Contract Routing Form

ROUTING: ROUTINE		printed on: 09/17/20
	Electric, Inc. ing Division	
Project: Bowman Field Lighting D	istribution System	
Contract No.: 7135 Enactment No.: RES-13-00677 Dollar Amount: 198,762.00	File No.: Enactment	31164 Date: 09/05/2013
(Please DATE before routing)		
Signatures Required	Date Received	Date Signed
City Clerk	9.17.13	1 9-17-2013
Director of Civil Rights	1 9-17-13	10/2/13 11
Risk Manager	1 10/2/13	10/2/13 PEST
Finance Director		1 10-213 Per
City Attorney 1462	10/3/3	10/3/13 PAL
Mayor 	10-3-13	10-4-13
Please return signed Contracts to Room 103, City-County Building for Original + 2 Copies	the City Clerk's Or filing.	ffice 5481537135
09/17/2013 11:36:20 enjls - Mike S	Sturm, 267-4921	

Dis Rights: OK NA Problem - Hold
Prev Wage: AA Agency / No
Contract Value: Free Sove
AA Plan: APPY DYLA
Amendment / Addendum #
Type: POS / Pwp / Sbdy / Gov't /
Grant / PW / Goal / Loan / Agrmt

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Details

Reports

Awarding Public

Works Contract No.

File #:

31164 Version: 1

Name:

7135, Bowman Field

Lighting Distribution

System.

Type:

Resolution

Status:

Passed

File created:

8/6/2013

In control:

COMMON COUNCIL

On agenda:

9/3/2013

Final action:

9/3/2013

Enactment date:

9/5/2013

Enactment #:

RES-13-00677

Title:

Awarding Public Works Contract No. 7135, Bowman Field Lighting Distribution

System.

Sponsors:

BOARD OF PUBLIC WORKS

Attachments:

1. Cont 7135.pdf

History (3)

Text

		·				
3 records	Grou	p Export				
Date	Ver.	Action By	Action	Result	Action Details	Watch
9/3/2013	1	COMMON COUNCIL	Adopt Under Suspension of Rules 2.04, 2.05, 2.24, and 2.25	Pass	Action details	Not available
8/21/2013	1	BOARD OF PUBLIC WORKS			Not available	Not available
8/6/2013	1	Engineering Division	Refer		Action details	Not available

CONTRACT NO. 7135 BOWMAN FIELD LIGHTING DISTRIBUTION SYSTEM

FORWARD ELECTRIC, INC.

\$198,762.00

Acct. No. CL60-58201-810397-00-0000000-60225C00

Contingency 8%±

\$198,762.00 15,838.00

GRAND TOTAL

\$214,600.00

	\$198,762.00 FILE			
BID OFFORWARD ELECTRIC, INC.				
2013				
PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS				
FOR				
BOWMAN FIELD LIGHTING DISTRIBUTION SYSTEM				
CONTRACT NO. 7135				
IN				
MADISON, DANE COUNTY, WISCONSIN				
AWARDED BY THE COMMON COUNCIL				
MADISON, WISCONSIN ON SEPTEMBER 3, 2013				
CITY ENGINEERING DIVISION				
1600 EMIL STREET				
MADISON, WISCONSIN 53713				

www.cityofmadison.com/business/pw

https://bidexpress.com/login

BOWMAN FIELD LIGHTING DISTRIBUTION SYSTEM

CONTRACT NO. 7135

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This Proposal, and Agreement have been prepared by:

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

Kevin Briski - Superintendant of Parks

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:	BOWMAN FIELD LIGHTING DISTRIBUTION SYSTEM
CONTRACT NO.:	7135
SBE GOAL	10%
BID BOND	5%
PRE BID MEETING (1:00 P.M.)	8/02/2013
PREQUALIFICATION APPLICATION DUE (1:00 P.M.)	8/02/2013
BID SUBMISSION (1:00 P.M.)	8/09/2013
BID OPEN (1:30 P.M.)	8/09/2013
PUBLISHED IN WSJ	7/19/2013 & 7/26/2013 & 8/02/2013

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.

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

THE BID OPENING is at 1600 EMIL ST., MADISON, WI53713.

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 prequalified 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 ⊠

<u>Buil</u> 101 120		g <u>Demolition</u>] Asbestos Removal] House Mover	110		Building Demolition		
Stre 201 205 210 215 220 221 225 230 235 240 241 242 245 250 251 260 265 270 275		Utility and Site Construction Asphalt Paving Blasting Boring/Pipe Jacking Concrete Paving Con. Sidewalk/Curb & Gutter/Misc. Flat Work Concrete Bases and Other Concrete Work Dredging Fencing Fiber Optic Cable/Conduit Installation Grading and Earthwork Horizontal Saw Cutting of Sidewalk Infrared Seamless Patching Landscaping, Maintenance Landscaping, Site and Street Parking Ramp Maintenance Pavement Sealcoating and Crack Sealing Petroleum Above/Below Ground Storank Tank Removal/Install Retaining Walls, Precast Modular Units Retaining Walls, Reinforced Concrete Sanitary, Storm Sewer and Water Main Construction	295 300 305 310 315 318 320 325 332 333 340		Sewer Lining Sewer Pipe Bursting Soil Borings Soil Nailing Storm & Sanitary Sewer Laterals & Water Svc.		
		Construction Bridge Construction and/or Repair					
Build 401 402 403 404 405 410 412 413 415 420 425 428 429 430 433		Concrete Doors and Windows Electrical - Power, Lighting & Communications Elevator - Lifts Fire Suppression Furnishings - Furniture and Window Treatments General Building Construction, Equal or Less than \$250,000 General Building Construction, \$250,000 to \$1,500,000 General Building Construction, Over \$1,500,000 Glass and/or Glazing Hazardous Material Removal Heating, Ventilating and Air Conditioning (HVAC)	440 445 450 455 460 461 465 466 470 475 480		Metals Painting and Wallcovering Plumbing Pump Repair Pump Systems Roofing and Moisture Protection		
State 1		f Wisconsin Certifications Class 5 Blaster - Blasting Operations and Activities 2500 feet and	l close	er to	inhabited buildings for quarries, open pits and		
2		road cuts. Class 6 Blaster - Blasting Operations and Activities 2500 feet and	l close	er to	inhabited buildings for trenches, site		
3	П	excavations, basements, underwater demolition, underground ex Class 7 Blaster - Blasting Operations and Activities for structures					
	_	the objects or purposes listed as "Class 5 Blaster or Class 6 Blas	ter".				
4 5	H	Petroleum Above/Below Ground Storage Tank Removal and Installation (Attach copies of State Certifications.) 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					
6		attached. Certification number as a Certified Arborist or Certified Tree World	er as	adı	ministered by the International Society of		
7		Arboriculture Pesticide application (Certification for Commercial Applicator For			·		
_		landscape (3.0) and possess a current license issued by the DAT	CP)				
8 9	H	Other 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 <u>ad hoc</u> 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 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 <u>bidder</u> 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 <u>meets or exceeds</u> 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 <u>does not meet</u> 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 <u>separate</u> Contact Report must be completed for <u>each applicable</u> SBE which is <u>not</u> utilized.)

2.5 Appeal Procedure

A bidder which does not achieve the established goal and is deemed <u>non-responsible</u> 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 <u>received</u> 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.

SECTION D: SPECIAL PROVISIONS

BOWMAN FIELD LIGHTING DISTRIBUTION SYSTEM

CONTRACT NO. 7135

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) is not required if either: a single trade accounts for 85% or more of the total labor costs of the project and the bid is less than \$48,000; or no single trade accounts for 85% or more of the total labor costs of the project and the bid is less than \$100,000. For bids not meeting either of these conditions, prevailing wages shall be required.

If 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:

X	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 104 SCOPE OF WORK

The project consists of providing all work, equipment, and materials required to install a new lighting distribution system while maintaining the existing electrical service to the Bowman Park athletic fields in accordance with the contract documents. The following is a brief summary of the work required and is not intended to be all inclusive. Refer to the contract documents for all work required as part of this contract:

- Coordinate with MG&E to provide new 277/480V, 3-phase, 4-wire electric service from Fish Hatchery Road. Provide transformer pad per MG&E requirements.
- Provide and install new electrical service from new transformer to new lighting control panel.
- Provide and install new lighting control enclosure.
- Provide and install new conduit and handholes from new lighting control enclosure to twenty (20) existing light pole locations.
- Provide and install new electrical feeder from new lighting control enclosure to existing press box.
- Test and adjust new lighting control enclosure to meet the requirements of the contract documents.
- Restore all disturbed surfaces to match existing.
- Construction shall be staged and coordinated such that the existing lighting system and fields are available for use during all scheduled activities for the entire construction period.

The Contractor shall visit the site prior to bidding to become familiar with the existing conditions. This work and any other work required to install the lighting distribution system according to these plans and specifications are to be included in the amount listed in the proposal page as "base bid lump sum".

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 105.12: COOPERATION OF THE CONTRACTOR

A PRE-CONSTRUCTION MEETING WILL BE REQUIRED PRIOR TO START OF CONSTRUCTION

The Contractor shall perform a One Call through Digger's Hotline for the site at least three days prior to beginning construction.

The Contractor warrants that its services are performed, within the limits prescribed by the City, with the usual thoroughness and competence of the consulting profession; in accordance with the standard for professional services at the time those services are rendered. The Contractor shall be responsible for the accuracy of the work performed under this Agreement, and shall promptly make necessary revisions or corrections resulting from their negligent acts, errors or omissions without additional compensation. The Contractor shall be responsible for any damages incurred as a result of their errors, omissions, or negligent acts and for any losses or costs to repair or remedy construction.

The Contractor will be allowed to store equipment and materials at the far southeast corner of the parking lot. The area available shall be the equivalent of seven (7) full-size parking stalls. Stored equipment and materials shall not occupy ADA reserved stalls or extend into drive aisles. The Contractor shall secure materials at the end of each work day to deter any potential vandalism and theft.

SECTION 105.9: SURVEYS, POINTS, AND INSTRUCTION

The Contractor will be responsible for all layout, lines and/or grades required to complete the installation of the lighting distribution system. The Contractor will layout any trench routes, and/or conduit routes then call the Parks Division for location/route approval prior to any digging. A minimum of 48 hours notice is required for onsite approvals.

SECTION 107.14: WEAPONS PROHIBITION

Contractor shall prohibit, and shall require its subcontractors to prohibit, its employees from carrying weapons, including concealed weapons, in the course of performance of work under this Contract, other than while at the Contractor's or subcontractor's own business premises. This requirement shall apply to vehicles used at any City work site and vehicles used to perform any work under this Contract, except vehicles that are an employee's "own motor vehicle" pursuant to Wis. Stat. sec. 175.60(15m).

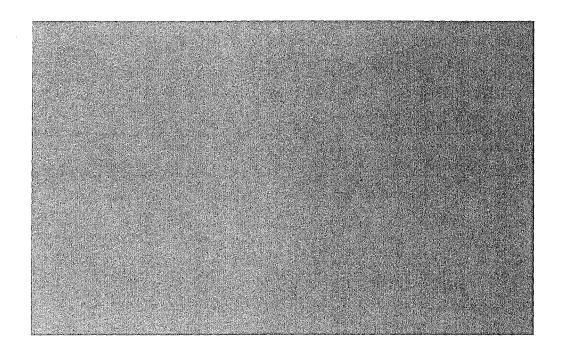
SECTION 107.2: PROTECTON/RESTORATION OF PROPERTY

Contractor shall protect all facility improvements in and around the complex. The Contractor shall protect concrete curbs, asphalt paving, lawn, fencing, trees and planting beds from construction operation related damage. Any damage shall be repaired per City of Madison Standard Specifications for Public Works Construction by the Contractor and considered incidental this contract.

SECTION 109.2: PROSECUTION OF THE WORK

Construction work must begin within seven (7) calendar days after the date appearing on mailed notice to do so. Once started, work shall be carried on at a rate so as to secure full completion within the contract time, the rate of progress and the time of completion being essential conditions of this Agreement.

The anticipated start date of this contract is September 30th, 2013. The calendar completion date of this contract is December 20th, 2013. Work on this project should be scheduled through Mike Sturm from the Parks Division, at (608) 267-4921 or msturm@cityofmadison.com.



Bowman Lighting Distribution System

Contract 7135

Technical Specifications

City of

Madison-Parks Division

Madison, WI

July 2013

TECHNICAL SPECIFICATIONS

BOWMAN LIGHTING DISTRIBUTION SYSTEM CONTRACT 7135 CITY OF MADISON-PARKS DIVISION MADISON, WISCONSIN



Prepared by:

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July 2013



SECTION 00010

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SECTION 01010

SUMMARY OF WORK

PART 1-GENERAL

1.01 DIVISION ONE

A. The requirements of Division 1 apply to all sections of the Contract(s).

1.02 PROJECT SCOPE

A. CONTRACTOR shall provide all items, articles, materials, operations or methods mentioned or scheduled on the Drawings or herein specified: including all labor, supervision, equipment, incidentals, taxes, and permits necessary to complete the Work as described within the Contract Documents. CONTRACTOR shall install all items provided by OWNER as mentioned or scheduled on the Drawings or herein specified.

1.03 CONTRACT DOCUMENTS-INTENT AND USE

A. Intent of Documents:

- 1. Singular notations and specifications shall be considered plural where application is reasonably inferred.
- 2. Mention or indication of extent of work under any division or Specification section is done only for convenience of CONTRACTOR and shall not be construed as describing all work required under that division or section.
- 3. Some individual sections may contain a list of related sections. The list of related sections in individual sections is provided for the convenience of CONTRACTOR and is not necessarily all-inclusive. CONTRACTOR may not rely upon this listing for determination of scope of work. Other sections of the Specifications not referenced in individual sections shall apply as required for proper performance of the Work.
- 4. Command type sentences may be used in the Contract Documents. These sentences refer to and are directed to CONTRACTOR.
- 5. Symbols for various elements and systems are shown on the Drawings. Should there be any doubt regarding the meaning or intent of the symbols used, a written interpretation shall be obtained from ENGINEER.

B. Use of Documents:

- CONTRACTOR shall examine all Specifications and Drawings for the Work, including those that may pertain to Work CONTRACTOR does not normally perform with its own forces.
- 2. CONTRACTOR shall use all of the Project Drawings and Specifications:
 - a. For a complete understanding of the Project.
 - b. To determine the type of construction and systems required.
 - c. For coordination with other contractors.
 - d. To determine what other work may be involved in various parts or phases.
 - e. To anticipate and notify others when work by others will be required.
 - f. And all other relevant matters related to the project.
- 3. CONTRACTOR is also bound by all requirements of the Contract Documents which are applicable to, pertain to, or affect its Work as may be shown or inferred by the entire set of Project Drawings and Specifications.

1.04 CONSTRUCTION REQUIREMENTS

A. General Information and Requirements: There are three existing utility services for the baseball and softball field lighting systems; one for the baseball field lighting system, one for the two southern softball field lighting systems, and one for the east softball field lighting system. The existing utility services will not be removed or modified as part of this project. The new utility service being provided as part of this project will be used to power future lighting system upgrades at each of the fields.

1.05 CONTRACTOR USE OF SITE

A. General:

- 1. OWNER's property lines shall be considered the "area of the site."
- 2. Construction activities shall be confined within the "area of the site" limits.
- 3. From the start of work to completion, CONTRACTOR is responsible for the care of the site and the premises which are affected by operations of Work of this Contract.
- 4. Except for permanent site improvements provided under the Contract, CONTRACTOR shall restore property disturbed during the Work to the conditions which previously existed.

B. Parking and Deliveries:

- 1. CONTRACTOR is responsible for control of traffic by vehicles and persons within the limits of its operations.
- 2. Parking for employees, subcontractors, and agents of CONTRACTOR shall be in areas subject to approval of OWNER.
- 3. Access to the site for delivery of construction material or equipment shall be subject to approval of OWNER.

1.06 EXISTING SERVICES, STRUCTURES, AND UNDERGROUND FACILITIES

- A. Interruption of existing services and systems including the existing baseball and softball field lighting system will not be permitted unless approved by OWNER.
- B. Work shall not commence until all labor, materials, and equipment are available so Work can continue without interruption or delay.
- C. Should uncharted or incorrectly charted piping or other utilities be encountered during installation, notify OWNER and consult with utility owner immediately for directions.
- D. Cooperate with OWNER and utility companies in keeping respective services and facilities in operation, and repair any damaged utilities to satisfaction of utility owner.
- E. CONTRACTOR shall not interrupt existing utilities serving facilities occupied and used by OWNER or others, except when permitted in writing by OWNER.
- F. Any accidental interruption of services shall be repaired immediately, including provision of temporary facilities until permanent repairs can be made.
- G. Wisconsin Statute 182.0175(2) requires, among other provisions, that before excavation or demolition begins, reasonable advance notice not less than three working days prior to the start of the excavation or demolition of the intent to excavate or demolish and the

commencement date be provided to the owners of the Underground Facilities in and near the construction area whose facilities may be affected by the excavation or demolition. As part of this notification requirement, CONTRACTOR shall contact Digger's Hotline (811 or 1-800-242-8511). CONTRACTOR shall be aware that not all owners participate in the Digger's Hotline program. A call to this agency shall not absolve CONTRACTOR of the requirements of this statute. CONTRACTOR shall comply with all other provisions of the statute though not enumerated herein.

- H. CONTRACTOR shall proceed with caution in the excavation and preparation of the Site so the exact location of structures and Underground Facilities can be determined. CONTRACTOR shall include in the Contract Price any costs for temporary or permanent relocations of such structures and Underground Facilities required to complete the Work unless specifically indicated otherwise in the Specifications.
- I. CONTRACTOR shall keep an accurate and complete record of all such structures and Underground Facilities encountered and shall provide OWNER a copy of this record. The record shall include a description of the item encountered, opinion as to conditions, and adequate measurements and depths so that the item can be located in the future.
- J. CONTRACTOR shall inspect all structures for condition and soundness. Unsound conditions shall be reported to the structure OWNER immediately after exposing. CONTRACTOR shall not proceed with the work until the structure owner has been notified. OWNER shall then be given time to inspect and correct, if required, the structure. CONTRACTOR may make claim under the provisions of Articles 11 and 12 of the General Conditions should CONTRACTOR feel a price or time adjustment is justified.
- K. Any additional costs incurred because of failure of CONTRACTOR to report the condition of any and all existing structure encountered shall be paid for by CONTRACTOR.
- L. Whenever ENGINEER feels it is necessary to explore and excavate to determine the location of existing structures and Underground Facilities, CONTRACTOR shall make explorations and excavations for such purposes. If CONTRACTOR is required to perform additional work in making the explorations and excavations, extra compensation will be allowed as provided for in the General Conditions.

1.07 PROTECTION OF WORK AND IMPROVEMENTS

- A. CONTRACTOR shall protect the property of OWNER, existing improvements, and the Work installed by CONTRACTOR and others from abuse, damage, dust, debris, and other objectionable materials resulting from construction activities.
- B. CONTRACTOR shall provide suitable covers, partitions, or other dust and fume containment devices to suit construction operations.
- C. CONTRACTOR shall keep property, existing improvements, and the Work including structures, fittings, and accessories free from dirt and foreign matter at all times.
- D. CONTRACTOR shall provide temporary plugging of openings, holes, and conduit ends that are existing or that CONTRACTOR has installed.
- E. Property, improvements, and Work damaged by CONTRACTOR shall be repaired or replaced by CONTRACTOR to the satisfaction of OWNER.

1.08 AVAILABILITY OF LANDS

A. Easements were not obtained for this project. CONTRACTOR shall contain its operation to within the rights-of-way or lands upon which the work is to be performed.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01019

CONTRACT CONSIDERATIONS

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Cash allowances.
 - 2. Measurement and Payment-Lump Sum.

1.02 CASH ALLOWANCES

- A. CONTRACTOR shall include in the Lump Sum bid, all allowances specified in the Contract Documents, and shall provide or coordinate all work covered by such allowances as acceptable to OWNER and ENGINEER.
- B. Cash allowances shall include the cost to CONTRACTOR, (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, including all applicable taxes.
- C. CONTRACTOR shall include in the Lump Sum bid, all costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowance. These costs shall not be included in the allowance, and additional payment shall not be allowed for such items.
- D. Prior to final payment, an appropriate change order will be issued to reflect actual amounts due CONTRACTOR on account of work covered by allowances, and the Contract Price shall be correspondingly adjusted.
- E. A cash allowance for the new Electrical Service shall be included in the Lump Sum bid. CONTRACTOR shall refer to Specification Section 16420–Electrical Service System for specific dollar amounts associated with the allowance.

1.03 MEASUREMENT AND PAYMENT-LUMP SUM

- A. No separate measurement for payment will be performed for Lump Sum Work.
- B. CONTRACTOR shall estimate percentage of Work completed. ENGINEER will review CONTRACTOR's estimate of quantity of Work completed.
- Payment will be made based on the percentage of the Contract completed less retainage and/or liquidated damages.
- D. Unless noted otherwise, all Work described in the Specifications and/or shown on the Drawings shall be included in the Lump Sum Bid.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01039

COORDINATION, FIELD ENGINEERING, AND MEETINGS

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Coordination.
 - 2. Field engineering.
 - 3. Progress meetings.

1.02 COORDINATION

- A. CONTRACTOR shall coordinate scheduling, submittals, and work of the various sections of the work to assure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later. See Section 01010–Summary of Work for specific construction sequence.
- B. CONTRACTOR shall verify utility requirements and characteristics of operating equipment are compatible with building utilities and coordinate Work of various sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.
- C. CONTRACTOR shall coordinate space requirements and installation of electrical work which are indicated diagrammatically on the Drawings and shall follow routing shown for conduit as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. CONTRACTOR shall coordinate completion and clean up of Work of separate sections in preparation for substantial completion and for portions of Work designated for OWNER's occupancy.
- E. CONTRACTOR shall coordinate access to Site for correction of defective Work and Work not in accordance with Contract Documents to minimize disruption of OWNER's activities.

1.03 FIELD ENGINEERING

- A. CONTRACTOR shall locate and protect property stakes, legal survey monuments, benchmarks, and survey control and reference points. CONTRACTOR shall pay for replacement of disturbed property stakes and legal survey monuments by a Registered Land Surveyor acceptable to OWNER and for replacement of benchmarks and survey control and reference points provided by ENGINEER.
- B. CONTRACTOR shall furnish all required plummets and graduated poles to check all Work.
- C. If stakes and boards have to be reset because of negligence of CONTRACTOR, CONTRACTOR shall bear the cost of such work.

- D. If existing property stakes not within the limits of the trench are removed or damaged by CONTRACTOR, CONTRACTOR shall bear the cost of replacement. Replacement shall be made by a legal survey performed by a licensed Land Surveyor hired by OWNER. Cost for survey shall be deducted from the Contract Price.
- E. CONTRACTOR shall be responsible for all lines, elevations, and measurements of buildings, structures, conduit, and other work executed by CONTRACTOR under the Contract. CONTRACTOR must exercise proper precaution to verify figures before laying out the Work and will be held responsible for any error resulting from its failure to exercise such precaution.

1.04 PROGRESS MEETINGS

- A. Progress meetings will be held throughout progress of the Work at intervals agreed to by OWNER, ENGINEER, and CONTRACTOR. Interval will generally be bi-weekly.
- B. CONTRACTOR's project manager, job superintendent, major subcontractors, and suppliers shall attend as appropriate to address agenda topics for each meeting. CONTRACTOR's representatives shall have authority to bind CONTRACTOR to decisions at the meetings.
- C. The project schedule shall be updated monthly and shall be reviewed at each progress meeting. CONTRACTOR shall provide the following information in written form at each meeting.
 - 1. Construction progress, including:
 - a. Activities completed this reporting period.
 - b. Activities in progress this reporting period.
 - c. Activities scheduled to commence this reporting period.
 - 2. Description of problem areas.
 - 3. Current and anticipated delays.
 - a. Cause of the delay.
 - b. Corrective action and schedule adjustments to correct the delay.
 - c. Impact of the delay on other activities, on milestones, and on completion dates.
 - 4. Changes in construction sequence.
- D. ENGINEER will prepare and distribute minutes to all attending parties.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01045

CUTTING, PATCHING, AND ALTERATIONS

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included: CONTRACTOR shall be responsible for all cutting, fitting, patching, and other alterations required to complete the Work as specified herein or to:
 - 1. Make its several parts fit together properly.
 - 2. Uncover portions of the Work to install improperly sequenced Work.
 - 3. Remove and replace defective Work.
 - 4. Remove and replace Work not conforming to requirements of the Contract Documents.
 - 5. Remove samples of installed Work as specified for testing.
 - 6. Provide penetrations of surfaces for installation of electrical conduit.

1.02 REFERENCES

A. ANSI A10 Safety Requirements for Construction and Demolition.

1.03 QUALITY ASSURANCE

- A. CONTRACTOR shall perform all cutting, patching, and alterations in strict accordance with pertinent requirements of these Specifications.
- B. Except as modified by governing codes, CONTRACTOR shall comply with the applicable provision and recommendations of ANSI A10.

1.04 SUBMITTALS

- A. CONTRACTOR shall submit a written request to OWNER well in advance of executing any cutting or alteration which affects the following:
 - 1. Work of OWNER.
 - 2. Structural value or integrity of any element of the Project.
 - 3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
 - 4. Efficiency, operational life, maintenance, or safety of operational elements.
 - 5. Visual qualities of sight-exposed elements.
- B. The request shall include:
 - 1. Description of affected work.
 - 2. The necessity for cutting, patching, or alteration.
 - 3. Effect on work of OWNER, any separate contractor, or on the structural or weather-proof integrity of the Project.
 - 4. Description of proposed work to include:
 - a. Scope of cutting, patching, or alteration.
 - b. Products proposed to be used.
 - c. Extent of refinishing to be done.
 - 5. Alternatives to cutting and patching.

- 6. Written permission of any separate contractor whose work will be affected.
- C. Submit written notice to OWNER designating the date and the time the Work will be uncovered or executed.

1.05 SCHEDULING AND COORDINATION

A. All work under this section shall be coordinated with OWNER's work forces and shall be accomplished at times acceptable to OWNER.

PART 2-PRODUCTS

2.01 NEW MATERIALS

A. For replacement of work removed, CONTRACTOR shall use materials which comply with the pertinent sections of these Specifications.

2.02 UNSALVAGEABLE MATERIALS

- A. Materials or items demolished and not designated to become the property of OWNER or not designated to be reinstalled shall become the property of CONTRACTOR and shall be removed from the site and legally and properly disposed of by CONTRACTOR.
- B. Materials shall be removed by CONTRACTOR in a manner that will avoid damage to materials or equipment to remain.

PART 3-EXECUTION

3.01 INSPECTION

- A. CONTRACTOR shall inspect existing conditions including elements subject to movement or damage during cutting, patching, and other alterations.
- B. After uncovering the work, CONTRACTOR shall inspect conditions affecting installation of new products or performance of new work.
- C. CONTRACTOR shall report unsatisfactory or questionable conditions to ENGINEER in writing.
- D. CONTRACTOR shall not proceed with work until unsatisfactory or questionable conditions are resolved.
- E. Beginning of cutting, patching, and alterations work means acceptance of existing conditions by CONTRACTOR.

3.02 PREPARATION AND PROTECTION

A. CONTRACTOR shall provide temporary bracing, shoring, needling, and support of the structure during alterations work as necessary to prevent collapse, settling, or deflection and to protect persons and property from injury or damage.

- B. Temporary supports must adequately carry all existing and imposed load.
- C. CONTRACTOR shall provide and maintain temporary protection of surface finishes, equipment, and adjacent work designated to remain where demolition, removal, and new work is being done, connections are being made, materials are being handled, or equipment is being removed.
- D. CONTRACTOR shall provide adequate fire protection in accordance with local Fire Department requirements.
- E. CONTRACTOR shall provide waterproofing, weather protection, heat, and other facilities for that portion of the work which may be exposed by cutting and patching, demolition, or other alterations.
- F. CONTRACTOR shall be responsible for any damage to the existing structure or its contents directly or indirectly by its crews or those of its subcontractors.

3.03 PERFORMANCE

- A. CONTRACTOR shall accomplish all work of cutting, removal, demolition, patching, or other alterations using only persons skilled in the appropriate trade.
- B. CONTRACTOR shall execute the work in a careful and orderly manner with the least possible disturbance to the public.
- C. CONTRACTOR shall execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to receive installation of repairs.
- D. CONTRACTOR shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.
- E. CONTRACTOR shall fit work airtight to conduit penetrations through surfaces.

3.04 DEMOLITION, CUTTING, AND REMOVAL

- A. Cutting and removal of construction shall be performed by CONTRACTOR so as not to cut or remove more than is necessary and so as not to damage adjacent work.
- B. CONTRACTOR shall not cut structural work in a manner resulting in a reduction of load-carrying capacity or load deflection ratio.
- C. CONTRACTOR shall not cut operational elements and safety components in a manner resulting in decreased performance, shortened useful life, or increased maintenance.
- D. CONTRACTOR shall not cut work exposed to view (exterior or interior) in a manner resulting in noticeable reduction of visual qualities as determined by OWNER.
- E. Construction that is to remain which is loosened, cracked, or otherwise damaged or defaced as a result of careless cutting or demolition and is unsuitable for use intended shall be removed and replaced at no additional cost to OWNER.
- F. CONTRACTOR shall clean demolished areas and remove debris, waste, and rubbish from the building at the conclusion of each day's work.

G. CONTRACTOR shall not let piled waste material endanger the structure.

3.05 PATCHING, EXTENDING, AND MATCHING

- A. Patching work shall conform to the standards of the Specifications where applicable, and where not specified, work shall conform to the highest standards of the applicable trade.
- B. CONTRACTOR shall patch construction to match adjacent work unless noted otherwise.
- C. CONTRACTOR shall provide adequate support to substrate for patching finishes.

END OF SECTION

SECTION 01060

REGULATORY REQUIREMENTS

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. OSHA Requirements.
 - 2. Roadway Limits.
 - 3. Permits.

1.02 OSHA REQUIREMENTS

A. All work including site safety, equipment, materials, and fabricated items provided under the Contract shall comply with the provisions of the "Occupational Safety and Health Act."

1.03 ROADWAY LIMITS

- CONTRACTOR shall comply with roadway weight restrictions including seasonal weight restrictions.
- B. No permits were obtained by OWNER for this Project. CONTRACTOR shall obtain required permits. Where the requirements of any permit are more restrictive than the Drawings or the Specifications, the permit requirements shall govern.
- C. Any permits required for dewatering operations shall be obtained and paid for by CONTRACTOR.

1.04 PERMITS

A. No permits were obtained by OWNER for this Project. CONTRACTOR shall obtain required permits. Where the requirements of any permit are more restrictive than the Drawings or the Specifications, the permit requirements shall govern.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01090

REFERENCE STANDARDS AND DEFINITIONS

PART 1-GENERAL

1.01 SUMMARY

A. Work Included:

- 1. Reference Standards:
 - a. Throughout the Contract Documents, reference is made to codes and standards which establish qualities and types of workmanship and materials, and which establish methods for workmanship and materials, and which establish methods for testing and reporting on the pertinent characteristics.
 - b. Where materials or workmanship are required by these Contract Documents to meet or exceed the specifically named code or standard, it is CONTRACTOR's responsibility to provide materials and workmanship which meet or exceed that specifically named code or standard.
 - c. It is also CONTRACTOR's responsibility, when so required by the Contract Documents, to deliver to ENGINEER all required proof that the material or workmanship, or both, meet or exceed the requirements of the specifically named code or standard.

2. Definitions:

- a. A substantial amount of specification language constitutes definitions for terms found in other Contract Documents, including the Drawings which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon.
- b. Certain terms used in the Contract Documents are defined generally in this section to supplement definitions of the Agreement, General Conditions, Supplementary Conditions, and other general contract documents.
- c. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the Work.
- B. Related Work Described Elsewhere: The specific naming of codes or standards occurs on the Drawings and in other sections of these Specifications.

1.02 QUALITY ASSURANCE

- A. Familiarity with Pertinent Codes and Standards:
 - 1. It is CONTRACTOR's responsibility to verify the requirements of the specifically named codes and standards and to verify that the items procured for use in this Work meet or exceed the specified requirements.
 - 2. When required by individual sections of these specifications, CONTRACTOR shall obtain a copy of each pertinent code or standard and maintain the copies at the job site during submittals, planning, and progress of the Work until Substantial Completion of the Work is attained.
- B. Overlapping or Conflicting Requirements:
 - Where compliance with two or more industry standards or sets of requirements are specified, and the overlapping of those standards or requirements establishes different or conflicting minimums or levels of quality, the most stringent requirement (which is

generally recognized to be also most costly) is intended and will be enforced, unless more detailed language written directly into Contract Documents clearly indicates that a less stringent requirement is acceptable.

2. Refer all uncertainties to ENGINEER for decision before proceeding.

1.03 REFERENCE STANDARDS

- A. Applicable standards of the construction industry are made a part of the Contract Documents by reference as if copied directly into the Contract Documents, or as if published copies were bound herewith. See Article 3.02 of the General Conditions for additional provisions regarding references.
- B. Standards referenced directly in the Contract Documents or by governing regulation, have precedence over nonreferenced standards which are recognized in industry for applicability to the Work.
- C. Nonreference standards are hereby defined to have no particular applicability to the work except as a general measurement of whether the Work complies with standards recognized in the construction industry.
- D. Reference standards and codes listed in these specifications may include, but are not necessarily limited to, standards or codes published by the following agencies and organizations:

1.	AA	Aluminum Association 1525 Wilson Boulevard, Arlington, VA 22209
2.	AAMA	American Architectural Manufacturer's Association 1827 Walden Office Square Suite 550, Schaumberg, IL 60173-4268
3.	AASHTO	American Association of State Highway & Transportation Officials 444 North Capitol Street NW Suite 249, Washington, DC 20001
4.	ACI	American Concrete Institute 38800 Country Club Drive, Farmington Hills, MI 48331-3439
5.	Al	Asphalt Institute 2696 Research Park Drive, Lexington, KY 40511-8480
6.	AISC	American Institute of Steel Construction One East Wacker Drive Suite 700, Chicago, IL 60601-1802
7.	AISI	American Iron and Steel Institute 25 Massachusetts Avenue NW Suite 800, Washington, DC 20001
8.	ANSI	American National Standards Institute 25 West 43rd Street, New York, NY 10036
9.	APA	American Plywood Association

7011 South 19th, Tacoma, WA 98466-5333

10. API	American Petroleum Institute 1220 L Street NW, Washington, DC 20005-4070
11. ARI	Air-Conditioning & Refrigeration Institute 4100 North Fairfax Drive Suite 200, Arlington, VA 22203
12. ASHRAE	American Society of Heating, Refrigerating, and Air Conditioning Engineers 1791 Tullie Circle NE, Atlanta, GA 30329
13. ASME	American Society of Mechanical Engineers Two Park Avenue, New York, NY 10016-5990
14. ASSE	American Society of Sanitary Engineering 901 Canterbury Suite A, Westlake, OH 44145
15. ASTM	ASTM International 100 Barr Harbor Drive, West Conshohoken, PA 19428-2959
16. AWI	Architectural Woodwork Institute 46179 Westlake Drive Suite 120, Potomac Falls, VA 20165-5874
17. AWPA	American Wood Protection Association P.O. Box 361784, Birmingham, AL 35236-1784
18. AWS	American Welding Society 8669 Doral Boulevard Suite 130, Doral, FL 33166
19. AWWA	American Water Works Association 6666 West Quincy Avenue, Denver, CO 80235
20. BHMA	Builder's Hardware Manufacturers Association 355 Lexington Avenue 15th floor, New York, NY 10017
21. BIA	Brick Industry Association 1850 Centennial Park Drive Suite 301, Reston, VA 20191
22. CRSI	Concrete Reinforcing Steel Institute 9333 North Plum Grove Road, Schaumburg, IL 60173
23. EJMA	Expansion Joint Manufacturers Association 25 North Broadway, Tarrytown, NY 10591
24. FM	FM Global FM Global Corporate Offices, 270 Central Avenue, Johnston, RI 02919
25. FTI	Facing Tile Institute Box 8880, Canton, OH 44711

26. GA	Gypsum Association 6525 Belcrest Road Suite 480, Hyattsville, MD 20782
27. GANA	Glass Association of North America 800 SW Jackson Street Suite 1500, Topeka, KS 66612-1200
28. ICC	International Code Council 500 New Jersey Avenue NW 6th Floor, Washington, DC 20001
29. IES	Illuminating Engineering Society 120 Wall Street, Floor 17, New York, NY 10005-4001
30. MIL	Military Specifications Naval Publications and Forms Center 5801 Tabor Avenue, Philadelphia, PA 19120
31. NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt Road Building C Suite 312, Glen Ellyn, IL 60137
32. NCMA	National Concrete Masonry Association 13750 Sunrise Valley Drive, Herndon, VA 20171-4662
33. NECA	NECA National Electrical Contractors Association 3 Bethesda Metro Center Suite 1100, Bethesda, MD 20814
34. NEMA	National Electrical Manufacturers Association 1300 North 17th Street Suite 1752, Rosslyn, VA 22209
35. NFPA	National Fire Protection Association 1 Batterymarch Park, Quincy, MA 02169-7471
36. NIST	National Institute of Standards and Technology (U.S. Department of Commerce), 100 Bureau Drive, Stop 1070 Gaithersburg, MD 20899-1070
37. NRCA	National Roofing Contractors Association 10255 West Higgins Road Suite 600, Rosemont, IL 60018-5607
38. NSF	National Sanitation Foundation International P.O. Box 130140, 789 North Dixboro Road, Ann Arbor, MI 48113-0140
39. OSHA	Occupational Safety & Health Administration 200 Constitution Avenue NW, Washington, DC 20210
40. PCA	Portland Cement Association 5420 Old Orchard Road, Skokie, IL 60077
41. PCI	Prestressed Concrete Institute 200 West Adams Street Suite 2100, Chicago, IL 60606

42. SAE	Society of Automotive Engineers SAE World Headquarters 400 Commonwealth Drive, Warrendale, PA 15096-0001
43. SDI	Steel Deck Institute P.O. Box 25, Fox River Grove, IL 60021
44. SDI	Steel Door Institute 30200 Detroit Road, Westlake, OH 44145-1987
45. SIGMA	Sealed Insulating Glass Manufacturers Assoc. 401 North Michigan Avenue Suite 2400, Chicago, IL 60611
46. SJI	Steel Joist Institute 234 Cheves Street, Florence, SC 29501
47. SMACNA	Sheet Metal and Air Conditioning Contractor's National Association 4201 Lafayette Center Drive, Chantilly, VA 20151-1219
48. SSPC	Society for Protective Coatings 40 24th Street 6th Floor, Pittsburgh, PA 15222-4656
49. TCA	Tile Council of America 100 Clemson Research Boulevard, Anderson, SC 29625
50. ICC	International Code Council 500 New Jersey Avenue NW 6th Floor, Washington, DC 20001
51. UL	Underwriters Laboratories 333 Pfingston Road; Northbrook, IL 60062

1.04 SUBMITTALS

A. For OWNER's records, CONTRACTOR shall submit copies of permits, licenses, certifications, inspection reports, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

1.05 DEFINITIONS

A. Indicated:

- 1. The term "indicated" is a cross-reference to details, notes, or schedules on the drawings, to other paragraphs or schedules in the specifications and to similar means of recording requirements in the Contract Documents.
- 2. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated", it is for the purpose of helping the reader locate cross-reference, and no limitation is intended except as specifically noted.

- B. Approve (or Words of Similar Nature):
 - 1. Where used in conjunction with ENGINEER's response to submittals, requests, applications, inquiries, reports, and claims by CONTRACTOR, the meaning of the term "approve" will be held to the limitation of ENGINEER's responsibilities and duties as specified in Paragraph 1.02.B.1. of the General Conditions.
 - 2. In no case will "approval" by ENGINEER be interpreted as a release of CONTRACTOR from responsibility to fulfill requirements of the Contract Documents.
- C. Minimum Requirements:
 - Indicated requirements are for a specific minimum acceptable level of quality or quantity, as recognized in the industry.
 - 2. Actual work must comply with (or within specified tolerances) or exceed minimums.
 - 3. CONTRACTOR shall refer uncertainties to ENGINEER before proceeding.
- D. Abbreviations: Abbreviations, where not defined in the Contract Documents, will be interpreted to mean the normal construction industry terminology.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

SUBMITTALS

PART 1-GENERAL

1.01 SUMMARY

A. Work Included:

- 1. Whenever possible throughout the Contract Documents, the minimum acceptable quality of workmanship and materials has been defined either by manufacturer's name and catalog number or by reference to recognized industry standards.
- 2. To facilitate CONTRACTOR's understanding of the design intent, procedures have been established for advance submittal of design data and for its review or rejection by ENGINEER.
- 3. The type of submittal requirements specified in this section include progress schedule, shop drawings, product data, samples, and other miscellaneous work related submittals.
- B. Related work described elsewhere: More detailed requirements for submittals are described in other sections of these specifications for some materials and equipment. They are to be considered additional requirements to supplement the requirements specified in this section. Submittals shall conform to Article 6 of the General Conditions.

1.02 IDENTIFICATION OF SUBMITTALS

- A. CONTRACTOR shall completely identify each submittal and resubmittal by showing at least the following information:
 - 1. Name and address of submitter, plus name and telephone number of the individual who may be contacted for further information.
 - 2. Name and location of project and identification number.
 - 3. Drawing number and specifications section number to which the submittal applies.
 - 4. Include the date of each submittal or resubmittal.

1.03 GROUPING OF SUBMITTALS

- A. Unless otherwise specifically permitted by ENGINEER, CONTRACTOR shall make all submittals in groups containing all associated items so that information is available for checking each item when it is received.
- B. Partial submittals may be rejected as not complying with the provisions of the Contract Documents.

1.04 TIMING OF SUBMITTALS

- A. CONTRACTOR shall make all submittals far enough in advance of scheduled dates of installation to provide required time for reviews, for securing necessary approval, for possible revision and resubmittal, and for placing orders and securing delivery.
- B. The review period for submittals that are received after 3 P.M. shall commence on the following business day.

1.05 CONSTRUCTION PROGRESS SCHEDULE

- A. Submit initial schedule in duplicate within 10 days after date of OWNER-CONTRACTOR Agreement.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a horizontal bar chart with separate line for each major portion of Work or operation, identifying first workday of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates.

1.06 SHOP DRAWINGS

- A. Shop drawings shall include specially prepared technical data for this project including drawings, diagrams, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements, and similar information not in standard printed form for general application to a range of similar projects. Shop drawings shall be submitted for all manufactured or fabricated items. See individual technical sections for special requirements.
- B. CONTRACTOR shall make all shop drawings accurately to scale and sufficiently large to show all pertinent aspects of the item and its method of connection to the work.
- C. Shop drawings shall be checked, approved, and stamped by CONTRACTOR in accordance with the General Conditions before transmittal to ENGINEER for review and approval.
- D. Complete shop drawings and descriptive data shall be submitted on all manufactured or fabricated items prior to 25% completion of the Work. Applications for payment beyond 25% of the Contract amount will not be recommended for payment until all shop drawings are submitted or a revised schedule for any remaining submittals is agreed to by OWNER and ENGINEER.
- E. CONTRACTOR shall submit shop drawings following the procedure described below. Except as noted, five color copies of shop drawings and descriptive data shall be submitted to ENGINEER for approval. Three copies of these will be returned to CONTRACTOR if approved. If shop drawings are not approved or if they are stamped "Approved as Noted-Resubmit," two corrected copies will be returned to CONTRACTOR for use in resubmittal. If CONTRACTOR desires more than three approved copies, submitted quantity shall be increased accordingly.
- F. Hard copy shop drawings shall be submitted in 3-ring binders or 3-tab report covers.

- G. Shop drawings submitted to ENGINEER will be reviewed and stamped "Approved," "Approved as Noted," "Approved as Noted-Resubmit," or "Not Approved." CONTRACTOR shall resubmit the above number of corrected shop drawings for all shop drawings stamped "Approved as Noted-Resubmit" and "Not Approved" and will continue this process until shop drawings are stamped "Approved" or "Approved as Noted." If drawings are stamped "Approved as Noted-Resubmit," fabrication may proceed in accordance with the marked-up shop drawings. Installation shall not proceed until shop drawings have been resubmitted and stamped "Approved" or "Approved as Noted."
- H. If shop drawings are stamped "Approved as Noted" or "Approved as Noted-Resubmit" and CONTRACTOR does not agree with revisions or cannot conform with revisions, fabrication shall not proceed and shop drawings shall be resubmitted with explanation of CONTRACTOR's position.
- I. All shop drawings used for construction site activities shall bear the "Approved" or "Approved as Noted" stamp of ENGINEER.
- J. Arrangements may be made between CONTRACTOR and ENGINEER to provide additional copies of "Approved" shop drawings for field activity purposes.
- K. Shop drawings shall include verification that the item meets applicable codes and standards such as NFPA 30, ASTM, OSHA, and others.

1.07 COLORS AND PATTERNS

- A. Unless the precise color and pattern is specifically described in the Contract Documents, whenever a choice of color or pattern is available in a specified product, CONTRACTOR shall submit accurate color charts and pattern charts to ENGINEER for OWNER's review and selection.
- B. Unless all available colors and patterns have identical wearing capabilities and are identically suited for the installation, CONTRACTOR shall completely describe the relative capabilities of each.

1.08 PRODUCT DATA

- A. CONTRACTOR shall provide product data as required to supplement shop drawings.
- B. Product data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by CONTRACTOR to illustrate a material, product, or system for some portion of the work.
- CONTRACTOR shall collect required product data into one submittal for each unit of work or system.
- D. CONTRACTOR shall include manufacturer's standard printed recommendations for application and use, compliance with standards, performance characteristics, wiring and piping diagrams and controls, component parts, finishes, dimensions, required clearances, and other special coordination requirements.

- E. CONTRACTOR shall mark each copy of standard printed data to identify pertinent products, models, options, and other data.
- F. CONTRACTOR shall supplement manufacturer's standard data to provide information unique to the work.

1.09 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals required by ENGINEER.
- B. Shop Drawings and Product Data:
 - 1. Revise initial drawings or data and resubmit as specified for initial submittal.
 - 2. Itemize in a cover letter any changes which have been made other than those requested by ENGINEER.

1.10 MANUFACTURER'S DIRECTIONS

- A. Manufactured articles, materials, and equipment shall be stored, commissioned operated, applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer, unless specified to the contrary.
- B. Wherever specifications call for work to be performed or materials to be installed in accordance with the manufacture's printed instructions or directions, CONTRACTOR shall furnish copies as required for shop drawings of those instructions or directions to ENGINEER before installing the material or performing the work.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

QUALITY CONTROL

PART 1-GENERAL

1.01 SUMMARY

- A. Work Includes:
 - 1. Quality Assurance-Control of Installation.
 - 2. Tolerances.
 - 3. Manufacturers' Field Services and Reports.

1.02 QUALITY ASSURANCE-CONTROL OF INSTALLATION

- A. CONTRACTOR shall monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce Work of specified quality.
- B. CONTRACTOR shall comply with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, CONTRACTOR shall request clarification from ENGINEER before proceeding.
- D. CONTRACTOR shall comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Work shall be performed by persons qualified to produce workmanship of specified quality.
- F. CONTRACTOR shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.03 TOLERANCES

- A. CONTRACTOR shall monitor tolerance control of installed products to produce acceptable work and shall not permit tolerances to accumulate.
- B. CONTRACTOR shall comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, CONTRACTOR shall request clarification from ENGINEER before proceeding.
- C. CONTRACTOR shall adjust products to appropriate dimensions; position before securing products in place.

1.04 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification sections or when requested by ENGINEER, CONTRACTOR shall require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, and quality of workmanship.

- B. CONTRACTOR shall submit qualifications of observer to ENGINEER 30 days in advance of required observations.
- C. CONTRACTOR shall report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. CONTRACTOR shall submit report in duplicate within 30 days of observation to ENGINEER for information.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

TEMPORARY FACILITIES

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Temporary utilities.
 - 2. Temporary support facilities.
 - 3. Removal of temporary facilities.
- B. CONTRACTOR shall arrange for and provide temporary facilities as required for proper and expeditious prosecution of the Work.
- C. CONTRACTOR shall pay all costs, except as otherwise specified, until final acceptance of the Work unless OWNER makes arrangements for use of completed portions of the Work after substantial completion in accordance with the provisions of the General Conditions.
- D. CONTRACTOR shall make all temporary connections to utilities and services in locations acceptable to OWNER and local authorities having appropriate jurisdiction.
 - 1. Furnish all necessary labor and materials.
 - 2. Make all installations in a manner subject to the acceptance of such authorities and OWNER.
 - 3. Maintain such connections.
 - 4. Remove temporary installation and connection when no longer required.
 - 5. Restore services and sources of supply to proper operating conditions.

1.02 TEMPORARY UTILITIES

- A. Temporary Toilets: CONTRACTOR shall provide and maintain sanitary temporary chemical toilets located where approved by OWNER and in sufficient number required for the work force employed by CONTRACTOR.
- B. Temporary Electrical Services:
 - 1. CONTRACTOR shall make all necessary arrangements, furnish, install, and maintain necessary temporary electrical services at the Site. Services shall be a minimum of 200 amperes, 1 phase, 3 wire, 120/240 volt temporary power and lighting system adequate for the construction of this Project and in accordance with OSHA Requirements for Construction Projects. Installation of the temporary power and lighting system is to begin upon notification to proceed and shall be installed and routed in a manner so as not to interfere with construction of the Project. CONTRACTOR shall remove all temporary services when Project is complete.
 - 2. The temporary light and power system shall include temporary service poles, metering facilities, driven ground, fused main disconnect switch, panelboards, branch circuits, outlets and lamps, and the maintenance thereof.
 - 3. Construction areas shall be illuminated to 5 fc.
 - 4. Temporary lights shall be equipped with heavy-duty electric cords and lamp guards. They must not be suspended by the power supply cord unless it is designed for this use.

- 5. Provide one general purpose, 20 ampere, 120 volt, single phase, grounding type receptacle outlet for every 1,000 feet of working area. The maximum length of a 20 ampere, 120 volt lighting or power circuit shall not be greater than 200 feet from panelboard to farthest outlet. All single phase receptacle outlet circuits shall have approved ground-fault circuit interrupter protection.
- 6. All utility charges for installation of the temporary services shall be paid for by CONTRACTOR. All metering installation charges and all energy charges for electric current used for temporary lighting and power are to be paid by CONTRACTOR.
- 7. No permanent electrical equipment or wiring shall be used without express written permission of OWNER. Such approval, if given, shall not affect guarantee period. If OWNER authorizes use of permanent service facilities, CONTRACTOR shall pay all metering costs until acceptance or occupancy (whichever occurs first) of building by OWNER.
- C. Weather Protection and Temporary Heat: CONTRACTOR shall provide weather protection to protect the Work from damage because of freezing, rain, snow, and other inclement weather.
- D. CONTRACTOR's and Subcontractor(s)' personnel shall refrain from smoking during excavation, backfilling, and other work at the Site which may involve potential contact with explosive vapors or gasoline products.

1.03 TEMPORARY SUPPORT FACILITIES

- A. CONTRACTOR shall provide whatever facilities and services which may be needed to properly support primary construction process and meet compliance requirements and governing regulations.
- B. CONTRACTOR shall not use permanent facilities except as otherwise indicated, unless authorized by OWNER.

1.04 REMOVAL OF TEMPORARY FACILITIES

- A. Remove temporary materials, equipment, services, and construction as soon as practicable but no later than just prior to substantial completion inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities and restore existing facilities used during construction to specified, or to original, condition.
- C. Minor temporary facilities which interfere with OWNER's operations shall be removed at the end of each Work period.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

TEMPORARY CONTROLS

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Dust Control.
 - 2. Water, Erosion, and Sediment Control.
 - 3. Noise Control.
 - 4. Traffic Control.
 - 5. Site Security.
 - 6. Daily Cleanup.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

3.01 DUST CONTROL

- A. CONTRACTOR shall execute the Work by methods to minimize raising dust from construction operations.
- B. CONTRACTOR shall provide positive means to prevent airborne dust from dispersing into atmosphere.
- C. CONTRACTOR shall provide partitions, enclosures, etc., within buildings as necessary to confine dust and protect adjacent areas.

3.02 WATER, EROSION, AND SEDIMENT CONTROL

- A. CONTRACTOR shall maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. CONTRACTOR shall protect Site from puddling or running water.
- C. CONTRACTOR shall provide erosion control measures as necessary to control discharge of sediment laden water to surface waters and wetlands.
- D. Restoration of the Site shall proceed concurrently with the construction operation. See Drawings and Specifications for erosion control measures in addition to that which may be required above.
- E. Erosion control measures shall comply with DNR Conservation Practice Standards-Construction Site Erosion and Sediment Controls.

3.03 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise produced by construction operations.

3.04 TRAFFIC CONTROL

- A. CONTRACTOR shall be responsible for providing all signs, barricades, flagmen, and other traffic control devices in the construction zone.
- B. All traffic control measures shall meet the requirements of Part 6 of the Manual on Uniform Traffic Control Devices of the State of Wisconsin.
- C. Do not close or obstruct roadways without approval of OWNER.
- D. Maintain two-way traffic on streets at all times.
- E. Conduct operations with minimum interference to roadways.

3.05 SITE SECURITY

- A. CONTRACTOR shall have the sole responsibility of safeguarding the Site perimeter to prevent unauthorized entry to the Site throughout the duration of the Project. CONTRACTOR shall at all times provide such permanent and temporary fencing or barricades or other measures as may be necessary to restrict unauthorized entry to its construction area including construction in public rights-of-way or easements. Site security measures shall include safeguards against attractive nuisance hazards as a result of construction activity.
- B. CONTRACTOR shall at all times be responsible for the security of the Work including materials and equipment. OWNER will not take any responsibility for missing or damaged equipment, tools, or personal belongings. CONTRACTOR shall have the sole responsibility of safeguarding the Work and the Site throughout the duration of the Project.

3.06 DAILY CLEANUP

- A. CONTRACTOR shall clean up the Site and remove all rubbish on a daily basis.
- B. CONTRACTOR shall clean up public streets and highways and remove any dirt, mud, or other materials due to project traffic on daily basis and shall comply with all local and state ordinances and permit requirements.

FIELD OFFICES AND SHEDS

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Materials, equipment, and furnishings.
 - 2. Construction.
 - 3. Environmental control.
 - CONTRACTOR office and facilities.
 - 5. Storage areas and sheds.

PART 2-PRODUCTS

2.01 MATERIALS, EQUIPMENT, AND FURNISHINGS

A. Materials, equipment, and furnishings shall be serviceable, new or used, and adequate for required purpose.

2.02 CONSTRUCTION

- A. CONTRACTOR shall provide structurally sound, secure, weathertight enclosures for storage spaces.
- B. Exterior materials shall be weather resistant.
- C. Provide appropriate type fire extinguisher at each storage area.
- D. Interior materials in storage sheds shall be as required to provide specified conditions for storage of products.

2.03 ENVIRONMENTAL CONTROL

A. Heating and ventilation for storage spaces shall be as needed to maintain products in accordance with Contract Documents and to provide adequate lighting for maintenance and observation of products.

2.04 CONTRACTOR OFFICE AND FACILITIES

A. CONTRACTOR shall provide facilities to meet CONTRACTOR's needs.

2.05 STORAGE AREAS AND SHEDS

A. Provide storage areas and sheds of size to meet storage requirements for products of individual sections, allowing for access and orderly provision for maintenance and for observation of products to meet requirements of Section 01600–Materials and Equipment.

PART 3-EXECUTION

NOT APPLICABLE

MATERIALS AND EQUIPMENT

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included: CONTRACTOR shall be responsible for the delivery, handling, storage and protection of all material and equipment required to complete the Work as specified herein.
- B. Related Sections and Divisions: Specific requirements for the handling and storage of material and equipment are described in other sections of these Specifications.

1.02 PRODUCTS

- A. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.
- B. CONTRACTOR shall not use materials and equipment removed from existing construction, except as specifically required, or allowed, by the Contract Documents.
- C. When any construction deviations from the Drawings and/or Specifications necessary to accommodate equipment supplied by CONTRACTOR, result in additional costs to CONTRACTOR, such additional costs shall be borne by CONTRACTOR. CONTRACTOR shall also pay any additional costs necessary for revisions of Drawings and/or Specifications by ENGINEER.
- D. Each major component of equipment shall bear a nameplate giving the name and address of the manufacturer and the catalogue number or designation.

1.03 TRANSPORTATION AND HANDLING

- A. Materials, products and equipment shall be properly containerized, packaged, boxed, and protected to prevent damage during transportation and handling.
- B. CONTRACTOR shall not overload any portion of the structure in the transporting or storage of materials.
- C. CONTRACTOR shall not damage other construction by careless transportation, handling, spillage, staining or impact of materials.
- D. CONTRACTOR shall provide equipment and personnel to handle products, including those provided by OWNER, by methods to prevent soiling and damage.
- E. CONTRACTOR shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.
- F. CONTRACTOR shall handle product by methods to avoid bending or overstressing. Lift large and heavy components only at designated lift points.

1.04 DELIVERY AND RECEIVING

- A. CONTRACTOR shall arrange deliveries of products in accordance with the Progress Schedule, allowing time for observation prior to installation.
- B. CONTRACTOR shall coordinate deliveries to avoid conflict with the Work and conditions at the Site; limitations on storage space; availability of personnel and handling equipment; and OWNER's use of premises.
- C. CONTRACTOR shall deliver products in undamaged, dry condition, in original unopened containers or packaging with identifying labels intact and legible.
- D. CONTRACTOR shall clearly mark partial deliveries of component parts of equipment to identify equipment and contents to permit easy accumulation of parts and to facilitate assembly.
- E. Immediately on delivery, CONTRACTOR shall inspect shipment to assure:
 - 1. Product complies with requirements of Contract Documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Accessories and installation hardware are correct.
 - 4. Containers and packages are intact and labels legible.
 - 5. Products are protected and undamaged.

1.05 STORAGE AND PROTECTION

A. General:

- 1. CONTRACTOR shall store products, immediately on delivery, in accordance with manufacturer's instructions, with all seals and labels intact and legible.
- 2. Available storage space at the Site is limited. Any additional off-site space required shall be arranged by CONTRACTOR.
- 3. CONTRACTOR shall allocate the available storage areas and coordinate their use by the trades on the job.
- 4. CONTRACTOR shall arrange storage in a manner to provide access for maintenance of stored items and for observation.
- B. In enclosed storage, CONTRACTOR shall:
 - 1. Provide suitable temporary weather tight storage facilities as may be required for materials that will be damaged by storage in the open.
 - 2. Maintain temperature and humidity within ranges stated in manufacturer's instructions.
 - 3. Provide ventilation for sensitive products as required by manufacturer's instructions.
 - 4. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.
 - 5. Store solid materials such as electrical equipment, fittings, and fixtures under shelter, in original packages, away from dampness and other hazards.
 - 6. Store liquid materials away from fire or intense heat and protect from freezing.
- C. At exterior storage, CONTRACTOR shall:
 - 1. Store unit materials such as conduit and lumber off ground, out of reach of dirt, water, mud and splashing.
 - 2. Store tools of equipment that carry dirt outside.
 - 3. Store large equipment so as not to damage the Work or present a fire hazard.

- 4. Cover products subject to discoloration or deterioration from exposure to the elements, with impervious sheet material and provide ventilation to avoid condensation.
- 5. Completely cover and protect any equipment or material which is prime coated or finish painted with secured plastic or cloth tarps. Store out of reach of dirt, water, mud and splashing.
- 6. Store loose granular materials on clean, solid surfaces such as pavement, or on rigid sheet materials, to prevent mixing with foreign matter.
- 7. Provide surface drainage to prevent erosion and ponding of water.
- 8. Prevent mixing of refuse or chemically injurious materials or liquids.
- 9. Cover aggregates such as sand and gravel in cold wet weather.
- 10. Remove all traces of piled bulk materials at completion of work and return site to original or indicated condition.

1.06 MAINTENANCE OF STORAGE

- A. CONTRACTOR shall periodically inspect stored products on a scheduled basis.
- B. CONTRACTOR shall verify that storage facilities comply with manufacturer's product storage requirements, and verify that manufacturer required environmental conditions are maintained continually.
- C. CONTRACTOR shall verify that surfaces of products exposed to the elements are not adversely affected and that any weathering of finishes is acceptable under requirements of Contract Documents.

1.07 INSTALLATION REQUIREMENTS

- A. Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the respective manufacturers, unless otherwise specified.
- B. After installation, CONTRACTOR shall protect all materials and equipment against weather, dust, moisture, and mechanical damage.
- C. CONTRACTOR shall be responsible for all damages that occur in connection with the care and protection of all materials and equipment until completion and final acceptance of the Work by OWNER. Damaged material and equipment shall be immediately removed from the Site.

1.08 CONCRETE EQUIPMENT BASE

- A. Cast-in-place concrete equipment bases shall be provided for all new equipment including electrical control panels, etc. Concrete equipment bases shall be provided by CONTRACTOR except where specifically noted to be provided by others. Bases shall be 3-1/2 inch minimum height and shall be a minimum of 3 inches larger than equipment being supported. Grouting of equipment bases shall be as recommended by equipment manufacturer.
- B. Concrete and grout shall meet applicable sections of the specifications.

C. Provide all anchor bolts, metal shapes and templates to be cast in concrete or used to form concrete for support of equipment.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

CONTRACT CLOSEOUT

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Closeout procedures.
 - 2. Final cleaning.
 - 3. Adjusting.
 - 4. Project record documents.
 - 5. Warranties.

1.02 CLOSEOUT PROCEDURES

- A. CONTRACTOR shall provide submittals to ENGINEER that are required by governing or other authorities.
- B. CONTRACTOR shall comply with General Conditions and complete the following before requesting ENGINEER's observation of the Work or designated portion thereof for substantial completion.
 - 1. Submit executed warranties, workmanship bonds, maintenance agreements, inspection certificates, and similar required documentation for specific units of Work, enabling OWNER's unrestricted occupancy and use.
 - 2. Submit record documentation, maintenance manuals, tools, spare parts, keys, and similar operational items.
 - 3. Submit consent of surety (if surety required in Contract).
 - 4. Complete final cleaning, touch-up work of marred surfaces, and remove temporary facilities and tools.

1.03 FINAL CLEANING

- A. It is CONTRACTOR's responsibility to completely clean up the construction site and interior spaces where work is performed at the completion of the Work.
- B. Interior cleaning includes:
 - 1. Removal of trash and rubbish from these areas.
 - 2. Broom cleaning of floors.
 - 3. Removal of any dust and other extraneous materials from surfaces, including but not limited to exposed structure and electrical equipment.

1.04 ADJUSTING

A. CONTRACTOR shall adjust operating products and equipment to ensure smooth and unhindered operation.

1.05 PROJECT RECORD DOCUMENTS

- A. CONTRACTOR shall maintain on Site one set of the following record documents to record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change orders and other modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. CONTRACTOR shall ensure entries are complete and accurate, enabling future reference by OWNER.
- CONTRACTOR shall store record documents separate from documents used for construction.
- D. CONTRACTOR shall record information concurrent with construction progress.
- E. Specifications: CONTRACTOR shall legibly mark and record at each Product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by addenda and modifications.
- F. Record Documents and Shop Drawings: CONTRACTOR shall legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements.
 - 2. Field changes of dimension and detail.
 - 3. Details not on original Contract drawings.

1.06 WARRANTIES

- A. CONTRACTOR shall provide warranties beyond project one-year warranty as required by technical sections and as follows.
- B. Submit warranty information as follows:
 - 1. Provide notarized copies.
 - 2. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers, and provide Table of Contents and assemble in three-ring binder with durable cover.
 - 3. Submit with request for certificate of Substantial Completion.
 - 4. For items of work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance listing date of acceptance as start of warranty period.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1-GENERAL

1.01 DESCRIPTION

- A. Applicable provisions of Division 1 shall govern all work under this Section.
- B. This Section specifies requirements for salvaging, recycling, and disposing of construction waste.

1.02 PRECONSTRUCTION AND PREBID MEETINGS

A. The Preconstruction Conference will include discussion of the proposed Construction Waste Management Plan to develop a mutual understanding regarding details of construction waste management implementation.

1.03 WASTE MANAGEMENT GOALS

- A. The recycling goal (including reuse) to be achieved at Substantial Completion of the Project shall be by 50% by weight or volume of total waste generated by the Project and includes reuse.
- B. Reduce: The Project shall generate the least amount of waste and methods shall be used that minimize waste due to error, poor planning, breakage, mishandling, contamination, or similar factors. Promote the resourceful use of materials to the greatest extent possible.
- C. Reuse: CONTRACTOR shall reuse materials to the greatest extent possible. Salvage reusable materials for resale, for reuse on this Project, or for storage for use on future projects. Return reusable items (e.g., pallets or unused products) to the material suppliers.
- D. Recycle: As many of the waste materials not able to be eliminated in the first place or salvaged for reuse shall be recycled. Waste disposal in landfills shall be minimized to the greatest extent possible.

1.04 SUBMITTALS

- A. Construction Waste Management Plan: Prior to commencing demolition or construction activities, CONTRACTOR shall develop and submit a Construction Waste Management Plan to OWNER for approval within 20 working days after Contract award or prior to any waste removal.
- B. Summary of Waste Progress Reports: Throughout the duration of the Project, CONTRACTOR shall report with their periodic Applications for Payment a Summary of Waste including the quantity of each material recycled, reused, or salvaged, the receiving party and the applicable diversion rates. CONTRACTOR shall maintain a record of related weight tickets, manifests, receipts, and invoices for review by OWNER on request.

C. Summary of Waste Final Documentation: At Substantial Completion of the Project, CONTRACTOR shall submit a final summary of reuse and recycling results, including the quantity of each material recycled, reused, or salvaged, the receiving party, and the applicable diversion rates.

1.05 CONSTRUCTION WASTE MANAGEMENT PLAN

- A. The purpose of the Construction Waste Management Plan is to achieve successful reuse and recycling with the highest possible reuse and recycling rates. The Plan shall include the following:
 - 1. A schedule identifying milestones and key reporting dates of Construction Waste Management.
 - 2. A list of waste materials expected to be generated from the Project as debris.
 - 3. A list of each material proposed to be salvaged, reused, recycled, and discarded. Identify applicable markets for reuse and/or recycling. At a minimum, all materials required by State law to be recycled shall be recycled (e.g., cardboard, cans, bottles, office paper, fluorescent bulbs, refrigerants, mercury, etc.), and scrap metal shall be recycled.
 - 4. Separation and Materials Handling Procedures: Description of how waste materials identified above will be separated, cleaned (if necessary), and protected from contamination.
 - 5. Educational and Motivational Procedures: Meetings to be held and other proposed methods for educating construction personnel regarding waste reduction and recycling.
 - 6. Waste Auditing Procedures: Methods of monitoring and enforcing the Plan.
 - 7. Documentation Procedures: Methods of documenting materials leaving the Project site as waste, for reuse, or recycling to allow Summary of Waste Progress Reports to be submitted with Applications of Payment.
- B. CONTRACTOR shall distribute copies of the Construction Waste Management Plan to OWNER.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

3.01 CONSTRUCTION WASTE MANAGEMENT PLAN IMPLEMENTATION

- A. CONTRACTOR shall be responsible for coordinating the separation, handling, recycling, salvage, reuse, and return methods to be used by all construction personnel. CONTRACTOR shall be responsible for reporting the results of the Construction Waste Management Plan. CONTRACTOR shall designate a "Waste Manager" who is responsible for instruction construction personnel and overseeing and documenting results of the Construction Waste Management Plan.
- B. Instruction: CONTRACTOR shall provide on-site instruction regarding appropriate separation, handling, recycling, salvage, reuse, and return methods to be used by all construction personnel throughout the duration of the Project.

- C. Separation Facilities: CONTRACTOR shall lay out and identify a specific area on the Project site for separating materials for recycling, salvage, reuse, and return. CONTRACTOR shall provide clean waste bins and shall keep these bins and the recycling area neat, clean, and clearly marked to avoid contamination of materials.
- D. Sorting: The following sorting methods are acceptable:
 - Sorting recyclable materials at the Project site and transporting them to recycling markets directly from the Project site.
 - 2. Employing haulers who make use of a materials-recovery facility or a transfer station where recyclable materials are sorted from the waste and recycled before disposing of the remainder. If using a hauler or recycling facility to sort out recyclables, verify that the hauler sorts out all construction waste loads and is not limited to those that are not acceptable at the landfill. Also, verify that the hauler or recycling facility recycles at least three types of materials.
- E. Hazardous Waste: Hazardous waste shall be disposed of according to State law. (Hazardous Waste is a separate category and not part of the basis on which the recycling percentage is calculated.)
- F. The following resources are provided for information only, to aid CONTRACTOR in managing the Project's construction waste:
 - 1. The Wisconsin DNR, Bureau of Waste Management: http://www.dnr.state.wi.us/org/aw/wm/.
 - 2. The UW-Extension's Solid and Hazardous Waste Education Center: http://www1.uwex.edu/ces/shwec/, email shwec@uwm.edu or telephone: (608) 262-0385.
 - 3. WasteCap Wisconsin, Inc.: http://www.wastecapwi.org or telephone: (414) 961-1100 or (608) 245-1100.

EXCAVATION, FILL, BACKFILL, AND GRADING

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included: Excavating, filling, backfilling, and grading for this work includes, but is not necessarily limited to:
 - 1. Placing and compacting all fill and backfill.
 - 2. Placement of crushed stone mat below handholes or other structures where required.
 - 3. Rough and finish grading prior to seeding, etc.
 - 4. Excavation for all below grade conduits, mounting stands, handholes, and free-standing equipment bores.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

C. Payment:

- General excavation shall include all excavation specified, fill, backfill and grading, including rock excavation but not including unsuitable foundation material, as hereinafter described.
- 2. All general excavation shall be included in the Lump Sum Bid.

1.02 REFERENCES

- A. ASTM D1557–Test Methods for Moisture Density Relations of Soils and Soil–Aggregate Mixtures using 10-pound Rammer and 18-inch drop.
- B. Standard Specifications: Unless otherwise indicated, Standard Specifications within this section shall refer to the State of Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, current edition, including all issued supplemental specifications.

1.03 JOB CONDITIONS

A. No soil borings were made for this project. CONTRACTOR shall conduct its own investigation to determine physical conditions at the site which may affect the work.

PART 2-PRODUCTS

2.01 COMPACTED FILL

A. All fill and backfill material designated to be compacted fill shall be granular with no stones larger than 4 inches and shall be reasonably well-graded throughout the particle size range. Of that portion of the material passing the No. 4 sieve, not more than 25% shall pass the No. 200 sieve, and material shall have less than 5% clay content. When placing fill during wet weather or in wet areas, this requirement shall be modified to not more than 5% passing the No. 200 sieve. Adequately dewatered areas are not defined as wet areas.

B. Native material may be used as compacted fill if it meets the above specification. CONTRACTOR shall determine whether native material meets the above specification. CONTRACTOR shall provide all needed fill material whether from on-site or off-site at no additional cost to OWNER.

2.02 CRUSHED STONE MAT

A. Crushed stone mat below handholes shall be 3/4-inch clear crushed stone and shall meet all requirements of ASTM C33 size No. 67.

2.03 CLAY FILL

A. Clay fill shall contain at least 25% clay minerals (material finer than 0.002 mm).

PART 3-EXECUTION

3.01 GENERAL

A. Prior to all excavating, CONTRACTOR shall become thoroughly familiar with the site and site conditions.

3.02 PROTECTION

- A. CONTRACTOR shall provide all necessary sheeting, shoring, or other soil retention systems including all labor, material, equipment, and tools required, or as necessary to maintain the excavation in a condition to provide safe working conditions, to permit the safe and efficient installation of all items of Contract work, and to protect adjacent property. CONTRACTOR shall be held liable for any damage which may result to property from excavation or construction operations. Sheeting, shoring, and other soil retainage systems shall be withdrawn or removed in a manner so as to prevent subsequent settlement of structures, utilities, and other improvements.
- B. Nothing in this specification shall be deemed to allow the use of protective systems less effective than those required by the Occupational Safety and Health Administration (OSHA) and other applicable code requirements.

3.03 UTILITIES

- A. Before starting excavations, CONTRACTOR shall locate existing underground utilities in all areas of the work.
- B. If utilities are to remain in place, CONTRACTOR shall provide adequate means of protection during earthwork operations.
- C. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult utility owner immediately for directions.
- D. Cooperate with OWNER and utility companies in keeping respective services and facilities in operation, and repair any damaged utilities to satisfaction of utility owner.

E. CONTRACTOR shall not interrupt existing utilities serving facilities occupied and used by OWNER or others except when permitted in writing by OWNER.

3.04 FINISH ELEVATIONS AND LINES

A. CONTRACTOR is responsible for setting and establishing finish elevations and lines.

3.05 EXCAVATION

- A. All excavated material that does not meet the specification for compacted fill or meets the specification but is not required for backfill shall be classified as excess material and shall be removed from the site and disposed of at CONTRACTOR's expense.
- B. CONTRACTOR shall backfill and compact all overexcavated areas.
- C. Excavations for all foundation work shall be large enough to provide adequate clearance for proper execution of the work within them.

3.06 PREPARATION OF SUBGRADE

A. Remove all ruts, hummocks, and other uneven surfaces by surface grading prior to placement of fill.

3.07 COMPACTED FILL AND BACKFILL

- A. All fill and backfill, except as otherwise specified, shall be compacted fill placed to within 4 inches of the bottom of the topsoil or to the bottom of the structure or other improvement.
- B. No fill shall be placed under water or over unsuitable subgrade conditions.
- C. All fill and backfill, except embankment fill and clay fill, shall be compacted as follows:
 - 1. Class 1 Compaction: This class of compaction shall apply to all backfill within 10 feet of structure walls. All compacted material shall be placed in uniform layers not exceeding 8 inches in loose thickness prior to compaction. Each layer shall be uniformly compacted to a dry density at least 95% of the maximum dry density as determined by a laboratory compaction test at the optimum moisture content (ASTM Test Designation D1557). Compaction shall be obtained by compaction equipment appropriate for the conditions.
 - 2. Class 2 Compaction: This class of compaction shall be used in excavated areas beyond 10 feet of structures without any piping or adjacent foundations. Material for backfill shall be granular material as specified above. The material shall be deposited, spread, and leveled in layers generally not exceeding 12 inches in thickness before compaction. Each layer of the fill shall be compacted to at least 90% of the maximum dry density (testing same as Class 1). Compaction shall be obtained by compaction equipment appropriate for the conditions.
- D. No frozen material shall be placed nor shall any material be placed on frozen ground.
- E. Four inches of clay fill shall be placed and compacted to at least a firm consistency in areas to be seeded or sodded prior to placement of topsoil.

3.08 GRADING

A. CONTRACTOR shall perform all rough and finish grading required to match the existing elevations.

3.09 PLACING CRUSHED STONE AND GEOTEXTILE FABRIC

A. The same day that the subgrade is exposed, place geotextile fabric on subgrade, and place 12 inches of crushed stone mat below handholes. Compact in place.

3.10 COMPACTION TESTING

A. Compaction tests shall be done by the Project Soils Engineer. Location and frequency of the tests shall be as recommended by the Project Soils Engineer and paid for by OWNER.

SLOPE PROTECTION AND EROSION CONTROL

PART 1-GENERAL

1.01 SUMMARY

- A Work Included: Erosion control devices.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 PAYMENT

A. All costs associated with slope protection and erosion control shall be included in CONTRACTOR's Bid. This work shall include, but is not limited to, excavation, backfilling, attaching woven wire and geotextile fabric; installing sediment traps; cleaning and repairing; removing or spreading accumulated sediment to form a surface suitable for seeding; and furnishing labor, tools, equipment, and incidentals necessary to complete the work in accordance with the Contract.

1.03 REFERENCES

- A. Wisconsin Department of Natural Resources Conservation Practice Standards-Construction Site Erosion and Sediment Control (Conservation Practice Standards).
- B. Erosion Control Product Applicability List for Multi-Modal Applications (PAL) Wisconsin Department of Transportation.
- C. Dane County Erosion Control and Stormwater Management Manual (www.co.dane.wi.us/landconservation/ecswpg.htm).

1.04 REGULATORY REQUIREMENTS

A. CONTRACTOR shall maintain site conditions where erosion and pollution are controlled.

1.05 QUALITY CONTROL

- A. Construct and maintain erosion sediment control measures in accordance with the Conservation Practice Standards.
- B. Check facilities weekly and after any rainfall event, and make needed repairs within 24 hours.

PART 2-PRODUCTS

2.01 EROSION CONTROL PRODUCTS

A. Erosion control products shall be as listed in the *Erosion Control Product Acceptability List* for *Multi-Modal Applications (PAL)* of the Wisconsin Department of Transportation. Contractors may obtain copies of the PAL and PAL qualification procedures from the WisDOT Bureau of Highway Construction.

2.02 INLET PROTECTION

A. Inlet protection shall conform to Conservation Practice Standard 1060-Storm Drain Inlet Protection for Construction Sites. Manufactured bags shall conform to Table 1 of Conservation Practice Standard 1060.

PART 3-EXECUTION

3.01 GENERAL

- A. Install devices before construction activities begin.
- B. Expose the smallest practical area of soil at any given time through construction scheduling. Make the duration of such exposure before application of temporary erosion control measures or final revegetation as short as practicable.
- C. CONTRACTOR shall provide a "qualified" inspector to inspect erosion control and sediment controls once in place. Inspector shall have prior experience with and knowledge of installation and maintenance of erosion and pollution controls. Unless stricter requirements are mandated by DNR or by any local permits, project site erosion control inspection shall be conducted every seven days and after each one-half-inch rainfall or greater. CONTRACTOR shall maintain hard copies of the inspection reports for the duration of the Project.
- D. Any necessary repairs to erosion and sediment control facilities shall be provided within 24 hours to all corrective measures noted on the inspection reports to address pollution issues. CONTRACTOR shall submit to OWNER a written notice stating the times, dates and actions taken to rectify the defective erosion and sediment controls.
- E. CONTRACTOR shall also make any necessary additions for erosion and sediment control as may result from on-site conditions or the progress of the Work or as may be required by DNR or OWNER.
- F. Disturbed areas shall be stabilized with temporary or permanent measures within 14 calendar days of the soil disturbance or redisturbance.
- G. All temporary erosion and sediment control measures shall be removed within 30 days after final stabilization is achieved or after the temporary measures are no longer needed. All sediment accumulated in temporary and permanent facilities shall be removed and properly disposed of and the area restored.

3.02 INLET PROTECTION

A. All storm drains that are or will be functioning during construction shall be provided with inlet protection. Inlet protection shall be provided in conformance with the criteria specified in Conservation Practice Standard 1060–Storm Drain Inlet Protection for Construction Sites.

RESTORATION

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Placement of topsoil.
 - 2. Fertilizing.
 - 3. Seeding.
 - 4. Maintenance.
- B. All areas disturbed by construction shall be restored.
- C. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.
- D. Payment: Payment for restoration shall be at the lump sum price bid. Costs for topsoiling, seeding, fertilizer, and maintenance of restored areas shall be included in the lump sum price bid. One percent of the total Contract price shall be retained following project completion until a uniform 2-inch growth of vegetation is established over all restored areas. CONTRACTOR shall be responsible to make his own computations for area restoration.

1.02 REFERENCES

A. Standard Specifications: Unless otherwise indicated, Standard Specifications shall refer to the State of Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, current edition, including all issued supplemental specifications.

1.03 QUALITY ASSURANCE

A. All work shall be in accordance with Standard Specifications, unless noted otherwise.

PART 2-PRODUCTS

2.01 TOPSOIL

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, stones greater than 3/4 inches in size, clay or impurities, plants, weeds and roots; pH value of minimum 5.4 and maximum 7.0.
- B. Topsoil from the site may be used if it meets the above requirements.

2.02 SEED

A. Seeding shall comply with Section 02936-Seeding and Sodding.

2.03 FERTILIZER

A. Fertilizer shall be Type B per Section 629 of the Standard Specifications.

PART 3-EXECUTION

3.01 TOPSOIL

A. Placing topsoil shall be in accordance with Section 625.3.3 of the Standard Specifications. Topsoil shall be placed to a uniform depth of 6 inches in place. Topsoil placement shall be incidental to sodding or seed and fertilizer.

3.02 SEEDING

A. Seeding shall comply with Section 02936-Seeding and Sodding.

3.03 FERTILIZER

A. Fertilizer shall be applied per Section 629 of the Standard Specifications.

SEEDING AND SODDING

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Preparation of subsoil.
 - 2. Placing topsoil.
 - 3. Seeding, sodding, mulching and fertilizing.
 - 4. Maintenance.
- B. All areas of the site which are disturbed and areas noted on the drawings shall be seeded or sodded. Surfaces on 3-to-1 slope or less may either be seeded or sodded, but surfaces on greater than 3-to-1 slope shall be sodded.
- C. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

- A. FS O-F-241-Fertilizers, Mixed, Commercial.
- B. Standard Specifications: Unless otherwise indicated, Standard Specifications shall refer to the State of Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, current edition, including all issued supplemental specifications.

1.03 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
- B. Sod: Minimum age of 18 months, with root development that will support its own weight without tearing when suspended vertically by holding the upper two corners. Submit sod certification for grass species and location of sod source.

1.04 DELIVERY, STORAGE, AND PROTECTION

- A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
- B. Deliver sod on pallets or in rolls. Protect exposed roots from dehydration. Do not deliver more sod than can be laid within 24 hours.
- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2-PRODUCTS

2.01 SEED MIXTURE

- A. Seed mix shall be coordinated with OWNER to match the existing seeding. Use blue tag certified seed. Do NOT use bent or Poa Annua. Each seed lot will be subject to sampling and testing by the State seed laboratory.
- B. Weed content shall not exceed 0.5% in mixture.

2.02 SOD

- A. Follow Section 631.1.2.1 of the Standard Specifications.
- B. Netting or fabric for sod reinforcement shall be in accordance with Section 631.2.2 of the Standard Specifications.
- C. Anchorage staples shall be in accordance with Section 631.12.3 of the Standard Specifications.

2.03 SOIL MATERIALS

- A. Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay, or impurities, plants, weeds, roots and rocks; pH value of minimum 5.4 and maximum 7.0.
- B. Topsoil from the site may be used if it meets the above requirements. Additional topsoil shall be provided as required by drawings and specifications.

2.04 ACCESSORIES

- A. Fertilizer shall be FS O-F-241, Type I, Grade A; recommended for grass, with 50% of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil to the following proportions: Nitrogen 10%, phosphoric acid 10%, soluble potash 10%. Submit composition deviations to suit site conditions for ENGINEER's approval.
- B. Water shall be clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.

PART 3-EXECUTION

3.01 EXAMINATION

A. Verify that prepared soil base is ready to receive the work of this section.

3.02 PREPARATION OF SUBSOIL

A. Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.

- B. Remove foreign materials, weeds, and undesirable plants and their roots. Remove contaminated subsoil in accordance with local, state, and federal regulations.
- C. Scarify subsoil to a depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.03 PLACING TOPSOIL

- A. Spread topsoil to a minimum depth of 4 inches over area to be seeded. Rake until smooth.
- B. Place topsoil during dry weather and on dry unfrozen subgrade.
- C. Remove vegetable matter and foreign nonorganic material from topsoil while spreading.
- D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.
- E. Manually spread topsoil around pole bases and buildings to prevent damage.
- F. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.04 FERTILIZING

- A. Apply fertilizer at a rate of 17 pounds per 1,000 square feet.
- B. Apply after smooth raking of topsoil and prior to installation of seed or sod, no more than 18 hours before seeding or 48 hours before sodding.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches of topsoil.
- E. Lightly water to aid the dissipation of fertilizer.

3.05 SEEDING

- A. Apply seed at a total rate of 3 1/2 pounds per 1,000 square feet. Apply evenly in two intersecting directions. Rake in lightly or roll the seeded area after seeding.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting season shall be between April 15 and June 15, or between August 15 and October 15.
- D. Do not sow immediately following rain, when ground is too dry or during windy periods.
- E. Immediately following seeding, apply mulch:
 - 1. Minimum Spread Rate: 1 1/2 tons per acre.
 - 2. Maximum Depth: 1 1/2 inches to 2 inches.
- F. Apply water with a fine spray immediately after each area has been mulched and on a daily basis to keep straw in place.

G. Seeding shall be maintained by CONTRACTOR until grass is well established. Grass is well established when it covers the entire seeded areas to a height of 2 inches.

3.06 LAYING SOD

- A. Moisten prepared surface immediately prior to laying sod.
- B. Lay sod immediately after delivery to site to prevent deterioration.
- C. Lay sod tight with no open joints visible and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.
- D. Lay smooth. Align with adjoining grass areas.
- E. Place bottom elevation of sod 1 inch below top of adjoining edging, paving, or curbs.
- F. All sod placed in ditches, flumes, or other appurtenances where a concentrated flow of water may be expected shall be staked regardless of the slope.
- G. Water sodded areas immediately after installation. Saturate sod to 4-inch depth of soil.

3.07 MAINTENANCE

- A. Water to prevent grass and soil from drying out.
- B. Roll surface to remove minor depressions or irregularities.
- C. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- D. Immediately reseed areas which fail to show adequate catch. Bare spots shall not exceed 5 square feet in area and not exceed 3% of the total seeded areas. Immediately replace sod in areas which show bare spots or deterioration.
- E. Protect seeded areas with warning signs during maintenance period.
- F. Immediately reseed areas which do not show a satisfactory stand of established grass, and resod areas that do not show satisfactory establishment.
- G. Correct damage resulting from erosion, gullies, rills, or other causes by filling with topsoil, tamping, refertilizing, and reseeding if damage occurs prior to acceptance of work.
- H. Maintain seeded lawns for not less than 60 days after substantial completion.
- I. If seeded in fall and not given full 60 days of maintenance, or if not considered acceptable at that time, continue maintenance the following spring until acceptable lawn is established.
- J. Maintain sodded lawns for not less than 30 days after substantial completion.

K. Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading, and replanting as required to establish a smooth acceptable lawn free of eroded or bare areas.

CONCRETE

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included: Cast-in-place concrete and accessories.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

- A. ACI 211-1-Selecting Proportions for Normal and Heavy Weight Concrete.
- B. ACI 304-Measuring, Mixing, Transporting, and Placing Concrete.
- C. ACI 305R-Hot Weather Concreting.
- D. ACI 306R-Cold Weather Concreting.
- E. ACI 347-Recommended Practice for Concrete Formwork.
- F. ASTM C33-Concrete Aggregates.
- G. ASTM C94-Ready Mixed Concrete.
- H. ASTM C143-Slump of Portland Cement Concrete.
- I. ASTM C150-Portland Cement.
- J. ASTM C231-Air Content of Freshly Mixed Concrete by the Pressure Method.
- K. ASTM C260–Air-Entraining Admixtures for Concrete.
- L. ASTM C494-Chemical Admixtures for Concrete.
- M. CRSI-Manual of Standard Practice.

1.03 SUBMITTALS

- A. Submit shop drawings in accordance with Section 01300–Submittals.
- B. Submit the following information:
 - 1. Gradation of fine and coarse aggregate—ASTM C33.
 - 2. Specific gravity and dry rodded density of each aggregate.
 - 3. Test of deleterious substances in fine and coarse aggregate-ASTM C33.
 - 4. Design mix of each individual concrete mix to be used.
 - 5. Previous test results or trial batch results with 7- and 28-day compressive strengths for each concrete mix proposed.

- 6. Certified mill test results for cement identifying brand, type, and chemistry of cement to be used.
- 7. Brand, type, principal ingredient, and amount of each admixture to be used.

1.04 QUALITY ASSURANCE

A. All concrete shall be in accordance with the referenced standards except as specified otherwise.

PART 2-PRODUCTS

2.01 CONCRETE

- A. All cement used shall be Portland Cement Type 1 conforming to requirements of ASTM C150. The aggregate shall be well graded from coarse to fine. The maximum size aggregate shall be 1 1/2-inch for concrete pours thicker than 10 inches and 3/4-inch for pours 4 inches to 10 inches thick. All aggregate shall meet the requirements of ASTM C33. Water shall be clean and free from injurious amounts of oil, alkali, and organic matter.
- B. Concrete shall have a 28-day minimum compressive strength of 4,000 psi, minimum cement content of six sacks per cubic yard, and a maximum of 5.5 gallons of total water per sack. The slump of the concrete shall be within the range of 2 to 3 1/2 inches. An air-entraining admixture conforming to ASTM C260, equal to "Darex," shall be used in all concrete to obtain 4% to 7% air content. A water reducer meeting ASTM C494 Type A requirements shall be included in the mix. Mixes shall be designed in accordance with ACI 211.1.

PART 3-EXECUTION

3.01 CONCRETE

- A. Before placing concrete, all equipment, forms, ground, reinforcements, and other surfaces with which the concrete will come in contact are to be thoroughly cleaned of all debris, ice, and water. Ground shall be wetted prior to placement of concrete on it.
- B. Ready mixed concrete shall be batched, mixed, and delivered in accordance with ASTM C94 and ACI 304.
- C. Concrete shall be deposited in approximately horizontal layers not to exceed 18 inches in thickness. Each layer shall be well worked into the preceding layer while both layers are still soft. All concrete shall be compacted with mechanical vibration equipment.
- D. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. The maximum allowable lateral movement of the concrete after being deposited is 3 feet. When concrete placement is started, it shall be carried on as a continuous operation until the placing of the section or panel is completed.
- E. All concrete shall be maintained in a moist condition for seven days by free water, wet covering, or curing compound.

- F. When atmospheric temperature exceeds 80°F during concrete placement, the provisions of ACI 305 shall be followed.
- G. Cold weather concreting shall conform to all requirements of ACI 306.1. Cold weather is defined as a period when, for more than 3 successive days, the average daily temperature drops below 40°F. The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight. When temperatures above 50°F occur during more than half of any 24-hour period, the period will no longer be regarded as cold weather.
- H. After the curing period, the temperature of the concrete shall be reduced uniformly at a rate not to exceed 20°F per 24 hours. The use of salt or other chemical admixtures for the prevention of freezing is prohibited.
- I. All concrete surfaces shall have all fins, burrs, etc. removed by grinding, wire brushed, or tapping off with a hammer as required to be left in a smooth condition.
- J. Sonit tube shall not be used for backfill. Backfill shall be in contact with unremoved native soil. All holes shall be dug with an auger.
- K. CONTRACTOR shall make and have tested three test cylinders for each pour less than 25 cubic yards, four test cylinders shall be made for each pour between 25 and 100 cubic yards, and eight test cylinders made for each pour in excess of 100 cubic yards. CONTRACTOR shall perform one slump test and one air test for each set of 4 cylinders. In no case shall a given concrete mix be represented by less than four cylinders for the entire job. A slump test conforming to ASTM C143 shall be performed for each set of cylinders. An air test conforming to ASTM C231 (pressure method) shall be made for each set of cylinders. All costs of additional testing and sampling of fresh or hardened concrete needed because of suspected or actual violation of the specifications shall be borne by CONTRACTOR. Acceptance of cast-in-place concrete will be based on performance of material tests to those specified. Concrete not meeting the specified range of slump and/or air will be rejected at the site. Concrete not meeting compressive strength requirements as demonstrated by test cylinders may be subject to removal or reduction in payment. ENGINEER shall receive a copy of the test results. All concrete testing costs shall be borne by CONTRACTOR.

GENERAL ELECTRICAL REQUIREMENTS

PART 1-GENERAL

1.01 SUMMARY

- A. Work includes general requirements for all electrical work.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

- A. ANSI/NFPA 70-National Electrical Code.
- B. ANSI/IEEE C2.

1.03 CONTRACT DOCUMENTS

- A. Any device roughed in improperly and/or not positioned on implied centerlines or as dictated by good practice shall be repositioned at no cost to OWNER.
- B. The drawings are generally diagrammatic, and CONTRACTOR shall coordinate the work so that interferences are avoided. Provide all offsets in conduit, fittings, etc., necessary to properly install the work. All offsets, fittings, etc., shall be provided without additional expense to OWNER.

1.04 REGULATORY REQUIREMENTS

- A. Conform to ANSI/NFPA 70.
- B. Conform to ANSI/IEEE C2.
- C. The rules and regulations of the federal, state, local, and civil authorities and utility companies in force at the time of execution of the Contract shall become a part of this specification.
- D. Obtain electrical permits and inspections from authority having jurisdiction. Costs for permits and inspections shall be by CONTRACTOR.

1.05 CODES AND ORDINANCES

A. CONTRACTOR is expected to know or to ascertain, in general and in detail, the requirements of all codes and ordinances applicable to the construction and operation of systems covered by this Contract. CONTRACTOR shall know or ascertain the rulings and interpretations of code requirements being made by all authorities having jurisdiction over the work to be performed by them.

- B. In preparing Bid, CONTRACTOR shall include the cost of all items and procedures necessary to satisfy the requirements of all applicable codes, ordinances, and authorities, whether or not these are specifically covered by the drawings and specifications. All cases of serious conflict or omission between the drawings, specifications, and codes shall be brought to ENGINEER's attention, as herein before specified. 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.
- C. When requested by ENGINEER, CONTRACTOR shall provide written calculations to show compliance with applicable codes or the Contract Documents. This shall include, but not be limited to, conduit and wire sizing, junction and pull box fill and sizing, conductor derating, and voltage drop. CONTRACTOR shall indicate calculation method used as well as compliance with applicable code, drawing, or specification.

1.06 ELECTRICAL DISTRIBUTION SYSTEM

- A. Provide a complete electrical distribution system consisting of components indicated on the drawings or specified herein including, but not limited to:
 - 1. All miscellaneous equipment coordination and related appurtenances required by power company.
 - 2. 480-volt, 3-phase, 4-wire service entrance conductors.
 - 3. Feeders, branch wiring, and electrical distribution equipment.
 - 4. All control wiring.
 - 5. Wiring between system components if equipment is not prewired.
 - 6. Support system design and supports for electrical raceways.
 - 7. Code-required disconnects.
- B. Provide balancing and adjusting of electrical loads.
- C. CONTRACTOR shall instruct OWNER's representative in the operation and maintenance of all equipment. The instruction shall include a complete operating cycle on all apparatus.
- D. Provide miscellaneous items for a complete and functioning system as indicated on the drawings and specified herein.
- E. A partial list of work not included in Division 16 is as follows: Painting (except as otherwise specified herein).

1.07 NOISE

A. Eliminate any abnormal noises which are not considered by ENGINEER to be an inherent part of the systems as designed. Abnormal buzzing in equipment components will not be acceptable.

1.08 DRAWINGS

A. The drawings indicate approximate locations of the various items of the electrical systems. These items are shown approximately to scale and attempt to show how these items should be integrated with building construction. Locate all the various items by on-the-job measurements in conformance with Contract Documents and cooperation with other trades.

- B. In certain instances, electrical devices and equipment, may be relocated. Where relocation is within 10 feet of location shown on drawings, and when CONTRACTOR is informed of necessary relocation before work is begun on this portion of the job, the relocation shall be at CONTRACTOR's expense.
- C. The drawings are schematic in nature and are not intended to show exact locations of conduit, but rather to indicate distribution, circuitry, and control.

1.09 EXISTING UNDERGROUND UTILITIES

A. The drawings show approximate location of existing underground electrical based on OWNER-provided record drawings. CONTRACTOR shall excavate and verify the location of all underground electrical prior to installing new electrical equipment and prior to making modifications to existing electrical. This shall include, but not be limited to, feeders to structures and equipment. CONTRACTOR shall temporarily relocate existing underground electrical to keep the existing facility in operation and for any new construction, and all costs for relocating existing electrical shall be included in the Bid.

1.10 SUBMITTALS

- A. CONTRACTOR shall submit to ENGINEER for approval prior to beginning work, shop drawings on the equipment and materials proposed to be furnished and installed. See Section 01300–Submittals for requirements.
- B. CONTRACTOR shall, in addition, submit drawings and/or diagrams for review and for job coordination in all cases where deviation from the Contract Drawings are contemplated because of job conditions, interference or substitution of equipment, or when requested by ENGINEER for purposes of clarification of CONTRACTOR's intent. CONTRACTOR shall also submit detailed drawings, rough-in sheets, etc., for all special or custom-built items or equipment. Drawings and details under this section shall include, but not be limited to, the following, where applicable to this project: Electrical interconnection wiring diagrams; see Section 16141–Wiring Devices.
- C. These drawings and diagrams shall show all electrical switch and breaker sizes, as well as the manufacturer's name and catalog number for each piece of equipment used.
- D. Equipment and material submittals must show sufficient data to indicate complete compliance with Contract Documents as follows:
 - 1. Proper sizes and capacities.
 - 2. That the item will fit in the available space in the manner that will allow proper service.
 - Construction materials and finishes.
- E. When the manufacturer's reference numbers are different from those specified, provide correct cross-reference number for each item. The shop drawings shall be clearly marked and noted accordingly.
- F. When equipment and items specified include accessories, parts, and additional items under one designation, shop drawings shall be complete and include all components.
- G. See additional requirements of shop drawings under Division 1–General Requirements.

PART 2-PRODUCTS

2.01 STANDARD PRODUCTS

- A. All equipment shall be UL and NEMA approved.
- B. Unless specified otherwise, major distribution equipment such as panelboards, transformers, etc., shall each be by the same manufacturer.
- C. All equipment and wiring shall be selected and installed for conditions in which it will perform (e.g., general purpose, weatherproof, raintight, dustproof, or any other special type).

2.02 SUBSTITUTION OF MATERIALS AND EQUIPMENT

- A. While it is not the intention of OWNER to discriminate against any manufacturer of equipment which may be equivalent to specified equipment, a strict interpretation of such equivalency will be exercised in considering any equipment offered as a substitute for specified equipment. CONTRACTOR shall submit with each request for approval of substitute material or equipment sufficient data to show conclusively that it is equivalent to that specified in the following respects:
 - 1. Performance:
 - a. Capacity at conditions and operating speeds scheduled shall be equal to or greater than that of the specified equipment.
 - b. Energy consumption at the point of rating shall not exceed that of the specified equipment.
 - c. Vibration and noise production at the point of rating shall not exceed that of the specified equipment.
 - 2. Materials of construction.
 - 3. Gauges, weights, and sizes of all portions and component parts.
 - 4. Design arrangements, methods of construction, and workmanship.
 - 5. Coatings, finishes, and durability of wearing parts.
 - 6. National reputation of the manufacturer as a producer of first quality equipment of the type under consideration.
 - 7. Availability of prompt, reliable, and efficient service facilities franchised by or affiliated with the equipment manufacturer. This shall include the maintenance of local stocks of critical replacement parts equal to those maintained for the specified equipment.
- B. Requests for substitution shall include CONTRACTOR's reason for the request.
- C. If ENGINEER does not consider the items equivalent to those specified, CONTRACTOR shall provide those specified.
- D. See General Conditions for additional requirements.

PART 3-EXECUTION

3.01 UTILITY SERVICES

- A. Utility connection requirements shall be determined. All costs for coordinating utility service shall be included in the price bid as described in Section 16420–Electrical Service System of these specifications.
- B. All costs for temporary service, temporary routing of piping, or any other requirements of a temporary nature associated with the utility service shall be included in the Base Bid.
- C. It is the intent that in the latter stages of construction, the permanent electrical service will be used and the temporary construction service discontinued. The following requirements shall govern the use of the permanent services:
 - 1. Temporary wiring shall not be connected to permanent distribution equipment.
 - 2. Under the above conditions, the use of permanent service equipment shall in no way affect the Contract conditions of the guarantee.
- D. It shall be CONTRACTOR's responsibility to police this situation and protect its equipment.

3.02 CONTINUITY OF SERVICE

- A. CONTRACTOR shall provide and maintain continuous services (power, controls, etc.) for the existing lighting systems during the entire construction period.
- B. No existing service shall be interrupted or changed without permission from OWNER. Written permission shall be obtained before any work is started.
- C. When interruption of an existing service is required, all persons concerned shall be notified and a prearranged time agreed upon. Notice shall be a minimum of 72 hours prior to the interruption.

3.03 CLEANING UP AND REMOVAL OF RUBBISH

- A. All lighting and appliance panelboards, disconnect switch enclosures, junction boxes, and pullboxes shall be cleaned of debris and wires neatly arranged with surplus length cut off prior to installation of covers.
- B. Where louvers are provided in transformer enclosures, louvers shall be vacuumed free of all dust and dirt.
- C. 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.

3.04 CONCRETE WORK

A. All cast-in-place concrete for new electrical equipment bases shown on the drawings shall be provided by CONTRACTOR, except where specifically noted to be provided by others. Transformers shall be set on 3 1/2-inch minimum leveling slabs. Pads shall be 3 inches larger than equipment being supported. Equipment pad for the Lighting Control Enclosure shall be as shown on the drawings.

- B. Concrete shall comply with Section 03300-Cast-In-Place Concrete.
- C. Provide all anchor bolts, metal shapes, and templates to be cast in concrete or used to form concrete for support of electrical equipment.

3.05 PAINTING

- A. All painting of electrical equipment shall be done by CONTRACTOR unless equipment is specified to be furnished with factory-applied finish coats.
- B. All electrical equipment shall be provided with factory-applied prime finish, unless otherwise specified.
- C. If the factory finish on any equipment furnished by CONTRACTOR is damaged in shipment or during construction, the equipment shall be refinished by CONTRACTOR.
- D. One can of touchup paint shall be provided for each different color factory finish which is to be the final finished surface of the product.

3.06 CAULKING

- A. Caulk with a caulking sealant where indicated on the electrical drawings or hereinafter specified.
- B. Caulking sealant shall be silicone construction sealant as manufactured by General Electric or two-part polysulfide conforming to the requirements and bearing the seal of the Thiokol Chemical Corporation.
- C. Caulking sealant shall contain no acid or ingredients which will stain stone, corrode metal, or have injurious effect on painting. It shall be colored to match adjacent surroundings.
- D. Caulking shall be performed by craftsman skilled at such work.

3.07 BUILDING ACCESS

A. When the installation requires openings and access through existing construction and the openings are not provided, CONTRACTOR shall provide the necessary openings.

3.08 COORDINATION

- A. Provide wiring for all electrically-powered or electrically-controlled equipment.
- B. All disconnects, relays, wire, conduit, pushbuttons, pilot lights, and other devices for the power and control electrical equipment shall be provided by CONTRACTOR except as specifically noted elsewhere in these specifications or on the drawings.
- C. CONTRACTOR shall provide all line voltage power and control wiring (100 volts and above), as specified herein and as shown on the drawings.
- CONTRACTOR shall connect and wire all apparatus according to approved wiring diagrams.

3.09 EXCAVATION AND BACKFILL

- A. Backfill of exterior trenches shall be compacted granular fill, unless otherwise noted. Compaction shall meet the requirements of Section 02222–Excavation, Fill, Backfill, and Grading. Refer to Section 16110-Conduit for additional requirements associated with PVC conduit installed in earth.
- B. Care shall be taken to ensure no disturbance of bearing soil under foundations.

3.10 EQUIPMENT ACCESS AND LOCATION

- A. All equipment, junction and pull boxes, and accessories shall be installed to permit access to equipment for maintenance. Any relocation of conduits, equipment, or accessories to provide maintenance access shall be accomplished by CONTRACTOR at no additional cost.
- B. Electrical equipment, hardware, etc., shall be installed with ample space allowed for removal, repair, calibration or changes to the equipment. Ready accessibility to equipment and wiring shall be provided without moving other equipment which is to be installed or which is already in place.

3.11 WORKMANSHIP

- A. Install work using procedures defined in NECA Standard of Installation.
- B. Utilization equipment and control devices required under these specifications shall be mounted in a code-approved manner.
- C. Locations of utilization equipment and control devices as shown on drawings are within 10 feet of actual positions. Any mounting of this equipment within this 10-foot distance will be performed at no additional cost to OWNER.
- D. Unless otherwise noted, equipment shall be fastened to building structure or equipment framework and not placed on the floor.
- E. Where materials, equipment apparatus, or other products are specified by manufacturer, brand name, and type or catalog number, such designation is to establish standards of desired quality and style and shall be the basis of the Bid.
- F. Materials and equipment of the types for which there are National Board of Fire Underwriters Laboratories (UL) listing, and label service shall be so labeled and shall be used by CONTRACTOR.

3.12 AREA CLASSIFICATION

A. As noted on the drawings.

3.13 MODIFICATIONS TO EXISTING CONSTRUCTION

- A. Alterations:
 - 1. Alter, extend, and reconnect conduits as necessary.

- 2. Reconnect existing conduits which were reused, cut, or exposed because of construction as quickly as possible.
- Furnish and install new conduits for wires if they cannot be "pulled-in" to existing conduits.
- 4. All new conduits, wiring, and electrical items shall be connected to the existing systems so as to function as a complete unit.
- B. CONTRACTOR shall remove all conduit and wiring associated with items specified herein and/or shown on the drawings to be removed.
- C. Include in Bid removal of existing electrical material and equipment as specified hereinafter, as noted on the drawings, or as needed by field conditions.

CONDUIT

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Rigid Aluminum Conduit.
 - 2. PVC Externally and Internally Coated Galvanized Rigid Metal Conduit.
 - 3. Electrical Metallic Tubing.
 - 4. Polyvinyl Chloride Conduit and Fittings.
 - 5. Liquidtight Flexible Metal Conduit and Fittings.
 - 6. Conduit Seals and Special Fittings.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

- A. ANSI/NEMA FB 1-Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.
- B. NEMA RN 1–PVC Polyvinyl–Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal.

1.03 QUALITY ASSURANCE

- A. Manufacturers of Raceways: Firms regularly engaged in the manufacture of electrical raceways of the types and capacities required whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical wiring installation work similar to that for the project.
- C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.
- D. UL Labels: Provide electrical cable, raceways, wire, connectors, outlets, switches, etc., which have been listed and labeled by Underwriters Laboratories.
- E. Prior to shipment to the site, all conduit provided shall be new, unused material and may not have been stored outdoors or exposed to weather.
- F. NECA Standard: Comply with applicable portions of National Electrical Contractor's Association's "Standard of Installation."

1.04 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01300–Submittals.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Provide color-coded thread protectors on the exposed threads of threaded rigid metal conduit.
- B. Handle conduit carefully to prevent end damage and to avoid scoring the finish.
- C. Store conduit inside and protect from weather. When necessary to store outdoors, elevate well abovegrade and enclose with durable, waterproof wrapping.

PART 2-PRODUCTS

2.01 RIGID METAL CONDUIT AND FITTINGS

- A. Rigid Aluminum Conduit: ANSI C80.5. Heavy wall.
- B. Conduit bodies for rigid aluminum conduit shall be as manufactured by Appleton, Form 85, or equal, and be constructed of pressure-cast, copper-free aluminum for sizes 2 inches and under, and sand-cast, copper-free aluminum for sizes over 2 inches. Conduit bodies shall have built-in pulling rollers, domed gasketed covers, and stainless steel screws. CONTRACTOR shall select body style and size per application.
- C. PVC coated conduit and fittings shall be internally and externally hot dipped galvanized rigid metal conduit with hot dipped galvanized threads and PVC coating. PVC coating shall be UL listed with rigid metal conduit as the primary means of corrosion protection for the conduit, and PVC coating shall have an external 40 mil thickness with an internal 2 mil urethane coating. Acceptable manufacturers shall be Plasti-bond RedH₂OT by Robroy Industries, Ocal-Blue by Thomas & Betts, or equal. PVC coated conduit and fittings shall meet the following listings and manufacturing standards, without exception. All installers shall be field-certified from the factory for installation and shall provide proof of certification:
 - 1. Federal Specification WW-C-581 E.
 - 2. ANSI C80.1.
 - 3. UL6.
 - 4. NEMA RN-1.
- D. Conduit bodies for PVC coated rigid conduit shall be as manufactured by Plasti-bond RedH₂OT by Robroy Industries, Ocal Blue by Thomas & Betts, or equal, and have a 40 mil PVC exterior coating and 2 mil red urethane interior coating. Conduit bodies shall be Form 7 style or pulling elbow and include pulling rollers, domed, gasketed covers and stainless steel screws. CONTRACTOR shall select body style and size per application.
- E. Fittings and Conduit Bodies: ANSI/NEMA FB 1; threaded-type material to match conduit.
- F. Supports: One-hole or two-hole pipe straps may be used for surface-mounted conduit. Where one-hole straps are used, provide conduit clamp and back spacer. Where standoffs are required, provide pipe straps and supporting devices as specified in

Section 16190-Supporting Devices. Support material shall match that of the conduit type provided.

2.02 ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS

- A. Conduit: ANSI C80.3. Thin wall seamless tubing with hot-dipped galvanized coating. Maximum size 2 inches.
- B. Fittings: Compression-type only.
- C. Supports: Mineralac with nut and clamping bolt; one hole straps.

2.03 POLYVINYL CHLORIDE CONDUIT (PVC) AND FITTINGS

- A. Conduit: Heavy wall rigid, Schedule 40, UL listed for underground, encased, and aboveground applications. PVC conduit installed in exterior locations shall be UV resistant.
- B. Conduit bodies for PVC conduit shall be as manufactured by Carlon, or equal, and be suitable for use with Schedule 40 PVC conduit. Conduit bodies shall have smooth hubs, textured lids, and foam-in-place gaskets. CONTRACTOR shall select body style and size per application.
- C. Supports: Two-hole nonmetallic clamps or conduit support straps may be used for surface-mounted conduit. Where standoffs are required, provide pipe straps and supporting devices as specified in Section 16190–Supporting Devices. Support material shall match that of the conduit type being provided.

2.04 LIQUIDTIGHT FLEXIBLE METAL CONDUIT AND FITTINGS

- A. Conduit: Electrogalvanized single-strip steel with PVC coating and integral grounding conductor. Liquidtight conduit installed in exterior locations shall be sunlight resistant. Conduit shall be UL listed.
- B. Fittings: ANSI/NEMA FB 1.

2.05 CONDUIT SEALS AND SPECIAL FITTINGS

- A. Conduit seals shall be duct sealing compound, OZ Gedney Type DUX, or equal.
- B. Expansion Fittings: Crouse Hinds or Robroy type XJG, or equal, for rigid, IMC, or PVC-coated rigid conduit. Crouse Hinds, type XD, or equal for PVC conduit.
- C. Ground Bushings: Appleton Model GIB, or equal.
- D. Watertight Hubs: Diecast, insulated and gasketed, rated for wet or dry locations indoors or outdoors. Watertight hubs shall be Appleton HUB, Crouse-Hinds Myers Hubs, or equal.
- E. Conduit Plugs: Kwik N Sure pipe plug as manufactured by Cherne Industries, or equal. Plug shall include natural rubber O-ring with galvanized wing nut and hex nut.

PART 3-EXECUTION

3.01 CONDUIT SIZING, ARRANGEMENT, AND SUPPORT

- A. Size conduits for branch circuit conductors, control wires and instrumentation cables so as to have not less than 25% spare capacity after installation; 3/4 inch minimum size. Minimum size for liquidtight flexible metal conduit is 1/2 inch.
- B. Maintain at least 1 inch of separation between conduit sizes to 1 1/2 inches and 2 inches between conduits 1 1/2 inches or larger.
- C. All conduit shall be supported in accordance with the NEC and as specified herein. This shall apply to all conduit types, including flexible conduit.
- D. Provide for the proper application, installation, and location of inserts, supports, and anchor bolts for a satisfactory raceway system. Where any component of the raceway system is damaged, replace or provide new raceway system.
- E. Run conduits to permit drainage, and to avoid all existing materials and equipment.
- F. Conduits shall be attached to building surfaces and not suspended unless installed in a Unistrut-type conduit rack as specified herein. Individual conduits shall not be suspended. Clevis hangers are not allowed.
- G. Independently support or attach the raceway system to structural parts of construction in accordance with good industry practice.
- H. Conduit attached to building surfaces which may be damp shall be spaced out to avoid rust using fittings approved for the use. Use back straps on all conduit in damp or wet locations, or mount conduit with Unistrut straps, or equal. Watertight hubs shall be used in all damp locations. Damp locations shall include, but not be limited to, all exterior locations and all areas belowgrade.
- I. Conduits shall be securely fastened to building structure at intervals not exceeding 8 feet or closer, if necessary. Where hangers are necessary, 3/8-inch rod/eyelets/rings/or trapeze type in Unistrut channel and pipe clamps shall be used. Wire or perforated strap iron is not acceptable. PVC conduit shall be securely fastened to building structure at intervals not exceeding 3 feet.

3.02 GENERAL CONDUIT INSTALLATION REQUIREMENTS

- A. Exterior conduit shall be buried belowgrade. Exposed conduit runs shall be avoided. Conduit may be run exposed only where it is <u>impossible</u> to conceal.
- B. All conduit installed belowgrade shall be buried a minimum of 2 feet 0 inches.
- C. PVC conduit installed in earth shall be bedded in compacted sand with a minimum of 6-inch cover on all sides.
- D. Ream conduit smooth at ends, cap upon installation, rigidly attach to structural parts of the building, and securely fasten to all outlet boxes, panel cabinets, junction boxes, pull boxes, splicing chambers, safety switches, and all other components of the raceway system.

- E. Conduits installed for future equipment or electrical work shall be cut off and capped. Conduit ends shall have threaded fittings to accommodate future conduit installation.
- F. Provide <u>all</u> empty raceways smaller than 2 1/2 inches with nylon cord. Empty raceways and nylon cord shall be identified with permanent label, and label shall include conduit termination point. Exposed conduits shall be threaded and capped.
- G. Conduit seals shall be provided where conduits pass from the interior to exterior of the building and any conduit entering a NEMA 4X area.
- H. Conduits shall be pitched so that drainage is towards handholes and away from all structures.
- I. Conduit bends for PVC conduit shall be made using a hot box, heat blanket, or glycol bender. Open flame or point heat sources of any type are not allowed.
- J. The PVC coated rigid conduit manufacturer's touch-up compound shall be used on all conduit interior and exterior bare steel exposed because of nicks, cuts, abrasions, thread cutting, and reaming; minimum six coats.

3.03 CONDUIT PENETRATIONS AND TERMINATIONS

- A. Where fittings are brought into an enclosure with a knockout, a gasket assembly consisting of an O-ring and retainer shall be installed on the outside. Fittings shall be insulated throat-type.
- B. Conduit penetrations for control panels or enclosures containing electronic equipment shall be made on the sides or bottom of the enclosure. Conduits shall not penetrate the top of the enclosure.
- C. Provide conduit expansion fittings for conduits protruding from earth where the conduit is terminated within 5 feet of finished grade.
- D. All conduits that protrude from poured concrete shall be PVC-coated rigid conduit. Conduit shall extend a minimum of 4 feet beyond the poured concrete (both sides).
- E. Conduits passing through masonry, concrete, or similar construction shall be cast-in-place using PVC-coated rigid conduit extending completely through the construction.
- F. All spare conduits that terminate in belowgrade shall be plugged with conduit plugs as specified herein.

3.04 CONDUIT INSTALLATION SCHEDULE

- A. The following schedule lists specific conduit types allowed in designated areas. Those areas not listed under a specific conduit type shall not have that type of conduit installed:
 - 1. EMT: Inside the press box.
 - 2. Rigid Aluminum: Exterior locations (except in earth) and locations exposed to weather.
 - 3. PVC coated rigid steel:
 - a. Conduits protruding from concrete.
 - b. Exterior locations requiring mechanical protection.

- c. Earth.
- d. Exterior locations and locations exposed to weather.
- e. Within 6 feet of building or structure footing, wall or handhole.
- 4. PVC:
 - a. Earth, except within 6 feet of a building or structure footing, wall, or handhole. PVC conduit under pavement or roadways shall be Schedule 80.
 - b. Service entrance ground conductors.
- 5. Liquidtight flexible metal conduit not over 3 feet in length for final connections to: Equipment housing ferromagnetic cores or with integral moving components capable of generating noise or vibrations, including transformers.

HANDHOLES

PART 1-GENERAL

1.01 DESCRIPTION

- A. Work Included: Precast Polymer Concrete Handholes.
- B. Related Sections: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

A. ANSI/SCTE 77-Specification for Underground Enclosure Integrity.

1.03 SUBMITTALS

- A. Submit shop drawings and product data in accordance with provisions of Section 01300-Submittals.
- B. Shop drawing submittals shall include the following:
 - 1. Interior elevations of each wall of all handholes provided under this Contract. Each conduit shall be identified as to what it serves.
 - 2. Product data: Manufacturer's technical information for handholes and accessories proposed for use.

PART 2-PRODUCTS

2.01 PRECAST POLYMER CONCRETE HANDHOLES

- A. Material and Construction:
 - 1. Precast polymer concrete.
 - 2. Enclosures shall be UL listed.
 - 3. Enclosures, boxes and covers are required to conform to test provisions of ANSI/SCTE 77 for Tier 22 applications.
 - 4. All covers are required to have a minimum coefficient of friction of 0.50 in accordance with ASTM C1028.
 - 5. Covers shall have the following stamped logo:

"ELECTRICAL"

6. Handholes shall be Hubbel, Quazite, PG-Style, or equal.

PART 3-EXECUTION

3.01 INSPECTION AND COORDINATION

- A. Examine conditions under which the Work is to be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.
- B. Coordinate handhole installation with existing piping, sheeting, and other underground systems and structures, and locate clear of interferences.

3.02 INSTALLATION

- A. Install handholes where shown and verify locations in field. Perform excavation and backfilling required for installation. Excavation and backfilling shall be in accordance with Section 16010–General Electrical Requirements.
- B. Install handholes on a 3/4-inch crushed stone foundation 1 foot under all handholes, and within 2 feet of exterior of handholes. Handhole bases shall be set at the proper grade and carefully leveled and aligned.
- C. All conduits must enter the sides of handholes. Conduits entering the bottom will not be permitted.
- D. Handholes shall be considered wet locations for purposes of equipment selection.
- E. All conduits shall be pitched so that drainage is towards handhole and away from all structures.

3.03 GRADING AT HANDHOLES

- A. Handholes in unpaved areas shall be built as shown to a rim elevation higher than the original ground. The ground surface shall be graded to drain away from the handhole. Fill shall be placed around handholes to the level of the upper rim of the handhole frame, and the surface evenly graded on a one- (vertical) to-five (horizontal) slope to surrounding ground, unless otherwise shown.
- B. CONTRACTOR shall be solely responsible for proper height of handholes necessary to reach final grade. ENGINEER's review of shop drawings for handhole components is general in nature, and CONTRACTOR shall provide random length precast handhole riser sections to adjust handholes to meet field conditions for final grading.

WIRE

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Wire.
 - 2. Terminal blocks and accessories.
 - 3. Wiring connections and terminations.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 QUALITY ASSURANCE

- A. Manufacturers of Wire: Firms regularly engaged in the manufacture of electrical wire products of the types and ratings needed whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical wiring installation work similar to that in this project.
- C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.
- D. UL Labels: Provide electrical raceways, wire, connectors, outlets, switches, etc., which have been listed and labeled by Underwriters Laboratories.
- E. NECA Standard: Comply with applicable portions of National Electrical Contractor's Association's "Standard of Installation."

1.03 SUBMITTALS

- A. Submit shop drawings and product data under the provisions of Section 01300–Submittals.
- B. Submit shop drawings for wiring system including layout of distribution devices, branch circuit conduit and cables, circuiting arrangement, and outlet devices.
- C. Submit manufacturer's instructions.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Provide factory-wrapped, waterproof, flexible-barrier material for covering wire on wood reels, where applicable, and weather-resistant fiberboard containers for factory-packaging of wire, connectors, outlets, boxes, lamps, fuses, etc., to protect against physical damage in transit. Do not install damaged wire or other material; remove from project site.

B. Store wire and other material in factory-installed coverings in a clean, dry, indoor space which provides protection against the weather.

PART 2-PRODUCTS

2.01 WIRE

- A. All wire for permanent installation shall be new stranded copper delivered to project in unopened cartons or reels, except where specifically noted and be UL listed for the use intended. No wire smaller than 12 AWG shall be used unless specifically noted. The use of multiconductor cable is NOT ALLOWED.
- B. All wiring within the lighting control enclosure shall be insulation type MTW, minimum size 16 AWG. All other wiring shall be type XHHW-2
- C. All available colors shall be used; however, green shall be used only for equipment grounds. Where color-coded wire in larger sizes is not available, one wrap of 1-inch-wide colored self-adhesive tape at each terminal end shall be used for identification. Initial phase color shall be used throughout the run. Colors must meet code requirements for each class voltage. Do not duplicate colors, including neutral, on different voltages.

D. Color Coding:

	120/208/240 V	277/480 V
A Phase	Black	Brown
B Phase	Red	Orange
C Phase	Blue	Yellow
Neutral	White	Gray
Travelers	Yellow	Orange
Equipment Ground	Green	Green

2.02 WIRING CONNECTIONS AND TERMINATIONS

- A. Provide crimp type UL or ETL listed terminations for 6 AWG and smaller stranded conductor connections to electrical devices and equipment such as receptacles and terminal strips. Crimp devices shall be Sta-con, or equal.
- B. Provide insulated, <u>silicone-filled</u> spring wire connectors with plastic caps for 8 AWG conductors and smaller. Connectors shall be King Silicone-Filled Safety Connectors, or equal. Spring wire connectors shall only be allowed in junction, outlet, or switch boxes.
- C. No splices will be allowed unless reviewed by ENGINEER. Where allowed, provide in-line splices for all conductor connections, 6 AWG and larger. Splice crimp component shall be Burndy copper compression splice long barrel, beveled entry, type YS, or equal. Splice shall be made with crimp tool by manufacturer that allows expanded conductor ranges. Splice insulation component shall be Raychem heavy-wall, low-voltage tubing, type WCSM, or equal.

2.03 TERMINAL BLOCKS AND ACCESSORIES

- A. Terminal Blocks: ANSI/NEMA ICS 4: UL listed.
- B. Power Terminals: Unit construction type, closed-back type, with tubular pressure screw connectors, rated 600 volts.
- C. Signal and Control Terminals: Modular construction type, channel mounted; tubular pressure screw connectors, rated 300 volts.
- D. Manufacturer and Model Number: Phoenix Contact UK 5 N, or equal.

PART 3-EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions under which the work is to be installed and notify CONTRACTOR of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 GENERAL WIRING METHODS

- A. Install electrical wire and connectors in accordance with the manufacturer's written instructions, applicable requirements of the NEC, the National Electrical Contractors Association's "Standard of Installation," and in accordance with recognized industry practices to ensure that products serve the intended functions. Use appropriate wiring methods and materials for the equipment or environment.
- B. Stranded conductors shall be terminated using crimp-type devices specified herein. Conductors may not be wrapped around a terminal screw.
- C. Place an equal number of conductors for each phase of a circuit in same raceway.
- D. Torque conductor connections and terminations with calibrated torque wrench to manufacturer's recommended values. Provide permanent marking on lug, bolt, nut, or connection for conductors larger than 4 AWG.
- E. Splice only in junction or outlet boxes. Splicing is not allowed in disconnects, handholes, etc.
- F. Spring wire connectors shall only be used in junction, outlet, or switch boxes. Equipment wireways (e.g., lighting control enclosures, panelboards, disconnects, etc.), shall not have any spring-wire connectors installed; all terminations shall be on terminal strips.
- G. Neatly train, lace, and tie wrap all wiring inside boxes, lighting control enclosures, equipment, and panelboards.
- H. Make conductor lengths for parallel circuits equal.
- I. The same color shall be used for each numbered wire throughout its entire length.

- J. Terminate all wiring on terminal blocks in lighting control enclosures, and similar equipment. This shall include all spare or unused wires.
- K. Provide preprinted adhesive or heat shrink-type wire numbering labels at all terminations and splices. Wire numbering preprinted on the conductor, flag-type labels, and individual wraparound numbers (e.g., Brady labels) are not acceptable.
- L. Provide a dedicated neutral for each branch circuit or feeder requiring a neutral. Ampacity of neutral conductor shall match that of the branch circuit or feeder.
- M. Do not use a pulling means which can damage the raceway.
- N. Provide junction or pull boxes to facilitate the "pulling in" of wires or to make necessary connections. All raceways and apparatus shall be thoroughly blown out and cleaned of foreign matter prior to pulling in wires.
- O. Thoroughly clean wires before installing lugs and connectors.
- P. Make splices, taps, and terminations to carry full capacity of conductors without perceptible temperature rise.
- Q. Terminate spare conductors within equipment, lighting control enclosures, control panels, etc., on terminal strips and label as "SPARE." Refer to Section 16195–Electrical Identification, for additional requirements.

3.03 WIRING INSTALLATION IN RACEWAYS

- A. Pull all conductors into a raceway at the same time. Use UL-listed wire-pulling lubricant for pulling 4 AWG and larger wires. Wax-based pulling lubricant is not allowed unless it includes a Teflon additive.
- B. Install wire in raceway after all work likely to injure conductors has been completed.
- C. Completely and thoroughly swab raceway system before installing conductors.
- D. Conductors No. 6 AWG and larger shall be pulled into conduits utilizing a tugger with built-in tension meter. CONTRACTOR shall provide a report to ENGINEER for each pull indicating maximum tension reached during the pull along with manufacturer's maximum pulling tension. Motorized machines of any type are NOTALLOWED for any wire pulling.
- E. Conductors shall be installed in conduit system in such a manner that insulation is not damaged, and conductors are not overstressed in pulling.
- F. CONTRACTOR shall observe code limitation on the number and size of wires in an outlet box. CONTRACTOR shall either lay out work so that the wires do not exceed the particular box limitation, or provide larger boxes approved for additional capacity.
- G. Panel riser feeder conductors shall be identified with colored tape at panel lugs. The same phase relation shall be maintained throughout.
- H. Circuiting is indicated diagrammatically on the drawings.

3.04 FIELD QUALITY CONTROL

- A. Inspect wire for physical damage and proper connection.
- B. Prior to energizing, check conduit, raceways, outlet boxes, and wire for continuity of circuitry and for short circuits. Correct malfunction when detected.
- C. Subsequent to wire hookups, energize circuitry and demonstrate functioning in accordance with these specifications.
- D. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.
- E. Perform field inspection and testing according to provisions of this section.

3.05 ACCEPTANCE TESTS

- A. CONTRACTOR shall furnish all materials, labor, and equipment necessary for the acceptance tests specified herein. Acceptance tests shall be performed in the presence of OWNER or OWNER's representative and must be passed before final acceptance of the work.
- B. CONTRACTOR shall be responsible for powered tests of each field-installed device unless specifically noted otherwise. CONTRACTOR shall be responsible for device operation as powered from its power source and signals as received at the I/O modules.
- C. Operation Test: By operational testing, OWNER will give final acceptance of the wiring system when all of the wiring is considered a complete system. All equipment shall function and operate in the proper manner as indicated in the details of the specifications and on the drawings. All motors shall be properly connected to protective devices, and motor rotation shall be in the correct direction.
- D. Individually test 600-volt cables for insulation resistance between phases and from each phase to ground. Test with a Megger whose rating is suitable for the tested circuit after cables are installed and before they are put into service. Tests shall meet the applicable specifications of ICEA S-95-658 and NEMA WC70. Tests shall be witnessed by ENGINEER. The insulation resistance for any given conductor shall not be less than the value recommended by the ICEA, or a minimum of one megohm for 600-volt and less service, if not ICEA listed. Any cable not conforming to the recommended value or that fails when tested under full load conditions, shall be replaced with a new cable for the full length.
- E. A written record of performance tests on electrical and control and instrumentation systems and equipment shall be supplied to OWNER. Such tests shall show compliance with governing codes.
- F. The transformer, feeder, and subfeeds to the power panels shall be completely phased out as to sequence and rotation. Phase sequence shall be A-B-C as follows:
 - 1. Front-to-rear, top-to-bottom, or left-to-right when facing equipment.
 - 2. Phasing shall be accomplished by using distinctive colors for the various phases. The same color or variation of it shall be used for a particular phase throughout the building and project.

3.06 WIRE INSTALLATION SCHEDULE

A. Install all wiring in raceways.

BOXES

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Outlet and small junction boxes.
 - 2. Pull and junction boxes.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

- A. ANSI/NEMA OS 1-Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
- B. ANSI/NEMA OS 2-Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
- C. NEMA 250-Enclosures for Electrical Equipment (1000 Volts Maximum).

1.03 QUALITY ASSURANCE

- A. Manufacturers of switches, outlets, boxes, lamps, fuses, lugs, etc.: Firms regularly engaged in the manufacture of these products, of the types and ratings required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical wiring installation work similar to that in this project.
- C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.
- D. UL Labels: Provide electrical cable, boxes, raceways, wire, connectors, outlets, switches, etc., which have been listed and labeled by Underwriters Laboratories.
- E. NECA Standard: Comply with applicable portions of National Electrical Contractor's Association's "Standard of Installation."

1.04 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01300–Submittals.

PART 2-PRODUCTS

2.01 OUTLET AND SMALL JUNCTION BOXES

A. Cast Boxes: Aluminum or cast feraloy, deep-type, gasketed cover, threaded hubs, Crouse-Hinds FD Series, or equal.

2.02 PULL AND JUNCTION BOXES

- A. Cast Boxes: NEMA 250; Type 4, flat-flanged, surface-mounted junction box, UL-listed as watertight. Cast aluminum or feraloy box and cover with ground flange, neoprene gasket, and stainless steel cover screws, Crouse-Hinds WCB Series, or equal.
- B. NEMA 4X Boxes: Hoffman NEMA 4X stainless steel, or equal with proper cover and gasket.
- C. Boxes Larger Than 12 inches in Any Dimension: Hinged enclosure in accordance with Section 16160–Cabinets and Enclosures.
- D. Boxes specified in this section are not allowed to have knockouts and are not allowed to be used as enclosures for control panels.

PART 3-EXECUTION

3.01 COORDINATION OF BOX LOCATIONS

- A. Provide electrical boxes as shown on drawings and as necessary for splices, taps, wire pulling, cable bending radii, equipment connections, and code compliance.
- B. Electrical box locations shown on drawings are approximate. Verify location and size of outlet boxes in all work areas prior to rough-in.
- C. Locate and install boxes to allow access.
- D. Locate and install to maintain headroom and to present a neat appearance.
- E. All boxes in damp locations shall be on 1-inch standoffs. Damp locations shall include, but not be limited to exterior locations and dry wells.

3.02 OUTLET BOX INSTALLATION

- A. Support boxes independently of conduit.
- B. Use multiple gang boxes where more than one device are mounted together; do not use sectional boxes.
- C. For weatherproof devices located outdoors, use cast boxes with proper cover and gasket.
- D. All interior exposed wall and ceiling outlet boxes shall be cast boxes, unless otherwise noted.

- E. Knockout punches or saws shall be used for holes; boxes with prepunched holes are not acceptable.
- F. Cast boxes with 3/4-inch hubs and aluminum fittings and enclosures may be used with all conduit types.

3.03 PULL AND JUNCTION BOX INSTALLATION

- A. Support pull and junction boxes independent of conduit.
- B. Knockout punches or saws shall be used for holes; boxes with prepunched holes are not acceptable.
- C. All junction boxes shall be labeled with permanent labels (not adhesive type). Permanent labels shall include painted stencil-type labels or engraved laminated nameplates. Labels shall indicate circuit or load served, as well as power source.
- D. All interior exposed junction and pull boxes shall be cast type with cover, unless noted otherwise.
- E. All exterior junction and pull boxes shall be NEMA 4X stainless steel.

WIRING DEVICES

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included: Receptacles.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

- A. NEMA WD 1-General-Purpose Wiring Devices.
- B. Drawings-Bill of Materials.

1.03 QUALITY ASSURANCE

- A. Manufacturers of switches, outlets, boxes, lamps, fuses, lugs, etc.: Firms regularly engaged in the manufacture of these products, of the types and ratings required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical wiring installation work similar to that in this project.
- C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.
- D. UL Labels: Provide electrical cable, raceways, wire, connectors, outlets, switches, etc., which have been listed and labeled by Underwriters Laboratories.
- E. NECA Standard: Comply with applicable portions of National Electrical Contractor's Association's "Standard of Installation."

1.04 SUBMITTALS

- A. Submit shop drawings and product data in accordance with provisions of Section 01300–Submittals.
- B. Provide product data showing configurations, finishes, dimensions, and manufacturer's instructions.

PART 2-PRODUCTS

2.01 RECEPTACLES

- A. Twenty ampere, 125 volt, NEMA 5-20R, Industrial specification grade, straight blade, 3-wire duplex grounded outlets, one of the following: Cooper 5362, Leviton 5362, Pass and Seymour 5362-A. Receptacles shall be mounted vertically. Provide ivory coloring.
- B. GFCI Receptacle: Pass and Seymour 2095, Cooper TRVGF20 receptacle with integral ground fault current interrupter. Receptacles shall be mounted vertically. GFCI receptacles shall not be series wired. Provide ivory coloring.

PART 3-EXECUTION

3.01 INSTALLATION

- A. Install devices and cover plates flush and level.
- B. Back-wiring is not allowed for receptacles. Wires shall be terminated with the device screw terminal.

CABINETS AND ENCLOSURES

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Hinged cover enclosures.
 - 2. Equipment enclosures.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

- A. NEMA 250–Enclosures for Electrical Equipment (1000 Volts Maximum).
- B. ANSI/NEMA ICS 1-Industrial Control and Systems.
- C. ANSI/NEMA ICS 6-Enclosures for Industrial Control Equipment and Systems.

1.03 SUBMITTALS

- A. Submit shop drawings and product data in accordance with provisions of Section 01300-Submittals.
- B. Show Drawings for Equipment Panels: Include wiring schematic diagram, connection diagram, outline drawing, and construction diagram as described in ANSI/NEMA ICS 1.

PART 2-PRODUCTS

2.01 HINGED COVER ENCLOSURES

- A. Construction: NEMA 250, larger than 12 inches in any dimension. Acceptable manufacturers: Hoffman, B-Line, or equal.
- B. Covers: Continuous hinge, applicable NEMA rating with hasp and staple for padlock.
- C. Back Panel for Mounting Terminal Blocks or Electrical Components: 14 gauge steel, white enamel finish.
- D. All cabinets with double doors or that are free-standing shall have 3-point latch.

2.02 LIGHTING CONTROL ENCLOSURE

A. Enclosure shall be front access only, minimum No. 12 gauge steel, and have continuous-hinged doors, rotating lockable handle, 3-point latch on each door (not screws or bolts), with top and bottom bolts actuated by one rotating handle. Provide door stop kit

for all panel doors, data pockets for wiring diagrams, and a minimum of two 18-inch fluorescent lights and door switch. All doors and panels shall be gasketed. New enclosures shall be a minimum of 60 inches wide, 20 inches deep, and 74 inches high and shall be as manufactured by Hoffman, Lehman, or Saginaw. Enclosure shall be rated NEMA 4X, stainless steel with 18-inch leg kit.

- B. Plastic wiring troughs shall have removable covers. **Maximum fill for wiring troughs shall be 60%**. All wiring in enclosure not in wiring troughs shall be bound with continuous-type spiral windings. Terminal strips located adjacent to wiring troughs shall have a minimum of 1 1/2 inches between terminal strip and wiring trough.
- C. All wiring shall be done in the factory, Class II, Type C with master terminal strips for exterior connections. Terminal strips shall be located either at the bottom or on the side of the enclosure, depending on where the conduits penetrate the enclosure. Splices are not allowed within enclosures or wireways. All wiring shall be labeled at each end with corresponding numbers. This numbering shall be shown on the shop drawings.
- D. All components within the enclosure shall be identified with interior-mounted engraved labels. Labels shall be installed on the enclosure back panel and not on the device or wireway. Devices shall be grouped for each device or unit being controlled.
- E. All panels with DIN rail-mounted equipment shall include a minimum of 25% spare DIN rail space.

2.03 FABRICATION

- A. Shop-assembled enclosures and cabinets housing terminal blocks or electrical components in accordance with ANSI/NEMA ICS 6.
- B. Provide conduit hubs on all enclosures.
- C. Provide protective pockets inside front cover with schematic diagram, connection diagram, and layout drawing of control wiring and components within enclosure.
- D. Provide gasketed surfaces for all enclosure and cabinet doors and covers.

2.04 ENCLOSURE RATING

A. Cabinets and enclosures shall be rated NEMA 4X, stainless steel, unless noted otherwise on the drawings.

PART 3-EXECUTION

3.01 INSTALLATION

- A. Install cabinets and enclosures plumb. Anchor securely to supports at each corner minimum.
- B. All cabinets and enclosures shall be labeled with permanent labels (not adhesive-type). Permanent labels shall include painted, stencil-type labels or engraved laminated nameplates (4 inches by 4 inches minimum size).

- C. Provide accessory feet for free-standing equipment enclosures.
- D. All cabinets and enclosures attached to building surfaces which may be damp shall be spaced out to avoid rust and/or corrosion. All boxes in damp locations shall be on 1-inch standoffs. Damp locations shall include, but not be limited to, exterior locations and all areas below grade.

SUPPORTING DEVICES

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Conduit and equipment support members.
 - 2. Fastening hardware.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 QUALITY ASSURANCE

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

1.03 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01300-Submittals.

PART 2-PRODUCTS

2.01 MATERIAL

- A. Support Members:
 - 1. 316 stainless steel or PVC in exterior locations.
 - 2. Galvanized steel in all other areas.
- B. Hardware:
 - 1. Stainless steel in exterior locations.
 - Galvanized steel in all other areas.
- C. Manufacturers: Unistrut P-1000, B-line, Superstrut, or equal.

PART 3-EXECUTION

3.01 INSTALLATION

A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors or support members. Do not use spring steel clips and clamps. Provide standoffs as specified in other technical sections.

- B. Where support members are used for conduit, cutoff ends shall be ground smooth. Cutoff PVC-coated support members shall be ground smooth and touched-up with PVC coating material from the manufacturer.
- C. Do not fasten supports to existing piping, ductwork, mechanical equipment, or new/existing conduit.
- D. Do not use powder-actuated anchors.
- E. Do not drill structural steel members.
- F. Fabricate supports with welded end caps and all welds and surfaces ground smooth for neat appearance. Use hexagon head bolts with steel spring-lock washers under all nuts.
- G. In wet locations install free-standing electrical equipment on concrete pads.
- H. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- I. Do not use chain hangers.
- J. All welds shall be continuous and ground smooth.

ELECTRICAL IDENTIFICATION

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Nameplates.
 - 2. Wire markers.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 SUBMITTALS

- A. Submit shop drawings and product data in accordance with provisions of Section 01300-Submittals.
- B. Provide schedule for nameplates and labeling tags with shop drawings. Reference drawings for type used.

PART 2-PRODUCTS

2.01 NAMEPLATES

- A. Type "A":
 - 1. Use:
 - a. Each separately mounted circuit breaker or disconnect switch.
 - b. SPD.
 - c. Cabinets, enclosures, pull, and junction boxes.
 - 2. Size: 2 inch by 3 inch.
 - 3. Material: 3-layer laminated Micarta.
 - 4. Background Color: Black.
 - 5. Character Color: White.
 - 6. Character Size: 1/4 inch.
 - 7. Engraving: Label shall include equipment number and description (i.e., SCAL-60-01, Fluoride Scale).
 - 8. Mounting Location: Front exterior.
- B. Type "B":
 - 1. Use:
 - a. Panelboards.
 - b. Transformers.
 - 2. Size: 4 inch by 4 inch.
 - 3. Material: 3-layer laminated Micarta.
 - 4. Background Color: Black.
 - 5. Character Color: White.
 - 6. Character Size: 2 1/4 inch.

- 7. Engraving: Equipment label. Label shall include equipment number and description (i.e., LP-10-01, First Floor Power).
- 8. Mounting Location: Equipment: Top wireway.

2.02 WIRE MARKERS

- A. Wire markers shall be permanently attached sleeve or heat shrink-type labels. Wire numbering preprinted on the conductor, flag-type labels, and individual wraparound numbers (such as Brady preprinted markers) are not acceptable. All wire markers shall be the same throughout the project.
- B. Wire markers shall be specifically printed for this project using permanently attached computerized adhesive tags, such as Brady IDXPERT labeling printer with self-laminating vinyl, permasleeve heat-shrink polyolefin, or equal. Handwritten markers are not acceptable.

PART 3-EXECUTION

3.01 INSTALLATION

- A. Degrease and clean surfaces to receive nameplates.
- B. Install nameplates parallel to equipment lines.
- C. Affix nameplates with sticky-back adhesive.
- D. Prepare and install neatly-typed directions in all panels.

3.02 WIRE IDENTIFICATION

- A. Provide wire markers on each conductor, including neutral and spare conductors, in panelboard gutters, pull boxes, outlet and junction 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 schematic and interconnection diagrams for control wiring. Spare conductors shall have control wire number or shall indicate termination point of wire.
- B. Conductors in pull boxes, lighting control enclosures, cabinets, and panelboards shall be grouped as to circuits and arranged in a neat manner. All conductors of a feeder or branch circuit shall be grouped, bound together with nylon ties, and identified. Phase identification shall be consistent throughout the system.

SURGE PROTECTIVE DEVICES (SPD)

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included: Service entrance devices.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

- A. ANSI/IEEE C62.41 and C62.45.
- B. NFPA 70, and 75.
- C. UL 1449, most recent issue.

1.03 QUALITY ASSURANCE

- A. Manufacturers of surge protective devices. Firms regularly engaged in the manufacture of these products of the types and ratings whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical wiring installation work similar to that in this project.
- C. Code Compliance: Comply with National Electrical Code (NFPA 70) and any and all local codes as applicable to construction and installation of electrical wiring devices, material, and equipment herein specified.
- D. UL Labels: Provide surge protective devices which have been listed and labeled by Underwriters Laboratories.
- E. NECA Standard: Comply with applicable portions of National Electrical Contractor's Association's "Standard of Installation."

1.04 SUBMITTALS

- A. Submit shop drawings and product data in accordance with provisions of Section 01300-Submittals.
- B. Shop Drawings for Equipment Panels: Include wiring schematic diagram, wiring diagram, outline drawing, and construction diagram as described in ANSI/NEMA ICS 1. Test reports certified by the manufacturer shall be provided to ENGINEER upon request for each model submitted.

1.05 WARRANTIES

A. Manufacturer shall provide a minimum 20-year warranty from the date of substantial completion to cover repair or replacement of the device. This warranty shall include the field replaceable plug-in modules and coordinated fuses.

PART 2-PRODUCTS

2.01 GENERAL

- A. These specifications describe the electrical and mechanical requirements for high energy transient voltage (service entrance) surge suppressors. The specified surge protective device shall provide effective energy surge diversion for application in ANSI/IEEE C62.41-2002 location Category C3 (service entrance). Testing shall be per ANSI/IEEE C62.45–2002 using ANSI/IEEE C62.41 Category C3 waveforms and amplitudes.
- B. The system individual units shall be UL listed under UL1449, latest edition, Standard for Surge Protective Devices (SPD). Surge ratings shall be permanently affixed to the SPD.
- C. Operating Temperature: Operating temperature range shall be -40 to +55°C (-40 to 131°F).
- D. Storage Temperature: Storage temperature range shall be -40 to +85°C.
- E. Relative Humidity: Operation shall be reliable in an environment with 0% to 95% noncondensing relative humidity.
- F. Operating Altitude: The system shall be capable of operation up to an altitude of 13,000 feet above sea level.
- G. Design Life: >15 years.
- H. Operating Voltage: Maximum continuous operating voltage shall be no less than 115% of the nominal rated line voltage.
- I. Power Frequency: SPD power frequency shall be rated for use on 50 and 60 Hertz power systems.
- J. All SPDs shall be MOV type. Noise filtering capabilities shall be provided as an option for the devices specified herein.
- K. SPD shall be suitable for use in Type 2 locations.
- L. Unit shall provide maximum ANSI/UL 1449 VPRs for 480Y/277-volt systems.
 - 1. L-N = 1500 V.
 - 2. L-G = 1500 V.
 - 3. N-G = 1200 V.
 - 4. L-L = 2500 V.

2.02 SERVICE ENTRANCE DEVICES

- A. The maximum surge current capacity of the specified system, based on the standard IEEE 8/20 microsecond waveform, shall be at least 160 kA per phase. The surge life (8/20) shall be at least 6 kA for 10,000 occurrences or 10 kA at 20 kV for 16,000 occurrences. The transient suppression capability shall be bidirectional and suppress both positive and negative impulses. SPD shall have a nominal discharge rating (I₀) of 10 kA.
- B. The SPD shall have a minimum Short Circuit Rating (SCCR) of 100 KAIC. The interrupt capability must be confirmed and documented by a recognized independent testing laboratory.
- C. The suppressor shall be designed so as to minimize the internal surge path impedance. Direct point-to-point internal wiring is inherently inductive and not acceptable. Connection to the power service shall be constructed as shown in the manufacturer's installation notes for best performance.
- D. The system shall be constructed using field replaceable plug-in modules. The module shall consist of multiple fuse protected metal oxide varistors. The status of each module shall be locally monitored with a red LED that will illuminate if the module protection is reduced. Protector shall provide redundant protection within each phase module with multiple surge rated fuses per module or one fuse per MOV.
- E. Red and green solid-state LED indicators shall be provided on the hinged front cover to indicate protection status. An illuminated green LED indicates power is present at the protector on all phases, and an illuminated red LED shall indicate that one or more of the modules have reduced protection. Both front panel and internal LEDs are required to provide power and fault indications. Relay operation shall be in a failsafe operating mode, i.e., continuously energized so that power failure, reduced protection, or a break in the remote monitoring line will cause a fault indication at the remote monitor. Neon indicators are not permitted.
- F. Relay alarm contacts shall be provided for remote alarm monitoring capability of unit status. Surge protected normally open and normally closed contacts shall be provided.
- G. The system shall be equipped with an audible alarm which shall be activated when any one or more of the modules has a reduced protection condition. A mute switch shall be provided for the audible alarm.
- H. A 14 gauge, NEMA Type 4, steel enclosure, with corrosion-resistant hardware shall be provided for the unit.
- I. Service entrance device shall be as manufactured by MCG, 160M Series, Liebert LM, or equal, and installed in the Lighting Control Enclosure.

PART 3-EXECUTION

3.01 INSTALLATION

A. The installation and testing of the system shall be in full accordance with the manufacturer's installation and maintenance instructions and all national and local codes.

- B. Each installed device shall be fed by an appropriately sized circuit breaker, per the manufacturer's installation notes, in the protected panel. No SPD shall be installed without an upstream overcurrent device.
- C. Units shall be installed as close as practical to the electrical panel. Low impedance cabling furnished by the manufacturer shall be utilized for installations with lead lengths greater than, or equal to, 5 feet. Low impedance cabling furnished by the manufacturer or appropriately-sized standard cable, as approved by ENGINEER may be utilized for installations with lead lengths less than 5 feet. SPD leads shall be as short as possible for best performance.
- D. Manufacturer shall provide protection modules and coordinated fuses under a no-cost lifetime replacement warranty.

ELECTRICAL SERVICE SYSTEM

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Utility company.
 - 2. Secondary service characteristics.
 - 3. Definitions.
 - 4. Sequencing, scheduling.
 - 5. Underground electrical service.
- B. Allowances: CONTRACTOR shall <u>INCLUDE</u> in the Bid the cost of the following items specified in this Section. Refer to the individual sections listed below for a complete description of the Work required. Electric Utility Service Entrance, Section 1.07– Underground Electrical Service.
- C. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 UTILITY COMPANY

A. The Utility Company is Madison Gas and Electric.

1.03 SECONDARY SERVICE CHARACTERISTICS

A. The secondary service will be 277/480-volt, 4-wire, three-phase for combined lighting and power.

1.04 DEFINITIONS

- A. Service-As defined in the NEC, Article 100.
- B. Secondary Voltage-600 volts and below.

1.05 SEQUENCING, SCHEDULING

- A. Provide electrical service system, except the Utility Company will provide:
 - 1. Transformer (pad by CONTRACTOR).
 - Meter.
 - 3. Cable from terminal pole to transformer.
 - Secondary cable to CONTRACTOR-provided disconnect switch, CT compartment and meter socket.
 - 5. Window-type current transformers, installed by CONTRACTOR.

1.06 UNDERGROUND OVERHEAD ELECTRICAL SERVICE

- A. Provide complete underground electrical service except for items furnished and installed by the Utility Company.
- B. Coordinate the new electrical service with the Utility, and all Utility costs shall be included in the Lump Sum Bid. All costs associated with temporary service of any type shall be included in CONTRACTOR's Bid and will not be paid for as a part of the allowance. An allowance of \$5,000 shall be included in the Lump Sum Bid to be adjusted at final payment in accordance with actual Utility charges.

PART 2-PRODUCTS

NOT APPLICABLE

PART 3-EXECUTION

NOT APPLICABLE

SECONDARY GROUNDING

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included:
 - Power System Grounding.
 - 2. Electrical Equipment And Raceway Grounding and Bonding.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 SUBMITTALS

- A. Indicate location of system grounding electrode connections and routing of grounding electrode conductor.
- B. Submit shop drawings and product data in accordance with provisions of Section 01300–Submittals.

PART 2-PRODUCTS

2.01 MATERIALS

- A. Ground Rods: Copper bonded, 5/8-inch diameter; minimum length 10 feet.
- B. Ground Connections Below Grade: Exothermic type by Cadweld, compression type, by Thomas & Betts or equal. Compression connectors shall be prefilled with an oxide inhibitor.
- C. Ground Fittings: O-Z/Gedney, Type ABG, CG, TG, KG, GBL, or equal.

PART 3-EXECUTION

3.01 INSTALLATION

- A. Compression-type connectors shall be installed with the manufacturer recommended tools. Compression dies shall emboss index on the connector when installed correctly. An indenter crimp shall be made on ground rods prior to connection of grounding conductor.
- B. Provide a separate insulated equipment grounding conductor for each feeder and branch circuit. Provide a dedicated neutral conductor sized to match the circuit or feeder conductors for each feeder, or branch circuit requiring a neutral. Terminate each end on a grounding lug, bus, or bushing.

- C. Bond together system neutrals, service equipment enclosures, exposed noncurrent carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, and receptacle ground connectors.
- D. Connect grounding electrode conductors to metal using suitable ground clamps. Make connections to flanged piping at a point ahead of meter or service shutoff valve. Provide jumper connection across meter or service shutoff valve.
- E. Ground system, transformer neutrals, and equipment as required by code and local ordinances.
- F. All feeder neutrals shall be connected to neutral at only one point in the panelboard.
- G. All bare copper conductors installed outdoors shall be buried a minimum of 2 feet below grade.
- H. A minimum of three ground rods at 15-foot separations near the service entrance to the lighting control enclosure shall be provided. These shall be connected to ground bus by conductors sized to code requirements. The above are minimum requirements.
- I. All service entrance grounding electrode conductors shall be installed in PVC conduit. All conduit bends shall be made using sweep elbows. Conduit bodies and 90-degree bends are not allowed.
- J. Include ground for grounded receptacles and equipment items shown on drawings.
- K. Flexible connections do not qualify for ground. All flexible connections must have separate green ground wire from equipment frame to conduit system.
- L. All equipment fed from circuits in PVC conduit shall be provided with a separate green ground wire that is terminated at the metallic conduit system and the equipment.
- M. Separately derived systems as defined by the National Electrical Code shall be grounded as such. This shall include, but not be limited to, transformers.

3.02 TESTING

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Provide ground system resistance test report for each ground grid. Test reports shall document ground system resistance following the three-point "Fall-of-Potential" test. The test results shall include a graph of the results plus a diagram of the testing layout. The remote current probe (C2) shall be placed a minimum of 100 feet from the ground system potential/current probe (P1/C1) or as required to provide sufficient spacing to demonstrate a resistance plateau on the graph. The ground resistance shall be tested with the potential probe (P2) between the P1/C1 probe and the C2 probe at 10% intervals starting at 0% and ending at 100% of the distance between P1/C1 and C2, 11 points total. A single point of measurement is not acceptable, and the two-point method of ground system testing shall only be used where there is no or insufficient "open earth" area to use the three-point Fall-of-Potential method. Resistance at any point in the grounding system shall not exceed 5 ohms. All ground system tests shall be witnessed by ENGINEER.

- C. The test meter shall be Associated Research Vibroground test set with null balance, James A. Biddle Megger Earth-Tester-Null Balance, or equal. All ground system tests shall be performed in accordance with the procedures outlined in the instruction manuals of the ground system test report.
- D. In lieu of testing the ground grid as a system, CONTRACTOR may choose to test individual ground rods separately. Individual ground rods when tested separately shall be isolated from all metallic connections, such as from the ground rod to other grounded structures and electrical system neutrals.
- E. Multiple ground rod grids shall be isolated from all metallic connections such as from grid under test to other grounded structures and electrical system neutrals.
- F. Provide test report using the attached Form 16450. Each ground grid, including service entrance transformers, switchgear, etc., shall have a form submitted.

FORM 16450

GROUND ROD RESISTANCE TO EARTH TEST RECORD

٦.	DATE		
2.	PROJECT NAME		
3.	LOCATION OF TEST		
4.			
5.	GROUND ROD TYPE		
	DIAMETER		
6.			
	INSTRUMENT TYPE		
	SERIAL NO.		
7.	REQUIRED MAXIMUM RESISTANCE TO EARTH		
8.	MEASURED RESISTANCE T	O EARTH	ROD 1
			ROD 2
			ROD 3
		GROUND ROD	SYSTEM
TEST	PERFORMED BY:	Signature	
TEST	WITNESSED BY:	Signature	

PANELBOARDS

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included: Power Distribution Panelboards.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 QUALITY ASSURANCE

- A. Manufacturers: Firms regularly engaged in the manufacture of electrical equipment, cable, and wire products of the types and ratings necessary, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Installer: A firm with at least 5 years of successful installation experience on projects with electrical equipment installation work similar to that in this project.
- C. Code Compliance: Comply with National Electrical Code (NFPA 70) as applicable to construction and installation of electrical equipment, cable, wire, and connectors.
- D. UL Labels: All electrical equipment and material shall be listed and labeled by Underwriters Laboratories, except where UL does not include the equipment in their listing procedures.
- E. NEMA/ANSI Compliance: Comply with National Electrical Manufacturers Association, American National Standards Institute, and other standards pertaining to material, construction, and testing, where applicable.

1.03 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01300—Submittals.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All electrical equipment and material shall be received and stored with the factory tamperproof wrapping intact. Provide factory-wrapped waterproof flexible barrier material for factory packaging of equipment and material to protect against physical damage in transit. Do not install damaged equipment or material; remove from project site. Store equipment in factory coverings in a clean, dry, indoor space that provides protection against weather.

PART 2-PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Square D.
- B. Cutler-Hammer.
- C. Substitutions: Under provisions of the General Conditions.
- D. The drawings and specifications were prepared based on Square D. CONTRACTOR shall include in the Bid and shall be responsible for the cost of any changes to accommodate other equipment including but not limited to structural, mechanical, and electrical work. CONTRACTOR shall also pay additional costs necessary for revisions of drawings and/or specifications by ENGINEER.

2.02 PANELBOARDS

- A. Power distribution panelboards shall be provided as indicated on the drawings and as scheduled. Panelboards shall be factory-assembled and constructed in accordance with latest NEMA, UL, and NEC requirements and shall bear the UL label. Panelboard cabinets, including boxes and fronts, shall be code gauge galvanized steel. Front covers shall be hinged to allow access to wiring gutters without removal of panel trim (door-in-door type). All fronts shall be complete with cylinder-type lock and catch, and all cylinders shall be keyed alike. Provide two keys per panelboard to OWNER.
- B. Gutter and wiring space shall be provided according to NEMA and UL standards, except provide additional 6-inch-wide or -high wiring space for all double-lugged two or more section panels, feed-through panels; or panels that subfeed other panels at 100 amperes or more. CONTRACTOR shall instruct manufacturer as to where additional wiring space is needed, i.e., top, bottom, right, left, or combination. Where oversized cabinets are necessary for one section of a panelboard, all sections of the panelboard shall be the same size.
- C. Panelboards shall have full ampacity bussing throughout (full length of panel) and shall be full-size in regard to number of possible pole spaces. Power distribution panels shall have number of poles as scheduled or shown on the drawings. Panelboards shall be identified with phases reading left to right and circuits alternately numbered left to right, odd numbers on the left, even numbers on the right.
- D. Panelboards shall have copper bussing. Provide copper ground bus in all panelboards.
- E. Lugs for incoming feeders shall be UL listed for use with copper conductors. Lugs shall be sized by CONTRACTOR in accordance with feeder sizes shown. Main lugs or main breakers shall be top- or bottom-mounted to coordinate with incoming feeder entrance location. Location shall be selected by CONTRACTOR.
- F. Circuit breakers shall be quick-make, quick-break, with thermal magnetic trip bolt-on type. Multipole breakers shall have common <u>internal</u> trip, UL listed as multipole units; handle ties are not permitted. All breakers shall be of the same manufacturer as the panelboard and provided at ampere capacity as scheduled.

G. Power Distribution Panelboards shall be provided as follows (types listed are Square D):

	Maximum	Maximum	Maximum	Minimum
Туре	Voltage	Bus Amps	Brk. Amps	I.C.
NF Series	277/480	400	125	22,000

H. All panelboards scheduled with main circuit breakers shall be individually mounted main circuit breaker panels. Main circuit breakers installed in the location of branch circuit devices (branch-mounted mains) are not acceptable.

PART 3-EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions under which work is to be installed and notify CONTRACTOR of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Panelboards shall be provided as indicated. Final locations, sizes, and mounting of panelboards shall be reviewed with ENGINEER prior to installation.
- B. Each panelboard shall have a typewritten circuit schedule provided on the inside cover. This schedule shall be covered with clear plastic in a metal frame and shall include area or item served by each branch circuit.
- C. Prior to final inspection, clean all panelboard interiors, adjust trims, covers, hinges and locks, and refinish covers to original condition.
- D. Panel trim shall have enamel finish as selected by OWNER.
- E. Balance load on all panelboards so phases are balanced to 15% of each other. Reconnect or redistribute circuits and/or circuit breakers to achieve balanced condition. Submit ammeter readings for all panelboard feeders indicating normal operating load and phase balance.

OVERCURRENT PROTECTIVE DEVICES

PART 1-GENERAL

1.01 SUMMARY

- A. Work Included: Provide overcurrent protective devices as shown on the drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Section 01300-Submittals, including electrical ratings, physical size, interrupt ratings, trip curves, I²t curves, and manufacturer's detailed specifications.

1.03 QUALITY ASSURANCE

- A. Comply with the following requirements:
 - 1. NFPA 70 National Electrical Code (NEC).
 - 2. Local codes and ordinances.
 - 3. Provide overcurrent protective devices by same manufacturer for each type of device.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of Section 01600-Materials and Equipment.
- B. 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.

PART 2-PRODUCTS

2.01 CIRCUIT BREAKERS

- A. General:
 - 1. Comply with UL 489 and NEMA AB1 requirements.
 - 2. Provide thermal and magnetic protection unless noted otherwise.
- B. All lugs shall be rated to accept copper and aluminum conductors.

2.02 ENCLOSURES

- A. Provide circuit breaker with enclosures where required as listed below, unless noted otherwise on the drawings:
 - 1. Indoor: NEMA 12, steel.

2. Outdoor locations: NEMA 4X, stainless steel, with provisions for padlocking. Circuit breakers handle shall not be accessible from outside the enclosure.

2.03 ACCESSORIES

A. Provide handle lock with provisions for padlocking:

PART 3-EXECUTION

3.01 INSTALLATION

- A. Install overcurrent protective devices in accordance with manufacturer's recommendations.
- B. Provide disconnect switches where indicated on the drawings. Maximum mounting height shall be 42 inches above grade/floor unless noted otherwise, or approved by ENGINEER based on field conditions.

3.02 ADJUSTMENT

A. Set and record adjustable settings on circuit breakers to provide selective coordination and proper operation.

For more location information please visit www.strand.com

Office Locations

Cincinnati, Ohio | 513.861.5600

Columbus, Indiana I 812.372.9911

Columbus, Ohio | 614.835.0460

Indianapolis, Indiana I 317.423.0935

Joliet, Illinois | 815.744.4200

Lexington, Kentucky | 859.225.8500

Louisville, Kentucky I 502.583.7020

Madison, Wisconsin* | 608.251.4843

Milwaukee, Wisconsin I 414.271.0771

Phoenix, Arizona | 602.437.3733



^{*}Corporate Headquarters

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SECTION E: BIDDERS ACKNOWLEDGEMENT

BOWMAN LIGHTING DISTRIBUTION SYSTEM CONTRACT NO. 7135

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.

The undersigned having familiarized himself/herself with the Contract documents, including

	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.
	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 Forward Electric, 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.
SIGNAT	KE / // // // / // // // // // // // // /
\mathcal{L}_{re}	esident
TITLE, IF	
Sworn a 9th	and subscribed to before me this
<u> </u>	day ofAugust, 20_13
	- Joseph Marie Mar
	Public or other officer authorized to administer oaths) mission Expires 4/13/14
	s shall not add any conditions or qualifying statements to this Proposal.
	, , , , , , , , , , , , , , , , , , ,

1.

SECTION F: DISCLOSURE OF OWNERSHIP & BEST VALUE CONTRACTING

BOWMAN LIGHTING DISTRIBUTION SYSTEM CONTRACT NO. 7135

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

- (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 Office Mark Log fielholz Signature of Authorized Officer Date Signed 8/9/13 Name of Corporation Partnership or Solg roprie orship Forward Electric,/ Street Address or P O Box 6909 Raywood Rd City Madison

If you have any questions call (608) 266-0028

ERD-7777-E (R. 09/2003)

BOWMAN LIGHTING DISTRIBUTION SYSTEM CONTRACT NO. 7135

Best Value Contracting

1.		N/A			
2.	active	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.	on thi 33.07(apprei agenc	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.			

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

BOWMAN LIGHTING DISTRIBUTION SYSTEM CONTRACT NO. 7135

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	<u>on</u>		
Company:	Forward Electric, Inc		
Address:	6909 Raywood Rd, Madison, WI 53	713	
Telephone Number:	608-221-1945	Fax Number:_	608-221-9307
Contact Person/Title:	Mark Loeffelholz		
Prime Bidder Certification	<u>on</u>		
I, Mark Loef	felholz,	President	of
	Name	Title	
Forward	l Electric, Inc	ce	ertify that the information
	Company	v	
contained in this SBE Compliance Report is true and correct to the best of my knowledge and belief.			
		Λ/I	//n nn /
Witness' Signature	Bi	dder's Signature	
8/9/13			
Date			

BOWMAN LIGHTING DISTRIBUTION SYSTEM CONTRACT NO. 7135

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	SUPPLIA	16 %
		%
		%
		%%
		%%
		%
Subtotal Contractors who are suppliers:	14 % x 0.6 = 10 & 4	% (discounted to 60%)
Total Percentage of SBE Utilization:	10, 8 %.	

Bowman Lighting Distribution System

Lump Sum Bid *

\$ 198,762/AND

SECTION G: BID BOND

	(a
corporation of the State of Wisconsin (individual), (partnership), hereinafter referred to as the "Principal") and Insurance Co., a corporation of the State of Ohio (hereinafter referred	ìe
"Principal") and Insurance Co, a corporation of the State of Ohio (hereinafter referred	to
as the "Surety") and licensed to do business in the State of Wisconsin, are held and firmly bound unto the	ιе
City of Madison, (hereinafter referred to as the "Obligee"), in the sum of five per cent (5%) of the amou	nt
of the total bid or bids of the Principal herein accepted by the Obligee, for the payment of which the	ìе
Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assign	s,
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:

BOWMAN LIGHTING DISTRIBUTION SYSTEM CONTRACT NO. 7135

- 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.

be signed by their proper officers, on the day and year set forth below. Seal Forward Electric, August 9, 2013 Principal Date By: Casualty Insurance Name By: August 9, 2013 This certifies that I have been duly licensed as an agent for the above company in Wisconsin under License No. 02321272 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. August 9, 2013 Connie Easland Date Agent PO Box 45470 Address Madison, WI 53744-5470 City, State and Zip Code 608-828-0232

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

NOTE TO SURETY & PRINCIPAL

The bid submitted which this bond guarantees may be rejected if the following instrument is not attached to this bond:

Telephone Number

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.

LMS_12873_092012

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 5795951

To confirm the validity of this Power of Attorney call

52 of 200

American Fire and Casualty Company The Ohio Casualty Insurance Company Liberty Mutual Insurance Company West American Insurance Company

POWER OF ATTORNEY KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of

	the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to a and appoint,Timothy A. Draxler; Connie S. Easland; Richard A. Hagen; Louis R. Marino	te of Massachusetts, and West American Insurance Company
	all of the city of MADISON , state of WI each individually if there be more than one named, its true an and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and othe be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by the president and attested by the secretary of the Companies as if they have been duly signed by t	r surety obligations, in pursuance of these presents and shall
_	IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and thereto this 1st day of _December, 2012	and the corporate seals of the Companies have been affixed
	1906 B (1919 B (1912 B (1912 B (1913 B (191	American Fire and Casualty Company The Ohio Casualty Insurance Company Liberty Mutual Insurance Company West American Insurance Company Sy: Sun Rugor
	STATE OF WASHINGTON ss COUNTY OF KING	Gregory W. Davenport, Assistant Secretary
5	On this <u>1st</u> day of <u>December</u> , <u>2012</u> , before me personally appeared Gregory W. Davenport, who acknowledge and Casualty Company, Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a d	e Company, and that he, as such, being authorized so to do,
	The state of the s	iy: KDR Lux KD Riley , Notary Public
	This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of Americ Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force	
	ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that pur to such limitation as the Chairman or the President may prescribe, shall appoint such attomeys-in-fact, as may be necessar acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorney powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments are executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or aut the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers	y to act in behalf of the Corporation to make, execute, seal, vs-in-fact, subject to the limitations set forth in their respective and to attach thereto the seal of the Corporation. When so thority granted to any representative or attorney-in-fact under
	ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authorized and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instrume executed such instruments shall be as binding as if signed by the president and attested by the secretary.	necessary to act in behalf of the Company to make, execute, h attorneys-in-fact subject to the limitations set forth in their
]	Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes of attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as other surety obligations.	
_	Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechar Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with sure the same force and effect as though manually affixed.	
	I, David M. Carey, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insuran American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct 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 day of	M. 20/ 5.
	1906 E (2 1919 E 1912 E 1991 E	y: <u>Afarid M. Carey, Assistant Secretary</u> David M. Carey, Assistant Secretary

SECTION H: AGREEMENT

THIS AGREEMENT made this How day of Seotember in the year Two Thousand and Thirteen between FORWARD ELECTRIC, 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 <u>SEPTEMBER 3, 2013</u>, 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:

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:

BOWMAN FIELD LIGHTING DISTRIBUTION SYSTEM CONTRACT NO. 7135

- 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 <u>SEE SPECIAL</u>
 PROVISIONS, the rate of progress and the time of completion being essential conditions of this
 Agreement.
- 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 <u>ONE HUNDRED NINETY-EIGHT THOUSAND SEVEN HUNDRED SIXTY-TWO</u> (\$198,762.00) 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.

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.

BOWMAN FIELD LIGHTING DISTRIBUTION SYSTEM CONTRACT NO. 7135

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.

FORWARD ELECTRIC, INC.

1 1 01	Company Name	/ /
09/04/13	. [[] [] [] [] [] [] [] [] [] [] [] [] []	09/04/1
Witness 1 Date	President	Date
ClaleUN 09/04/13	Havi Or och	Date 09/04//3
Witness Date	Segletary	Date
CITY OF MADISON, WISCONSIN		
Provisions have been made to pay the liability	Approved as to form:	
that will accrue under this contract.	nay Da.	
this blyedule	Carriera fauten	
Finance Director	City Attorney	4
grighted this day of	tour .20 1.	<u> </u>
Marta tachne	fund/h	10-4-13
Witness	Mayor V	Date
Vin Christianso	Mariboth Witzel-Bell	9-17-2013
Witness	City Clerk	Date

Countersigned:

SECTION 1: PAYMENT AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we FOF and The Ohio Casualty Insurance Company	RWARD ELECTRIC, INC. as principal,
Company of New Hampshire as Madison, Wisconsin, in the sum of ONE HUNDR SIXTY-TWO (\$198,762.00) Dollars, lawful money of the City of Madison, we hereby bind ourselves and othese presents.	the United States, for the payment of which sum to
The condition of this Bond is such that if the above perform all of the terms of the Contract entered into be construction of:	
BOWMAN FIELD LIGHTING CONTRACT	
in Madison, Wisconsin, and shall pay all claims for prosecution of said work, and save the City harmless in the prosecution of said work, and shall save harm (under Chapter 102, Wisconsin Statutes) of employees to be void, otherwise of full force, virtue and effect.	from all claims for damages because of negligence less the said City from all claims for compensation
Signed and sealed thisdthday of	September, 2013
Countersigned: Countersigned: Countersigned: Countersigned: Witness Witness Secretary	FORWARD ELECTRIS, INC. Company Name (Principal) President Seal
Approved as to form: Taking futen City Attorney	Surety Seal Salary Employee Commission By Attorney-in-Fact Connie Easland
This certifies that I have been duly licensed as an a License No. 02321272 for the year 20 authority to execute this payment and performance bon September 4, 2013	and appointed as attorney-in-fact with
Date	Agent Signature

THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 5795955

American Fire and Casualty Company
The Ohio Casualty Insurance Company

Liberty Mutual Insurance Company West American Insurance Company

POWER OF ATTORNEY KNOWN ALL PERSONS BY THESE PRESENTS: That American Fire & Casualty Company and The Ohio Casualty Insurance Company are corporations duly organized under the laws of

the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company

is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and appoint,Timothy A. Draxler; Connie S. Easland; Richard A. Hagen; Louis R. Marino	o and by authority herein set forth, does hereby name, constitute
all of the city of MADISON, state of WI each individually if there be more than one named, its true and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and ot be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the C	
IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companie thereto this 1st day of	American Fire and Casualty Company The Ohio Casualty Insurance Company Liberty Mutual Insurance Company West American Insurance Company By: Gregory W. Davenport, Assistant Secretary Anowledged himself to be the Assistant Secretary of American nice Company, and that he, as such, being authorized so to do,
IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at Seattle, Washington, on the	By: KD Riley , Notary Public
Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full for ARTICLE IV – OFFICERS – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necess acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys of attorney, shall have full power to bind the Corporation by their signature and execution of any such instrument executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or at the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officer	ce and effect reading as follows: courpose in writing by the Chairman or the President, and subject sary to act in behalf of the Corporation to make, execute, seal, neys-in-fact, subject to the limitations set forth in their respective is and to attach thereto the seal of the Corporation. When so authority granted to any representative or attorney-in-fact under
ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings. Any officer of the Company authoriz and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. So respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruence executed such instruments shall be as binding as if signed by the president and attested by the secretary.	be necessary to act in behalf of the Company to make, execute, uch attorneys-in-fact subject to the limitations set forth in their
Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorized attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver other surety obligations.	
Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mech Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with su the same force and effect as though manually affixed.	
I, David M. Carey, the undersigned, Assistant Secretary, of American Fire and Casualty Company, The Ohio Casualty Insur American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and con 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 day of	ft, 20 12.
1906 S 1919 S 1912 S 1919 S 1912 S 1911 S 1912 S 1913 S	By: Afair / Carey, Assistant Secretary

To confirm the validity of this Power of Attorney call

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

	Afficiated Off. 02/16/2013
DETERMINATION N	JMBER: 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	N: MADISON CITY, DANE COUNTY, WI
CONTRACTING AGE	NCY: 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.
FUTURE INCREASE:	A DOT Premium (discussed below) may supersede this time and one-half requirement. 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
- 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			
CODE	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY \$	HOURLY FRINGE BENEFITS \$	<u>TOTAL</u> \$
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 <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE <u>OF PAY</u> \$	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
38	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
40	Terrazzo Mechanic	29.51	17.63	47.14
41	Tile Finisher Future Increase(s): Add \$.80/hr on 6/1/2013.	23.77	16.50	40.27
42	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	32.01	17.35	49.36

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.

	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY	HOURLY	
CODE	TRADE OR OCCUPATION	BASIC RATE OF PAY	FRINGE BENEFITS	<u>TOTAL</u> \$
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		·	
<u>CODE</u>	Fringe Benefits Must Be Paid On <u>All</u> 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 <u>All</u> 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 <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY \$	HOURLY FRINGE <u>BENEFITS</u> \$	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			
CODE	Fringe Benefits Must Be Paid On <u>All</u> 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.		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

	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY	HOURLY	
CODE	TRADE OR OCCUPATION	BASIC RATE OF PAY \$	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 LA	ANDSCAPING W	ORK	

CODE	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked <u>TRADE OR OCCUPATION</u>	HOURLY BASIC RATE OF PAY \$	HOURLY FRINGE <u>BENEFITS</u> \$	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;	35.12	18.46	53.58

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.

•	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY BASIC RATE	HOURLY	
CODE	TRADE OR OCCUPATION	OF PAY	FRINGE BENEFITS \$	<u>TOTAL</u> \$
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 <u>All</u> Hours Worked <u>TRADE OR OCCUPATION</u>	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.		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 <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY \$	HOURLY FRINGE <u>BENEFITS</u> \$	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	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

0000	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY BASIC RATE	HOURLY FRINGE		
CODE	TRADE OR OCCUPATION	OF PAY \$	<u>BENEFITS</u> \$	<u>TOTAL</u> \$	
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	54 Groundman - ELECTRICAL LINE CONSTRUCTION ONLY		11.90	33.65	
	TRUCK DRIVERS	-			
CODE	Fringe Benefits Must Be Paid On <u>All</u> 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 13.8		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 <u>All</u> Hours Worked <u>TRADE OR OCCUPATION</u>	HOURLY BASIC RATE OF PAY \$	HOURLÝ FRINGE <u>BENEFITS</u> \$	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	3 Landscaper		12.51	39.43	

CODE	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked DDE TRADE OR OCCUPATION		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 WOR			
CODE	Fringe Benefits Must Be Paid On All Hours Worked	HOURLY BASIC RATE	HOURLY FRINGE	TOTAL
CODE	TRADE OR OCCUPATION	OF PAY \$	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.		18.46	50.85

	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY	HOURLY	
CODE	TRADE OR OCCUPATION	BASIC RATE OF PAY \$	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.		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 <u>All</u> Hours Worked <u>TRADE OR OCCUPATION</u>	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		

	Fringe Benefits Must Be Paid On All Hours Worked	HOURLY	HOURLY		
CODE	TRADE OR OCCUPATION	BASIC RATE OF PAY \$	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 <u>All</u> 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	
	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 <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE <u>OF PAY</u> \$	HOURLY FRINGE BENEFITS \$	TOTAL \$			
301	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 preptime 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	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

CODE	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked 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 Ove 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 r	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 &		19.90	54.62

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.

CODE	Fringe Benefits Must Be Paid On <u>All</u> 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		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

	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY BASIC RATE	HOURLY FRINGE		
CODE	TRADE OR OCCUPATION	<u>OF PAY</u>	<u>BENEFITS</u>	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.	33.67	19.90	53.57	
	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.				
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			
CODE	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked <u>TRADE OR OCCUPATION</u>	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

304

311

314

Flagperson or Traffic Control Person

Railroad Track Laborer

Fiber Optic Laborer (Outside, Other Than Concrete Encased)

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CODE	Fringe Benefits Must Be Paid On <u>All</u> 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 <u>All</u> Hours Worked <u>TRADE OR OCCUPATION</u>	HOURLY BASIC RATE <u>OF PAY</u> \$	HOURLY FRINGE BENEFITS \$	TOTAL \$
301	General Laborer	27.20	13.37	40.57
303	Landscaper	18.25	1.11	19.36

17.33

17.81

23.41

15.53

12.22

6.91

32.86

30.03

30.32

HEAVY EQUIPMENT OPERATORS CONCRETE PAVEMENT OR BRIDGE WORK

CODE	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY \$	HOURLY FRINGE <u>BENEFITS</u> \$	<u>TOTAL</u> \$
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	34.72	19.90	54.62

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.

	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY BASIC RATE	HOURLY FRINGE	
CODE	TRADE OR OCCUPATION	OF PAY	BENEFITS \$	<u>TOTAL</u> \$
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.	33.96	19.90	53.86

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.

	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY	HOURLY	
CODE	TRADE OR OCCUPATION	BASIC RATE OF PAY \$	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 WO	PRK		
<u>CODE</u>	Fringe Benefits Must Be Paid On <u>All</u> 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.		18.46	51.38

	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked	HOURLY	HOURLY	
CODE	TRADE OR OCCUPATION	BASIC RATE OF PAY \$	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 <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE <u>OF PAY</u> \$	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

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CODE	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY \$	HOURLY FRINGE <u>BENEFITS</u> \$	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 <u>All</u> 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 <u>All</u> 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
202		40.45	0.54	40.00

13.15

6.51

19.66

CODE	Fringe Benefits Must Be Paid On <u>All</u> 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 CONST			
CODE	Fringe Benefits Must Be Paid On <u>All</u> Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY \$	HOURLY FRINGE BENEFITS \$	<u>TOTAL</u> \$
557	Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Backhoe (Track Type); Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boring Machine (Directional, Horizontal or Vertical); Bulldozer or Endloader; Concrete Breaker (Large, Auto, Vlbratory/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