by the Architect/Engineer. Contractor shall verify with Architect/Engineer all surface conduit installations except in mechanical rooms.

M. Changes in direction shall be made with symmetrical bends, cast steel boxes, stamped metal boxes, or cast steel conduit bodies.

N. No continuous conduit run shall exceed 100 feet (30 meters) without a junction box.

3.3 CONDUIT INSTALLATION

A. Cut conduit square using a saw or pipecutter; de-burr cut ends.

B. Conduit shall not be fastened to corrugated metal roof deck.

C. Bring conduit to the shoulder of fittings and couplings, and fasten securely.

D. Use conduit hubs for fastening conduit to cast boxes. Use sealing locknuts or conduit hubs for fastening conduit to sheet metal boxes in damp or wet locations. Sheet metal boxes larger than 4-11/16" square shall not contain pre-punched or concentric knockouts.

E. All conduit terminations (except for terminations into conduit bodies) shall use connectors or conduit hubs with one locknut, or shall use double locknuts (one each side of box wall) and insulating bushing. Provide bushings for the ends of all conduit not terminated in box walls. Refer to Section 26 05 26 Grounding and Bonding for grounding bushing requirements.

F. Install no more than the equivalent of four 90-degree bends between boxes.

G. Use hydraulic one-shot conduit bender or factory elbows for bends in conduit larger than 2-inch (50 mm) size unless sweep elbows are required.

H. Conduit shall be bent according to manufacturer's recommendations.

I. Torches or open flame shall not be used to aid in bending PVC conduit.

J. Use suitable conduit caps or other approved seals to protect installed conduit against entrance of dirt and moisture.

K. Conduit stubs, sleeves, and nipples shall be terminated with a bushing. Provide a ground bushing as required by other specification sections.

L. Provide 1/8-inch (3 mm) nylon pull string in empty conduit.

M. Install expansion-deflection joints where conduit crosses building expansion joints. Expansion-deflection joints are not required where conduit crosses building control joints if the control joint does not act as an expansion joint. Install expansion fitting in PVC conduit runs as recommended by the manufacturer.

N. Avoid moisture traps where possible. Where moisture traps are unavoidable, provide junction boxes with drain fittings at conduit low points.

O. Where conduit passes between areas of differing temperatures such as into or out of cool rooms, freezers, unheated and heated spaces, buildings, etc., provide Listed conduit seals to prevent the passage of moisture and water vapor through the conduit.

P. Route conduit through roof openings for piping and ductwork where possible.

Q. Conduit is not permitted in any slab or slab topping except passing perpendicularly through a slab or slab topping.

R. Ground and bond conduit under provisions of Section 26 05 26.

S. PVC conduit shall transition to galvanized rigid metal conduit before it enters a concrete pole base, foundation, wall, or through a concrete floor.

T. Identify conduit under provisions of Section 26 05 53.

U. All conduit installed underground (exterior to building) shall be buried a minimum of 24" below finished grade, whether or not the conduit is concrete encased.

V. PVC conduit shall be cleaned with solvent, and dried before application of glue. The temperature rating of glue/cement shall match weather condition. Apply full even coat of cement/glue to entire area that will be inserted into fitting. The entire installation shall meet manufacturer's recommendations.

3.4 CONDUIT INSTALLATION SCHEDULE

A. Conduit other than that specified below for specific applications shall not be used.

B. Underground installations within five feet (1.5 m) of foundation wall: Rigid steel conduit.

C. Underground installations more than five feet (1.5 m) from foundation wall: Schedule 40 PVC conduit.

D. Under slab on grade installations: Schedule 40 PVC conduit.

E. Exposed outdoor locations: Rigid steel conduit.

F. Concealed in concrete and block walls: Rigid steel conduit, electrical metallic tubing.

G. Wet interior locations: Rigid steel conduit, Schedule 40 PVC conduit, PVC coated rigid steel conduit.

H. Concealed dry interior locations: Rigid steel conduit, electrical metallic tubing.

I. Exposed dry interior locations: Rigid steel conduit, electrical metallic tubing, flexible metal conduit (light fixtures and transformers).

J. Motor and equipment connections: Flexible PVC coated metal conduit in all locations. Minimum length shall be one foot (300 mm); maximum length shall be three feet (900 mm). Conduit must be installed perpendicular to direction of equipment vibration to allow conduit to freely flex.

K. Light fixtures: Direct box or conduit connection for surface mounted and recessed fixtures in unaccessible ceilings. Flexible metal conduit from a J-box for recessed light fixtures. Conduit size shall be 3/8" (10 mm) minimum diameter and six foot (1.8 M) maximum length. Flexible conduit length shall allow movement of fixture for maintenance purposes.

END OF SECTION

SECTION 26 05 34
BOXES
BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 05/03/07

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Wall and ceiling outlet boxes, floor boxes, pull and junction boxes for power, lighting, fire alarm, and telecommunications.

B. All boxes shall be of sufficient size to provide free space for all conductors enclosed in the box and shall comply with the National Electric Code and EIA/TIA Commercial Building Standards for Telecommunication Pathways and Spaces.

1.3 SUBMITTALS

A. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

PART 2 – PRODUCTS

2.1 OUTLET BOXES

A. Sheet Metal Outlet Boxes: NEMA OS1 galvanized steel, with stamped knockouts.

B. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 3/8 inch male fixture studs where required. Provide device ring of appropriate depth to accommodate the application. Refer to Part 3 Outlet Box Installation for required box sizes.

C. Concrete Ceiling Boxes: Concrete type.

D. Cast Boxes: Cast ferroalloy or aluminum, deep type, gasketed cover, threaded hubs.

2.2 PULL AND JUNCTION BOXES

A. Pull boxes and junction boxes shall be minimum 4-inch square (100 mm) by 2-1/8th inches (54 mm) deep for use with 1-inch (25 mm) conduit and smaller. On conduit systems using 1-1/4 inch (31.75 mm) conduit or larger, pull and junction boxes shall be sized per NEC but not less than 4-11/16 inch square (117 mm).

B. For telecommunication, fiber optic, security, and other low voltage cable installations the NEC box size requirements shall apply. All boxes, used on telecommunication, security, other low voltage and fiber optic systems with conduits of 1-1/4" and larger, shall be sized per the NEC conduit requirements. For determining box size, the conduit is the determining factor not the wire size.

C. Sheet Metal Boxes: code gauge galvanized steel, screw covers, flanged and spot welded joints and corners.

D. Sheet Metal Boxes Larger Than 12 Inches (300 mm) in any dimension shall have a hinged cover or a chain installed between box and cover.

E. Cast Metal Boxes for Outdoor and Wet Location Installations: Type 4 and Type 6, flat-flanged, surface-mounted junction box, UL listed as raintight. Galvanized cast iron or aluminum box and cover with ground flange, neoprene gasket, and stainless steel cover screws.

F. Box extensions and adjacent boxes within 48" of each other are not allowed for the purpose of creating more wire capacity.

G. Junction boxes 6" x 6" or larger size shall be without stamped knockouts.

H. Wireways shall not be used in lieu of junction boxes.

2.3 POLYMER CONCRETE BOXES FOR UNDERGROUND INSTALLATIONS

A. Pull/junction box constructed of polymer concrete consisting of sand and aggregate bonded together with polymer resin.

B. Internal reinforcement of steel and/or fiberglass.

C. Enclosure rated for a minimum test load of 7,500 lbs.

D. Box and cover shall be green, sized as shown on the drawings.

E. Covers shall be heavy duty rated with stainless steel bolts; imprinted identification legend.

F. Manufacturer: Quazite or approved equal.

PART 3 – EXECUTION

3.1 COORDINATION OF BOX LOCATIONS

A. Provide electrical boxes as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.

B. Electrical box locations shown on Contract Drawings are approximate unless dimensioned. Verify location of floor boxes and outlets in offices and work areas prior to rough in.

C. No outlet shall be located where it will be obstructed by other equipment, piping, lockers, benches, counters, etc.

D. Boxes shall not be fastened to the metal roof deck.

E. It shall be the Contractor's responsibility to study drawings pertaining to other trades, to discuss location of outlets with workmen installing other piping and equipment and to fit all electrical outlets to job conditions.

F. In case of any question or argument over the location of an outlet, the Contractor shall refer the matter to the Architect/Engineer and install outlet as instructed by the Architect/Engineer.

G. The proper location of each outlet is considered a part of this contract and no additional compensation will be paid to the Contractor for moving outlets which were improperly located.

H. Locate and install boxes to allow access to them. Where installation is inaccessible, coordinate locations and provide 18 inch (450 mm) by 24-inch (600 mm) access doors.

I. Locate and install to maintain headroom and to present a neat appearance.

J. Install boxes to preserve fire resistance rating of partitions and other elements, using approved materials and methods.

3.2 OUTLET BOX INSTALLATION

A. Do not install boxes back-to-back in walls. Provide minimum 6-inch (150 mm) separation, except provide minimum 24-inch (600 mm) separation in acoustic-rated walls.

1. Conduit interconnecting boxes within a common wall shall utilize at least two Code complying 90-degree bends.

B. Power: Recessed (1/4" maximum) outlet boxes in masonry, drywall, or tile construction shall be minimum 4 inch square with 4 inch square-cut device covers. Coordinate masonry cutting to achieve neat openings for boxes. Recessed outlet boxes in concrete shall be concrete type.

C. Tele/Data/Comm: Recessed (1/4" maximum) outlet boxes in masonry, drywall, or tile construction shall be minimum 4 11/16 inch square with 4 11/16 inch square-cut device covers. Coordinate masonry cutting to achieve neat openings for boxes. Recessed outlet boxes in concrete shall be concrete type.

D. Ceiling Boxes: Ceiling outlets shall be 4-inch (100 mm) octagon, minimum 2-1/8 inch (54 mm) deep, except that concrete boxes and plates will be approved where applicable. Position outlets to locate luminaires as shown on reflected ceiling plans. All ceiling outlets shall be equipped with 3/8 inch (10 mm) fixture studs.

E. Provide knockout closures for unused openings.

F. Support boxes independently of conduit except for cast boxes that are connected to two rigid metal conduits, both supported within 12 inches (300 mm) of box.

G. Use multiple-gang boxes where more than one device are mounted together; do not use sectional boxes. Provide barriers to separate wiring of different voltage systems.

H. Install boxes in walls without damaging wall insulation.

I. Coordinate mounting heights and locations of outlets mounted above counters, benches, and backsplashes.

J. In inaccessible ceiling areas, position outlets and junction boxes within 6 inches (150 mm) of recessed luminaire, to be accessible through luminaire ceiling opening.

K. Provide recessed outlet boxes in finished areas; secure boxes to interior wall and partition studs, accurately positioning to allow for surface finish thickness. Use stamped steel stud bridges for flush outlets in hollow stud wall, and adjustable steel channel fasteners for flush ceiling outlet boxes.

L. Align wall-mounted outlet boxes for switches, thermostats, and similar devices.

M. Provide cast outlet boxes in exterior locations and wet locations.

N. Surface wall outlets shall be 4-inch (100 mm) square with raised covers for one and two gang requirements. For three gang or larger requirements, use gang boxes with non-overlapping covers.

3.3 FLOOR BOX INSTALLATION

A. Set boxes level and flush with finish flooring material.

B. Use cast iron floor boxes for installations in slab on grade if required by local codes.

3.4 PULL AND JUNCTION BOX INSTALLATION

A. Locate pull boxes and junction boxes above accessible ceilings, in unfinished areas or furnish and install approved access panels in non-accessible ceilings where boxes are installed.

B. Support pull and junction boxes independent of conduit.

C. Box covers shall be color coded per section 26 05 53.

D. Pull box sizing is to be in compliance with the EIA/TIA Commercial Building Standards for Telecommunications Pathways and Spaces (EIA/TIA-569).

E. Outlet boxes serving system furniture at wall locations shall be a 3-gang box, not have rounded corners and have a minimum depth of 2-1/8 inches.

END OF SECTION

SECTION 26 05 46
UTILITY SERVICE ENTRANCE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Basic requirements for providing electrical power to the facility.

1.2 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.3 SYSTEM DESCRIPTION (NEW SERVICE)

A. Utility Company: Madison Gas and Electric Co.
133 S. Blair St.
Madison, WI 53788
(608) 252-7373
Chris Erickson, P.E.

B. System Characteristics: 208Y/120 volts, 3-phase, four- wire, 60 Hertz.

C. Service Entrance: Underground.

D. Arrange with Utility Company for permanent electric service.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Utility Company written requirements.

B. Maintain one copy of each document on site.

1.5 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on drawings.

1.6 UTILITY COSTS

A. This contractor shall be responsible for coordinating with the utility company, the relocation of any overhead or underground lines interfering with the construction. Where power lines are to be relocated, all utility costs, if any, shall be billed directly to the Owner.

PART 2 - PRODUCTS

2.1 UTILITY METER BASE

A. Provide Utility approved meter base.

2.2 METERING TRANSFORMER CABINET

A. Current transformer enclosure by Electrical Contractor per Utility requirements.

B. Size: Per utility requirements.

C. Include provisions for padlocking and sealing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Coordinate available fault current with Utility and verify that service equipment is properly protected.

B. Verify that service equipment is ready to be connected and energized.

3.2 PREPARATION

A. Make arrangements with Utility Company to obtain permanent electric service to the Project.

B. Coordinate location of Utility Company's facilities to ensure proper access is available.

END OF SECTION

SECTION 26 05 53
ELECTRICAL IDENTIFICATION
BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 11/7/02

PART 1 – GENERAL

1.1 GENERAL

A. This section describes the products and execution requirements relating to labeling of power, lighting, general wiring, signal, and fire alarm wire and cable. Further, this section includes labeling of all terminations and related sub-systems, including but not limited to nameplates, stenciling, and wire and cable marker.

PART 2 – PRODUCTS

2.1 MATERIAL

A. Labels: All labels shall be permanent, and be machine generated. NO HANDWRITTEN OR NON-PERMANENT LABELS SHALL BE ALLOWED.

B. Wire and Cable Marker: Label size shall be appropriate for the conductor or cable size(s). All labels to be used shall be self-laminating, white/transparent vinyl and be wrapped around the cable. Flag type labels are not allowed. The labels shall be of adequate size to accommodate the circumference of the cable being labeled and properly self-laminate over the full extent of the printed area of the label.

C. Nameplates: Engraved three-layer laminated plastic, black letters on a white background. Emergency system shall use red letters on white background.

D. Stenciling: Black paint. Emergency system stenciling shall use red paint.

E. Tape (phase identification only): Scotch #35 tape in appropriate colors for system voltage and phase.

F. Adhesive type labels not permitted except for phase and wire identification.

G. Underground Warning Tape: 6-inch (152 mm) wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.

PART 3 – EXECUTION

3.1 GENERAL

A. Where mixed voltages are used in one building (e.g. 4160 volt, 480 volt, 208 volt) each switch, switchboard, junction box, equipment, etc., on each system must be labeled for voltage in addition to other requirements listed herein.

B. All branch circuit and power panels must be identified with the same symbol used in circuit directory in main distribution center.

C. Clean all surfaces before attaching labels with the label manufacturer's recommended cleaning agent.

D. Install all labels firmly as recommended by the label manufacturer.

E. Install nameplates parallel to equipment lines.

F. Secure nameplates to equipment fronts using screws, or rivets. Secure nameplate to inside of recessed panelboards in finished locations.

G. Embossed tape will not be permitted for any application.

H. Locate underground warning tape above each underground conduit outside building.

3.2 JUNCTION AND PULLBOX IDENTIFICATION

A. Junction and pullboxes for systems shall be color-coded. The following junction and pullboxes shall be identified utilizing spray painted covers (fire alarm system boxes shall also be painted red):

System	Color(s)
Secondary Power – 480Y/277V	Brown
Secondary Power – 208Y/120V	White
Emergency Power – 480Y/277V	Brown/Red
Emergency Power – 208Y/120V	White/Red
Fire Alarm	Red
Video	Green
Door control and Door Monitoring System	Orange
Sound and Intercom Systems	Blue
Video Surveillance System	Yellow

3.3 POWER AND CONTROL WIRE IDENTIFICATION

A. Provide wire markers on each conductor in panelboard gutters, pull boxes and at load connection. Identify with branch circuit or feeder number for power and lighting circuits, and with control wire number, as indicated on equipment manufacturer's shop drawings, for control wiring.

3.4 NAMEPLATE ENGRAVING

A. Provide nameplates of minimum letter height as scheduled below.

B. Panelboards, Switchboards and Motor Control Centers: 1 inch (25 mm); identify equipment designation. 1/2 inch (13 mm); identify voltage rating and source.

C. Individual Circuit Breakers, Switches, and Motor Starters in Switchboards and Motor Control Centers: 1/4 inch (6 mm); identify load served.

D. Enclosed Circuit Breakers, Enclosed Switches, and Motor Starters: 1/4 inch (6 mm); identify load served.

3.5 PANELBOARD DIRECTORIES

A. Typed directories for panels must be covered with clear plastic and inserted in a metal frame. Room number on directories shall be Owner's numbers, not plan numbers, unless Owner so specifies.

END OF SECTION

SECTION 26 24 13
SWITCHBOARDS

BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 10/17/01

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Main switchboards.

1.3 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Include front and side views of enclosures with overall dimensions shown; conduit entrance locations and requirements; nameplate legends; size and number of bus bars per phase, neutral, and ground; switchboard instrument details; instructions for handling and installation of switchboard; and electrical characteristics including voltage, frame size and trip ratings, withstand ratings, and time-current curves of all equipment and components.

C. Clearly indicate equipment's accessibility requirements (e.g. front access only, front and rear access, etc.)

D. Submit manufacturers' instructions under provisions of Section 26 05 00.

E. Submit time-current curves to the engineer. The coordination study and overcurrent device set point recommendations will be provided by the engineer.

1.4 OPERATION AND MAINTENANCE DATA

A. Submit operation and maintenance data under provisions of Section 26 05 00.

B. Include spare parts data listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to the site under provisions of Section 26 05 00.

B. Unless noted otherwise, deliver in 48 inch (1.2 m) maximum width shipping splits, individually wrapped for protection, and mounted on shipping skids.

C. Store and protect products.

D. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

E. Handle in accordance with NEMA PB2.1 and manufacturer's written instructions. Lift only with lugs provided for the purpose. Handle carefully to avoid damage to switchboard internal components, enclosure, and finish.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers:

1. Square D
2. Siemens

2.2 SWITCHBOARD CONSTRUCTION AND RATINGS

A. Enclosure.

1. Factory-assembled, dead front, metal-enclosed, and self-supporting switchboard assembly conforming to NEMA PB2, and complete from incoming line terminals to load-side terminations.
2. All closure plates shall be screw removable and small enough for easy handling by one person.

B. Switchboard electrical ratings and configurations as shown on drawing schedules.

C. Minimum wiring bending space shall meet requirements of NEC Article 373.

D. Line and Load Terminations: Accessible from the front only of the switchboard, suitable for the conductor materials used.

E. Main Section Devices: Individually mounted.

F. Distribution Section Devices: Group-mounted, complete with bus in an integrated assembly. All breakers shall be bolted, quick-make, quick-break, trip indicating, and common trip on all multi-pole breakers. No handle ties will be permitted.

G. Buses:

1. The switchboard bussing shall be plated and of sufficient cross-sectional area to continuously conduct rated full load current with a maximum temperature rise of 50 degree C, above an ambient temperature of 40 degree C. Bus bars (and all other current carrying parts such as fingers, neutral and ground buses) shall be cold rolled copper, 98% minimum conductivity.
2. All bus bars and connections shall be braced to withstand stress resulting from short circuit currents of at least 42,000 amperes RMS symmetrical.
3. All bus bars and bus bar connections shall be machined for maximum contact surface and have silver plated contact connections. At the point of connection, use bronze alloy or cadmium plated bolts with Belleville washers. No clamp joints shall be used. Connections shall be bolted, accessible from front for maintenance.
4. Extend bus bars the full length of the switchboard; drilled and tapped for future breakers.
5. Provide a 1 inch x 1/4 inch (25 x 6 mm) copper ground bus through the length of the switchboard.

H. Provide metering transformer compartment for utility company's use. Compartment size, location, bus spacing and drilling, door, and locking and sealing requirements shall meet the requirements of the local utility company.

I. Enclosure shall be NEMA PB 2 Type 1 - General Purpose. Sections shall align at front and rear.

J. Switchboard Height: NEMA PB2; 90 inches, excluding floor sills, lifting members and pull boxes.

K. Finish: Manufacturer's standard light gray enamel over external surfaces. Coat internal surfaces with minimum one coat corrosion-resisting paint, or plate with cadmium or zinc.

L. Pull Box: Same construction as switchboard.

2.3 SWITCHING AND OVERCURRENT PROTECTIVE DEVICES

A. Solid-state Molded Case Circuit Breakers: Main NEMA AB 1; provide with electronic sensing, timing and tripping circuits for adjustable current settings; instantaneous trip; and adjustable short time trip.

B. Molded Case Circuit Breakers: Branch Breakers NEMA AB 1; provide circuit breakers with integral thermal and adjustable instantaneous magnetic trip in each pole.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install switchboard in locations shown on drawings, in accordance with manufacturer's written instructions and NEMA PB 2.1.

B. Install switchboard on a nominal 4" thick concrete pad.

C. Tighten accessible bus connections and mechanical fasteners after placing switchboard.

3.2 FIELD QUALITY CONTROL

A. Inspect completed installation for physical damage, proper alignment, anchorage, and grounding.

B. Check tightness of accessible bolted bus joints using a calibrated torque wrench. Tightness shall be in accordance with manufacturer's recommended values.

3.3 ADJUSTING AND CLEANING

A. Adjust all operating mechanisms for free mechanical movement.

B. Touch up scratched or marred surfaces to match original finish.

C. Adjust trip and time delay settings to values as instructed by the Architect/Engineer.

END OF SECTION

SECTION 26 24 16
PANELBOARDS

BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 10/04/02

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Branch circuit panelboards.

1.3 SUBMITTALS

A. Submit shop drawings for equipment and component devices under provisions of Section 26 05 00.

B. Include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.

C. All of the panelboards provided under this section shall be by the same manufacturer.

1.4 SPARE PARTS

A. Keys: Furnish 2 each to Owner.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers:

1. Square D
2. Siemens

2.2 BRANCH CIRCUIT PANELBOARDS

A. Lighting and Appliance Branch Circuit Panelboards: Circuit breaker type.

B. Enclosure: NEMA Type 1. Cabinet Size: 5-3/4 inches (144 mm) deep; 20 inches (508 mm) wide with 5" minimum gutter space top and bottom. Constructed of galvanized code gauge steel having welded corners. Panel enclosure (back box) shall be of non-stamped type (without KO's) to avoid concentric problem.

C. Provide flush or surface cabinet front as scheduled on the drawings with concealed trim clamps, concealed hinge and flush cylinder lock all keyed alike. Front cover shall be hinged to allow access to wiring gutters without removal of panel trim. Hinged trim shall be held in place with screw fasteners. Finish in manufacturer's standard gray enamel.

D. Provide metal directory holders with clear plastic covers.

E. Provide panelboards with copper bus (phase buses, bus fingers, etc.), ratings as scheduled on drawings. Provide ground bars in all panelboards. Neutral and ground bars can be dual rated ALCU9. All spaces indicated shall have bus fully extended and drilled for the future installation of breakers.

F. Minimum System (i.e. individual component) Short Circuit Rating: 10,000 amperes rms symmetrical for 240 volt panelboards; or as shown on drawings.

G. Molded Case Circuit Breakers: Bolt-on type thermal magnetic trip circuit breakers. Provide UL Class A ground fault interrupter circuit breakers where scheduled on drawings. Provide UL shunt-trip accessory where scheduled on drawings.

H. Do not use tandem circuit breakers.

I. Circuit breakers shall be bolted type with common trip handle for all poles. No handle ties of any sort will be approved.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install panelboards plumb. Install recessed panelboards flush with wall finishes.

B. Height: Install branch circuit panelboards 6 feet (2 m) to top.

C. Provide filler plates for unused spaces in panelboards.

D. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.

3.02 FIELD QUALITY CONTROL

A. Measure steady state load currents at each panelboard feeder. Should the difference at any panelboard between phases exceed 10 percent, rearrange circuits in the panelboard to balance the phase loads within 10 percent. Take care to maintain proper phasing for multi-wire branch circuits.

B. Visual and Mechanical Inspection: Inspect for physical damage, proper alignment, anchorage, and grounding. Check proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

END OF SECTION

SECTION 26 27 26
WIRING DEVICES

BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATE 07/11/06

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Wall switches, receptacles, occupancy sensors, wall dimmers, device plates and box covers, poke-through service fittings, power poles, photocells, and time clocks.

B. All devices shall be delivered to the project in unbroken cartons.

1.3 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

C. Manufacturer's Instructions:

1. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.
2. Include instructions for storage, handling, protection, examination, preparation, operation and installation of product.

PART 2 – PRODUCTS

2.1 WALL SWITCHES

A. Acceptable manufacturers (SPST models listed):

1.	Pass & Seymour	Model 20AC1
2.	Hubbell	Model HBL1221
3.	Leviton	Model 1221-2

B. Provide 2 pole, 3-way, 4-way, pilot lighted, keyed, momentary, etc. models to match the manufacturer's series indicated above.

C. Description: NEMA WD 1, Specification grade, AC only general-use snap switch.

D. Body and Handle: Color to match existing, plastic with toggle handle.

E. Indicator Light: Separate pilot strap; red color lens.

F. Locator Light: Lighted handle type switch; red color handle.

G. Ratings:

1. Voltage: 120/277 volts, AC.
2. Current: 20 amperes.

2.2 RECEPTACLES

A. Duplex Convenience Receptacle: commercial grade, one piece mounting strap, nylon face:

1.	Pass & Seymour	model 5362
2.	Hubbell	model CR5362
3.	Leviton	model 5362
4.	Cooper	model CR5362

B. GFCI Duplex Receptacle: Commercial grade convenience receptacle with integral ground fault circuit interrupter to meet regulatory requirements; 4-6 mA trip level, .025 second trip time, listed UL 498 and 943 (class A), compliant with latest NEC, nylon face, trip indicator LED:

1.	Pass & Seymour	model 2094
2.	Hubbell	model GFR5352
3.	Leviton	model 8899
4.	Cooper	model XGF20

C. Configuration: NEMA 5-20R.

D. Device Body: Color to match existing, plastic.

2.3 DEVICE PLATES AND BOX COVERS

A. Decorative Cover Plate: Color to match existing, lined thermoplastic or nylon plastic. Note requirement for red plates on emergency outlets.

B. Surface Cover Plate in Unfinished (Utility) Areas: Raised galvanized steel.

C. Weather Protective Cover Plate: UV stabilized polycarbonate hinged gasketed device cover configured such that the weather protective rating is maintained when device is in use.

1.	Tay Mac	Model 20510 or as applicable.
2.	Intermatic	Model WP100

D. Gaskets: Resilient neoprene, sized for device and device box.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install wall switches Off position down.

B. Install new convenience receptacles to match orientation of remaining existing receptacles in a common space with respect to positioning ground pole and neutral contacts.

C. Install wiring devices at heights shown on drawings.

D. Install decorative plates on switch, receptacle, and blank outlets in finished areas, using jumbo size plates for outlets installed in masonry walls.

E. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

F. Install devices and wall plates flush and level

G. Wiring devices shall have a bonding conductor from grounding terminal to both the equipment grounding conductor and the metal conduit system. Self-grounding wiring device using mounting screws as bonding means are not approved.

H. Stranded conductors may only be terminated with UL or ETL Listed type terminations or methods: e.g. stranded conductors may not be wrapped around a terminal screw but must be terminated with a crimp type device.

I. Wall plates for devices in common box shall be one-piece, sized to cover all devices.

J. Identify wiring devices per section 26 05 53.

3.2 FIELD QUALITY CONTROL

A. Inspect each wiring device for defects.

B. Operate each wall switch and sensor with circuit energized and verify proper operation.

C. Verify that each receptacle device is energized.

D. Test each receptacle device for proper polarity.

E. Test each GFCI receptacle device for proper operation.

3.3 GROUND FAULT CIRCUIT INTERRUPTING RECEPTACLES

A. Receptacles shown on plans with "GF" designation shall be a ground fault circuit interrupting type device. Daisy chain and series type installations are not acceptable.

B. Ground fault circuit interrupting receptacles shall be wired to terminals labeled "line side" such that no single "GF" device will affect or open the circuit to another 'GF" device or equipment on a common circuit. Do not connect to terminals labeled "load side".

1. "Line Side" terminals of "GF" device must be labeled as approved for more than one conductor termination, if not so labeled, then conductors will require to be spliced in device box.

END OF SECTION

SECTION 26 27 28
DISCONNECT SWITCHES
BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 10/17/01

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Disconnect switches, fuses, and enclosures.

1.3 SUBMITTALS

A. Submit product data under provisions of Section 26 05 00.

B. Include outline drawings with dimensions, and equipment ratings for voltage, capacity, horsepower, and short circuit.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. Square D
2. Siemens

2.2 DISCONNECT SWITCHES

A. Fusible Switch Assemblies: NEMA Type HD; quick-make, quick-break, load interrupter, enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse Clips: designed to accommodate Class R cartridge type fuses.

B. Non-fusible Switch Assemblies: NEMA Type HD; quick-make, quick-break, load interrupter, enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position.

C. Enclosures: NEMA type as indicated on Drawings.

2.3 FUSES

A. Provide fuses per requirements of Section 26 28 13.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install disconnect switches where indicated on drawings and as required by code.
B. Install fuses in fusible disconnect switches.

C. Provide identification as specified in Section 26 05 53.

D. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

END OF SECTION

SECTION 26 28 13
FUSES

BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 4/10/02

PART 1 – GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. Fuses.

1.3 SUBMITTALS

A. Submit the following product data under provisions of Section 26 05 00.

1. Device dimensions, nameplate nomenclature, and electrical ratings.
2. Product data sheets with installation instructions.
3. Time current characteristics curves for each size and type.

1.4 REGULATORY REQUIREMENTS

A. Use fuses listed by Underwriter's Laboratories, Inc., and suitable for specific application.

1.5 EXTRA MATERIALS

A. Submit extra materials under provisions of Section 26 05 00.

B. Provide three spares of each size and type fuse.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers:

1. Bussman "Low Peak Yellow"
2. Gould Shawmut "AMP Trap Orange"
3. Littelfuse "Little Peak"

2.2 250 VOLT FUSES

A. Class RK-1, one end rejection or to fit mountings specified; 0-600 ampere, 200,000 ampere interrupting rating, dual element, time delay with short circuit protection for motor, transformer, feeder and main service protection.

B. Class L, bolt-in, 601-6,000 amperes, 200,000 ampere interrupting rating, dual element, time delay with short circuit protection for motor, transformer, feeder and main service protection.

C. Class CC, fast acting, single element, 0-30 amperes, 200,000 ampere interrupting rating.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine fusible equipment for size and type of fuse to ensure selective coordination.

B. Install fuses only after selective coordination has been made.

3.2 INSTALLATION

A. Fuses shall not be installed until equipment is ready to be energized.

3.3 AS BUILT INFORMATION

A. Record the equipment nameplate rating and actual fuse rating on the as-built drawings.

END OF SECTION

SECTION 26 43 13
TRANSIENT VOLTAGE SURGE SUPPRESSION
BASED ON CLARK DIETZ MASTER ELECTRICAL SPEC DATED 10/29/03

PART 1 - GENERAL

1.1 GENERAL

A. None.

1.2 SCOPE

A. This section describes the materials and installation requirements for transient voltage surge suppressors (TVSS) for the protection of all AC electrical circuits from the effects of lightning induced currents, substation switching transients and internally generated transients resulting from inductive and/or capacitive load switching.

B. Performance requirements of this section shall apply regardless of whether the TVSS unit is mounted integrally or externally to the power distribution equipment. Reference drawings and these specifications for information stating whether a particular TVSS unit is mounted integrally or externally.

1.3 REFERENCES

A. UL 1449 (most recent edition) - Transient Voltage Surge Suppressors.

B. UL 1283 - Electromagnetic Interference Filters.

C. NFPA 70 (National Electric Code) – Article 280-NFPA 1999 (Article 285-NFPA 2002)

D. NFPA 20, NFPA 75, and NFPA 78

E. NEMA LS-1 - Low Voltage Surge Protective Devices

F. ANSI/IEEE C62.45 - IEEE Guide for Surge Suppressor Testing

G. ANSI/IEEE C62.41 - IEEE Guide for Surge Voltages in Low Voltage AC Power Circuits

1.4 SUBMITTALS FOR REVIEW

A. Submit shop drawings for equipment under provisions of Section 26 05 00.

B. Shop Drawings: Include dimensional drawing of each suppressor type indicating the following:

1. Service Entrance Equipment TVSS:
   a. Copper bus bars (electrical grade copper 1.5" wide, 0.25" thick) or stranded copper conductors with equivalent cross-sectional area.
   b. Redundant replaceable current diversion modules on each phase.
   c. Replaceable 200,000 AIC fuses on each module.
   d. Diagnostic monitoring package, capable of both on-site and off-site monitoring.
   e. Line-to-neutral, line-to-ground, and neutral-to-ground suppression paths.

C. UL Standard 1449 Listing, Standard for Safety, Transient Voltage Surge Suppressors, documentation.

D. UL Standard 1283 Listing, Electromagnetic Interference Filters, documentation.

E. ANSI/IEEE C62.41 - 1991 Category C3 (20kV-1.2/50, 10kA-8/20μs waveform) let through voltage test results. Scope traces required.

F. Spectrum analysis of SPD based on MIL-STD-220A test procedures between 50 kHz and 200 kHz.

G. Independent third party test results verifying maximum surge current capability (single pulse rated).

H. Endurance testing documentation utilizing Category C3 high exposure waveform (20kV 1.2/50μs, 10kA-8/20μs) per ANSI/IEEE C62.41 - 1991 utilizing test procedures as outlined in ANSI/IEEE C62.45 Scope traces of first and last impulses are required.

I. A document of specification compliance shall be included outlining the prospective manufacturers compliance or deviation from each point in the specification. Should deviations be noted, a comprehensive clarification shall be provided outlining the reason for deviation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable manufacturers (Externally Mounted Units):

1. Advanced Protection Technologies
2. Liebert
3. Current Technology
4. Tycor
5. Leviton
6. Square D

2.2 SERVICE ENTRANCE SWITCHBOARD

A. Switchboard Surge Suppressor

1. Suppressors shall be installed by the electrical contractor, warranted by the suppressor equipment manufacturer.
2. Suppressors shall be listed in accordance with UL 1449 (most recent edition), Standard for Safety, Transient Voltage Surge Suppressors, and UL 1283, Electromagnetic Interference Filters.
3. Suppressors shall be independently tested with the Category C3 high exposure waveform (20kV-1.2/50μs, 10kA-8/20μs) per ANSI/IEEE C62.41 - 1991.
4. Suppressors shall provide redundant suppression modules between each phase conductor and the neutral conductor and between the neutral conductor and ground. Delta configured systems shall have components directly connected between each phase conductor and ground. Each mode of protection shall utilize two current sharing surge current diversion modules in parallel for either a wye or delta configuration.
5. Visible indication of proper suppressor connection and operation shall be provided. The indicator lights shall indicate which phase as well as which module is fully operable.
6. The suppressor shall incorporate appropriately sized copper bus or conductors for the surge current path. Surge current diversion modules shall use bolted connections to the bus bars for reliable low impedance connections.
7. Suppressors shall meet or exceed the following criteria:
   a. Maximum single impulse current rating shall be 240kA per phase, 120kA per mode.

b. Pulse Lift Test: Capable of protecting against and surviving 5000 ANSI/IEEE C62.41 Category C transients without failure or degradation of UL 1449 (most recent edition) clamp voltage by more than 10%.

c. UL 1449 (most recent edition) clamping voltage must not exceed the following:

VOLTAGE	L-N	N-G
208Y/120	400V	400V
480Y/277	800V	800V

d. The ANSI/IEEE C62.41 - 1991 Category C3 clamping voltage shall not exceed the following:

VOLTAGE	L-N	N-G
208Y/120	675V	675V
480Y/277	9200V	9200V

8. TVSS shall be designed to withstand a maximum continuous operating voltage (MCOV) of not less than 115% of nominal RMS voltage.
9. TVSS shall have a minimum EMI/RFI filtering of -55dB at 100kHz with an insertion ratio of 50:1 using MIL STD 220A methodology in accordance with NEMA LS-1 Standard.
10. The suppressor shall include an internal UL Listed disconnect switch.
11. The TVSS shall be constructed using surge current modules (MOV based). Each module shall be fused with user replaceable 200,000 AIC rated fuses. The status of each module shall be monitored on the front cover of the switchboard as well as on the module.
12. The TVSS shall be equipped with an audible alarm, as well as RED and GREEN visual alarms, on each phase and each diversion module. GREEN visual alarm shall indicate "Protection is Provided" status. Audible alarm and RED visual alarm shall actuate when any one of the surge current modules has failed. An audible alarm on/off switch shall be provided to silence the audible alarm. Alarm pulse-to-test switches shall be provided to test each respective alarm. Both switches and alarms shall be located on the front panel of the switchboard. Integrated diagnostic monitoring circuits shall continually monitor the operational status of the surge current diversion modules. No other test equipment shall be necessary for TVSS monitoring or testing before or after installation.
13. Terminals shall be provided for all of the necessary power and ground connections. Each terminal shall accommodate wire sizes of #8 to #1 AWG.
14. The suppressor shall have a response time no greater than 1 nanoseconds for any of the individual protection modes.
15. TVSS shall be equipped with the following accessories:
    a. Transient event counter, with manual reset and battery back-up to retain memory upon loss of AC power. Counter shall be located on the front panel of service equipment.
    b. Form C dry contacts for remote annunciation and monitoring.
16. Suppressors shall have a five-year warranty, incorporating unlimited replacements of suppressor parts if transients destroy them during the warranty period.

PART 3 - EXECUTION

3.1 SERVICE ENTRANCE

A. One primary suppressor shall be installed at each utility service entrance to the facility.

B. The suppressor shall be installed on the load side of the service entrance.

C. The suppressor's ground shall be bonded to the service entrance ground.

END OF SECTION

SECTION E: BIDDERS ACKNOWLEDGEMENT

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

Bidder must state a Unit Price and Total Bid for each item. The Total Bid for each item must be the product of quantity, by Unit Price. The Grand Total must be the sum of the Total Bids for the various items. In case of multiplication errors or addition errors, the Grand Total with corrected multiplication and/or addition shall determine the Grand Total bid for each contract. The Unit Price and Total Bid must be entered numerically in the spaces provided. All words and numbers shall be written in ink.

1. The undersigned having familiarized himself/herself with the Contract documents, including Advertisement for Bids, Instructions to Bidders, Form of Proposal, City of Madison Standard Specifications for Public Works Construction - 2013 Edition thereto, Form of Agreement, Form of Bond, and Addenda issued and attached to the plans and specifications on file in the office of the City Engineer, hereby proposes to provide and furnish all the labor, materials, tools, and expendable equipment necessary to perform and complete in a workmanlike manner the specified construction on this project for the City of Madison; all in accordance with the plans and specifications as prepared by the City Engineer, including Addenda to the Contract Nos. 1 through _____ issued thereto, at the prices for said work as contained in this proposal. (Electronic bids submittals shall acknowledge addendum under Section E and shall not acknowledge here)
2. If awarded the Contract, we will initiate action within seven (7) days after notification or in accordance with the date specified in the contract to begin work and will proceed with diligence to bring the project to full completion within the number of work days allowed in the Contract or by the calendar date stated in the Contract.
3. The undersigned Bidder or Contractor certifies that he/she is not a party to any contract, combination in form of trust or otherwise, or conspiracy in restraint of trade or commerce or any other violation of the anti-trust laws of the State of Wisconsin or of the United States, with respect to this bid or contract or otherwise.
4. I hereby certify that I have met the Bid Bond Requirements as specified in Section 102.5. *(IF BID BOND IS USED, IT SHALL BE SUBMITTED ON THE FORMS PROVIDED BY THE CITY. FAILURE TO DO SO MAY RESULT IN REJECTION OF THE BID).*
5. I hereby certify that all statements herein are made on behalf of H&H Electric Co., Inc. (name of corporation, partnership, or person submitting bid) a corporation organized and existing under the laws of the State of Wisconsin a partnership consisting of _____; an individual trading as _____; of the City of _____ State of _____; that I have examined and carefully prepared this Proposal, from the plans and specifications and have checked the same in detail before submitting this Proposal; that I have fully authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.

_____
SIGNATURE William T. Howe

President
TITLE, IF ANY

Sworn and subscribed to before me this
20th day of September, 20 13.
Callie M Pankow
(Notary Public or other officer authorized to administer oaths)
My Commission Expires 10/23/16

CALLIE F PANKOW
NOTARY PUBLIC
STATE OF WISCONSIN

Bidders shall not add any conditions or qualifying statements to this Proposal.

SECTION F: DISCLOSURE OF OWNERSHIP & BEST VALUE CONTRACTING

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

State of Wisconsin
Department of Workforce Development
Equal Rights Division
Labor Standards Bureau

Disclosure of Ownership

Notice required under Section 15.04(1)(m), Wisconsin Statutes. The statutory authority for the use of this form is prescribed in Sections 66.0903(12)(d) and 103.49(7)(d), Wisconsin Statutes. The use of this form is mandatory. The penalty for failing to complete this form is prescribed in Section 103.005(12), Wisconsin Statutes. Personal information you provide may be used for secondary purposes.

(1) On the date a contractor submits a bid to or completes negotiations with a state agency or local governmental unit, on a project subject to Section 66.0903 or 103.49, Wisconsin Statutes, the contractor shall disclose to such state agency or local governmental unit the name of any "other construction business", which the contractor, or a shareholder, officer or partner of the contractor, owns or has owned within the preceding three (3) years.

(2) The term "other construction business" means any business engaged in the erection, construction, remodeling, repairing, demolition, altering or painting and decorating of buildings, structures or facilities. It also means any business engaged in supplying mineral aggregate, or hauling excavated material or spoil as provided by Sections 66.0903(3), 103.49(2) and 103.50(2), Wisconsin Statutes.

(3) This form must ONLY be filed, with the state agency or local governmental unit that will be awarding the contract, if **both (A) and (B) are met.**

(A) The contractor, or a shareholder, officer or partner of the contractor:
(1) Owns at least a 25% interest in the "other construction business", indicated below, on the date the contractor submits a bid or completes negotiations.
(2) Or has owned at least a 25% interest in the "other construction business" at any time within the preceding three (3) years.

(B) The Wisconsin Department of Workforce Development (DWD) has determined that the "other construction business" has failed to pay the prevailing wage rate or time and one-half the required hourly basic rate of pay, for hours worked in excess of the prevailing hours of labor, to any employee at any time within the preceding three (3) years.

Other Construction Business

Not Applicable ☒

Name of Business			
Street Address or P O Box	City	State	Zip Code
Name of Business			
Street Address or P O Box	City	State	Zip Code
Name of Business			
Street Address or P O Box	City	State	Zip Code

I hereby state under penalty of perjury that the information, contained in this document, is true and accurate according to my knowledge and belief.

Print the Name of Authorized Officer: William T. Howe

Signature of Authorized Officer: [signature] | Date Signed: 9/20/13

Name of Corporation, Partnership or Sole Proprietorship: H&H Electric Co., Inc.

Street Address or P O Box	City	State	Zip Code
3201 Latham Drive	Madison	WI	53713

If you have any questions call (608) 266-0028

ERD-7777-E (R. 09/2003)

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

Best Value Contracting

1. The Contractor shall indicate the non-apprenticeable trades used on this contract.

_____

_____

2. Madison General Ordinance (M.G.O.), 33.07(7), does provide for some exemptions from the active apprentice requirement. Apprenticeable trades are those trades considered apprenticeable by the State of Wisconsin. Please check applicable box if you are seeking an exemption.

☐ Contractor has a total skilled workforce of four or less individuals in all apprenticeable trades combined.

☐ No available trade training program; The Contractor has been rejected by the only available trade training program, or there is no trade training program within 90 miles.

☒ Contractor is not using an apprentice due to having a journey worker on layoff status, provided the journey worker was employed by the contractor in the past six months.

☐ First-time Contractor on City of Madison Public Works contract requests a onetime exemption but intends to comply on all future contracts and is taking steps typical of a "good faith" effort.

☐ Contractor has been in business less than one year.

☐ Contractor doesn't have enough journeyman trade workers to qualify for a trade training program in that respective trade

3. The Contractor shall indicate on the following section which apprenticeable trades are to be used on this contract. Compliance with active apprenticeship, to the extent required by M.G.O. 33.07(7), shall be satisfied by documentation from an applicable trade training body; an apprenticeship contract with the Wisconsin Department of Workforce Development or a similar agency in another state; or the U.S Department of Labor. This documentation is required prior to the Contractor beginning work on the project site.

☐ The Contractor has reviewed the list and shall not use any apprenticeable trades on this project.

LIST APPRENTICABLE TRADES (check all that apply to your work to be performed on this contract)

- ☐ BRICKLAYER
- ☐ CARPENTER
- ☐ CEMENT MASON / CONCRETE FINISHER
- ☐ CEMENT MASON (HEAVY HIGHWAY)
- ☐ CONSTRUCTION CRAFT LABORER
- ☐ DATA COMMUNICATION INSTALLER
- ☒ ELECTRICIAN
- ☐ ENVIRONMENTAL SYSTEMS TECHNICIAN / HVAC SERVICE TECH/HVAC INSTALL / SERVICE
- ☐ GLAZIER
- ☐ HEAVY EQUIPMENT OPERATOR / OPERATING ENGINEER
- ☐ INSULATION WORKER (HEAT & FROST)
- ☐ IRON WORKER
- ☐ IRON WORKER (ASSEMBLER, METAL BLDGS)
- ☐ PAINTER & DECORATOR
- ☐ PLASTERER
- ☐ PLUMBER
- ☐ RESIDENTIAL ELECTRICIAN
- ☐ ROOFER & WATER PROOFER
- ☐ SHEET METAL WORKER
- ☐ SPRINKLER FITTER
- ☐ STEAMFITTER
- ☐ STEAMFITTER (REFRIGERATION)
- ☐ STEAMFITTER (SERVICE)
- ☐ TAPER & FINISHER
- ☐ TELECOMMUNICATIONS (VOICE, DATA & VIDEO) INSTALLER-TECHNICIAN
- ☐ TILE SETTER

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

Small Business Enterprise Compliance Report

This information may be submitted electronically through Bid Express or submitted with bid in sealed envelope.

Cover Sheet

Prime Bidder Information

Company: H&H Electric Co., Inc.

Address: 3201 Latham Drive, Madison, WI 53713

Telephone Number: 608-273-4464 Fax Number: 608-273-9764

Contact Person/Title: Mike Simonson, Project Manager

Prime Bidder Certification

I, William T. Howe (Name), President (Title) of

H&H Electric Co., Inc. (Company) certify that the information

contained in this SBE Compliance Report is true and correct to the best of my knowledge and belief.

Witness' Signature

9/19/13
Date

Bidder's Signature William T. Howe
President

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

Small Business Enterprise Compliance Report

Summary Sheet

SBE Subcontractors Who Are NOT Suppliers

Name(s) of SBEs Utilized	Type of Work	% of Total Bid Amount
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
Subtotal SBE who are NOT suppliers:		%

SBE Subcontractors Who Are Suppliers

Name(s) of SBEs Utilized	Type of Work	% of Total Bid Amount
Price & Sons, Inc.	Electrical supplier	20 %
		%
		%
		%
		%
		%

Subtotal Contractors who are suppliers: 20 % x 0.6 = 1.2 % (discounted to 60%)

Total Percentage of SBE Utilization: 1.2 %.

CONSULTING | ENGINEERING | CONSTRUCTION
ENERGY MANAGEMENT
3201 Latham Drive | Madison, WI 53713
Phone: (608) 273-4464 | Fax: (608) 273-9764

September 20, 2013

City Engineering Division
1600 Emil Street
Madison, WI 53713

RE: TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

We propose the lump sum price for the above referenced project:

$ 123,873.00

In words: One Hundred twenty-three thousand eight hundred seventy-three and 00/100

Mike Simonson
Project Manager

SECTION G: BID BOND

KNOW ALL MEN BY THESE PRESENT, THAT H&H Electric Co., Inc. (a corporation of the State of Wisconsin) (individual), (partnership), hereinafter referred to as the "Principal") and Travelers Casualty & Surety Company of America, a corporation of the State of Connecticut (hereinafter referred to as the "Surety") and licensed to do business in the State of Wisconsin, are held and firmly bound unto the City of Madison, (hereinafter referred to as the "Obligee"), in the sum of five per cent (5%) of the amount of the total bid or bids of the Principal herein accepted by the Obligee, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that, whereas the Principal has submitted, to the City of Madison a certain bid, including the related alternate, and substitute bids attached hereto and hereby made a part hereof, to enter into a contract in writing for the construction of:

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

1. If said bid is rejected by the Obligee, then this obligation shall be void.

2. If said bid is accepted by the Obligee and the Principal shall execute and deliver a contract in the form specified by the Obligee (properly completed in accordance with said bid) and shall furnish a bond for his/her faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

   If said bid is accepted by the Obligee and the Principal shall fail to execute and deliver the contract and the performance and payment bond noted in 2. above executed by this Surety, or other Surety approved by the City of Madison, all within the time specified or any extension thereof, the Principal and Surety agree jointly and severally to forfeit to the Obligee as liquidated damages the sum mentioned above, it being understood that the liability of the Surety for any and all claims hereunder shall in no event exceed the sum of this obligation as stated, and it is further understood that the Principal and Surety reserve the right to recover from the Obligee that portion of the forfeited sum which exceed the actual liquidated damages incurred by the Obligee.

   The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which the Obligee may accept such bid, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year set forth below.

Seal

H&H Electric Co., Inc. — 9/20/13
Principal — Date

By: William T. Howe, President

Travelers Casualty & Surety Company of America
Name of Surety

By: Kelsey Jacobson, Attorney-in-Fact — 9/20/13
Date

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under License No. 2564601 for the year 2013, and appointed as attorney in fact with authority to execute this bid bond and the payment and performance bond referred to above, which power of attorney has not been revoked.

9/20/13
Date

Agent Kelsey Jacobson, Hausmann-Johnson Insurance

700 Regent St.
Address

Madison, WI 53715
City, State and Zip Code

(608) 257-3795
Telephone Number

NOTE TO SURETY & PRINCIPAL

The bid submitted which this bond guarantees may be rejected if the following instrument is not attached to this bond:

Power of Attorney showing that the agent of Surety is currently authorized to execute bonds on behalf of the Surety, and in the amounts referenced above.

TRAVELERS

POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 222990 **Certificate No.** 003958438

KNOW ALL MEN BY THESE PRESENTS: That St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, that Farmington Casualty Company, Travelers Casualty and Surety Company, and Travelers Casualty and Surety Company of America are corporations duly organized under the laws of the State of Connecticut, that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Tim Hausmann, Jeff Hausmann, Judith A. Walker, Sheila Dickey, Steven L. Squires, Brooke L. Parker , Patrick A. McKenna, and Kelsey Jacobson

of the City of Madison, State of Wisconsin, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 5th day of November, 2010.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

State of Connecticut
City of Hartford ss.

By: _____
George W. Thompson, Senior Vice President

On this the 5th day of November, 2010, before me personally appeared George W. Thompson, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2011.

MARIE C. TETREAULT NOTARY PUBLIC CONNECTICUT

Marie C. Tetreault
Marie C. Tetreault, Notary Public

58440-4-09 Printed in U.S.A.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kori M. Johanson, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 20 day of September, 20 13

Kori M. Johanson, Assistant Secretary

To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

SECTION H: AGREEMENT

THIS AGREEMENT made this 16 day of October in the year Two Thousand and Thirteen between **H & H ELECTRIC CO., INC.** hereinafter called the Contractor, and the City of Madison, Wisconsin, hereinafter called the City.

WHEREAS, the Common Council of the said City of Madison under the provisions of a resolution adopted **OCTOBER 15, 2013**, and by virtue of authority vested in the said Council, has awarded to the Contractor the work of performing certain construction.

NOW, THEREFORE, the Contractor and the City, for the consideration hereinafter named, agree as follows:

1. **Scope of Work.** The Contractor shall, perform the construction, execution and completion of the following listed complete work or improvement in full compliance with the Plans, Specifications, Standard Specifications, Supplemental Specifications, Special Provisions and contract; perform all items of work covered or stipulated in the proposal; perform all altered or extra work; and shall furnish, unless otherwise provided in the contract, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work or improvements:

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2. **Completion Date/Contract Time.** Construction work must begin within seven (7) calendar days after the date appearing on mailed written notice to do so shall have been sent to the Contractor and shall be carried on at a rate so as to secure full completion SEE SPECIAL PROVISIONS, the rate of progress and the time of completion being essential conditions of this Agreement.

3. **Contract Price.** The City shall pay to the Contractor at the times, in the manner and on the conditions set forth in said specifications, the sum of **ONE HUNDRED TWENTY-THREE THOUSAND EIGHT HUNDRED SEVENTY-THREE** (**$123,873.00**) Dollars being the amount bid by such Contractor and which was awarded to him/her as provided by law.

4. **Wage Rates for Employees of Public Works Contractors**

General and Authorization. The Contractor shall compensate its employees at the prevailing wage rate in accordance with section 66.0903, Wis. Stats., DWD 290 of the Wisconsin Administrative Code and as hereinafter provided.

"Public Works" shall include building or work involving the erection, construction, remodeling, repairing or demolition of buildings, parking lots, highways, streets, bridges, sidewalks, street lighting, traffic signals, sanitary sewers, water mains and appurtenances, storm sewers, and the grading and landscaping of public lands.

"Building or work" includes construction activity as distinguished from manufacturing, furnishing of materials, or servicing and maintenance work, except for the delivery of mineral aggregate such as sand, gravel, bituminous asphaltic concrete or stone which is incorporated into the work under contract with the City by depositing the material directly in final place from transporting vehicle.

"Erection, construction, remodeling, repairing" means all types of work done on a particular building or work at the site thereof in the construction or development of the project, including without limitation, erecting, construction, remodeling, repairing, altering, painting, and decorating, the transporting of materials and supplies to or from the building or work done by the employees of the Contractor, Subcontractor, or Agent thereof, and the manufacturing or furnishing of materials, articles, supplies or equipment on the site of the building or work, by persons employed by the Contractor, Subcontractor, or Agent thereof.

"Employees working on the project" means laborers, workers, and mechanics employed directly upon the site of work.

"Laborers, Workers, and Mechanics" include pre-apprentices, helpers, trainees, learners and properly registered and indentured apprentices but exclude clerical, supervisory, and other personnel not performing manual labor.

Establishment of Wage Rates. The Department of Public Works shall periodically obtain a current schedule of prevailing wage rates from DWD. The schedule shall be used to establish the City of Madison Prevailing Wage Rate Schedule for Public Works Construction (prevailing wage rate). The Department of Public Works may include known increases to the prevailing wage rate which can be documented and are to occur on a future specific date. The prevailing wage rate shall be included in public works contracts subsequently negotiated or solicited by the City. Except for known increases contained within the schedule, the prevailing wage rate shall not change during the contract. The approved wage rate is attached hereto.

Workforce Profile. The Contractor shall, at the time of signature of the contract, notify the City Engineer in writing of the names and classifications of all the employees of the Contractor, Subcontractors, and Agents proposed for the work. In the alternative, the Contractor shall submit in writing the classifications of all the employees of the Contractor, Subcontractors and Agents and the total number of hours estimated in each classification for the work. This workforce profile(s) shall be reviewed by the City Engineer who may, within ten (10) days, object to the workforce profile(s) as not being reflective of that which would be required for the work. The Contractor may request that the workforce profile, or a portion of the workforce profile, be submitted after the signature of the contract but at least ten (10) days prior to the work commencing. Any costs or time loss resulting from modifications to the workforce profile as a result of the City Engineer's objections shall be the responsibility of the Contractor.

Payrolls and Records. The Contractor shall keep weekly payroll records setting forth the name, address, telephone number, classification, wage rate and fringe benefit package of all the employees who work on the contract, including the employees of the Contractor's subcontractors and agents. Such weekly payroll records must include the required information for all City contracts and all other contracts on which the employee worked during the week in which the employee worked on the contract. The Contractor shall also keep records of the individual time each employee worked on the project and for each day of the project. Such records shall also set forth the total number of hours of overtime credited to each such employee for each day and week and the amount of overtime pay received in that week. The records shall set forth the full weekly wages earned by each employee and the actual hourly wage paid to the employee.

The Contractor shall submit the weekly payroll records, including the records of the Contractor's subcontractors and agents, to the City Engineer for every week that work is being done on the contract. The submittal shall be within twenty-one (21) calendar days of the end of the Contractor's weekly pay period.

Employees shall receive the full amounts accrued at the time of the payment, computed at rates not less than those stated in the prevailing wage rate and each employee's rate shall be determined by the work that is done within the trade or occupation classification which should be properly assigned to the employee.

An employee's classification shall not be changed to a classification of a lesser rate during the contract. If, during the term of the contract, an employee works in a higher pay classification than the one which was previously properly assigned to the employee, then that employee shall be considered to be in the higher pay classification for the balance of the contract, receive the appropriate higher rate of pay, and she/he shall not receive a lesser rate during the balance of the contract. For purposes of clarification, it is noted that there is a distinct difference between working in a different classification with higher pay and doing work within a classification that has

varying rates of pay which are determined by the type of work that is done within the classification. For example, the classification "Operating Engineer" provides for different rates of pay for various classes of work and the Employer shall compensate an employee classified as an "Operating Engineer" based on the highest class of work that is done in one day. Therefore, an "Operating Engineer's" rate may vary on a day to day basis depending on the type of work that is done, but it will never be less than the base rate of an "Operating Engineer". Also, as a matter of clarification, it is recognized that an employee may work in a higher paying classification merely by chance and without prior intention, calculation or design. If such is the case and the performance of the work is truly incidental and the occurrence is infrequent, inconsequential and does not serve to undermine the single classification principle herein, then it may not be required that the employee be considered to be in the higher pay classification and receive the higher rate of pay for the duration of the contract. However, the Contractor is not precluded or prevented from paying the higher rate for the limited time that an employee performs work that is outside of the employee's proper classification.

Questions regarding an employee's classification, rate of pay or rate of pay within a classification, shall be resolved by reference to the established practice that predominates in the industry and on which the trade or occupation rate/classification is based. Rate of pay and classification disputes shall be resolved by relying upon practices established by collective bargaining agreements and guidelines used in such determination by appropriate recognized trade unions operating within the City of Madison.

The Contractor, its Subcontractors and Agents shall submit to interrogation regarding compliance with the provisions of this ordinance.

Mulcting of the employees by the Contractor, Subcontractor, and Agents on Public Works contracts, such as by kickbacks or other devices, is prohibited. The normal rate of wage of the employees of the Contractor, Subcontractor, and Agents shall not be reduced or otherwise diminished as a result of payment of the prevailing wage rate on a public works contract.

Hourly contributions. Hourly contributions shall be determined in accordance with the prevailing wage rate and with DWD. 290.01(10), Wis. Admin. Code.

Apprentices and Subjourney persons. Apprentices and sub journeypersons performing work on the project shall be compensated in accordance with the prevailing wage rate and with DWD 290.02, and 290.025, respectively, Wis. Admin. Code.

Straight Time Wages. The Contractor may pay straight time wages as determined by the prevailing wage rate and DWD 290.04, Wis. Admin. Code.

Overtime Wages. The Contractor shall pay overtime wages as required by the prevailing wage rate and DWD 290.05, Wis. Admin. Code.

Posting of Wage Rates and Hours. A clearly legible copy of the prevailing wage rate, together with the provisions of Sec. 66.0903(10)(a) and (11)(a), Wis. Stats., shall be kept posted in at least one conspicuous and easily accessible place at the project site by the Contractor and such notice shall remain posted during the full time any laborers, workers or mechanics are employed on the contract.

Evidence of Compliance by Contractor. Upon completion of the contract, the Contractor shall file with the Department of Public Works an affidavit stating:

a. That the Contractor has complied fully with the provisions and requirements of Sec. 66.0903(3), Wis. Stats., and Chapter DWD 290, Wis. Admin. Code; the Contractor has received evidence of compliance from each of the agents and subcontractors; and the names and addresses of all of the subcontractors and agents who worked on the contract.

b. That full and accurate records have been kept, which clearly indicate the name and trade or occupation of every laborer, worker or mechanic employed by the Contractor in connection with work on the project. The records shall show the number of hours worked by each employee and the actual wages paid therefore; where these records will be kept and the name, address and telephone number of the person who will be responsible for keeping them. The records shall be retained and made available for a period of at least three (3) years following the completion of the project of public works and shall not be removed without prior notification to the municipality.

Evidence of Compliance by Agent and Subcontractor. Each agent and subcontractor shall file with the Contractor, upon completion of their portion of the work on the contract an affidavit stating that all the provisions of Sec. 66.0903(3), Wis. Stats., have been fully complied with and that full and accurate records have been kept, which clearly indicate the name and trade or occupation of every laborer, worker or mechanic employed by the Contractor in connection with work on the project. The records shall show the number of hours worked by each employee and the actual wages paid therefore; where these records shall be kept and the name, address and telephone number of the person who shall be responsible for keeping them. The records shall be retained and made available for a period of at least three (3) years following the completion of the project of public works and shall not be removed without prior notification to the municipality.

Failure to Comply with the Prevailing Wage Rate. If the Contractor fails to comply with the prevailing wage rate, she/he shall be in default on the contract.

5. **Affirmative Action.** In the performance of the services under this Agreement the Contractor agrees not to discriminate against any employee or applicant because of race, religion, marital status, age, color, sex, disability, national origin or ancestry, income level or source of income, arrest record or conviction record, less than honorable discharge, physical appearance, sexual orientation, political beliefs, or student status. The Contractor further agrees not to discriminate against any subcontractor or person who offers to subcontract on this contract because of race, religion, color, age, disability, sex or national origin.

The Contractor agrees that within thirty (30) days after the effective date of this agreement, the Contractor will provide to the City Affirmative Action Division certain workforce utilization statistics, using a form to be furnished by the City.

If the contract is still in effect, or if the City enters into a new agreement with the Contractor, within one year after the date on which the form was required to be provided, the Contractor will provide updated workforce information using a second form, also to be furnished by the City. The second form will be submitted to the City Affirmative Action Division no later than one year after the date on which the first form was required to be provided.

The Contractor further agrees that, for at least twelve (12) months after the effective date of this contract, it will notify the City Affirmative Action Division of each of its job openings at facilities in Dane County for which applicants not already employees of the Contractor are to be considered. The notice will include a job description, classification, qualifications and application procedures and deadlines. The Contractor agrees to interview and consider candidates referred by the Affirmative Action Division if the candidate meets the minimum qualification standards established by the Contractor, and if the referral is timely. A referral is timely if it is received by the Contractor on or before the date started in the notice.

Articles of Agreement
Article I

The Contractor shall take affirmative action in accordance with the provisions of this contract to insure that applicants are employed, and that employees are treated during employment without regard to race, religion, color, age, marital status, disability, sex or national original and that the

employer shall provide harassment free work environment for the realization of the potential of each employee. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training including apprenticeship insofar as it is within the control of the Contractor. The Contractor agrees to post in conspicuous places available to employees and applicants notices to be provided by the City setting out the provisions of the nondiscrimination clauses in this contract.

Article II

The Contractor shall in all solicitations or advertisements for employees placed by or on behalf of the Contractors state that all qualified or qualifiable applicants will be employed without regard to race, religion, color, age, marital status, disability, sex or national origin.

Article III

The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice to be provided by the City advising the labor union or worker's representative of the Contractor's equal employment opportunity and affirmative action commitments. Such notices shall be posted in conspicuous places available to employees and applicants for employment.

Article V

The Contractor agrees that it will comply with all provisions of the Affirmative Action Ordinance of the City of Madison, including the contract compliance requirements. The Contractor agrees to submit the model affirmative action plan for public works contractors in a form approved by the Director of Affirmative Action.

Article VI

The Contractor will maintain records as required by Section 39.02(9)(f) of the Madison General Ordinances and will provide the City Affirmative Action Division with access to such records and to persons who have relevant and necessary information, as provided in Section 39.02(9)(f). The City agrees to keep all such records confidential, except to the extent that public inspection is required by law.

Article VII

In the event of the Contractor's or subcontractor's failure to comply with the Equal Employment Opportunity and Affirmative Action Provisions of this contract or Section 39.03 and 39.02 of the Madison General Ordinances, it is agreed that the City at its option may do any or all of the following:

1. Cancel, terminate or suspend this Contract in whole or in part.

2. Declare the Contractor ineligible for further City contracts until the Affirmative Action requirements are met.

3. Recover on behalf of the City from the prime Contractor 0.5 percent of the contract award price for each week that such party fails or refuses to comply, in the nature of liquidated damages, but not to exceed a total of five percent (5%) of the contract price, or five thousand dollars ($5,000), whichever is less. Under public works contracts, if a subcontractor is in noncompliance, the City may recover liquidated damages from the prime Contractor in the manner described above. The preceding sentence shall not be construed to prohibit a prime Contractor from recovering the amount of such damage from the non-complying subcontractor.

Article VIII

The Contractor shall include the above provisions of this contract in every subcontract so that such provisions will be binding upon each subcontractor. The Contractor shall take such action with respect to any subcontractor as necessary to enforce such provisions, including sanctions provided for noncompliance.

Article IX

The Contractor shall allow the maximum feasible opportunity to small business enterprises to compete for any subcontracts entered into pursuant to this contract.

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

IN WITNESS WHEREOF, the Contractor has hereunto set his/her hand and seal and the City has caused these presents to be sealed with its corporate seal and to be subscribed by its Mayor and City Clerk the day and year first above written.

Countersigned:

H & H ELECTRIC CO., INC.
Company Name

Witness 10/17/13 Date

Witness 10/17/13 Date

President Date

Secretary 10/17/13 Date

CITY OF MADISON, WISCONSIN

Provisions have been made to pay the liability that will accrue under this contract.

Finance Director

Approved as to form:

City Attorney

Signed this 4th day of November, 20 13

Witness

Witness

Mayor 11-4-13 Date

City Clerk Maribeth Witzel-Behl 10-23-13 Date

Bond No.: 105938736

SECTION I: PAYMENT AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we H & H ELECTRIC CO., INC. as principal, and Travelers Casualty & Surety Company of America Company of Connecticut as surety, are held and firmly bound unto the City of Madison, Wisconsin, in the sum of ONE HUNDRED TWENTY-THREE THOUSAND EIGHT HUNDRED SEVENTY-THREE ($123,873.00) Dollars, lawful money of the United States, for the payment of which sum to the City of Madison, we hereby bind ourselves and our respective executors and administrators firmly by these presents.

The condition of this Bond is such that if the above bounden shall on his/her part fully and faithfully perform all of the terms of the Contract entered into between him/herself and the City of Madison for the construction of:

TRAFFIC ENGINEERING ELECTRICAL UPGRADES-2013
CONTRACT NO. 7172

in Madison, Wisconsin, and shall pay all claims for labor performed and material furnished in the prosecution of said work, and save the City harmless from all claims for damages because of negligence in the prosecution of said work, and shall save harmless the said City from all claims for compensation (under Chapter 102, Wisconsin Statutes) of employees and employees of subcontractor, then this Bond is to be void, otherwise of full force, virtue and effect.

Signed and sealed this 16 day of October, 2013

Countersigned:

Witness

Secretary

H & H ELECTRIC CO., INC.
Company Name (Principal)

President William T. Howe, President Seal

Approved as to form:

City Attorney

Travelers Casualty & Surety Company of America
Surety Seal

☑ Hourly Employee ☐ Commission

By
Attorney-in-Fact Brooke L. Parker

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under License No. 2512433 for the year 2013, and appointed as attorney-in-fact with authority to execute this payment and performance bond which power of attorney has not been revoked.

10/16/13
Date

Agent Signature

TRAVELERS

POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 222990 **Certificate No.** 003958445

KNOW ALL MEN BY THESE PRESENTS: That St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, that Farmington Casualty Company, Travelers Casualty and Surety Company, and Travelers Casualty and Surety Company of America are corporations duly organized under the laws of the State of Connecticut, that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Tim Hausmann, Jeff Hausmann, Judith A. Walker, Sheila Dickey, Steven L. Squires, Brooke L. Parker , Patrick A. McKenna, and Kelsey Jacobson

of the City of Madison, State of Wisconsin, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 5th day of November, 2010.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

State of Connecticut
City of Hartford ss.

By: _____
George W. Thompson, Senior Vice President

On this the 5th day of November, 2010, before me personally appeared George W. Thompson, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2011.

_____
Marie C. Tetreault, Notary Public

58440-4-09 Printed in U.S.A.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kori M. Johanson, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 16 day of OCTOBER, 20 13

Kori M. Johanson, Assistant Secretary

To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

SECTION J: PREVAILING WAGE RATES

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:	201300080
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 MADISON
PROJECT LOCATION:	MADISON CITY, DANE COUNTY, WI
CONTRACTING AGENCY:	CITY OF MADISON-ENGINEERING

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:	Time and one-half must be paid for all hours worked: - 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. 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. A DOT Premium (discussed below) may supersede this time and one-half requirement.
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, whevenever 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 journeyperson'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 All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
101	Acoustic Ceiling Tile Installer	30.16	15.31	45.47
102	Boilermaker	31.09	24.52	55.61
103	Bricklayer, Blocklayer or Stonemason Future Increase(s): Add $ .80 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.	32.01	17.35	49.36
104	Cabinet Installer	30.16	15.31	45.47
105	Carpenter	30.16	15.31	45.47
106	Carpet Layer or Soft Floor Coverer	30.16	15.31	45.47
107	Cement Finisher	31.48	13.19	44.67
108	Drywall Taper or Finisher	25.10	14.78	39.88
109	Electrician 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.	32.94	18.80	51.74
110	Elevator Constructor	44.94	23.84	68.78
111	Fence Erector	22.50	3.98	26.48
112	Fire Sprinkler Fitter	36.07	18.60	54.67
113	Glazier	37.13	12.32	49.45
114	Heat or Frost Insulator	33.93	23.26	57.19
115	Insulator (Batt or Blown)	27.47	19.16	46.63
116	Ironworker	30.90	19.11	50.01
117	Lather	30.16	15.31	45.47
118	Line Constructor (Electrical)	37.05	16.94	53.99

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
119	Marble Finisher	20.00	0.00	20.00
120	Marble Mason	32.01	16.85	48.86
121	Metal Building Erector	18.05	8.08	26.13
122	Millwright	31.76	15.36	47.12
123	Overhead Door Installer	13.50	0.00	13.50
124	Painter	24.80	14.78	39.58
125	Pavement Marking Operator	30.00	0.00	30.00
126	Piledriver	30.66	15.31	45.97
127	Pipeline Fuser or Welder (Gas or Utility)	30.18	19.29	49.47
129	Plasterer	30.03	16.36	46.39
130	Plumber	36.17	15.37	51.54
132	Refrigeration Mechanic	42.45	16.71	59.16
133	Roofer or Waterproofer	30.40	2.23	32.63
134	Sheet Metal Worker	34.23	20.19	54.42
135	Steamfitter	41.20	16.28	57.48
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.	21.89	11.85	33.74
138	Temperature Control Installer	41.20	16.21	57.41
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 Future Increase(s): Add $ .80/hr on 6/1/2013.	23.77	16.50	40.27
142	Tile Setter Future Increase(s): Add $ .80/hr on 6/1/2013.	29.71	16.50	46.21
143	Tuckpointer, Caulker or Cleaner Future Increase(s): Add $ .80 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.	32.01	17.35	49.36

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	31.89	17.98	49.87
203	Three or More Axle	18.00	11.45	29.45
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
207	Truck Mechanic	18.00	11.45	29.45

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer Future Increase(s): Add $.75/hr. on 06/03/2013 Premium Increase(s): Add $1.00/hr for certified welder; Add $.25/hr for mason tender	24.19	13.90	38.09
302	Asbestos Abatement Worker	18.00	0.00	18.00
303	Landscaper	15.00	3.90	18.90
310	Gas or Utility Pipeline Laborer (Other Than Sewer and Water)	20.94	12.65	33.59

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased) Premium Increase(s): DOT PREMIUMS: Pay two times the hourly basic rate on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	18.31	12.67	30.98
314	Railroad Track Laborer	23.41	6.91	30.32
315	Final Construction Clean-Up Worker	24.69	12.90	37.59

HEAVY EQUIPMENT OPERATORS
SITE PREPARATION, UTILITY OR LANDSCAPING WORK ONLY

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
501	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Milling Machine; Boring Machine (Directional, Horizontal or Vertical); Backhoe (Track Type) Having a Mfgr's Rated Capacity of 130,000 Lbs. or Over; Backhoe (Track Type) Having a Mfgr's Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bulldozer or Endloader (Over 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Crane, Shovel, Dragline, Clamshells; Forklift (Machinery Moving or Steel Erection, 25 Ft & Over); Gradall (Cruz-Aire Type); Grader or Motor Patrol; Master Mechanic; Mechanic or Welder; Robotic Tool Carrier (With or Without Attachments); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Tractor (Scraper, Dozer, Pusher, Loader); Trencher (Wheel Type or Chain Type Having Over 8 Inch Bucket). Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
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 $1/hr on 6/2/2013.	32.39	18.46	50.85
503	Air Compressor (&/or 400 CFM or Over); Augers (Vertical & Horizontal); Compactor (Self-Propelled 84 Ft Total Drum Width & Under, or Tractor Mounted, Towed & Light Equipment); Crusher, Screening or Wash Plant; Farm or Industrial Type Tractor; Forklift; Generator (&/or 150 KW or Over); Greaser; High Pressure Utility Locating Machine (Daylighting Machine); Mulcher; Oiler; Post Hole Digger or Driver; Pump (3 Inch or Over) or Well Points; Refrigeration Plant or Freeze Machine; Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $1/hr on 6/2/2013.	30.32	18.46	48.78

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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. Future Increase(s): Add $1/hr on 6/2/2013. 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.	35.12	18.46	53.58

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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 & Gantrys (20,000 Lbs. & Over). Future Increase(s): Add $1/hr on 6/2/2013. Premium Increase(s): Add $.25/hr for all >45 Ton lifting capacity cranes.	34.12	18.46	52.58
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).	32.42	17.97	50.39
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). Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
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 $1/hr on 6/2/2013.	30.32	18.46	48.78

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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. Future Increase(s): Add $1/hr on 6/2/2013.	29.69	18.46	48.15
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.	31.32	17.95	49.27
516	Fiber Optic Cable Equipment Future Increase(s): Add $1.75/hr on 02/01/2013; Add $1.75/hr on 02/01/2014	26.69	16.65	43.34

SEWER, WATER OR TUNNEL CONSTRUCTION

Includes those projects that primarily involve public sewer or water distribution, transmission or collection systems and related tunnel work (excluding buildings).

SKILLED TRADES

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	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 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.	32.09	16.13	48.22
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	22.50	3.98	26.48
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	30.66	15.31	45.97
130	Plumber	36.97	17.66	54.63

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
135	Steamfitter	41.20	16.28	57.48
137	Teledata Technician or Installer	21.26	11.75	33.01
143	Tuckpointer, Caulker or Cleaner	32.01	16.85	48.86
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
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	25.87	13.00	38.87
203	Three or More Axle	17.54	13.85	31.39
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer Future Increase(s): Add $.80/hr. on 06/03/2013 Premium Increase(s): Add $.20 for blaster, bracer, manhole builder, caulker, bottomman and power tool; Add $.55 for pipelayer; Add $1.00 for tunnel work 0-15 lbs. compressed air; Add $2.00 for over 15-30 lbs. compressed air; Add $3.00 for over 30 lbs. compressed air.	25.53	13.89	39.42
303	Landscaper	26.92	12.51	39.43

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
304	Flagperson or Traffic Control Person	17.33	15.53	32.86
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.81	12.22	30.03
314	Railroad Track Laborer	23.41	6.91	30.32

HEAVY EQUIPMENT OPERATORS SEWER, WATER OR TUNNEL WORK

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
521	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. Future Increase(s): Add $1/hr on 6/2/2013. 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.	35.12	18.46	53.58
522	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). Future Increase(s): Add $1/hr on 6/2/2013.	32.92	18.46	51.38
523	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). Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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. Future Increase(s): Add $1/hr on 6/2/2013.	29.69	18.46	48.15
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	Fringe Benefits Must Be Paid On All Hours Worked 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	30.16	15.31	45.47
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.	32.09	16.13	48.22
109	Electrician 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.	32.94	18.80	51.74
111	Fence Erector	28.00	4.50	32.50
116	Ironworker	30.90	19.11	50.01
118	Line Constructor (Electrical)	31.29	15.34	46.63
124	Painter	26.65	13.10	39.75
125	Pavement Marking Operator	29.22	16.71	45.93
126	Piledriver	30.66	15.31	45.97
133	Roofer or Waterproofer	30.40	2.23	32.63
137	Teledata Technician or Installer	21.26	11.75	33.01
143	Tuckpointer, Caulker or Cleaner	32.01	16.85	48.86
144	Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.64	17.00	46.64
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	35.50	15.09	50.59

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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	14.94	38.78
206	Shadow or Pilot Vehicle	33.22	18.90	52.12
207	Truck Mechanic	22.50	16.19	38.69

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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 $.10/hr for topman, air tool operator, vibrator or tamper operator (mechanical hand operated), chain saw operator and demolition burning torch laborer; Add $.15/hr for bituminous worker (raker and luteman), formsetter (curb, sidewalk and pavement) and strike off man; Add $.20/hr for blaster and powderman; Add $.25/hr for bottomman; Add $.35/hr for line and grade specialist; Add $.45/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).	28.35	13.90	42.25
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).	28.35	13.90	42.25
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)	17.81	12.22	30.03
314	Railroad Track Laborer	23.41	6.91	30.32

HEAVY EQUIPMENT OPERATORS
AIRPORT PAVEMENT OR STATE HIGHWAY CONSTRUCTION

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
533	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. 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.	34.22	19.90	54.12
534	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 Sawer (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. Future Increase(s): Add $2/hr on 6/1/13; Add $1.75/hr on 6/1/14. Premium Increase(s):	33.96	19.90	53.86

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
	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.	25.74	15.85	41.59
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

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

Fringe Benefits Must Be Paid On All Hours Worked

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	31.48	15.68	47.16
109	Electrician 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.	32.94	18.80	51.74
111	Fence Erector	22.50	3.98	26.48
116	Ironworker	30.90	19.11	50.01
118	Line Constructor (Electrical)	37.05	16.94	53.99
124	Painter	24.80	14.78	39.58
125	Pavement Marking Operator	28.10	15.00	43.10
126	Piledriver	30.66	15.31	45.97
133	Roofer or Waterproofer	30.40	2.23	32.63
137	Teledata Technician or Installer	21.26	11.75	33.01
143	Tuckpointer, Caulker or Cleaner	32.01	16.85	48.86
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer	27.20	13.37	40.57
303	Landscaper	18.25	1.11	19.36
304	Flagperson or Traffic Control Person	17.33	15.53	32.86
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.81	12.22	30.03
314	Railroad Track Laborer	23.41	6.91	30.32

HEAVY EQUIPMENT OPERATORS
CONCRETE PAVEMENT OR BRIDGE WORK

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
543	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. 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.	34.22	19.90	54.12
544	Backfiller; Belting, Burlap, Texturing Machine; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Jeep Digger; Joint Sawer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler; Tining or Curing Machine. Future Increase(s): Add $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.	33.96	19.90	53.86

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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.	29.82	17.98	47.80
546	Fiber Optic Cable Equipment.	25.74	15.85	41.59
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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.	34.62	17.98	52.60
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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
553	Air, Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boring Machine (Directional, Horizontal or Vertical); Bulldozer or Endloader; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Laser/Screed; Concrete Slipform Placer Curb & Gutter Machine; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Railroad Track Rail Leveling Machine, Tie Placer, Extractor, Tamper, Stone Leveler or Rehabilitation Equipment; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A-Frames. Future Increase(s): Add $1/hr on 6/2/2013.	32.39	18.46	50.85
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 Sawer (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.	25.74	15.85	41.59

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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
101	Acoustic Ceiling Tile Installer	19.50	11.10	30.60
102	Boilermaker	31.09	24.52	55.61
103	Bricklayer, Blocklayer or Stonemason	23.00	0.00	23.00
104	Cabinet Installer	16.25	3.22	19.47
105	Carpenter	30.16	1.36	31.52
106	Carpet Layer or Soft Floor Coverer	23.95	6.48	30.43
107	Cement Finisher	22.46	2.71	25.17
108	Drywall Taper or Finisher	15.50	0.00	15.50
109	Electrician	17.00	13.64	30.64
110	Elevator Constructor	44.94	23.84	68.78
111	Fence Erector	18.52	5.93	24.45
112	Fire Sprinkler Fitter	36.07	18.60	54.67
113	Glazier	37.13	12.32	49.45
114	Heat or Frost Insulator	35.00	0.00	35.00
115	Insulator (Batt or Blown)	18.50	13.98	32.48
116	Ironworker	30.90	19.11	50.01
117	Lather	30.16	1.36	31.52
119	Marble Finisher	16.50	2.38	18.88
120	Marble Mason	23.00	0.00	23.00
121	Metal Building Erector	16.52	1.82	18.34
123	Overhead Door Installer	17.00	0.00	17.00
124	Painter	23.00	11.27	34.27
125	Pavement Marking Operator	28.10	15.00	43.10

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
129	Plasterer	20.00	0.00	20.00
130	Plumber	38.90	0.00	38.90
132	Refrigeration Mechanic	33.00	1.79	34.79
133	Roofer or Waterproofer	17.50	3.73	21.23
134	Sheet Metal Worker	21.03	3.40	24.43
135	Steamfitter	41.20	16.28	57.48
137	Teledata Technician or Installer	19.23	1.46	20.69
138	Temperature Control Installer	21.00	0.00	21.00
139	Terrazzo Finisher	26.57	16.00	42.57
140	Terrazzo Mechanic	30.01	17.13	47.14
141	Tile Finisher	20.60	4.88	25.48
142	Tile Setter	19.00	0.00	19.00
143	Tuckpointer, Caulker or Cleaner	32.50	2.84	35.34
146	Well Driller or Pump Installer	19.00	7.30	26.30
147	Siding Installer	19.07	0.00	19.07

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	28.05	4.18	32.23
203	Three or More Axle	20.00	4.37	24.37
205	Pavement Marking Vehicle	20.85	11.02	31.87
207	Truck Mechanic	19.00	1.85	20.85

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer	19.80	7.22	27.02
302	Asbestos Abatement Worker	18.00	6.24	24.24
303	Landscaper	13.15	6.51	19.66

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.81	12.22	30.03
315	Final Construction Clean-Up Worker	15.00	0.00	15.00

HEAVY EQUIPMENT OPERATORS
RESIDENTIAL OR AGRICULTURAL CONSTRUCTION

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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, Timbco, Tree Shear, Tub Grinder, Processor; Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type); Winches & A-Frames.	31.89	18.20	50.09
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.	28.70	4.91	33.61

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

Wisconsin Office of the Commissioner of Insurance
Licensed Producer Search*

Wednesday, October 23, 2013

PARKER, BROOKE L
BARNEVELD WI

Year of Birth: 1980
Status: Active
License Number: 2512433
NPN**: 10068217
Effective Date: 12-17-2007
Expiration Date: 12-31-2013
License Type: Resident Intermediary Indv
CE Compliance: 12-31-2013

Lines of Authority

Line of Authority	Residency	Effective Date	Status
Property	Resident	12-17-2007	Active
Casualty	Resident	12-17-2007	Active

Appointments and Terminations

Company Name	Qualification Type/Status	Effective Date	Termination Date	Termination Reason
ACUITY, A Mutual Insurance Company	CAS/Active	08-26-2009		
	PROP/Active	08-26-2009		
Allmerica Financial Alliance Insurance Company	CAS/Active	08-02-2012		
	PROP/Active	08-02-2012		
Allmerica Financial Benefit Insurance Company	CAS/Active	08-02-2012		
	PROP/Active	08-02-2012		
Capitol Indemnity Corporation	CAS/Active	01-14-2008		
	PROP/Active	01-14-2008		
Chubb Indemnity Insurance Company	CAS/Active	07-31-2012		
	PROP/Active	07-31-2012		
Chubb National Insurance Company	CAS/Active	07-31-2012		
	PROP/Active	07-31-2012		
Cincinnati Casualty Company, The	CAS/Active	01-14-2008		
	PROP/Active	01-14-2008		
Cincinnati Indemnity Company, The	CAS/Active	01-14-2008		
	PROP/Active	01-14-2008		
Cincinnati Insurance Company, The	CAS/Active	01-14-2008		
	PROP/Active	01-14-2008		

Citizens Insurance Company of America	CAS/Active	08-02-2012		
	PROP/Active	08-02-2012		
Donegal Mutual Insurance Company	CAS/Active	11-12-2012		
	PROP/Active	11-12-2012		
Executive Risk Indemnity Inc.	CAS/Active	07-31-2012		
	PROP/Active	07-31-2012		
Federal Insurance Company	CAS/Active	07-31-2012		
	PROP/Active	07-31-2012		
Fidelity and Deposit Company of Maryland	CAS/Active	01-24-2008		
	PROP/Active	01-24-2008		
General Casualty Company of Wisconsin	CAS/Active	07-06-2011		
	PROP/Active	07-06-2011		
Great Northern Insurance Company	CAS/Active	07-31-2012		
	PROP/Active	07-31-2012		
Guarantee Company of North America USA, The	CAS/Active	01-11-2008		
Hanover Insurance Company, The	CAS/Active	08-02-2012		
	PROP/Active	08-02-2012		
Massachusetts Bay Insurance Company	CAS/Active	08-02-2012		
	PROP/Active	08-02-2012		
Merchants Bonding Company (Mutual)	CAS/Active	01-22-2008		
Merchants National Bonding, Inc.	CAS/Active	02-06-2013		
Midwest Family Mutual Insurance Company	CAS/Active	08-02-2012		
	PROP/Active	08-02-2012		
Old Republic Insurance Company	CAS/Active	06-09-2011		
	CAS/Inactive	01-15-2008	01-11-2011	Vol. Surrender per Agent Rqst
Old Republic Surety Company	CAS/Active	06-09-2011		
	CAS/Inactive	01-15-2008	01-11-2011	Vol. Surrender per Agent Rqst
Pacific Indemnity Company	CAS/Active	07-31-2012		
	PROP/Active	07-31-2012		
Pioneer Specialty Insurance Company	CAS/Active	08-01-2013		
	PROP/Active	08-01-2013		

Platte River Insurance Company	CAS/Active	01-14-2008
	PROP/Active	01-14-2008
Regent Insurance Company	CAS/Active	07-06-2011
	PROP/Active	07-06-2011
Sheboygan Falls Insurance Company	CAS/Active	11-12-2012
	PROP/Active	11-12-2012
SOCIETY INSURANCE, a mutual company	CAS/Active	01-15-2010
	PROP/Active	01-15-2010
Travelers Casualty and Surety Company of America	CAS/Active	02-08-2008
	PROP/Active	02-08-2008
United Fire & Casualty Company	CAS/Active	01-22-2009
	PROP/Active	01-22-2009
United Wisconsin Insurance Company	CAS/Active	06-05-2009
Vigilant Insurance Company	CAS/Active	07-31-2012
	PROP/Active	07-31-2012
West Bend Mutual Insurance Company	CAS/Active	06-25-2008
	PROP/Active	06-25-2008
Western National Mutual Insurance Company	CAS/Active	08-01-2013
	PROP/Active	08-01-2013
Western Surety Company	CAS/Active	01-18-2008

* Photocopies of this report provided to an insurer should be confirmed on-line for accuracy.

** NPN = National Producer Number assigned by the National Insurance Producer Registry to assist with nonresident licensing in the future.