BID OF_____

2016

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE

CONTRACT NO. 7730

MUNIS NO. 20170

IN

MADISON, DANE COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL
MADISON, WISCONSIN ON_____

CITY ENGINEERING DIVISION
1600 EMIL STREET
MADISON, WISCONSIN 53713

https://bidexpress.com/login

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

INDEX

SECTION A: ADVERTISEMENT FOR BIDS AND INSTRUCTIONS TO BIDDERS A-1

SECTION B: PROPOSAL SECTION B-1

SECTION C: SMALL BUSINESS ENTERPRISE C-1

SECTION D: SPECIAL PROVISIONS D-1

SECTION E: BIDDER'S ACKNOWLEDGEMENT E-1

SECTION F: DISCLOSURE OF OWNERSHIP & BEST VALUE CONTRACTING F-1

SECTION G: BID BOND G-1

SECTION H: AGREEMENT H-1

SECTION I: PAYMENT AND PERFORMANCE BOND I-1

SECTION J: PREVAILING WAGE RATES J-1

This Proposal, and Agreement have
been prepared by:

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

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

RFP: je

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:	MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO.:	7730
SBE GOAL	11%
BID BOND	5%
PRE-BID WALKTHROUGH (11:00 A.M.)	JULY 25, 2016
PRE BID MEETING (1:00 P.M.)	JULY 29, 2016
PREQUALIFICATION APPLICATION DUE (1:00 P.M)	JULY 29, 2016
BID SUBMISSION (1:00 P.M.)	AUGUST 5, 2016
BID OPEN (1:30 P.M.)	AUGUST 5, 2016
PUBLISHED IN WSJ	JULY 8, 15, 22 & 29, 2016

PRE-BID WALKTHROUGH: The Project Engineer and City Project Manager will be present at Monona Terrace, 1 John Nolan Drive, from 11:00 A.M. to 12 P.M. on Monday, July 25, 2016 to review the project scope with potential bidders. Bidders should meet in the receiving area on the lower level.

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

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

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

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

STANDARD SPECIFICATIONS

The City of Madison's Standard Specifications for Public Works Construction - 2016 Edition, as supplemented and amended from time to time, forms a part of these contract documents as if attached hereto.

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

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

SECTION 102.1: PRE-QUALIFICATION OF BIDDERS

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

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

In accordance with Section 39.02(9)(a)l. 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.

MINOR DISCREPENCIES

Bidder is responsible for submitting all forms necessary for the City to determine compliance with State and City bidding requirements. Nothwithstanding any language to the contrary contained herein, the City may exercise its discretion to allow bidders to correct or supplement submissions after bid opening, if the minor discrepancy, bid irregularity or omission is insignificant and not one related to price, quality, quantity, time of completion or performance of the contract.

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

Building Demolition

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

Street, Utility and Site Construction

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

Bridge Construction

501 ☐ Bridge Construction and/or Repair

Building Construction

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

State of Wisconsin Certifications

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

SECTION B: PROPOSAL

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

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

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

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

SECTION C: SMALL BUSINESS ENTERPRISE

Instructions to Bidders
City of Madison
SBE Program Information

2 Small Business Enterprise (SBE) Program Information

2.1 Policy and Goal

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.2 Contract Compliance

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

2.3 Certification of SBE by City of Madison

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

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

2.4 Small Business Enterprise Compliance Report

2.4.1 Good Faith Efforts

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

2.4.1.1 Attendance at the pre-bid meeting.

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

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

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

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

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

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

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

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

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

2.4.1.11 Completion of Cover Page (page C-6), Summary Sheet (page C-7) and SBE Contact Reports (pages C-8 and C9) if applicable.

2.4.2 **Reporting SBE Utilization and Good Faith Efforts**

The Small Business Enterprise Compliance Report is to be submitted by the bidder with the bid: This report is due by the specified bid closing time and date. Bids submitted without a completed SBE Compliance Report as outlined below may be deemed non-responsible and the bidder ineligible for award of this contract. Nothwithstanding any language to the contrary contained herein, the City may exercise its discretion to allow bidders to correct or supplement submissions after bid opening, if the minor discrepancy, bid irregularity or omission is insignificant and not one related to price, quality, quantity, time of completion, performance of the contract, or percentage of SBE utilization.

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

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

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

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

2.5 Appeal Procedure

A bidder which does not achieve the established goal and is found non-responsible for failure to demonstrate a good faith effort to achieve such goal and subsequently denied eligibility for award of contract may appeal that decision to the Small Business Enterprises Appeals Committee. All appeals shall be made in writing, and shall be delivered to and received by the City Engineer no later than 4:30 PM on the third business day following the bidder's receipt of the written notification of ineligibility by the Affirmative Action Division Manager. Postmark not acceptable. The notice of appeal shall state the basis for the appeal of the decision of the Affirmative Action Division Manager. The Appeal shall take place in accordance with Madison General Ordinance 33.54.

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.

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

Small Business Enterprise Compliance Report

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

Cover Sheet

Prime Bidder Information

Company:_____

Address:_____

Telephone Number:_____ Fax Number:_____

Contact Person/Title:_____

Prime Bidder Certification

I, _____, _____ of
Name Title

_____ certify that the information
Company

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

_____ _____
Witness' Signature Bidder's Signature

_____
Date

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

Small Business Enterprise Compliance Report

Summary Sheet

SBE Subcontractors Who Are NOT Suppliers

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

Subtotal SBE who are NOT suppliers: _____ %

SBE Subcontractors Who Are Suppliers

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

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

Total Percentage of SBE Utilization: _____%.

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

Small Business Enterprise Compliance Report

SBE Contact Report

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

SBE Information

Company:_____

Address:_____

Telephone Number:_____

Contact Person/Title:_____

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

   _____

   _____

   _____

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

   _____

   _____

   _____

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

   ☐ Yes ☐ No

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

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

   ☐ Yes ☐ No

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

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

_____

_____

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

_____

_____

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

_____

_____

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

_____

_____

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

_____

_____

6. Describe any other good faith efforts:

_____

_____

SECTION D: SPECIAL PROVISIONS

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

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 101 DEFINITIONS AND TERMS

Relationship Between the City and Strand Associates, Inc.® Strand Associates, Inc.® has been engaged by the City to prepare Contract Drawings and Specifications for this project. Additionally, Strand will assist the City with part-time Project Representative and shop drawing review during construction. The City will provide contract administration and is referred to as the City and/or ENGINEER in the Contract Documents.

Strand Associates, Inc.® will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences, or procedures of construction, or safety precautions and programs incidental thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. Strand Associates, Inc.® will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents. Strand Associates, Inc.® will not be responsible for the acts or omissions of CONTRACTOR or of any subcontractor, any supplier, or of any person or organization performing or furnishing any of the Work.

The duties and responsibilities of the resident project representative (Strand Associates, Inc.®) include the following:

1. Review schedules as required.

2. Attend conferences and meetings with CONTRACTOR.

3. Serve as liaison between ENGINEER and CONTRACTOR and help ENGINEER serve as liaison between CITY and CONTRACTOR.

4. Conduct periodic on-site observation of the work.

5. Observe tests, equipment, and system startups.

6. Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed. Consider, evaluate, and report to ENGINEER, CONTRACTOR's requests for modification.

7. Maintain orderly records, keep a log for days visiting site, and furnish periodic reports to ENGINEER of the progress of the Work.

8. Before project completion, prepare final list of items to be completed or corrected and make recommendations to ENGINEER concerning acceptance of the Work.

The resident project representatives shall not:

1. Authorize any deviation from the Contract Documents or substitutions of materials or equipment.

2. Exceed limitations of ENGINEER's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of CONTRACTOR, Subcontractor, Suppliers or CONTRACTOR'S superintendent.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences, or procedures of construction.

5. Advise on, issue directions regarding, or assume control over safety precautions and programs in connection with the Work.

6. Accept shop drawing or sample submittals from anyone other than CONTRACTOR.

7. Authorize OWNER to occupy the Project in whole or in part.

8. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by ENGINEER.

SECTION 102.9 BIDDER'S UNDERSTANDING

Tax Exempt Status: Effective with all contracts executed after January 1, 2016, the sales price from the sale, storage, use or other consumption of tangible personal property that is used in conjunction with a public works improvement for a tax exempt entity (including the City of Madison), is exempt from State sales tax. Said property must become a component of the project owned by the tax exempt entity and includes: any building; shelter; parking lot; parking garage; athletic field; storm sewer; water supply system; or sewerage and waste water treatment facility, but does not include a highway, street or road.

The contractor shall ensure that the exemption for sales and use tax available under Wis. Stat. Sec. 77.54(9m) applies where available. The contractor shall provide all necessary documentation as required by the State of Wisconsin and the City of Madison to comply with this exemption.

SECTION 102.10 PREVAILING WAGE

For this project, payment of prevailing wages (white sheet) shall be required unless the box indicating prevailing wages are not required is checked below.

☐ Prevailing wages shall not be required when this box is checked.

If prevailing wages (white sheets) are required, the wages and benefits paid on the contract shall not be less than those specified in the Prevailing Wage Determination included with these contract documents for the following types of work:

☒ Building or Heavy Construction
☐ Sewer, Water, or Tunnel Construction
☐ Local Street or Miscellaneous Paving Construction
☐ Residential or Agricultural Construction

When multiple boxes are checked, worker's wages may vary according to the type and area of work performed. It is the responsibility of the Contractor to determine and apply the appropriate wage rate for the specific work assigned.

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 $56,500 for a single trade contract; or equal to or greater than $277,000 for a multi-trade contract pursuant to MGO 33.07(7).

SECTION 102.14 BAN THE BOX – ARREST AND CRIMINAL BACKGROUND CHECKS (SEC. 39.08, MGO)

This provision applies to all prime contractors on contracts entered into on or after January 1, 2016, and all subcontractors who are required to meet prequalification requirements under MGO 33.07(7)(I), MGO as of the first time they seek or renew pre-qualification status on or after January 1, 2016. The City will monitor compliance of subcontractors through the pre-qualification process.

A. **Definitions.** For purposes of this section, "Arrest and Conviction Record" includes, but is not limited to, information indicating that a person has been questioned, apprehended, taken into custody or detention, held for investigation, arrested, charged with, indicted or tried for any felony, misdemeanor or other offense pursuant to any law enforcement or military authority.

"Conviction record" includes, but is not limited to, information indicating that a person has been convicted of a felony, misdemeanor or other offense, placed on probation, fined, imprisoned or paroled pursuant to any law enforcement or military authority.

"Background Check" means the process of checking an applicant's arrest and conviction record, through any means.

B. **Requirements**. For the duration of this Contract, the Contractor shall:

1. Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant's arrest and conviction record, as defined herein.
2. Refrain from asking an applicant in any manner about their arrest or conviction record until after conditional offer of employment is made to the applicant in question.
3. Refrain from conducting a formal or informal background check or making any other inquiry using any privately or publicly available means of obtaining the arrest or conviction record of an applicant until after a conditional offer of employment is made to the applicant in question.
4. Make information about this ordinance available to applicants and existing employees, and post notices in prominent locations at the workplace with information about the ordinance and complaint procedure using language provided by the City.
5. Comply with all other provisions of Sec. 39.08, MGO.

C. **Exemptions:** This section shall not apply when:

1. Hiring for a position where certain convictions or violations are a bar to employment in that position under applicable law, or
2. Hiring a position for which information about criminal or arrest record, or a background check is required by law to be performed at a time or in a manner that would otherwise be prohibited by this ordinance, including a licensed trade or profession where the licensing authority explicitly authorizes or requires the inquiry in question.

To be exempt, Contractor has the burden of demonstrating that there is an applicable law or regulation that requires the hiring practice in question, if so, the contractor is exempt from all of the requirements of this ordinance for the position(s) in question.

SPECIAL PROVISIONS

SECTION 105.15 SUBSTANTIAL COMPLETION

The Project shall be substantially complete no later than February 28, 2017.

The Project shall be completed and ready for final payment no later than March 28, 2017.

SECTION 109.9 LIQUIDATED DAMAGES

Substantial Completion-February 28, 2017. Liquidated damages, as defined in Section 109.9, shall apply for each calendar day that this completion date is not met.

BIDDING DOCUMENTS

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE

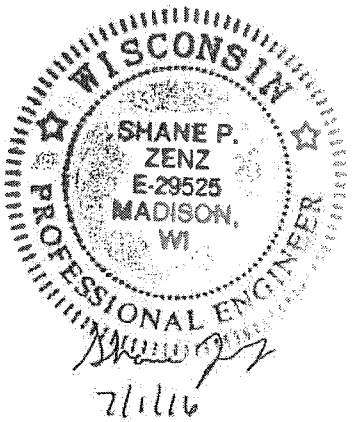
CONTRACT# 7730

MONONA TERRACE
One John Nolan Drive
Madison, Wisconsin 53703

July 1, 2016

OWNER: City of Madison
CONTACT:
Jon Evans, Project Manager
Engineering Division
City-County Building, Room 118
210 Martin Luther King, Jr. Boulevard
Madison, WI 53703
608-243-5893

ENGINEER: Strand Associates
CONTACT:
Matthew Carerros, Project Engineer
910 W Wingra Dr
Madison, WI 53715
608-251-4844
Project No. 20170



Professional

Engineering

Services

Monona Terrace Fire Alarm System Upgrades

Contract 7730

Technical Specifications

City of Madison, WI

Issued for Bid

July 1, 2016

STRAND ASSOCIATES®

TECHNICAL SPECIFICATIONS

MONONA TERRACE FIRE ALARM SYSTEM UPGRADES
CONTRACT 7730
CITY OF MADISON, WISCONSIN

Prepared by:

STRAND ASSOCIATES, INC.®
910 West Wingra Drive
Madison, WI 53715
www.strand.com

Issued for Bid
July 1, 2016

STRAND ASSOCIATES®

DATE: **July 1, 2016**

PROJECT: **MONONA TERRACE FIRE ALARM SYSTEM UPGRADE**

TABLE OF CONTENTS - SPECIFICATION INDEX

DIVISION 1 – GENERAL REQUIREMENTS		Page No.'s
Section 01 01 00	SUMMARY OF WORK	P1-4
Section 01 25 13	PRODUCT SUBSTITUTION PROCEDURES	P1-2
Section 01 26 13	REQUEST FOR INFORMATION (RFI)	P1-2
Section 01 26 46	CONSTRUCTION BULLETIN (CB)	P1-2
Section 01 26 57	CHANGE ORDER REQUEST (COR)	P1-4
Section 01 26 63	CHANGE ORDER (CO)	P1-2
Section 01 29 73	SCHEDULE OF VALUES	P1-3
Section 01 29 76	PROGESS PAYMENT PROCEDURES	P1-5
Section 01 31 13	PROJECT COORDINATION	P1-3
Section 01 31 19	PROJECT MEETINGS	P1-3
Section 01 32 16	CONSTRUCTION PROGRESS SCHEDULES	P1
Section 01 33 23	SUBMITTALS	P1-3
Section 01 41 00	REGULATORY REQUIREMENTS	P1-2
Section 01 45 16	FIELD QUALITY CONTROL PROCEDURES	P1-3
Section 01 50 00	TEMPORARY FACILITIES AND CONTROLS	P1-3
Section 01 60 00	PRODUCT REQUIREMENTS	P1-4
Section 01 73 29	CUTTING AND PATCHING	P1-3
Section 01 74 13	PROGRESS CLEANING	P1-4
Section 01 74 19	CONSTRUCTION WASTE MANAGEMENT	P1-3
Section 01 76 00	PROTECTING INSTALLED CONSTRUCTION	P1-6
Section 01 77 00	CLOSEOUT PROCEDURES	P1-4
Section 01 78 23	OPERATION AND MAINTENANCE DATA	P1-3
Section 01 78 36	WARRANTIES	P1-5
Section 01 78 39	AS-BUILT DRAWINGS	P1-4
Section 01 79 00	DEMONSTRATION AND TRAINING	P1-4

DIVISION 2 – SITE WORK		Page No.'s
Section 02 05 00	DEMOLITION	P1-2

DIVISION 7 – THERMAL AND MOISTURE PROTECTION		Page No.'s
Section 07 27 00	FIRESTOPPING	P1-2

DIVISION 26 – ELECTRICAL		Page No.'s
Section 26 00 30	SURFACE RACEWAY	P1-2
Section 26 05 00	GENERAL ELECTRICAL REUQIREMENTS	P1-7
Section 26 05 19	WIRE	P1-7
Section 26 05 33	CONDUIT	P1-6
Section 26 05 34	BOXES	P1-4
Section 26 05 53	ELECTRICAL IDENTIFICATION	P1-4
Section 26 16 00	HINGED COVER ENCLOSURES	P1-2
Section 26 19 00	SUPPORTING DEVICES	P1-2
Section 26 31 00	FIRE ALARM SYSTEM	P1-28
Section 26 93 10	STRUCTURED CABLING	P1-6
Section 26 95 10	SPARE PARTS	P1

TABLE OF CONTENTS : DRAWING INDEX

SHEET NO.	DRAWING NO.	TITLE
1	G0.1	TITLE SHEET, LOCATION MAPS, AND LIST OF DRAWINGS
2	G0.2	STANDARD ABBREVIATIONS AND SYMBOLS
3	E1.0	LEVEL 29' AND 40' OVERALL PARKING RAMP FLOOR PLAN
4	ED1.1	LEVEL 4.6' DEMOLITION FLOOR PLAN - EAST
5	ED1.2	LEVEL 4.6' DEMOLITION FLOOR PLAN - WEST
6	ED1.3	LEVEL 19' DEMOLITION FLOOR PLAN - EAST
7	ED1.4	LEVEL 19' DEMOLITION FLOOR PLAN - WEST
8	ED1.5	LEVEL 29' DEMOLITION FLOOR PLAN - EAST
9	ED1.6	LEVEL 29' DEMOLITION FLOOR PLAN - WEST
10	ED1.7	LEVEL 40' DEMOLITION FLOOR PLAN - EAST
11	ED1.8	LEVEL 40' DEMOLITION FLOOR PLAN - WEST
12	ED1.9	LEVEL 52/56' DEMOLITION FLOOR PLAN - EAST
13	ED1.10	LEVEL 52/56' DEMOLITION FLOOR PLAN - WEST
14	ED1.11	LEVEL 65' DEMOLITION FLOOR PLAN - EAST
15	ED1.12	LEVEL 65' DEMOLITION FLOOR PLAN - WEST
16	ED1.13	DEMOLITION ENLARGED PLANS - 1
17	ED1.14	DEMOLITION ENLARGED PLANS - 2
18	E1.1	LEVEL 4.6' FLOOR PLAN - EAST
19	E1.2	LEVEL 4.6' FLOOR PLAN - WEST
20	E1.3	LEVEL 19' FLOOR PLAN - EAST
21	E1.4	LEVEL 19' FLOOR PLAN - WEST
22	E1.5	LEVEL 29' FLOOR PLAN - EAST
23	E1.6	LEVEL 29' FLOOR PLAN - WEST
24	E1.7	LEVEL 40' FLOOR PLAN - EAST
25	E1.8	LEVEL 40' FLOOR PLAN - WEST
26	E1.9	LEVEL 52/56' FLOOR PLAN - EAST
27	E1.10	LEVEL 52/56' FLOOR PLAN - WEST
28	E1.11	LEVEL 65' FLOOR PLAN - EAST
29	E1.12	LEVEL 65' FLOOR PLAN - WEST
30	E1.13	ENLARGED PLANS - 1
31	E1.14	ENLARGED PLANS - 2

SPECIFICATIONS

SECTION 01 01 00

SUMMARY OF WORK

PART 1–GENERAL

1.01 DIVISION ONE

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

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:
   1. 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. Construction Sequence:

1. The following construction sequence is provided as a general guideline for the information and for the benefit of CONTRACTOR. This construction sequence is not intended to dictate means, method of construction, or direct construction activities. This construction sequence is a conceptual general construction sequence with minimum recommended outage, shutdowns, and operating units to be maintained in service. The general construction sequence is projected to allow the Work to be completed while the convention center is occupied. It is not intended to be all inclusive and does not list all work elements or details that are required to complete the Work or place the fire alarm system in service. CONTRACTOR shall be responsible for implementing any additional details required, including temporary construction at no additional cost to OWNER.
2. CONTRACTOR may propose alternate sequence or modifications to this sequence. OWNER will review the proposed modification and determine if such modification of the sequence interferes with the proper operation of the convention center. Any modifications to this general construction sequence shall be proposed in writing and shall be approved by OWNER prior to their implementations.
3. New fire alarm control panels in the East Command Center (FACP-1), West Fire Command (FACP-2), and Parking Ramp (FACP-3) shall be installed to allow the existing fire alarm control panels to remain in operation. The one fire alarm control panel shown on the drawings in the Parking Ramp Electrical Room can be removed at any time.
4. New Fire Alarm Control Panel (FACP-1) shall be temporarily installed in front of the existing panel or on the adjacent wall to allow for both systems to operate concurrently. FACP-2 shall be installed on the opposite wall as shown on Drawings to allow for both systems to operate concurrently. FACP-3 can be installed adjacent to the existing panel.
5. The new panels shall be installed and energized prior to removal of the existing fire alarm panels and all devices. New panels shall be installed in areas shown on drawings. The West Fire Command Center and parking ramp fire alarm control panels should be connected to the new main panel in the East Command Center prior to removal of the existing panels.
6. New fire alarm devices shall be wired into each new fire alarm control panel (East and West Command Center and Parking Ramp). The existing devices shall be removed and new devices shall be installed in each zone based on the existing configuration and OWNER's schedule of events. CONTRACTOR shall coordinate any shutdowns of the system with OWNER prior to beginning any Work.
7. All non-occupied areas (mechanical rooms, storage rooms, rooftop deck (fall), parking ramp, etc.) can begin construction at any time, after authorization from OWNER.
8. Occupied areas (banquet rooms, open areas, corridors, meeting rooms, etc.) can only begin Work after authorization from OWNER. CONTRACTOR shall receive authorization at least 72 hours prior to beginning any work. OWNER to provide event calendar to schedule Work in these areas.
9. CONTRACTOR shall provide a weekly schedule to OWNER and ENGINEER prior to beginning any new Work.
10. Fire alarm testing for each control panel shall be coordinated with OWNER at least 72 hours prior to beginning any testing.

1.05 CONTRACTOR USE OF SITE

A. General:
   1. If the “area of the site” is not shown, OWNER's property lines, the Project right-of-way and/or any easements obtained for the Project 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.
   5. Work in occupied spaces shall be restricted to specified Work and essential activities, such as making necessary connections and extending services or constructing temporary access ways. Such work shall be scheduled in advance with OWNER.

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.

C. Working Hours:
   1. CONTRACTOR shall perform the Work based on events in the convention center. Coordinate allowable work hours with OWNER. No security staff is on site from 1 A.M. to 5 A.M. If Work needs to be completed during this period, CONTRACTOR shall coordinate with OWNER.
   2. CONTRACTOR shall perform the Work on Monday through Friday. Work outside of the days listed above will require OWNER’s written consent.

1.06 EXISTING SERVICES INCLUDING STRUCTURES

A. Interruption of existing services and systems including heating, ventilating, air conditioning, power, signal and security systems, and similar work shall be kept to an absolute minimum and shall be limited to times approved by OWNER. Provide temporary facilities to maintain services.

B. If deemed necessary by OWNER, such work shall be accomplished after OWNER’s normal office hours.

C. Work shall not commence until all labor, materials, and equipment are available so Work can continue without interruption or delay.

D. Should uncharted or incorrectly charted services be encountered during installation, notify OWNER and consult with utility owner immediately.

E. CONTRACTOR shall not interrupt existing services 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. CONTRACTOR shall keep an accurate and complete record of all such services 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.

H. CONTRACTOR shall inspect all services for condition and soundness. Unsound conditions shall be reported to OWNER immediately after exposing. CONTRACTOR shall not proceed with the Work until the service or facility owner has been notified. Service or facility owner shall then be given time to inspect and correct, if required, the service. CONTRACTOR may make claim under the provisions of the General Conditions should CONTRACTOR feel a price or time adjustment is justified.

I. Any additional costs incurred because of failure of CONTRACTOR to report the condition of any and all existing services encountered shall be paid for by CONTRACTOR.

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, mains, fittings, and accessories free from dirt and foreign matter at all times.

D. CONTRACTOR shall provide temporary plugging of openings, holes, and pipe 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.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

SECTION 01 25 13
PRODUCT SUBSTITUTION PROCEDURES

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
PART 2 – PRODUCTS 1
2.1. SUBSTITUTION REQUEST FORM 1
PART 3 - EXECUTION 1
3.1. REQUESTING A SUBSTITUTION DURING BIDDING 1
3.2. REQUESTING A SUBSTITUTION AFTER AWARD OF CONTRACT 2
3.3. UNAUTHORIZED SUBSTITUTIONS 2

PART 1 – GENERAL

1.1. SUMMARY

A. The City of Madison uses a specific list of preferred products for various specification items to establish standards of quality, utility, and appearance required.

B. The City of Madison will not allow substitutions for specified Products except as follows:
   1. The Product is no longer produced or the product manufacturer is no longer in business.
   2. The manufacturer has significantly changed performance data, product dimensions, or other such design criteria for the specified Product(s).
   3. Products specified by naming one or more Products or manufacturer's and "or approved equal" or "approved equivalent."

C. The City of Madison will not allow substitutions for specified Products as follows:
   1. For Products specified by naming only one Product and manufacturer, no substitute product will be considered.
   2. For Products specified by naming several Products or manufacturers select any one of the products or manufacturers named, which complies with the specifications. No substitute product will be considered.

D. Request for substitutions from any party other than the General Contractor (GC) will not be accepted.

1.2. RELATED SPECIFICATIONS

A. Section 01 26 13 Request for Information (RFI)
B. Section 01 33 23 Submittals

PART 2 – PRODUCTS

2.1. SUBSTITUTION REQUEST FORM

A. During bidding all contractors (General and Sub-contractors) and suppliers of materials or products shall provide hard copy of the Substitution Request form and all required attachments directly to the Project Engineer.

B. After bidding only the GC shall submit a request and shall use the form provided by CPM.

PART 3 - EXECUTION

3.1. REQUESTING A SUBSTITUTION DURING BIDDING

A. In the event that a substitution is requested during the bidding phase the Contractor or Supplier shall meet the substitution request deadline listed in the bidding documents. No substitution request will be considered during the bidding period after the stated substitution request deadline. In general this procedure shall be as follows:
   1. Submit the Substitution Request Form including all required supporting documentation to the City Project Manager and Project Engineer by the substitution request deadline specified in Section A of the Contract Documents.
   2. Submit a Substitution Request Form for each product, supported with complete data, drawings and samples as appropriate, including:
      i. Comparison of qualities of the proposed substitutions with that specified.
      ii. Changes required in other elements of the Work because of the substitution.
      iii. Effect on the construction schedule.
      iv. Cost data comparing the proposed substitution with the Product specified.
      v. Any required license fees or royalties.

vi. Availability of maintenance service and source of replacement materials.

3. The Owner and Engineer will review the Substitution Request Form and if approved the City of Madison will publish a bidding addendum authorizing the replacement. The Owner and Engineer may reject any substitution request without providing specific reasons.

B. Substitutions submitted and approved during the bidding phase shall be announced by the City of Madison by addenda prior to the bid due date.

3.2. REQUESTING A SUBSTITUTION AFTER AWARD OF CONTRACT

A. A substitution request will only be considered after award of contract if it meets the qualifying provisions as described in 1.1.B.1 above.

B. The GC shall submit a substitution request using the form provided by CPM.

1. Consulting Staff, Owner and Owners Representatives will review the request and provide the appropriate approvals and feed back to the GC.

3.3. UNAUTHORIZED SUBSTITUTIONS

A. Any Contractor who substitutes products without proper authorization by the Owner and Engineer will be required to immediately remove and replace the product and all costs required to conform to the Contract Documents shall be borne by the General Prime Contractor.

END OF SECTION

SECTION 01 26 13
REQUEST FOR INFORMATION (RFI)

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. PERFORMANCE REQUIREMENTS 1
1.4. QUALITY ASSURANCE 1
PART 2 – PRODUCTS 1
2.1. REQUEST FOR INFORMATION FORM 1
PART 3 - EXECUTION 1
3.1. CONTRACTOR INITIATED RFI 1
3.2. RFI RESPONSES 2
3.3. COMMENCEMENT OF WORK RELATED TO AN RFI 2

PART 1 – GENERAL

1.1. SUMMARY

A. Contractors shall use the RFI form/process to request additional information or clarification regarding the construction documents.

B. Form will be provided by CPM.

1.2. RELATED SPECIFICATIONS

A. Section 01 26 46 Construction Bulletin (CB)

B. Section 01 26 57 Change Order Request (COR)

C. Section 01 26 63 Change Order (CO)

1.3. PERFORMANCE REQUIREMENTS

A. RFI issues initiated by any contractor shall be done through the General Contractor (GC).

1. RFIs submitted by any Sub-contractor under the GCs control shall be returned with no response.

B. Submit a new RFI for each issue. Only multiple questions that are of a similar nature may be combined into one RFI shall be allowed and responded to.

1.4. QUALITY ASSURANCE

A. The GC shall be responsible for all of the following:

1. Ensure that any request for additional information is valid and the information being requested is not addressed in the construction documents.
2. Ensure that all requests are clearly stated and the RFI form is completely filled out.
3. Ensure that all Work associated an RFI response is carried out as intended.

B. The Project Engineer (PE) shall be responsible for the following:

1. Ensure that all responses to contractor initiated RFIs are properly responded to in a timely fashion.
   a. The CPM, Owner, consulting staff, and other City staff shall be responsible for the initial review of the RFI. The PE shall be responsible for codifying all consultant and Owner/City staff comments into a unified RFI response.

PART 2 – PRODUCTS

2.1. REQUEST FOR INFORMATION FORM

A. Will be provided by CPM.

PART 3 - EXECUTION

3.1. CONTRACTOR INITIATED RFI

A. Immediately on discovery of the need for additional information or interpretation of the Contract Documents any contractor may initiate an RFI for additional information or clarification through the GC.

3.2. RFI RESPONSES

A. Responses to simple RFI issues shall use the response section of the RFI form and shall be completed within five (5) working days of the RFI form being submitted.

B. Responses to more complex issues may require additional time or may require a Construction Bulletin to be published. The initial RFI shall be responded to within five (5) working days stating that the RFI is being reviewed and provide an estimated date for the response.

C. The following GC generated RFIs will be returned without action:

1. Requests for approval of submittals
2. Requests for approval of substitutions
3. Requests for approval of Contractor's means and methods.
4. Requests for coordination information already indicated in the Contract Documents.
5. Requests for adjustments in the Contract Time or the Contract Sum.
6. Requests for interpretation of A/E's actions on submittals.
7. Incomplete RFI or inaccurately prepared RFI.

3.3. COMMENCEMENT OF WORK RELATED TO AN RFI

A. The GC shall only proceed with the Work of an RFI where, additional information is not required.

B. The GC shall not proceed with any Work associated with an RFI while it is under review.

C. The GC shall not proceed with any Work associated with an RFI that clearly states a CB will be issued in response to the RFI.

D. The GC will be required to immediately remove and replace unauthorized Work and all costs required to conform to the Contract Documents shall be borne by the GC.

END OF SECTION

SECTION 01 26 46
CONSTRUCTION BULLETIN (CB)

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. PERFORMANCE REQUIREMENTS 1
1.4. QUALITY ASSURANCE 1
PART 2 – PRODUCTS 2
2.1. CONSTRUCTION BULLETIN FORM 2
PART 3 - EXECUTION 2
3.1. WRITING THE CONSTRUCTION BULLETIN 2
3.2. EXECUTING THE CONSTRUCTION BULLETIN 2

PART 1 – GENERAL

1.1. SUMMARY

A. Construction Bulletins (CB) are formal published construction documents that modify the original contract bid documents after construction has commenced. CBs may be published for many reasons, including but not limited to the following:
   1. Clarification of existing construction documents including specifications, plans, and details
   2. Change in product or equipment
   3. A response to a Request for Information
   4. Change in scope of the contract as either an add or a deduct of work

B. CBs provide a higher degree of detail in response to a Request for Information (RFI) through directives, revised plans/details, and specifications as necessary.

C. The CB may change the original contract documents through additions or deletions to the Work.

D. Where the directives of a CB are significant enough to warrant a Change Order Request (COR) the GC shall use all information provided in the CB to assemble all required back-up documentation for additions and deletions of materials, labor and other related contract costs for the COR.

1.2. RELATED SPECIFICATIONS

A. Section 01 26 13 Request for Information (RFI)
B. Section 01 26 57 Change Order Request (COR)
C. Section 01 26 63 Change Order (CO)

1.3. PERFORMANCE REQUIREMENTS

A. Project Engineer (PE): The PE shall be the only person authorized to publish a CB as needed for any reason indicated in section 1.1.A above. The PE shall consult as necessary with any of the following while drafting the CB and shall confirm final direction with the CPM prior to issuing a CB:
   1. City Project manager (CPM)
   2. Owner
   3. Members of the consulting staff
   4. Members of city staff
   5. The General Contractor
   6. Sub-contractors

B. General Contractor: The GC shall be responsible for the following as needed:
   1. Executing the directives of the CB when he/she believes that no changes in labor, materials, equipment, or contract duration will be required for additions or deletions.
   2. Submit a COR when he/she believes that a change in labor, materials, equipment or contract duration will be required for additions or deletions.

1.4. QUALITY ASSURANCE

A. The PE shall be responsible for ensuring the final CB sufficiently provides direction, details, specifications and other information as necessary for the GC to perform the intended Work.

B. The PE shall be responsible for ensuring the final CB is published as expeditiously as practical based on the complexity of the CB being written. CBs that may affect the GC critical path shall be given priority.

PART 2 – PRODUCTS

2.1. CONSTRUCTION BULLETIN FORM

A. Will be provided by CPM.

PART 3 - EXECUTION

3.1. WRITING THE CONSTRUCTION BULLETIN

A. The PE shall draft a CB as needed using the form provided by CPM.
   1. The PE and/or consulting staff as necessary shall provide specifications, model numbers and performance data, details and other such information necessary to clearly state the intentions of the CB.
   2. The consulting staff, CPM, Owner, and other City Staff shall review the draft and recommend changes as needed.
   3. The PE shall amend the draft as necessary into a final CB for review

B. Once the final CB has been approved the PE shall submit it to the GC.

3.2. EXECUTING THE CONSTRUCTION BULLETIN

A. The GC shall acknowledge receipt of the CB.

B. The GC shall notify all Sub-contractors of the CB and publish the CB to all field sets of drawings and specifications as appropriate.

C. The GC shall execute the directives of the CB or submit COR documentation as necessary during the execution and implementation of the CB.
   1. See Specification 01 26 57 Change Order Request (COR)

END OF SECTION

SECTION 01 26 57
CHANGE ORDER REQUESTS (COR)

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATION SECTIONS 2
1.3. DEFINITIONS AND STANDARDS 2
1.4. CONTRACT EXTENSION 3
1.5. OVERHEAD AND PROFIT MARKUP 3
1.6. PERFORMANCE REQUIREMENTS 3
1.7. QUALITY ASSURANCE 3
PART 2 – PRODUCTS 4
2.1. CHANGE ORDER REQUEST FORM 4
PART 3 - EXECUTION 4
3.1. ESTABLISHING A CHANGE ORDER REQUEST 4
3.2. CHANGE ORDER REQUEST REVIEW, APPROVAL, AND PROCESSING 4
3.3. EMERGENCY CHANGE ORDER REQUEST 4

PART 1 – GENERAL

1.1. SUMMARY

A. Except in cases of emergency no changes in the Work required by the Contract Documents may be made by the General Contractor (GC) without having prior approval of the City Engineer or his representative.

B. The City may at any time, without invalidating the Contract and without Notice to Sureties, order changes in the Work by written Change Order (CO). Such changes may include additions and/or deletions.

C. Where the City desires to make changes in the Work through use of written Change Order Request (COR), the following procedures apply:

1. If requested by the City, the GC shall prepare and submit a detailed proposal, including all cost and time adjustments to which the GC believes it will be entitled if the change proposed is incorporated into the Contract. The City shall be under no legal obligation to issue a Change Order for such proposal.
2. The parties shall attempt in good faith to reach agreement on the adjustments needed to the Contract to properly incorporate the proposed change(s) into the Work. In the event that the parties agree on such adjustments, the City may issue a Change Order and incorporate such changes and agreed to adjustments, if any.
3. In some instances, it may be necessary for the City to authorize Work or direct changes in Work for which no final and binding agreement has been reached and for which unit prices are not applicable. In such cases the following shall apply.
    a. Upon written request by the City, the GC shall perform proposed Work
    b. The cost of such change may be determined in accordance with this specification.
    c. In the event agreement cannot be accomplished as contemplated herein, the City may authorize the Work to be performed by City forces or to hire others to complete the Work. Such action on the part of the City shall not be the basis of a claim by the GC for failure to allow it to perform the changed Work.

D. Where changes in the Work are made by the City through use of a force account basis, the GC shall as soon as practicable, and in no case later than ten (10) working days from the receipt of such order, unless another time period has been agreed to by both parties, give the City written Notice, stating:

1. The date, circumstances and source of the extra work; and,
2. The cost of performing extra work described by such Order, if any; and,
3. Effect of the order on the required completion date of the Project, if any.

E. The giving of each Notice by the GC as prescribed by this specification, shall be a requirement to liability of the City for payment of any additional costs incurred by the GC in implementing changes in the Work. Under this specification, no order or statement of the City shall be treated as a Change Order, or shall entitle the GC to an equitable adjustment of the terms of this Contract or damages for costs incurred by the GC on any activity for which the Notice was not given.

F. In the event Work is required due to an emergency as described in this specification the GC must request an equitable adjustment as soon as practicable, and in no case later than ten (10) working days of the commencement of such emergency.

G. All GC requests for equitable adjustment shall be submitted to the CPM per the specifications below. Such requests shall set forth with specificity the amount of and reason(s) for the proposed adjustment and shall be accompanied by supporting information and documents.

H. No adjustment of any kind shall be made to this Contract, if asserted by the GC for the first time, after the date of final payment.

I. This specification shall be used by the GC when preparing documentation for any COR to ensure each has been properly and completely filled out as required by the City of Madison.

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 26 13 Request for Information (RFI)

B. Section 01 26 46 Construction Bulletins (CB)

C. Section 01 26 63 Change Order (CO)

D. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public Works Construction".

1. Use the following link to access the Standard Specifications web page:
   http://www.cityofmadison.com/business/pw/specs.cfm
   a. Click on the "Part" chapter identified in the specification text. For example if the specification says "Refer to City of Madison Standard Specification **2**10.2" click the link for Part II, the Part II PDF will open.
   b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you to the referenced text.

1.3. DEFINITIONS AND STANDARDS

A. LABOR: The amount of time and cost associated with the performance of human effort for a defined scope of Work. Labor is further defined as follows:

1. Labor rate is the total rate which includes the base rate, taxes, insurance and fringe benefits required by agreement or custom.
2. Unit labor is the labor hours anticipated to install the corresponding unit of material.
3. Labor cost is the labor hours multiplied by the hourly labor rates.

B. MATERIAL: Actual material cost is the amount paid, or to be paid, by the GC for materials, supplies and equipment entering permanently into the Work, including cost of transportation and applicable taxes. The cost shall not exceed the usual and customary cost for such items available in the geographical area of the project

C. LARGE TOOLS AND MAJOR EQUIPMENT: Large tools and major equipment are those with an initial cost greater than $1,000, whether from the GC or other sources.

1. Tool and equipment use and time allowed is only for extra work associated with change orders.
   a. Rental Rate is the machine cost associated with operating a piece of equipment for a defined length of time (hour, day, week, or month) and shall not exceed the usual and customary amount for such items available in the geographical area of the project.
   b. Rental cost is the rental rate multiplied by the anticipated duration the equipment shall be required.
2. The GC shall provide a breakdown of all rental rates to indicate what items and costs are associated with the rate. Examples of items to include in the breakdown would be fuel consumption, lubrication, maintenance and other similar expenses but not including profit and overhead.
3. When large tools and equipment needed for Change Order work are not already at the job site, the actual cost to get the item there is also reimbursable.

D. BOND COST: The cost shall be calculated at 1% of the total proposed change order.

E. SUB-CONTRACTOR COSTS: Sub-contractor costs are for those labor, material, and equipment costs required by subcontracted specialties to complete the Change Order work including allowable markups as outlined within this specification.

F. OVERHEAD AND PROFIT Markup: The allowable markup percentage to a COR by the GC and Sub-contractors for overhead and profit. All of the following are expenses associated with overhead and profit and shall not be reimbursable as individual items on any COR:

1. CHANGE ORDER PREPARATION: All costs associated with the preparing and processing of the change order.
2. DESIGN, ESTIMATING, AND SUPERVISION: All such efforts, unless specifically requested by Owner as additional Work to be documented as a COR or portion thereof.
3. INSTALLATION LAYOUT: The layout required for the installation of material and equipment, and the installation design, is the responsibility of the GC.

4. SMALL TOOLS AND SUPPLIES: The cost of small hand tools with an initial cost of $1,000 or less, along with consumable supplies and expendable items such as drill bits, saw blades, gasoline, lubricating or cutting oil, and similar items.
5. GENERAL EXPENSE: The general expense, which is those items that are a specific job cost not associated with direct labor and material such as job trailers, foreman truck, and similar items.
6. RECORD DRAWINGS: The preparation of record or as-built drawings.
7. OTHER COSTS: Any miscellaneous cost not directly assessable to the execution of the Change Order including but not limited to the following:
    a. All association dues, assessments, and similar items.
    b. All education, training, and similar items.
    c. All drafting and/or engineering, unless specifically requested by Owner as additional Work to be documented as a Change Order proposal or portion thereof.
    d. All other items including but not limited to review, coordination, estimating and expediting, field and office supervision, administrative work, etc.

G. Contract Extension: The necessary amount of time to be added to the contract deadlines for the completion of a change order.

1.4. CONTRACT EXTENSION

A. The GC shall not assume that every COR will require a Contract Extension. If the GC feels a contract extension is warranted he/she shall provide sufficient scheduling information that shows how the COR being requested impacts the critical path of the project.

B. The City of Madison strongly encourages the GC to explore alternative methods and practices prior to submitting a COR with a request for contract extension.

1.5. OVERHEAD AND PROFIT MARKUP

A. Pursuant to the City of Madison Standard Specifications for Public Works Construction, Section 104.7, Extra Work, the following maximum allowable markups shall be strictly enforced on all change orders associated with the execution of this contract.
1. The total maximum overhead and profit shall not exceed fifteen percent (15%) of the total costs.
2. The total maximum overhead and profit shall be distributed as follows:
    a. For work performed and materials provided solely by the General Contractor, fifteen percent (15%) of the total costs.
    b. For work performed and materials provided solely by Sub-contractors and supervised by the General Contractor:
        i. Supervision of the GC, five percent (5%) of the total Sub-contractor cost.
        ii. Sub-contractors work and materials ten percent (10%) of the total Sub-contractor cost.

1.6. PERFORMANCE REQUIREMENTS

A. The GC shall become thoroughly familiar with this specification as it will identify procedures and expenses that are or are not allowed under the Change Order and Change Order Request process.

B. The GC shall be responsible for all of the following:
1. Carefully reviewing the CB that is associated with the COR.
2. Collecting required supporting documentation from all contractors that quantify the need for a COR.
    a. Labor hours and wage rates
    b. Material costs
    c. Equipment costs

C. The following shall apply to establishing prices for labor, materials, and equipment costs:
1. Where Work to be completed has previously been established by individual bid items in the contract bid proposal the GC shall use the unit bid prices previously established.
2. Where Work to be completed was bid as a Lump Sum without individual bid items the GC shall provide a breakdown of all labor, materials, equipment including unit rates and quantities required.

D. The completion date is determined by Owner. The schedule, however, is the responsibility of the GC. Time extensions for extra Work will be considered when a schedule analysis of the critical path shows that the Change Order Request places the Work beyond the completion date stated in the Contract.

1.7. QUALITY ASSURANCE

A. The GC shall be responsible for ensuring that all COR supporting documentation meets the following requirements prior to completing the COR form:

1. Sufficiently indicates labor, material, and other expenses related to completing the intent of the CB.
2. No costs exceed the usual and customary amount for such items available in the geographical area of the project, and no costs exceed those established under the contract.

B. The Project Engineer (PE), City Project Manager (CPM), other members of the consulting staff, and city staff shall review all COR requests to ensure that the intent of the CB will be met under the proposal of the COR or request additional information as necessary.

PART 2 – PRODUCTS

2.1. CHANGE ORDER REQUEST FORM

A. Will be provided by CPM.

PART 3 - EXECUTION

3.1. ESTABLISHING A CHANGE ORDER REQUEST

A. Upon receipt of a Construction Bulletin (CB) where the GC believes a significant change in contract scope warrants the submittal of a COR the GC shall do all of the following within ten (10) working days after receipt of the CB:
   1. Review the CB with all necessary trades and sub-contractors required by the change in scope.
      a. Additions or deletions to the contract scope shall be as directed within the CB.
      b. Additions or deletions of labor and materials shall be determined by the GC based on the directives of the CB.
   2. Assemble all required back-up documentation for additions and deletions of materials, labor and other related contract costs as previously outlined in this specification.
   3. Submit a COR request form.

B. Submitting a COR does not obligate the GC to complete the work associated with the COR nor does it obligate the Owner to approve the COR as a change to the contract.

3.2. CHANGE ORDER REQUEST REVIEW, APPROVAL, AND PROCESSING

A. The PE and CPM shall review all CORs submitted by the GC.
   1. Additional consulting staff and city staff having knowledge of the components of the COR shall review and advise the PE and CPM as to the accuracy of the items, quantities, and associated costs of the COR as directed by the CB.
   2. The CPM shall review the COR with the Owner.

B. If required the PE and CPM, shall in good faith, further negotiate the COR with the GC as necessary. All amendments to any COR shall be documented.

C. After final review of the COR the CPM and Owner may accept the COR.

D. The CPM shall prepare the COR in the form of an official Board of Public Works Change Order for final review and approval as outlined in Section 01 26 63 Change Order (CO).

E. The GC shall not act upon any accepted COR until it has received final approval through the Public Works process as an official CO to the Work unless instructed to do so by the CPM. Proceeding without the final approval of a fully authorized Change Order is at the GC's own risk.

3.3. EMERGENCY CHANGE ORDER REQUEST

A. In the event Work is required due to an emergency as described in the Contract Documents, the GC must request an equitable adjustment as soon as practicable, and in no case later than ten (10) working days of the commencement of such emergency.

B. The GC shall provide full documentation of all labor, materials and equipment used during the period of emergency as part of the COR submittal.

END OF SECTION

SECTION 01 26 63
CHANGE ORDER (CO)

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATION SECTIONS 1
1.3. BOARD OF PUBLIC WORKS PROCEDURE 1
PART 2 – PRODUCTS 1
2.1. CHANGE ORDER FORM 1
PART 3 - EXECUTION 1
3.1. PREPARATION OF THE CHANGE ORDER 2
3.2. EXECUTION OF THE CHANGE ORDER 2

PART 1 – GENERAL

1.1. SUMMARY

A. Except in cases of emergency, no changes in the Work required by the Contract Documents may be made by the General Contractor (GC) without having prior approval of the City Project Manager (CPM).

B. The City may at any time, without invalidating the Contract and without Notice to Sureties, order changes in the Work by written Change Order. Such changes may include additions and/or deletions.

C. The Change Order (CO) is a Board of Public Works (BPW) form that is reviewed and approved by a specific process.

D. The CO form is typically made up of multiple Change Order Requests (CORs) and/or Bid Items as appropriate depending on the type of project and how the contract was bid.

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 26 13 Request for Information (RFI)

B. Section 01 26 46 Construction Bulletin (CB)

C. Section 01 26 63 Change Order Request (COR)

1.3. BOARD OF PUBLIC WORKS PROCEDURE

A. The Board of Public Works has a very explicit procedure for the review and approval of all change orders associated with any Public Works Contract as follows:

1. The Supervisory Chain of the CPM shall review and approve any CO under $10,000 provided it does not include either of the following:
   a. The CO does not request a time extension to the contract.
   b. The CO does not cause the contract contingency sum to be exceeded.
2. The Board of Public Works shall review and approve any CO that requires any of the following:
   a. Any CO over $10,000.
   b. Any CO requesting a time extension to the contract regardless of the monetary value of the CO.
   c. Any CO that that causes the contract contingency sum to be exceeded.

B. The Board of Public Works generally meets every other week and only once in August and December. The GC is cautioned that, under normal scheduling, a CO requiring a BPW review will take a minimum of two (2) weeks to achieve final approval.

1. The City shall not be responsible for additional delays to the Work caused by the scheduling constraints of the Board of Public Works.

C. *SPECIAL NOTE:* The GC is cautioned to never proceed unless told to do so by the CPM. Only in rare instances may the CPM give a written notice to proceed on a COR without an approved CO. Proceeding without the written notice of the CPM or an approved CO is at the GC's own risk.

PART 2 – PRODUCTS

2.1. CHANGE ORDER FORM

A. Provided by CPM.

PART 3 - EXECUTION

3.1. PREPARATION OF THE CHANGE ORDER

A. The CPM shall prepare the required CO as follows:
   1. Provide information for all contract information.
   2. Provide a general description of the items described within the change order.
   3. Provide detailed information for each Item on the CO form. At the option of the CPM he/she may include multiple Change Order Requests each as their own item.
   4. Provide required pricing and accounting information as needed for the item.
   5. Insert attachments of contractor/architect provided information that clarifies and quantifies the CO. Attachments may include but not be limited to material lists, estimated labor, revised details or specifications, and other documents that may be related to the requested change.
   6. Save the final version of the completed CO.

3.2. EXECUTION OF THE CHANGE ORDER

A. The GC shall do the following:
   1. Review all items on the CO form.
   2. The GC shall notify the CPM immediately of any errors or discrepancies on the form and shall not sign or save it.
      a. The CPM shall make any corrections as needed, re-save the form, and notify the GC.
   3. If/when the GC concurs with the CO form as drafted the GC shall digitally sign the form.

B. The CPM shall do the following:
   1. Monitor the review process
   2. Ensure that proper BPW procedures are executed as needed by the CO approval process.
      a. Schedule the CO on the next available BPW agenda if required.
         i. Attend the BPW meeting to speak on the CO to board members and answer questions.
         ii. The GC and/or PE may be required to attend the BPW meeting to address specific information as it relates to the Work and/or materials associated with the CO.
   3. Monitor final approval and distribution of the CO.
   4. Notify the GC that the CO has been completed.
   5. Ensure that the CO is posted to the next Public Works payment schedule.
   6. Verify that the GC's next Progress Payment-Schedule of Values show the CO as part of the contract sum.

C. Upon final approval of the CO the GC may proceed with executing the Work associated with the CO.

END OF SECTION

SECTION 01 29 73
SCHEDULE OF VALUES

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. RELATED DOCUMENTS 1
1.4. BASIS OF VALUES 1
PART 2 – PRODUCTS – THIS SECTION NOT USED 2
PART 3 - EXECUTION 2
3.1. AIA DOCUMENT G702 – APPLICATION AND CERTIFICATE FOR PAYMENT 2
3.2. AIA DOCUMENT G703 – CONTINUATION SHEET 2
3.3. INITIAL SCHEDULE OF VALUES SUBMITTAL 2
3.4. SOV FOR PROGRESS PAYMENT REQUESTS 3

PART 1 – GENERAL

1.1. SUMMARY

A. The Schedule of Values (SOV) is a Contractor provided statement that allocates portions of the total contract sum to various portions of the contracted work and shall be the basis for reviewing the Contractors Progress Payment Requests.

B. AIA Document G702 – Application and Certificate for Payment and AIA Document G703 Continuation Sheet shall be filled out in sufficient detail to be used as a guideline in determining work completed and materials stored on site when verifying Progress Payment Requests.

C. The General Contractor shall be responsible for filling out, updating, and providing these work sheets with each Progress Payment Request.

1.2. RELATED SPECIFICATIONS

A. Section 01 26 63 Change Order (CO)
B. Section 01 29 76 Progress Payment Procedures
C. Section 01 32 26 Construction Progress Reporting
D. Section 01 33 23 Submittals
E. Parts of this specification will reference articles within “The City of Madison Standard Specifications for Public Works Construction”.
   1. Use the following link to access the Standard Specifications web page:
      http://www.cityofmadison.com/business/pw/specs.cfm
      a. Click on the “Part” chapter identified in the specification text. For example if the specification says “Refer to City of Madison Standard Specification **2**10.2” click the link for Part II, the Part II PDF will open.
      b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you to the referenced text.

1.3. RELATED DOCUMENTS

A. The following documents shall be used as the basis for initiating and maintaining the SOV worksheets throughout the execution of this contract.
   1. Drawing documents and specifications (including general provisions) as provided with the bid set documents and any published addendums.
   2. Documents associated with revisions or clarifications to number 1 above after awarding of the contract, including but not limited to:
      a. Construction Bulletins
      b. Request for Information
      c. Approved Change Orders
   3. The latest daily/weekly Construction Progress Report
   4. Other specifications as identified in Section 1.2 above

1.4. BASIS OF VALUES

A. The Contractor shall provide a breakdown of the Contract Sum in sufficient detail to assist the Engineer and City Project Manager in evaluating Progress Payment Requests.

B. The total sum of all items shall equal the Contract Sum.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. AIA DOCUMENT G702 – APPLICATION AND CERTIFICATE FOR PAYMENT

A. The Contractor shall use AIA Document G-702 Application and Certificate for Payment with each Progress Payment Request.

B. Completely fill out the Project Information section as follows:
1. TO OWNER; provide all owner related information as provided in the contract documents.
2. PROJECT; provide all contract information including contract number, title and address.
3. FROM CONTRACTOR; provide all contractor related information.
4. VIA ARCHITECT; provide all the architect's related information including the architect's project reference number if different from the owners.
5. Indicate the current APPLICATION NO., PERIOD TO date, and CONTRACT DATE.

C. Completely fill out the Contractors Application for Payment section.
1. Fill out lines 1 through 9 to reflect the current status of the contract through the payment date being requested.
2. The City of Madison calculates retainage on Public Works Contracts as follows:
   a. In general, across the duration of the contract, 2.5% of the total contract sum, including change orders, is withheld for retainage as referenced from the City of Madison Standard Specification 110.2:
      i. Beginning with Progress Payment 1, 5% retainage will be withheld until such time that 50% of the total contract sum has been paid out.
      ii. No additional retainage will be withheld after 50% of the total contract sum has been paid, unless additional change orders have been approved after the 50% milestone has been reached. Per City of Madison Standard Specification 110.2, additional retainage up to 10%, may be held in the event there are holds placed by Affirmative Action or liquidated damages by BPW.
      iii. Retainage for additional change orders after the 50% milestone will be withheld at the rate of 2.5% of the total cost of the change order.
      iv. Retainage is based on the change orders posted to the City's contract worksheet at the time the progress payment is processed.

D. Completely fill out the Change Order Summary section. Only change orders that have been finalized and posted to the City of Madison's Application for Partial Payment worksheet may be itemized into the SOV documents.

E. The Contractor shall sign and date the application and it shall be properly notarized.

F. The Contractor shall not fill in any information in the Architects Certificate for Payment section.

3.2. AIA DOCUMENT G703 – CONTINUATION SHEET

A. The Contractor shall use AIA Document G-703 Continuation Sheet to itemize his/her SOV for this contract. Provide additional sheets as necessary.

B. Provide information in Column A (Item No.), Column B (Description of Work), and Column C (Scheduled Value) by any method that allocates portions of the total contract sum to various portions of the contracted work. Possible methods include combinations of the following:
1. By division of work
2. By contractor, sub-contractor, sub sub-contractor
3. By specialty item or group
4. Other methods of breakdown as may be requested by the City Project Manager or City Construction Manager at the pre-construction meeting.

C. Provide total cost of the item/description of work including proportionate shares of profit and overhead related to the item.

3.3. INITIAL SCHEDULE OF VALUES SUBMITTAL

A. The Contractor shall provide his/her initial SOV to the CPM no later than five (5) working days after the Pre-construction Meeting.
1. The initial SOV shall provide information in Column A (Item No.), Column B (Description of Work), and Column C (Scheduled Value) only.

2. The level of detail shall be as described in section 3.2 above.

B. The Project Engineer (PE) and the City Project Manager (CPM) shall review the SOV as any other submittal and may require modifications to reflect additional detail as necessary.

C. The Contractor shall resubmit the SOV as necessary until such time as the PE and CPM have sufficient detail for assessing and approving future Progress Payment Applications.

D. Progress Payment Application 1 will not be processed until such time as the Contractor has met this requirement regardless of the amount of work completed per the application.

3.4. SOV FOR PROGRESS PAYMENT REQUESTS

A. The Contractor shall update the initial SOV with each Progress Payment Application as follows:

1. Initial items and values as part of Section 3.3 above will not be adjusted once the original Schedule of Values submittal has been approved.
2. Change orders shall be added as additional items and values at the bottom of the SOV as they become approved and posted to the City's contract worksheet. The value for each change order shall be the value indicated on the SOV and shall stand alone. Values shall not be split out or combined with other existing items with similar work descriptions on the original SOV.
3. Fill out Columns D, E, F and G to properly reflect the work completed and materials received since the last Progress Payment Application.
4. Only materials delivered and stored on the project site may be reflected on SOV progress updates.

B. Provide updated G702 and G703 sheets with each Progress Payment application.

C. See Specification 01 29 76 Progress Payment Procedures for additional information on submitting Progress Payment Applications.

END OF SECTION

SECTION 01 29 76
PROGRESS PAYMENT PROCEDURES

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. RELATED DOCUMENTS 1
1.4. PROGRESS PAYMENT MILESTONES 1
1.5. PROGRESS PAYMENT SUBMITTAL 4
PART 2 - PRODUCTS - THIS SECTION NOT USED 4
PART 3 - EXECUTION 4
3.1. GENERAL CONTRACTOR PROCEDURE 4
3.2. PROJECT ARCHITECT PROCEDURE 5
3.3. CITY PROJECT MANAGER PROCEDURE 5

PART 1 – GENERAL

1.1. SUMMARY

A. The General Contractor (GC) shall review this and all related specifications prior to submitting progress payment requests.

B. Progress payment requests (Partial Payment-PP) for this contract shall be submitted digitally by the GC to the CPM.

C. The Project Engineer (PE) and City Project Manager (CPM) shall review and amend or approve the PP as needed.

D. After approval of the PP by the CPM, he/she shall forward the PP to the appropriate agencies for BPW contractural review and payment processing.

1.2. RELATED SPECIFICATIONS

A.	Section 01 26 63	Change Order (CO)
B.	Section 01 29 73	Schedule of Values
C.	Section 01 31 19	Progress Meetings
D.	Section 01 32 26	Construction Progress Reporting
E.	Section 01 33 23	Submittals
F.	Section 01 77 00	Closeout Procedures
G.	Section 01 78 23	Operation and Maintenance Data
H.	Section 01 78 36	Warranties
I.	Section 01 78 39	As-Built Drawings
J.	Section 01 79 00	Demonstration and Training

1.3. RELATED DOCUMENTS

A. The following documents shall be used when evaluating PP requests.

1. Construction progress reports filed since the last payment request.
2. Contractors Schedule of Values as updated from the last payment request. See Specification 01 29 73.
3. Any document that may be required to be submitted for review and approval, as noted by the specifications listed in Section 1.2 above, or the Progress Payment Milestone Schedule in Section 1.4 below, to achieve a required bench mark of contract progression or contract requirement.

1.4. PROGRESS PAYMENT MILESTONES

A. City Engineering-Facility Management has developed the Project Payment Milestone Schedule (Section 1.4 below) to assist the GC in providing required construction specific documentation and general contractural documentation in a timely manner.

B. The Progress Payment Milestone Schedule is not an all inclusive list. Multiple agencies review progress payment requests and contract closeout requests. Missing, incomplete, or incorrect documentation for any agency may be a cause for not processing progress payments. It shall be the sole responsibility of the Contractor for providing documentation as required or requested to the appropriate agencies.

C. The milestone schedule is based on the contract total sum and shall be valid for most contracts. Milestone submittals will be required with whatever progress payment hits the percentage of contract total indicated in the schedule.

D. The CPM shall review the milestone schedule with each progress payment request and at his/her option may elect to hold processing the progress payment until such time as the contractor has met the requirements for providing construction specific documentation.

E. It shall be the General Contractors responsibility to comply with all BPW Contract Administration requirements and related deadlines as outlined in the Award Letter, Award Checklist, and Start Work Letter.

Progress Payment (PP) Milestone Schedule		
Milestone Description	***Due Before***	***Remarks***
BPW Contract Administration Documentation • Workforce profiles • Best Value Contracting Documentation • Sub-contractors prequalification approval & Affirmative Action plans • Other as may be required	PP-1, or start work as applicable	• For GC and Sub-contractors before PP-1 regardless of scheduling • Sub-contractors (if applicable), due 10 days before they may start work • Sub-contractors (if applicable), due 10 days before they may start work
Required Construction Submittals/Administrative Documents • Contractors Project Directory • Schedule of Values • Submittals Schedule • • Closeout Requirement Checklist • Warranty Checklist	PP-1	References • Specification 01 31 23 • Specification 01 29 73 • Specification 01 32 19 • • Specification 01 77 00 • Specification 01 78 36
Construction Progress Milestones • Early submittals, per submittal schedule • Detailed Contract Schedules	PP-1	See specifications for specific requirements • Specification 01 32 19, Examples: concrete mix, structural steel, products with long lead times • See Specification 01 32 16
General Construction Progress Requirements are all up to date • Progress Schedules • Submittals/Re-submittals (ongoing) • Schedule of Values • Progress Reporting • • • QMOs are being addressed and closed • Progress Cleaning • As-Built Drawings	Each future PP	Verified with each Progress Payment Request • Specification 01 32 16 • Specification 01 33 23 • Specification 01 29 73 • Specification 01 32 26 • • • Specification 01 45 16 • Specification 01 74 13 • Specification 01 78 39
*** All of the above are updated as required**		
BPW Contract Administration Documentation • Weekly payroll reports • Best Value Contracting Reports • SBE Reports	25% CT or PP 2	See 1.4.E above. *This progress payment will be with held by BPW for any missing contractural documentation.*
Construction Progress Milestones • Construction/Contract Closeout Meeting #1 • Submittals/Re-submittals complete	70% CT	• Specification 01 31 19 • Specification 01 33 23
Operation and Maintenance (O & M) drafts	60% CT	Specification 01 78 23

Progress Payment (PP) Milestone Schedule		
Milestone Description	***Due Before***	***Remarks***
BPW Contract Administration Documentation • Request Finalization Review from BPW	80% CT	This is a recommendation to the GC and is not a requirement of this PP. • Specification 01 77 00
Construction Progress Milestones • Operation and Maintenance (O & M) finals, accepted • All major QMO issues resolved • As-Built Drawings, Division Trades ready for GC review	80% CT	• Specification 01 78 23 • Specification 01 45 16; Items that could prevent occupancy • Specification 01 78 39
All of the following shall be completed for this PP: • Regulatory Inspections completed • All QMO reports closed • Demonstration and Training completed • Attic Stock completed • Final Cleaning	90% CT	Contractor to determine the proper order of completion: • Governing ordinances and statutes • Specification 01 45 16 • Specification 01 79 00 • Specification 01 78 43 • Specification 01 74 13
Construction Closeout Procedures: • Letter of Substantial Compliance sent to BI and DHS as needed • Certificate of Occupancy issued • As-Built Drawings, finals, accepted • City Letter of Substantial Completion • Warranty letters dated and issued	100% CT	See Specification 01 77 00 • Generated/Signed by the Engineer • Building Inspection • Specification 01 78 39 • Signed by the City Engineer • Specification 01 78 36
*** Completion of this begins the one year warranty.**		
BPW Contract Administration Documentation Contract Closeout Procedures • Construction Closeout has been completed • Contractor requests final payment of retainage • All BPW contractural requirements are verified	Final	See Specification 01 77 00 • Contractor must provide any missing BPW Contractural Documentation
*** Completion of this closes the contract but not the warranty period/bond.**		
NOTE: **CT = Contract Total less held retainage**		

1.5. PROGRESS PAYMENT SUBMITTAL

A. Each progress payment submittal shall be:
   1. Digital in PDF format
   2. PDF shall be in color
   3. Uploaded to the appropriate Project Management library and properly named per the tutorial instructions provided to the awarded contractor.

B. Submit all required construction progress documentation

C. In general the following shall apply to all PP requests:
   1. Materials or products:
      a. On order, being shipped, etc. may not be invoiced.
      b. Received and stored on the project site may be invoiced.

c. Being manufactured off site at any location may not be invoiced (example: cabinetry, ductwork, etc.)
d. Completed products stored off site locally waiting for delivery to the project site may be invoiced with prior approval by the CPM. All of the following conditions must be met to be allowed:
i. Items must be visually inspected by CPM to verify product is complete.
ii. Item must be stored inside a compatible structure and the structure and contents must be insured.
iii. Contractor is responsible for condition until installation is completed.
2. All labor and equipment, including rental time for the current progress period may be invoiced.
3. Only completed installations may be invoiced to 100% based on the Schedule of Values.

D. DO NOT submit BPW Contract Administration Documentation for review with Progress Payment Requests, submit them directly to the correct agency and in the correct format as instructed from information in your BPW Contract Award Packet instructions.

PART 2 - PRODUCTS - THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL CONTRACTOR PROCEDURE

A. The GC shall provide an updated version of his/her schedule of values (AIA documents G702 & G 703) with each PP request.
1. The AIA - Application and Certificate for Payment (G702) shall be properly filled out and prepared for the Architects review. See specification 01 29 73, Schedule of Values for more information.
2. The AIA - Continuation sheets (G703) shall be properly filled out and indicate the dollar value of the completed work to date for each item on the form. See specification 01 29 73, Schedule of Values for more information.
a. The GC shall subtotal the work completed to date for all of the original Schedule of Value items.
b. Divide the sub total of work completed by the Original Contract Total to obtain a percentage complete of the original Lump Sum Bid. This percentage may be taken out to five (5) decimal places (round fifth place up or down as needed).
i. Example: $5,192.55 of completed work divided by $10,000 original Contract Total = 0.519255, round this to 0.51926
c. Write the percentage in Column 10 on the City Tabular Sheet for the original lump sum bid item in RED ink.
3. Ensure that any newly posted change orders from the City of Madison provided tabulation sheet have been entered on the G703 continuation sheets. Repeat steps a thru c above for each change order on the schedule of values and the City Tabular Sheet.

B. The GC shall fill out the City of Madison Application and Certificate of Payment cover sheet as follows:
1. The GC shall not change any pre-printed information and shall not write in the box that indicates previous progress payments.
2. The GC shall sign and date the form where indicated.
3. The GC shall provide the dates from and to for the PP being requested.
4. The GC shall provide the list of all contractors/sub-contractors that were actively working during the dates indicated above.
a. All contractors/sub-contractors named must be in compliance with all City requirements (Pre-qualified, Affirmative Action Plan on file, etc). The PP will be held and not processed by the City of Madison until all contractors/sub-contractors are in compliance.
b. Do not list the names of suppliers or manufacturers, doing so will slow down processing and require a re-submittal of the paperwork.

C. The General Contractor (GC) shall scan all of the documents listed below in the order shown, save the scan as a single PDF file for each PP request.
1. City cover sheet – Application and Certificate for Payment
2. City tabulation sheet(s)
3. AIA G702 - Application and Certificate for Payment
4. AIA G703 - Continuation Sheet(s)
5. Any miscellaneous documents that may be requested as backup documentation for the pay request.
a. Lien waivers are not required and shall not be submitted.
b. Do not provide contractural administrative documents such as pay reports with pay requests.

c. Do not supply progress deliverables with pay requests.

3.2. PROJECT ENGINEER PROCEDURE

A. The PE shall review the AIA-continuation sheets provided by the GC to determine if the Schedule of Values accurately reflects the work completed for the inclusive dates indicated.

B. The PE shall advise the CPM of any discrepancies in the schedule of values.

C. The PE shall work with the GC and the CPM to resolve any issues prior to signing the AIA - Application and Certificate for Payment.

D. When verified, the PE shall digitally sign the original PDF version of the AIA - Application and Certificate for Payment.

3.3. CITY PROJECT MANAGER PROCEDURE

A. The CPM shall review all documents submitted by the GC and work with the PE to ensure the schedule of values accurately reflects the work completed to date.

B. The CPM may elect to hold processing of any progress payment pending submittal of required progress payment milestones.

C. When verified, the CPM shall digitally sign the City Cover Sheet and forward the required documentation to the appropriate City agencies for further processing of the payment request.

END OF SECTION

SECTION 01 31 13
PROJECT COORDINATION

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. GENERAL REQUIREMENTS 1
1.4. GENERAL CONTRACTOR PERFORMANCE REQUIREMENTS 2
1.5. SUB-CONTRACTOR PERFORMANCE REQUIREMENTS 2
PART 2 – PRODUCTS – THIS SECTION NOT USED 3
PART 3 – EXECUTION – THIS SECTION NOT USED 3

PART 1 – GENERAL

1.1. SUMMARY

A. Project Coordination covers many areas within the execution of the Contract Documents and the requirements of proper coordination are the applicable to all contractors executing the Work of this contract.

B. This specification provides general information regarding project coordination for the General Contractor and all Sub-contractors. All contractors shall be familiar with project coordination requirements and responsibilities that may be defined in other specification within these Contract Documents.

C. The General Contractor shall at all times be responsible for the project, project site, and execution of the Contract Documents.

1.2. RELATED SPECIFICATIONS

A.	Section 01 29 76	Progress Payment Procedures
B.	Section 01 31 19	Progress Meetings
C.	Section 01 32 16	Construction Progress Schedules
D.	Section 01 32 19	Submittals Schedule
E.	Section 01 33 23	Submittals
H.	Section 01 60 00	Product Requirements
I.	Section 01 77 00	Closeout Procedures, including all specifications referenced therein

1.3. GENERAL REQUIREMENTS

A. The following general requirements shall applicable to all contractors:

1. Cooperate with the Owner, all authorized Owner Representatives, Project Engineer and all consultants of the Owner.
2. Materials, products, and equipment shall be new, as specified and to industry standards except where otherwise noted.
3. Labor and workmanship shall be of a high quality and to industry standards.

B. Existing conditions:

1. Verify all existing conditions noted in the contract documents with actual filed locations. Verify dimensions, sizes and locations, of structural, equipment, mechanical and utility components.
2. Report any inconsistencies, errors, omissions, or code violations in writing to the General Contractor (GC) immediately.
3. Annotate any inconsistencies, errors, omissions on the GC As-Built record drawings immediately for future reference.

C. Contract Documents:

1. The Contract Documents are intended to include everything necessary to perform the work. Every item required may not be specifically mentioned, shown, or detailed.
   a. Except where specifically stated all systems and equipment shall be complete, installed, and fully operable.
   b. If a conflict exists within the contract documents the contractor shall furnish the item, system, or workmanship of the highest quality, largest, largest quantity, or most closely fits the intent of the contract documents.
   c. Manufacturers recommended installation details shall be verified and used prior to installation of products and equipment so as to not void warranties.

D. Errors and Omissions

1. No Contractor shall take any advantage of any apparent error or omission in the construction documents.

2. The City of Madison shall be permitted to make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the construction documents.

E. Owners Representatives

1. All contractors shall be familiar with various Owner Representatives having Quality Management responsibilities for the duration of this project including but not limited to the following:
   a. Project Engineer, responsible for all decisions affecting the code compliance and design intent of the construction documents.
   b. c. Owner, the designated representative of the City Agency that will occupy the project upon completion.
   d. City Project Manager, responsible for all day to day decisions regarding the execution and performance of this Public Works Contract.
   e. Consulting City Staff, responsible for providing consulting services to the Project Engineer, Owner, and City Project Manager, also responsible for Quality Management of the construction documents.
2. Owner Representatives shall be attending progress meetings, pre-installation meetings, performing or being present for final testing and acceptance and quality management reporting during the execution of the contract documents as outlined in other specifications.

1.4. GENERAL CONTRACTOR PERFORMANCE REQUIREMENTS

A. Assume the responsibility for all Work specified in the Contract Documents except where specifically identified to be performed by the Owner or other contractor separately hired by the Owner.
1. Coordinate all work by Owner, equipment provided Owner, or contractor hired by the Owner into the project schedule.

B. Provide all construction management responsibilities as specified in other Division 1 specifications including but not limited to:
1. Scheduling of work
2. Coordination of work between other Trades and Sub-contractors
3. Construction administration and management
4. Site layout, cleanliness, and protection of completed work/stored materials
5. Waste Management
6. Quality Assurance and Quality Control

C. Use Diggers Hotline and private utility locating companies to accurately locate all public and private utilities on the property as needed. The GC is responsible for any repair or replacement to any public or private utility damaged during the execution of the Work

D. Report any inconsistencies, errors, omissions, or code violations in writing to the Project Engineer immediately. Failure to report inconsistencies prior to beginning work shall indicate that the GC accepted all existing conditions.

E. The GC shall be responsible for assigning work and related responsibilities where the Contract Documents may not clearly state who is responsible for providing the work, material, or product.

F. Provide construction management oversight of all items described in Section 1.5 below.

1.5. SUB-CONTRACTOR PERFORMANCE REQUIREMENTS

A. Be familiar with all of the contract documents as they pertain to your Work, adjacent work and the overall progress of the project.
1. All Sub-contractors shall be familiar with all Division 1 specifications as they may apply to progress, progress payments, quality control construction management, and closeout of the contract.

B. Coordinate your Work with all adjacent work and existing conditions.
1. Perform your work in proper sequence according to the GC's project schedule and in relation to the work of other trades.
2. Notify other sub-contractors and trades whose work may be connected to, combined with, or influenced by your work and allow them reasonable time and access to complete their work.
3. Join your work to the work of others in accordance with the intent of the Contract Documents.
4. Order materials and schedule deliveries to facilitate the general progress of the Work.

C. Cooperate with all other trades to facilitate the general progress of the work. This shall include providing every reasonable opportunity for the installation of work by others and the storage of their materials and equipment.
1. In no case shall any contractor exclude from the premises or work any Sub-contractor or their employees.
2. In no case shall any contractor interfere with the execution or installation of Work by any other Sub-contractor or their employees.

D. Arrange your work, equipment, and materials and dispose of your construction waste so as to not interfere with the work or storage of materials of others.

E. Coordinate all work as indicated during pre-installation meetings with Owner Representatives, the GC and other trades. Any work improperly coordinated shall be relocated as designated by the Owner Representative at no additional cost to the City.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 – EXECUTION – THIS SECTION NOT USED

END OF SECTION

SECTION 01 31 19
PROJECT MEETINGS

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. PROJECT MEETING TYPES 1
1.4. GENERAL REQUIREMENTS 1
PART 2 – PRODUCTS – NOT USED IN THIS SECTION 1
PART 3 - EXECUTION 1
3.1. PRECONSTRUCTION MEETING 1
3.2. CONSTRUCTION PROGRESS MEETINGS 2
3.3. PRE-INSTALLATION MEETINGS 2
3.4 PRE-CONTRACT CLOSEOUT MEETINGS 2
3.5 OTHER SPECIAL MEETINGS 3

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to identify various project related meetings and the responsible parties for scheduling, agendas, minutes, and required attendance.

B. This specification is not intended to be inclusive of all meeting types or a complete list of required meetings.

C. This specification is not intended to cover planning and execution meetings between the General Contractor (GC) and his/her sub-contractors.

1.2. RELATED SPECIFICATIONS

A. 01 32 16 Construction Progress Schedules

1.3. PROJECT MEETING TYPES

A. The following project meeting types may be used but not limited to the following

1. Preconstruction Meeting
2. Construction Progress Meetings
3. Pre-installation Meetings (including mock-up review meetings)
4. Weekly Trade Meetings
5. Special Meetings

1.4. GENERAL REQUIREMENTS

A. Representatives of Contractors, Subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

PART 2 – PRODUCTS – NOT USED IN THIS SECTION

PART 3 - EXECUTION

3.1. PRECONSTRUCTION MEETING

A. After execution of the Contract the City Project Manager (CPM) shall schedule and conduct the Preconstruction Meeting at the Owner's facilities. The CPM shall coordinate the meeting agenda with the Project Engineer and the GC Project Manager.

B. The CPM shall be responsible for the final agenda.

C. The CPM and Project Engineer shall take notes on the meeting and post completed meeting minutes.

D. Attendance shall be required by all of the following:

1. Owner Representative(s)
2. Engineer and applicable sub consultant(s)
3. General Contractor and applicable subcontractors and suppliers
4. City Quality Management Staff
5. Others, as may be invited for particular agenda items.

E. Topics of the Preconstruction Meeting shall include but not be limited to the following:

1. Staff and contractor introductions

2. Completion Date
3. BPW Administrative requirements and due outs
   a. Small Business Enterprise (SBE) (if applicable)
   b. Certified payroll forms
   c. Workforce profiles
   d. Best Value Contracting (BVC)
4. General Facility Management Division 1 Specifications, including:
   a. Section 01 29 76 Progress Payment Procedures
   b. Section 01 45 16 Field Quality Control Procedures
   c. Section 01 77 00 Closeout Procedures
5. Project Meeting scheduling
   a. Section 01 31 19 Project Meetings
6. Construction Schedule

3.2. CONSTRUCTION PROGRESS MEETINGS

A. In general all of the following shall apply:
   1. Representatives of Contractors, Subcontractors, and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
   2. The attendance shall be from the required attendance list in 3.1.D. above.

B. The General Contractor Project Manager (GCPM) shall:
   1. Schedule and conduct all construction progress meetings biweekly or more frequently as required.
   2. Prepare agenda for meetings including, but not limited to the following:
      a. Safety
      b. Current Schedule, including review of the critical path and 6-week look ahead schedule
      c. Status of project related documentation (Submittals, RFIs, CBs, etc.)
      d. Quality Observation Log and status of correction of deficient items
      e. Project questions and issues from meeting attendees
      f. BPW Administration Check
      g. Other as needed
      h. Status of CORs and COs to be reviewed outside the standard progress meeting time.
   3. Make physical arrangements for meetings.
   4. GCPM to post meeting agendas no less than two (2) working days prior to the scheduled meeting. Notify all required attendees, applicable parties to the contract, and others affected of the posted meeting agenda.
   5. Preside at meetings.
   6. Route a meeting attendance roster for attendees to sign-in on.
   7. GCPM to record the minutes of the meeting; include significant proceedings and decisions. Post meeting minutes no more than two (2) working days after the completed meeting. Meeting minutes shall include a scanned copy of the attendance sign-in sheet. Notify all required meeting attendees, applicable parties to the contract, and others affected by decisions made at the meetings.
   8. The above requirements do not apply to GC/sub-contractor meetings.

3.3. PRE-INSTALLATION MEETINGS

A. The GCPM shall schedule and conduct all pre-installation meetings, including mockup reviews, before each construction activity that requires coordination with other trades.

B. The GCPM shall be responsible for the final agenda and meeting minutes.

C. The GCPM will work with all concerned parties to resolve issues as needed and submit RFI's if necessary.

D. Required attendance shall be from the list in 3.1.D. above and shall be personnel having a stake in the outcome of the installation or knowledge of the system being installed.

E. In the event the Contractor installs equipment or materials without a pre-installation meeting the Contractor shall be solely responsible for removing, replacing, repositioning materials and equipment as instructed by the Project Engineer or City Project Manager at no additional cost to the City.

3.4 PRE-CONTRACT CLOSEOUT MEETINGS

A. One (1) Pre-contract Closeout Meetings shall be held to review the closeout procedures, requirements, and contract deliverables.
   1. Pre-contract Closeout Meeting #1 shall be scheduled prior to the 80% Progress Payment Request is being requested. This meeting shall discuss, but not be limited to, the status of scheduling final regulatory inspections,

cleaning up outstanding QMO's, demonstration and training, O&M manuals, attic stock; and finalization review of payroll and other related documents.

B. The GCPM shall schedule, coordinate, and make physical arrangements for both meetings.

C. All of the following shall be required to attend both meetings:

1. The GCPM and the GC Field superintendent
2. All Subcontractor Project Managers regardless of the current status of their work.
   a. The GCPM may excuse a Subcontractor PM if he is confident that all contractural requirements for closeout by the subcontractor have been completed and/or delivered to the GCPM. The list of attendees shall be reviewed and agreed upon with CPM ahead of the meeting.
   b. At the option of these project managers the field supervisors may also attend.
3. The Project Engineer and at least one design consultant from each discipline represented by the plans and specifications to address open QMOs, final tests, reports, etc.
4. The Owner
5. The CPM
6. Quality Management staff as needed to address open QMOs, final tests, reports, etc.

D. The CPM shall publish an agenda and chair the meeting.

3.5 OTHER SPECIAL MEETINGS

A. The Contractor shall schedule special meetings per the requirements of these specifications.

B. Special meetings may include but are not limited to the following:

2. Equipment start up meetings
3. Testing and balancing meetings
5. Other meetings as necessitated by the contract documents

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULES

PART 1 – GENERAL 1
1.1. SCOPE 1
1.2. RELATED SPECIFICATIONS 1
PART 2 – PRODUCTS – THIS SECTION NOT USED 1
PART 3 - EXECUTION 1
3.1. OVERALL PROJECT SCHEDULE (OPS) 1

PART 1 – GENERAL

1.1. SCOPE

A. This specification is to identify various project related schedules associated with indicating construction progress and outlook. The following schedules are the responsibility of the General Contractor (GC).
   1. Overall Project Schedule

B. This specification is not intended to include internal schedules generated by the contractors during their planning and execution of the contract.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 31 19 Progress Meetings
C. Section 01 74 13 Progress Cleaning
D. Section 01 77 00 Closeout Procedures
E. Section 01 78 23 Operation and Maintenance Data
F. Section 01 78 36 Warranties
G. Section 01 78 39 As-Built Drawings
H. Section 01 79 00 Demonstration and Training
I. Other specification within the construction documents that may indicate the need for scheduling any event with Owner, Project Engineer, Owner Representatives, including any owner provided equipment.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. OVERALL PROJECT SCHEDULE (OPS)

A. The GC shall prepare an OPS that covers the duration of the contract from the pre-construction meeting through the end of construction to final contract closeout.
   1. The GC shall review Specification 01 77 00 Closeout Procedures to become familiar with definitions, differences, and requirements for closing out the construction and contract including the association with progress payments.

B. The GC shall provide copies and lead a discussion on the OPS during the pre-construction meeting.
C. The OPS shall indicate start and end dates of each task associated with the project.
D. The OPS shall clearly indicate the critical path of the project.
E. The GC shall update the OPS as often as necessary during the duration of the project. Updates will be briefed as needed during progress meetings.

END OF SECTION

SECTION 01 33 23
SUBMITTALS

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED REFERENCES 1
1.3. SUBMITTAL REQUIREMENTS 1
PART 2 – PRODUCTS – THIS SECTION NOT USED 2
PART 3 - EXECUTION 2
3.1. GENERAL CONTRACTORS PROCEDURES 2
3.2. SUBMITTAL REVIEW 2
3.3. PROJECT ENGINEERS REVIEW 2

PART 1 – GENERAL

1.1. SUMMARY

A. The General Contractor (GC) shall be responsible for providing submittals for review of all contractors and sub-contractors as designated in the construction documents. Submittals shall include but not be limited to all of the following:
   1. Equipment specified and pre-approved in the specification; to ensure quality, construction, and performance specifications have not changed since final design.
   2. Equipment specified by performance in the specification; to ensure that the intended quality, construction, and performance specified is met by the selected material or product.
   3. Shop, piece, erection, and other such drawings as indicated in the specifications to ensure all structural, dimensional, and assembly requirements are being met.
   4. Submittals indicating installation sequencing
   5. Submittals indicating control sequencing
   6. Contractor licensing, certification, and other such regulatory documentation when required by a specification.
   7. Other submittals as may be required by individual specifications.

B. The submittal process shall not be used to determine alternates to specified products or equipment. All considerations shall be reviewed during the bidding process and acceptable alternates shall be acknowledged by addendum prior to the closing of bidding. See bidding instructions for the information on submitting alternates for consideration.

D. In the event that a manufacturer has significantly changed a product (discontinued a model, changed dimension or performance data changed available colors, etc.) since bid opening the GC shall submit a Request for Information (RFI) to the Project Engineer requesting other approved alternates prior to uploading a digital submittal.

E. Contractors and sub-contractors shall be responsible for knowing the submittal requirements of ALL sections within their scope of work under the contract. The Owner reserves the right to request documentation on any materials, equipment, or product being installed where a submittal is not on file. If the material, equipment, or product installed is determined not to meet the intent of the specification the contractor/sub-contractor shall be required to remove and replace the items involved. The GC shall be solely responsible for all costs associated with the removal and replacement.

1.2. RELATED REFERENCES

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 32 19 Submittals Schedule
C. Section 01 32 26 Construction Progress Reporting
D. All Technical Specifications, contract documents, construction drawings, and any published addendums during the bidding process.
E. All contract documents generated during the execution of the contract including but not limited to Requests for Information (RFI) and Construction Bulletins (CB).

1.3. SUBMITTAL REQUIREMENTS

A. A completed submittal shall meet the following requirements:
   1. Digital submittal shall be original PDF of manufacturer's data sheets or high quality color scan of the same.

a. Submittals shall not include sales fliers or other similar documents that typically do not provide complete manufacturers data.

2. Documents within the PDF submittal shall be printable to a sized sheet no less than 8-1/2 by 11 inches and no larger than 24 by 36 inches.

3. At the beginning of each submittal the contractor shall identify the plan reference (WC-1, EF-3, etc.) in RED block letters that the submittal is for.

4. Where multiple model numbers appear in a table the contractor shall identify the specific model being submitted by using a RED square, box, or other designation to distinguish the correct model from others on the page.

B. A complete submittal will include all information associated with the product or equipment as presented in plans, equipment tables, and specifications. Information shall include but not be limited to the following:

1. Dimensional data
2. Performance data
3. Resource requirements, power, water, waste, etc
4. Clearance and maintenance requirements
5. Finish information, colors, textures, etc.
6. Warranty information

C. Where a submittal includes material samples (carpet, tile, paint draw downs, etc.) the contractor shall do the following:

1. The Contractor shall submit the sample(s) as indicated in the specification.
2. The Contractor shall include a quality photograph(s) of the product with the digital submittal. Photographs shall meet the following requirements:
   a. Formatted to be between 500Kb and 1.0 Mb in file size
   b. Have no glare or flash reflection on the sample
   c. Sample fills the frame of the photo and shows detail as needed. Include multiple photos from other angles as needed.
   d. Scanned copies of products or photos are not acceptable.

D. Uploaded submittals should be relative and related to a specific written specification.

1. Do not upload submittals under a broad category or division (I.E. HVAC 23 00 00). Always upload by the specific specification that identifies a required product or performance to be met.
2. Group related items together if the specification is written that way. (I.E. all of the plumbing fixtures and trim relative to one specific specification should be submitted together).

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL CONTRACTORS PROCEDURES

A. All required submittals will be submitted electronically by the GC.

B. Uploading the submittal indicates that the GC has reviewed and approved the submittal against the contract document requirements.

C. The GC shall discuss submittal status at all progress meetings and shall monitor submittal review/approval/re-submittal so as to not incur delays in the project schedule.

D. The GC and sub-contractors shall provide re-submittals as required.

3.2. SUBMITTAL REVIEW

A. The submittal shall be reviewed internally by the required Architect/Engineer and Owner Representative in a timely fashion and provide commentary on missing items, incorrect information, or incomplete shop drawings, etc as needed.

B. When the internal review is completed the CPM will notify the Project Engineer the submittal is ready for final review.

C. Information will be transmitted electronically.

3.3. PROJECT ENGINEERS REVIEW

A. Upon completion of the internal review the Project Engineer shall review all internal review comments, confer with the CPM as needed and determine the appropriate disposition status for the submittal (approved or resubmit).

B. The Project Engineer shall summarize final internal review comments onto the submittal cover sheet, provide a final disposition of the submittal and update the review status of the submittal to "Complete…" (with or w/o comments) or "Rejected".

C. A completed Final Review status initiates the CPM to notify the GC and appropriate sub-contractor(s) that the review of the submittal has been completed.

D. Information will be transmitted electronically.

END OF SECTION

SECTION 01 41 00
REGULATORY REQUIREMENTS

PART 1 – GENERAL 1
1.1. REQUIREMENT INCLUDED 1
1.2. PROCEDURES 1
1.3. NOTICES 1
1.4 PERMITS 2
PART 2 – PRODUCTS - THIS SECTION NOT USED 2
PART 3 – EXECUTION - THIS SECTION NOT USED 2

PART 1 – GENERAL

1.1. REQUIREMENT INCLUDED

Unless otherwise specifically directed by Contractor each Subcontractor and each Sub-subcontractor shall comply with provisions of this Section as required for proper execution and completion of their Work or portions thereof

1.2. PROCEDURES

Comply with and give notices required by applicable laws, statutes, ordinances, codes, rules, and regulations, and lawful orders of public authorities having jurisdiction applicable to performance of the Work. Comply with and give notices required by Owner's and Contractor's insurance companies, local utilities and labor regulations relating to the performance of the Work, the protection of adjacent property, and the maintenance of passage ways, guard fences and other protective facilities.

The Contractor shall acquire all permits, licenses, and approvals necessary for the execution of this Contract and performance of the Work and provide evidence of such applicable permits, licenses, and approvals at the Pre-Construction Meeting or before commencement of the Work.

Where Contract Documents require abatement of asbestos containing materials, prior written Notice to the State of Wisconsin, Department of Natural Resources is required. The Contractor shall provide evidence of such Notice prior to commencement of the Work.

Procure all certificates of inspection, use, and occupancy, and all permits and licenses, pay all charges and fees and give all notices necessary and incidental to the due and lawful prosecution of the Work. Certificates of inspection, use and occupancy shall be delivered to the Owner upon completion of the Work in sufficient time for occupation of the Project in accordance with the approved schedule for the Work. The costs of such procurement, payment and delivery shall be included within the Base Bid.

Exercise precaution at all times for the protection of persons (including employees) and property. Observe the safety provisions of applicable laws, building and construction codes. Refer to the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America.

It is not Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, and rules and regulations. However, if Contractor observes that portions of the Contract Documents are at variance therewith, Contractor shall promptly notify A/E and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

If Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities having jurisdiction, the Contractor shall assume full responsibility for such Work and shall bear the costs attributable to correction.

Refer to the Sections of the Work for referenced codes, standards, tests, etc., applicable to the Work.

1.3. NOTICES

Concealed or Unknown Conditions:

If the Contractor encounters conditions at the site are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual

nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Engineer before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Engineer will promptly investigate such conditions and, if the Engineer determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any of the Work, will recommend and equitable adjustment in the Contract Sum or Contract Time, or both. If the Engineer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Engineer shall promptly notify the Owner and Contractor in writing, stating the reasons.

If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites, or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Engineer. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume operations. The Contractor shall continue to suspend operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features.

1.4 PERMITS

Permits, Fees, Licenses, and Inspections: Unless otherwise provided in the Contract Documents, Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, inspections and approvals by government and utility agencies, necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

Owner will obtain plan approvals and pay all fees required by the Wisconsin Department of Safety and Professional Services.

Contractor shall obtain all permits and pay all fees required by local utilities for permanent electric and gas service.

Contractor shall obtain copies of all required permits and certificates of inspection applicable to the work.

Contractor shall furnish A/E and Owner with copy of all required permits and certificates.

PART 2 – PRODUCTS - THIS SECTION NOT USED

PART 3 – EXECUTION - THIS SECTION NOT USED

END OF SECTION

SECTION 01 45 16
FIELD QUALITY CONTROL PROCEDURES

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATION SECTIONS 1
1.3. PERFORMANCE REQUIREMENTS 1
1.4. QUALITY ASSURANCE 2
1.5. QUALITY MANAGEMENT OBSERVATION REPORT 2
PART 2 – PRODUCTS - THIS SECTION NOT USED 2
PART 3 - EXECUTION 2
3.1. QUALITY MANAGEMENT RESPONSIBILITIES 2
3.2. RESPONDING TO A QMO 3
3.3. GENERAL CONTRACTORS FOLLOW-UP 3
3.4. QMO CLOSEOUT PROCEDURE 3
3.5. CONSTRUCTION CLOSEOUT 3

PART 1 – GENERAL

1.1. SUMMARY

A. The City of Madison has developed a multi-faceted Quality Management Program that begins with contract signing and runs through contract closeout to ensure the best quality materials, workmanship, and product are delivered for the contracted Work.

2. The Quality Management Observation (QMO) is an ongoing observation of the construction process as it progresses. The City of Madison does not use a "Punch List" or "Corrections List" as it is typically known throughout the construction industry. The QMO process acts as an "in progress punch list".

a. By using the QMO process the City of Madison's goal is to have a zero item punch list prior to the 90% progress payment and owner occupancy.

B. All contractors shall be required to review the specifications identified in Section 1.2 below, and other related specifications identified therein to become familiar with the terminology and expectations of this City of Madison Public Works contract.

C. It is the intent of this specification to outline the requirements, expectations, and responsibilities of the General Contractor (GC), Project Engineer, and other representatives of the Owner for items of Quality Assurance and Quality Control.

1. This specification is not intended to conflict other specifications requiring testing and inspecting services.
2. This specification does not relieve the GC from any requirements associated with regulatory inspections performed by the City of Madison Building Inspection Unit, or inspectors from other agencies as required by code.
3. Any testing performed by an Owner's Representative does not relieve the GC from performing any testing that may required by the construction documents.

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 26 13 Request for Information (RFI)
B. Section 01 29 76 Progress Payment Procedures
C. Section 01 31 13 Project Coordination
D. Section 01 77 00 Closeout Procedures

1.3. PERFORMANCE REQUIREMENTS

A. All contractors shall be responsible for a proper quality assurance/quality control (QA/QC) program throughout the execution of the Work defined within the construction documents, including all recognized construction industry standards and all applicable regulatory codes.

B. The GC shall be responsible for all of the following:

1. Monitor the quality of all workmanship, supplies, materials, and products being installed by all contractors and installers to ensure they meet or exceed the minimum requirements set forth by the construction documents.
2. Submit a Request for Information (RFI) whenever manufacturers' instructions or referenced standards conflict with the construction documents before proceeding with the Work.

3. Ensure that Work requiring special certifications or licensing is being performed by is being performed and supervised by personnel that meet the appropriate requirements.
    a. Ensure that all certificates and licenses are current throughout the execution of the project.

C. The City of Madison and its representatives shall perform quality assurance and quality control activities throughout the execution of this project. This in no way relieves the GC of maintaining an acceptable QA/QC program.

1.4. QUALITY ASSURANCE

A. The GC shall be responsible for the following:
1. All materials, equipment, and products shall be new, clean, undamaged, and meet the performance specifications defined within the construction documents including favorably reviewed submittals.
    a. Any material, equipment, or product that does not meet the requirements of the construction documents shall be removed and replaced, including any adjacent and related work, at the GCs expense.
2. All Work shall be performed by persons properly trained and/or qualified to produce workmanship of the quality specified in the construction documents.
3. Providing access to updated as-builts, addenda, submittals, bulletins and other related construction documents at the project site.

B. The City of Madison and its representatives may be responsible for any of the following:
1. Attend pre-installation meetings
2. Attend construction progress meetings
3. Review all submittals
4. Conduct field visits for QA/QC purposes, provide feedback to the GC and sub-contractors using Quality Management Observation (QMO) reports.
5. Review delivered equipment
6. Witness equipment installations, startups, testing as specified in other specifications

1.5. QUALITY MANAGEMENT OBSERVATION REPORT

A. The Quality Management Observation report or QMO is used as a QA/QC tool by those entities responsible for QA/QC activities, including but not limited to, the GC, CoM, PE, Cx agent, etc.

B. QMOs are designed to be an early observation of non-conforming construction work before it becomes buried by follow on work. As such it is most often used as an “in progress punch list”.

C. QMO reports and tracking will be distributed electronically. The distribution list will be established by the GC and CPM.

PART 2 – PRODUCTS - THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. QUALITY MANAGEMENT RESPONSIBILITIES

A. While making routine progress visits to the construction project the GC, CPM, and A/E, and applicable others shall observe the details of the construction and installations to ensure that the intent of the construction documents is being followed.

B. If during the progress visit there is a determination of contract non-conformance a QMO report shall be initiated to begin the documentation process.
1. The GC field superintendent shall be informed immediately of any issue that may cause harm, damage to finished work, or be buried prior to properly filing a QMO report.

C. The following information will be included in a QMO report:
1. The date and time of the field visit
2. References to construction documents if any (examples; specification, drawing page, details, approved submittals, RFI, CB, etc)
3. Short title for the observation being made
4. Detailed description of the observation being made
5. Assignment of categories (Sitework, Structure, Enclosure, Interior, etc) from the given list that may apply to the observation being reported.
6. Assignment of responible contractor(s) that may need to be aware of the observation.
7. Any attachments that may help provide reference to the observation.

3.2. RESPONDING TO A QMO

A. All contractors receiving email notification of a QMO Observation shall review the details of the observation.

B. The GC shall be responsible for determining the course of action required to remedy the non-conforming issue and shall coordinate and direct the contractor(s) responsible for any work related to the observation.

C. All contractors assigned to remedy the observation by the GC shall provide follow-up responses on the QMO report as follows:

1. In the "Follow-Up Response" area enter a description of your follow-up response in the box provided.
2. Add attachments (pictures) if needed to show the work has been completed.

3.3. GENERAL CONTRACTORS FOLLOW-UP

A. The GC shall inspect the work to ensure that all assigned contractors have remedied the observation to the intent of the construction documents.

B. The GC shall respond with any additional comments in his/her response box.

3.4. QMO CLOSEOUT PROCEDURE

A. The person who initiated the QMO shall review the remedied work and if properly corrected shall close and date the QMO form.

3.5. CONSTRUCTION CLOSEOUT

A. The GC shall note that successful close out QMOs are required for construction closeout as follows:

1. Certain progress payments as identified in Specification 01 29 76 are contingent QMO reports being properly closed out.
2. Specification 01 77 00 defines all construction closeout requirements.

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATION SECTIONS 1
1.3. QUALITY ASSURANCE 1
1.4. TEMPORARY UTILITIES 1
1.5. BARRIERS 2
1.6. FENCING 2
1.7. EXTERIOR ENCLOSURES 2
1.8. SECURITY 2
1.9. VEHICULAR ACCESS AND PARKING 2
1.10. WASTE REMOVAL 2
1.11. PROJECT IDENTIFICATION 2
PART 2 - PRODUCTS 2
2.1. TEMPORARY PARTITIONS 2
2.2. EQUIPMENT 3
PART 3 - EXECUTION 3
3.1. TEMPORARY FIRE PROTECTION 3
3.2. COLLECTION AND DISPOSAL OF WASTE 3
3.3. ENVIRONMENTAL PROTECTION 3

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes general procedural requirements for temporary facilities and controls including, but not limited to the following:
   1. Temporary Utilities
   2. Barriers
   3. Fencing
   4. Exterior Enclosures
   5. Security
   6. Vehicular Access and Parking
   7. Waste Removal
   8. Project Identification

1.2. RELATED SPECIFICATION SECTIONS

A. Section 01 31 19 Progress Meetings
B. Section 01 74 19 Construction Waste Management and Disposal

1.3. QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
   1. Building Code requirements
   2. Health and safety regulations
   3. Utility company regulations
   4. Police, Fire Department and Rescue Squad rules
   5. Environmental protection regulations
   6. Joint Commission - Hospital Accreditation Standards
B. Standards: Comply with NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities".
C. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code".

1.4. TEMPORARY UTILITIES

A. Owner will provide the following:

1. Electrical power and metering, consisting of existing facilities.
2. Water supply, consisting of existing facilities.

B. General:
1. Existing facilities may be used.
2. New permanent facilities may be used.

C. Water Service: water is available from existing building services.
1. Use trigger-operated nozzles for water hoses, to avoid waste of water.

D. Temporary Electric Power Service: Electrical Contractor shall extend temporary power from existing building services.

1.5. BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

1.6. FENCING

A. Construction: Contractors option.

1.7. EXTERIOR ENCLOSURES

A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.8. SECURITY

A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.9. VEHICULAR ACCESS AND PARKING

A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.

B. Coordinate access and haul routes with governing authorities and Owner.

C. Provide and maintain access to fire hydrants, free of obstructions.

1.10. WASTE REMOVAL

A. See Section 01 74 19 - Waste Management, for additional requirements.

B. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

C. Provide containers with lids. Remove trash from site periodically.

D. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.11. PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction indicated in Section 01 58 13.

B. Erect on site at location determined by Owner .

C. No other signs are allowed without Owner permission except those required by law.

PART 2 - PRODUCTS

2.1. TEMPORARY PARTITIONS

A. Provide dustproof partitions to limit dust and dirt migration and to separate occupied areas from fumes and noise.
1. Non-fire rated partitions, standard
a. Wood stud framing, 6-mil polyethylene

2.2. EQUIPMENT

A. Temporary Lifts and Hoists: Contractors requiring temporary lifts and hoists shall provide facilities for hoisting materials and employees.

B. Electrical Outlets: Electrical Contractor shall provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

C. Electrical Power Cords: Contractors requiring power cords shall provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

D. Lamps and Light Fixtures: Electrical Contractor shall provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

E. Heating Units: General Contractor shall provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.

F. First Aid Supplies: General Contractor shall provide first aid supplies complying with governing regulations.

G. Fire Extinguishers: General Contractor shall provide hand-carried, portable UL-rated, fire extinguishers of NFPA recommended classes for the exposures, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1. TEMPORARY FIRE PROTECTION

A. Until fire protection needs are supplied by permanent facilities, General Contractor shall install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses.

B. Comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations".

C. Locate fire extinguishers where convenient and effective for their intended purpose.

D. Store combustible materials in containers in fire-safe locations.

E. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires.

F. Prohibit smoking on the premises.

G. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

H. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site

I. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.2. COLLECTION AND DISPOSAL OF WASTE

A. Collect waste from construction areas and elsewhere daily

B. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly.

C. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F.

D. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.3. ENVIRONMENTAL PROTECTION

A. Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.

B. Avoid use of tools and equipment which produce harmful noise.

C. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. QUALITY ASSURANCE 1
PART 2 – PRODUCTS – THIS SECTION NOT USED 2
PART 3 - EXECUTION 2
3.1. GENERAL CONTRACTOR REQUIREMENTS 2
3.2. BULK MATERIAL 3
3.3. DRY PACKAGED MATERIAL 3
3.4. STRUCTURAL AND FRAMING MATERIAL 3
3.5. EQUIPMENT 3
3.6. FINISH PRODUCTS 3
3.7. DUCTWORK, PIPING, AND CONDUIT 3
3.8. OWNER PROVIDED, CONTRACTOR INSTALLED EQUIPMENT 4

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide general guidelines and responsibilities related to the receiving, handling, and storage of all materials and products from arrival on the job site through installation.
   1. Immediate inspection of delivered goods means a timely replacement if damaged.
   2. Proper storage helps prevent damage and loss by weather, vandalism, theft, and job site accidents.
   3. Proper storage helps with job site performance and safety.
   4. Proper handling helps prevent damage and job site accidents.

B. Each Contractor shall be directly responsible for the receiving, handling, and storage of all materials and products associated with the Work of their Division or Trade.

C. Each Contractor responsible for Work associated with Owner provided materials or products shall be responsible for the receiving, handling and storage of the material/product as outlined in Section 3.8 below..

1.2. RELATED SPECIFICATIONS

A. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public Works Construction".
   1. Use the following link to access the Standard Specifications web page:
      http://www.cityofmadison.com/business/pw/specs.cfm
      a. Click on the "Part" chapter identified in the specification text. For example if the specification says "Refer to City of Madison Standard Specification **2**10.2" click the link for Part II, the Part II PDF will open.
      b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you to the referenced text.
      c. City Standard Detail Drawings (SDD) may be located from the index in Part VIII.

B. Section 01 74 13 Progress Cleaning

C. Section 01 76 00 Protecting Installed Construction

D. Other Divisions and Specifications that may address more specifically the requirements for the storage and handling of materials and products associated Work of other Divisions or Trades.

1.3. QUALITY ASSURANCE

A. The GC shall be responsible for ensuring that these minimum storage and handling requirements are met by all contractors on the project site including but not limited to the following:
   1. Receiving deliveries of materials, products, and equipment.
      a. Inspect all deliveries upon arrival for damage, completeness, and compliance with the construction documents.
         i. Deliveries shall remain in original packaging or crates, shipping manifest shall be kept with the delivery and the packaging shall have visible identification of the items within the packaging.

b. Immediately report any damaged products or equipment to the GC, begin arrangements for immediate replacement.
c. Materials or equipment that have been damaged, are incomplete, or do not comply with the construction documents shall not be permitted to be installed.

2. All materials and products shall be stored within the designated limits of the project site. Only store the amount of material necessary for upcoming operations so as not to interfere with other construction activities and access to Work by the Owner and Engineer. Any offsite storage shall be at the expense of the contractor storing the material or product. All offsite storage requirements shall comply with this specification. All offsite storage of materials is subject to Owner Representative Quality Management review at any time.
3. Large storage containers may be used but shall be weather tight, securable, placed on concrete blocks, timbers, or jack stands and shall be level.
4. When lifting equipment is required the equipment rating shall be greater than the loading requirements of the item being lifted. In addition all of the following shall apply as necessary:
   a. Only designated and/or designed lift points shall be used.
   b. Large items shall have tag lines and handlers at all times during lifting operations.
   c. Lift at multiple points as needed to prevent bending.
5. Materials and products stored inside of the structure shall comply with all of the following:
   a. Storage shall not be allowed to impede the flow of work in progress.
   b. Storage shall not be allowed to hide completed work from review and inspections.
   c. Storage shall not exceed the design loads of the structural components it is being stored upon.
6. All materials and products shall be stored according the manufacturers minimum recommended requirements. All of the following shall be considered before storing any product or material:
   a. Dust and dirt
   b. Moisture and humidity, including rain and snow
   c. Excessive temperatures, direct sun, etc
   d. Product or material weight and size
   e. Potential for breakage
   f. Product incompatibility with other products such as corrosiveness, chemical reactions, flammability, etc.
   g. Product or material value and replacement cost
7. The Contractor shall be responsible for providing fully functional tarps or plastic wrap, to protect materials and products from the weather. All coverings shall be free of large holes and tears, and shall be tied, strapped, or weighted down to resist blowing.
8. The Contractor shall be responsible for any temporary heating, cooling, or other utility requirement that may be associated with the storage of a material or product.
9. The Contractor shall be responsible for securing materials and products of value such as copper, A/V equipment, etc. Such items shall be stored in securable shipping containers, job trailers or other such storage devices. Container shall be kept secured when not in use.

B. The GC shall inspect the job site daily to ensure that all products and materials stay weather tight and are secured against vandalism or theft as required by this specification.
C. The Owners Representative may at any time request improvements regarding storage of any material or product being provided under these construction documents.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL CONTRACTOR REQUIREMENTS

A. Designate material storage and handling areas as needed including all of the following:
   1. Designate specific areas of the site for delivery and storage of materials to be used during the execution of the Work.
   2. Designated areas shall not be located so as to interfere with the installation of any Work including Work by others such as the installation of utilities or the maintenance of existing utilities. This shall include not storing items in active utility easements as designated by the site plan.
B. Arrange for openings in the building as needed to allow delivery and installation of large items. Openings shall be appropriately sized to include the use of booms, slings, and other such lifting devices that may be larger than the item being installed.

1. When openings are required in completed Work (new or existing) the GC shall be responsible for providing an appropriate opening and for restoring the opening to the original or better condition upon completion. Restoration shall be weather tight and complete.

C. Repeated moving and handling of items being stored shall not be allowed. The GC shall be responsible for any damage and replacement because of mishandling or excessive handling.

3.2. BULK MATERIAL

A. Bulk material such as sand, gravel, top soil and other types of fill shall be stored away from the construction area and shall be stock piled as follows:
1. All bulk material shall be piled safely and efficiently in as small an area as practical. Only store the amount of material necessary for upcoming operations so as not to interfere with other construction activities and access to Work by the Owner and Engineer.
2. All stock piles shall have silt fence/sock properly installed around the perimeter to prevent erosion and loss of material. Refer to City of Madison Standard Specification Section 210.1(f) and other related specification or details.
3. Fine grained material shall be protected with tarps to prevent blowing. Tarps shall be weighted or staked to stay in place.

B. Bulk material such as brick, concrete block, stone, and other palletized materials shall be stored on original shipping pallets until ready for use.

3.3. DRY PACKAGED MATERIAL

A. Dry packaged material such as cement, mortar, etc shall be stored on pallets, on slightly elevated ground or clear stone pad to keep water away from the base of the material being stored. Protect from moisture.

3.4. STRUCTURAL AND FRAMING MATERIAL

A. All structural and framing material shall be stored in an organized manner arranged by type, size and dimension. Materials shall be stored on pallets or timbers as necessary and shall not be allowed to lie directly on the ground.

B. Long and heavy items shall be supported at several points to prevent bending and warping.

3.5. EQUIPMENT

A. Equipment delivered to the site shall be stored away from all construction activities until the item can either be moved inside or properly installed.

B. Equipment shall be stored on slightly elevated ground or clear stone pad to keep water away from the base of the equipment.

3.6. FINISH PRODUCTS

A. Finish products such as flooring, tile, counters, lockers, toilets, partitions, lighting, and other similar items should not be delivered and stored until the structure has been enclosed, is weather tight, temperature controlled and the contractor is ready for such items to be installed.
1. Storage of finished products outside for any length of time shall not be allowed.

B. Products that cannot be stored inside the structure shall be stored in secured containers or job trailers until such time as they are ready to be installed.

C. Products with a high potential for breakage such as glass, mirrors, tiles, toilet fixtures, etc. shall be stored with additional protection as necessary such as but not limited to the following:
1. Store in original shipping containers until ready for installation.
2. Do not store in high traffic areas.
3. Shield with other materials such as cardboard, plywood, or similar products.

3.7. DUCTWORK, PIPING, AND CONDUIT

A. All piping and conduit shall be stored horizontally unless otherwise specified by the manufacturer or Division and Trade Specifications.
1. Do not store directly on grade.
2. Cover metal pipes and tubes to prevent rust and corrosion, allow ventilation to prevent condensation.
3. Whenever possible use pipe stands for storing pipe and conduit to prevent tripping and rolling hazards.

B. All ductwork shall be stored horizontally or vertically as necessary unless otherwise specified by the manufacturer or Division and Trade Specifications.
1. During storage, both ends of each duct shall be protected with plastic sheathing to prevent dust and dirt from getting inside the duct. Sheathing shall be sufficiently taped to the duct.

2. After installation, free/open ends shall remain protected with taped plastic sheathing and or temporary filters as specified by division or Trade specifications.

3.8. OWNER PROVIDED, CONTRACTOR INSTALLED EQUIPMENT

A. Section 3.8.A. shall apply to all equipment being provided to any contractor directly from the Owner for installation under the contract.

1. The Owner or Owners Representative shall do the following:
   a. Inspect all deliveries upon receipt and notify manufacturer of any issues directly.
   b. Review the received shipment with the contractor.
      i. Only provide products or materials to the contractor that were not damaged through shipping or handling.
      ii. Confirm missing products or materials and anticipated delivery schedule if known.
2. The Contractor responsible for the installation of Work associated with Owner provided materials or products shall "take ownership" and provide safe and secure storage and handling as previously described within this specification.
      i. The Contractor shall be liable for the repair or replacement of any material or product damaged after taking ownership of the product from receipt through final acceptance.

B. Section 3.8.B. shall apply to all equipment being provided by the Owner but shipped directly to any sub-contractor or the project site for installation under the contract.

1. The GC and/or Contractor responsible for the Work associated with the Owner provided materials or products shall do the following:
   a. Inspect all deliveries upon receipt and notify the Owner or Owners Representative of any issues directly.
      i. Owner or Owners Representative shall notify manufacturer of any issues directly.
   b. Review the received shipment with the Owner or Owners Representative
      i. Confirm missing products or materials and anticipated delivery schedule if known.
2. The Contractor shall "take ownership" and provide safe and secure storage and handling as previously described within this specification.
      i. The Contractor shall be liable for the repair or replacement of any material or product damaged after taking ownership of the product from receipt through final acceptance.

END OF SECTION

SECTION 01 73 29
CUTTING AND PATCHING

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATION SECTIONS 1
1.3. DEFINITIONS 1
1.4. QUALITY ASSURANCE 1
1.5. WARRANTY 2
PART 2 - MATERIALS 2
2.1. GENERAL 2
PART 3 - EXECUTION 2
3.1. EXAMINATION 2
3.2. PREPARATION 2
3.3. PERFORMANCE 2
3.4. CLEANUP AND RESTORATION 3

PART 1 – GENERAL

1.1. SUMMARY

A. This Section includes general procedural requirements for cutting and patching including, but not limited to the following:
   1. Examination
   2. Preparation
   3. Performance
   4. Cleanup and Restoration

1.2. RELATED SPECIFICATION SECTIONS

A. Divisions 02 through 32 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
B. Division 07 Section "Penetration Fire Stopping" for patching fire-rated construction.

1.3. DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.
C. Level Alpha

1.4. QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
B. Operational Elements: Do not cut and patch operating elements and related components ina manner that results in reducing their capacity to perform as intended or that may result in increased maintenance or decreased operational life or safety.
C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that may result in increased maintenance or decreased operational life or safety. Some miscellaneous elements include the following:
   1. Water, moisture, or vapor barriers
   2. Membranes and flashings
   3. Exterior curtain-wall construction
   4. Equipment supports
   5. Piping, ductwork, vessels, and equipment
   6. Noise and vibration control elements and systems
D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Engineer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.5. WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

B. All cutting and patching work performed under this contract shall be warranted like new work as defined by the Specification governing the work.

PART 2 - MATERIALS

2.1. GENERAL

A. Comply with requirements specified within other sections of the Specifications.

B. In-Place Materials: Use materials identical to existing in-place materials. For exposed surfaces use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1. EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions havebeen corrected.

3.2. PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to eliminate interruption to occupied areas.

3.3. PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces totheir original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retainedor adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 3l Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

D. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

3.4. CLEANUP AND RESTORATION

A. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

1. Clean piping, conduit, and similar features before applying paint or other finishing materials.
2. Restore damaged pipe covering to its original condition.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
4. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
5. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
6. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
7. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

SECTION 01 74 13
PROGRESS CLEANING

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICAITONS 1
1.3. QUALITY ASSURANCE 1
PART 2 - PRODUCTS 1
2.1. CLEANING MATERIALS AND EQUIPMENT 1
PART 3 - EXECUTION 1
3.1. SAFETY CLEANING 1
3.2. PROJECT SITE CLEANING 2
3.3. PROGRESS CLEANING 2
3.4. FINAL CLEANING 3
3.5. CALL BACK WORK 4

PART 1 – GENERAL

1.1. SUMMARY

A. Throughout the execution of this contract all contractors shall be responsible for maintaining the project site in a standard of cleanliness as described in this specification.

B. All contractors shall also comply with the requirements for cleaning as described in other specifications.

C. Work included in this specification shall include but not be limited to:

1. Safety Cleaning
2. Project Site Cleaning
3. Progress Cleaning
4. Final Cleaning

1.2. RELATED SPECIFICAITONS

A. Section 01 60 00 Product Requirements

B. Section 01 74 19 Construction Waste Management and Disposal

C. Section 01 76 00 Protecting Installed Construction

1.3. QUALITY ASSURANCE

A. The General Contractor (GC) shall conduct daily inspections, more often if necessary, of the entire project site to ensure the requirements of cleanliness are being met as described within these specifications.

B. All contractors shall comply with other regulatory requirements as they apply to waste recycling, reuse, hauling, and disposal requirements of any governmental authority having jurisdiction.

C. The Owner reserves the right to have work done by others in the event any contractor fails to perform cleaning as described within these specifications. The cost of any Owner provided cleaning shall be charged to the contractor through a deduct change order.

PART 2 - PRODUCTS

2.1. CLEANING MATERIALS AND EQUIPMENT

A. The Contractor shall provide all required personnel, equipment, and materials necessary to maintain the required level of cleanliness as described in this specification.

B. Use only cleaning materials and equipment that are compatible with the surface being cleaned, as recommended by the manufacturer, or as approved by the A/E.

C. Use only cleaning materials, equipment, and methods as recommended in the manufacturers care and use guide of the material, finish or equipment being cleaned.

PART 3 - EXECUTION

3.1. SAFETY CLEANING

A. All Contractors shall be responsible for safety cleaning as required by OSHA and other regulatory requirements as applicable.

B. Safety Cleaning shall include but not be limited to the following:

1. All work areas, passageways, ramps, and stairs shall be kept free of debris, scrap materials, pallets, and other large items that would obstruct exiting routes. Small items such as tools, electrical cords, etc are picked up when not in use.
2. Form and scrap lumber shall have nails/screws removed or bent over. Lumber shall be neatly stacked in an area designated by the GC.
3. Spills of oil, grease, and other such liquids shall be cleaned immediately or sprinkled with sand/oil-dry first, then cleaned.
4. Oily, flammable, or hazardous items shall be stored in appropriate covered containers and storage devices unless actively being used.
5. Oily, or flammable rags, and other such waste shall only be disposed of in authorized covered containers.
6. Disposal by burning shall not be allowed at any time.

3.2. PROJECT SITE CLEANING

A. This section applies to the general cleanliness of the project site as a whole for the duration of the execution of this contract.

B. Exterior Project Site Areas

1. The GC and other Contractors as appropriate shall ensure the following levels of cleanliness are applied to the exterior project site areas.
   a. The overall appearance of the project site is neat and orderly. Defined areas for material storage, material waste, job trailers, and the project area are clean and well maintained.
   b. The construction fence is maintained, erect with no gaps, and properly posted per all regulatory requirements.
   c. All erosion control measures are properly maintained, cleaned, and repaired as necessary.
   d. All loose materials (construction or waste) are properly tied or weighted down to resist blowing.
   e. All construction materials are properly covered with fully functional tarps or plastic wrap, protected from the weather, coverings are tied, strapped, or weighted down to resist blowing.
   f. Dust control is applied as necessary or as required by any regulatory requirement.

C. Interior Project Site Areas

1. All Contractors shall ensure the following levels of cleanliness are applied to the interior project site areas.
   a. The overall appearance of the project site is neat and orderly. Defined areas for material storage, material waste, and project area are clean and well maintained.
   b. Stored materials are kept in original shipping containers whenever possible. Stored materials not in shipping containers are properly stored and protected according to other applicable specifications.
   c. All scraps and debris shall be properly disposed of as often as necessary to keep work areas, passageways, stairs, and ramps free of debris and clear for emergency exiting.
   d. Boxes, pallets, and other such shipping containers, are broken down, stored in a consolidated area or, disposed of as often as is necessary.
   e. Hand tools, supplies, materials, electrical cords not being used are picked up and sptored in gang boxes, not left as walking hazards in work areas, passageways, etc.

D. Job Trailer

1. The interior of the job trailer shall be kept clean and available as a work space at all times. The GC shall ensure that the following is provided for within the job trailer:
   a. Meeting space including tables and chairs.
   b. Sufficient space for all contractors to access the official construction documents, provide updates, etc.

3.3. PROGRESS CLEANING

A. This sub-section shall apply to all Progress Cleaning prior to the installation of finishes, fixtures, and trim (IE rough-in).

1. For the purposes of this section “clean” shall be defined as a level of cleanliness free of dust and other material capable of being removed by use of reasonable effort using a good quality janitor broom and shop-vac.
2. Daily cleanings shall be conducted by all contractors at the end of the work day as follows:
   a. Debris in excavated areas shall be removed prior to backfill and compaction.
   b. Debris in wall cavities, chase spaces, etc shall be removed prior to enclosing the spaces.
   c. Large items shall be properly stored, returned to designated areas, or disposed of as necessary.

d. Loose materials shall be properly secured.
e. Flammable or hazardous materials are properly stored or disposed of.

3. Weekly cleaning shall be conducted by all contractors as designated by the GC. Weekly cleanings shall include all the above for a daily cleaning and other necessary cleaning as designated by the GC.

B. This sub-section shall apply to Progress Cleaning in preparation for the installation of finishes, fixtures, and trim.
   a. Surfaces receiving finishes shall be thoroughly cleaned prior to contractors applying finish materials. The GC shall be responsible for inspecting the area and surfaces being cleaned for finish prior to the sub-contractor applying the finish. This shall include but not be limited to the following:
      i. Wall surfaces shall be wiped clean of dirt and oily residues, vacuumed free of dust, and shall be free of surface imperfections prior to painting or installing wall coverings.
      ii. Metal surfaces shall be wiped clean of dirt and oily residues, and be free of surface imperfections prior to painting.
      iii. Flooring shall be broom swept of large and loose items then vacuumed clean of dust and small particles, and damp mopped clean and dried prior to installing any flooring finish. Additional cleaning may be required depending on the preparation requirements recommended by the flooring material manufacturer.

C. This sub-section shall apply to Progress Cleaning after the installation of finishes, fixtures, and trim.
   1. For the purposes of this section “clean” shall be defined as a level of cleanliness free of dust and other material capable of damaging or visually disfiguring finished work, finishes, fixtures, and trim.
   2. Progress Cleaning at this point in the contract shall be conducted immediately as follows:
      a. Dust, dirt, etc shall be swept and vacuumed off of finish flooring and trim.
      b. Liquid spills shall be cleaned up according to the spill type. This shall include drips and spills caused by paint, stain, sealants, and other such items.
   3. The Contractor(s) at no additional cost to the Owner shall be responsible for replacing any finished work, finishes, fixtures, and trim damaged or disfigured because of inadequate or improper cleaning.

3.4. FINAL CLEANING

A. As noted in Specification 01 29 76 Progress Payment Procedures, Progress Payment Milestone Schedule, Final Cleaning shall not be conducted prior to requesting the 90% contract total progress payment and all of the following shall be complete:
   1. All final regulatory inspections including but not limited to Building Inspection Department and Madison Fire Department inspections have been successfully completed.
   2. All Quality Management Observation (QMO) reports have been closed out.
   3. All Demonstration and Training has been completed.
   4. All Attic Stock has been consolidated and located to its designated area
   5. All protection for installed construction shall be removed prior to final cleaning by the contractor responsible for providing the protections. This shall include the removal of any adhesive residues left behind from tapes. Contractors shall only use manufacturer authorized cleaning materials for removing adhesives, etc.

B. For the purposes of this section “clean” shall be defined as a level of cleanliness generally provided by skilled cleaners using commercial quality building maintenance equipment and materials.

C. The GC shall be responsible for ensuring that all requirements under this section are being met.

D. General Requirements
   1. Employ experienced personnel or professional cleaners for final cleaning as necessary for the areas or equipment being cleaned.
   2. Cleaning equipment used shall be commercial grade equipment commonly used by professional cleaners.
   3. Cleaning equipment and materials shall be cleaned, rinsed, or replaced to ensure a uniform level of cleanliness is being maintained during the final cleaning. This shall include but not be limited to the following:
      a. Vacuum cleaner bags and/or filters are changed and/or cleaned as often as necessary.
      b. Dust & wipe down rags are washed, rinsed, or replaced before starting each room.
      c. Mopping equipment
         i. Mop water for washing shall have cleaning solution added to the amount and temperature per manufacturer’s recommendations. Mop washing water shall be replaced often to maintain the levels of the cleaning solution and temperature required.
         ii. Mop water for rinsing shall remain clean, clear, and be replaced as often as necessary.
         iii. Mop heads shall be rinsed often and replaced as necessary.

iv. Mop heads and buckets shall be thoroughly rinsed with each change of water.
v. Only new mop heads shall be used for rinsing.

E. Refer to all other specifications in this contract for specific requirements regarding final cleaning of finishes, fixtures, equipment, etc.

F. Exterior Cleaning shall include but not be limited to the following:
1. All exterior glazing surfaces have been professionally cleaned and are free of dust and streaking.
2. Metal roofs, siding, and other surfaces shall be clean of dirt and free of splashed or excess materials such as sealants, mortar, paint, etc.
3. All exterior furnishings shall be clean, waste receptacles shall be empty.
4. Paved areas shall be clean, free of dirt, oily stains and other such blemishes
5. Exterior lights and diffusers are clean and free of dust.

G. Interior Cleaning shall include but not be limited to the following:
1. Remove all labels, stickers, tags, and other such items which are not required by code as permanent labels.
2. All interior glazing surfaces, including mirrors, have been professionally cleaned and are free of dust and streaking.
3. All interior surfaces have been cleaned of excess materials such as paint, sealants, etc and have been wiped free of dust.
4. Interior metals, fixtures, and trim have been cleaned free of dust and oily residues
5. Carpet flooring has been thoroughly cleaned; vacuumed free of dust, excess glues and other stains removed per manufacturers use and care instructions.
6. Resilient flooring has been thoroughly cleaned; vacuumed free of dust, excess glues and other stains removed, mopped and buffed per manufacturers use and care instructions.
7. Interior non-occupied concrete floors shall be broom cleaned, vacuumed free of dust, excess glues and other stains removed per manufacturers use and care instructions.
8. Light fixtures, lamps, diffusers and other such items have been dusted and cleaned as necessary.

3.5. CALL BACK WORK

A. The GC shall be responsible for ensuring that any contractor returning to the project site for completion or correction work has re-cleaned and restored the area to the levels described in section 3.4 above upon completion of the work. This shall include but not be limited to the following:
1. The immediate area(s) where work was completed.
2. Adjacent areas where dust or debris may have traveled.
3. Other areas occupied during the completion of the call back work.
4. Path of entrance/exit, to/from the area(s) of work.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICAITONS 1
1.3. CITY ORDINANCES 1
PART 2 – PRODUCTS – THIS SECTION NOT USED 1
PART 3 - EXECUTION 1
3.1. GENERAL GUIDELINES FOR ALL WASTES 1
3.2. GUIDELINES FOR RECYCLABLE, RE-USABLE, AND SALVAGEABLE WASTE 2
3.3. GUIDELINES FOR DISPOSAL OF WASTES 3

PART 1 – GENERAL

1.1. SUMMARY

A. This specification includes administrative and procedural requirements for the recycling, re-use, salvaging, and disposal of non-hazardous construction and demolition waste.

B. The General Contractor (GC) shall be fully responsible for complying with all applicable ordinances and other such regulatory requirements during the execution of this contract.

1.2. RELATED SPECIFICAITONS

A. 01 29 76 Progress Payment Procedures

B. 01 33 23 Submittals

C. 01 77 00 Closeout Procedures

D. Other Divisions and Specifications that may address the proper disposal of construction or demolition waste as it pertains to work being conducted under that particular specification.

1.3. CITY ORDINANCES

A. There are two (2) Madison General Ordinances (MGO) that the City of Madison has regarding construction and demolition waste.

1. MGO 10.185, Recycling and Reuse of Construction and Demolition Debris, describes the requirements associated with this ordinance including definitions, documentation requirements, and penalties.
2. MGO 28.185, Approval of Demolition (Razing, Wrecking) and Removal, describes the requirements associated with applying for and receiving a demolition permit.

B. All City of Madison, Board of Public Works, contracts being conducted by City Engineering, Facility Management, for construction, remodeling, or demolition shall comply with the above ordinances regardless of project type or size.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL GUIDELINES FOR ALL WASTES

A. Recycle all paper and beverage containers used by workers, sub-contractors, suppliers and visitors to the project site.

B. All revenues, savings, rebates, tax credits, and other such incentives received from recycling, reusing, or salvaging waste materials shall accrue to the GC unless specified otherwise in the contract documents.

C. Separate recyclable, reusable, and salvageable waste from other waste materials, trash, and debris except where Waste Management Disposal Company allows comingled waste materials, see section 1.8.D above.

1. Separate by type in appropriate containers or designated areas according to the approved waste management plan away from the construction area. Do not store within the drip lines of existing trees.
2. Inspect containers and bins frequently for contamination and inappropriately sorted materials. Remove contaminated materials and resort as necessary.

3. Stockpile bulk materials such as sand, topsoil, stone, etc., on site away from the construction area and without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water, and cover to prevent windblown dust. Do not store within the drip lines of existing trees.
4. Whenever possible store items off the ground and/or protect them from the weather.

3.2. GUIDELINES FOR RECYCLABLE, RE-USABLE, AND SALVAGEABLE WASTE

A. The following guidelines is not a complete or all inclusive list and shall be adjusted as needed by the methods and procedures identified in the Waste Management Plan.
B. Asphalt Paving: Break-up into transportable pieces or grind, transport to an authorized recycling facility.
C. Carpet and Pad: Separate carpet and pad scraps, containerize and transport to an authorized recycling facility.
D. Ceiling System Components: Suspended ceiling system components shall be sorted by material type as follows:
   1. Broken, cut, or damaged tiles shall be containerized, transport to an authorized recycling facility.
   2. Damaged, or cut tracks, trim and other metal grid system components shall be sorted with other metals of similar types, palletize, transport to an authorized recycling facility.
E. Clean Fill: When allowed by Division 31 Specifications; concrete, masonry, stone, asphalt pavement, sand and other such materials may be used as clean fill on this project site. The GC shall verify with the Project Engineer, Structural Engineer, or Civil Engineer as necessary prior to using any materials as clean fill. Materials shall be processed, placed, and compacted as specified. If not being re-used on site, transport to an authorized recycling facility.
F. Clean Wood Materials: Including but not limited framing cutoffs, wood sheathing or paneling materials, structural or engineered wood products, and pallets or crates. Clean Wood shall be free of paints, stains, oils, preservatives and other such contaminates.
   1. Useable pieces shall be sorted by type and dimension, bundled and transported off site by the GC or returned to the supplier.
   2. Non-useable pieces shall be palletized or containerized, transport to an authorized recycling facility.
   3. Clean, uncontaminated sawdust and wood shavings shall be bagged, transport to an authorized recycling facility.
G. Concrete: Break-up into transportable pieces, remove all reinforcing and other metals, transport to an authorized recycling facility.
H. Glass Products: Shall be sorted by types, do not include light fixture lamps and bulbs. Products broken in shipment shall be returned to the supplier. Broken or cracked items still in frames shall be taped to prevent further breakage and injury to workers. Transport to an authorized recycling facility.
I. Gypsum Board: Stack large clean pieces on wooden pallets or container, store in a dry location, transport to an authorized recycling facility.
J. Light Fixture Lamps and Bulbs: Fluorescent tubes shall be containerized, transport to an authorized recycling facility.
K. Masonry and CMU: Remove all metal reinforcing, anchors, and ties, clean undamaged pieces and neatly stack on pallets, transport damaged pieces to an authorized recycling facility.
L. Metals: Sort metals by type as follows, this does not include piping:
   1. Architectural metals including but not limited to siding, soffit, and roofing panels shall be sorted by material, palletize or bundle as needed and transport to an authorized recycling facility.
   2. Structural steel, sort by size and type; palletize and transport to an authorized recycling facility.
   3. Miscellaneous metals such as aluminum, brass, bronze, etc shall be sorted by type, containerized or palletized as necessary, transport to an authorized recycling facility.
M. Packaging and shipping materials
   1. Cardboard boxes and containers: Breakdown all cardboard boxes and containers into flat sheets. Bundle and store in a dry location until transported for recycling.
   2. Pallets:
      a. Whenever possible require deliveries using pallets to remove them from the project site.
      b. Neatly stack pallets in preparation for reusing them or providing them to other companies for salvage or re-use.
      c. Break down pallets into component wood pieces that comply with the requirements for recycling clean wood materials. Neatly stack or palletize pieces in preparation for transportation.
   3. Crates: Break down crates into component wood pieces that comply with the requirements for recycling clean wood materials. Neatly stack or palletize pieces in preparation for transportation.
   4. Polystyrene Packaging: Separate and bag materials.

N. Piping and conduit: Reduce all piping and conduit to straight lengths, sort and store by size, material and type. Remove supports, hangers, valves, boxes, sprinkler heads, and other such components, sort and store by size, material and type. Transport to authorized recycling facilities according to material types.

O. Roofing: Roofing materials shall be sorted and containerized by type, transport to authorized recycling facilities according to material types.

P. Site-Clearing Waste: Sort all site waste by type.

1. Only stockpile soils types and quantities required for re-use on the project site. All remaining quantities shall be transported off site to an authorized facility that receives such materials.
2. Brush, branches, and trees with no marketable re-use shall be transported to facilities for chipping into mulch.
3. Trees with a marketable re-use shall be salvaged and transported to facilities that specialize in processing trees for future use as wood products.

3.3. GUIDELINES FOR DISPOSAL OF WASTES

A. The following guidelines shall be adjusted as needed by the methods and procedures identified in the Waste Management Plan.

B. Any waste that is contaminated, organic, or cannot be recycled, re-used, or salvaged shall be legally disposed of in an authorized landfill or incinerator. Disposal methods shall follow all applicable regulatory requirements.

C. No waste material of any kind, except those types designated as clean fill in section 3.4 above, shall be allowed to be buried on the project site at any time.

D. No burning of any kind of waste material shall be permitted on this project site at any time.

E. Paint and Stain: Paints, stains, and their containers shall be disposed of as follows:

1. Whenever possible containers should be thoroughly cleaned immediately after emptying and sorted with as appropriate (metal or plastic) for recycling
2. Empty containers, regardless of type or base material, may be disposed of with lids off with general garbage.
3. Latex paint may be placed with general garbage if properly solidified as follows:
   a. Small amounts (an inch or less in can): Remove lids and allow paint to dry out in the can and harden. Protect cans from rain and freezing.
   b. Large amounts (more than one inch): Mix paint with equal amounts of cat litter, stir and allow to completely dry. Alternate method: mix with commercial paint hardener.
4. Oil-based or combustible paints and stains, regardless of liquid or solid, shall be transported to an approved facility that takes such items such as Dane County Clean Sweep Sites.

F. Treated Wood Materials: Treated wood materials including but not limited to wood that has been painted, stained, or chemically treated shall not be recycled or incinerated.

END OF SECTION

SECTION 01 76 00
PROTECTING INSTALLED CONSTRUCTION

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. QUALITY ASSURANCE 1
1.3. RELATED SPECIFICATIONS 2
PART 2 - PRODUCTS 2
2.1. FENCING MATERIALS AND BARRICADES 2
2.2. EROSION CONTROL PROTECTION 2
2.3. INTERIOR FINISH PROTECTION MATERIALS 2
PART 3 - EXECUTION 3
3.1. GENERAL EXECUTION REQUIREMENTS 3
3.2. PROTECT ADJACENT PROPERTIES 3
3.3. PROTECT LANDSCAPING FEATURES 3
3.4. PROTECT UTILITIES 4
3.5. PROTECT PUBLIC RIGHT OF WAY 4
3.6. PROTECT STORED MATERIALS 5
3.7. PROTECT WORK - EXTERIOR 5
3.8. PROTECT WORK - INTERIOR 5

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide clear responsibilities, guide lines, and requirements related to providing protection to already installed construction.

B. Already installed construction shall include but not be limited to the following:

1. Any existing site feature such as pavement, curbs, drainage features, utilities, landscaping features (trees, shrubbery, plantings, flagpoles, etc) and other such exterior items not associated with the building whether on or adjacent to the project site.
2. Any existing structure on or adjacent to the project site.
3. Any existing interior work that may be adjacent to the new work including all paths of ingress/egress to areas associated with accessing the Work.
4. Any existing feature of any kind within the public right-of-way that may be on the project site property, adjacent to the project site or across the street from the project site.

C. All contractors shall be familiar with the specifications of their Division of Work for specific requirements on protection of the Work.

D. The requirements noted within this specification do not relieve any contractor of the responsibility for compliance with any code, statute, ordinance, or other such regulatory requirement having jurisdictional authority over these contract documents.

1.2. QUALITY ASSURANCE

A. It shall be the responsibility of every contractor and worker assigned to the project to be diligent in protecting all existing work, and newly installed construction.

B. It shall be the General Contractors' (GC) responsibility under the contract to provide all reasonable protection methods, materials, or precautionary measures required to protect new or existing construction as described in within this specification to the project as a whole.

1. The GC shall be responsible to ensure any damaged new or existing construction is repaired or replaced at no additional cost to the Contract.
2. The GC at his/her discretion may direct other contractors to provide and maintain protection of completed work associated with their Division of Work. I.E.: The carpet installer may be required by the GC to provide carpet protection along traveled paths, ingress/egress, etc after installation.

C. It shall be the responsibility of the GC to ensure that all materials being used to protect installed construction are compatible with, and/or adjacent to, the materials being protected. This shall include but not be limited to the material used as covering, tapes used to fasten protective materials, etc.

1.3. RELATED SPECIFICATIONS

A. Parts of this specification will reference articles within "The City of Madison Standard Specifications for Public Works Construction".

1. Use the following link to access the Standard Specifications web page:
   http://www.cityofmadison.com/business/pw/specs.cfm
   a. Click on the "Part" chapter identified in the specification text. For example if the specification says "Refer to City of Madison Standard Specification **2**10.2" click the link for Part II, the Part II PDF will open.
   b. Scroll through the index of Part II for specification 210.2 and click the text link which will take you to the referenced text.
   c. City Standard Detail Drawings (SDD) may be located from the index in Part VIII.

B. Section 01 60 00 Product Requirements

C. Section 01 74 13 Progress Cleaning

PART 2 - PRODUCTS

2.1. FENCING MATERIALS AND BARRICADES

A. Except where noted in other areas of the construction documents the responsible contractor may provide any of the following that sufficiently provide a sturdy physical barrier and/or visual barrier as necessary for the intended application.

1. Standard orange construction barrels each with a standard rubber base ring and reflective tape
   a. Provide flashing amber lights as needed to increase night time visibility
2. Steel "T" style fence posts
3. 4'0" high standard orange construction fence
4. Traffic barricades
5. Jersey barriers
6. Other types of fencing or barricades typically used in the construction industry

B. The contractor responsible for providing the fencing materials and barricades shall also be responsible for maintaining them. This shall include but not limited to fixing damaged fencing, standing up barrels that have been knocked over, realigning barrels, and ensuring flashing lights are fully operational at all times.

C. The following fencing and barricade designations, and their use descriptions shall be used throughout this specification to provide uniformity in describing protection requirements.

1. Type A, Jersey Barriers, to be used as permanent blocking devices to deny access to alternate project site entrances or exits.
2. Type B, Traffic Barricades, to be used as temporary blocking devices to deny access to alternate project site entrances or exits.
3. Type C, Construction Barrels without construction fencing shall be used for lane closures, temporary blocking devices to deny access and the protection of single locations (I.E. identify the location of an access structure) that do not require fencing.
4. Type D, Construction Barrels with construction fencing where it becomes necessary to surround an object with a complete visual barricade and it is impractical or unacceptable to install fence posts. The surround shall be constructed in such a manner as to provide a buffer zone around and access to the item being protected.
5. Type E, Steel "T" Fence Posts with construction fencing to surround an object with a complete visual barricade and it is practical to install fence posts. The surround shall be constructed in such a manner as to provide a buffer zone around and access to the item being protected.
6. Type X, Other fencing or barricade types that may be designated and detailed within the construction documents shall use additional alpha numeric designations.

2.2. EROSION CONTROL PROTECTION

A. Refer to City of Madison Standard Specification 210.2 for authorized materials associated with erosion control materials.

2.3. INTERIOR FINISH PROTECTION MATERIALS

A. Except where noted in other areas of the construction documents or this specification the responsible contractor:

1. Shall not provide the cheapest or least effective method as an effort to meet any protection requirement.

2. Shall provide materials of sufficient quality, and durability to provide adequate protection based on the seasonal conditions and the anticipated duration at the time the protection will be needed.
3. Shall provide sufficient quantity of protection material to protect the construction as needed.

B. Prior to installing protective measures the responsible contractor shall propose to the GC, Project Engineer (PE) and City Project Manager (CPM) the proposed plan for protection, materials to be used and samples as necessary.
1. The PE and CPM reserve the right to disapprove any proposed method and/or material and/or make alternate proposals.

PART 3 - EXECUTION

3.1. GENERAL EXECUTION REQUIREMENTS

A. The GC shall be responsible for ensuring all of the following procedures and requirements are implemented as needed for the duration of the Work performed under this contract.

B. The GC shall also be responsible for the following:
1. Reporting any incident of damage to existing property, right-of-way, or utility to the CPM immediately upon rendering the incident safe, and notifying emergency response teams, and emergency utility crews as needed.
2. Conduct a site walk through prior to leaving at the end of each day to assess:
   a. Protection measures are properly in place, provide correction actions as necessary.
   b. Note damage to existing completed work and schedule repair/replacement as needed.
3. Ensure all contractors and workers are being diligent in protecting existing work, and newly installed construction.

3.2. PROTECT ADJACENT PROPERTIES

A. Whenever possible through the design process the City of Madison shall have previously provided notice to adjacent property owners that work will be occurring on or near their property. The City of Madison shall also have obtained any permanent or temporary easements that may be necessary to complete any Work on adjacent properties.

B. It shall be the responsibility of the GC to do the following for all Work under this contract being performed on or adjacent to the property line:
1. Contact the adjacent property owner and provide him/her with information on the work to be done, equipment to be used, and estimated duration of the work. Information to be updated and communicated to property owner(s) as construction progresses and site conditions change.
   a. If any adjacent property is a rented or leased space the GC shall also make contact and provide the same information to the tenants.
   b. Determine from the owner and/or tenants if there are any concerns for children, pets, special plantings, or other concerns.
2. Discuss the following with all contractors performing work on or near the property line.
   a. Work to be completed and timeline.
   b. Concerns of adjacent property owners/tenants from item 1 above.
   c. Which protective measures will be necessary to protect adjacent properties and address the concerns of adjacent property owners/tenants.
3. Ensure all protective measures are placed and maintained during the execution of Work on or adjacent to the property line. Interact with the adjacent property owners/tenants as needed.

C. Any contractor doing work on or adjacent to the property line shall install and maintain any protective measure identified in the contract documents, this specification, or as directed by the GC.

D. The GC shall be responsible for restoring any damage to structure and property located on or adjacent to the property line.
1. Restoration shall include but not be limited to repair or replacement using like materials and finishes to its original condition or better.
2. Restoration of landscaping materials shall include watering of any seed, sod, or other planting of any kind for a reasonable period of time to encourage germination and root development.

E. The GC shall keep the CPM informed directly to any issues pertaining to adjacent property owners and tenants.

3.3. PROTECT LANDSCAPING FEATURES

A. Except where specifically stated in other areas of the construction documents the following minimal protection requirements shall apply under this section.

1. Whenever possible do not install new landscape features until exterior building construction has been completed, equipment such as scaffolding and lifts are no longer needed and have been removed, and heavy equipment operation is no longer required.
2. Whenever possible remove and temporarily store all existing landscape features such as benches, waste receptacles, signage, and other such features that will be within the area of Work that can be removed.
3. Landscape features that cannot be removed such as flag poles, light poles, light bollards, etc. shall be protected with Type D fencing for areas on pavement or Type E fencing for areas on soil.
4. Planting beds shall be protected using Type E fencing around the exposed perimeter of the planting bed as needed.
5. The City of Madison Standard Specification 107.13 shall apply to all tree protection in and around the project site at all times.

3.4. PROTECT UTILITIES

A. The contractor shall be responsible for notifying all utilities to determine emergency response procedures and protection requirements prior to installing any construction protection.
   1. This includes requesting utility marking through Diggers Hotline.
      a. Call 811 or 1-800-242-8511 to request a public utility locate
      b. For emergency locate call (262) 432-7910 or (877) 500-9592
   2. Contact the Owner and CPM for any available private utility information on the property that may be available prior to calling a private utility locating company.

B. Except where specifically stated in other areas of the construction documents the following minimal protection requirements shall apply under this section.
   1. Hydrants, lamp posts, electrical transformers, and other utility pedestals shall be protected with Type D fencing for areas on pavement or Type E fencing for areas on soil. Fence posts shall be located so as to not be directly over the utility main.
   2. Storm sewer structures in pavement shall have proper inlet protection according to City of Madison Standard Specification 210.1(g) and Type C Construction Barrels when necessary.
   3. Storm sewer structures in turf and other landscaped areas shall have proper inlet protection according to City of Madison Standard Specification 210.1(g) and Type E fencing for areas on soil.
   4. Stormwater management features such as greenways, retention/detention ponds, bio-filtration ponds and other such features shall be properly protected according to the appropriate erosion control measure specified on the Erosion Control Plan. See multiple sections of City of Madison Standard Specification 210.1
      a. For the protection of hard to see items such as structures, castings, inlets, etc. in grassy areas provide Type E fencing for areas on soil.
      c. For the protection of storm water management features having special soils and plants such as bio-filtration ponds provide Type E fencing for areas on soil.
   5. Other structures and covers including but not limited to cleanouts, wiring hand holes, valve boxes, access structures, grease trap structures, etc shall be protected as follows:
      a. Provide Type E fencing for areas on soil.
      b. When paving operations are complete provide a construction barrel or cone near structures as necessary depending on required heavy construction traffic.

3.5. PROTECT PUBLIC RIGHT OF WAY

A. Except where specifically stated in other areas of the construction documents the following minimal protection requirements shall apply under this section.
   1. All public right-of-way (area from behind the sidewalk to the centerline of the street) shall remain open and accessible except during periods of active work. At such times the public right of way shall be properly closed and signed as referenced in City of Madison Standard Specification 107.9.
   2. Bus stops and bus stop structures shall remain accessible at all times.
   3. Traffic signage and traffic signals, traffic control boxes shall be protected with Type D fencing for areas on pavement or Type E fencing for areas on soil.
      a. Protection at traffic signage/signals shall not obstruct the viewing of the sign/signal for its intended purpose at any time.

B. When additional protection for traffic control is required, the use of barricades, guardrails, lane closures and other such procedures will be detailed within the construction documents.

C. When additional protection for overhead sidewalk cover is required the contract documents shall indicate the specific location and structural requirements of the protective structure.

3.6. PROTECT STORED MATERIALS

A. All contractors shall refer to Specification 01 60 00 Product Requirements for all storage and protection requirements of building materials and products delivered to the site.

3.7. PROTECT WORK - EXTERIOR

A. Provide all temporary services that may be required to protect the installed material from heat, cold, humidity, etc, while materials such as concrete, mortar, sealants, paints, etc, are drying and/or curing.

B. Open trenches, pits, and other such excavations shall be properly covered, lined, or shored as needed during periods of inclement weather to prevent the caving of soils onto existing work in progress. Refer to the appropriate specifications and/or regulatory requirements governing this type of work as necessary.

C. Provide adequate protection at all openings with heavy duty tarps, plastic sheathing, or wood framing and sheathing as needed to protect interior work in progress from inclement weather as needed.

D. Protect exterior finishes of all kinds with heavy duty tarps or plastic sheathing as needed while landscaping is being installed through full germination of seeded areas or installation of filter fabric and mulches to keep dust, dirt, and mud off of finished exterior surfaces.

E. Designate specific curb mounting points and provide wood blocking where small vehicles, skid loaders and other such equipment may need access to areas being landscaped.

F. Provide plywood turning pads for skid loaders to turn on to prevent tire marking on new pavement.

G. Do not permit the parking of vehicles with any kind of fluid leaks to park on new pavement.

H. The contractor shall be responsible for cleaning, repairing, or replacing any completed work or work in progress under this specification as deemed necessary by the CPM without additional cost to the contract.

3.8. PROTECT WORK - INTERIOR

A. The GC shall do all of the following:

1. Provide all temporary services that may be required to protect the installed material from heat, cold, humidity, etc, while materials such as concrete, mortar, sealants, paints, etc, are drying and/or curing.
2. Provide adequate visual and/or physical protection as needed to protect newly completed interior work such as paint, flooring material, sealants, grouts, etc that may be drying and/or curing.
3. Provide adequate space and materials for cleaning boots, tool boxes, supplies, and other items coming into the project site once finish work has begun.
4. Clean dirtied areas and repair/replace damaged areas immediately.

B. The contractors responsible for interior work shall be responsible for protecting their work and finishes from dirt, mud, snow, spills, splatters, and physical damage after installation as follows:

1. Protect vinyl composite, rubber composite, painted/stained concrete, and tiled flooring as follows:
   a. Define foot traffic areas and protect with Ramboard Temporary Floor Protection products as a minimum basis of design or other protection product(s) compatible with installed flooring product if Ramboard is not compatible. Products to be used shall be new.
      i. Tape all edges, seams, etc with a good quality tape that does not leave sticky residue. Do not allow any debris or other material between the installed flooring and the protection material.
      ii. Repair tears immediately, replace worn areas with like material as necessary.
2. Protect carpeted areas as follows:
   a. Define foot traffic areas and protect with a minimum of 6mil, clear, polyethylene sheeting 3 feet wide. Products to be used shall be new.
      i. Tape all edges, seams, etc with a good quality tape that does not leave sticky residue. Do not allow any debris or other material between the installed flooring and the protection material.
      ii. Repair tears immediately, replace worn areas with like materials as necessary.
3. Protect all finished walls in high traffic areas with Ramboard Temporary Wall protection products or approved equal.
      i. Tape all edges, seams, etc with a good quality tape that does not leave sticky residue. Do not allow any debris or other material between the installed flooring and the protection material.
      ii. Repair tears immediately, replace worn areas with like materials as necessary.
3. Protect counter tops, cabinets, and other finished surfaces with large sheets of thick cardboard or Ramboard products. Do not allow toolboxes, finish materials, parts and other such items to be placed on finished materials.

C. All protection shall stay in place until the CPM, PE, and GC mutually deem the project is ready for Final Cleaning. The contractors responsible for protecting the work shall be responsible for removing the protection and removing any adhesive residue at that time. Contractors shall only use manufacturer authorized cleaning materials for removing adhesives, etc.

D. Contractors doing work in un-protected areas of finished work shall be required to provide drop cloths and other protection as noted within this specification for the duration of their work.

1. Finished areas shall be sufficiently covered to accommodate all equipment, and materials being used to complete the work being done.
2. Finished areas shall be sufficiently covered to prevent splatters, over spray, etc when doing touch-up work.
3. Contractors who do not provide sufficient protection under this sub-section shall be responsible for any costs associated with cleaning, repairing or replacing already finished construction at no additional cost to the contract.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. DEFINITIONS 1
1.4. QUALITY ASSURANCE – CONSTUCTION CLOSEOUT 2
1.5. QUALITY ASSURANCE – CONTRACT CLOSEOUT 2
PART 2 – PRODUCTS – THIS SECTION NOT USED 3
PART 3 - EXECUTION 3
3.1. CONSTRUCTION CLOSEOUT CHECKLIST 3
3.2. CONSTRUCTION CLOSEOUT REQUIREMENTS 3
3.3. CONSTRUCTION CLOSEOUT PROCEDURE 4
3.4. CONTRACT CLOSEOUT REQUIREMENTS 4
3.5. CONTRACT CLOSEOUT PROCEDURE 4

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to clearly define and quantify the requirements associated with closing a City of Madison Public Works Contract for facility related work.

B. All contracts have two distinct but related paths. Each path needs to be properly closed independently in order to close the contract as a whole.

1. Construction closeout is related to closing out all of the Work associated with the construction documents.
   a. It shall be the responsibility of all contractors to be fully aware of the required Work and closeout requirements involved in their individual trades.
2. Contract closeout is related to closing out all of the administrative aspects of the contract in general.
   a. It shall be the responsibility of all contractors to be fully aware of the administrative requirements required by the contract and to provide the supporting documentation required.
3. Construction Closeout must be completed before Contract Closeout can begin.

C. This specification will provide general knowledge associated with the following areas:

1. Construction Closeout Requirements
2. Construction Closeout Procedure
3. Contract Closeout Requirements
4. Contract Closeout Procedure
5. Final Payment and Certificate of Completion

1.2. RELATED SPECIFICATIONS

A. Contractors shall review all references to other specifications including specifications relating to the execution of the Work associated with their Division or Trade.

B. Section 01 29 76 Progress Payment Procedures
C. Section 01 32 16 Construction Progress Schedules
D. Section 01 74 13 Progress Cleaning
E. Section 01 45 16 Construction Waste Management and Disposal
F. Section 01 76 00 Protecting Installed Construction
G. Section 01 78 23 Operation and Maintenance Data
H. Section 01 78 36 Warranties
I. Section 01 78 39 As-Built Drawings
J. Section 01 79 00 Demonstration and Training
K. Other requirements as noted in the contract documents signed by the General Contractor

1.3. DEFINITIONS

A. ***Substantial Compliance***: A letter provided to the City of Madison Building Inspection and signed by the Project Engineer indicating that all Work has been completed to a level that would allow Owner Occupancy and that all construction is in compliance with the construction documents. A copy of this letter is also provided to the

State of Wisconsin Department of Health and Safety as necessary to clear plan review requirements. This letter does not represent construction closeout.

B. ***Certificate of Occupancy***: The Regulatory letter from the City of Madison Building Inspection Department indicating that all regulatory requirements and inspections have been completed and the building may now be occupied for its intended use. This letter does not represent construction closeout.

C. ***Certificate of Substantial Completion***: A letter provided by the Department of Public Works, signed by the City Engineer indicating that Construction activities are substantially complete. This letter does represent construction closeout and the date of this letter begins the date of the Warranty Period.

D. ***Construction Closeout***: The point in the contract where all contractural requirements associated the execution of the Work as described in the plans, specifications, and other documents have been successfully met and the items described in 1.3.A, .B, and .C above have been completed.

E. ***Final Progress Payment***: The progress payment associated with achieving Construction closeout as described in 1.3.D above. At this point the contractor may request all monies associated with the contract be paid with the exception of held retainage.

F. ***Contract Closeout***: The point in the contract where all contractural requirements associated with the City of Madison, Board of Public Works contract has been successfully met.

G. ***Final Payment***: The final contract payment submittal that may be approved by the City of Madison after all contractural requirements of the Public Works Contract have been met and any remaining monies (retainage) due to the contractor may be released for the Final Payment.

1.4. QUALITY ASSURANCE – CONSTUCTION CLOSEOUT

A. All contractors shall be responsible for properly executing the construction closeout requirements associated with their Work as described in the specifications governing their Work.

B. The GC shall be responsible for all of the following:

1. Ensuring that all contractors have met the construction closeout requirements associated with their Work.
2. Coordinate the collection of all construction closeout deliverables from all contractors, provide the deliverables to the Project Engineer and City Project Manager for review as necessary, and ensure all contractors correct deficiencies of deliverables and resubmit as needed for final acceptance.
3. Ensure all closeout requirements identified in the Construction Closeout Checklist below have been completed as intended by the construction documents.

1.5. QUALITY ASSURANCE – CONTRACT CLOSEOUT

A. The City of Madison, Department of Civil Rights (DCR) monitors contract compliance for construction and procurement contracts to ensure that local, state and federal regulations are followed by contractors working on City of Madison Public Works (PW) projects. DCR will monitor all PW projects from contract award through the final payment at the close of the project. Contractors will be required to submit reporting paperwork throughout the PW project process.

1. Contractors are encouraged to visit the web site identified below for additional information, checklists, forms, and other information provided by DCR as it relates to Contract Compliance.
   http://www.cityofmadison.com/Business/PW/contractCompliance.cfm
2. Questions regarding the process should be directed to parties and offices as identified on the various forms, documents, and instructions or contact:
   City of Madison, Department of Civil Rights
   210 Martin Luther King Jr. Blvd., Room 523
   Madison, WI 53703
   (608) 266-4910

B. All Sub-Contractors have submitted the applicable required documents described in item 1.5.D below to the General Contractor (GC) for Contract Closeout.

C. The GC has submitted the required applicable documents described in item 1.5.D below for all contractors to the appropriate City of Madison Agency per instructions associated with each submittal.

D. The documents required for submittal to the City of Madison for Contract Closeout may include any/all of the items listed below depending on contract type. It is the sole responsibility of all contractors to know and submit the required and complete documentation in a timely fashion.

1. Weekly Payroll Reports
2. Employee Utilization Reports
3. Agent or Subcontractor Affidavit of Compliance with Prevailing Wage Rate Determination
4. Prime Contractor Affidavit of Compliance with Prevailing Wage Rate Determination

5. Documentation required for Small Business Enterprise (SBE) goals
6. Other documents as maybe required or requested through the Finalization Review Process

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. CONSTRUCTION CLOSEOUT CHECKLIST

A. All contractors shall be responsible for reviewing the drawings and specifications within their Divisions of Work to provide a complete and comprehensive list of all Construction Closeout Requirements to the GC.
   1. The checklist shall include all items identified within the construction documents that require any of the following (and examples) prior to moving into Contract Closeout Procedures:
      a. Documents indicating a specified level of performance has been achieved, such as:
         i. Test reports of all types
         ii. Startup reports
      b. Required documentation, such as:
         i. As-builts and record drawings
         ii. Operation and maintenance data
      c. Physical items to be turned over to the owner, such as:
         i. Attic stock
         ii. Keys
      d. Required maintenance completed, such as:
         i. Ducts cleaned
         ii. Filters replaced
      e. Owner and Maintenance Training

B. Each list shall indicate the title of the closeout requirement, the associated specification of the requirement, the required result or deliverable, the responsible contractor(s), and a column to verify the item has been turned in and completed.

C. The GC shall be responsible for all of the following:
   1. Consolidating all the closeout lists into one master Construction Closeout Checklist.
      a. The checklist shall be in a tabular data format similar to the sample below
   2. Resubmit the checklist as needed after initial reviews have been completed.

D. The GC shall work with all contractors to amend the Construction Closeout Checklist throughout the execution of the project based on changes and modifications as necessary.

Title	Specification	Description	Responsibility	Completed
Quality Management Observation Reports	01 45 16	All QMO reports have been properly responded to, reviewed and closed by the CPM.	All, GC	
As-Built Drawings	01 78 39	As-Built drawings have been reviewed and accepted per the specification	All, GC	
Testing and Balancing	23 09 23	Provide final TAB reports indicating design performance has been achieved	HVAC	

3.2. CONSTRUCTION CLOSEOUT REQUIREMENTS

A. The timely submittal or completion of closeout requirements shall go hand in hand with the Progress Payment Milestone Schedule that can be found in Specification 01 29 76 Progress Payments. No payments shall be made until all requirements for that payment have been met.
   1. The GC and all major Subcontractors, PE, and CPM, shall review all requirements for Construction/Contract Closeout during two (2) special meetings.
      a. The first meeting shall be held at the 50% Contract Total Payment milestone. This meeting shall discuss the requirements associated with various construction/contract closeout documentation and events when they are due with respect to progress payments.
      b. The second meeting shall be held at the 70% Contract Total Payment milestone. This meeting shall review the contractors progress regarding the closeout checklist, begin making plans for upcoming deadlines such as scheduling training, where to put attic stock, and when they are due with respect to progress payments.

2. The GC, PE, and CPM, shall utilize the Construction Closeout checklist to ensure that all construction closeout requirements have been met.

3.3. CONSTRUCTION CLOSEOUT PROCEDURE

A. Upon successful completion and final acceptance of all Construction Closeout Requirements the GC may submit to the CPM and PE the request for Final Progress Payment (100% contract total, less retainage).

B. The PE will confirm with the design consultants, CPM, and other City of Madison staff that all requirements of the Work have been completed and will do the following:
   1. Approve the final progress payment application
   2. Provide the required signed payment documents to the CPM
   3. Provide the required Letter of Substantial Compliance to the following as required:
      a. State Safety and Building Division
      b. Local Building Inspection office
      c. GC
      d. CPM

C. The CPM shall draft the City Letter of Substantial Completion for signature by the City Engineer. This letter shall state any of the following that may still be tied to the contract and/or warranty:
   1. Indicate that the date of the letter shall also be the beginning of the Warranty period.
   2. Indicate any allowed due outs, reasons for them, and anticipated dates of finalization.

D. The GC and all subcontractors shall finalize all warranty letters associated with their Work using the date noted on the City Letter of Substantial Completion, and provide the CPM with all warranties as described in Specification 01 78 36 Warranties. Upon receipt and final approval of the Warranties the CPM may initiate final processing of the Final Progress Payment (100% contract total, less retainage).

3.4. CONTRACT CLOSEOUT REQUIREMENTS

A. The GC and all sub-contractors shall follow all requirements associated with documenting contract compliance and provide documentation as required or requested by DCR or PW staff. All contractors are encouraged to stay current with submissions of the following documentation:
   1. Weekly Payroll Reports no later than the Progress Payment equal to 50% of the contract total.
   2. Employee Utilization Reports
   3. Agent or Subcontractor Affidavit of Compliance with Prevailing Wage Rate Determination
   4. Prime Contractor Affidavit of Compliance with Prevailing Wage Rate Determination
   5. Documentation required for Small Business Enterprise (SBE) goals
   6. Other documents as maybe required or requested through the Finalization Review Process

B. Near the Progress Payment equal to 80% of the contract total the GC shall request in writing a Finalization Review. At that time DCR or PW staff shall prepare a report of all contract documentation submitted to date. A list of missing items or outstanding issues will be emailed to the GC. No additional follow-up will be generated by DCR or PW Staff.

3.5. CONTRACT CLOSEOUT PROCEDURE

A. The Contract Closeout Procedure will not begin until the Construction Closeout Procedure has been completed.

B. When the GC feels he/she has successfully met all of the Contract Closeout Requirements associated with Section 3.3 above the GC may submit to the request for Final Payment to the CPM.

C. The CPM shall sign and submit the Final Payment request for processing.

D. DCR and PW staff shall do a complete review of all documentation associated with item 3.3.A above.

E. The GC shall be notified directly by DCR or PW Staff of any documentation that may still be missing, have incomplete information, or other outstanding issues. It shall be the responsibility of the GC to continue follow-up with DCR and PW staff until all documentation has been successfully submitted and accepted.

F. When all required documentation associated with Contract Closeout has been successfully submitted and accepted by DCR and PW Staff the City of Madison shall process the Final Payment of any remaining monies including retainage.

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. QUALITY ASSURANCE 1
1.4. O&M DATA REQUIREMENTS 1
1.5. O&M DATA SUBMITTALS 2
PART 2 – PRODUCTS – THIS SECTION NOT USED 2
PART 3 - EXECUTION 2
3.1. O&M DATA PREPARATION - GENERAL 2
3.2. O&M DATA DRAFT SUBMITTAL 3
3.3. O&M DATA FINAL SUBMITTAL 3
3.4. CONSTRUCTION CLOSEOUT 3

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide clear responsibilities and guide lines related to providing well documented and complete Operation and Maintenance (O&M) Data related to general facility use, equipment, systems, finishes, and materials to City of Madison Staff (Owner, Owner Representatives, Maintenance, and Custodial Personnel) as needed.

B. Operation and Maintenance Data shall apply to both of the following categories except where specific requirements are noted under their separate titles as follows:

1. Operation and Maintenance Data: Generally shall mean the owner manual that provides information on start-up, shut-down, operation, troubleshooting, maintenance, parts, and other such documentation as it pertains to all equipment and systems installed under the Work.
2. Use and Care instructions: Where applicable use and care instructions shall also be considered O&M for such things as flooring, tile, partitions, and other such finishes and trim related items, installed under the Work.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 77 00 Closeout Procedures
C. Section 01 78 36 Warranties
D. Section 01 79 00 Demonstration and Training
E. Other Divisions and Specifications that may address more specifically the requirements for O&M Data.

1.3. QUALITY ASSURANCE

A. All O&M Data shall meet the requirements identified in Section 1.4 below.

B. All contractors shall provide O&M Data for each piece of equipment, system, or finish installed during the installation of the Work. O&M Data shall be provided to the General Contractor (GC) for verification and submittal.

C. The GC shall be responsible for receiving all required O&M Data files from all contractors for verifying that all files submitted meet the requirements in Section 1.4 below.

1.4. O&M DATA REQUIREMENTS

A. O&M Data shall be provided in digital PDF format as follows:

1. PDF files shall be complete first generation consumer useable editions of PDF documents as provided by any of the following:
   a. Product manufacturer
   b. Supplier of product
   c. Product manufacturer internet site
2. Acceptable PDF files shall have the following functionality:
   a. Word searchable
   b. Key areas are bookmarked
   c. Table of Contents and/or Index linked to content is preferred whenever possible.

3. Scanned printed material, with word searchable capabilities, saved as a PDF, is not acceptable and will be rejected without further review.

B. O&M Data shall include but not be limited to the following manufacturers' published information as appropriate for the equipment, system, material, or finish:
1. Installation instructions
2. Parts lists, assembly diagrams, explosion diagrams
3. Wiring diagrams
4. Start-up, shut-down, troubleshooting and other related operation procedures
5. Lubrication, testing, parts replacement, and other such maintenance procedures
6. General use, care, and cleaning instructions
7. Special precautions and safety requirements
8. A list of certified equipment vendors, service companies, parts suppliers including company name, address, and phone number
9. A list of the recommended spare parts to have on hand at all times
10. A list by type of all recommended lubes, oils, packing material, and other maintenance supplies
11. Copies of final test reports, balance reports, and other related documentation
12. Warranty information for equipment and systems

1.5. O&M DATA SUBMITTALS

A. O&M Data shall be prepared as identified in this specification and shall be submitted for review as per the schedule identified in Specification Section 01 29 76, Progress Payment Procedures.

B. O&M Data Draft submittals will be reviewed for content, procedure, and compliance only. A general critique with recommendations for improvement will be made but re-submittals will not be required.

C. O&M Data Final submittals will be reviewed for content, procedure, and compliance. Re-submittals will be required until such time as each submittal is accepted.

NOTE: Acceptance of O&M Data Final submittals is required to be complete prior to scheduling and conducting owner related training and construction closeout.

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. O&M DATA PREPARATION - GENERAL

A. All contractors shall prepare O&M Data for draft and final submission as follows:
1. Obtain digital PDF files for each piece of equipment, system, material or finish as described in Sections 1.4.A.1 and 1.4.A.2 above.
2. Verify that all information as described in Section 1.4.B above is included with the PDF file. Obtain missing information as necessary for a complete submittal.

B. Rename each individual PDF file as follows.
1. Do not use special characters such as #, %, &, /, etc. These characters are reserved by the Project Management Web Site software the City of Madison uses; however the under-score (or under-bar) '_' is an allowed character.
2. Use the following format and examples for renaming your file:
a. Format: ***Equipment name_What_Project name_Contract number_Year***
i. *Equipment Name* represents the name of any equipment, system, material or finish as designated in the Contract Documents.
ii. *What* represents what the file is about
iii. *Project Name* represents the title of the project or contract. A shortened version of the title may be identified by the City Project Manager to be used by all contractors.
iv. *Contract number* is the specific identification number the Work was bid under and appears on the plan set title sheet and in each sheet title block
v. *Year* represents the year the contract will be closed out
b. Examples of file names
i. AHU 2_Operation Manual_Fire Admin_1234_2015
ii. CPT 2_Use and Care_MPD West_9876_2011

C. All contractors shall submit the completed digital PDF files to the GC in sufficient time for the GC to meet the O&M Data submission deadlines as described in Specification Section 01 29 76, Progress Payment Procedures.

D. O&M Data shall be submitted and reviewed as described in sections 3.2 and 3.3 below.

3.2. O&M DATA DRAFT SUBMITTAL

A. All contractors shall prepare and submit the following for an O&M Data Draft review submittal:
   1. Prepare three (3) complete O&M Data file samples as described in section 3.1 above.
   2. Review all specifications within his/her Division of Work and prepare a complete O&M Data checklist listing all equipment, systems, materials, or finishes. Checklist shall be in tabular form similar to the example below and shall indicate the title (and plan identifier when applicable) of the O&M Data, the associated specification, and a column to verify the item has been turned in and completed.

B. The GC shall be required to review all contractors' samples and checklists for compliance with this specification and shall return any to the originating contractor that are insufficient for re-submittal.
   1. When acceptable to the GC, he/she shall electronically submit each O&M Data draft submittal file to the CPM.

C. The Project Engineer, City Project Manager, Consulting Staffs and Owner Representatives shall review the O&M Data draft submittals and checklist within fifteen 15 working days as follows:
   1. Provide general critique comments by Division on O&M Data samples submitted. Critique is intended to provide all contractors with information on strengths and weaknesses of their submittals.
      a. Re-submittal of the O&M Data samples will not be required.
   2. Review in detail the O&M Data Checklist for completeness. Provide comments as needed.
      a. Re-submittal of the O&M Checklist will be required until accepted.

Title	Specification	Completed
Overhead Door Operator	08 36 00	
Air Handling Unit (AHU-3)	23 00 00	
Water Heater (WH-1)	22 30 00	

3.3. O&M DATA FINAL SUBMITTAL

A. All contractors shall prepare and submit the following for an O&M Data Final review submittal:
   1. Prepare complete O&M Data files as described in Section 3.1 above according to their approved checklist as described in Section 3.2 above.
   2. Submit completed checklist and all final O&M Data files to the GC for final submittal review.

B. The GC shall be required to spot check all contractors' submittals for completeness against their checklists and for compliance with this specification and shall return any to the originating contractor that are insufficient for re-submittal.
   1. When acceptable to the GC, he/she shall electronically submit each O&M Data final submittal file to the CPM.

C. The Project Engineer, City Project Manager, Consulting Staffs and Owner Representatives shall review the O&M Data final submittals and checklist within fifteen (15) working days as follows:
   1. Review the files submitted against the checklist and request any missing files through the GC.
   2. Review in detail all of the O&M Data files for completeness.
      a. Submittals shall be accepted or rejected as individual PDF files.
      b. Contractors shall re-submit entire O&M submittal if any portion is rejected or incomplete.

3.4. CONSTRUCTION CLOSEOUT

A. All contractors shall review Specification 01 77 00, Closeout Procedures and Specification 01 79 00 Demonstration and Training.
   1. Acceptance of all final O&M Data submittals is required prior to scheduling Demonstration and Training Sessions.
   2. Completion of all Demonstration and Training Sessions is required to receive the Substantial Compliance for Occupancy Certificate, and to begin Construction Closeout procedures.

END OF SECTION

SECTION 01 78 36
WARRANTIES

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. DEFINITIONS 1
1.4. GENERAL CONTRACTORS RESPONSIBILITIES 2
PART 2 – PRODUCTS - THIS SECTION NOT USED 2
PART 3 - EXECUTION 2
3.1. WARRANTY CHECKLIST 3
3.2. LETTERS OF WARRANTY 3
3.3. STANDARD PRODUCT WARRANTY 4
3.4. FINAL WARRANTY SUBMITTAL 4
3.5. WARRANTY NOTIFICATION, RESPONSE, EXECUTION AND FOLLOW-UP 4

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide clear responsibilities and guide lines related to providing all Warranties and Guarantees related to the Work, workmanship, materials, equipment, and other such items required by the Construction Documents.

B. Manufacturers' disclaimers and limitations on product warranties do not relieve any contractor of the warranty on the Work that includes the product.

C. Manufacturers' disclaimers and limitations on product warranties do not relieve suppliers, manufacturers and any contractor required to provide special warranties under the contract documents.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures

B. Section 01 77 00 Closeout Procedures

C. Section 01 78 23 Operation and Maintenance Data

D. Other Divisions and Specifications that may address more specifically the requirements for Warranties related to the installation of all items and equipment installed under the execution of the Work.

1.3. DEFINITIONS

A. See specification 01 77 00 for the definitions of the following terms that may also be used in this specification:

1. Substantial Compliance
2. Certificate of Occupancy
3. Certificate of Substantial Completion
4. Construction Closeout
5. Contract Closeout

B. Emergency Repair: The Owner or Owner Representative reserves the right to make emergency repairs as required to keep equipment or materials in operation or to prevent damage to property and injury to persons without voiding the contractors warranty or bond or relieving the contractor of his/her responsibilities during the warranty period.

C. Installer: The company or contractor hired to install a finished product that was manufactured and supplied specifically for the Work within this contract. The Installer may or may not be the same company that supplied the product. See the definition for supplier.

D. Supplier: Any company that makes a specific finished product for the Work from information within the Contract Documents. Examples of suppliers would include custom cabinets, steel stairs and railings, etc. A supplier would not be a company that distributes items manufactured by others such as an electrical or plumbing supplier.

E. Warranty: A written guarantee from the manufacturer to the owner on the integrity of a product and its installation, and the manufacturers' responsibility to repair or replace the defective product or components within a specified time from the date of ownership. Warranty may also be used interchangeably with Guarantee. The following warranty types may be part of any specification within the Work associated with the Construction Documents:

1. Expressed Warranty: A warranty that provides specific repair or replacement for covered components of a product over a specified length of time.

2. Implied Warranty: A warranty that is not stated explicitly by a seller or manufacturer that the product is merchantable and fit for the intended purpose.
3. Standard Product Warranty: Preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner. Standard warranties may be for any amount of time but shall not be for anything less than one (1) year from the warranty date.
4. Special Warranty: A written warranty required by the Contract Documents either to extend the time limit provided under a standard warranty or to provide greater rights to the Owner.

F. Warranty Date: The effective date that begins all warranty periods required for products, installations, and work-manship associated with the execution of the Work for this contract. The Warranty Date shall be the date the Certificate of Substantial Completion was signed by the City Engineer.

G. Related Damages and Losses: When correcting failed or damaged Warranted Work, remove and reinstall (or replace if necessary) the construction that has been damaged as a result of the failure or the construction that must be removed and replaced to obtain access for the correction of Warranted Work.

H. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected reinstate the warranty by a new written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation unless specifically noted otherwise in a specification.

I. Replacement Cost: All costs that may be associated with Work being replaced under warranty including but not limited to the following:
1. Related damages and losses
2. Labor, material and equipment
3. Permits and inspection fees
4. This shall be regardless of any benefit the Owner may have had from the Work through any portion of its anticipated useful service life.

J. Replacement Work: All materials, products, required labor, and equipment necessary to replace failed or damaged warranted to an acceptable condition that complies with the requirements of the original Construction Documents.

K. Owners Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, and remedies.
1. Rejection of Warranties: The Owner reserves the right to reject any warranty and to limit the selection of products with warranties not in conflict with the requirements of the contract documents.
2. Where the Contract Documents require a Special Warranty or similar commitment on the Work or product, the Owner reserves the right to refuse acceptance of the Work until the Contractor presents evidence the entities required to countersign such required commitments have done so.

1.4. GENERAL CONTRACTORS RESPONSIBILITIES

A. The General Contractor (GC) shall be responsible to remedy, at his/her expense, any defect in the Work and any damage to City owned or controlled real or personal property when the damage is a result of:
1. The GC's failure to conform to Contract Document requirements.
   a. Any substitutions not properly approved and authorized may be considered defective.
2. Any defect in workmanship, materials, equipment, or design furnished by the GC or Sub-contractors.

B. All warranties as described in this specification and these Contract Documents shall take effect on the date of the Certificate of Substantial Completion signed by the City Engineer as noted in Section 1.3.F above.
1. All warranties shall remain in effect for one (1) year thereafter unless specifically stated otherwise in the Contract Documents or where standard manufacturer warranties are greater.

C. The GC's warranty with respect to Work repaired or replaced, including restored or replaced Work due to damage, will run for one (1) year from the date of Owner Acceptance of said repair or replacement.
1. This shall be regardless of any benefit the Owner may have had from the Work through any portion of its anticipated useful service life.

D. Warranty Response
1. See Section 3.5 of this specification.

PART 2 – PRODUCTS - THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. WARRANTY CHECKLIST

A. All contractors shall be responsible for reviewing the drawings and specifications within their Divisions of Work to provide a complete and comprehensive list of all Warranty Requirements to the GC.

B. Each list shall indicate the title (and plan identifier when applicable) of the warranted item, the associated specification of the warranted item, the terms of the warranty (years), and a column to verify the item has been turned in and completed.

C. The GC shall be responsible for all of the following:

1. Consolidating all the warranty lists into one master Warranty Checklist and submitting electronically.
    a. The checklist shall be in a tabular data format similar to the sample below.
2. Resubmit the schedule as needed after initial reviews have been completed.

D. The GC shall work with all contractors to amend the Warranty Checklist throughout the execution of the project based on changes and modifications as necessary.

Title	Specification	Terms	Completed
Overhead Door Operator	08 36 00	MFR 2yr	
Exterior Bench and Trash Receptacles	12 93 00	MFR 3 year warranty on finish	
Kitchen Sink (SK-1)	22 42 00	MFR 5 year	
Disposal (D-1)	22 42 00	MFR 7 year parts and in-home service	
Toilet (WC-1)	22 42 00	MFR 1 year limited	

3.2. LETTERS OF WARRANTY

A. All letters of warranty shall be in a typed letter format and provide the following information:

1. The letter shall be on official company stationary including company name, address, and phone number.
2. Indicate project name, contract number, and contract address the warranty is for on the reference line.
3. Provide a description of the warranty(ies) being provided.
    a. Include Division, Trade, or Specification information as necessary.
    b. Only combine warranties of related Divisional Work together. Create new letters for additional Divisions as necessary.
4. Indicate the effective Warranty Date. As noted in Section1.3.F above, the Warranty Date shall be the date the Certificate of Substantial Completion was signed by the City Engineer.
5. Contractor Letters of Warranty shall only be signed by a principal officer of the company.
6. After signing the letter provide the GC with a high quality color scanned image in PDF format and the original signed letter.

B. The GC shall be responsible for the Final Warranty submittal as identified in Section 3.4 below.

C. The GC shall obtain letters of warranty from all of the following:

1. The General Contractor shall provide warranty letters for all Work that was self performed under the contract documents, identify all trades or Divisions of Work.
2. All Sub-contractors shall provide warranty letters for Work performed under the contract documents; identify all trades or Divisions of Work.
3. Suppliers, as required by other specifications within the Construction Documents where the manufacture of a specific product unique to the Work of this contract was required.
    a. The terms and conditions of the Supplier Letter of Warranty shall be as defined by the specifications associated with the Work but shall not be less than the industry standard of repair, or replace defective materials and workmanship within one (1) year of the warranty date.
    b. When the supplier is also the installer a single written letter may be submitted identifying both the warranty for the manufacture of the product and the warranty for the installation of the product.
4. Installers as required by other specifications within the Construction Documents where the installation of a specific product unique to the Work of this contract was required.
    1. The terms and conditions of the Installer Letter of Warranty shall be as defined by the specifications associated with the Work but shall not be less than the industry standard of repair, or replace defective materials and workmanship associated with the installation of the product within one (1) year of the warranty date.
5. Special Letters of Warranty shall be required from any contractor, supplier, installer or manufacturer who agrees to provide warranty services required by any Division Specification in excess of their Standard Product Warranty.

3.3. STANDARD PRODUCT WARRANTY

A. All contractors shall be responsible for collecting and providing copies of all standard product warranties for commercially available products purchased and installed under this contract.

B. Only one copy of the manufacturers' standard warranty needs to be submitted as representative for all quantities of the same model number used throughout the Work.

C. Provide the manufacturers certificate, letter, or other standard documentation for each Standard Product Warranty submitted as follows:

1. Whenever possible a PDF version of the document shall be used.
    a. If a PDF version is used all additional information shall be completed using simple PDF editing tools such as text boxes, highlight, etc.
    b. If a PDF version is not available and an original document is furnished the additional information shall be neatly hand written and highlighted on the document in such a fashion so that it does not obscure any part of the written warranty.
2. Provide the following additional information on each warranty document:
    a. Contract warranty date.
    b. Provide the manufacturer name and model number of the product if not specified within the warranty.
        i. Where the manufacturer name and model number is specified within the warranty it shall be highlighted for visibility.
    c. Provide the plan identifier (LAV-1, WC-2, etc) when applicable.

D. Each completed warranty shall be saved as a digital PDF. The file shall be named using the specification number and item description. I.E. 22 42 00 Toilet (WC-1).pdf
    a. Where an original certificate was furnished provide a high quality colored scan of the completed document with the additional information. Save the scanned image in PDF format and use the same naming convention as indicated above.

E. Provide all PDF files and any original documents to the GC for final consolidation to be provided to the Owner.

3.4. FINAL WARRANTY SUBMITTAL

A. The GC shall receive all required warranties (digital PDF and any original documents) from all contractors, suppliers, installers and manufacturers.

B. The GC shall inventory all received warranties with the Warranty Submittal List to ensure all required warranties have been received and all warranty periods are correct according to the specifications.

C. Provide with each Operation and Maintenance Manual a complete copy of any associated warranty.

D. Scan all warranties into a single organized electronic PDF file as follows:
1. Organize the PDF file into an orderly sequence based on the table of contents of the Specifications.
2. Provide a typed Table of Contents for the entire file at the front of the document.
3. Provide bookmarks and links to each individual PDF to enable quick navigation through the PDF document.

E. Submit electronically, the warranty submittal for review by the PE and CPM.

F. Correct any deficiencies or omissions and resubmit as necessary.

3.5. WARRANTY NOTIFICATION, RESPONSE, EXECUTION AND FOLLOW-UP

A. Warranty Notification:
1. The City of Madison uses an email notification system for all warranty related issues. The GC will be required to provide, and keep current during the warranty period, a minimum of two (2) email addresses and phone numbers of current employees to receive email notifications and provide response regarding Work associated with these construction documents.
    a. In the event a Warranty Issue is deemed by the City of Madison to be an emergency, the GC shall first receive a phone call with a follow-up email from the CPM.

B. Warranty Response:
1. The GC shall upon notification by the City of Madison provide warranty response as follows:
    a. Critical Systems or equipment: Where damage to equipment and other building components, or injury to personnel is probable provide immediate emergency shut-down information and an on-site response team as soon as possible but in no case shall on-site response exceed 24 hours.
    b. For non-critical responses where damage or injury is unlikely provide on-site response no later than the next business day.

c. Where Technical Assistance support is part of the written warranty provide all assistance necessary via phone, text, or internet systems as indicated by the warranty. If issues cannot be resolved provide on-site response no later than the next business day.

d. If the request cannot be supported in sufficient time as outlined above the Owner (or Owner Representative) reserves the right to contact other contractors or service companies having similar capability to expedite the repair or replacement and shall invoice all associated costs to the Owner back to the GC.

C. Warranty Execution:

1. The GC shall provide all repairs or replacements as necessary to restore broken or damaged Work to the original level of acceptance as intended by the Contract Documents.

a. Provide all materials, equipment, products, and labor necessary to complete the repair or replacement associated with the Warranty Issue.

b. Provide all cleaning services as may be required before, during, and after the repair or replacement as per Specification 01 74 13 Progress Cleaning.

c. Provide any protection necessary for existing construction as per Specification 01 76 00 Protecting Installed Construction

d. Provide new letters of warranty when required.

D. Warranty Follow-up:

1. Logged Warranty Issues:

a. The GC shall provide complete documented responses of all logged Warranty Issues. Responses shall provide a description of work completed, by who, inclusive dates, and photos of completed or repaired work.

i. Provide call back response if work is not acceptable.

b. The City Project Manager shall review the submitted response documentation and do a field inspection if necessary.

i. If work is not acceptable, contact GC to review details and expectations of the repair as needed.

ii. If work is acceptable close the Warranty Issue.

2. Warranty Reviews:

a. The GC shall be responsible for scheduling on-site review with all of the following:

i. City Project Manager, and other City staff as needed

ii. Owner and Owner Tenant Representative

iii. Plumbing, Heating, Electrical Sub-contractors

iv. Other Sub-contractors that may be responsible for open Warranty issues

b. Reviews shall be scheduled at 6 months, and 11 months after the effective date of the warranty. The review meetings shall:

i. Review the status of all open Warranty Issues, determine course of action and estimated date of completion.

ii. As appropriate, provide shut-down, start-up, testing, and training of off-season equipment as required by the contract documents.

iii. The 11th month review shall review all open Warranty Issues, final plan for resolution, and all Warranty Issues where a new letter of warranty may have been issued.

END OF SECTION

SECTION 01 78 39
AS-BUILT DRAWINGS

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICAITONS 1
1.3. RELATED DOCUMENTS 1
1.4. PERFORMANCE REQUIREMENTS 1
1.5. QUALITY ASSURANCE 2
PART 2 – PRODUCTS 2
2.1. OFFICE SUPPLIES 2
PART 3 - EXECUTION 2
3.1. FIELD DOCUMENT AS-BUILTS 2
3.2. SITE SURVEY AS-BUILT 3
3.3. MASTER AS-BUILT DOCUMENT SET 3
3.4. AS-BUILT REVIEW AND ACCEPTANCE 4
3.5. CHANGES AFTER ACCEPTANCE 4

PART 1 – GENERAL

1.1. SUMMARY

A. This specification is intended to provide clear guidelines and identify the responsibilities of all contractors as they pertain to City of Madison contract procedures regarding the accurate recording of the Work associated with the execution of this contract. This shall include but not be limited to work that will be hidden, concealed, or buried.

B. Each contractor shall be responsible for maintaining an accurate record of all installations, locations, and changes to the contract documents during the execution of this contract as it may relate to their specific division or trade.

C. The General Contractor (GC) shall be responsible for ensuring all contractors provide as-built record information to the Master As-Built Document Set as described in this specification.

1.2. RELATED SPECIFICAITONS

A. 01 26 13 Request for Information
B. 01 31 23 Construction Bulletin
C. 01 26 63 Change Orders
D. 01 29 76 Progress Payment Procedures
E. 01 33 23 Submittals
F. 01 77 00 Closeout Procedures
G. Other Divisions and Specifications that may address more specifically the requirements for field recording the installation of all items associated with the execution of this contract by Division or Trade.

1.3. RELATED DOCUMENTS

A. Other related documents shall include but not be limited to the following:
1. Bidding documents including drawings, specifications, and addenda.
2. Required regulatory documents of conditional approval.
3. Field orders, verbal or written by inspectors having regulatory jurisdiction.
4. Shop drawings and installation drawings.

1.4. PERFORMANCE REQUIREMENTS

A. The GC shall be responsible for maintaining the “Master As-Built Document Set” at all times during the execution of this contract. This document set shall include all of the following:
1. Master As-Built Plan Set
2. Master As-Built Specification Set
3. Other Document Sets

B. The GC shall designate one person of the GC staff to be responsible for maintaining the Master As-Built Document Set. This shall include, posting updates, revisions, deletions and the monitoring of all contractors posting as-built information as described in this specification.

C. All contractors shall use this specification as a general guideline regarding the requirements for documenting their completed Work. Contractors shall explicitly follow additional specification requirements within their own Division of Trade as it may apply to this specification.

1.5. QUALITY ASSURANCE

A. The GC shall be responsible for all of the following:
   a. Spot checking all sub-contractors field documents to insure daily information is being recorded as work progresses.
   b. Discuss as-built recording to the plan set at weekly job meetings with all sub-contractors on site.
   c. Schedule time with sub-contractors in the job trailer for recording as-built information to the plan set.
   d. Insure that all sub-contractors are providing clear and accurate information to the plan set in a neat and organized manner.
   e. Insure sub-contractors who have completed work have finalized recording all as-built information to the plan set before releasing them from the project site.

B. The Project Engineer, the City Project Manager, and other design team staff will perform random checks of the Master As-Built Document Set during the execution of this contract to ensure as-built information is being recorded in a timely fashion as the Work progresses. An updated and current Master As-Built Document Set is a stipulation for approval of the progress payment.

PART 2 – PRODUCTS

2.1. OFFICE SUPPLIES

A. The GC shall provide a sufficient supply of office products at all times for all contractors to use in recording as-built information into the plan set. This shall include but not be limited to the following:
   a. Red ink pens, medium point. Pens that bleed through paper, markers, and felt tips will not be accepted.
   b. The use of highlighters is acceptable. Assign colors to various trades for consistency in recording information.
   c. Straight edges of various lengths for drawing dimension, extension and other lines.
   d. Civil and Architectural scales
   e. Clear transparent, non-yellowing, single sided tape.
   f. Correction tape or correction fluid for correcting small errors.

PART 3 - EXECUTION

3.1. FIELD DOCUMENT AS-BUILTS

A. The GC and all Sub-contractors shall be responsible for keeping their own field set of as-built documents including plans, specifications and published changes.

B. Field sets shall be kept dry and in good condition at all times.

C. No Work shall be buried, covered, or hidden, by any additional Work, regardless of Contractor or Trade, until locations of all materials and equipment has been properly documented as described below.

D. All contractors shall be required to record the following as-built information:
   a. Notes on the daily installation of materials and equipment.
   b. Sketches, corrections, and markups indicating final location, positioning, and arrangement of materials and equipment such as pipes, conduits, valves, cleanouts, pull boxes and other such items. Note all final locations on plan sheets, indicate dimension off identifiable building features. Riser diagrams need only be corrected for significant changes in locations, routing or configuration.
      i. The use of photographs in lieu of hand drawn sketches is acceptable.
      ii. Photos shall be taken according to Specification 01 32 33 Photographic Documentation
      iii. Print photo and markup with dimensions or notes as necessary.
   c. Identify by the use of existing plan symbology and notes the size, type, quantity, and use as applicable of materials such as pipes, valves, conduits, etc.
   d. Note whether horizontal runs are below slab or above ceiling, include dimensions above or below finished floor elevation.

E. All contractors shall be responsible for transferring the information from their field set of documents to the Master As-Built Plan Set kept in the GC job trailer. See Section 3.3.D. below for the proper procedure.

F. All contractors shall update the GC Master Plan Set as often as necessary, but not less than once per work week.

3.2. SITE SURVEY AS-BUILT

A. The Land Surveyor Sub-Contractor shall provide digital as-built information including but not be limited to the following:

a. For underground buried utility laterals and services of all types locate all of the following that may apply:

i. Connection points at all mains
ii. Storm discharge points to open air
iii. All corners and bends regardless of angle, large radius sweeps shall have multiple point locations sufficient to define the sweep.
iv. All vertical drops
v. All wells
vi. Private buried utilities such as buried electrical cables, irrigation systems, etc.
v. Other information that may need to be located in the future by the owner prior to digging

b. Record all surface features including but not limited to the following:

i. Building corners, pavement edges, and other permanent structural features.
ii. All surface covers for inlets, catch basins, cleanouts, access structures, curb stops and other such devices.
iii. Other permanent surface features such as hydrants, lamp posts, and other permanent site amenities.

c. The following data shall be recorded while locating items in sub-sections 3.2.a and 3.2.b above:

i. Flow lines at both ends of pipes
ii. Pipe sizes and material types
iii. Rim elevations for all covers
iv. Sump elevations and invert elevations of all structures
v. Spot elevations for all pads, driveways, walks, stoops, and floors

B. The Surveyor shall provide the final digital as-built on a media and in a format specified in Specification 00 31 21 Survey Information to the GC for turn in to the Project Engineer and the Civil Engineer.

C. The Surveyor shall provide two printed as-built site plans to the GC for inclusion in the Master As-Built Plan Set as follows:

1. One sheet to show all features (but not contour information) with text neatly organized for each item identified.
2. One sheet showing contours, contour labels, and features from item 1 above, but with no additional text.

3.3. MASTER AS-BUILT DOCUMENT SET

A. The GC shall be responsible for maintaining the Master As-Built Document Set in the job trailer at all times.

1. The Master As-Built Plan Set (Plan Set) shall begin with one complete bid set of drawings and any additional sheets that were supplied by published addenda during the bidding process. The cover sheet shall be titled as the “Master As-Built Plan Set” in large bold red letters approximately 2” in height and shall not be used for any other purpose.

a. The Plan Set shall be kept dry, legible, and in good condition at all times.
b. The Plan Set shall be kept up to date with new revisions within two (2) working days of supplemental drawings being issued. Revisions shall be posted as follows:

i. Insert new, revised sheets into the plan set. Void old sheets but do not remove them from the plan set. Indicate date received and what document (RFI, CB, CO, etc) caused the change.
ii. Insert new, revised individual details into the plan set. Void old details, tape new details over the old details with a “tape hinge” to allow them to be viewed. Indicate date received and what document (RFI, CB, CO, etc) caused the change.
iii. Add new details in appropriate white space on relevant sheets. If no space is available use the back side of the previous sheet or insert a new sheet. Indicate date received and what document (RFI, CB, CO, etc) caused the change.

c. The Plan Set shall be available at anytime for easy reference during progress meetings and for emergency location information of new work already completed.

2. The Master As-Built Specification Set (Spec Set) shall begin with one complete bid set of specifications and any additional specifications that were supplied by published addenda during the bidding process. The Spec Set shall be provided in three “D” ring type binders of sufficient thickness to accommodate the specification set. Multiple binders are allowed as necessary. Label the front cover and binding edge with

"Master As-Built Specifications" in bold red letters. Provide other information as necessary to distinguish the contents of multi-volume sets.

a. The Spec Set shall be kept dry, legible, and in good condition at all times.
b. The Spec Set shall be kept up to date with new revisions within two (2) working days of supplemental drawings being issued.
c. The Spec Set shall be available at anytime for easy reference during progress meetings.

3. Other Document Sets may be kept at the GCs option in three "D" ring type binders of sufficient thickness to accommodate the documentation. Other documentation sets may include but not be limited to RFIs, CBs, COs, etc.

C. The Land Surveyor Sub-Contractor shall be required to use digital surveying for all exterior site surveying, and provide deliverable digital as-builts as specified in Specification 00 31 21 Survey Information. As soon as practical the surveyor shall provide the GC with a preliminary copy of installed buried utilities for inclusion with the plan set in the job trailer. The surveyor shall provide final digital as builts as per section 3.2 above.

D. All contractors shall be responsible for updating the Plan Set from their field sets at least once per work week. Updates shall include but not be limited to the following procedures:

a. All updates shall be done only in red ink. Place a "cloud" around small areas of correction to call attention to the change.
b. Whenever possible place general work notes, field sketches, supplemental details, photos, and other such information on the reverse side of the preceding sheet. Installation notes including dates shall be kept neatly organized in chronological order as necessary.
c. Accurately locate items on the plan set as follows:
   i. For items that are located as dimensioned provide a check mark or circle indicating the dimension was verified.
   ii. For items that are within 5 feet of the location indicated on the plans leave as shown and:
      - Provide correct dimensions to existing dimension strings or,
      - Accurately locate with new dimension strings
   iii. For items that are more than 5 feet from the location indicated on the plans
      - Accurately draw the items in the new location as installed and,
      - Accurately locate with new dimension strings and,
      - Note that the existing location is void.
d. Include dimensioned locations for items that will be buried, concealed, or hidden in the ground, under floors, in walls or above ceilings.
   i. Dimensions shall be pulled from identifiable building features, not from centers of columns or other buried features.
   ii. When necessary pull more dimensions as needed from opposing directions to properly locate single items.

3.4. AS-BUILT REVIEW AND ACCEPTANCE

A. The GC shall provide the Master As-Built Plan Set to the Project Engineer (PE), the City Project Manager (CPM), and other design team staff for content review prior to the Progress Payment Milestone indicated in Specification 01 29 76 Progress Payment Procedures. The submitted plan set shall include the digital survey information produced under Section 3.2 above.

1. If the plan set is not approved:
   a. The PE and CPM shall only be required to generalize deficiencies by trade there shall be no requirement or expectation to generate a "punch list" of required corrections.
   b. The GC and Sub-contractors as necessary shall be responsible for inspecting the installation and correcting the drawings as needed.
   c. The GC shall re-submit the plan set for review.
2. If the plan set is approved the PE shall take possession of the plan set to be used in providing the owner with digital CAD record drawings. Upon completion of transferring the information to CAD the PE shall provide the Owner with CAD record drawings, record PDFs, and the Master As-Built Plan Set.

3.5. CHANGES AFTER ACCEPTANCE

A. No Contractor shall be responsible for making changes to the As-Built record documents after acceptance by the PE and CPM except when necessitated by changes resulting from any Work made by the Contractor as part of his/her guarantee.

END OF SECTION

SECTION 01 79 00
DEMONSTRATION AND TRAINING

PART 1 – GENERAL 1
1.1. SUMMARY 1
1.2. RELATED SPECIFICATIONS 1
1.3. QUALITY ASSURANCE 1
PART 2 – PRODUCTS – THIS SECTION NOT USED 2
PART 3 - EXECUTION 2
3.1. GENERAL REQUIREMENTS 2
3.2. COORDINATING AND SCHEDULING THE TRAINING 2
3.3. TRAINING OBJECTIVES 2
3.4. DEMONSTRATION AND TRAINING PROGRAM PREPARATION 3
3.5. CONDUCTING A DEMONSTRATION AND TRAINING SESSION 3
3.6. CLOSEOUT PROCEDURE 4

PART 1 – GENERAL

1.1. SUMMARY

A. The purpose of this specification is to provide clear responsibilities and guidelines related to providing Demonstration and Training (D&T) Sessions related to general facility use, equipment, systems, finishes, and materials to City of Madison Staff (Owner, Owner Representatives, Maintenance, and Custodial Personnel) as needed.

B. All D&T shall be coordinated through the General Contractor (GC), Project Engineer (PE) and City Project Manager (CPM), and will be based on or customized to the needs of City of Madison Staff being trained. New equipment and systems may have complete D&T sessions as described in this specification while equipment or systems staff is familiar with may have sessions more focused on maintenance only.

1.2. RELATED SPECIFICATIONS

A. Section 01 29 76 Progress Payment Procedures
B. Section 01 78 23 Operation and Maintenance Data
C. Section 01 78 36 Warranties
D. Section 01 78 39 As-Built Drawings
E. Other Divisions and Specifications that may address more specifically the requirements for D&T sessions related to the installation of all items and equipment installed under the execution of the Work.

1.3. QUALITY ASSURANCE

A. All contractors shall have the responsibility of preparing for and conducting D&T sessions as determined by this and other Division or Trade related specifications, Owner Operation and Maintenance Manuals, and other such documentation related to the Work.

B. The GC shall have responsibility for:

1. Ensuring that all contractors required to conduct a D&T session have successfully completed all of the following:
    a. Turned in all required documentation for review and documentation has been approved/accepted prior to scheduling D&T sessions.
    b. Other required documentation as needed is available and ready for use during the D&T session.
    c. All systems have been started, tested, and running as per appropriate specification and/or manufacturers recommendations prior to scheduling D&T sessions.
    d. All contractors are sufficiently prepared for their D&T session
    e. Documents the D&T session including date, time, contractor and company name, attendees and other information regarding the session
2. Organizing the coordination and scheduling of all D&T sessions between all contractors and the appropriate representatives of the Owner. These representatives may include any of the following depending on the Work of the Contract:
    a. Owner – end users
    b. Facility Maintenance personnel
        i. Facility general operation procedures including custodial services
        ii. Electrical

iii. Mechanical
iv. Plumbing
v. Site
c. Information Technology (IT) Department
d. Traffic Engineering – Radio Shop
e. Architects, Engineers and Facility Management staff as project completion overview

PART 2 – PRODUCTS – THIS SECTION NOT USED

PART 3 - EXECUTION

3.1. GENERAL REQUIREMENTS

A. The GC shall develop a specific D&T plan to be scheduled and conducted as described below but no sooner than the meeting discussed in 3.2.A.2 below.

C. The GC shall not schedule D&T sessions to preclude required personnel from attending multiple sessions.

3.2. COORDINATING AND SCHEDULING THE TRAINING

A. The GC, PE, and CPM, shall review all Training and Demonstration requirements during two (2) special meetings.
1. The first meeting shall be held at the 50% Contract Total Payment. During this meeting the following shall be discussed:
a. Preliminary schedule of training dates to be completed prior to beginning construction closeout.
b. List of documentation and items that need to be completed and available before and during the training session.
c. Who (Owner, Maintenance, etc) will be attending what training session(s).
2. The second meeting shall be held at the 80% Contract Total Payment. This meeting shall review due outs that have not yet been completed for the 90% Contract Total Payment and the requirements necessary for Construction Closeout. All Demonstration and Training sessions shall be completed prior to receiving the 90% progress payment and beginning Construction Closeout Procedures (see Specification 01 77 00).
a. This does not include any requirement associated with off season equipment preparation and/or demonstration and Training Sessions.

B. All of the Construction Work shall be operationally ready prior to conducting training as follows:
1. All contractors shall have their As-Built Drawing Records available for reviewing locations of system components during training.
2. All final and approved Operations and Maintenance Data shall be completed no less than two (2) full weeks prior to the scheduled training.
3. All systems shall have been started, functionally tested, balanced, and fully operational, and all piping and equipment labeling complete at least two (2) days prior to the scheduled training.
a. Seasonal equipment shall not be trained out of season. Contractors having seasonal equipment shall work with the GC and CPM for coordinating additional training sessions as appropriate for seasonal equipment.

C. Correction list items that prevent a piece of equipment or system from being fully operational for training shall be corrected prior to conducting the training.

3.3. TRAINING OBJECTIVES

A. For each piece of equipment or system installed train on the following objectives/topics as applicable:
1. System design, concept, and capabilities
2. Review of related contractor as-built drawings
3. Facility walkthrough to identify key components of the system
4. System operation and programming including weekly, monthly, annual test procedures
5. System maintenance requirements
6. System troubleshooting procedures
7. Testing, inspection, and reporting requirements associated with any regulatory requirements
8. Identification of any correction list items still outstanding
9. Review of system documentation including the following:
a. Operation and maintenance data
b. Warranties
c. Valve charts, tags, and pipe identification markers

B. For each piece of specialty equipment train on the following objectives/topics as applicable:

1. Manufacturers operations instructions
2. Manufacturers use and care instructions
3. Manufacturers maintenance and troubleshooting instructions
4. System operation and programming including weekly, monthly, annual test procedures
5. Identification of any correction list items still outstanding
6. Review of system documentation including the following:
    a. Operation and maintenance data
    b. Warranties

C. End User Orientation
1. Facility walkthrough
2. Security and emergency features
3. General facility operation procedures

D. Facility General Use and Custodial Services – if requested
1. Facility walkthrough
2. Security and emergency features
3. General facility operation procedures
4. Care and maintenance of specialty items, finishes, etc as requested
5. Attic stock inventory and material designations

3.4. DEMONSTRATION AND TRAINING PROGRAM PREPARATION

A. Each contractor having a responsibility for providing D&T sessions shall meet with the GC, CPM, and other City Staff as needed to review the extent of the Training Objectives in section 3.3 above needed for each piece of equipment, system, finish, etc. This meeting shall occur no less than four (4) weeks prior to the anticipated training session.

B. The contractor shall use the information from item 3.4.A above to prepare a formal training program for each piece of equipment or system based on the Training Objectives in 3.3 above.
1. The formal training program shall include the following information:
    a. Session title
    b. List of systems, equipment, use, care, etc to be covered during the session
    c. Provide the following for each systems, equipment, use, care, etc to be covered during the session
        i. Name and affiliation of each instructor to be used. As needed and discretion of the Owner the GC to require attendance by the installing technician, installing Contractor and the appropriate trade or manufacturer's representative.
        ii. Qualifications of each instructor to be used. Practical building operation expertise as well as in-depth knowledge of all modes of operation of the specific piece of equipment as installed in this project is required by the training personnel. If Owner determines training was not adequate, the training shall be repeated until acceptable to Owner.
        iii. A checklist of all documentation and system/equipment requirements necessary to complete a successful training session and the current status of each
        iv. Any additional documents, training aids, video or other items to be used to complete the training
        v. Any special requirements or needs associated with item iv above to complete the training
    d. The intended audience for the training
    e. The approximate duration of each objective or topic to be covered
2. Submit the completed training program to the GC for review and approval by the PE and CPM.

C. The PE and CPM shall work with staff as necessary to ensure all points of anticipated training needs have been met. The PE and CPM will approve the program as submitted or recommend changes for re-submittal as necessary.

3.5. CONDUCTING A DEMONSTRATION AND TRAINING SESSION

A. All contractors shall conduct their required D&T Sessions as follows:
1. Begin with a classroom session
    a. Provide a sign in sheet indicating all training to be conducted, instructors, etc.
    b. Provide an overview of the training to be conducted including the approximate schedule.
2. Conduct a general walk-through of the site.
    a. Point out locations of various equipment, valves, charts, and other related items.
    b. Use the Division or Trade As-Built record drawings to indicate locations of hidden or buried items.
3. Provide a demonstration of general equipment/system operation including using the O&M manual.

a. Startup and shutdown procedures.
b. Normal operational levels as depicted by any gauges, software, etc.
c. Indicate warning devices, signs etc. and demonstrate emergency shut-down procedures.

4. Provide a demonstration of all owner level maintenance using the O&M manual.
   a. Indicate frequency of maintenance.
   b. Provide and review all spare parts, special tools, and special materials.
5. Provide and review all spare parts, special tools, special materials, or attic stock as applicable.
6. While conducting D&T sessions:
   a. Allow hands on training whenever practical.
   b. Answer questions promptly
   c. Repeat demonstrations and procedures as necessary.

B. Within two (2) working days of completing the D&T session the contractor responsible for the session shall turn-in any documentation generated including the sign in roster to the GC.

C. The GC shall turn over all training documentation to the PE and CPM upon completion of D&T sessions.

D. Re-schedule any training that has been determined to be inadequate or inappropriate for any reason including but not limited to any of the following;
   1. Unqualified instructor
   2. System installation incomplete or untested to the specifications
   3. Equipment failure during demonstration
   4. Un-expected cancellation

3.6. CLOSEOUT PROCEDURE

A. Prior to receiving the 90% Progress payment the GC shall:
   1. Verify with the PE and CPM that each Demonstration and Training Session was conducted properly and according to the submitted plan.
   2. Any required “Off Season” equipment testing, balancing, and Demonstration and Training Sessions have been tentatively scheduled with the GC, necessary sub-contractors, instructors and Owner/Owner Representatives as necessary.

END OF SECTION

SECTION 02 05 00

DEMOLITION

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: All demolition, removal, and salvage work as shown on the drawings or specified herein to include, but not necessarily limited to the following: Fire Alarm Control Panels and Devices.

B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 SUBMITTALS

A. CONTRACTOR shall submit permits and notices, if required, authorizing demolition.

1.03 QUALITY ASSURANCE

A. CONTRACTOR shall perform demolition, removal, and salvage in conformity with applicable federal, state, and local safety practices and code requirements.

B. Obtain and pay for all necessary permits, licenses and certificates required.

1.04 SEQUENCE

A. No demolition, removal, or salvage work shall commence until approval to proceed has been granted by OWNER. Such work shall be completed in accordance with the construction sequence included in Division 1 of these specifications and in accordance with the construction phases of this project and work to be done by other contractors.

PART 2–PRODUCTS

NOT APPLICABLE

PART 3–EXECUTION

3.01 EQUIPMENT

A. CONTRACTOR shall remove all equipment specified herein or indicated.

B. CONTRACTOR shall remove associated exposed conduit, power wiring, controls, control wiring, control boxes, appurtenances, and their supports serving equipment to be removed unless noted otherwise. Electrical items shall be removed to their junction with control panel, or their junction with conduit serving other equipment that is to remain.

C. CONTRACTOR shall patch floors, walls, and ceilings as required to match existing or as indicated where equipment, electrical, or supports are removed.

D. CONTRACTOR shall remove the following major equipment items or systems. The following list is not intended to be all-inclusive. CONTRACTOR shall remove all items indicated or specified to be removed: Fire Alarm Control Panels and Devices.

3.02 SALVAGE

A. OWNER has first right of refusal to all material, piping, and equipment removed.

B. All equipment and material, except as specified hereinafter, within the buildings and structures and additional items as noted shall be removed by CONTRACTOR.

C. All equipment, material, and piping, except as specified hereinafter, within the limits of the demolition and additional items noted to be removed, will become the property of CONTRACTOR if OWNER does not claim under first right of refusal and shall be removed from the project site. Comply with State and local ordinances and regulations for disposing of materials.

END OF SECTION

SECTION 07 27 00

FIRESTOPPING

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: Silicone firestopping sealant for sealing annular spaces around conduit penetrations through fire-rated assemblies and to seal gaps at intersections of walls and floors/ceilings.

B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

A. UL 1479–Fire Tests of Through-Penetration Fire Stops.

B. UL–Fire Hazard Classifications.

1.03 REGULATORY REQUIREMENTS

A. Firestopping materials and installation shall conform to the Wisconsin Building Code requirements, including fire-resistance ratings and surface-burning characteristics.

B. Provide certificate of compliance from local building inspector indicating approval of firestopping materials and installation.

1.04 ENVIRONMENTAL REQUIREMENTS

A. A small amount of hydrogen gas is released as the firestopping foam cures. Use forced-air ventilation when installing if areas of installation have less than 2 cubic feet of free air for each pound of liquid mixture being formed.

PART 2–PRODUCTS

2.01 FIRESTOPPING SEALANT

A. Firestopping sealant for conduit penetrations through fire-rated assemblies shall be a single-component silicone elastomer.

B. Acceptable products include the following, or equal: Fire Barrier Silicone Sealant 2000 by 3 M Corporation.

2.02 DAMMING MATERIAL

A. Damming material shall be fire-resistant mineral fiber (if left in place) or other combustible material (if removed), as directed by the appropriate fire-tested designs.

2.03 PRIMER AND WRAP STRIP

A. Primer for firestopping sealant shall be 3 M Corporation, or equal.

B. Wrap strip for firestopping sealant shall be 3 M Fire Barrier FS-195 Wrap/Strip, or equal.

PART 3–EXECUTION

3.01 INSTALLATION

A. Firestopping sealant shall be applied according to manufacturer's written instructions and shall achieve a fire rating equal to rating of construction which is penetrated. Substrate shall be free of all combustible materials (except damming material for later removal), loose impediment, oil, and other free liquids.

B. Install damming material to establish the thickness and hold the firestopping foam/sealant in place. Follow the manufacturer's installation instructions. All gaps or cracks left after damming materials are in place must be sealed.

C. Firestopping Sealant: Apply primer and wrap strip in accordance with manufacturer's instructions prior to installing sealant. Apply sealant to a minimum depth of 1 1/2 inches and with uniform density and texture.

D. Remove combustible damming material after sealant has cured. Noncombustible damming material may be left in place.

3.02 QUALITY CONTROL

A. Firestopping Sealant:
   1. Check completed work for complete adhesion and seal 48 hours after sealant application.
   2. Clean adjacent surfaces of excess sealant using a compatible solvent in accordance with the manufacturer's instructions.

END OF SECTION

SECTION 26 00 30

SURFACE RACEWAY

PART 1–GENERAL

1.01 SUMMARY

A. Work included: Furnish and install surface raceways, including surface metal raceway and auxiliary gutters (wireways).

B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 QUALITY ASSURANCE

A. Surface raceway sections and fittings shall be UL labeled.

1.03 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Division 1.

PART 2–PRODUCTS

2.01 SURFACE METAL RACEWAY

A. Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway; 4000 Series manufactured by Legrand Wiremold, or equal.

B. Size: 4 3/4 inches by 1 3/4 inches.

C. Faceplate and Activation Fittings: Legrand Wiremold 4047 faceplates, corresponding components and “Open Connectivity Solutions Modules” shall be installed for all 4000 Series locations.

D. Finish: Ivory, or to match existing, as approved by OWNER.

E. Fittings: Couplings, elbows, ceiling trim rings and connectors designed for use with raceway system.

F. Boxes and Extension Rings: Designed for use with raceway systems.

G. Description: Sheet metal channel with fitted cover, suitable for use as surface raceway, manufactured by Wiremold Series V700 is acceptable at locations with two or less wires.

PART 3–EXECUTION

3.01 INSTALLATION–SURFACE METAL RACEWAY

A. Use flathead screws to fasten channel to surfaces every 24 inches. In addition, mount plumb and level per the manufacturer's recommendations.

B. Use suitable insulating bushings and inserts at connections to corner fittings.

C. Install trim rings at the ceiling when the raceway passes through the ceiling.

D. Maintain grounding continuity between raceway components to provide a continuous grounding path per the manufacturer's installation requirements.

E. Fastener Option: Use clips and straps suitable for the purpose. Use two hole straps for 700 size wiremold.

END OF SECTION

SECTION 26 05 00

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–National Electrical Safety Code.

1.03 CONTRACT DOCUMENTS

A. Any equipment 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 a 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 balancing and adjusting of electrical loads.

B. 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.

C. Provide miscellaneous items for a complete and functioning system as indicated on the drawings and specified herein.

D. A partial list of work not included in Division 26 is as follows: Painting (except as otherwise specified herein).

1.07 NOISE

A. Eliminate any abnormal noises that 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. Prior to locating equipment, confer with ENGINEER as to desired location in the various areas. In no case should equipment locations be determined by scaling drawings. Relocate equipment and bear cost of redoing work or other trades' work necessitated by failure to comply with this requirement.

C. In certain instances, fire alarm devices or other electrical devices and equipment, etc., may be relocated. Where relocation is within 10 feet of location shown on the 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.

D. 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 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 Division 1 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:
   1. Electrical interconnection wiring diagrams; see Section 26 31 00–Fire Alarm System.
   2. Equipment room layouts showing exact locations and arrangements of equipment, conduit, wiring, etc., and clearances.

C. These drawings and diagrams shall show applicable 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.
   3. 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 and products shall be of new manufacture per applicable specifications.

B. All equipment shall be UL and NEMA approved.

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 CONTINUITY OF SERVICE

A. CONTRACTOR shall provide and maintain continuous services (power, controls, alarms, etc.) during the entire construction period.

B. No service shall be interrupted or changed without permission from OWNER. Written permission shall be obtained before any work is started.

C. When interruption of 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.

3.02 CLEANUP AND REMOVAL OF RUBBISH

A. All lighting and appliance panelboards, fire alarm control panels, disconnect switch enclosures, junction boxes, and pullboxes shall be cleaned of debris and wires neatly arranged with surplus length cut off before installation of covers.

B. 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.

3.03 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 touch-up paint shall be provided for each different color factory finish which is to be the final finished surface of the product.

3.04 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 that 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.

3.05 BUILDING ACCESS

A. CONTRACTOR shall arrange for the necessary openings in the building to allow for admittance of all apparatus.

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

3.06 COORDINATION

A. Provide wiring for all electrically powered or electrically controlled equipment.

B. All disconnects, relays, wire, conduit, and other devices for the power and control of electrical equipment shall be provided by CONTRACTOR.

C. CONTRACTOR shall connect and wire all apparatus according to approved wiring diagrams furnished by the various trades.

3.07 EQUIPMENT ACCESS AND LOCATION

A. Where various items of equipment and materials are specified and scheduled, the purpose is to define the general type and quality level, not to set forth the exact trim to fit the various types of ceiling, wall, or floor finishes. Provide materials that will fit properly the types of finishes actually installed.

B. 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.

C. Electrical equipment, devices, instruments, 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 that is to be installed or that is already in place.

D. Locate equipment to fit the details, panels, decorating, or finish of the space. ENGINEER shall reserve the right to make minor position changes before the work has been installed.

3.08 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 the 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) listings shall be so labeled and shall be used by CONTRACTOR.

3.09 MODIFICATIONS TO EXISTING CONSTRUCTION

A. Alterations:
   1. Alter, extend, and reconnect conduits as necessary.
   2. Reconnect existing conduits that were reused, cut, or exposed because of construction as quickly as possible.
   3. Where wiring is involved, new wires shall be “pulled in” between the nearest available accessible reused outlets to the extent allowed by the governing code.
   4. Provide new conduits for wires if they cannot be “pulled in” to existing conduits.

5. All new conduits, wiring, and electrical items shall be connected to the existing systems so as to function as a complete unit.
6. Where existing electrical equipment, devices, fixtures, electrically operated items, etc., interfere with any remodeling work, they shall be removed and reinstalled in another location to avoid such interferences. All existing and relocated equipment shall be left in good operating condition.

B. CONTRACTOR shall remove all electrical equipment, conduit, and wiring associated with the structures, equipment, and control systems specified herein and/or shown on the Drawings to be removed, unless noted otherwise.

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.

D. Provide stainless steel cover plates for all existing recessed outlet and junction boxes not being reused. Seal or cap all existing conduit penetrations not being reused.

E. Provide new, typed, updated panelboard schedules for existing panelboards supplying new branch circuits.

END OF SECTION

SECTION 26 05 19

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 Division 1.

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, boxes, 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 control panels that does not extend outside of the enclosure shall be insulation-type MTW, minimum size 16 AWG.

C. Wiring in dry locations shall be THHN. Wiring in damp and wet locations shall be XHHW-2. Damp and wet locations shall include, but not be limited to, parking ramp areas, garage areas, unconditioned spaces, and exterior locations.

D. 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, even for switch legs. Colors must meet code requirements for each class voltage. Do not duplicate colors, including neutral, on different voltages.

E. Refer to Section 26 31 00–Fire Alarm System for additional requirements.

F. Refer to Section 26 05 53–Electrical Identification for conductor labeling and insulation color requirements.

2.02 LOW-VOLTAGE WIRING (LESS THAN 100 VOLTS)

A. Low-voltage wiring specified in this section shall be applicable to all systems installed that utilize low-voltage wiring where such wiring is not specified in other technical sections.

B. All wiring shall have copper conductors with 300-volt insulation rating and meet the requirements of NEC Article 725.

C. All conductors must be suitable for the application intended. Conductors 16 AWG and larger shall be stranded. Conductors 18 AWG and smaller may be solid or stranded.

2.03 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 terminal strips. Crimp devices shall be Sta-kon, or equal.

B. Provide insulated, 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.

2.04 TERMINAL BLOCKS AND ACCESSORIES

A. Terminal Blocks: ANSI/NEMA ICS 4: UL listed or UL recognized under UL 467, UL 486E, UL1059, and UL 1953 (power terminals only).

B. Power Terminal Blocks: Unit construction type, closed-back type, tin-plated copper, with tubular pressure screw connectors, rated 600 volts as manufactured by Allen-Bradley 1492-PDL, or equal.

C. Signal and Control Terminal Blocks:
   1. General-Purpose Terminal Blocks:
      a. Terminal blocks shall be rated up to 600 volts AC/DC.
      b. Terminal blocks shall accept center-mounted jumper bars without increasing the installed space.
      c. Terminal blocks shall be Allen-Bradley Bulletin 1492-J3, 1492-J4, 1492-J6, or equal, depending on the application.
      d. Terminal block color shall be gray.
   2. Grounding Terminal Blocks:
      a. Terminal blocks shall accept 22- to 14-AWG conductors.
      b. Terminal blocks shall be Allen-Bradley Bulletin 1492-JG3, or equal.
      c. Terminal block color shall be green/yellow.
   3. Disconnect-type Terminal Blocks:
      a. Terminal blocks shall be rated up to 300 volts AC/DC.
      b. Terminal blocks shall be feed-through type with a knife-blade disconnect.
      c. Terminal blocks shall be Allen-Bradley Bulletin 1492-JKD3, 1492-JKD4, or equal, depending on the application.
      d. Terminal block color shall be gray.
   4. Terminal blocks shall have self-locking screw compression clamps rated for the size of conductors being terminated and upstream overcurrent protection for each application.
   5. Terminal blocks with different current ratings shall be used based on the selected application; however, the same manufacturer and style of terminal block shall be used throughout the entire project for all applications.
   6. Terminal blocks shall have tin-plated copper current bars and tin-plated steel screws. Terminal housings shall be completely finger safe from all live circuits and be constructed of self-extinguishing material with minimum UL 94-V0 flammability rating.
   7. Terminal blocks shall accept pre-printed, snap-in labeling cards on both sides without increasing the installed space. Provide terminal block manufacturer’s end barriers and screw-type retainers for all terminal block groupings.
   8. Terminals shall be a maximum of 2.2 inches tall. Maximum terminal block width shall be as follows:
      a. Terminal blocks rated up to 25 amps and grounding terminal blocks: maximum .20 inches wide.
      b. Terminal blocks rated from 25 to 50 amps: maximum .32 inches wide.

9. Terminal blocks shall mount on standard DIN rail and shall be able to be removed without removing adjacent terminal blocks.
10. Multi-level terminal blocks and stacked, single-level terminal block installations are not acceptable.

D. Refer to Section 26 05 53–Electrical Identification for terminal block labeling requirements.

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. Splice only in junction or outlet boxes. Splicing is not allowed in disconnects, panelboards, control panels, equipment, etc. Avoid splices between terminals of interconnecting power and control wiring.

E. Spring wire connectors shall only be used in junction, outlet, or switch boxes. Equipment wireways (e.g., panelboards, disconnects, etc.), and control panels shall not have any spring-wire connectors installed; all terminations shall be on terminal strips.

F. Neatly train, lace, and tie wrap all wiring inside boxes, equipment, control panels, and panelboards.

G. Make conductor lengths for parallel circuits equal.

H. The same color shall be used for each numbered wire throughout its entire length.

I. Terminate all wiring on terminal blocks in control panels and similar equipment. This shall include all spare or unused wires.

J. 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.

K. Do not use a pulling means that can damage the raceway.

L. Signal wiring (below 100 volts) must be in a conduit separate from power and/or control wiring (over 100 volts). Signal wire shall include, but not be limited to, data communications, and communication wiring (i.e., RS-232, etc.). Analog wiring shall be in a conduit separate from all other wiring.

M. 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.

N. Thoroughly clean wires before installing lugs and connectors.

O. Make splices, taps, and terminations to carry full capacity of conductors without perceptible temperature rise.

P. Terminate spare conductors within equipment, control panels, etc., on terminal strips and label as “SPARE.” Spare wiring in pull or junction boxes may be terminated with electrical tape and labeled as “SPARE.” All spare conductor labels shall indicate where the conductors terminate. Refer to Section 26 05 53–Electrical Identification, for additional requirements.

3.03 GENERAL LOW-VOLTAGE WIRING METHODS (LESS THAN 100 VOLTS)

A. Low-voltage wiring installation requirements specified herein shall be applicable to all systems installed that utilize low-voltage wiring where such wiring installation is not specified in other technical sections.

B. Low-voltage wiring shall be installed in conduit.

C. Do not use wire smaller than 14 AWG for control wiring greater than 60 volts, or 18 AWG for voltages less than 60 volts. All sizes subject to NEC 725 requirements.

D. Low-voltage cable splices shall only be allowed in junction boxes.

3.04 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Wax-based pulling lubricant is not allowed unless it includes a Teflon additive.

B. Install wire in raceway after all mechanical work likely to injure conductors has been completed.

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

D. Motorized machines of any type are NOT ALLOWED for any wire pulling.

E. Conductors shall be installed in conduit system in such a manner that insulation is not damaged, conductors are not overstressed in pulling, and walls are not damaged. No splices are permitted except in junction boxes or outlet boxes.

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. Circuiting is indicated diagrammatically on the drawings.

3.05 TERMINAL BLOCK INSTALLATION

A. A maximum of one conductor shall be installed on the field-wired side of each terminal block. If rated to accept more than one conductor, a maximum of two conductors shall be installed on the enclosure-wired side of each terminal block. Provide additional terminal blocks and shorting jumpers as required.

B. Provide a separate ground-type terminal block for each shielded-cable drain conductor.

C. Provide ten percent spare terminal blocks for each type of connected terminal block, minimum five spare terminal blocks total. For each grouping of terminal blocks, provide 25% spare DIN rail space.

D. Maintain a minimum of 1 1/2 inches between terminal blocks and adjacent devices and enclosure wireways.

3.06 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 functionality 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.

3.07 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.

D. At the request of OWNER's representative, demonstrate by test the compliance of the installation with these specifications and drawings, the National Electrical Code, and the

accepted standards of good workmanship. These tests shall include operation of equipment, continuity of the conduit system, grounding resistance and insulation resistance.

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.

3.08 WIRE INSTALLATION SCHEDULE

A. Install all wiring in raceways except as otherwise noted. This includes all low-voltage wiring such as network cabling, fiber optic, etc.

END OF SECTION

SECTION 26 05 33

CONDUIT

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
1. Rigid metal conduit and fittings.
2. Rigid aluminum conduit.
3. Electrical metallic tubing.
4. PVC externally and internally coated galvanized rigid metal conduit.
5. Flexible metal conduit and fittings.
6. Liquidtight flexible metal conduit and fittings.
7. 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 C80.1–Electrical Rigid Steel Conduit (ERSC).

B. ANSI C80.3–Steel Electrical Metallic Tubing (EMT).

C. ANSI C80.5–Electrical Rigid Aluminum Conduit (ERAC).

D. ANSI/NEMA FB 1–Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable.

E. NEMA RN 1–Polyvinyl-Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit.

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 Division 1.

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 above grade and enclose with durable, waterproof wrapping.

PART 2–PRODUCTS

2.01 RIGID METAL CONDUIT AND FITTINGS

A. Rigid Steel Conduit: ANSI C80.1. Heavy wall seamless tubing with hot-dipped galvanized coating.

B. Conduit bodies for rigid steel conduit shall be as manufactured by Appleton, Form 35, or equal, and be constructed of stamped steel for sizes 2 inches and under, and cast malleable iron for sizes over 2 inches. Conduit bodies shall have built-in pulling rollers, domed gasketed covers, and stainless steel screws. Covers for conduit bodies must have bolts that thread into the conduit body. Snaptight and wedgenut covers are not allowed. CONTRACTOR shall select body style and size according to application.

C. Rigid Aluminum Conduit: ANSI C80.5. Heavy wall.

D. 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. Covers for conduit bodies must have bolts that thread into the conduit body. Snaptight and wedgenut covers are not allowed. CONTRACTOR shall select body style and size per application.

E. 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 RedH_2OT 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 RN1.

F. Conduit bodies for PVC-coated rigid conduit shall be as manufactured by Plasti-bond RedH_2OT 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 8 style or pulling elbow and include pulling rollers, domed, gasketed covers and stainless steel screws. Covers for conduit bodies must have bolts that thread into the conduit body. Snaptight and wedgenut covers are not allowed. CONTRACTOR shall select body style and size according to application.

G. Fittings and Conduit Bodies: ANSI/NEMA FB 1; threaded-type material to match conduit. Split couplings are not allowed.

H. 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 26 19 00–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 FLEXIBLE METAL CONDUIT AND FITTINGS

A. Conduit: Electrogalvanized single-strip steel.

B. Fittings: ANSI/NEMA FB1.

2.04 LIQUIDTIGHT FLEXIBLE CONDUIT AND FITTINGS

A. Liquidtight Flexible Metal Conduit:
   1. Conduit: Spiral-wound, electrogalvanized, single-strip steel with integral grounding conductor continuously enclosed within the entire length of the convolutions. The flexible PVC jacket shall be sunlight-resistant, flame-retardant, and resistant to damage from mild acids. Conduit shall be UL Listed and be rated for installation in Class I, Division 2, Groups C and D locations. Conduit shall be Liquatite Type LA, or equal.
   2. Fittings: UL listed with thermoplastic elastomer sealing gasket.
      a. Provide stainless-steel fittings outdoors and in NEMA 4X locations, unless noted otherwise.
      b. Provide electro-zinc plated steel fittings in all other areas, unless noted otherwise.

2.05 CONDUIT SEALS AND SPECIAL FITTINGS

A. Conduit Seals: Duct sealing compound, OZ Gedney Type DUX, or equal.

B. Expansion Fittings: Crouse Hinds or Robroy type XJG, or equal, for rigid, or PVC-coated rigid conduit.

C. Expansion Deflection Fittings: O-Z type “DX,” Appleton, or equal.

D. Ground Bushings: Crouse Hinds Model GLL, or equal.

E. 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.

F. 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 and 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. Maintain 1 foot of separation between signal conduits (below 100 volts) and power conduits (100 volts and above).

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 concealed to avoid adverse conditions such as heat and moisture, to permit drainage, and to avoid all materials and equipment of other trades. Maintain a minimum clearance of 6 inches from all hot water pipes, flues, or any high-temperature piping or ductwork.

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 that may be damp shall be spaced out to avoid rust and/or corrosion 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, parking ramp areas, garage areas, unconditioned spaces, and exterior locations.

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.

J. Vertical conduit runs 1 1/4 inches and larger passing through floors shall be supported at each floor with conduit riser grips.

3.02 GENERAL CONDUIT INSTALLATION REQUIREMENTS

A. Interior conduit shall be run concealed in walls, building cavities, chases, and attic spaces. Exterior conduit shall be concealed in structure walls. Exposed conduit runs shall be avoided. Conduit may be run exposed only where it is impossible to conceal.

B. Conduit may be run exposed on the underside of precast or poured concrete floor slabs or in the parking ramp. Run exposed conduit grouped and parallel or perpendicular to construction. Do not route exposed conduits over boilers or other high-temperature machinery nor in contact with such equipment. All conduit shall be run exposed in structures below grade.

C. 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.

D. Provide all empty raceways 2 1/2 inches and over with No. 10 galvanized fishwire, and nylon cord for conduits smaller than 2 1/2 inches. Empty raceways and fishwire/nylon cord shall be identified with permanent label, and label shall include conduit termination point. All empty conduits shall be threaded, capped and flush with finished floor or wall. Exposed conduits shall be threaded and capped.

E. Conduit seals shall be provided where conduits pass from the interior to exterior of the building, when conduit enters a wet location, and where conduit enters a damp location.

F. Liquidtight flexible conduit shall be installed in such a manner that liquids tend to run off the surfaces and not drain toward the fittings.

G. Provide conduit expansion-deflection fittings as specified herein in all conduit runs where movement perpendicular to axis of conduit may be encountered.

H. 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 utilize watertight hubs and enter the sides or bottom of the enclosure. Conduits shall not penetrate the top of the enclosure.

C. Conduit penetrations for all exterior enclosures (e.g., disconnects, junction boxes, control panels) shall utilize watertight hubs and enter the sides or bottom of the enclosure. Conduits shall not penetrate the top of the enclosure.

D. Provide firestopping for all conduits penetrating fire barriers as specified in Section 07 27 00–Firestopping.

E. All conduits that protrude from poured concrete shall be PVC-coated rigid conduit. Conduit shall extend continuously (i.e., no joints) a minimum of 4 feet beyond the poured concrete (both sides).

F. Conduits passing through masonry, concrete, or similar construction shall be cast in place using PVC-coated rigid conduit extending completely through the construction.

G. Where above-grade conduits pass through cores in existing structures or through masonry walls, grout openings between conduit and walls with sand cement mortar.

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. Rigid steel:
      a. Interior locations requiring mechanical protection.
      b. All exposed interior locations.
      c. All concealed interior locations.
   2. EMT:
      a. Above suspended ceilings.
   3. Rigid aluminum:
      a. All exposed interior locations.
      b. Interior locations requiring mechanical protection.
      c. Exterior locations and locations exposed to weather.
      d. Above suspended ceilings.
   4. PVC-coated rigid steel:
      a. Conduits protruding from concrete.
      b. Interior and exterior locations requiring mechanical protection.
      c. Exterior locations and locations exposed to weather.
   5. Flexible metal conduit not over 4 feet in length except 6-foot maximum length for fixture wiring for final connections for:
      a. Equipment in dry connections.
      b. Equipment in dry connections arranged for flexible positioning or equipped with sliding bases.
      c. Equipment in dry locations with vibrations isolation mounting.
   6. Liquidtight flexible metal conduit not over 3 feet in length for final connections to:
      a. Equipment in wet locations.
      b. Duct smoke detectors.

END OF SECTION

SECTION 26 05 34

BOXES

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Switch, 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 boxes, 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 Division 1.

PART 2–PRODUCTS

2.01 SWITCH, OUTLET, AND SMALL JUNCTION BOXES

A. Sheet Metal Boxes: ANSI/NEMA OS 1; galvanized steel, 4-inch square or octagon, minimum 2 1/8 inches deep. Raco, Appleton, or equal. Boxes with knockouts for multiple size conduits not allowed. Suspended ceiling grid support bridges shall be as manufactured by Caddy, Model 512 HD, or equal.

B. Masonry and Partition Boxes: Galvanized steel, nongangable. Thomas & Betts, GW Series, or equal. Provide number of gangs for devices shown on the drawings.

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

D. NEMA 4X Boxes: PVC or FRP, Carlon NS Series, or equal, with proper cover and gasket.

E. Covers for switch and outlet boxes used as junction boxes shall have covers that match box type.

2.02 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: ANSI/NEMA OS 1: Code gauge steel with galvanized or sheradised finish, secured by galvanized machine screws. Hoffman ASG Series without knockouts, or equal.

B. 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.

C. NEMA 4X Boxes: Hoffman Stainless Steel, or equal with hinged cover and gasket.

D. Boxes Larger Than 12 inches in Any Dimension: Hinged enclosure in accordance with Section 26 16 00–Hinged Cover Enclosures.

E. 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 the drawings and as necessary for splices, taps, wire pulling, cable bending radii, equipment connections, and code compliance.

B. Electrical box locations shown on the drawings are approximate. Verify location and size of boxes in all work areas prior to rough-in.

C. Locate and install boxes to allow access. Where installation is inaccessible, coordinate locations and sizes of access doors.

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

E. All boxes attached to building surfaces that may be damp shall be spaced to avoid rust and/or corrosion. All boxes in damp locations shall be on 1/2-inch standoffs. Damp locations shall include, but not be limited to, parking ramp areas, exterior locations, unconditioned spaces, and garage areas.

3.02 SWITCH, OUTLET, AND SMALL JUNCTION BOX INSTALLATION

A. Provide knockout closures for unused openings.

B. Support boxes independently of conduit.

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

D. Switch and outlet boxes provided for branch circuits and feeders shall not contain control wiring. Control wiring shall have dedicated pull and junction boxes provided. Wiring for different voltage systems (e.g., 24 V, 120 V) shall have dedicated pull and junction boxes for each voltage.

E. For weatherproof devices, use cast boxes with proper cover and gasket.

F. All interior exposed wall and ceiling outlet boxes shall be cast boxes, unless otherwise noted.

G. Knockout punches or saws shall be used for holes; boxes with prepunched holes are not acceptable, except when used in conjunction with EMT conduit in areas where allowed.

H. Cast boxes with 3/4-inch hubs and aluminum fittings and enclosures may be used with all conduit types.

I. Sheet metal boxes installed in suspended ceilings for devices installed through the suspended ceiling shall be supported by the suspended ceiling grid system using grid support bridges. Provide mounting hardware, accessories, extensions, etc., based on ceiling grid installed for this project.

3.03 PULL AND JUNCTION BOX INSTALLATION

A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.

B. Support pull and junction boxes independent of conduit.

C. Knockout punches or saws shall be used for holes; boxes with prepunched holes are not acceptable, except when used in conjunction with EMT conduit in areas where allowed.

D. Refer to Section 26 05 53–Electrical Identification for junction box labeling requirements.

E. All interior exposed junction and pull boxes shall be cast type with cover, unless noted otherwise.

F. All exterior junction and pull boxes shall be NEMA 4X.

END OF SECTION

SECTION 26 05 53

ELECTRICAL IDENTIFICATION

PART 1–GENERAL

1.01 SUMMARY

A. Work Included:
   1. Nameplates.
   2. Labeling tags.
   3. 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 Division 1.

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. 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: See Drawings for labels, or as requested by ENGINEER. Label shall include equipment number and description (i.e., SCAL-60-01, Fluoride Scale).
   8. Mounting Location: Front exterior.

B. Type “B”:
   1. Use: Fire Alarm System.
   2. Size: As necessary.
   3. Material: 3-layer laminated Micarta.
   4. Background Color: White.
   5. Character Color: Red.
   6. Character Size: 3/16-inch.
   7. Engraving and Mounting Location: As requested by ENGINEER.

C. Type “C”:
   1. Use: Operator instructions.
   2. Size: As necessary.
   3. Material: 3-layer laminated Micarta.
   4. Background Color: Yellow.
   5. Character Color: Black.
   6. Character Size: 3/16-inch.
   7. Engraving and Mounting Location: As requested by ENGINEER.

2.02 LABELING TAGS

A. Use: Field-Mounted Devices (Limit Switches, etc.).
   1. Size: 2-inch diameter round.
   2. Material: 3-layer laminated Micarta.
   3. Character Size: 1/8-inch.
   4. Engraving: As requested by ENGINEER.

2.03 WIRE AND CABLE MARKERS

A. Wire and cable markers shall be permanently-attached, heat-shrink type labels.
   1. Sleeve: Permanent, PVC, white, with legible machine-printed black markings.
   2. Acceptable Manufacturers: Raychem Model D-SCE or ZH-SCE, Brady Model 3PS, or equal.
   3. Grounding Conductor: Provide green wire marker; minimum 2 inches wide.

B. Wire or cable numbering preprinted on the conductor or cable insulation, 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.

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 weatherproof, UV-resistant adhesive in outdoor locations and sticky back adhesive in indoor locations.

D. Affix labeling tags with stainless steel leaders; vinyl locking wire ties are not acceptable. Provide 3/8-inch hole to accommodate leaders.

E. Prepare and install neatly-typed directions in all panels, including existing panels where Work is done under this Contract.

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. Neutral conductor labels shall include the associated branch circuit number. 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, control panels, 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. All wiring labels shall be able to be read without removing wire management (i.e., wiring trough covers, spiral windings, etc.) or twisting the wire/cable.

C. Power Conductor Insulation Color Code:
   1. 6 AWG and Larger: Provide general-purpose, flame-retardant, permanent tape at each termination and at accessible locations such as junction and pull boxes, panelboards, etc. Apply tape with at least six full, overlapping wraps; minimum 2 inches wide.
   2. 8 AWG and Smaller: Provide conductors with color-coded insulation.
   3. Colors:

System	Conductor	Color
All Systems	Equipment Grounding	Green
120/208 Volts Three-Phase, Four Wire	Grounded Neutral Phase A Phase B Phase C	White* Black Red Blue
Note: Phase A, B, C implies direction of positive phase rotation.		
* When installed as part of a 120-volt branch circuit, provide a color-coded stripe on the white neutral conductor insulation matching the branch circuit insulation.		

D. Control Panel and Field-Installed Control Conductor Insulation Color Code:
   1. All conductors shall have color-coded insulation.
   2. Colors:

System	Conductor	Color
Supply Voltage	Ungrounded Circuit Conductors Neutral	Black White

E. Refer to Section 26 31 00-Fire Alarm System for color code of conductors with the fire alarm system.

F. Circuit Identification
   1. Identify power, instrumentation, and control conductors at each termination and at accessible locations such as junction and pull boxes, panelboards, etc.
   2. Conductors for panelboard circuits shall identify circuit matching the circuit directory designations, including the neutral conductor.
   3. Control conductor identification shall match the associated terminal block label.
   4. Circuits Not Listed in Circuit Directories:
      a. Assign circuit name based on unique device or equipment at load end of circuit.
      b. Where unique device or equipment names are not available or apparent, add a unique number or letter modifier to each otherwise identical circuit name.

3.03 DATA/VOICE CABLE AND COMMUNICATION EQUIPMENT IDENTIFICATION

A. Individual labels shall be placed on all information outlets and both ends of all cables.

B. Each component shall be clearly labeled using a code identifying each device's location throughout the building along with a unique identifier. The as-built drawings shall identify the numbering at each jack location. Each media type shall be uniquely labeled as follows:
   1. Cables:
      a. Panel number, cable type (D=data)-jack number.
      b. For example: "FACP-01:C07.D-001" represents the first data jack served from a copper patch panel mounted in top RU space 7 of Fire Alarm Control Panel No. 1.
   2. Jacks:
      a. Provide a label on the top or bottom of the faceplate identifying the panel serving the associated jacks, as specified herein.
      b. Label each jack with the cable type (D=data): jack number.
      c. For example: "D-001" represents the first data jack served from the associated panel.
   3. All labels shall comply with ANSI/TIA/EIA-606-A-1.

C. Refer to Section 26 93 10–Structured Cabling for cable insulation and jack color requirements.

3.04 JUNCTION BOX IDENTIFICATION

A. All junction boxes shall be labeled with permanent labels. Labels shall indicate circuit or load served, as well as the power source and highest voltage present on any conductor.

3.05 TERMINAL BLOCK IDENTIFICATION

A. Terminal blocks shall be labeled on both sides of each terminal block. Terminal block numbering shall match the numbers shown on the project-specific wiring diagrams.

B. Fused terminal blocks labels shall be located on top of the terminal blocks and include the fuse voltage and amperage rating.

3.06 LABELING FONT REQUIREMENTS

A. The font for all conductor, cable, and device labels shall be Arial with black characters on white background, and minimum font size 12.

B. The text for all conductor, cable, and device labels shall be machine printed. Handwritten labels are not acceptable.

END OF SECTION

SECTION 26 16 00

HINGED COVER ENCLOSURES

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: Hinged cover 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 Division 1.

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.

2.02 FABRICATION

A. Shop-assembled enclosures 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 doors and covers.

2.03 ENCLOSURE RATING

A. Enclosures shall be rated as listed below, unless noted otherwise on the Drawings:
   1. Indoor dry locations: NEMA 12, steel.
   2. Outdoor or wet locations: NEMA 4X, stainless steel.

PART 3–EXECUTION

3.01 INSTALLATION

A. Install enclosures plumb. Anchor securely to wall and structural supports at each corner minimum.

B. Refer to Section 26 05 53–Electrical Identification for enclosure labeling requirements.

C. All 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, parking ramp areas, garage areas, unconditioned spaces, and exterior locations.

END OF SECTION

SECTION 26 19 00

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 Division 1.

PART 2–PRODUCTS

2.01 MATERIAL

A. Support Members:
   1. 316 stainless steel, fiberglass, or PVC in exterior locations and FRP in NEMA 4X areas. PVC-coated steel where used with PVC-coated conduit.
   2. Galvanized steel in all other areas.

B. Hardware:
   1. Stainless steel in exterior locations. FRP in NEMA 4X areas.
   2. Galvanized steel in all other areas.

C. Manufacturers: Unistrut P-1000, B-line, Superstrut, or equal.

PART 3–EXECUTION

3.01 INSTALLATION

A. All supporting devices and support structures shall be constructed such that the structure adequately supports the load of the equipment installed on it including any wind and/or snow loads. Provide additional support members to those shown on the Drawings to adequately support load.

B. 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 or suspended ceiling grid bridge supports as specified in other technical sections.

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

D. 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.

E. Do not fasten supports to piping, ductwork, mechanical equipment, or conduit.

F. Do not use powder-actuated anchors.

G. Do not drill structural steel members.

H. 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.

I. Install surface-mounted cabinets with a minimum of four anchors.

J. Do not use chain, wire rope, or perforated strap hangers.

K. All welds shall be continuous and ground smooth.

END OF SECTION

SECTION 26 31 00

FIRE ALARM SYSTEM

PART 1–GENERAL

1.01 SUMMARY

A. Work includes the furnishing of all labor, equipment, materials, and performance of all operations associated with the installation of the Fire Alarm System as shown on the drawings and as specified herein to meet the requirements of a complete Fire Alarm System.

B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 REFERENCES

A. NFPA 72, the National Fire Alarm Code.

B. ADA.

C. Underwriters Laboratories.

D. ASME 17.1.

E. NFPA 90.

F. IBC/IFC.

1.03 SCOPE

A. Furnish and install a complete Fire Alarm System to be wired, connected, and left in first class operating condition. The system shall be UL listed, cross-listed, and compatible for use with individual zone supervision, individual NAC supervision, and incoming and standby power supervision. The project includes furnishing a system which includes manual stations, smoke detectors, heat detectors, audible/visual devices, visual only devices, all wiring, connections to devices, outlet boxes, junction boxes, and all other necessary material for a complete operating system.

B. The work covered by this section of the specifications includes the furnishing of all labor, equipment, materials, and performance of all operations in connection with the installation of the Fire Alarm System as shown on the drawings and as herein specified.

1.04 QUALITY ASSURANCE

A. System Supplier shall be a nationally-recognized company specializing in smoke detection and fire alarm systems. This organization shall employ factory-trained and NICET-certified technicians, and shall maintain a service organization within 100 miles of this project location. The System Supplier and service organization shall have a minimum of 10 years' experience in the fire protective signaling systems industry.

B. The System Supplier shall supply the final checkout, contractual service, and testing.

C. The complete installation is to conform to the applicable sections of NFPA-72, NFPA-101 Local Code Requirements and National Electrical Code with particular attention to Article 760.

D. Each and all items of the complete Fire Alarm System shall be listed as a product of a single fire alarm system manufacturer unless the primary equipment provider or manufacturer provides written documentation of compatibility, and assumes responsibility for compatibility with the control equipment.

E. Each and all items of the complete Fire Alarm System shall be listed under the appropriate category by Underwriters Laboratories, Inc. (UL), and shall bear the UL label.

1.05 SUBMITTALS

A. Submit shop drawings and product data sheets in accordance with provisions of Division 1.

B. Submittals shall be sent to and approved by the Authority Having Jurisdiction prior to submitting to ENGINEER. Include copy of approval letters in submittal to ENGINEER.

C. Provide wiring diagrams, equipment ratings, dimensions, and finishes for all proposed devices and equipment.

D. Provide battery calculations to indicate both the Standby and Alarm loads because of various field devices and panel components/module. Battery calculations shall illustrate the minimum battery capacity required and the capacity actually provided. Battery shall contain date of installation and not the manufactured date.

E. Provide a complete Fire Alarm System riser diagram including: Point of origin of each circuit (usually a Panel, or a Module within a panel), circuit type and labeling, area served by each circuit, wire/cable type and size, locations of panelboards where primary system power is obtained and the device type circuit(s) to which device is connected, and locations of any End-Of-Line Resistor for each field device.

F. Provide “worst-case” notification appliance circuit voltage drop calculation.

1.06 AS-BUILT DRAWINGS

A. As-built drawings shall include the location of all Fire Alarm System devices with their respective labels and the location of all end-of-line device locations.

B. Upon completion of the work, and final acceptance by the local authority, CONTRACTOR shall submit as-built drawings to OWNER and ENGINEER under the provisions of Division 1.

C. CONTRACTOR shall submit a copy of the Fire Alarm System; Record of Completion documentation to OWNER, ENGINEER, and AUTHORITY HAVING JURISDICTION. Included with the Record of Completion documentation shall be a copy of final acceptance testing results.

D. As-built drawings shall be provided to OWNER on a DVD. Site-specific fire alarm system program shall be included on DVD.

E. As-built drawings of the existing fire alarm system are available. Contact ENGINEER for as-built drawings.

1.07 OPERATION AND MAINTENANCE DATA

A. Submit Manufacturer data sheets for all equipment installed.

B. Include operating, installation, and routine maintenance instructions.

C. Submit a record copy of site-specific computer software for software-based Fire Alarm Systems.

D. Include manufacturer letter stating the date of installation on which the system is operational.

E. Operating instructions shall be mounted in a frame next to each FACP.

1.08 WARRANTY

A. Standard One-Year Warranty: Unless otherwise stated below, manufacturer shall warrant the equipment to be free from defects in material and workmanship for a period of one year from the earlier of either the date established for partial utilization in accordance with GC14.04 and 14.05, as modified in the Supplementary Conditions, or Substantial Completion of the project.

PART 2–PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Fire Alarm System: Provide a complete, supervised, power-limited, fire detection and evacuation system.

B. System Supervision: The fire protective signaling system shall be an electrically-supervised, power-limited system which shall monitor the integrity of circuit conductors and power supplies. Fire alarm system shall be remotely supervised by an OWNER-designated recognized agency. CONTRACTOR shall coordinate with OWNER to establish a monitoring agency. The existing monitoring agency is EMERgency24 (1-800-827-3624), account number 150132.

C. Equipment of another manufacturer may be submitted as an alternate, however, CONTRACTOR must provide a complete system.

2.02 ENCLOSURES

A. All panels and peripheral devices shall be the standard product of a single manufacturer and shall display the manufacturer’s name on each component.

B. Provide cabinets of sufficient size to accommodate the aforementioned equipment.

C. Cabinet shall be equipped with locks and transparent door panel providing a tamperproof enclosure, yet allowing full view of the various lights and controls as required.

2.03 INTELLIGENT FIRE ALARM CONTROL PANEL (FACP)

A. Intelligent fire alarm systems shall be installed where shown on the drawings.

B. FACP shall be UL 864, latest edition, manufactured by Siemens model FireFinder XLSV, Simplex model 4100es, or Johnson Controls model IFC2-640, or equal.

C. The FACP shall allow for loading or editing special instructions and operating sequences as required. The system shall be capable of on-site programming to accommodate facility expansion, building parameter changes, or changes as required by local codes. All software operations shall be stored in a nonvolatile, programmable memory resident within the FACP. Loss of power shall not erase the instructions stored in memory.

D. The ability for selective input/output control functions based on ANDing, ORing, NOTing, and special coded operations shall also be incorporated in the resident software programming of the system.

E. To accommodate and facilitate jobsite changes, initiation circuits shall be individually configurable on-site to provide either alarm/trouble operation, alarm only, trouble only, current limited alarm, no alarm, normally closed device monitoring, a nonlatching circuit, or an alarm verification circuit.

F. FACP shall be modular, expandable with solid-state, microprocessor-based electronics. It shall display through the front viewing window only those primary controls and displays essential to operation during a fire alarm condition.

G. The FACP shall provide the following features as standards:
   1. Support intelligent detection devices.
   2. The number of initiating device loops required for the specified quantity of initiating devices, plus one spare loop for each five active loops. Each active loop shall include 5% spare capacity.
   3. The number of indicating appliance (speakers) circuits required for the specified quantity speakers, plus one spare circuit for each ten active circuits. Each active circuit shall include 10% spare capacity.
   4. The number of indicating appliance (strobe) circuits required for the specified quantity of strobes, plus one spare circuit for each ten active circuits. Each active circuit shall include 25% spare capacity.
   5. 80-character liquid crystal display.
   6. Printer interface.
   7. History log file with a minimum of 1,000 events.
   8. Field programmable.
   9. Drift compensation.
   10. Sensitivity display in percent.
   11. Sensitivity adjustment.
   12. Day/night sensitivity adjustment.
   13. Auto detector test to meet NFPA 72.
   14. Alarm verification with tally counter.
   15. Silent walk test.

16. Maintenance alerts.
17. AC fail delay.
18. Other features as described below.

H. The FACP shall provide the ability to recall alarms and trouble conditions in chronological order for the purpose of recreating an event history.

I. The FACP LCD shall have the capability of displaying the following information relative to the abnormal condition of a point in the system prior to acknowledgement:
   1. 40 characters for:
      a. Point address and loop number (i.e., 555-L5).
      b. Type of device (i.e., smoke, pull station, water flow).
      c. Point status (i.e., alarm, trouble).
   2. 40 characters for: Custom location label (i.e., 4th Floor–Room 444).

J. FACP keyboards or keypads shall not be required to operate the system during fire alarm conditions.

K. FACP shall have the following software functions:
   1. Setting of time and date.
   2. LED testing.
   3. Alarm, trouble, and abnormal condition listing.
   4. Enabling and disabling of each monitor point separately.
   5. Activation and deactivation of each control point separately.
   6. Changing operator access levels.
   7. Walk Test enable.
   8. Running diagnostic functions.
   9. Displaying historical logs.
   10. Point listing.

L. FACP shall have the following hardware functions:
   1. Acknowledge alarm or trouble.
   2. Silence alarm or trouble.
   3. Reset system after alarm.
   4. Connect/disconnect fire department tie.
   5. Provide manual evacuation (drill).
   6. Bypass door holders.
   7. Supervise system.
   8. Allow computer interface.

M. FACP shall have the following Status Indicators and Displays:
   1. Local audible device shall sound during Alarm, Trouble or Supervisory conditions. This audible device shall also sound during each key-press to provide an audible feedback to ensure that the key has been pressed properly. The visual display shall distinguish between alarm, trouble and supervisory conditions.
   2. The following indicators and displays shall be visible through the front viewing window:
      a. One red system alarm LED.
      b. One yellow supervisory service LED.
      c. One yellow trouble LED.
      d. Green “power on” LED.
      e. Eighty-character liquid crystal display.

3. The 2-line by 40-character liquid crystal display shall be backlit for enhanced readability. So as to conserve battery standby power, it shall not be lit during an AC power failure unless an alarm condition occurs or there is keypad activity.
4. The display shall support both upper and lowercase letters. Lowercase letters shall be used for soft-key titles and prompting the user. Uppercase letters shall be used for system status information. A cursor shall be visible when entering information.
5. Scrolling through menu options or lists shall be accomplished in a self-directing manner in which prompting messages shall direct the user. These controls shall be located behind an access door. The following status data shall be available on this display:
    a. Initiating device circuits.
    b. Indicating appliance circuits.
    c. Auxiliary relays.
    d. Feedback points.
    e. Primary state of point.
    f. Zone information.
    g. Class “A” status.
    h. Current priority of outputs.
    i. Disable/Enable status.
    j. Verification tallies of initiating devices.
    k. Automatic/Manual control status of output points.
    l. Acknowledge status.

N. Controls:
1. The following controls (one switch per function per system) shall be visible through the front viewing window:
    a. Alarm Acknowledge key.
    b. Trouble Acknowledge key.
    c. Alarm Silence key.
    d. System Reset key.
2. The following controls shall be accessible with the front door open, though not visible, through the front viewing window:
    a. Supervising Station disconnect/switch.
    b. Manual evacuation (drill).
    c. Elevator bypass.
    d. Fan shutdown override/bypass switches.
    e. Door holder release bypass.
    f. Key pad for data input and microprocessor control.

O. One-way Voice Communication System
1. The FACP shall be provided with an Integrated, One-way Emergency Voice Communications (EVAC) sub-system. This EVAC sub-system shall be configured as a single-channel sub-system, with automatic and manual operation as specified herein.
2. The tone generators, microphones, audio controls, selector switches, LEDs, amplifiers, and speaker-type NACs, which make up this system shall all be modular components of the FACP. The tone generator and audio controls may share the same “system bus” as the other FACP components. The primary microphone and audio controls shall be built-into the FACP.
3. FACP on-board diagnostics shall be configured to assist in the identification of individual module faults. The EVAC components shall be powered from the FACP power supplies and batteries.

4. Hand-held, push-to-talk microphones shall be provided within the FACP enclosure. Each microphone shall be dynamic communication type with a frequency range of 200 Hz to 4000 Hz and shall be equipped with a self-winding five-foot coiled cable. An LED indicator shall be provided to indicate microphone push-to-talk button has been pressed and speaker circuits are ready for transmission. All microphones shall be supervised for disconnection.
5. Audio control switches shall be furnished to provide manual controls of all audio functions. These switches and associated LED indicators shall be supervised for disarrangement or failure.
6. Audio power amplifiers shall be furnished with self-contained filtered 24VDC power supply, transformer and amplifier monitoring circuits. Amplifiers shall provide a 25 or 70 VRMS output with a frequency response of 4,000Hz to 14,000Hz. Minimum amplifier sizes shall be determined as follows:
    a. Provide a minimum of 1 Watt for each Speaker.
    b. Provide a minimum of 10% Additional Amplifier Capacity.
7. The Fire Alarm System shall include back-up amplifiers within each Amplifier-Equipped FACP or Amplifier-Equipped Remote Equipment Cabinet. When amplifiers are distributed throughout the building in the NAC supply panels, at minimum a back-up amplifier shall be provided for each group of amplifiers within the same equipment closet. These back-up amplifiers shall be configured such that upon failure of any other Fire Alarm Audio Power Amplifier:
    a. A back-up amplifier shall be automatically routed into the signal path, such that the back-up amplifier shall functionally replace the failed amplifier.
    b. A Trouble event shall be logged by the Fire Alarm System. This Trouble event shall indicate that an amplifier failure has occurred. If the system contains multiple amplifiers, the Trouble event message shall indicate which specific amplifier has failed.
8. Speaker circuits shall be capable of supplying audio signals at 25 or 70 VRMS supplied by the system amplifiers. Supervision for open, short or ground fault conditions shall be provided. Individual and distinct trouble indications shall be provided for each fault.

P. Tones for One-way Emergency Voice System
1. The Alert Tone and Digital Voice Message utilized by Automatic Mode shall be compliant with the latest NFPA-72. The Tone and Message shall be selected by OWNER and ENGINEER.
2. The Main Alert tone shall be the temporal code pattern. This temporal pattern shall be compliant with the latest ANSI standards and as described in the latest NFPA-72.

Q. Voice Message Transcript for One-way Emergency Voice System
1. OWNER will select one of the following or develop one similar.
    a. “May I have your attention please? May I have your attention please? There has been a fire emergency reported in this building. While this is being verified, please proceed calmly to nearest exit and leave the building immediately. Do not use the elevators, use stairwells. All handicapped occupants should use the building evacuation plan.”
    b. “Attention please, there has been a report of a fire emergency. Proceed calmly to the nearest exit and leave the building immediately. Do not use the elevators, use stairwells where necessary. All handicapped occupants should use the building evacuation plan.”
    c. “Attention, attention: the building fire alarm has been activated. All occupants must evacuate the building. Do not use the elevators. Walk to the nearest available exit

and evacuate the building. All handicapped occupants should use the building evacuation plan."

2. High rise message: "Attention please. The signal tone you have just heard indicated a report of an alarm emergency in this building. If your floor evacuation signal sounds after this message, walk to the nearest stairway and leave the floor. While the report is being verified, occupants on the other floors should await further instruction."

R. FACP shall have the capability of supervising all slave modules LEDs for burnout or disarrangement.

S. Acknowledgement:
   1. All events shall have a global acknowledgement.
   2. Acknowledge one event at a time from an unacknowledged list of events.
   3. Pressing the appropriate acknowledge button shall display the first unacknowledged condition in the appropriate list (either alarm, supervisory, or trouble) and require another acknowledge button. Press to acknowledge only the displayed point.
   4. After all points have been acknowledged, the LEDs shall glow steadily and the Sonalert will be silenced. The total number of alarms, supervisory, and trouble conditions shall be displayed along with a prompt to review each list chronologically. The end of the list shall be indicated by an end of list message "END of LIST."
   5. Systems not capable of password-protected manual command operations shall provide key-operated switches for these functions. Function key switches shall be keyed differently from any other keyed switches or locks used within the system.
   6. All acknowledge functions shall be behind locked door or pass-code protected. In pass-code protection, if the user has insufficient privilege to acknowledge such conditions, a message shall indicate insufficient privilege, but allow the user to view the points without acknowledging them. Should the user have sufficient privilege to acknowledge, a message will be displayed informing the user that the condition has been acknowledged.

T. Silencing:
   1. If an alarm condition exists and the "Alarm Silence" button is pressed, all alarm signals shall cease operation. The strobes shall remain active until the system is reset.
   2. If trouble conditions exist in the system and the "Trouble Silence" button has been pressed, the audible trouble signal shall cease, but shall resound at time intervals to act as a reminder that the fire alarm system is not in a normal operating mode. Both the time interval and the trouble reminder signal shall be programmable to suit OWNER's application.
   3. Panel shall be equipped with an alarm silence inhibit function.

U. Reset:
   1. The SYSTEM RESET button shall be used to return the system to its normal state after an alarm condition has been remedied. The display shall step the user through the reset process with simple English language messages. Messages shall provide operator assurance of sequential steps (i.e., "IN PROGRESS," RESET COMPLETED," and "SYSTEM NORMAL") as they occur, should all alarms conditions be cleared.
   2. Should an alarm condition continue to exist, the system shall provide indications that resetting cannot be completed and shall remain in an abnormal state. The Sonalert and the Alarm LED shall remain activated. The display shall indicate the total number of alarms and troubles present in the system along with a prompt to use the ACK keys

to review the points. These points shall not require acknowledgment if they were previously acknowledged.

V. Access Levels:
   1. There shall be three access levels with Level 4 being the highest level. Level 1 actions shall not require a passcode. Passcodes shall consist of up to five digits. Changes to passcodes shall only be made by authorized personnel.
   2. In order to maintain security when entering a passcode, the digits entered shall not be displayed, but a cursor shall move along filling the position with an X to indicate that the digit has been accepted. All key presses shall be acknowledged by a local audible sound.
   3. When a correct passcode is entered, the system shall indicate “Access Granted” to the operator. The new access level shall be in effect until the operator manually logs out or the keypad has been inactive for 5 minutes.
   4. Operator entering an invalid code shall be notified with the message “Incorrect Pass-Code” and shall be allowed up to three chances to enter a valid code. After three unsuccessful tries, the message “Access Denied” shall be displayed. The level shall not be altered, and the operator shall no longer be in the menu option.
   5. Access to a level shall allow the operator to perform all actions within that level plus all actions of lower levels but no actions of higher levels.
   6. The following keys/switches shall have access levels associated with them:
      a. Alarm Silence.
      b. System Reset.
      c. Set Time/Date.
      d. Manual Control.
      e. On/Off/Auto Control.
      f. Disable/Enable.
      g. Programming functions.
      h. Clear Historical Alarm Log.
      i. Clear Historical Trouble Log.
      j. Walk Test.
      k. Change Alarm Verification.
   7. Acknowledge keys shall also require privileged access to acknowledge points. If the operator presses an ACK key with insufficient access, an error message shall be displayed. The points shall scroll with ACK key presses to view the points on the list, but the points shall not get acknowledged in the database.

W. For maintenance purposes, the following lists shall be available from the point lists menu:
   1. All points list by address.
   2. Monitor point list.
   3. Signal/speaker list.
   4. Auxiliary control list.
   5. Feedback point list.

X. History Logging:
   1. The system shall be capable of logging and storing the last 400 events (alarm and trouble) in a history log. These events shall be stored in a battery-protected random access memory. Each recorded event shall include the time and date of that event’s occurrence. Systems not having discrete alarm and trouble logging memory shall include an alternative supervised (e.g., USB drive, compact disk) historic recording method with battery backup. Real time and date shall accompany all history event recording.

2. History logs shall be capable of being viewed separately or shall be selectable for viewing as a combined history log that displays both alarm and trouble events in chronological order.
3. The following historical alarm log events shall be stored:
    a. Alarms.
    b. Alarm Acknowledgment.
    c. Alarm Silence.
    d. System Reset.
    e. Alarm Historical log cleared.
4. The following historical trouble log events shall be stored:
    a. Trouble conditions.
    b. Supervisory alarms.
    c. Trouble acknowledgment.
    d. Supervisory acknowledgment.
    e. Alarm Verification tallies.
    f. Walk Test results.
    g. Trouble Historical log cleared.

Y. FACP shall have Silent Walk Test Function With History Logging:
1. The system shall be capable of being tested by one person.
2. The panel shall have the capability of dividing the system into distinctive walk test groups, a minimum of 8 groups.
3. Should an alarm condition occur from an active point, not in walk test mode, it shall perform operations described above.
4. After testing is considered complete, testing data may be retrieved from the system in chronological order to ensure device/circuit activation.
5. Suppliers of systems not having this feature as functionally specified above shall include a testing agreement meeting the requirements of NFPA-72 in their Base Bid quotation. As a minimum, 2 years of scheduled testing shall be included.

Z. Field Programming:
1. The system shall be fully programmable, configurable, and expandable in the field without the need for special tools or PROM programmers and shall not require replacement of memory ICs. All programming may be accomplished through the standard control panel keyboard, or a keyboard at the printer, or the use of a PC. All programs shall be stored in nonvolatile memory.
2. All programming or reprogramming shall be done by the supplier at no charge until the system is accepted by OWNER.

AA. Terminal/Printer Interface:
1. FACP shall be capable of operating remote monitors and/or printers.
2. The output shall be ASCII from an EIA RS-232-C connection with an adjustable baud rate.
3. Each RS-232-C port shall be capable of supporting and supervising up to four remote CRTs and Printers.
4. Data amplifiers shall be used to increase CRT or printer line distance, if required.
5. Each RS-232-C port shall only communicate with one keyboard. The FACP shall support up to five RS-232-C ports.

BB. Intelligent Network:

1. The system must provide communications with intelligent initiating and control devices individually. These devices shall be individually annunciated at the control panel. Annunciation shall include the following conditions for each point:
   a. Alarm.
   b. Trouble.
   c. Open.
   d. Short.
   e. Device missing/failed.
2. All intelligent devices shall have the capability of being disabled or enabled individually.
3. There shall be no limit to the number of detectors, stations, or addressable modules which may be activated or “in alarm” simultaneously.
4. Multiple intelligent devices shall be connected to a single pair of wires. Systems that require factory preprogramming to add or delete devices are unacceptable.
5. The communication format must be a completely digital poll/response protocol to allow T-tapping of the circuit wiring. A high degree of communication reliability must be obtained by using parity data bit error checking routines for address codes and check sum routines for the data transmission portion of the protocol. Systems that do not utilize full digital transmission protocol are not acceptable.

CC. The FACP shall provide a minimum of 6 amps for notification appliances and auxiliary devices. Provisions shall be available to provide additional signal expansion.

2.04 INTELLIGENT PERIPHERAL DEVICES

A. All devices shall be supervised for trouble conditions. The system control panel shall be capable of displaying the type of trouble condition (open, short, device missing/failed). Failure of a device shall not hinder the operation of other system devices.

2.05 DEVICE IDENTIFICATION

A. Each intelligent device shall be uniquely identified by an address code entered on each device at time of installation. The use of jumpers to set address shall not be acceptable. This address, along with the loop number, shall be indicated and be visible from the ground on the device in the field using machine-generated marking.

B. Location of the end-of-line (EOL) device shall be indicated on the fire alarm system device containing the EOL device.

C. Device identification schemes that do not use uniquely set addresses, but rely on electrical position along the communication channel are unacceptable. These systems cannot accommodate T-tapping, and the addition of an intelligent device between existing devices requires reprogramming all existing devices beyond added device.

D. The system must verify that proper type device is in place and matches the desired software configuration.

2.06 INTELLIGENT DETECTOR BASES

A. Either the base or the head shall contain electronic circuits that communicate the detector's status (normal, alarm, sensitivity status, trouble, etc.) to the control panel over two wires. The same two wires shall also provide power to the base and detector.

B. The base shall be lockable. The locking feature must be field-removable when not required.

C. Upon removal of the detector's head, a trouble signal shall be transmitted to the control panel.

D. The detector base shall be sealed against rear airflow entry.

E. Each detector's base or head shall contain LED(s) which shall flash when the detector is being scanned by the control panel. The LED(s) shall turn on steady when the detector is in an alarm condition.

F. Each base shall provide means to allow for function testing of the detector at the detector's location.

G. The base shall be common with heat detector and smoke-type detectors and shall be compatible with other intelligent detectors, addressable manual stations, and addressable modules on the same circuit.

2.07 INTELLIGENT DETECTORS–GENERAL

A. All detectors must be approved by the State Engineer prior to installation.

B. The detectors shall be plugin units which mount to a common base, and shall be UL 268 approved.

C. The detector shall be a 24 Vdc type, which is compatible with the fire alarm panel and obtains its operating power from the supervisory current in the fire alarm detection loop. The 24 Vdc detector shall be reset by actuating the control panel reset switch.

D. To minimize false alarms, voltage and RF transient suppression techniques shall be employed.

E. Detectors shall be installed on circuits with alarm verification modules.

F. Detectors shall include an insect screen.

G. If field conditions so require, the detection devices shall not be installed until construction is completed.

2.08 INTELLIGENT PHOTOELECTRIC SMOKE DETECTORS

A. The detectors shall contain no radioactive material.

B. Detectors shall be of the solid-state photoelectric type and shall operate on the light-scattering photodiode principle using a pulsed infrared LED light.

C. Smoke detectors shall be listed for sensitivity testing from the control panel. Sensitivity test results shall be logged.

D. Smoke detectors shall communicate the actual smoke chamber values to the system control panel.

E. Smoke detectors shall be smoke density measuring devices having no self-contained alarm setpoint (fixed threshold). The alarm decision for each detector shall be determined by the control panel. The control panel shall determine the condition of each detector by comparing the detector's value to the stored value.

2.09 INTELLIGENT THERMAL DETECTORS

A. The detectors shall be a combination rate-of-rise and fixed temperature (135°F unless noted).

B. Detectors shall sense within a temperature range of 32°F to 158°F. The control panel shall be capable of sensing either a setpoint of 135°F, or a rate-of-rise of 20°F per minute for fire sensing. For utility sensing, a setpoint may be chosen within the stated range, and the control panel programming shall be capable of using that information to determine specific response such as warning of failure of local temperature controls.

2.10 INTELLIGENT DUCT SMOKE DETECTORS

A. Duct detectors shall be of the photoelectric smoke or photoelectric smoke telescoping sampling tube type. It shall be possible to alarm the duct detector by using a remote or local test switch.

B. For maintenance purposes, it shall be possible to clean the duct housing sampling tubes by accessing them through the duct housings front cover.

C. Detector shall include auxiliary SPDT relays and remote keyed test switch and alarm LED indicator.

D. Alarm LED indicators for duct detectors shall be labeled with the detectors loop and address.

2.11 PULL STATIONS

A. Pull stations shall contain circuits that communicate the station's status (alarm, normal) to the control panel over two wires, which also provide power to the pull station. The address shall be field programmable at the station.

B. Manual stations shall be double-action, constructed of high-impact red Lexan with raised white lettering, and a smooth high-gloss finish.

C. Station shall mechanically latch upon operation and remain so until manually reset by a master key common to all system locks. Stations which use Allen wrenches or special tools to reset will not be accepted.

D. The manual station shall be fitted with screw terminals for field wire attachment.

2.12 ADDRESSABLE INTERFACE MODULES–GENERAL

A. Addressable Interface Modules shall receive their 24 Vdc power from a separate two-wire circuit provided by an appropriate power supply.

B. The module shall be available in either a Class B or Class A supervision version.

C. In the Class B version, the wiring shall be supervised by an end-of-line device.

D. In the Class A version, the wiring shall be looped back and connected to the module to allow continual operation of the controlled devices even if the wiring sustains a single break.

E. The interface modules shall be supervised and uniquely identified by the control panel. Device identification shall be transmitted to the control panel for processing according to the program instructions.

F. Should the interface modules become nonoperational, tampered with, or removed, a discrete trouble signal unique to the device shall be transmitted to and annunciated at the control panel.

G. The interface modules shall be capable of being programmed for its “address” location on the intelligent device initiating circuit. The interface modules shall be compatible with addressable manual stations and intelligent detectors on the same intelligent initiating circuit.

2.13 ADDRESSABLE INTERFACE MODULES–SUPERVISED CONTROL

A. Interface Modules shall be suited for control of indicating appliances and AHU systems.

B. For signals, speakers, firefighter phone jacks, and other device control with Class B or Class A wiring supervision, the interface module shall provide double-pole/double-throw relay switching that can be used to connect any of the following through easily replaceable 2-amp fuses:
   1. A zone of signals to a power source.
   2. Speakers to an audio source.
   3. Firefighter phone jacks to a communications channel.
   4. A variety of controlled devices to the appropriate controlling circuits.

C. These interface modules shall communicate the supervised wiring status (normal, trouble) to the fire alarm control panel and shall receive from the fire alarm control panel a command to transfer the relay.

2.14 FAULT ISOLATOR MODULE

A. The system shall have Fault Isolator Module (FIM) on the initiating device circuits in the following situations:
   1. Loop extends to another floor.
   2. Loop extends to another building.
   3. Loop has more than 25 devices.

B. Isolated Loop Circuit Protectors (ILCP) shall be located as close as practical to the point where these conditions occur.

C. FIM shall automatically reconnect the isolated section of the loop upon correction of the fault conditions. The FIM shall not require any address setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an FIM after its normal operation.

D. FIM shall include an LED, which shall flash under normal operation and illuminate steady to indicate a short circuit.

2.15 SPEAKER/STROBE UNITS

A. Speaker units shall have Lexan housing with field-adjustable output taps, three taps minimum, including a 1W tap. Speakers shall have a minimum sound pressure at 1W tap of 82 dBA at 10 feet. Speakers shall have vandal-resistant Lexan grills and sealed backs to protect the speaker assembly.

B. Speaker/strobe devices installed outdoors shall be installed in a clear Lexan enclosure. Enclosure shall be Model STI-1210E as manufactured by Safety Technology International, Inc.

C. The unit shall be complete with a tamper-resistant Lexan lens with “FIRE” lettering visible from a 180 degree field of view. Strobes installed in open areas such as hallways, open office spaces, and assembly areas shall have an adjustable candela rating range from 15-75 candela. Strobes installed in mechanical areas shall have a peak candela rating of 110 candela. All strobes shall be in compliance with ADA requirements.

2.16 INTELLIGENT BEAM SMOKE DETECTORS

A. The beam smoke detectors shall consist of an infrared beam emitting and receiving device(s). Beam smoke detector shall emit an infrared signal to the receiving device, then the signal shall be analyzed for the presence of smoke by the fire alarm control panel via the beam smoke detectors on-board addressable communications module.

B. Beam smoke detectors shall have a maximum range of 100 feet or greater and shall operate at 50 mA or less at 24 VDC.

C. Beam smoke detectors shall have an operator-selectable alarm threshold sensitivity selection minimum of 10% to 50%.

2.17 FIRE ALARM SYSTEM SOFTWARE

A. Provide a Windows 10 based control-software package for use with the fire alarm control panel. The software package shall impose all fire detection device locations on project-specific buildings floor plans and provide status indication for each device for the following:
   1. Device type.
   2. Module type.
   3. In alarm.
   4. In trouble.
   5. Status.

6. Sensitivity.
7. Settings.
8. Threshold.

B. Software shall clearly display the event types, graphical location of event, and status of operator's response. Software shall have an event history stored to the hard drive of the PC. The amount of hard-drive space that is used to store history shall be limited to the OWNER's request.

C. Software shall have a multi-level password to prevent unauthorized users from operating the system.

D. Software shall be installed on an OWNER provided PC. System Supplier shall configure the software to provide all capabilities as described above.

E. Software shall be model NCCW7I7 v7.80, as manufactured by Siemens, model 4190-8603, TrueSite Workstation Software; version 3.04, as manufactured by Simplex, or equal.

F. Provide intranet/internet interface module model 4100-6079, as manufactured by Simplex or equal.

2.18 SPARE PARTS

A. CONTRACTOR shall provide spare parts as described in Section 26 95 10.

PART 3–EXECUTION

3.01 FIRE ALARM SYSTEM CONFIGURATION

A. The FACP in the Fire Command Security Room 102 (FACP-1) shall function as the main panel for the entire site. All alarms and supervisory messages for the entire site shall be annunciated through this panel. Notification of alarms to the off-site monitoring agency shall be through this panel.

B. The FACP in the Fire Command Security Room 102 (FACP-1), Fire Command Room 138 (FACP-2), and Parking Ramp (FACP-3) shall be connected together via manufacturer's standard communication network.

C. Communications between the FACPs in the Fire Command Security Room 102 (FACP-1), Fire Command Room 138 (FACP-2), and Parking Ramp (FACP-3) shall be supervised. Abnormal communications shall be annunciated on the panel in the Fire Command Security Room 102.

3.02 FIRE ALARM SYSTEM OPERATION

A. FACP:
1. Under normal conditions, the front panel shall display a "SYSTEM NORMAL" message with current time and date.

2. Should an abnormal condition be detected, the appropriate LED (Alarm, Supervisory, or Trouble) shall flash. The panel audible signal shall pulse for alarm conditions and sound steadily for trouble and supervisory conditions.
3. In the event of an abnormal condition, the following three characteristics relative to the condition shall be displayed simultaneously in alphanumeric format. Systems not capable of such a display on the panel faceplate shall include a LCD display meeting the above requirements and must provide a secondary power supply to maintain LCD operation for the duration of the standby requirements of the panel. Information shall include:
    a. Custom location label (40 characters minimum).
    b. Type of device (i.e., smoke, heat, pull station).
    c. Status (i.e., alarm, trouble).
4. Pressing the appropriate acknowledge button shall acknowledge the alarm or trouble condition.
5. After all points in alarm have been acknowledged, associated LEDs shall glow steady and the panel audible signal shall be silenced. The total number of alarms, supervisory, and trouble conditions shall be displayed along with a prompt to review each list chronologically. The end of the list shall be indicated. The first 10 fire alarm zones shall be displayed simultaneously in chronological order.
6. Alarm Silencing:
    a. Pressing the “Alarm Silence” button shall cause all notification appliances programmed for “On-Until-Silenced” to be deactivated. A separate panel-mounted yellow LED shall illuminate to indicate the alarm silenced mode.
    b. All NACs programmed for “On-Until-Reset” shall remain activated until the system is Reset.
7. System Reset:
    a. The “System Reset” button shall be used to return the system to its normal state after an alarm condition has been remedied.
    b. In the event an alarm condition continues to exist following system reset, the system shall remain in an abnormal state. System control relays shall not reset. The panel audible signal and the Alarm LED shall remain on. The display shall indicate the total number of alarms and troubles present in the system along with a prompting to review the points. These points shall not require acknowledgment if they were previously acknowledged.
    c. In the event the Alarm Silence inhibit function is active, the system shall ignore all Key presses. An indication of enabling and disabling the inhibit stator shall be provided as a feedback to the operation.
8. Walk Test System Testing:
    a. While in the test mode, the system shall display a trouble condition.
        (1) While in the walk test mode, the activation of an initiating device shall be silently logged as an alarm in the historical log. The panel shall automatically reset after logging the alarm.
        (2) The momentary disconnection of an initiating device or notification appliance shall be silently logged as a trouble condition in the historical log. The panel shall automatically reset itself after logging of the trouble condition.
        (3) Integrity of the installation conductors of IDCs and NACs shall be verified by momentarily opening any circuit.
        (4) Walk Test of ground fault circuit testing shall be verified by operating the Notification Appliances for 4 seconds.
    b. As an option, the Walk Test sequence shall have the capability of activating NACs to signal with a code associated with the alarmed zone. If this option is selected, any momentary opening of initiating or NAC wiring shall cause the notification

appliances to sound for 4 seconds to indicate the trouble condition. The Walk Test feature shall automatically revert to the normal operating mode after 8 hours if it is not manually activated.

9. LED Supervision: All slave module LEDs shall be supervised for burnout or disarrangement. Should a problem occur, the panel shall display the module and the LED location numbers to facilitate location of that LED.
10. Active Status Reminder: Should any Alarm, Supervisory, or Trouble condition be present within the system and the audible signal silenced, the local tone alert shall resound every 8 hours as a reminder that the fire alarm system is not 100% operational.
11. Access Levels:
    a. There shall be a minimum of four access levels. Passcodes shall consist of up to four digits. Changes to passcodes shall be only by authorized personnel. Systems not capable of password-protected manual command operations shall provide key-operated switches for these functions. Function-key switches shall be keyed differently from any other keyed switches or locks used within the system.
    b. In order to maintain security when entering a passcode, the entered digits shall not be displayed.
    c. When a correct passcode is entered, a message indicating acceptance shall be displayed. The new access level shall be in effect until the operator manually logs out or leaves the keypad inactive for 10 minutes.
    d. When an incorrect passcode is entered, a message shall be displayed indicating that the passcode was invalid.
    e. Access to a level shall only allow the operator to perform all actions within that level and all actions of lower levels, not higher levels.
    f. The following keys/switches shall not have access levels associated with them and shall be functional without a passcode: Alarm Acknowledge–Supervisory Acknowledge–Trouble Acknowledge–Alarm Silence–System Reset.
12. In event mode, the operator shall have 15 seconds to acknowledge alarm and a maximum of 180 seconds to verify alarm and reset panel. Coordinate with Authority Having Jurisdiction.

B. Smoke and Heat Detection Operation:
    1. The activation of any system smoke or heat detector shall initiate an alarm verification operation whereby the FACP will reset the activated detector and wait for a second alarm activation. If after 20 seconds and within 1 minute after resetting a second alarm is reported from the same or any other smoke or heat detector, the system shall process the alarm as described previously. If no second alarm occurs within 1 minute, the system shall resume normal operation. The alarm verification shall operate only on single smoke or heat detector alarm. Other activated initiating devices or multiple smoke or heat detector alarms shall be processed and reported immediately. The alarm verification operation shall be selectable by device or zone.
    2. The intelligent system shall have the capability of displaying the number of times (tally) a detector has gone into a verification mode.
    3. The FACP shall maintain a moving average of the detector’s smoke chamber value to automatically compensate (move the threshold) for dust and dirty conditions that could affect detection operations. The system shall automatically maintain a constant smoke obscuration sensitivity for each detector (via the floating threshold) by compensating for environmental factors. Photoelectric detector’s smoke obscuration sensitivity shall be adjustable to within 0.3% of either limit of the UL window (0.5% to 4.0%) to compensate for any environment.

4. The system shall automatically indicate when an individual detector needs cleaning. When a detector's average value reaches a predetermined level, a trouble MESSAGE shall be audibly and visibly indicated at the FACP for the individual detector. Additionally, the LED on the detector base shall glow steady giving a visible indication at the detector's location. If the trouble condition is left unattended and the detector's average value increases to a second predetermined value, another trouble MESSAGE shall be indicated at the FACP for the individual detector. To prevent false alarms, these TROUBLE conditions shall in no way decrease the amount of smoke obscuration necessary for system activation. For scheduling of maintenance, the control panel shall be able to generate a MESSAGE indication for any detector approaching a trouble condition because of dirt or contamination.

C. System Interface with Existing AHUs/Fans:
   1. Duct Smoke Detectors and Addressable Control Modules, or Supervised Remote Relays shall be provided as specified below. Detectors shall be installed in compliance with the manufacturer's recommendations. Each Addressable Control Module or Supervised Remote Relay for AHU and/or fan shutdown shall be installed within 3 feet of the Temperature Control Panel to which it is connected. Provide all wiring and terminations required for shutdown of the existing AHUs/fans.
   2. The Addressable Control Modules or Supervised Remote Relays provided for this purpose shall be provided by DPDT output contacts. One SPDT set of the DPDT contacts shall be utilized for the specified shutdown function. The second SPDT set of the DPDT contacts shall be available for connection to the temperature controls to indicate that unit shut down because duct smoke has been detected.
   3. An override feature/control switch shall be provided which shall prevent shutdown of AHUs when this function is active.
   4. Operation: The associated AHU/fan shall be shut down only upon actuation of the Duct Smoke Detector associated with the particular unit. All such AHUs/fans shall remain shut down until a valid System Reset occurs.

D. Elevator Recall Operation:
   1. After any elevator lobby smoke detector alarm is verified, it shall, in addition to the operations listed in the "Fire Alarm Sequence," cause Phase 1 Emergency Recall Operation according to the following sequence:
      a. If the alarmed detector is located on any floor other than the designated level of egress, an Addressable Control Module shall be actuated. This Control Module shall be located within 3 feet of the elevator controls, and shall cause the associated cab to be recalled to the designated recall floor.
      b. If the alarmed detector is located on the designated level of egress, an Addressable Control Module shall be actuated. This Control Module/Relay shall be located within 3 feet of the elevator controls and shall cause the associated cab to be recalled to the alternate recall floor.
   2. Elevator lobby smoke detectors shall be labeled as such in the custom label. Labeling shall include the floor designations.
   3. Where practical, upon reset of the fire alarm control panel, the elevators shall automatically resume normal operations.

E. Elevator Shunt Trip Operation:
   1. The intended function of elevator Shunt-Trip operation is to disable power to the elevator prior to elevator shaft or machine room sprinkler actuation.
   2. Elevator and machine room heat detectors shall be configured as follows:
      a. Detectors shall be configured for FIXED TEMPERATURE-ONLY OPERATION.

b. Detectors shall have a lower actuation temperature than the sprinkler heads within the shaft and machine room. CONTRACTOR shall coordinate with sprinkler CONTRACTOR to obtain the correct temperature rating on the heat detector. Detector shall be installed within 2 feet from the sprinkler head.
c. Detectors shall have a lower response-time index than the sprinkler heads within the shaft and machine room. CONTRACTOR shall coordinate with sprinkler CONTRACTOR to obtain the correct response time index on the heat detectors.

3. If the alarmed heat detector is located within the elevator shaft or within the machine room, an Addressable Control Module shall be actuated. This Control Module/Relay shall be located within 3 feet of the shunt-trip circuit breaker and shall interrupt power to the elevator. If the elevator is hydraulic, a second Control Module Contact shall allow elevator auxiliary power to lower the elevator to the proper level. Auxiliary power, if needed, shall be furnished by the elevator contractor.
4. The Power Source, which is used to actuate each elevator shunt-trip circuit breaker, shall be individually supervised by the FACP.

F. Existing Access Control System Operation:
1. The existing access control system functionality shall remain.
2. Fire alarm system shall communicate with the existing access control system to disengage door electric strikes in the event of an alarm. Existing electric strike controls and wiring shall remain.

G. One-way Voice Communications Operation:
1. The One-Way Voice Communications System, as specified for this project, is intended to perform two primary functions:
a. Automatic Fire Alarm Function Summary:
(1) In the event of a FIRE Alarm, this system shall automatically generate an Alert Tone and Digital Voice Message, and shall automatically broadcast and repeat this tone throughout the building as described below. This function is intended to notify the occupants that they need to leave the building.
b. Manual Voice Function Summary:
(1) The intended purpose of the voice capabilities of the system are to provide an approved means for manually providing live voice instructions for fire evacuation, and for other Emergency notifications as described below.
(2) Initiation of live voice announcements from microphones on the fire alarm system panel shall <u>not</u> automatically place the fire alarm system in ALERT priority mode. A supervised manual switch shall be provided to enter the ALERT mode.
(3) The Fire Alarm System shall be provided with suitable means to generate Manual EVAC messages from the Master EVAC microphone, located within the Fire Command Security Room 102 FACP (FACP-1).
2. The FACP shall be equipped with programmed Control Switches and LEDs, for all manually selectable functions. These switches and LEDs shall be clearly labeled, in order to indicate the functions associated with them or the status conditions, which they indicate.
a. Switches and LEDs shall be configured for selection of the various modes. Whenever a Voice System Mode and/or a Notification Area is manually selected, LEDs located adjacent to the control switches shall illuminate in a distinctive manner, and a Trouble status condition shall be logged by the system. The Trouble status condition shall remain until all control switches are manually or automatically reset to their normal positions.

b. LEDs shall be provided in order to indicate which mode is currently active and to remind the system operator to return the switches to the normal position when use of the Voice System is no longer required.

3. In conjunction with the two primary functions of this system, and because this system is intended to provide selective manual functions, the system shall provide a minimum of the following Modes of operation:
   a. Evacuation (Fire Conditions)–Automatic Mode:
      (1) In most cases, the One-Way Voice Communications system shall function automatically as a tone generator and Digital Message Generator. Whenever Automatic EVAC Mode is triggered by a FIRE alarm condition, the system shall function according to the system programming. The Fire Alarm System shall be programmed such that this Mode shall ALWAYS be accompanied by simultaneous operation of ALL visible notification appliance Circuits, within the active Notification Areas.
         (a) The actual sequence, signal tone, and digital voice message utilized by Automatic Mode shall be compliant with the latest edition of NFPA-72
         (b) The sequence shall include a back-up tone generator, which operates in compliance with the latest edition of NFPA-72 in the event of failure of the primary tone / message generator.
         (c) Pressing the “Signal Silence” switch, at any FACP shall cause the audible notification appliances to cease operation.
         (d) All visual notification appliances shall continue to flash until the system is reset.
   b. Manual Evacuation (Drill Conditions)–All Speakers Mode:
      (1) This mode shall only be initiated manually. Manual Evacuation mode shall be initiated by means of programmed Control Switches and LEDs. These switches and LEDs shall be appropriately labeled, in order to indicate their function.
      (2) Actuation of this mode shall not require the existence of a FIRE alarm status condition. This mode shall be able to be used for other Emergency Evacuation Notifications.
      (3) Whenever “Manual Evacuation–All Speakers” Mode is selected, the following shall occur:
         (a) The Audio System shall broadcast the evacuation tone or ALERT message through all audible notification appliances, and shall actuate all the FIRE alarm visual notification appliances or the ALERT visual notification appliances depending on the condition.
      (4) If a FIRE alarm status condition does not exist, re-setting the notification appliances shall be accomplished by setting all switches back to the normal (inactive) positions and / or by resetting the system.
      (5) If a FIRE alarm Status condition occurs while “EVACUATION–MANUAL MODE” is active, all other required automatic actions–such as AHU/fan shutdown and door holder release, shall be initiated.
   c. Manual Talk Mode (Using the Microphone)–All Speakers Mode:
      (1) This mode shall only be initiated manually. This mode shall be initiated by means of programmed control switches, LEDs and a microphone. These switches and LEDs shall be appropriately labeled, in order to indicate their function.
      (2) Actuation of this mode shall not require the existence of a FIRE alarm status condition. This mode may be used for other Emergency Evacuation Notifications.

(3) Whenever “Manual Talk–All Speakers” Mode is selected, and pressing the push to talk button on the microphone, the following shall occur:
   (a) An Alert Tone shall be broadcast through all system speakers for approximately two seconds. The purpose of this tone is to warn occupants that a manual voice message is about to be announced. At the end of this Alert Tone, messages spoken into the system microphone shall be broadcast through all audible notification appliances.
   (b) Depending on the selected switch, all of the FIRE alarm visual notification appliances shall be activated upon selection of this mode, and shall remain in operation until this mode is de-activated.
(4) If a FIRE alarm status condition does not exist, re-setting the notification appliances shall be accomplished by setting all switches back to the normal (inactive) positions and/or by resetting the system.
(5) If a FIRE alarm Status condition occurs while “Manual Talk–All Speakers” Mode is active, all other required actions–such as AHU/fan shutdown and door holder release, shall be initiated.
(6) If “Manual Talk–All Speakers” Mode is initiated during a FIRE alarm status condition, ALL FIRE alarm visible notification appliances shall continue to flash, until the system is silenced.

d. Manual Talk Mode (Using the Microphone)–Selected Speakers:
(1) This mode shall only be initiated manually. This mode shall be initiated by means of programmed control switches and LEDs and a microphone. These switches and LEDs shall be appropriately labeled, in order to indicate their function. The panel shall allow for the operator to select which annunciation circuit and which speakers connected to the selected circuit will broadcast the manual voice message.
(2) Actuation of this mode shall not require the existence of a FIRE alarm status condition. This mode may be used for other Emergency Evacuation Notifications.
(3) Whenever “Manual Talk–Selected Speakers” Mode is selected, and pressing the push to talk button on the microphone, the following shall occur:
   (a) An Alert Tone shall be broadcast through system selected speakers only for approximately two seconds. The purpose of this tone is to warn occupants that a manual voice message is about to be announced. At the end of this Alert Tone, messages spoken into the system microphone shall be broadcast through all selected audible notification appliances.
   (b) Depending on the selected switch, the FIRE alarm visual notification appliances in the selected areas only shall be activated upon selection of this mode, and shall remain in operation until this mode is de-activated.
(4) If a FIRE alarm status condition does not exist, re-setting the notification appliances shall be accomplished by setting all switches back to the normal (inactive) positions and/or by resetting the system.
(5) If a FIRE alarm Status condition occurs while “Manual Talk–Selected Speakers” Mode is active, all other required actions–such as AHU/fan shutdown and door holder release, shall be initiated.
(6) If “Manual Talk–Selected Speakers” Mode is initiated during a FIRE alarm status condition, ALL FIRE alarm visible notification appliances shall continue to flash in the affected areas, until the system is silenced.

e. “Dead-man” Tone: The system shall automatically default to the Automatic Evacuation Mode, and shall broadcast the evacuation tone to the entire facility (tone generator/temporal pattern) if a manual talk mode is selected during an ALARM mode or an ALARM condition occurs while the manual talk mode was selected, and the microphone becomes inactive for more than one minute.

4. Where exterior speaker/strobes are provided, there shall be a way to select them separately from interior speaker/strobes.

3.03 ALARM SEQUENCE

A. The system alarm operation subsequent to the alarm activation of any manual station or automatic detection device shall be as follows:
   1. All audible alarm notification appliances shall sound with the following characteristics: Temporal code pattern until silenced by the alarm silence switch at the FACP.
   2. All visible alarm notification appliances: Xenon Strobes shall display a continuous (synchronized where indicated on the drawings) pattern until system is reset. Strobe intensities are indicated on the plans for adherence with ADA.
   3. Alarm speakers and strobes shall be wired and operate independently.
   4. All doors normally held open by existing door control devices shall release. Existing card access system door release controls and wiring shall remain. Fire alarm system shall communicate with the existing card access system to provide door release control as specified herein.
   5. A supervised signal to notify the central station shall be activated.

B. The FACP shall have a dedicated supervisory service LED and a dedicated supervisory service acknowledge switch.

C. Activation of an auxiliary bypass means shall override the automatic functions either selectively or throughout the system.

D. The system shall have an alarm list means that shall allow the operator to display all alarm, trouble, and supervisory service conditions with the time of occurrence. This shall allow for the determination of the most recent alarm and may also indicate the path that the fire is taking.

E. All doors normally held open by door control devices shall release upon AC power failure.

3.04 POWER REQUIREMENTS

A. Each FACP shall receive 120 Vac (as noted on the drawings) from a dedicated circuit. This branch circuit shall have a “breaker lock” to prevent accidentally deenergizing power to the fire alarm control panel. Circuit breakers shall be painted red and permanently labeled “FIRE ALARM.”

B. The FACP shall be provided with sufficient battery capacity to operate the entire system upon loss of normal AC main’s power in a normal supervisory mode for a period of 24 hours with 5 minutes of alarm operation at the end of this period. The system shall automatically transfer to the standby batteries upon power failure. All battery charging and recharging operations shall be automatic.

C. The FACP shall include a disconnect switch for the AC power inside an enclosure near the panel or within the panel itself. This switch shall be labeled “Fire Alarm Power Disconnect.”

D. Isolated Loop Circuit Protectors (ILCP):
   1. The FACP shall include Isolated Loop Circuit Protector (ILCP) on all circuits which extends beyond the building. These circuits include, but are not limited to, the initiating device circuits, alarm notification appliance circuits, and signaling line circuits. ILCP shall be located as close as practical to the point where the circuits leave or enter a building.
   2. The ILCP grounding conductor shall be a No. 12 AWG wire having a maximum length of 25 feet. It shall be run in a straight line and connected to the building grounding electrode system.
   3. The ILCP shall have a line-to-line response time of less than one nanosecond. Spark gap devices or devices incorporated in or installed within the control panel in lieu of the ILCP are not acceptable.

3.05 SUPERVISION

A. The system shall contain independently supervised initiating device circuits. The alarm activation of any initiation circuit shall not prevent the subsequent alarm operation of any other initiation circuit.

B. There shall be supervisory service initiation device circuits for connection of all sprinkler flow and tamper switches. Device activation shall be appropriately annunciated at the FACP.

C. Auxiliary manual controls shall be supervised so that an “off normal” position of any switch shall cause an “off normal” system trouble.

D. Auxiliary circuits for addressable relays shall be supervised so that a blown fuse or an open in the circuit shall be visibly and audibly annunciated.

E. Each independently supervised circuit shall include a discrete visible amber “Trouble” LED to indicate disarrangement conditions per circuit.

F. The incoming power to the system shall be supervised so that any power failure will be audibly and visually indicated at the control panel and the remote annunciator. A green “power on” LED shall be displayed continuously while incoming power is present.

G. The system’s batteries shall be supervised so that a low battery condition or disconnection of any battery shall be audibly and visually indicated at the control panel and the remote annunciator.

H. The System Modules shall be electrically supervised for module placement. Should a module become disconnected, the system trouble indicator shall illuminate and the audible trouble signal shall sound.

I. The system shall have provisions for disabling and enabling all circuits individually for maintenance or testing purposes.

3.06 INSTALLATION

A. The complete installation shall be done in a neat, workmanlike manner in accordance with the applicable requirements of NFPA 70–Article 760 and the manufacturer's recommendations.

B. If field conditions require, cover all smoke detection devices with plastic bags immediately after installation to maintain cleanliness.

C. Class B circuiting shall be used.

3.07 RACEWAYS

A. All wiring shall be in a conduit system separate from all other building wiring. Conduit and boxes shall be painted red. See Section 26 05 33–Conduit for specifications.

B. All wiring shall be installed in minimum 3/4-inch conduit.

C. Surface access to existing alarm initiating circuits in public areas shall be via UL listed surface metal raceways (minimum equivalent to 3/4-inch conduit) and box extensions. See Section 26 00 30-Surface Raceway.

D. There shall be no sharp edges with installed materials.

3.08 CONDUCTORS

A. All cable shall be installed according to NEC Article 760.

B. All cables and wires shall be No. 12 AWG and larger and shall be stranded.

C. All wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, disarrangement of any components, any open circuits or grounds in the system, an audible and visual trouble signal shall be activated until the system is restored to normal.

D. Power wiring for FACP shall be No. 12 AWG.

E. FACP shall have No. 12 AWG green equipment ground wire. Where fire alarm circuits enter or leave a building, additional transient 75 to 90-volt gas tube protection shall be provided for each conductor.

F. Leave 8-inch wire tails at each device box and 36-inch wire tails at each FACP.

G. Cable for Intelligent Detector Loops shall be 18 to 12 AWG twisted pair with a shield jacket installed in 3/4-inch conduit. Shield continuity must be maintained and connected to earth ground only at the control panel. Intelligent detector wiring must not be in the same conduit with 120/240 Vac power wiring or other high current circuits. T-taps or branch circuit connections are allowed for all class B intelligent loop circuits.

H. Cable for RS 485 devices shall be twisted shielded pair (Belden 9841 or equivalent) for the data signal. Power wiring shall be 12 or 14 AWG.

I. Wiring for alarm horn circuits and alarm strobe circuits shall be No. 14 AWG minimum.

J. Fire alarm cables shall be held in place at the device box by means of a two-screw connector (do not use squeeze- or crimp-type connectors).

K. All splices or connections shall be made within approved junction boxes and with approved fittings. Boxes shall be red and/or labeled “FIRE ALARM SYSTEM” by decal or other approved markings.

L. Speaker and strobe circuits shall have separate conductors and shall operate independently of each other.

M. Speaker wiring shall be 16 AWG twisted shielded cable or as recommend by manufacturer.

N. Strobe wiring shall be 14 AWG minimum or as recommend by manufacturer.

O. Tray cable is not acceptable for use as fire alarm system wiring.

3.09 DEVICE MOUNTING

A. Unless otherwise noted on the drawings, the recommended mounting heights and requirements are as follows:
   1. FACP: Mount control panels so all visual indicators and controls are at 60 inches above floor level. Cabinet shall be grounded to either a cold water pipe or grounding rod.
   2. Audio-Visual Devices:
      a. Install flush, semiflush, or surface mount at 6 inches below finished ceiling or at 80 inches from the bottom of the device to the highest level of the finished floor. No devices protruding 4 inches or more shall be installed lower than 80 inches.
      b. All audio/visual devices shall be installed at the same height throughout the facility.
      c. For surface mounting, use manufacturer-supplied back boxes and trim plates. Mark each device with its circuit number.
   3. Manual Stations:
      a. The operable part of the manual stations shall be installed not less than 3 1/2 feet (42 inches) and not more than 4 1/2 feet (54 inches) above finished floor. All Manual Stations shall be in unobstructed locations. Mark the unit’s address on the inside and outside of housing. For surface mounting, use manufacturer-supplied backboxes and trim plates
      b. All pull stations shall be installed at the same height throughout the facility.
   4. Heat And Smoke Detectors:
      a. The location of detectors shown on the drawings is schematic only. The detectors must be located according to code requirements.
      b. Surface mounted detectors shall be installed using backboxes equal to the base’s size. Standard octagon and square boxes are not acceptable.
      c. Detectors shall be located on the highest part of a smooth ceiling so that the edge of the detector is no closer than 4 inches from a sidewall. Ceilings with beams, joists, or soffits that exceed 8 inches in depth require special planning and closer spacing. Verify with manufacturer.
      d. If it is necessary to mount a detector upon a sidewall, the top of the detector shall be located no closer than 4 inches from the ceiling and no further away than 12 inches.

e. Smoke detectors shall be installed to favor the air flow towards return openings and not located closer than 3 feet from air supply diffusers which could dilute smoke before it reaches the detector. No detectors shall be installed in direct airflow.
f. Ideally, heat and smoke detectors should be located near the center of the open area which they are protecting, thus providing coverage generally for 15-foot radius for smoke detectors and a 25-foot radius for heat detectors. Verify location with ENGINEER.
g. Mark the address and loop number on each detector's base.

5. Identification: All junction boxes shall be painted red and labeled "Fire Alarm."

3.10 FIELD START-UP AND COMMISSIONING

A. Provide the services of a manufacturer's qualified NICET-certified technician to assist CONTRACTOR in installation and start-up of the equipment specified in this section. The manufacturer's representative shall provide technical direction and assistance to CONTRACTOR in general operation of the equipment, connections and adjustments, and testing of the assembly and components contained therein.

B. The manufacturer's representative shall provide inspection of the final installation. The manufacturer's representative shall perform site start-up and functional checkout of the equipment. Upon completion of the manufacturer's start-up and checkout, the manufacturer shall generate a site start-up and functional checkout report, documenting all systems checked as well as any incomplete work remaining and operational deficiencies. CONTRACTOR shall provide three copies of the manufacturer's site start-up and functional checkout report to ENGINEER for review.

C. CONTRACTOR shall be responsible for all costs required to check operation of the system.

D. The completed fire alarm system shall be fully tested by the manufacturer in accordance with the Wisconsin Building Code, and all applicable local building codes in the presence of OWNER's representative and the local Fire Marshal. Upon completion of a successful test, a certification shall be issued in writing to OWNER and CONTRACTOR.

E. CONTRACTOR shall ensure fire alarm control panel is communicating properly between the main FACP (FACP-1) and the monitoring agency.

3.11 TRAINING

A. Upon successful completion of checkout by ENGINEER, a manufacturer's representative shall provide a demonstration of the automated sequences of operation. After this demonstration and acceptance by OWNER, the manufacturer shall provide 4 hours of "hands-on" training for OWNER's operating personnel which shall cover the following topics:
1. Overall System Description and Theory of Operation.
2. Automatic Operation.
3. Manual Operation and Testing of System Devices.
4. Recommended System Check Lists and Log Sheets.
5. Recommended Preventative Maintenance.

B. Two 4-hour training session for two operators shall be provided. The training session shall be conducted by a manufacturer's qualified representative. Training program shall include instructions on the assembly, controls, protective devices, and other major components. Travel time and expenses to the jobsite shall be over and above the time required to perform the training and shall be included in the Bid.

3.12 FIRE ALARM WIRE AND CABLE COLOR CODE

A. Provide fire alarm circuit conductors with color-coded insulation or other permanent identification at each conductor termination and in each junction box. Coding shall be consistent throughout the facility. Green wire shall be used only for equipment ground.

END OF SECTION

SECTION 26 93 10

STRUCTURED CABLING

PART 1–GENERAL

1.01 SUMMARY

A. This Section describes the requirements for providing telecommunications and data cabling, termination components, and related subsystems as part of a structured cabling system.

B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern Work in this Section.

1.02 SYSTEM DESCRIPTION

A. CONTRACTOR shall provide and test all cabling and components necessary for a complete and functional structured cabling system as specified herein and shown on the Drawings. Conduit, raceway, and outlet boxes for the “Fire Alarm Panel Information Outlets” shall be provided by CONTRACTOR.

B. CONTRACTOR shall ensure cable runs do not exceed 90 meters.

C. Provide all other items necessary for computer connections at all specified data outlets.

1.03 REGULATORY REFERENCES

A. All Work and materials shall conform in every detail to the rules and requirements of the National Fire Protection Association, the National Electrical Code and present manufacturing standards.

B. All materials shall be listed by UL and shall bear the UL label. If UL has no published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where UL has an applicable system listing and label, the entire system shall be so labeled.

C. The cabling system shall comply with the following standards:
   1. ANSI/IEEE C2–National Electrical Safety Code.
   2. NFPA 70–National Electrical Code (currently-adopted edition).
   3. TIA/EIA Standards 526-14A (OFSPT-14A), 526-7 (OFSPT-7), TIA-568-C.0, TIA-568-C.1, TIA-568-C.2, TIA-568-C.3, TIA-569-B-1, TIA-606-A-1, and TIA J-STD-607-A.
   4. IEEE/ANSI 142–Recommended Practice for Grounding of Industrial and Commercial Power Systems.

1.04 SUBMITTALS

A. Submit shop drawings and product data in accordance with provisions of Division 1.

B. Initial Project Documentation: CONTRACTOR shall submit the following project documentation for approval prior to ordering materials or equipment. See Division 1 for requirements. Provide documentation in a binder tabbed for easy identification. Catalog sheets with complete technical data for all materials being furnished. Exact part/model numbers being provided shall be highlighted.

C. Provide project-specific fire alarm system communications riser diagrams showing all point-to-point terminations including wire numbers, equipment terminals, and network ports.

D. As-Built Drawings:
   1. Three complete sets of drawings shall be provided by CONTRACTOR prior to final acceptance.
   2. These drawings shall contain the following:
      a. Any changes made to the system during installation.
      b. Location of all information outlets including jack number identification.
      c. Fire alarm system communications riser diagrams showing all point-to-point terminations including wire numbers, equipment terminals, and network ports.

E. Technical Manual: CONTRACTOR shall furnish three complete technical service manuals containing the following:
   1. Description of maintenance/programming procedures for all equipment and systems.
   2. All warranty information required by manufacturers for submission of warranty claims for all equipment installed.
   3. All testing reports according to Paragraph 3.03.

1.05 QUALIFICATIONS

A. CONTRACTOR shall have at least four years of experience in the installation of similar systems. CONTRACTOR shall provide documentation upon request to certify that all assigned staff have attended training courses corresponding to the type of cabling and equipment specified herein.

B. CONTRACTOR shall currently be licensed to install low voltage electronic cabling systems in the state of the project.

C. CONTRACTOR shall currently meet all manufacturer’s requirements for the provision and installation of all equipment specified herein.

D. CONTRACTOR shall utilize and have technicians trained in the utilization of the following test equipment: Copper cable certification equipment.

1.06 WARRANTY

A. Standard One-Year Warranty: Unless otherwise stated below, manufacturer shall warrant the equipment to be free from defects in material and workmanship for a period of one year from the earlier of either the date established for partial utilization in accordance with GC14.04 and 14.05, as modified in the Supplementary Conditions, or Substantial Completion of the project.

PART 2–PRODUCTS

2.01 GENERAL

A. All products Bid shall be the most current and up-to-date versions available, unless otherwise specified.

B. CONTRACTOR shall provide written notification to ENGINEER, prior to Bidding, of any discrepancies in model or part numbers specified herein.

C. CONTRACTOR shall provide written notification to ENGINEER, prior to Bidding, of the announced discontinuation or replacement of any items specified herein.

D. CONTRACTOR shall provide all necessary mounting hardware and accessories required to install the materials specified herein.

2.02 DATA AND VOICE STATION CABLES

A. Provide 4-pair, unshielded twisted-pair (UTP) cabling with solid, copper-only conductors meeting EIA/TIA Category 6 requirements for horizontal station cabling. Cable shall be listed as suitable for use in locations indicated on the Drawings. Provide Systimax Solutions 1071E PVC, or equal.

B. Refer to the Execution Section which details the required performance criteria for the permanent link of which the cable is a part. The jacket color for data cables shall be blue.

C. Provide nylon cable ties or reusable hook-and-loop bands, where specified herein, for bundling cables.
   1. Nylon cable ties for bundling cables above suspended ceilings shall be Panduit Contour-Ty Model CBR, or equal. Provide black cable ties in all other environments.
   2. Reusable hook-and-loop bands for all other areas shall be Panduit Tak-Ty Model HLT, or equal, black.

2.03 CONNECTORS

A. Data and Voice Station Cables:
   1. Faceplates: Systimax Solutions: L-Type flush-mounted, ivory, or equal, in finished areas and stainless steel, SP-L-Type, flush-mounted, or equal in all other areas.
   2. Jacks: Systimax Solutions M1BH-H-246 (Ivory) for voice and MGS400-318 (Blue) for data, or equal.

PART 3–EXECUTION

3.01 GENERAL

A. Install all equipment and components in accordance with manufacturer’s written instructions, in compliance with NEC, ANSI/TIA/EIA-569-B-1 and with recognized industry practices, to ensure that all items comply with these Specifications and serve intended purposes.

B. Refer to Section 26 05 53–Electrical Identification for cable and equipment label requirements.

C. All cabling shall be installed in accordance with good engineering practices as established by the TIA/EIA and the NEC. Cabling shall meet all applicable local, state, and federal building codes. Voice and Data Cables shall be terminated according to the TIA-568B standard:
   1. Pair 1: Pins 5 and 4.
   2. Pair 2: Pins 1 and 2.
   3. Pair 3: Pins 3 and 6.
   4. Pair 4: Pins 7 and 8.

D. Record serial numbers of all items provided that are serialized prior to final acceptance.

E. All items must be complete as specified prior to final acceptance. CONTRACTOR shall ensure cabling meets all specifications and standards defined herein.

3.02 INSTALLATION

A. Cabling–General:
   1. Provide cabling runs from the fire alarm control panel to each jack shown on the Drawings. A dedicated cabling run shall be utilized for each jack.
   2. Provide faceplates and connections in outlet boxes for all jacks shown on the Drawings.
   3. Excess cable behind faceplate connections shall be pulled back into junction boxes in ceiling space and secured in such a manner as to prevent damage to cabling or connections. Provide minimum 10 feet of slack in all cables within the Fire Command Security Room 102 and Fire Command Room 138. Manage slack for future use.
   4. Provide grommets and/or bushings in conduit ends to prevent damage to insulation and conductors.
   5. Use hook-and-loop bands to secure cable bundles within Fire Command Security Room 102 and Fire Command Room 138, racks, cable trays, and communication cabinets. Cable bundles shall be limited to a 3-inch diameter.
   6. Tighten connectors and terminals including screws and bolts in accordance with the equipment manufacturer’s published torque-tightening values for equipment connectors.
   7. Allow sufficient slack in cable to prevent premature deterioration of cable system components, and to assist in the maintenance and servicing of cable and/or other building systems and components. Avoid excessive and sharp bends. Ensure manufacturer’s recommended pulling tensions are not exceeded.
   8. Fittings or connections are allowed only at the input and output of devices. Splicing shall not be accepted in any cable run. The entire cable run shall be replaced in all such instances.
   9. All wiring shall be installed in conduit.
   10. Conduit, raceways, and outlet boxes shall be provided as required.
   11. All station cables shall be installed in conduit or raceway.
   12. All horizontal station cables shall be routed and installed to avoid light fixtures and other sources of EMI.
   13. All horizontal station cables shall be concealed within conduit or raceways. No cables shall be installed where they will be exposed.

B. Grounding: Ground all equipment according to manufacturer's instructions, NEC requirements, EIA/TIA 568B, and EIA/TIA 607.

3.03 TESTING AND ACCEPTANCE

A. General:
1. CONTRACTOR is responsible to perform certification tests as indicated below for each subsystem (e.g., station, etc.), as it is completed.
2. CONTRACTOR is responsible for supplying all equipment and personnel necessary to conduct the certification tests. Prior to testing, CONTRACTOR shall provide a summary of the proposed test plan for each cable type, including equipment to be used, set-up, test frequencies or wavelengths, results format, etc. The method of testing shall be subject to review by ENGINEER.
3. CONTRACTOR shall visually inspect all cabling and termination points to ensure that they are complete and conform to the wiring pattern specified herein. CONTRACTOR shall provide ENGINEER with a written certification that this inspection has been made.
4. CONTRACTOR shall conduct certification testing according to a schedule coordinated with OWNER. Representatives of OWNER may be in attendance to witness the test procedures. CONTRACTOR shall provide a minimum of one week advance notice to ENGINEER as to allow for such participation. The notification shall include a written description of the proposed tests, including copies of blank test result sheets to be used.
5. IMPORTANT: Failure to provide the above information shall be grounds for OWNER/ENGINEER to reject any and all Documentation of Results on related testing, and to require a repeat of the affected test.
6. Tests related to connected equipment of others shall only be done with the permission and presence of CONTRACTOR involved. CONTRACTOR shall ascertain that testing only as required to prove the wiring connections are correct.
7. CONTRACTOR shall provide test results and describe the method of the tests, including the date of the tests, the equipment used, and the procedures followed. At the request of ENGINEER, CONTRACTOR shall provide copies of the original test results.
8. All cabling shall be 100% fault-free, unless noted otherwise. If any cable is found to be outside the specification defined herein, that cable and the associated termination(s) shall be replaced at the expense of CONTRACTOR. The applicable tests shall then be repeated.
9. Should it be found by ENGINEER that the materials or any portion thereof provided under this Contract fail to comply with the Specifications and Drawings, with the respect or regard to the quality, amount of value of materials, appliances, or labor used in the Work, it shall be rejected and replaced by CONTRACTOR, and all Work distributed by changes necessitated in consequence of said defects or imperfections shall be made good at CONTRACTOR's expense.

B. Data and Voice Station Cabling (Copper UTP):
1. Testing shall be from the jack at the information outlet to the data patch panel on which the cables are terminated.
2. Horizontal Station cables shall be free of shorts within the pairs, and be verified for continuity, pair validity and polarity, and wire map (conductor position on the modular jack). Any defective, split or mispositioned pairs must be identified and corrected.
3. Testing of the Cabling Systems rated at TIA Category 6 and above shall be performed to confirm proper functioning and performance.

4. In addition to the above, Certification Testing shall be performed on all cables. Testing of the Transmission Performance of station cables (Category 6 and above) shall include the following:
    a. Length.
    b. Attenuation.
    c. Pair to Pair NEXT Loss (new limits).
    d. PSNEXT Loss.
    e. Return Loss.
    f. Pair to Pair ELFEXT Loss (Equal Level Far End Cross talk).
    g. PSEFEXT Loss.
    h. Propagation Delay.
    i. Delay Skew.
    j. Return Loss.
5. Cables shall be tested to the maximum frequency defined by the standards covering that performance category. Transmission Performance Testing shall be performed using a test instrument designed for testing to the specified frequencies. Test records shall verify “PASS” on each cable and display the specified parameters–comparing test values with standards based “templates” integral to the unit.
6. Testing shall be per ANSI/TIA/EIA 568-C.2 Basic Link test configurations.
7. The maximum length of station cable shall not exceed 90 meters which allows 10 meters for equipment and patch cables.
8. In order to establish testing baselines, cable samples of known length and of the cable type and lot installed shall be tested. The cable may be terminated with an 8-position Category 6 Modular plug (8-pin) to facilitate testing. Net Propagation Velocity (NPV) and nominal attenuation values shall be calculated based on this test and be utilized during the testing of the installed cable. This requirement can be waived if NPV data is available from the cable manufacturer for the exact cable type under test.
9. In the event results of the tests are not satisfactory, CONTRACTOR shall make adjustments, replacement and changes as are necessary, and shall then repeat the test or tests which disclosed faulty or defective material, equipment or installation method, and shall make additional tests as ENGINEER deems necessary at no additional expense to OWNER.

C. Upon completion of the installation, CONTRACTOR shall provide three complete test reports to ENGINEER for review. Documentation shall include the following items:
    1. Test results, submitted in hard copy or in electronic format as specified for submittals under Division 1. Where documentation provided in electronic form requires unique software for viewing test results, CONTRACTOR shall provide one licensed copy of the software along with the above documentation.
    2. Insertion loss test data, including a record of test wavelengths, cable type, cable (or Outlet) i.d., measurement direction, test equipment type, model and serial number, date, reference setup, and crew member name(s).

END OF SECTION

SECTION 26 95 10

SPARE PARTS

PART 1–GENERAL

1.01 SUMMARY

A. Work Included: Spare parts for applicable sections of Division 26 as noted below.

B. Related Sections and Divisions: Applicable provisions of Division 1 shall govern work in this section.

1.02 QUALITY ASSURANCE

A. 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.

B. NEMA/ANSI Compliance: Comply with National Electrical Manufacturer's Association, American National Standards Institute, and other standards pertaining to material, construction, and testing where applicable.

1.03 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All electrical equipment and material shall be received and stored with the factory winter-proof wrapping intact. Provide factory-wrapped waterproof flexible barrier metal for factory packaging of equipment and material to protect against physical damage in transit. When applicable, equipment stored shall be in factory coverings in a clean, dry, indoor space which provides protection against the weather.

B. All spare parts shall be suitably boxed or wrapped to prevent deterioration and shall be completely identified on the outside.

PART 2–PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Spare parts specified herein shall be provided by the same manufacturer as the equipment provided on the project.

2.02 FIRE ALARM SYSTEM

A. CONTRACTOR shall provide spare parts totaling 10% of automatic detectors/bases and 1% of the other devices, with a minimum of two each.

PART 3–EXECUTION

NOT APPLICABLE

END OF SECTION

For more location information
please visit www.strand.com

Office Locations

Brenham, TX | 979.836.7937

Cincinnati, Ohio | 513.861.5600

Columbus, Indiana | 812.372.9911

Columbus, Ohio | 614.835.0460

Indianapolis, Indiana | 317.423.0935

Joliet, Illinois | 815.744.4200

Lexington, Kentucky | 859.225.8500

Louisville, Kentucky | 502.583.7020

Madison, Wisconsin* | 608.251.4843

Milwaukee, Wisconsin | 414.271.0771

Phoenix, Arizona | 602.437.3733

*Corporate Headquarters

STRAND ASSOCIATES®

SECTION E: BIDDERS ACKNOWLEDGEMENT

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

Bidder must state a Unit Price and Total Bid for each item. The Total Bid for each item must be the product of quantity, by Unit Price. The Grand Total must be the sum of the Total Bids for the various items. In case of multiplication errors or addition errors, the Grand Total with corrected multiplication and/or addition shall determine the Grand Total bid for each contract. The Unit Price and Total Bid must be entered numerically in the spaces provided. All words and numbers shall be written in ink.

1. The undersigned having familiarized himself/herself with the Contract documents, including Advertisement for Bids, Instructions to Bidders, Form of Proposal, City of Madison Standard Specifications for Public Works Construction - 2016 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 _____ (name of corporation, partnership, or person submitting bid) a corporation organized and existing under the laws of the State of _____ a partnership consisting of _____; an individual trading as _____; of the City of _____ State of _____; that I have examined and carefully prepared this Proposal, from the plans and specifications and have checked the same in detail before submitting this Proposal; that I have fully authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.

_____
SIGNATURE

_____
TITLE, IF ANY

Sworn and subscribed to before me this
_____ day of _____, 20_____.

_____
(Notary Public or other officer authorized to administer oaths)
My Commission Expires _____
Bidders shall not add any conditions or qualifying statements to this Proposal.

SECTION F: DISCLOSURE OF OWNERSHIP & BEST VALUE CONTRACTING

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

State of Wisconsin
Department of Workforce Development
Equal Rights Division
Labor Standards Bureau

Disclosure of Ownership

Notice required under Section 15.04(1)(m), Wisconsin Statutes. The statutory authority for the use of this form is prescribed in Sections 66.0903(12)(d) and 103.49(7)(d), Wisconsin Statutes. The use of this form is mandatory. The penalty for failing to complete this form is prescribed in Section 103.005(12), Wisconsin Statutes. Personal information you provide may be used for secondary purposes.

(1) On the date a contractor submits a bid to or completes negotiations with a state agency or local governmental unit, on a project subject to Section 66.0903 or 103.49, Wisconsin Statutes, the contractor shall disclose to such state agency or local governmental unit the name of any "other construction business", which the contractor, or a shareholder, officer or partner of the contractor, owns or has owned within the preceding three (3) years.

(2) The term "other construction business" means any business engaged in the erection, construction, remodeling, repairing, demolition, altering or painting and decorating of buildings, structures or facilities. It also means any business engaged in supplying mineral aggregate, or hauling excavated material or spoil as provided by Sections 66.0903(3), 103.49(2) and 103.50(2), Wisconsin Statutes.

(3) This form must ONLY be filed, with the state agency or local governmental unit that will be awarding the contract, if **both (A) and (B) are met**.

(A) The contractor, or a shareholder, officer or partner of the contractor:

(1) Owns at least a 25% interest in the "other construction business", indicated below, on the date the contractor submits a bid or completes negotiations.

(2) Or has owned at least a 25% interest in the "other construction business" at any time within the preceding three (3) years.

(B) The Wisconsin Department of Workforce Development (DWD) has determined that the "other construction business" has failed to pay the prevailing wage rate or time and one-half the required hourly basic rate of pay, for hours worked in excess of the prevailing hours of labor, to any employee at any time within the preceding three (3) years.

Other Construction Business

Not Applicable ☐

Name of Business			
Street Address or P O Box	City	State	Zip Code
Name of Business			
Street Address or P O Box	City	State	Zip Code
Name of Business			
Street Address or P O Box	City	State	Zip Code

I hereby state under penalty of perjury that the information, contained in this document, is true and accurate according to my knowledge and belief.

Print the Name of Authorized Officer	
Signature of Authorized Officer	Date Signed
Name of Corporation, Partnership or Sole Proprietorship	

Street Address or P O Box	City	State	Zip Code

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

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

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

Best Value Contracting

1. The Contractor shall indicate the non-apprenticeable trades used on this contract.

_____

_____

2. Madison General Ordinance (M.G.O.), 33.07(7), does provide for some exemptions from the active apprentice requirement. Apprenticeable trades are those trades considered apprenticeable by the State of Wisconsin. Please check applicable box if you are seeking an exemption.

☐ Contractor has a total skilled workforce of four or less individuals in all apprenticeable trades combined.

☐ No available trade training program; The Contractor has been rejected by the only available trade training program, or there is no trade training program within 90 miles.

☐ Contractor is not using an apprentice due to having a journey worker on layoff status, provided the journey worker was employed by the contractor in the past six months.

☐ First-time Contractor on City of Madison Public Works contract requests a onetime exemption but intends to comply on all future contracts and is taking steps typical of a "good faith" effort.

☐ Contractor has been in business less than one year.

☐ Contractor doesn't have enough journeyman trade workers to qualify for a trade training program in that respective trade.

☐ An exemption is granted in accordance with a time period of a "Documented Depression" as defined by the State of Wisconsin.

3. The Contractor shall indicate on the following section which apprenticeable trades are to be used on this contract. Compliance with active apprenticeship, to the extent required by M.G.O. 33.07(7), shall be satisfied by documentation from an applicable trade training body; an apprenticeship contract with the Wisconsin Department of Workforce Development or a similar agency in another state; or the U.S Department of Labor. This documentation is required prior to the Contractor beginning work on the project site.

☐ The Contractor has reviewed the list and shall not use any apprenticeable trades on this project.

LIST APPRENTICABLE TRADES (check all that apply to your work to be performed on this contract)

- ☐ BRICKLAYER
- ☐ CARPENTER
- ☐ CEMENT MASON / CONCRETE FINISHER
- ☐ CEMENT MASON (HEAVY HIGHWAY)
- ☐ CONSTRUCTION CRAFT LABORER
- ☐ DATA COMMUNICATION INSTALLER
- ☐ ELECTRICIAN
- ☐ ENVIRONMENTAL SYSTEMS TECHNICIAN / HVAC SERVICE TECH/HVAC INSTALL / SERVICE
- ☐ GLAZIER
- ☐ HEAVY EQUIPMENT OPERATOR / OPERATING ENGINEER
- ☐ INSULATION WORKER (HEAT & FROST)
- ☐ IRON WORKER
- ☐ IRON WORKER (ASSEMBLER, METAL BLDGS)
- ☐ PAINTER & DECORATOR
- ☐ PLASTERER
- ☐ PLUMBER
- ☐ RESIDENTIAL ELECTRICIAN
- ☐ ROOFER & WATER PROOFER
- ☐ SHEET METAL WORKER
- ☐ SPRINKLER FITTER
- ☐ STEAMFITTER
- ☐ STEAMFITTER (REFRIGERATION)
- ☐ STEAMFITTER (SERVICE)
- ☐ TAPER & FINISHER
- ☐ TELECOMMUNICATIONS (VOICE, DATA & VIDEO) INSTALLER-TECHNICIAN
- ☐ TILE SETTER

SECTION G: BID BOND

KNOW ALL MEN BY THESE PRESENT, THAT Principal and Surety, as identified below, are held and firmly bound unto the City of Madison, (hereinafter referred to as the "Obligee"), in the sum of five per cent (5%) of the amount of the total bid or bids of the Principal herein accepted by the Obligee, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that, whereas the Principal has submitted, to the City of Madison a certain bid, including the related alternate, and substitute bids attached hereto and hereby made a part hereof, to enter into a contract in writing for the construction of:

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

1. If said bid is rejected by the Obligee, then this obligation shall be void.

2. If said bid is accepted by the Obligee and the Principal shall execute and deliver a contract in the form specified by the Obligee (properly completed in accordance with said bid) and shall furnish a bond for his/her faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

   If said bid is accepted by the Obligee and the Principal shall fail to execute and deliver the contract and the performance and payment bond noted in 2. above executed by this Surety, or other Surety approved by the City of Madison, all within the time specified or any extension thereof, the Principal and Surety agree jointly and severally to forfeit to the Obligee as liquidated damages the sum mentioned above, it being understood that the liability of the Surety for any and all claims hereunder shall in no event exceed the sum of this obligation as stated, and it is further understood that the Principal and Surety reserve the right to recover from the Obligee that portion of the forfeited sum which exceed the actual liquidated damages incurred by the Obligee.

   The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by an extension of the time within which the Obligee may accept such bid, and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year set forth below.

Seal PRINCIPAL

Name of Principal

By Date

Name and Title

Seal SURETY

Name of Surety

By Date

Name and Title

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under National Provider No. _____ for the year _____, 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.

Date Agent

Address

City, State and Zip Code

Telephone Number

NOTE TO SURETY & PRINCIPAL

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

Power of Attorney showing that the agent of Surety is currently authorized to execute bonds on behalf of the Surety, and in the amounts referenced above.

Certificate of Biennial Bid Bond

TIME PERIOD - VALID (FROM/TO)
NAME OF SURETY
NAME OF CONTRACTOR
CERTIFICATE HOLDER City of Madison, Wisconsin

This is to certify that a biennial bid bond issued by the above-named Surety is currently on file with the City of Madison.

This certificate is issued as a matter of information and conveys no rights upon the certificate holder and does not amend, extend or alter the coverage of the biennial bid bond.

Cancellation: Should the above policy be cancelled before the expiration date, the issuing Surety will give thirty (30) days written notice to the certificate holder indicated above.

Signature of Authorized Contractor Representative

Date

SECTION H: AGREEMENT

THIS AGREEMENT made this _____ day of _____ in the year Two Thousand and Sixteen between _____ 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 _____, and by virtue of authority vested in the said Council, has awarded to the Contractor the work of performing certain construction.

NOW, THEREFORE, the Contractor and the City, for the consideration hereinafter named, agree as follows:

1. **Scope of Work.** The Contractor shall, perform the construction, execution and completion of the following listed complete work or improvement in full compliance with the Plans, Specifications, Standard Specifications, Supplemental Specifications, Special Provisions and contract; perform all items of work covered or stipulated in the proposal; perform all altered or extra work; and shall furnish, unless otherwise provided in the contract, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work or improvements:

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

2. **Completion Date/Contract Time.** Construction work must begin within seven (7) calendar days after the date appearing on mailed written notice to do so shall have been sent to the Contractor and shall be carried on at a rate so as to secure full completion SEE SPECIAL PROVISIONS, the rate of progress and the time of completion being essential conditions of this Agreement.

3. **Contract Price.** The City shall pay to the Contractor at the times, in the manner and on the conditions set forth in said specifications, the sum of _____($_____) 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 unless otherwise noted in Section D: Special Provisions, Subsection 102.10 – Minimum Rate of Wage Scale.

   "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. In addition, if DWD finds that a contractor or subcontractor violated the prevailing wage law, DWD will assess liquidated damages of 100% of the wages owed to employees.

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 and DWD prevailing wage requirements are attached hereto as Sec. I of the contract.

5. **Affirmative Action.** In the performance of the services under this Agreement the Contractor agrees not to discriminate against any employee or applicant because of race, religion, marital status, age, color, sex, disability, national origin or ancestry, income level or source of income, arrest record or conviction record, less than honorable discharge, physical appearance, sexual orientation, gender identity, 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, sexual orientation, gender identity 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, sexual orientation, gender identity 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, sexual orientation, gender identity 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 Affirmative Action Division Manager.

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. (In federally funded contracts the terms "DBE, MBE and WBE" shall be substituted for the term "small business" in this Article.)

6. Substance Abuse Prevention Program Required. Prior to commencing work on the Contract, the Contractor, and any Subcontractor, shall have in place a written program for the prevention of substance abuse among its employees as required under Wis. Stat. Sec. 103.503.

7. **Contractor Hiring Practices.**

Ban the Box - Arrest and Criminal Background Checks. (Sec. 39.08, MGO)

This provision applies to all prime contractors on contracts entered into on or after January 1, 2016, and all subcontractors who are required to meet prequalification requirements under MGO 33.07(7)(I), MGO as of the first time they seek or renew pre-qualification status on or after January 1, 2016. The City will monitor compliance of subcontractors through the pre-qualification process.

a. **Definitions.** For purposes of this section, "Arrest and Conviction Record" includes, but is not limited to, information indicating that a person has been questioned, apprehended, taken into custody or detention, held for investigation, arrested, charged with, indicted or tried for any felony, misdemeanor or other offense pursuant to any law enforcement or military authority.

"Conviction record" includes, but is not limited to, information indicating that a person has been convicted of a felony, misdemeanor or other offense, placed on probation, fined, imprisoned or paroled pursuant to any law enforcement or military authority.

"Background Check" means the process of checking an applicant's arrest and conviction record, through any means.

b. Requirements. For the duration of this Contract, the Contractor shall:

1. Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant's arrest and conviction record, as defined herein.

2. Refrain from asking an applicant in any manner about their arrest or conviction record until after conditional offer of employment is made to the applicant in question.

3. Refrain from conducting a formal or informal background check or making any other inquiry using any privately or publicly available means of obtaining the arrest or conviction record of an applicant until after a conditional offer of employment is made to the applicant in question.

4. Make information about this ordinance available to applicants and existing employees, and post notices in prominent locations at the workplace with information about the ordinance and complaint procedure using language provided by the City.

5. Comply with all other provisions of Sec. 39.08, MGO.

c. Exemptions: This section shall not apply when:

1. Hiring for a position where certain convictions or violations are a bar to employment in that position under applicable law, or

2. Hiring a position for which information about criminal or arrest record, or a background check is required by law to be performed at a time or in a manner that would otherwise be prohibited by this ordinance, including a licensed trade or profession where the licensing authority explicitly authorizes or requires the inquiry in question.

To be exempt, Contractor has the burden of demonstrating that there is an applicable law or regulation that requires the hiring practice in question, if so, the contractor is exempt from all of the requirements of this ordinance for the position(s) in question.

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

IN WITNESS WHEREOF, the Contractor has hereunto set his/her hand and seal and the City has caused these presents to be sealed with its corporate seal and to be subscribed by its Mayor and City Clerk the day and year first above written.

Countersigned:

Company Name

Witness Date

President Date

Witness Date

Secretary Date

CITY OF MADISON, WISCONSIN

Provisions have been made to pay the liability that will accrue under this contract.

Approved as to form:

Finance Director

City Attorney

Signed this _____ day of _____, 20_____

Witness

Mayor Date

Witness

City Clerk Date

SECTION I: PAYMENT AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____ as principal, and _____ Company of _____as surety, are held and firmly bound unto the City of Madison, Wisconsin, in the sum of _____($_____) Dollars, lawful money of the United States, for the payment of which sum to the City of Madison, we hereby bind ourselves and our respective executors and administrators firmly by these presents.

The condition of this Bond is such that if the above bounden shall on his/her part fully and faithfully perform all of the terms of the Contract entered into between him/herself and the City of Madison for the construction of:

MONONA TERRACE FIRE ALARM SYSTEM UPGRADE
CONTRACT NO. 7730

in Madison, Wisconsin, and shall pay all claims for labor performed and material furnished in the prosecution of said work, and save the City harmless from all claims for damages because of negligence in the prosecution of said work, and shall save harmless the said City from all claims for compensation (under Chapter 102, Wisconsin Statutes) of employees and employees of subcontractor, then this Bond is to be void, otherwise of full force, virtue and effect.

Signed and sealed this _____day of _____

Countersigned:

_____
Company Name (Principal)

_____ _____
Witness President Seal

_____
Secretary

Approved as to form:

_____
Surety Seal
☐ Salary Employee ☐ Commission

_____ By _____
City Attorney Attorney-in-Fact

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under National Producer Number _____ for the year _____, and appointed as attorney-in-fact with authority to execute this payment and performance bond which power of attorney has not been revoked.

_____ _____
Date Agent Signature

SECTION J: PREVAILING WAGE RATES

State of Wisconsin Department of Workforce Development Equal Rights Division	**DEPARTMENTAL ORDER**

ISSUE DATE: 1/8/2016

PROJECT:

ALL PUBLIC WORKS PROJECTS UNDER SEC. 66.0903, STATS-CITY OF MADISON
MADISON CITY, DANE COUNTY, WI
Determination No. 201600001

PROJECT OWNER:	REQUESTER:
ROBERT F PHILLIPS, INTERIM CITY ENGINEER CITY OF MADISON - ENGINEERING 210 M L KING JR BLVD, RM 115 MADISON, WI 537033342	ROBERT F PHILLIPS, INTERIM CITY ENGINEER CITY OF MADISON - ENGINEERING 210 M L KING JR BLVD, RM 115 MADISON, WI 537033342

ADDITIONAL CONTACT:

NORMAN DAVIS, CONTRACT COMPLIANCE
CITY OF MADISON-DEPT OF CIVIL RTS-AA DIV
210 MARTIN L KING JR BLVD, RM 523
MADISON, WI 537033342

The department received an application for prevailing wage rate determination for the above-captioned project. The department conducted a survey to determine the prevailing wage rate for the trade(s) or occupation(s) needed to complete the project. The survey's findings appear in the attached project determination.

If you believe that the wage rate for any trade or occupation does not accurately reflect the prevailing wage rate in the city, village or town where the project is located, you may ask the department to conduct an administrative review of such wage rate. You must submit this request in writing within 30 days from the date indicated above. Additionally, your request must include wage rate information from at least three similar projects in the city, village or town where the proposed project is located and on which some work has been performed by the contested trade(s) during the current survey period and was previously considered by the department in issuing the attached determination. See DWD 290.10 of the Wisconsin Administrative Code and either s. 66.0903(3)(br), Stats., or s. 103.49(3)(c), Stats., for a complete explanation of the administrative review process.

Enclosures

It is hereby ordered that the prevailing wage rates set forth in the attached project determination shall only be applicable to the above referenced project. This order is a **FINAL ORDER** of the department unless a timely request for an administrative review is filed with the department.

ISSUED BY:

Equal Rights Division
Labor Standards Bureau
Construction Wage Standards Section
P.O. Box 8928, Madison, WI 53708-8928
(608)266-6861

Web Site: http://dwd.wisconsin.gov/er/

PREVAILING WAGE RATE DETERMINATION
Issued by the State of Wisconsin
Department of Workforce Development
Pursuant to s. 66.0903, Wis. Stats.
Issued On: 01/08/2016
Amended On: 01/28/2016

DETERMINATION NUMBER:	201600001
EXPIRATION DATE:	Prime Contracts MUST Be Awarded or Negotiated On Or Before 12/31/2016. If NOT, You MUST Reapply.
PROJECT NAME:	ALL PUBLIC WORKS PROJECTS UNDER SEC. 66.0903, STATS-CITY OF MADISON
PROJECT LOCATION:	MADISON CITY, DANE COUNTY, WI
CONTRACTING AGENCY:	CITY OF MADISON - ENGINEERING

CLASSIFICATION:	Contractors are responsible for correctly classifying their workers. Either call the Department of Workforce Development (DWD) with trade or classification questions or consult DWD's Dictionary of Occupational Classifications & Work Descriptions on the DWD website at: dwd.wisconsin.gov/er/prevailing_wage_rate/Dictionary/dictionary_main.htm.
OVERTIME:	Time and one-half must be paid for all hours worked: - over 10 hours per day on prevailing wage projects - over 40 hours per calendar week - Saturday and Sunday - on all of the following holidays: January 1; the last Monday in May; July 4; the 1st Monday in September; the 4th Thursday in November; December 25; - The day before if January 1, July 4 or December 25 falls on a Saturday; - The day following if January 1, July 4 or December 25 falls on a Sunday. Apply the time and one-half overtime calculation to whichever is higher between the Hourly Basic Rate listed on this project determination or the employee's regular hourly rate of pay. Add any applicable Premium or DOT Premium to the Hourly Basic Rate before calculating overtime. A DOT Premium (discussed below) may supersede this time and one-half requirement.
FUTURE INCREASE:	When a specific trade or occupation requires a future increase, you MUST add the full hourly increase to the "TOTAL" on the effective date(s) indicated for the specific trade or occupation.
PREMIUM PAY:	If indicated for a specific trade or occupation, the full amount of such pay MUST be added to the "HOURLY BASIC RATE OF PAY" indicated for such trade or occupation, whevenever such pay is applicable.
DOT PREMIUM:	This premium only applies to highway and bridge projects owned by the Wisconsin Department of Transportation and to the project type heading "Airport Pavement or State Highway Construction." DO NOT apply the premium calculation under any other project type on this determination.
APPRENTICES:	Pay apprentices a percentage of the applicable journeyperson's hourly basic rate of pay and hourly fringe benefit contributions specified in this determination. Obtain the appropriate percentage from each apprentice's contract or indenture.
SUBJOURNEY:	Subjourney wage rates may be available for some of the trades or occupations indicated below with the exception of laborers, truck drivers and heavy equipment operators. Any employer interested in using a subjourney classification on this project MUST complete Form ERD-10880 and request the applicable wage rate from the Department of Workforce Development PRIOR to using the subjourney worker on this project.

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

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

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

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

s. 66.0903 (10) RECORDS; INSPECTION; ENFORCEMENT.
(a) Each contractor, subcontractor, or contractor's or subcontractor's agent performing work on a project of public works that is subject to this section shall keep full and accurate records clearly indicating the name and trade or occupation of every person performing the work described in sub. (4) and an accurate record of the number of hours worked by each of those persons and the actual wages paid for the hours worked.

s. 66.0903 (11) LIABILITY AND PENALTIES.
(a) 1. Any contractor, subcontractor, or contractor's or subcontractor's agent who fails to pay the prevailing wage rate determined by the department under sub. (3) or who pays less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor is liable to any affected employee in the amount of his or her unpaid wages or his or her unpaid overtime compensation and in an additional amount as liquidated damages as provided under subd. 2., 3., whichever is applicable.
2. If the department determines upon inspection under sub. (10) (b) or (c) that a contractor, subcontractor, or contractor's or subcontractor's agent has failed to pay the prevailing wage rate determined by the department under sub. (3) or has paid less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor, the department shall order the contractor to pay to any affected employee the amount of his or her unpaid wages or his or her unpaid overtime compensation and an additional amount equal to 100 percent of the amount of those unpaid wages or that unpaid overtime compensation as liquidated damages within a period specified by the department in the order.
3. In addition to or in lieu of recovering the liability specified in subd. 1. as provided in subd. 2., any employee for and in behalf of that employee and other employees similarly situated may commence an action to recover that liability in any court of competent jurisdiction. If the court finds that a contractor, subcontractor, or contractor's or subcontractor's agent has failed to pay the prevailing wage rate determined by the department under sub. (3) or has paid less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor, the court shall order the contractor, subcontractor, or agent to pay to any affected employee the amount of his or her unpaid wages or his or her unpaid overtime compensation and an additional amount equal to 100 percent of the amount of those unpaid wages or that unpaid overtime compensation as liquidated damages.
5. No employee may be a party plaintiff to an action under subd. 3. unless the employee consents in writing to become a party and the consent is filed in the court in which the action is brought. Notwithstanding s. 814.04 (1), the court shall, in addition to any judgment awarded to the plaintiff, allow reasonable attorney fees and costs to be paid by the defendant.

BUILDING OR HEAVY CONSTRUCTION

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

SKILLED TRADES

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
101	Acoustic Ceiling Tile Installer Future Increase(s): Add $1.42/hr on 6/1/2016.	33.02	17.12	50.14
102	Boilermaker	33.35	28.29	61.64
103	Bricklayer, Blocklayer or Stonemason Future Increase(s): Add $1.45 on 06/06/2016 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.	32.86	20.03	52.89
104	Cabinet Installer Future Increase(s): Add $1.42/hr on 6/1/2016.	33.02	17.12	50.14
105	Carpenter Future Increase(s): Add $1.42/hr on 6/1/2016. 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.	33.02	17.12	50.14
106	Carpet Layer or Soft Floor Coverer Future Increase(s): Add $1.42/hr on 6/1/2016.	33.02	17.12	50.14
107	Cement Finisher	33.15	16.40	49.55
108	Drywall Taper or Finisher	29.97	20.08	50.05
109	Electrician Future Increase(s): Add $1.25/hr on 6/1/16. 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.	35.75	19.97	55.72
110	Elevator Constructor	46.05	27.09	73.14
111	Fence Erector	18.72	5.78	24.50

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
112	Fire Sprinkler Fitter	36.78	19.97	56.75
113	Glazier	38.27	14.42	52.69
114	Heat or Frost Insulator	33.53	27.31	60.84
115	Insulator (Batt or Blown) Future Increase(s): Add $1.42/hr on 6/1/2016.	33.02	17.12	50.14
116	Ironworker	32.50	20.58	53.08
117	Lather	32.72	16.00	48.72
118	Line Constructor (Electrical)	40.81	18.06	58.87
119	Marble Finisher	25.72	18.54	44.26
120	Marble Mason	32.82	18.67	51.49
121	Metal Building Erector	22.40	6.27	28.67
122	Millwright Future Increase(s): Add $1.47/hr on 6/1/2016.	34.79	17.17	51.96
123	Overhead Door Installer	31.93	13.39	45.32
124	Painter	26.70	16.65	43.35
125	Pavement Marking Operator	30.00	18.81	48.81
126	Piledriver Future Increase(s): Add $1.44/hr on 6/1/2016. 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.	33.56	17.12	50.68
127	Pipeline Fuser or Welder (Gas or Utility)	44.20	18.26	62.46
129	Plasterer	32.82	18.81	51.63
130	Plumber	38.82	18.02	56.84
132	Refrigeration Mechanic	45.55	18.71	64.26
133	Roofer or Waterproofer	29.65	1.71	31.36
134	Sheet Metal Worker	35.55	24.67	60.22
135	Steamfitter	45.55	18.71	64.26
137	Teledata Technician or Installer	22.50	12.74	35.24
138	Temperature Control Installer	34.97	19.67	54.64
139	Terrazzo Finisher	25.72	18.54	44.26

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
140	Terrazzo Mechanic Future Increase(s): Add $1.60 on 06/06/2016	33.98	18.96	52.94
141	Tile Finisher	30.00	0.00	30.00
142	Tile Setter Future Increase(s): Add $1.45/hr on 6/06/2016.	31.59	19.61	51.20
143	Tuckpointer, Caulker or Cleaner Future Increase(s): Add $1.45 on 06/06/2016 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.	32.86	20.03	52.89
144	Underwater Diver (Except on Great Lakes)	36.74	16.00	52.74
146	Well Driller or Pump Installer Future Increase(s): Add $1/hr on 6/1/2016; Add $1/hr on 6/1/2017.	25.32	16.40	41.72
147	Siding Installer	17.00	6.71	23.71
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	36.73	20.41	57.14
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	32.65	15.52	48.17
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	28.57	13.71	42.28
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	26.53	13.55	40.08
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	25.00	12.55	37.55

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	33.69	19.78	53.47
203	Three or More Axle	18.25	21.61	39.86
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add $1.60/hr on 6/3/2016.	34.69	20.38	55.07
205	Pavement Marking Vehicle	18.25	21.61	39.86
207	Truck Mechanic	18.25	21.61	39.86

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer Future Increase(s): Add $1.25/hr eff. 06/06/2016 Premium Increase(s): Add $1.00/hr for certified welder and pipelayer; Add $.25/hr for mason tender.	25.81	15.63	41.44
302	Asbestos Abatement Worker	17.00	4.22	21.22
303	Landscaper	21.90	9.83	31.73
310	Gas or Utility Pipeline Laborer (Other Than Sewer and Water)	20.83	18.39	39.22
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	19.35	0.00	19.35
314	Railroad Track Laborer	17.00	3.96	20.96
315	Final Construction Clean-Up Worker	29.01	7.20	36.21

HEAVY EQUIPMENT OPERATORS
SITE PREPARATION, UTILITY OR LANDSCAPING WORK ONLY

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
501	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Milling Machine; Boring Machine (Directional, Horizontal or Vertical); Backhoe (Track Type) Having a Mfgr's Rated Capacity of 130,000 Lbs. or Over; Backhoe (Track Type) Having a Mfgr's Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bulldozer or Endloader (Over 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Crane, Shovel, Dragline, Clamshells; Forklift (Machinery Moving or Steel Erection, 25 Ft & Over); Gradall (Cruz-Aire Type); Grader or Motor Patrol; Master Mechanic; Mechanic or Welder; Robotic Tool Carrier (With or Without Attachments); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Tractor (Scraper, Dozer, Pusher, Loader); Trencher (Wheel Type or Chain Type Having Over 8 Inch Bucket). Future Increase(s): Add $1.60/hr on 6/3/2016.	35.22	20.38	55.60
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 $1.60/hr on 6/3/2016.	34.69	20.38	55.07

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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 $1.60/hr on 6/3/2016.	32.62	20.38	53.00
504	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	41.65	21.71	63.36
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 $1.25/hr on 1/1/2017. Premium Increase(s): Add $.50/hr for Friction Crane, Lattice Boom or Crane Certification (CCO).	44.05	23.24	67.29
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 $1.25/hr on 1/1/2017.	39.20	23.09	62.29
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.	36.72	21.15	57.87

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

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
508	Boring Machine (Directional); Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic. Future Increase(s): Add $1.60/hr on 6/3/2016. Premium Increase(s):	37.67	20.38	58.05

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
	Add $.50/hr for >200 Ton; Add $1/hr at 300 Ton; Add $1.50/hr at 400 Ton; Add $2/hr at 500 Ton & Over.			
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 $1.60/hr on 6/3/2016. Premium Increase(s): Add $.25/hr for all >45 Ton lifting capacity cranes.	36.42	20.38	56.80
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). Future Increase(s): Add $1.60/hr on 6/3/2016.	35.22	20.38	55.60
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 $1.60/hr on 6/3/2016.	34.69	20.38	55.07

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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 $1.60/hr on 6/3/2016.	32.62	20.38	53.00
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 $1.60/hr on 6/3/2016.	31.99	20.38	52.37
514	Gas or Utility Pipeline, Except Sewer & Water (Primary Equipment). Future Increase(s): Add $1/hr on 5/30/2016.	37.04	22.44	59.48
515	Gas or Utility Pipeline, Except Sewer & Water (Secondary Equipment).	33.82	20.30	54.12
516	Fiber Optic Cable Equipment	29.50	0.68	30.18

SEWER, WATER OR TUNNEL CONSTRUCTION

Includes those projects that primarily involve public sewer or water distribution, transmission or collection systems and related tunnel work (excluding buildings).

SKILLED TRADES

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
103	Bricklayer, Blocklayer or Stonemason	32.82	18.67	51.49
105	Carpenter	32.72	16.00	48.72
107	Cement Finisher Future Increase(s): 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.	35.97	17.85	53.82
109	Electrician	52.00	1.50	53.50
111	Fence Erector	18.72	5.78	24.50
116	Ironworker	32.50	20.58	53.08
118	Line Constructor (Electrical)	40.81	18.06	58.87
125	Pavement Marking Operator	30.00	18.81	48.81
126	Piledriver	33.24	16.00	49.24
130	Plumber Future Increase(s): Add $1.50 on 6/1/16	39.95	19.45	59.40
135	Steamfitter	44.20	18.26	62.46
137	Teledata Technician or Installer	22.50	12.74	35.24
143	Tuckpointer, Caulker or Cleaner	32.82	18.67	51.49
144	Underwater Diver (Except on Great Lakes)	31.00	20.43	51.43
146	Well Driller or Pump Installer Future Increase(s): Add $1/hr on 6/1/2016; Add $1/hr on 6/1/2017.	25.32	16.40	41.72
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	36.73	15.92	52.65
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	32.65	15.52	48.17

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	28.57	13.71	42.28
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	26.53	13.55	40.08
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	12.97	34.72

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	19.00	0.00	19.00
203	Three or More Axle	19.00	0.00	19.00
204	Articulated, Euclid, Dumptor, Off Road Material Hauler	33.69	19.78	53.47
205	Pavement Marking Vehicle	19.00	0.00	19.00
207	Truck Mechanic	19.00	0.00	19.00

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer Future Increase(s): Add $1.25/hr eff. 06/06/2016 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.	27.18	15.64	42.82
303	Landscaper	41.00	0.00	41.00
304	Flagperson or Traffic Control Person	20.92	14.80	35.72
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	19.35	0.00	19.35
314	Railroad Track Laborer	17.00	3.96	20.96

HEAVY EQUIPMENT OPERATORS
SEWER, WATER OR TUNNEL WORK

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
521	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Master Mechanic; Pile Driver. Premium Increase(s): Add $.25/hr for operating tower crane.	38.09	20.80	58.89
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 $1.60/hr on 6/3/2016.	35.22	20.38	55.60
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 $1.60/hr on 6/3/2016.	34.69	20.38	55.07

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
524	Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Finishing Machine (Road Type); Environmental Burner; Fireman (Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Hoist (Tugger, Automatic); Grout Pump; Jeep Digger; Lift Slab Machine; Mulcher; Power Subgrader; Pump (3 Inch or Over) or Well Points; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Screw or Gypsum Pumps; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Stump Chipper; Tining or Curing Machine; Trencher (Wheel Type or Chain Type Having 8-Inch Bucket & Under); Winches & A-Frames.	33.69	21.75	55.44
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 $1.60/hr on 6/3/2016.	31.99	20.38	52.37
526	Boiler (Temporary Heat); Forklift; Greaser; Oiler.	30.99	19.78	50.77
527	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	41.65	21.71	63.36
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.	41.65	21.71	63.36
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.	36.72	21.15	57.87
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.	36.72	21.15	57.87

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

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
103	Bricklayer, Blocklayer or Stonemason	31.55	18.52	50.07
105	Carpenter Future Increase(s): Add $1.42/hr on 6/1/2016. 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.	33.02	17.12	50.14
107	Cement Finisher Future Increase(s): 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.	35.97	17.85	53.82
109	Electrician Future Increase(s): Add $1.25/hr on 6/1/16. 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.	35.75	19.97	55.72
111	Fence Erector	35.62	0.00	35.62
116	Ironworker	32.50	20.58	53.08
118	Line Constructor (Electrical)	40.81	18.06	58.87
124	Painter	29.87	18.79	48.66
125	Pavement Marking Operator	31.24	17.30	48.54
126	Piledriver	30.11	21.09	51.20
133	Roofer or Waterproofer	30.40	2.23	32.63
137	Teledata Technician or Installer	22.50	12.74	35.24
143	Tuckpointer, Caulker or Cleaner	32.82	18.67	51.49

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
144	Underwater Diver (Except on Great Lakes)	36.74	16.00	52.74
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	36.73	15.92	52.65
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	32.65	17.37	50.02
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	28.57	13.71	42.28
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	26.53	13.09	39.62
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	12.97	34.72

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	36.72	21.15	57.87
203	Three or More Axle 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.	25.78	18.96	44.74
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	30.82	21.85	52.67
205	Pavement Marking Vehicle	23.82	17.72	41.54
206	Shadow or Pilot Vehicle	25.28	18.31	43.59
207	Truck Mechanic	25.28	18.31	43.59

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer Future Increase(s): Add $1.00/hr eff. 06/01/2016; Add $1.00/hr eff. 06/01/2017 Premium Increase(s): Add $.10/hr for topman, air tool operator, vibrator or tamper operator (mechanical hand operated), chain saw operator and demolition burning torch laborer; Add $.15/hr for bituminous worker (raker and luteman), formsetter (curb, sidewalk and pavement) and strike off man; Add $.20/hr for blaster and powderman; Add $.25/hr for bottomman; Add $.35/hr for line and grade specialist; Add $.45/hr for pipelayer. / DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	30.95	15.65	46.60
302	Asbestos Abatement Worker	17.00	4.22	21.22
303	Landscaper Future Increase(s): Add $1.00/hr eff. 06/01/2016; Add $1.00/hr eff. 06/01/2017 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).	30.95	15.65	46.60
304	Flagperson or Traffic Control Person Future Increase(s): Add $1.00/hr eff. 06/01/2016; Add $1.00/hr eff. 06/01/2017 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.	27.30	15.65	42.95

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	19.35	0.00	19.35
314	Railroad Track Laborer	17.00	3.96	20.96

HEAVY EQUIPMENT OPERATORS
AIRPORT PAVEMENT OR STATE HIGHWAY CONSTRUCTION

CODE	Fringe Benefits Must Be Paid On All 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 Over 4,000 Lbs., Crane With Boom Dollies; Traveling Crane (Bridge Type). Future Increase(s): Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	38.27	21.85	60.12
532	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With A Lifting Capacity Of 4,000 Lbs., & Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver. Future Increase(s): Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	37.77	21.85	59.62

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
533	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Automatic Subgrader (Concrete); Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boatmen (NOT Performing Work on the Great Lakes); Boring Machine (Directional, Horizontal or Vertical); Bridge (Bidwell) Paver; Bulldozer or Endloader; Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, VIbratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & Distributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane WIth a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A-Frames. Future Increase(s): Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	37.27	21.85	59.12

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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 $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	37.01	21.85	58.86
535	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Automatic Belt Conveyor & Surge Bin; Boiler (Temporary Heat); Concrete Proportioning Plant; Crusher, Screening or Wash Plant; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oiler; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx..	36.72	21.85	58.57
536	Fiber Optic Cable Equipment.	29.50	0.68	30.18
537	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	41.65	21.71	63.36
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.	41.65	21.71	63.36

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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.	36.72	21.15	57.87
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.	36.72	21.15	57.87

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 All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
103	Bricklayer, Blocklayer or Stonemason	32.82	18.67	51.49
105	Carpenter Future Increase(s): Add $1.42/hr on 6/1/2016. 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.	33.02	17.12	50.14
107	Cement Finisher Future Increase(s): 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.	35.97	17.85	53.82
109	Electrician Future Increase(s): Add $1.25/hr on 6/1/16. 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.	35.75	19.97	55.72
111	Fence Erector	18.72	5.78	24.50
116	Ironworker	32.50	20.58	53.08
118	Line Constructor (Electrical)	40.81	18.06	58.87
124	Painter	26.70	16.65	43.35
125	Pavement Marking Operator	30.00	18.81	48.81
126	Piledriver Future Increase(s): Add $1.44/hr on 6/1/2016. 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.	33.56	17.12	50.68

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
133	Roofer or Waterproofer	29.65	1.71	31.36
137	Teledata Technician or Installer	22.50	12.74	35.24
143	Tuckpointer, Caulker or Cleaner	32.82	18.67	51.49
144	Underwater Diver (Except on Great Lakes)	36.74	16.00	52.74
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	36.73	15.92	52.65
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	32.65	15.52	48.17
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	28.57	13.71	42.28
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	26.53	13.55	40.08
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	12.97	34.72

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	18.00	0.00	18.00
203	Three or More Axle	18.00	0.00	18.00
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add $1.60/hr on 6/3/2016.	34.69	20.38	55.07
205	Pavement Marking Vehicle	18.00	0.00	18.00
206	Shadow or Pilot Vehicle	18.00	0.00	18.00
207	Truck Mechanic	18.00	0.00	18.00

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer	26.34	15.17	41.51

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
303	Landscaper Future Increase(s): Add $1.00/hr eff. 06/01/2016; Add $1.00/hr eff. 06/01/2017 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).	30.67	15.65	46.32
304	Flagperson or Traffic Control Person	20.92	14.80	35.72
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	19.35	0.00	19.35
314	Railroad Track Laborer	17.00	3.96	20.96

HEAVY EQUIPMENT OPERATORS
CONCRETE PAVEMENT OR BRIDGE WORK

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
541	Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic. Future Increase(s): Add $1.60/hr on 6/3/2016. Premium Increase(s): Add $.50/hr for >200 Ton; Add $1/hr at 300 Ton; Add $1.50/hr at 400 Ton; Add $2/hr at 500 Ton & Over.	37.67	20.38	58.05

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
542	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity of 4,000 Lbs. & Under; Crane, Tower Crane Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver. Future Increase(s): Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	37.77	21.85	59.62
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 $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	37.27	21.85	59.12

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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 $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	37.27	21.85	59.12
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.	31.62	19.78	51.40
546	Fiber Optic Cable Equipment.	29.50	0.68	30.18
547	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	41.65	21.71	63.36
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. Future Increase(s): Add $1.25/hr on 1/1/2017. Premium Increase(s): Add $.50/hr for Friction Crane, Lattice Boom or Crane Certification (CCO).	44.05	23.24	67.29
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.	36.72	21.15	57.87

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.	36.72	21.15	57.87

HEAVY EQUIPMENT OPERATORS
ASPHALT PAVEMENT OR OTHER WORK

Fringe Benefits Must Be Paid On All Hours Worked

CODE	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.	36.67	19.78	56.45
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 $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/prevailing-wage-compliance.aspx.	37.77	21.85	59.62

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
553	Air, Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boring Machine (Directional, Horizontal or Vertical); Bulldozer or Endloader; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Laser/Screed; Concrete Slipform Placer Curb & Gutter Machine; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Railroad Track Rail Leveling Machine, Tie Placer, Extractor, Tamper, Stone Leveler or Rehabilitation Equipment; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A-Frames. Future Increase(s): Add $1.60/hr on 6/3/2016.	34.69	20.38	55.07
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.	36.17	19.19	55.36
555	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Automatic Belt Conveyor & Surge Bin; Boiler (Temporary Heat); Crusher, Screening or Wash Plant; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oiler; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $1.60/hr on 6/3/2016.	32.62	20.38	53.00
556	Fiber Optic Cable Equipment.	29.50	0.68	30.18

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

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
101	Acoustic Ceiling Tile Installer	37.41	0.00	37.41
102	Boilermaker	33.35	28.29	61.64
103	Bricklayer, Blocklayer or Stonemason	32.82	9.93	42.75
104	Cabinet Installer	20.00	0.46	20.46
105	Carpenter	25.39	5.03	30.42
106	Carpet Layer or Soft Floor Coverer	24.04	4.89	28.93
107	Cement Finisher	23.86	3.43	27.29
108	Drywall Taper or Finisher	27.00	0.00	27.00
109	Electrician	20.00	12.47	32.47
110	Elevator Constructor	46.05	27.09	73.14
111	Fence Erector	19.45	4.70	24.15
112	Fire Sprinkler Fitter	33.00	18.96	51.96
113	Glazier	38.27	14.42	52.69
114	Heat or Frost Insulator	17.00	0.00	17.00
115	Insulator (Batt or Blown)	20.00	12.35	32.35
116	Ironworker	24.30	14.25	38.55
117	Lather	25.39	5.03	30.42
119	Marble Finisher	25.72	18.54	44.26
120	Marble Mason	32.82	9.93	42.75
121	Metal Building Erector	13.60	6.57	20.17
123	Overhead Door Installer	18.00	0.00	18.00
124	Painter	26.24	0.00	26.24
125	Pavement Marking Operator	30.00	18.81	48.81

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
129	Plasterer	30.00	9.21	39.21
130	Plumber	30.00	11.56	41.56
132	Refrigeration Mechanic	22.50	9.03	31.53
133	Roofer or Waterproofer	21.00	4.10	25.10
134	Sheet Metal Worker	23.22	5.45	28.67
135	Steamfitter	17.05	0.94	17.99
137	Teledata Technician or Installer	22.50	12.74	35.24
138	Temperature Control Installer	22.50	2.36	24.86
139	Terrazzo Finisher	25.72	18.54	44.26
140	Terrazzo Mechanic	33.67	17.82	51.49
141	Tile Finisher	30.00	0.00	30.00
142	Tile Setter Future Increase(s): Add $1.45/hr on 6/06/2016.	31.59	19.61	51.20
143	Tuckpointer, Caulker or Cleaner	25.00	2.99	27.99
146	Well Driller or Pump Installer	29.00	0.64	29.64
147	Siding Installer	14.00	0.00	14.00

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	16.50	0.50	17.00
203	Three or More Axle	21.53	3.34	24.87
205	Pavement Marking Vehicle	21.53	3.34	24.87
207	Truck Mechanic	21.53	3.34	24.87

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer	17.20	9.26	26.46
302	Asbestos Abatement Worker	18.00	3.22	21.22

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
303	Landscaper	15.00	4.03	19.03
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	19.35	0.00	19.35
315	Final Construction Clean-Up Worker	15.00	0.00	15.00

HEAVY EQUIPMENT OPERATORS
RESIDENTIAL OR AGRICULTURAL CONSTRUCTION

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
557	Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Backhoe (Track Type); Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boring Machine (Directional, Horizontal or Vertical); Bulldozer or Endloader; Concrete Breaker (Large, Auto, VIbratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & DIstributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Crane, Shovel, Dragline, Clamshells; Forestry Equipment, TImbco, Tree Shear, Tub Grinder, Processor; Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type); WInches & A-Frames.	34.22	19.55	53.77
558	Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Backfiller; Belting, Burlap, Texturing Machine; Boiler (Temporary Heat); Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & LIght Equipment); Concrete Finishing Machine (Road Type); Farm or Industrial Type Tractor; Forklift; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Jeep Digger; Lift Slab Machine; Mulcher; Oiler; Post Hole Digger or Driver; Power Subgrader; Pump (3 Inch or Over) or Well Points; Robotic Tool Carrier (With or Without Attachments); Rock, Stone Breaker; Roller (Rubber Tire, 5 Tons or Under); Screed (Milling Machine); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Stump Chipper; Telehandler; Vibratory Hammer or Extractor, Power Pack. Future Increase(s): Add $1.60/hr on 6/3/2016.	31.99	20.38	52.37

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

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STATE OF WISCONSIN
DWD
Department of Workforce Development

Scott Walker, Governor
Reginald J. Newson, Secretary

THE 2015-17 BUDGET BILL MADE SIGNIFICANT CHANGES TO WISCONSIN'S PREVAILING WAGE LAWS. HOWEVER, THOSE CHANGES DO NOT GO INTO EFFECT UNTIL JANUARY 1, 2017.

During calendar year 2016, DWD will continue to enforce prevailing wage laws for local governmental unit and state agency public works projects under current prevailing wage laws.

2015 Wisconsin Act 55 (the budget bill) repealed the state prevailing wage law for **local governmental units** such as villages, towns, cities, school districts, or sewerage districts effective January 1, 2017. However, if a local governmental unit:

- issues a Request for Bids before January 1, 2017, for a project of public works that is subject to bidding or,
- enters into a contract before January 1, 2017, for a project of public works that is not subject to bidding,

then those public works projects are subject to the current prevailing wage law (§66.0903, Wis. Stats.) through the life of the project. Projects of public works with prevailing wage project determinations issued prior to 2017 continue to be subject to the current prevailing wage law through the life of the project even though the project may have work going on in 2017 or subsequent years.

Contractors working on local governmental unit projects with prevailing wage rate determinations must continue to pay employees the appropriate prevailing wage and maintain required prevailing wage payroll records. For instance, if a contractor is working in 2018 on a public works project with a project determination issued prior to 2017, then the contractor is required to comply with the "old" prevailing wage rate law (§66.0903, Wis. Stats.). After January 1, 2017, DWD will continue to enforce prevailing wage requirements for projects with DWD prevailing wage determinations issued under the "old" prevailing wage laws (§§ 66.0903 & 103.49, Wis. Stats.).

For new public works projects starting on January 1, 2017, state prevailing wage law will only apply to **state agency** and **state highway** projects. Prevailing wage rates applicable to state agencies will be those issued by the U.S. Department of Labor under the Davis-Bacon Act, 40 U.S.C. 3142. The Wisconsin Department of Administration will enforce the new state agency prevailing wage law (§16.856, Wis. Stats.) and the Wisconsin Department of Transportation will continue to enforce prevailing wage on state highway projects (under a law renumbered as §84.062, Wis. Stats.).

(Updated-122215)

State of Wisconsin
Department of Workforce Development
Equal Rights Division
Labor Standards Bureau

POST THE WHITE SHEET

As the public entity receiving this prevailing wage rate determination, YOU ARE REQUIRED by law to post the prevailing wage rate determination (i.e., white sheet) in at least one conspicuous and easily accessible place on the project site that is available to all construction workers. The white sheet must remain posted from the onset of the project until all construction labor on the project has been completed.
[*See,* Wis. Admin. Code §DWD 290.12(1)]

Posting the white sheet inside the general contractor's trailer does not meet this requirement. That placement is not available/accessible to all workers and is not a location over which you have control.

If you have questions about posting, please call (608)266-6861 and ask for prevailing wage intake.

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PREVAILING WAGE – Contractors

Any public works project that has a total estimated project cost that equals or exceeds prevailing wage project thresholds requires a prevailing wage rate determination issued by the Department of Workforce Development (DWD). Public works include erecting, constructing, remodeling, repairing, demolishing, alterations, painting and decorating projects for a local governmental unit or state agency. State law excludes minor service or maintenance work, warranty work, or work under a supply-and-installation contract. There is a statutory definition for most of these exclusions. The prevailing wage laws that apply to local governmental units and their contractors are §§66.0903 and 103.503, Wis. Stats. The prevailing wage laws that apply to state agencies and their contractors are §§103.49 and 103.503, Wis. Stats. The applicable administrative rules for all prevailing wage projects are DWD 290 and DWD 294, Wis. Adm. Code. These laws include provisions that apply to all contractors and subcontractors working on prevailing wage projects.

Any contractor or subcontractor working on a local governmental unit or state agency's public works project that equals or exceeds current prevailing wage project thresholds must do all of the following:

- Receive and review the project's prevailing wage rate determination (i.e., white sheet).
- Tell subcontractors the project is subject to state prevailing wage law and include the prevailing wage rate determination in the construction contract, or if there is no written contract, provide a copy of the project determination to each subcontractor.
- Hire subcontractors who do *not* appear on the "Consolidated List of Debarred Contractors."
- Have a written substance abuse testing program in place that fulfills the requirements of §103.503, Wis. Stats., before commencing work on the project.

- Notify subcontractors that if DWD finds that a contractor or subcontractor violated the prevailing wage law, DWD will assess liquidated damages of 100% of the wages owed to employees.

- Apply to DWD for subjourney wage rates prior to employing these individuals on the project.

- Receive and retain a completed Affidavit of Compliance from each subcontractor brought on to the project before providing final payment to those subcontractors.

- Submit a completed Affidavit of Compliance to the contractor who brought the subcontractor on to the project before receiving final payment for the project.

- Maintain payroll records for 3 years that comply with §§66.0903(10)(a) or 103.49(5)(a), Stats. and DWD 274.06.

- Respond to requests from DWD or the project owner to provide payroll records and/or respond to prevailing wage complaints filed by employees or third parties.

For more information, visit the prevailing wage website: http://dwd.wisconsin.gov/er/prevailing_wage_rate/default.htm. For further assistance, call the Equal Rights Division at 608-266-6861 and ask for prevailing wage.