BID OF_____

2014

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

SKATE PARK - CENTRAL PARK, MADISON

CONTRACT NO. 7408

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

SKATE PARK - CENTRAL PARK, MADISON
CONTRACT NO. 7408

INDEX

This Proposal, and Agreement have
been prepared by:

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

Eric Knepp – Superintendant of Parks

RFP:

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:	SKATE PARK - CENTRAL PARK, MADISON
CONTRACT NO.:	7408
SBE GOAL	12%
BID BOND	5%
PRE BID MEETING (1:00 P.M.)	12/05/14
PREQUALIFICATION APPLICATION DUE (1:00 P.M)	12/05/14
BID SUBMISSION (1:00 P.M.)	12/12/14
BID OPEN (1:30 P.M.)	12/12/14
PUBLISHED IN WSJ	10/31/14,11/7/14,11/14/14,11/21/14,11/28/14,12/05/14

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 - 2014 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.

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 Skate Park Specialty Contractor

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.

2.4.2 Reporting SBE Utilization and Good Faith Efforts

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

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

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

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

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

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

2.5 Appeal Procedure

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

2.6 SBE Requirements After Award of the Contract

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

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

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

2.7 SBE Definition and Eligibility Guidelines

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

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

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

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

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

SKATE PARK - CENTRAL PARK, MADISON
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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

SKATE PARK - CENTRAL PARK, MADISON
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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: _____%.

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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

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

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

SECTION 102.1 PREQUALIFICATION OF BIDDERS

The work associated with the construction of skate park bowls and transition features in this project has necessitated the implementation of a new prequalification category:

399 – Skate Park Specialty Contractor

Either the General Contractor or their sub contractor shall be pre-qualified under this new category to bid on the project. If the General Contractor is only prequalified in one of the other approved categories for this project (#215, #220, or #240), the General Contractor must team with a sub contractor that is prequalified under #399.

The contract will be awarded to the lowest responsible bidder where either the General Contractor or their sub contractor, meet the requirements of category 399 Skate Park Specialty Contractor

General Contractors or sub contractors interested in pre-qualifying for category 399 shall complete and submit the Contractors Prequalification Application, and the Affirmative Action Plan packet **along with the materials required in Attachment 1 as soon as possible** but no later than 1:00 PM on Friday, December 5, 2014, to be considered for PW Contract #7408 Skate Park – Central Park, Madison.

Submit Pre-Qualification Packet to:
City of Madison Engineering Division Administrative Office
Attention: Janet Pien
210 Martin Luther King Jr. Blvd. Room 115
Madison, WI 53701

To be sure of a complete application, please contact Janet at 608-266-4620 prior to submission of the pre-qualification packet. Note: #399 is a category for "Other" specialty qualifications that are infrequently used. The applicant shall write in "Skate Park Specialty Contractor" in the space alongside #399 when submitting the packet.

Attachment 1 contains a detailed list of submission requirements to obtain prequalification under #399.

If your company is currently prequalified to bid on City of Madison public works contracts, please submit an Amendment to Contractors Prequalification Application along with the required materials.

General Contractors wishing to bid on this contract that are prequalified under catagories other than #399 (#215, #220, or #240), will be required to list the sub contractor they are using on a form that will be provided on BID EXPRESS under Section D: General Contractor/Subcontractor Pre-qualification Requirement. The Contractor can upload the form and submit on Bid Express along with the project bid, or the form may be submitted as a hard copy along with a manual bid at 1:00 PM at the Emil St. Engineering office the day the bids are due.

If the Contractor does not submit this form with their bid, and they are deemed the lowest bidder, they will have one business day to submit this information to the Project Engineer, Mike Sturm, City of Madison Parks Division, City-County Building, Suite 104, 210 MLK Jr. Blvd., Madison, WI, 53703.

If the Contractor fails to provide this form within the guidelines described above or their chosen sub contractor does not meet the pre-qualification requirements of category 399, the Contractor's proposal will be considered non-responsive.

Prospective bidders can also download the prequalification application forms from the City's website:
http://www.cityofmadison.com/business/pw/documents/PreQualAppContractors2014.doc

Questions relating to prequalification application may be directed to Janet Pien, City Engineering Division, by phone at (608) 266-4620, or email japien@cityofmadison.com.

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 $54,000 for a single trade contract; or equal to or greater than $264,500 for a multi-trade contract pursuant to MGO 33.07(7).

SECTION 103.2 AWARD OF CONTRACT

The bid proposal contains bid alternates. The alternate bid items may be considered in the award of the bid, based upon the project budget. The City reserves the right to award the Contract to the lowest, responsible bidder, based on the Base Bid or any combination of the Base Bid plus bid alternates.

SECTION 104: SCOPE OF WORK

This project consists of the construction of a skate park at Central Park, Madison, WI including but not limited to the following:

- Earthwork and site restoration
- Concrete street skating features
- Concrete transition and bowl features
- Athletic field lighting with new electrical distribution system

- Concrete retaining walls
- Stormwater drainage system with electric sump pump
- Metal fencing

The contractor shall view the site prior to bidding to become familiar with the existing conditions. It will be the responsibility of the Contractor to locate utilities and resolve conflicts during the construction process.

Project questions should be directed to:

Mike Sturm
City of Madison Parks Division
608-267-4921 (office); 608-576-9671 (cell)
msturm@cityofmadison.com

SECTION 105.9: SURVEYS, POINTS, AND INSTRUCTION

The Contractor shall be responsible for setting all lines and/or grades required to complete the work for the Skate Park – Central Park, Madison project. Any questions regarding the layout and staking of this project should be directed to Mike Sturm at the Parks Division at 267-4921.

SECTION 105.12 COOPERATION BY THE CONTRACTOR

Several utilities exist on site. The Contractor shall perform a One Call through Digger's Hotline at least three days prior to beginning construction. To ensure that Parks-owned utilities are also marked, include the park name at the beginning of the Marking Instructions field on the ticket, and send a copy of the ticket to the City of Madison Parks Surveyor (Dan Rodman / drodman@cityofmadison.com /tel (608)266-6674 / fax (608)267-1162).

The Contractor will be allowed to store equipment and materials on site as shown on the drawings, with the exact location to be determined at the pre construction meeting. The Contractor shall secure materials at the end of each work day to deter any potential vandalism and theft. The Contractor is responsible for securing all equipment and materials at the end of each work day.

Contractor shall use care while working adjacent to existing structures and utilities. Damage to these items during construction shall be repaired or replaced at Contractor's expense. Contractor shall restore any and all areas damaged as a result of construction operations, including but not limited to, existing pavements and lawn areas. Damaged items shall be restored to their condition prior to construction. Cost of restoration shall be incidental to the contract and shall be at no cost to the City.

The Contractor shall use the City of Madison's web based construction management software for communication during construction. The Contractor will be responsible for, but not limited to, uploading project schedules, material submittals, shop drawings, construction reports, RFIs, erosion control reports, and project meeting notes to the project's web site. The City of Madison will provide an initial tutorial on the construction management software and provide on-going support as needed.

Central Park Phase 1B – S. Few Street Plaza, Contract 7059 may be performed concurrently with this project. Construction access for the skate park construction only permitted from S. Ingersoll Street as detailed in the plans. The Contractor will need to coordinate with the contractor on the Phase 1B project for schedule, grading, concrete paving, and fence installation.

Central Park is a public park that will remain open during the construction time period. Caution should be taken entering and exiting the park area. There are special events for 2015, as construction access to the site is through the Great Lawn area, construction activities may be suspended during these special events.

LaFete de Marquette is a large music festival that occurs in Central Park over several days in July. Central Park in it's entirely is utilized for this festival, with approximately 25,000 attendees visiting the park

over a four day period. Alcohol and food are served late into the evening each night, with music acts concluding at approximately 11:00 pm. All skate park construction activities shall be suspended during the festival, including the dates reserved for set-up and tear-down. The Contactor shall insure the site is fully secured from public access and all construction materials and equipment are secured within the project site.

Events that are currently scheduled Monday-Friday for the Central Park Great Lawn in 2015 include, but are not limited to:

- Wednesday-Sunday, July 8-12, 2015, **LaFete de Marquette** – alcohol served, Contractor will end work day by 5 p.m. on July 7th and will be able to return to the work site by 7 a.m. Monday, July 13th.
- Consecutive Thursdays starting August 20th, **Central Park Sessions** – alcohol served, Contractor will end work day by 5 p.m. on August 20th, volunteers will be setting up for the event during the day.

Other events may be scheduled on the weekends throughout the construction time period.

There are existing utilities located in the vicinity of the project site. Among the utilities there is a network of communication facilities along the north and south sides of the railroad tracks, high pressure gas along S. Ingersoll Street, buried electric along S. Ingersoll. There is also an extensive lawn irrigation system in the Great Lawn area that has shallow water service lines to the irrigation heads. These facilities listed are not intended to be a complete list of the facilities located in the vicinity of the project site. Utilities located outside of the project limits are not anticipated to be in conflict with construction. Contacts for these utilities are provided below should there be a need to reach any of these entities:

MG&E-Electric
Contact: Chris Erickson
P.O. Box 1231
Madison, WI 53701
Phone: 608-252-5670
Cell: 608-516-7940
Email: cerickson@mge.com

MG&E-Gas
Contact:Sean Endres
P.O. Box 1231
Madison, WI 53701
Phone: 608-252-7224
Email: sendres@mge.com

Wisconsin DOA
Contact:Lisa Gilbert
Email: lisa.gilbert@wisconsin.gov

MCI Communications
Contact:Steve Bonczkowski
Phone: 630-327-6959
EmailL: Stephen.bonczkowski@verizon.com

American Transmission Company
Contract:Lori Kolbow
2 Fen Oak Court
Madison, WI 53718
Phone: 608-877-7158
Email: lkolbow@atcllc.com

Madison Metropolitan Sewerage District
Contact: Eric Hjellen
1610 Moorland Road
Madison, WI 53713
Phone: 608-222-1201 Ext. 348
Cell: 608-347-3613
Email: erich@madsewer.org

Windstream
Contact:Jim Kostuch
13935 Bishops Drive
Brookfield,WI 53005
Phone: 262-792-7938
Email: james.kostuch@windstream.com

Facilities located within the project limits are as follows:

Level 3 Communications

Contact:
Mark Dechant/Dave Peterson
411 East Wisconsin Avenue
Milwaukee, WI 53202
Phone: 414-426-1857/608-212-8795
Email: mark.dechant@level3.com/dave.peterson@level3.com

Level 3 Communications has a buried telephone line that runs east to west located to the south of the WSOR (Union Pacific) railroad tracks. Within the project limits bound by S. Brearly Street on the west and S. Baldwin Street on the east, the line is located approximately 20 feet south of the existing tracks. Level 3 also has buried fiber optic that runs along the north side of the WSOR (Union Pacific Railroad).

Conflicts with this facility are not anticipated with this phase of the project.

AT&T
Contact: Carol Anason
316 E. Washington Ave. Rm 607
Madison, WI 53703
Phone: 608-252-2385
Email: ca2624@att.com

AT&T has a buried telephone drop that was abandoned along with overhead facilities as a part of the first phase of Central Park. This telephone line may be encountered during excavation of the walls for the skate park.

SECTION 105.13 ORDER OF COMPLETION

The order of doing the work is subject to the review of the City. Prior to beginning construction, the Contractor shall submit to the City a detailed construction schedule showing the sequence and anticipated dates of all construction operations, as well as a Staging/Phasing Plan for approval by the City. The sequence of scheduled operations shall coordinate with the Central Park Phase 1B project and may be modified by the City to accommodate specific needs.

SECTION 105.18 PRECONSTRUCTION MEETING

Before starting the work at the project site, a pre-construction meeting will be held at the project site to review schedules, establish procedures for handling shop drawings and other submissions, establish procedures for processing Applications for Payment, establish a working understanding between the

parties as to the project, and to discuss project details. Present at the meeting will be representatives of the City of Madison, the Consultant, and a representative of the General Contractor and all the sub contractors.

Weekly progress meetings are anticipated and the Contractor shall coordinate and lead these meetings. Contractor shall have subcontractors at these meetings that are either doing work or will be doing work within the next two weeks in order to be involved in project discussions.

SECTION 107.12 RAILROAD – HIGHWAY GRADE SEPARATIONS AND APPROACHES, NEW RAILROAD CROSSINGS, AND OPERATIONS ON RAILROAD RIGHT-OF-WAY

The company representative who may be consulted by Bidders and Contractors with regard to railroad requirements is Ben Meighan of the Wisconsin & Southern Railroad (WSOR) at (608)-243-9129 x 4201. Notice must be given to Ben Meighan at least 72 hours prior to working within twenty-five feet (25') of the railroad tracks. The Contractor shall obtain authorization of the WSOR to work within twenty-five feet (25') of the railroad tracks prior to any work being done. Any time that work is being done within twenty-five (25') of the track, a WSOR flag person must be present.

It shall be the responsibility of the Contractor to compensate the Railroad for the flag person requirements. Prior to any work within twenty-five feet (25') of the Railroad Tracks, the Contractor shall provide WSOR an estimate of the time required to perform the necessary work within twenty-five feet (25') of the Railroad Tracks and the Contractor shall pre-pay WOSR an estimate cost for compensation for a flag person based on the estimate time required to perform all work within twenty-five feet (25') of the tracks at the current hourly rate of compensation charged by WSOR for a flag person. In the event the pre-paid amount for the flag person compensation exceeds the actual cost required for the compensation of the flag person, any excess pre-paid amount will be refunded to the contractor. In the event that the actual cost for compensation of the flag person exceeds the pre-paid estimate, the Contract shall submit an additional pre-payment for the estimate additional cost for compensation of a flag person, prior to any work continuing within twenty-five feet (25') of the tracks.

SECTION 108.2 PERMITS

The City of Madison has submitted a DNR Water Resources Application for Projects Permits (WRAPP) to obtain coverage under the Construction Site General Permit No. WI-S067831-4 for construction site erosion control as the disturbed area is more than one (1) acre. In addition to the WRAPP, a City of Madison Erosion Control permit will be obtained and weekly inspections shall be completed by City Staff.

The Contractor shall meet the conditions of the City permit by properly installing and maintaining the erosion control measures as shown on the plans, specified in these Special Provisions, or as directed by the Engineer or his designees. This work will be paid for under the appropriate contract bid items.

The City's obtaining of these permits is not intended to be exhaustive of all permits that may be required to be obtained by the Contractor for construction of this project. It shall be the responsibility of the Contractor to identify and obtain any other permits needed for construction.

It is expected that the Contractor will be required to obtain a dewatering permit. There is known PAH soil and groundwater contamination located in this area. Due to the contaminated nature of the site, it is anticipated that all dewatering shall be discharged to the sanitary sewer system. The Contractor shall obtain a Permit to Discharge to the sanitary sewer for the contaminated water from any Type I or Type II dewatering.

SECTION 109.2: PROSECUTION OF THE WORK

Construction work shall begin within seven (7) calendar days after the date appearing on the mailed notice to do so that was sent to the Contractor. Construction work shall be carried on at a rate so as to secure full completion within the contract times outlined in Section 109.7, the rate of progress and the time of completion being essential conditions of this Agreement.

The fixed, agreed upon, liquidated damages for failure to complete all work within the contract, unless otherwise specified in this section, shall be calculated in accordance with Article 109 of the Standard Specifications. The Contractor shall limit workdays from 7:00 am to 7:00 pm, Monday – Friday, unless approved by the Engineer in writing.

SECTION 109.7: TIME OF COMPLETION

Work cannot start on this contract until after the "Start to Work" letter has been received. Work on the Skate Park – Central Park, Madison project is anticipated to start on or around 03/16/15 and construction shall be completed by 08/19/2015.

BID ITEM 10911 – MOBILIZATION

DESCRIPTION

Work under this item shall include all costs associated with mobilization of the Contractor to the site. Parking of equipment, storage of materials, and staging shall be allowed within construction limits and as shown on plans. Construction staging shall occur in the area as identified by the plan. THE CONTRACTOR MAY NOT DRIVE OR STORE EQUIPMENT ON ANY PORTION OF THE PARK OUTSIDE THE CONSTRUCTION LIMITS AS SHOWN ON PLANS.

A job trailer is not required, but if the Contractor chooses to place a job trailer within the project limits, the Contractor shall receive written approval of proposed trailer location from the Engineer. All costs associated with a job trailer shall be included in BID ITEM 10911 - Mobilization per the City of Madison Standard Specifications for Public Works Construction.

METHOD OF MEASUREMENT

Mobilization shall be measured and paid as a lump sum.

BASIS OF PAYMENT

Mobilization shall be measured as described above and shall be paid for at the contract price which shall be full compensation for all work, materials, tools, equipment, labor, and incidentals required to complete the work as set forth in the description.

BID ITEM 20101 – EXCAVATION CUT

Under this item, all areas within the project limits shall be graded to the finished grades, lines, and details less an allowance for topsoil, pavement, base, and structures. This work shall also include removal and disposal of surface and base course and unsuitable materials, and maintaining such work in a finished condition until acceptance.

During excavation, industrial fill shall be encountered in the project limits. This work shall conform with the requirements of Article 201 of the City of Madison's Standard Specifications for Public Works Contracts, and pertinent parts of the Wisconsin Administration Code (Department of Natural Resources Environmental Investigation and Remediation of Environmental Contamination, Chapters NR 700-736), as shown on the plans, and as supplemented herein.

During excavation activities, soils contaminated with polycyclic aromatic hydrocarbons (PAHs), and heavy metals will be encountered within the project limits (201 S. Ingersoll Street). This area has undergone extensive environmental remediation efforts and both areas have been closed with residual soil and/or groundwater contamination under approval of the WDNR. A condition for their closure is that all residual contamination be capped indefinitely into the future with two feet of clean fill to provide an adequate direct contact barrier. For the purposes of this contract, soils contaminated with PAHs and/or heavy metals are referred to as 'industrial fill', as indicated in the plans.

Per the *Soil Cover Modification Request and Materials Management Plan, March 2012*, contaminated soil may remain on-site covered by a 2-foot-thick clean soil cap, consisting of 1.5 feet of clean fill and 0.5 feet of topsoil. In areas with paved surfaces, the topsoil may be omitted and the depth of clean fill will vary depending on the proposed overlaying pavement structure. It is the City's goal to maximize the reuse of contaminated soils on-site, thereby minimizing the quantity of soil that must be disposed of at a landfill. The *Soil Cover Modification Request and Materials Management Plan, March 2012* will be made available for viewing on the City's bidding website: http://www.cityofmadison.com/business/pw/contracts/openforBid.cfm

Within the project limits, an existing 2-foot cap of topsoil and clean fill covers the entire site. Beneath this clean cap there are isolated zones of petroleum-contaminated soils at the west end of the site, and the rest of the site is assumed to be contaminated with industrial fill.

During excavation activities below the existing 2-foot soil cap, the Contractor shall expect to encounter soil contaminated with PAH, heavy metals. Site workers taking part in activities that will result in the reasonable probability of exposure to safety and health hazards associated with hazardous materials shall have completed health and safety training that meets the Occupational Safety and Health Administration (OSHA) requirements for Hazardous Waste Operations and Emergency Response (HAZWOPER), as provided in 29 CFR 1910.120. The Contractor shall prepare a site-specific Health and Safety Plan, and develop, delineate and enforce the health and safety exclusion zones for each contaminated site location as required by 29 CFR 1910.120. The Contractor shall submit the site-specific health and safety plan and written documentation of up-to-date OSHA training to the Engineer prior to the start of work. All costs associated with the health and safety plan shall be incidental to construction.

CONSTRUCTION METHODS

During excavation and grading activities, the Contractor will encounter two classes of soil:

- *Uncontaminated Clean Soil and Topsoil* – Uncontaminated clean soil and topsoil currently make up the 2-ft clean cap within the entire project limits. Excavation into this cap or topsoil stripping may be required for general site grading, retaining wall installation, fence post bases, or utility work in this area. On-site reuse of this clean material is required, at the direction of the Engineer. Clean soil and topsoil shall be used to satisfy the 2-foot clean cap required upon completion of the project.

- *Industrial Fill* – Industrial fill contaminated with PAHs and metals is assumed to be present within the project limits. Industrial fill soils are currently covered by two feet of clean fill and topsoil. All excavated industrial fill is considered suitable as general fill material, beneath the 2-ft clean soil cap. Such soils shall be reused on-site to the fullest extent possible.

During excavation, clean soil and topsoil suitable and approved for reuse shall be piled in an orderly manner a sufficient distance from the banks of the excavation to avoid overloading and to prevent slides or cave-ins. Erosion control at and around the stockpile shall be considered incidental to bid items for Excavation Cut.

The Contractor shall take all necessary efforts to minimize the quantity of contaminated soil excavated and maximize its reuse on-site as general fill. The City reserves the right to suspend the Contractor's operations if those operations are deemed to be generating unreasonable quantities of contaminated soil due to over excavation, soil mixing, improper handling or disposal methods or other unacceptable practices.

METHOD OF MEASUREMENT

Excavation Cut shall be paid for at the contract unit bid price per CY as accepted.

BASIS OF PAYMENT

The contract price for Bid Item 20101 shall be payment in full for all equipment, tools, labor and incidentals necessary to complete the work of excavation and related work.

BID ITEM 20201 - FILL BORROW

MATERIALS

The existing project site has an existing two (2) foot layer of clean fill which satisfies the *Soil Cover Modification Request and Materials Management Plan*. The finish grade is either equal to or above the existing ground elevation. In pervious areas, Fill Borrow does not include material to restore or re-establish the existing two (2) foot layer. In impervious areas, a two (2) foot layer of clean material is not required per the *Soil Cover Modification Request and Materials Management Plan* and reuse of excavated material from below the existing cap is assumed.

METHOD OF MEASUREMENT

Fill Borrow shall be paid for at the contract unit bid price per CY.

BASIS OF PAYMENT

The contract price for Bid Item 20201 listed above shall be payment in full for all equipment, tools, labor and incidentals necessary to complete the work of fill borrow and related work.

ARTICLE 203 – REMOVAL OF MICELLANEOUS STRUCTURES

SECTION 203.2 DISPOSING OF MATERIALS

The Contractor shall comply with Section 203.2 of the City of Madison Standard Specifications for Public Works Construction with regard to salvaging castings.

BID ITEM 20701 – TERRACE SEEDING

DESCRIPTION
Work under this item shall include fine grading of the topsoil – whether it is extra topsoil brought in to the project or existing topsoil redistributed on site - to the grades shown on the plans, seed bed preparation and seeding the lawn areas adjacent to each project as shown on the plans, or as directed by the Engineer. The seed mixture shall be Sun Terrace Mix, installed per the City of Madison Standard Specifications for Public Works Construction.

Contractor to note - the Engineer is to be called to inspect and approve the finish grade prior to seeding and mulching. The Contractor will be paid for as-built quantities measured in place.

METHOD OF MEASUREMENT

Terrace Seeding shall be measured and paid for by the square yard.

BASIS OF PAYMENT

Terrace Seeding shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, materials, labor, tools, equipment, disposal, and incidentals required to complete the work as set forth in the description. Unless there is a significant change, no payment shall be given for changes in quantities listed in proposal.

ARTICLE 210 – EROSION CONTROL

NOTICE TO CONTRACTOR

Supplement Article 210 of the City of Madison Standard Specifications for Public Works Construction with the following:

Prior to leaving the contaminated site, wash machinery and ensure that the machinery is free of all soil and other substances that could possibly contain contaminated material. The contractor is responsible for all vehicles that enter the contaminated site including but not limited to construction equipment, and maintenance, subcontractor, and delivery vehicles.

In the event that a rain event is in the forecast the contractor shall take proper measures to protect from runoff and contamination the portions of the site that have material for the clean soil cap installed. The contractor shall consider long range forecasts extending over weekends and holidays when implementing such erosion control measures.

BID ITEM 21001 – EROSION CONTROL PLAN AND IMPLEMENTATION

Supplement Article 210.1 (a) of the City of Madison Standard Specifications for Public Works Construction with the following:

Submit an Earthwork Construction Sequencing Plan (ECSP) to the Engineer in conjunction with the Erosion Control Implementation Plan at or before the preconstruction meeting for review and approval. The ECSP shall include the construction phasing for all earthwork excavation and grading work.

BID ITEM 21002 - EROSION CONTROL INSPECTION

DESCRIPTION

Work under this item shall conform to Article 210.1(b) Erosion Control Inspection. It should be noted that the Contractor is also required to perform inspections on both **WEEKDAYS AND WEEKENDS** as it relates to rain events in accordance with Article 210.1(b) and as stipulated in the included permits.

Per Article 210.1(b), the Contractor shall provide an erosion control inspection report via email indicating the project status to the Engineer. The Contractor shall submit the email report within 12 hours of the end of the rain day.

METHOD OF MEASUREMENT

Erosion Control Inspection shall be measured per inspection for the completed work as described above.

BASIS OF PAYMENT

Erosion Control Inspection shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, materials, tools, equipment, labor, driving, placement, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 21011 - CONSTRUCTION ENTRANCE

The Contractor shall provide a construction entrance for the skate park. There will be no additional compensation for the Contractor in the event that the Construction Entrance needs to be relocated during construction. There will be no additional payment for clear stone and shall be considered incidental to the bid item for Construction Entrance. The Contractor is responsible for maintaining the Construction Entrance throughout construction and for removal, restoration and/or repair of any damaged areas within

the immediate limits of the entrance, including curb and gutter, sidewalk and pavement, which shall be considered incidental to the Construction Entrance bid item.

BID ITEM – 21061 EROSION MATTING, CLASS 1, URBAN TYPE A

DESCRIPTION

Work under this item shall include all work, materials, labor, and incidentals required to install Erosion Matting, Class 1, Type A on areas as shown on the plans.

The Contractor shall note that special care with anchorage devices shall be required so as to not injure users of the park. Anchorage devices for the mat are required to be a product identified on the Wisconsin Department of Transportation Erosion Control Product Acceptability List (PAL) under the category of "Anchoring Devices for Class I, Urban Erosion Mat. Anchorage devices shall be completely biodegradable, and photobiodegradable or metal anchorage devices or will not be allowed. Materials deemed to present a hazard from splintering or spearing will not be approved, including solid wood devices.

Photobiodegradable matting is not allowed.

Erosion Matting, Class I Urban Type A installed correctly with correct anchorage, staple pattern, and overlap shall be paid at the contract price. To verify the staple pattern, the Contractor shall provide to the City a Manufacturer's recommended staple pattern for the type of matting installed.

Trimming of the Erosion Matting, Class I Urban Type A required to accommodate existing tree locations shall be considered incidental to this bid item.

MATERIALS

Matting shall be organic and biodegradable. Mat anchoring devices shall also be biodegradable.

METHOD OF MEASUREMENT

Erosion Matting, Class I Urban Type A shall be measured by the plan square yard quantity as listed in the proposal page.

BASIS OF PAYMENT

Erosion Matting, Class I Urban Type A shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, materials, tools, equipment, labor, hauling, placement, and incidentals required to complete the work as set forth in the description.

BID ITEM 21064 - EROSION MATTING, CLASS 1, TYPE B ORGANIC

DESCRIPTION

Work under this item shall include all work, materials, labor, and incidentals required to install Erosion Matting, Class 1, Type B Organic as shown in the plans. Center the roll of matting along the flow line of the ditch or swale.

METHOD OF MEASUREMENT

Erosion Matting, Class I, Type B Organic shall be measured by the plan square yard quantity as listed in the propos

BASIS OF PAYMENT

Erosion Matting, Class 1, Type B Organic shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, materials, tools, equipment, labor, hauling, placement, and incidentals required to complete the work as set forth in the description.

ARTICLE 502 – TRENCH EXCAVATION, BEDDING, AND BACKFILL

Excavation Cut
Excavation associated with Article 502, Trench Excavation, Bedding, and Backfill should comply with the requirements and procedures under Bid Item 20101, Excavation Cut.

Dewatering
It is advised that the Contractor visit the site prior to bidding to determine the type of trench protection and dewatering that will be necessary. It is anticipated that with the high groundwater table, that dewatering will be necessary with Point wells. Placing a pump in the trench will be considered Type I Dewatering which is considered incidental to the pipe installation.

Due to the contaminated nature of the site, it is anticipated that all dewatering shall be discharged to the sanitary sewer system. The Contractor shall obtain a permit per Section 108.2 of these special provisions to discharge to the sanitary sewer for the contaminated water from any dewatering, which requirements include removing all sediment or fines larger than the #200 sieve prior to discharge to the sanitary sewer system.

If pumping is expected to last beyond the contract work period called for in these specifications, dewatering wells will not be allowed in pavement area. If dewatering equipment (pumps/ hoses) is in the street pavement area during the time periods beyond the contract work period, liquidated penalties in accordance with Article 109.9 will be assessed to the Contractor.

BID ITEM 50202 – TYPE II DEWATERING

Due to the high ground water level the Contractor may be required to perform Type II dewatering by use of points/wells with pump rates greater than or equal to 70 gallons per minute. If Type II Dewatering is required the Contractor shall comply with all the provisions of the City of Madison Standard Specifications regarding this bid item and shall obtain any required permitting from Wisconsin Department of Natural Resources prior to the installation of any Type II Dewatering system.

Due to the contaminated nature of the site, it is anticipated that all dewatering shall be discharged to the sanitary sewer system. The Contractor shall obtain a Permit per Section 108.2 of these special provisions to Discharge to the sanitary sewer for the contaminated water from any dewatering, which requirements include removing all sediment or fines larger than the #200 sieve prior to discharge to the sanitary sewer system(s). If Type II Dewatering extends past 3 months from the start of the dewatering activities additional approvals may be required by Madison Metropolitan Sewerage District (MMSD) and the City of Madison and a new permit may be required.

The Contractor shall be responsible for all coordination with MMSD and all fees and taxes associated with dewatering activities.

BID ITEM 90000- CONSTRUCTION SURVEYING

DESCRIPTION

The Contractor shall be responsible for surveying and staking all lines and grades, contours and grade points, to the elevations shown on the plans or as field changes directed by the Engineer. An AutoCAD (.dwg) file will be provided upon request. The Contractor shall be responsible for configuring the file to a usable format in order to create nodes, alignments, or other useful data to facilitate surveying and staking.

The Contractor shall use the established horizontal and vertical control points as provided by the City of Madison. The Contractor shall run a level circuit for the project in order to check for accuracy. If GPS is used to establish vertical and horizontal control, the Contractor shall provide a check on accuracy by checking established control locations. If vertical control is established using GPS, the vertical control must be distributed across the site using conventional level circuits.

The horizontal survey data is in Wisconsin County Coordinate System-Dane Zone, NAD83 (1997) datum. Vertical survey data has been referenced to NAVD 88.

The Madison Parks Division will be checking accuracy of all staking in order to provide quality control. The Contractor shall contact City of Madison Parks Surveyor Dan Rodman at 209-7012 at least 48 hours prior to proof all sub and finished grades.

METHOD OF MEASUREMENT

Construction Surveying shall be measured as lump sum as completed in the field.

BASIS OF PAYMENT

Construction Surveying, as measured above shall be full compensation for all materials, labor and incidentals necessary to complete the work as described above.

BID ITEM 90001 – REMOVE FENCE POST AND CONCRETE BASE

DESCRIPTION

Work under this bid item shall consist of removal and disposal of fence posts and concrete bases in accordance with Article 203 of the City of Madison Standard Specifications.

CONSTRUCTION

The Contractor shall remove the fence posts and concrete bases to the nearest post as noted on the plans.

The Contractor is responsible for disposing of all materials associated with this removal.

METHOD OF MEASUREMENT

Remove Fence Post and Concrete Base shall be measured by the EACH removed and accepted.

BASIS OF PAYMENT

Remove Fence Post and Concrete Base is full compensation for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

BID ITEM 90002 – REMOVE AND SALVAGE FENCE PANELS

DESCRIPTION

Work under this bid item shall consist of removing salvaging fence panels in accordance with Article 203 of the City of Madison Standard Specifications.

CONSTRUCTION

The Contractor shall remove the fence panels such that the panels are intact and the structural integrity of the panel is maintained for reuse. The Contractor shall transport and unload the fence panels at the

Parks Division maintenance yard located at the Yahara Hills Golf Course, 6701 Hwy 12 & 18 East, Madison, WI 53718.

The contractor is responsible for storing and transporting the panels such that they are protected from damage and/or theft until they are received by the City of Madison.

The Contractor shall utilize salvaged fence panels and associated hardware to complete the work in Bid Item 90008 – Fence.

METHOD OF MEASUREMENT

Remove and Salvage Fence Panels shall be measured by the EACH removed and accepted.

BASIS OF PAYMENT

Remove and Salvage Fence Panels is full compensation for furnishing all labor, tools, equipment, including items necessary to ensure proper storage and transportation of the panels, and incidentals necessary to complete the work.

BID ITEM 90003 – 3-INCH D.I. STORM SEWER

DESCRIPTION

This work shall consist of furnishing and installing 3-Inch D.I. Storm Sewer in accordance with Part 5 of the City of Madison Standard Specifications.

MATERIALS

Pipe, fittings, tees, and wye materials shall conform to Section 702.2 of the City of Madison Standard Specifications.

CONSTRUCTION

Construction shall conform to Section 504.3 of the City of Madison Standard Specifications.

METHOD OF MEASUREMENT

3- Inch D.I. Storm Sewer shall be measured per linear foot from center-of-structure to center-of-structure unless otherwise noted.

BASIS OF PAYMENT

3-Inch D.I. Storm Sewer is full payment for all labor, equipment, and materials necessary to furnish and install ductile iron storm sewer. No additional compensation will be provided for washed stone or crushed gravel, structure backfill, ductile iron fittings, tees, and wyes and is incidental to the installation of ductile iron storm sewer.

BID ITEM 90004 – 6 INCH PVC STORM SEWER

DESCRIPTION

This work shall consist of furnishing and installing 6-Inch PVC Storm Sewer in accordance with Part 5 of the City of Madison Standard Specifications

MATERIALS

Furnish Zurn 415-B Floor Drain and Strainer as specified in the plans.

Pipe, fittings, tees, and wye materials shall conform to Section 504.2 of the City of Madison Standard Specifications.

CONSTRUCTION

Construction shall conform to Section 504.3 of the City of Madison Standard Specifications.

Install Zurn 415-B floor drain and strainer according to the manufacturer. Protect drain from collecting construction debris with inlet protection until concrete or landscaping surrounding the drain is established.

METHOD OF MEASUREMENT

6 Inch PVC Storm Sewer shall be measured per lineal foot from center-of-structure to center-of-structure unless otherwise noted.

BASIS OF PAYMENT

6 Inch PVC Storm Sewer shall be payment for all labor, equipment, and materials necessary to furnish and install PVC storm sewer. No additional compensation will be provided for washed stone or crushed gravel, backfill material, Zurn Z415-B-100 Floor Drain and Strainer, drain inlet protection, PVC fittings, elbows, tees, and wyes and shall be incidental to the installation of PVC Storm Sewer.

BID ITEM 90005 –CONNECT TO EXISTING WATER SERVICE

DESCRIPTION

Work under this bid item consist of making the connection of the new water service to the existing water service in accordance with Part 7 of the City of Madison Standard Specifications.

CONSTRUCTION

Contractor shall be responsible for locating and making connection of new water service to existing water service. The location of the existing water service is shown as approximate and should be verified by the Contractor. Cut and abandon the existing water main at the connection location and provide a mechanical threaded cap with a 2-inch corporation. Abandon existing curb stop and box. Connect the 2 inch copper water service to the 2 inch corporation.

METHOD OF MEASUREMENT

Connect to Existing Water Service shall be measured as a LUMP SUM unit upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Connection to Existing Water Service shall be payment for all labor, equipment, and materials necessary to connect to the existing water service. Any excavation, caps, fittings, corporations, and couplings shall be considered incidental to connecting to the existing water service.

BID ITEM 90006 – SUMP PUMP SYSTEM AND APPURTANENCES

DESCRIPTION

Work under this bid item shall include all labor, equipment, and incidentals required to complete the installation of a sump pump system and the associated appurtanences as outlined in the detail drawings and manufacturer's specifications, or as directed by the Engineer

MATERIALS

Furnish a Hydromatic Model S3SD with 1150 rpm submersible pump with 1 horsepower or an approved equal.

Furnish base elbow and guide rail removal system including stainless steel rails, stainless steel chain, riser pipe, check valve, and stainless steel screen for vent pipe.

Furnish a concrete pad for vent pipe in accordance with Article 301 of the City of Madison Standard Specifications.

Furnish control panel cabinet and components as shown in the plans.

CONSTRUCTION

Install the pump system, appurtenances, panel, and components per the manufacturer's recommendations.

METHOD OF MEASUREMENT

Sump Pump System and Appurtenances shall be measured as a LUMP SUM item as installed and accepted.

BASIS OF PAYMENT

Sump Pump System and Appurtenances shall include all labor, equipment, and materials necessary to furnish and install the sump pump system; including the submersible pump, backfill material, base elbow and guide rail removal system, stainless steel rails, riser pipe, check valve, vent pipe and concrete pad for vent pipe, stainless steel screen, control panel, and all components as shown in the plans. Cabinet and concrete pad for the cabinet is included in the Electrical Specifications.

BID ITEM 90007 – 4X4 LIFT STATION

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to furnish and install 4x4 Lift Station in accordance with Article 507 of the City of Madison Standard Specifications.

MATERIALS

Furnish materials to construct 4x4 lift station in accordance with Article 507 of the City of Madison Standard Specifications.

Furnish and install aluminum access hatch as shown on the plans.

CONSTRUCTION

Construct 4x4 lift station according to City of Madison Standard Detail 5.7.3 for a 4x4 SAS.

METHOD OF MEASUREMENT

4x4 Lift Station shall be measured per each as accepted and installed.

BASIS OF PAYMENT

4x4 Lift Station shall be payment for all labor, equipment, and materials necessary to furnish and install 4x4 Lift Station and access hatch including structure backfill and all fittings and parts necessary to install the access hatch.

BID ITEM 90008 – FENCE

DESCRIPTION

This special provision describes furnishing and installing decorative fencing.

MATERIALS

Furnish concrete for footings that is in accordance to the pertinent requirements of Part 3 of the Standard Specifications.

Fence materials shall include:

1. Salvaged fence panels from Bid Item 90002 – Remove and Salvage Fence Panels, and associated mounting hardware.
2. Steel posts shall be 3" round, 11 gauge with flush mount cap. Fence panels, posts, and all hardware shall be powder coat finish, color black.

Submit shop drawings to the City of Madison for review, including location of fence, posts, rails, details, hardware, and accessories. Indicate materials, dimensions, sizes, and finishes of components. Verify layout information for fences shown on Drawings in relation to property survey, existing utilities, and field measurements.

CONSTRUCTION

Locate all existing and new underground facilities prior to layout of the fence. Adjust the post layout as necessary to avoid underground conflicts. Layout all end posts and obtain approval of the layout from the engineer prior to beginning construction of footings and posts.

Install the fence in accordance to the construction details and the manufacturer's recommended installation instructions.

METHOD OF MEASUREMENT

Fence shall be measured by the linear foot, acceptably completed. The measurement will be made from center of end post to center of end post.

BASIS OF PAYMENT

Payment is full compensation for furnishing all fence materials, including fasteners; locating underground facilities; layout of the fence posts; excavation of post holes; furnishing and placing concrete; installing the fence; site restoration; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

BID ITEM 90009 – HAULING AND DISPOSAL – INDUSTRIAL FILL

This item describes the hauling or disposal of material that is contaminated with PAHs and/or heavy metals that is referred to as 'industrial fill'. Work under this bid item shall include all labor, equipment, materials, and fees and/or taxes necessary to haul and dispose of industrial-fill soils.

Testing for soil and groundwater contamination was completed by the City for locations within this project where excavation is required. Analytical results indicate that PAH and heavy-metal contaminated soils, referred to here as 'industrial fill', are present throughout the site, as explained further under **Bid Item 20101 Excavation Cut**. All non-petroleum-contaminated soils are assumed here to be contaminated with industrial fill excluding the existing 2-foot clean soil cap.

The Contractor shall take all necessary efforts to maximize the reuse of industrial fill as general fill materials below the 2-foot clean soil cap in pervious areas or below the impervious surface elsewhere on the site. Off-site disposal of industrial fill shall not exceed the bid quantity without written preapproval from the Engineer.

The City has already extensively tested the soil and will provide these analytical reports to the Contractor to assist with proper waste profiling. The City has coordinate with local landfills and anticipates that this material will be considered suitable as alternate daily cover material.

If the Contractor's selected landfill requires additional testing for this designation, the Contractor shall be responsible for acquiring the necessary waste profile including additional TCLP testing requirements if needed.

Laboratory reports and sampling maps will be available on the City's bidding website. It is anticipated that the material will pass landfill TCLP testing requirements.
http://www.cityofmadison.com/business/pw/contracts/openforBid.cfm.

The Contractor shall use loading and hauling practices that are appropriate to prevent any spills or releases of industrial fill. Prior to transport, the Contractor shall sufficiently dewater soils designated for off-site approved disposal facility so as not to contain free liquids.

For further information regarding previous investigation and remediation activities at these sites contact:

Name:	Richard Lyster
Company:	MSA Professional Services, Inc.
Address:	1230 South Boulevard
Phone:	(608) 356-2771
Fax:	(608) 356-2770
e-mail:	dlyster@msa-ps.com

MEASUREMENT

Hauling and Disposal – Industrial Fill Contaminated Material will be measured by the TON, as measured at the landfill. The City has assumed 2 Tons/CY for this item. The Contractor shall provide landfill tickets as verification of tons hauled.

BASIS OF PAYMENT

Hauling and Disposal – Industrial Fill Contaminated Material, measured as stated above, is full compensation associated with handling, hauling material offsite to a proper disposal facility, and fees associated with the disposal. The Contractor shall be responsible for paying the taxes and disposal and tipping fees associated with this item.

BID ITEM 90010 – CONSTRUCTION SKATE PARK- GENERAL FEATURES

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to complete the Skate Park construction per specifications as specified in Appendix A and as shown in plans. General Contractor Skate Park construction includes all work shown on the plans which includes but not limited to flat work grading, ornamental fencing and swing gate, metal fabricated ledge and stair edging, concrete

slabs with smooth trowel finish, cast in place stairs and grind ledges, thickened edges, turndown walls, free standing metal fabricated rails, granite ledges, retaining walls, integral color concrete, seat walls, etc.

MATERIALS

Refer to Appendix A.

CONSTRUCTION

Refer to Appendix A.

METHOD OF MEASUREMENT

The installation of the Skate Park as described above and in the plans shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Skate Park construction shall be paid for at the contract unit bid price per LUMP SUM.

BID ITEM 90011 – CONSTRUCTION SKATE PARK- SKATE PARK SPECIALTY CONTRACTOR FEATURES

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to complete the Skate Park construction per specifications as specified in Appendix A and as shown in plans. Specialty Contractor Skate Park construction includes all work shown on the plans which includes but not limited to bowl grading, cast-in-place banks, shotcrete banks and bowl transitions, pool coping and tile, bowl coping, roller ledge feature, etc.

MATERIALS

Refer to Appendix A.

CONSTRUCTION

Refer to Appendix A.

METHOD OF MEASUREMENT

The installation of the Skate Park as described above and in the plans shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Skate Park construction shall be paid for at the contract unit bid price per LUMP SUM.

BID ITEM 90012 – SKATE PARK ELECTRICAL

DESCRIPTION

Work under this bid item shall include all labor, equipment, and materials necessary to complete the Electrical per City of Madison Standard Specifications for Public Works Construction, additional specifications as specified in Appendix B and as shown in plans. Electrical work includes all furnishing and supplying all electrical work shown on the plans which includes but not limited to electrical lines, lighting, lighting bases, electrical boxes, hand holes, etc.

MATERIALS

Refer to Appendix B.

CONSTRUCTION

Refer to Appendix B.

METHOD OF MEASUREMENT

The installation of the Electrical as described above and in the plans shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Electrical shall be paid for at the contract unit bid price per LUMP SUM.

BID ITEM 90100 ADD ALTERNATE A – ROLLER EDGE FEATURE

DESCRIPTION

Work under this item shall include all work, materials, equipment, and incidentals required to construct the roller edge feature at the location shown on the plans. The roller edge feature shall be constructed at the dimensions given in the plans and in accordance with Appendix A of the Special Provisions.

Base bid condition of Add Alternate A - Roller Edge Feature is Detail 2/2P-5.1 Flatbottom Concrete Slab.

METHOD OF MEASUREMENT

Add Alternate A – Roller Edge Feature as described above and in the plans shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Add Alternate A – Roller Edge Feature shall be paid for at the contract unit bid price per LUMP SUM.

BID ITEM 90200 ADD ALTERNATE B – GRANITE LEDGES AND SEATING WALLS

DESCRIPTION

Work under this item shall include all work, materials, equipment, and incidentals required to construct the granite ledges and seating walls at locations shown on the plans. The granite ledges and seating walls shall be constructed at the dimensions given in the plans and in accordance with Appendix A of the Special Provisions.

Base bid condition of Add Alternate B Granite Ledges is Detail 8/SP-5.2 Large Grind Ledge with 6” Steel Stair Edging per Details 3 & 4 /SP5.3.

Base bid condition of Add Alternate B Seating Walls is Detail 1/SP 5.1Top Deck Concrete Slab.

METHOD OF MEASUREMENT

Add Alternate B – Granite Ledges and Seating Walls as described above and in the plans shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Add Alternate B – Granite Ledges and Flow Bowl Banked Extension shall be paid for at the contract unit bid price per LUMP SUM.

BID ITEM 90300 ADD ALTERNATE C - INTEGRAL COLOR CONCRETE

DESCRIPTION

Work under this item shall include all work, materials, equipment, and incidentals required to construct integral color concrete at locations shown on the plans. The integral color concrete shall be constructed at the dimensions given in the plans and in accordance with Appendix A of the Special Provisions.

Base bid condition of Add Alternate C – Integral Color Concrete is standard grey concrete per Appendix A.

Contractor shall provide a 12”x12” sample of each color identified in the plans. Allow a minimum of two weeks to obtain written approval from the City before confirming concrete mix order.

Mockups: After initial color approval, cast mockups of full-size sections of integrally colored concrete pavement to demonstrate typical joints, surface finish, texture, color, and standard of workmanship. For accurate color, the quantity of concrete mixed to produce the sample should not be less than 3 cubic yards (not less than 1/3 the capacity of the mixing drum on the ready mix truck) and should always be in full cubic yard increments. Excess material shall be discarded according to local regulations. Build mockups in the location and of the size indicated directed by the City Engineer. Notify the city seven days in advance of dates and times when mockups will be constructed. Obtain City’s written approval of mockups before starting construction.

Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

A separate design mix shall be provided for all areas to receive integrally colored concrete. Integrally colored concrete mix(es) shall not contain fly ash. Consider admixture recommendations for concrete mix design, however, mix design must also conform to the standard specifications. Submit the concrete mix design to the City of Madison for review.

Excess concrete material from mockups can be used elsewhere per the Engineers approval if the mix design meets the standard requirements of the secondary use.

MATERIALS

Contractor shall provide suggested manufacturer for Architect/Engineer approval. Integral-mix colored admixture shall conform to the requirements of ACI 303.1, ASTM C979, ASTM C494 and ASSHTO M194. Admixture shall be a single-component, colored, water-reducing, set-controlling admixture containing no calcium chloride with coloring agents that are lime-proof and ultra-violet resistant. The admixture shall be factory formulated and packaged in cubic yard dosage increments, not multiple additives and pigments added separately into the mix.

Color: As shown in the plans pending final approval of samples. Raw pigments are not an equivalent and may not be substituted.

All surfaces shall be cured uniformly. The concrete shall never be covered with plastic sheeting.

Curing compound shall comply with ASTM C309 and be of same manufacturer as colored admixture, for use with integrally colored concrete. All placing, finishing, curing, joint sealing, and patching shall be in accordance with the admixture manufacturer's recommendations.

CONSTRUCTION

Color Pigment. Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

METHOD OF MEASUREMENT

Add Alternate C – Integral Color Concrete as described above and in the plans shall be measured, as one unit and payment shall be made upon completion, in place, and accepted in accordance with the contract.

BASIS OF PAYMENT

Add Alternate C – Integral Color Concrete shall be paid for at the contract unit bid price per LUMP SUM.

APPENDIX A
CONSTRUCTION SKATE PARK

TABLE OF CONTENTS

SECTION 03100
CONCRETE FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION:

Provide formwork and accessories for construction of cast-in-place concrete work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 03200-Concrete Reinforcement
B. Section 03300-Cast-in-Place Concrete
C. Section 03360-Shotcrete

1.03 QUALITY ASSURANCE:

A. Design Criteria: Conform to ACI 347-68, Chapter I.

B. Allowable Tolerances: Conform to ACI 347-68, 2.4.

1.04 STORAGE OF MATERIALS:

A. Store materials on and under protective sheeting.

1.05 COORDINATION:

A. Notify responsible trades of schedules of concrete pours to allow time for installation and coordination.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Forms:

1. Flatwork: Nominal 2" thick No. 2 Common Southern Yellow Pine or steel forms.

2. Vertical and Custom Work: Exterior grade Standard Douglas Fir (or equal plywood), minimum three ply, one smooth side sufficiently thick to sustain loads, or steel forms.

B. Form Oil: Non staining, paraffin-base oil having a specific gravity of between 0.8 and 0.9.

C. Form Ties: Bolts, rods, or patented devices having tensile strength of 3000 lbs., adjustable length, free of lugs which would leave a hole larger than 5/8" diameter and having a full one-inch depth of break-back.

PART 3 - EXECUTION

3.01 CONSTRUCTION AND ERECTION:

A. Construct forms in accordance with ACI 347-68.

B. Build forms to shapes, lines and dimensions of detailed members of concrete construction. Set to line and grade, brace and secure to withstand placing of concrete and maintain their shape and position.

SECTION 03100
CONCRETE FORMWORK

C. Construct forms with care to produce concrete surfaces without unsightly or objectionable form marks in exposed concrete surfaces.

D. Thoroughly clean surfaces of form material and remove nails before reuse. Do not reuse damaged or worn forms. Coat contact surfaces of forms with non-staining form oil prior to placing metal reinforcement.

E. Immediately before placing concrete, clean forms of chips, sawdust, and debris. Immediately after removal of forms, remove form ties, wires, and defects and patch.

3.02 INSERTS AND ACCESSORIES:

A. Make provisions for required installation of accessories, bolts, hangers, sleeves, anchor slots and inserts cast in concrete. Obtain suitable templates or instructions for installation of items. Place expansion joints where detailed and required.

3.03 REMOVAL OF FORMS AND SHORING:

A. Remove forms and shores in accordance with ACI 347-68.

3.04 CLEANUP:

A. Remove debris and trash.

END OF SECTION 03100

SECTION 03200
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 DESCRIPTION:

Provide steel reinforcement for cast-in-place concrete.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

Section 03100-Concrete Formwork
Section 03200-Cast-in-Place Concrete
Section 03200-Shotcrete

1.03 DELIVERY AND STORAGE:

A. Stack reinforcing steel in tiers. Mark each length, size, shape and location. Maintain reinforcement free of dirt, mud, paint or rust.

1.04 REFERENCE STANDARDS:

A. American Concrete Institute (ACI):

1. ACI 315-80, Manual of Standard Practice for Detailing Reinforced Concrete Structures.
2. ACI 318-77, Building Code Requirements for Reinforced Concrete.

B. American Society for Testing and Materials (ASTM - latest editions):

1. ASTM A233, Mild Steel Arc Welding Electrodes.
2. ASTM A615, Deformed Billet-Steel Bars for Concrete Reinforcement.
3. ASTM A706, Low-Alloy Steel Deformed Bars for Concrete Reinforcement.

C. Concrete Reinforcing Steel Institute (CRSI): Manual of Standard Practice, latest edition.

D. American Welding Society (AWS): Reinforcing Steel Welding Code, D12.1-75, including latest revisions.

1.05 SUBMITTALS:

A. Shop Drawings: Indicate complete reinforcing method for each concrete member including materials, sizes, bends, dimensions, stirrup spacing, and placing details not shown on drawings.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Steel Reinforcement: Deformed billet steel, ASTM A615, Grade 60. Minimum 75% Recycled Product.

B. Welded Steel Reinforcement: Deformed low-alloy steel, ASTM A706, carbon content not exceeding 0.30% and manganese content not exceeding 0.60%. Identify and tag with manufacturer's heat identification number.

2.02 FABRICATION:

A. Fabricate to sizes, shapes, and lengths detailed in accordance with requirements of ACI 318-71 and ACI 315-65.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Accurately place reinforcing steel in accordance with drawings. Thoroughly clean reinforcement of any coating which would reduce bonding. Do not heat, cut, or bend bars without Landscape Architect's approval. Do not splice reinforcement at points of maximum stress. Stagger splices in adjacent bars and provide a minimum overlap of 30-bar diameters at splices unless specifically noted otherwise on Drawings.

B. Securely saddle tie intersections with No. 18 ga. black annealed wire. Rigidly secure reinforcement in place. Provide concrete coverage as shown on Drawings.

3.02 WELDING REINFORCEMENT:

A. Weld deformed steel reinforcement bars in strict accordance with AWS 12.1, using recommended pre-heat temperature and electrode for type of steel being welded.

B. Do not weld steel reinforcement bars without proper heat identification of bars.

3.03 CLEANUP:

A. Remove debris and trash resulting from specified work.

END OF SECTION 03200

SECTION 03300
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 RELATED INFORMATION

03100-Concrete Formwork
03200-Concrete Reinforcement
03360-Shotcrete
03370-Concrete Curing

1.02 SUBMITTALS:

A. Design of Concrete Mixes:

1. Contractor shall be responsible for and pay for design of concrete mixes. Design of concrete mixes shall be performed by a Testing Laboratory selected by Contractor. Design methods to be in accordance with ACI 318-71.

2. Make three trial mixes using aggregate proposed.

3. Make advance tests of trial mixes with proposed materials. Test four cylinders in accordance with ASTM C-39 at 7 days and 28 days. Do not place concrete on project until laboratory reports and breaks of confirmation cylinders indicate that proposed mixes will develop required strengths.

4. Check mix design and revise, if necessary, wherever changes are made in aggregate or in surface water content of aggregate or workability of concrete. Slump shall be the minimum to produce workable mix. Laboratory shall prescribe minimum quantity of water.

5. If Portland Cement reducers or other additives are used, submit control mix design without reducers or additives as well as mix exactly proposed to be used. Submit W.R. Grace Co. recommendations for retarder and shrinkage compensation of slab on grade.

6. Sample of Workmanship: Provide onsite, minimum 48”x48” sample (not part of finished project) of each flatwork finish.

7. Forward two copies of design mix to Skate Park Architect for approval.

8. Soils Investigation Report.

1.04 COORDINATION:

Notify responsible trades of schedules of concrete pours so as to allow adequate time for installation of work and inspection prior to pour. Obtain all materials and other miscellaneous steel items to be cast into concrete. Verify all measurements and layout to avoid any delay.

1.05 QUALITY ASSURANCE

A. Concrete Testing

Prepare samples by each application crew using the equipment, materials and mix proportions proposed for the Project.

B. Acceptance: Final acceptance of the shotcrete will be based upon Skate Park Architects approval.

C. Regulatory Requirements: Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work.

D. Contractor Samples:

1. Contractor shall prepare a sample for each paving type indicated on Drawings, prior to installation.

2. Samples shall be completed to the satisfaction of the aggregates, texture, color, and finishes to Landscape Architect. These samples will become the standard of quality by which future paving samples and work will be judged.

3. Samples to remain on-site and be protected during the course of construction, as a means to compare work in progress.

E. Concrete Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

F. Contractor Experience: Provide evidence to indicate successful experience in providing cast-in-place concrete work for skate parks similar in scope to that specified herein and can demonstrate successful experience through past project documentation and references.

G. Required Experience: Contractor or Subcontractor must have completed (3) public concrete skate park facilities with a minimum size of 10,000 square feet, in the last 5 years. Parks must be open and in good operating condition for at least one year.

H. Evidence of Experience: Contractor or Subcontractor shall submit to Skate Park Architect satisfactory documentation of the aforementioned experience and qualification. If a Contractor cannot provide this information or if it is unverifiable, work under this Section and any other related Section cannot be completed by Contractor. This submission must contain the Project Name & Location, Owner's Name & Contact Information, Architect Name & Contact Information, Project Size, Contract Value, Completion Date, and Supervisor and/or Key Personnel responsible for this experience for each of the qualifying projects.

I. Safety and Performance Guidelines: Comply with all safety and performance requirements and all applicable references as specified in the ASTM F2480 Standard Guide for In-ground Skate Parks.

J. ACI Requirements: Meet all requirements of ACI 506, Chapter 13, Wet Method and Chapter 5, Shotcrete Crew.

1.05 REFERENCE STANDARDS:

A. ACI 211.1-81 - Recommended Practice for Selecting Proportions for Normal-Weight Concrete.

B. ACI 211.3-81 - Recommended Practice for Selecting Proportions for Lightweight Concrete.

C. ACI 301-73 - Specifications for Structural Concrete for Buildings.

D. ACI 305-77 - Recommended Practice for Hot Weather Concreting.

E. ACI 306-72 - Recommended Practice for Cold Weather Concreting.

F. ACI 318-77 - Building Code Requirements for Reinforced Concrete.

G. ASTM C33 - Concrete Aggregates.

H. ASTM C94 - Ready-Mixed Concrete.

I. ASTM C143 - Test for Slump of Portland Cement Concrete.

J. ASTM C150 - Portland Cement.

K. ASTM C260 - Air-Entraining Admixtures for Concrete.

L. ASTM C494 - Chemical Admixtures for Concrete.

M. ASTM C618 - Fly Ash and Raw or Calcined Natural Pozzalans for Use in Portland Cement Concrete.

1.06 JOB CONDITIONS:

A. Environmental Conditions: Submit plan to monitor wind velocity, relative humidity, temperature, and concrete temperature in order to maintain specified maximum rate of evaporation.

B. Coordination:

1. Coordinate schedules of concrete pours to allow adequate time for installation of other related work.

2. Verify that anchor bolts and other embedded steel items to be cast into concrete are properly placed.

3. Coordinate size and location of mechanical and electrical equipment concrete pads.

4. Coordinate earthwork and soils report requirements with placement requirements.

5. Coordinate with form-work and finishes sections to provide finish floor levelness and flatness as specified herein. Slope to drains at grades and percent slope shown on contract documents.

PART 2 – PRODUCTS

2.01 MATERIALS:

A. Portland Cement: ASTM C-150, Type II.

B. Fine Aggregate: Clean, hard, durable, uncoated natural sand, free from silt, loam or clay, meeting requirements of ASTM C-33.

C. Coarse Aggregate: Class ll-Hard durable, un-coated crushed limestone meeting requirements of ASTM C-33. Unless otherwise noted in aggregate size 1” minimum, No. 5, 56 or 57. Base rock shall conform to local City code.

D. Water: Potable.

E. Admixture: Cement-dispersing, water-reducing compound, ASTM C-494, Type A, as made by Master Builders, Sika, or Gifford-Hill Co., or equal. Depending upon weather conditions at time of placing, ASTM C-494, Type D (water-retarding) or Type E (water-reducing, accelerating) may be used if approved by Owner's representative.

SECTION 03300
CAST-IN-PLACE CONCRETE

2.02 PROPORTIONS AND MIXING:

A. Proportions and Design: In accordance with approved mix design.

Min. All. Comp.
Strength (28 days)

4000 PSI

B. Admixture: No admixtures without approval. Introduce admixtures in quantities and according to methods recommended by admixture manufacturer. Add air-entraining agent to concrete as scheduled.

C. Slump: Not to exceed 3 ½"

D. Mixing: Ready mixed concrete in accordance with ASTM C-94. Do not transport or use concrete after 1-1/2 hours have elapsed from time of initial mixing. Supplier of transit-mixed concrete shall have a plant of sufficient capacity, and adequate transportation facilities to assure continuous delivery at required rate, to provide continuous concrete placement throughout a pour.

E. Grout and Dry Pack: Non-Shrink, Non-Metallic: U.S. Grout Corp. "Five Star Grout" ASTM C-877, C-191, and C-109, 5,000 PSI.

2.03 CURING MATERIALS:

A. Water: Domestic Quality, clear and potable with no chemical content.

B. Sheet Material: ASTM C171. Moisture loss maximum .055 g/ cm sq.
Color: White.

C. Curing Compounds: Cure/ Seal: Curecrete Ashford Formula or equal.

PART 3 – EXECUTION

3.01 INSPECTION:

A. Inspect subgrade, forms, reinforcing steel, pipes, conduits, sleeves, hangers, anchors, inserts, and other work required to be built into concrete and report any discrepancies. Notify City's Representative at least 5 working days in advance of scheduled pour.

B. Correct unsatisfactory work prior to pouring concrete.

C. Remove rubbish from formwork immediately prior to placing concrete.

3.02 INSTALLATION:

A. Placing Concrete:

1. Convey and place concrete allowing no separation of ingredients in accordance with ACI 304 and as specified below.

2. Maximum height of concrete free fall: five-feet.

3. Regulate rate of placement to maintain plasticity and flow into position.

4. Deposit concrete continuously until panel or section is completed.

5. Place concrete in horizontal layers 18" maximum thickness.

B. Consolidation:

1. Use mechanical vibrating equipment for consolidation.

2. Vertically insert and remove hand-held vibrators at 18" o.c. for 10 to 15 seconds.

3. Do not use vibrators to transport concrete in forms.

4. Provide vibrators with minimum speed of 8000 RPM and with amplitude to consolidate effectively.

5. Thoroughly consolidate concrete and work around reinforcement, embedded items and into corners of forms. Thoroughly consolidate layers of concrete with previous layers.

C. Construction Joints:

1. Unless otherwise shown on Drawings, each footing, wall, beam, and slab shall be considered as a single unit of operation and shall be monolithic in construction.

2. Where construction joints are absolutely unavoidable, locate joints at or near quarter points of spans where approved by City's Representative and/or shown on plan.

3. Saw Cut joints, Expansion Joints and Key Joints as detailed in contract documents

D. Expansion Joint Fillers:

1. Refer to Drawings for Expansion Joint locations and details.

2. Finish joint material flush with concrete surface.

3. Finish:

Smooth Trowel. (See sample requirements under submittals).

4. Cracking:

Cracking from inadequate curing is not allowed. Sawcut joints and construction joints are shown on drawings. Contractor may, with approval of City's Representative, recommend and detail other joints required to prevent cracking.

3.03 CLEAN UP:

Clean all debris, excess concrete and miscellaneous material associated with work.

END OF SECTION 03310

SECTION 03360
SHOTCRETE

PART 1 - GENERAL

1.01 SCOPE

Provide sprayed-on concrete (concrete conveyed into place by air pressure through a flexible tube or gun with controlled nozzle) referred to herein as shotcrete, complete as shown and as specified by skate park specialty contractor.

1.02 RELATED INFORMATION

03100-Concrete Formwork
03200-Concrete Reinforcement
03300-Cast-In-Place Concrete
03370-Concrete Curing

1.03 QUALITY ASSURANCE

A. Standards: Comply with the requirements of the current edition of the following codes and standards, except as herein modified:

UBC-Uniform Building Code

American Concrete Institute (ACI): 506, Chapter 13, Wet Method. Chapter 5, Shotcrete Crew.

American Society for Testing Materials (ASTM):

1. Concrete Testing:

   a. Prepare test specimens by each application crew using the equipment, materials and mix proportions proposed for the Project. Owner's Representative shall observe preparation of test panels noting placement of shotcrete by applications crew.

   b. Test panel shall be at least 48 in. x 48 in. with the same reinforcement as in the structure. (Specimens shall be 6 in. thick. A Testing Agency shall take at least three (3) cores from the specimen and test them in accordance with ASTM C42).

2. Secure production samples of materials at plants and stockpiles during construction and test for compliance with Specifications.

3. Test strength of the shotcrete as work progresses as follows:

   a. Cut cores from the structure and test in accordance with ASTM C42. A set of three (3) cores shall be taken not less than once each shift nor less than one for each 50 cubic yards of shotcrete placed through the nozzle. Cores shall be soaked in water for a minimum of 40 hours before testing.

   b. When the length of a core is less than twice the diameter, apply the correction factors given in ASTM C42 to obtain the compressive strength of individual cores. The average compressive strength of three cores taken from the structure, representing a shift or 50 cubic yards of

shotcrete, must equal or exceed 0.85f'c with no individual core less than 0.75f'c.

B. Acceptance: Final acceptance of the shotcrete will be based upon the results obtained from cores. Use of data obtained from impact devices will not be permitted for final acceptance of the shotcrete. However, these data may be useful for determining uniformity of the shotcrete.

1.04 QUALITY ASSURANCE

A. Concrete Testing:
Prepare samples by each application crew using the equipment, materials and mix proportions proposed for the Project.

B. Acceptance: Final acceptance of the shotcrete will be based upon Skate Park Architect's approval.

C. Regulatory Requirements: Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over Work.

D. Contractor Samples:

1. Contractor shall prepare a sample for each paving type indicated on Drawings, prior to installation.

2. Samples shall be completed to the satisfaction of the aggregates, texture, color, and finishes to Skate Park Architect.

3. These samples will become the standard of quality by which future paving samples and work will be judged.

4. Samples to remain on-site and be protected during the course of construction, as a means to compare work in progress.

E. Concrete Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

F. Contractor Experience: Provide evidence to indicate successful experience in providing cast-in-place concrete work for skate parks similar in scope to that specified herein and can demonstrate successful experience through past project documentation and references.

G. Required Experience: Contractor or Subcontractor must have completed (3) public concrete skate park facilities with a minimum size of 10,000 square feet, in the last 5 years. Parks must be open and in good operating condition for at least one year.

H. Evidence of Experience: Contractor or Subcontractor shall submit to Skate Park Architect satisfactory documentation of the aforementioned experience and qualification. If a Contractor cannot provide this information or if it is unverifiable, work under this Section and any other related Section cannot be completed by Contractor. This submission must contain the Project Name & Location, Owner's Name & Contact Information, Architect Name & Contact Information, Project Size, Contract Value, Completion Date, and Supervisor and/or Key Personnel responsible for this experience for each of the qualifying projects.

I. Safety and Performance Guidelines: Comply with all safety and performance requirements and all applicable references as specified in the ASTM F2480 Standard Guide for In-ground Skate Parks.

J. ACI Requirements: Meet all requirements of ACI 506, Chapter 13, Wet Method and Chapter 5, Shotcrete Crew.

1.05 SUBMITTALS

A. Manufacturer's Data: Current printed specifications with application and installation instruction for proprietary materials including concrete admixtures.

B. Shop Drawings: Section and plan views showing all proposed construction joints.

C. Mix Design: Concrete mix proportions.

D. Concrete Samples: Representative samples of materials for materials testing, mix proportion testing, and finish. Provide on site, minimum (1) 48”x48” sample (not part of finished project) of shotcrete transition (7’ Radius).

1.06 DELIVERY, HANDLING, AND STORAGE

A. Properly deliver and handle materials to prevent contamination, segregation or damage to materials.

B. Store cement in weather tight enclosures to protect against dampness and contamination.

C. Prevent segregation and contamination of aggregates by proper arrangement and use of stockpiles.

D. Store admixtures properly to prevent contamination, evaporation, or other damage.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Portland Cement: ASTM C150, Type I or II, one brand only.

B. Fly Ash: ASTM C618

C. Normal Weight Aggregates: ASTM C33 and as herein specified.

1. Batch fine coarse aggregates separately to avoid segregation.

2. Aggregates shall be free from clay, mud, loam, or other deleterious substances.

3. Dune sand, bank run sand, and manufactured sand are not acceptable for fine aggregate.

4. Coarse aggregate shall be clean, uncoated, heavy media processed aggregate of crushed stone or river washed aggregate.

2.02 ACCESSORIES

A. Water: Fresh, clean, potable, and free of deleterious acids, mixing, and curing water, as available from Owner. Transport as required.

B. Admixtures: Use only accepted admixtures meeting the following requirements:

1. Chemical Admixtures: ASTM C494

2. Air-entraining Admixtures: ASTM C260

C. Expansion Joints: See Cast-In-Place Concrete - Section 03300.

2.03 PROPORTIONING AND DESIGN OF CONCRETE MIXES

A. Mix: Prepare design mix to achieve an in-place 28 day compressive strength of 4,000 pounds per square inch. Maximum aggregate size shall not exceed 3/8 inch. Unit weight of in-place shotcrete shall be 494 pounds per cubic yard. Use an independent Testing Agency acceptable to the Owner's Representative to prepare and report the proposed mix design.

B. Test Data: Submit for acceptance proportioning and test data from prior experience if available. If data from prior experience are not available or accepted, make and have tested specimens from three or more different mix proportions in accordance with pre-construction testing requirements of this Specification.

C. Strength: Selected mix proportions on the basis of compressive strength tests of specimens shall be cut from the shotcreted test panels not earlier than 5 days after shotcreting. For mix acceptance purposes, average core strengths shall be least equal to f'c for cores with L/D of 2.0. For cores with L/D between 1.0 and 2.0, use correction factors given in ASTM C42.

D. Review: Mix design shall be reviewed for acceptance by Owner's Representative.

2.04 CONCRETE APPLICATION EQUIPMENT

A. For Wet Mix Shotcrete:

1. Mixing Equipment: Capable of thoroughly mixing aggregate, cement and water in sufficient quantity to maintain continuous placement.

2. Ready-mixed Concrete: ASTM C94, except that it may be delivered to the site in the dry state if the equipment is capable of adding the water and mixing it satisfactorily with the dry ingredients.

3. Air Supply: Clean air adequate for maintaining sufficient nozzle velocity for parts of work, and for simultaneous operation of blow pipe for cleaning away rebound.

4. Delivery Equipment: Capable of discharging aggregate-cement-water mixture accurately, uniformly, and continuously through delivery hose.

PART 3 -EXECUTION

3.01 INSPECTION

A. Examination: Examine concrete formwork and verify that it is true to line and dimension, adequately braced against vibration, and constructed to permit escape of air and rebound but to prevent mortar leakage during shotcreting. Correct deficiencies.

B. Inspection: Inspect reinforcement steel and items to be embedded in concrete. Correct any deviations from the accepted shop drawings.

C. Notification: Notify other trades involved in ample time to permit the proper installation of their work. Cooperate in setting such work.

D. Existing Surfaces: Examine existing concrete surfaces for unsound material. Correct deficiencies.

3.02 PREPARATION FOR INSTALLATION OF CONCRETE

A. Forms: Use a form-coating material on removable forms to prevent absorption of moisture and to prevent absorption of moisture and to prevent bond with shotcrete.

3.03 CONCRETE BATCHING AND MIXING

A. Proportions: Mix proportions shall be controlled by weight batching. Contractor's Testing Laboratory shall maintain quality control records during shotcrete production and make those records available to Owner's Representative.

3.04 CONCRETE PLACEMENT

A. Placement: Use suitable delivery equipment and procedures that will result in shotcrete in place meeting the requirements of this Specification. Determine operating procedures for placement in, extended distances, and around any obstructions where placement velocities and mix consistency must be adjusted.

B. Placement Techniques: Do not place shotcrete if drying or stiffening of the mix takes place at any time prior to delivery to the nozzle.

1. Control thickness, method of support, air pressure, and/or water content of shotcrete to preclude sagging or sloughing off. Discontinue shotcreting or provide suitable means to screen the nozzle stream if wind or air currents cause separation of the nozzle stream during placement.

2. Hold nozzle as perpendicular to surface as work will permit, to secure maximum compaction with minimum rebound.

3. In shotcreting walls, begin application at bottom. Ensure work does not sag.

4. Layering:

a. Build up layers by making several passes of nozzle over work area.

b. Broom or scarify the surface of freshly placed shotcrete to which, after hardening, additional layers of shotcrete are to be bonded. Dampen surface just prior to application of succeeding layers.

c. Allow each layer of shotcrete to take initial set before applying succeeding layers.

d. Use radial templates to insure exact radii from flat bottom of skate park, deck and coping. Template shall be fabricated from steel or ¾" Plywood. Contractor to submit shop drawing for all templates to be used on the project.

5. Placement Around Reinforcement:

a. Hold the nozzle at such distance and angle to place materials behind reinforcement before any material is allowed to accumulate on its face. In the

dry-mix process, additional water may be added to the mix when encasing reinforcement to facilitate a smooth flow of material behind the bars.

b. Test to ascertain if any void or sand pockets have developed around or behind reinforcement by probing with an awl or other pointed tool after the shotcrete has achieved its initial set, by removal of randomly selected bars, or coring or other suitable standards.

3.05 REMOVAL OF SURFACE DEFECTS IN CONCRETE

A. General: Remove and replace shotcrete which lacks uniformity, exhibits segregation honeycombing, or lamination, or which contains any dry patches, slugs, voids, or pockets. Remove defective areas.

B. Sounding: Sound work with hammer for voids. Remove and replace damaged in-place shotcrete.

3.06 CONCRETE FINISH

A. Form Finish: Smooth form finish shall consist of a smooth, hard, uniform texture with a minimum of seams.

B. Unformed Finish: Float finish on unformed face of wall shall consist of a smooth, hard, uniform surface of smooth steel trowel. level to a tolerance of 1/10 inch in 10 feet when tested with a 10-foot steel straightedge placed on the surface horizontally, and vertically with radial template with the appropriate radii.

3.07 CONCRETE JOINTS

A. Cleaning: The entire joint shall be thoroughly cleaned and wetted prior to the application of additional shotcrete.

B. Reinforcement: Make joints perpendicular to the main reinforcement. Continue reinforcement across joints.

3.08 CONCRETE CURING AND PROTECTION

A. Initial Curing: Immediately after finishing, keep shotcrete continuously moist for at least 24 hours. Use one of the following materials or methods:

1. Ponding or continuous sprinkling.

2. Cover and keep continuously wet.

B. Final Curing: Provide additional curing immediately following the initial curing and before the shotcrete has dried. Use one of the following materials or methods:

1. Continue the method used in initial curing.

2. Materials conforming to "Specifications for Sheet Materials for Curing Concrete", (ASTM C 171).

C. Duration of Curing: Continue for the first 7 days after shotcreting or until specified strength is obtained. During the curing period, maintain shotcrete above 40 degrees and in a moist condition. Prevent rapid drying at the end of the curing period.

SECTION 03360
SHOTCRETE

END OF SECTION 03360

SECTION 03370
CONCRETE CURING

PART 1 - GENERAL

1.01 DESCRIPTION:

Provide curing material for cast-in-place concrete flatwork, and shotcrete walls (radial and angled).

1.02 RELATED WORK SPECIFIED ELSEWHERE:

Section 02514-Concrete Formwork
Section 03200-Concrete Reinforcement
Section 03300-Cast-In-Place Concrete
Section 03360-Shotcrete

1.03 SUBMITTALS:

A. Submit samples and detailed technical data of products proposed for curing use for Owner's Representative's approval.

B. Submit certification that materials meet specification requirements.

1.04 DELIVERY AND STORAGE:

Deliver materials in original sealed containers with seal and labels intact. Store in dry place. Use materials out of original containers only.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Chemcure R90 W.B. or approved equal

B. Polyethylene Film conforming to AASHTO M-171

C. Curing Agent: ASTM C 309, non-staining, water or soy based, low or no Volatile Organic compound emitting, compatible with color admixture.

PART 3 - EXECUTION

3.01 CURING:

A. Protect concrete surfaces against rapid drying. Keep moist for necessary amount of time to reach concrete strength and inhibit moisture loss after placing.

B. Curing Method: Spread curing paper over surfaces, lapping ends and sides a minimum of four inches, and maintain in place by use of suitable weights for necessary duration, then remove.

3.02 CLEANUP:

A. Remove debris and trash resulting from specified work.

END OF SECTION 03370

SECTION 05500
METAL FABRICATIONS

PART 1 - GENERAL

1.01 SCOPE: Provide labor, materials and equipment for the installation of the Site Metal Work as shown on the drawings and as specified.

1.02 RELATED SECTIONS

A. Section 03100 - Concrete Formwork
B. Section 03200 - Concrete Reinforcement
C. Section 03300 - Cast-In-Place Concrete
D. Section 03360 - Shotcrete

1.03 QUALITY ASSURANCE

A. Qualifications of Fabricators: Experienced in fabrication of miscellaneous metals.

B. Qualifications of Welders: Welding shall be done only by certified welding operators currently qualified according to AWS D1.1.

C. Qualifications of Workmen: Provide at least one person who shall be present at all times during execution of this portion of the Work, and who shall be thoroughly familiar with the type of materials being installed, the referenced standards, the requirements of this Work, and who shall direct all work performed under this Section. Welds indicated may be made in shop or field with approval.

D. Reference Standards:

1. Steel: Meet requirements of AISC "Specifications of Architecturally Exposed Structural Steel," latest edition.

2. Welding: Meet requirements of AWS "Structural Welding Code," D1.1, latest edition.

1.04 SUBMITTALS

A. Shop Drawings:

1. Submit shop drawings for all custom fabricated items under this section. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners and accessories. Indicate welded connections using standard AWS welding symbols.

2. Verification: Verify all measurements at the job. Show dimensions, sizes, thicknesses, gauges, finishes, joining, attachments, and relationship of work to adjoining construction. Where items must fit and coordinate with finished surfaces and/or constructed spaces, take measurements at site and not from drawings.

3. Coordination: Coordinate with work of Cast-In-Place Concrete Section.

B. Samples: Required for all Coping and Edging of concrete work. Submit finish metal samples for final finish selection. Submit prior to delivery to site. Attach name, address of manufacturer and/or supplier to each sample.

1.05 DELIVERY, STORAGE AND HANDLING

A. Coordination:

SECTION 05500
METAL FABRICATIONS

1. Coordinate with work of Cast-In-Place Concrete Section.

B. Storage of Materials:

Materials which are stored at the project site shall be above ground on platforms, skids, or other supports. Protect steel from corrosion. Store other materials in a weather-tight and dry place until ready for use.

C. Protection:

1. Use all means necessary to protect miscellaneous metals before, during and after installation and to protect the installed work and materials of all other trades.

2. Protect any adjacent materials or areas below from damage due to weld splatter or sparks during field welding.

D. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

1.06 JOB CONDITIONS

A. Examine existing conditions in which the work is to be installed. Notify Owner's Representative if conditions are unacceptable to begin work.

B. Do not proceed with the work until unsatisfactory conditions have been corrected.

1.07 COORDINATION

A. Templates and Built-ins: Furnish all anchors, fastenings, sleeves, setting templates and layouts affecting or installed in the work of other trades.

B. Delivery: Where items must be incorporated or built into adjacent work, deliver to trade responsible for such work in sufficient time that progress of work is not delayed. Be responsible for proper location of such items.

1.08 JOB SITE SAMPLE

A. Contractor to provide fabricated, on site sample of metal item(s), complete with approved finish, for review by Owner and Owner's Representative before fabrication of total quantities. Any fabrication of project item(s) by Contractor before Owner review and approval is strictly at his own risk and expense.

B. Approved sample(s) shall be used as the standard of workmanship and shall remain on site until work has been completed and approved by the Owner's Representative.

PART 2 - PRODUCTS

2.01 MATERIALS

A. 2" ROUND STEEL PIPE COPING-O.D. 2.375, Thickness .154: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).

B. 3" ROUND STEEL PIPE COPING-O.D. 2.375, Thickness .154: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).

C. 1”X1” SQUARE STEEL TUBING- O.D. 2”X2”, Thickness .188: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).

E. 2”X2” SQUARE STEEL TUBING- O.D. 2”X2”, Thickness .188: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).

F. 2”x6” STEEL PIPE COPING: O.D. 2”X4”, Thickness .188: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).

G. 2”X2” ANGLE IRON STAIR NOSING- O.D. Thickness .188: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).

H. 4”X4” ANGLE IRON BENCH/ LEDGE PROTECTION- O.D. Thickness .188: ASTM A-53, Type E or S (Fy=35 ksi), Grade B or A-501 (Fy=36 ksi).

I. WELDING RODS: E-70 series low hydrogen unless otherwise noted on drawings.

J. STEEL PIPE COPING: Roll pipe to conform with top radius curve of each bowl and ledge as shown on drawings. Refer to drawings for relational tolerance to concrete surface and other steel.

2.02 GROUT: Non-shrinking Master Builder's "Embedco", Conrad Sovig's "Metel-Mxs Grout", Sonneborn's "Ferrolith G Redi-Mixed Grout"' or approved equal.

2.03 OTHER MATERIALS: All other materials, not specifically described but required for a complete and proper installation of miscellaneous metals, shall be new, first quality of their respective kinds and subject to the approval of the Owner’s Representative.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. Inspection:

Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Discrepancies:

In the event of discrepancy, immediately notify the Owner's Representative.

3.02 COORDINATION

A. General: Carefully coordinate with all other trades to insure proper and adequate interface of the work of other trades with the work of this Section.

B. Delivery: Insure timely delivery of all metal fabrications which must be installed in other work so as not to delay that work.

3.03 INSTALLATION

A. General:

SECTION 05500
METAL FABRICATIONS

Install metal fabrications in strict accordance with the Drawings, the approved Shop Drawings, and all pertinent codes, regulations and standards.

B. Obtain Owner's Representative review prior to site cutting or making adjustments which are not part of scheduled work.

C. Install items square and level, accurately fitted and free from distortion or defects.

D. Align all metal fabrications as shown on the Drawings, and where vertical or horizontal members are shown, align them straight, plumb and level within a tolerance of one in 500.

E. Make provisions for erection stresses by temporary bracing. Keep work in alignment.

G. Replace items damaged in course of installation.

H. Perform field welding in accordance with AWS D1.1

I. After installation, grind and touch-up field welds.

3.04 WORKMANSHIP

A. Layout: Set all work plumb, true, rigid, and neatly trimmed out. Miter corners and angles of exposed molding and frames unless otherwise noted.

B. Fitting: Fit exposed connections accurately together to form tight hairline joints.

C. Labor: Employ only workmen specifically skilled in such work.

3.05 FABRICATION

A. Shop assemble in largest practicable dimensions, making members true to length so assembling may be done without fillers.

B. Provide all surfaces free of file marks, dents, hammer marks, wire edges or any unsightly surface defects.

3.06 ATTACHMENTS AND REINFORCEMENTS

A. Do all cutting, shearing, drilling, punching, threading, tapping, etc., required for site metalwork or for attachment of adjacent work. If applicable, drill or punch holes; do not use cutting torch.

3.07 OTHER CONNECTORS: Make all permanent connections in ferrous metal surfaces using welds where at all possible; do not use bolts or screws.

3.08 WELDING

A. Preparation: Remove all rust, paint, scale and other foreign matter.

B. Wire brush all flame-cut edges. Clamp members as required and alternate welds, all as necessary to prevent warping or misalignment.

C. Exposed Welds: Uniformly grind smooth (no tolerance) all welds normally exposed to view and fill in the finished work.

D. Faulty and Defective Welding: Chip out and replace all welding showing cracks, slag inclusion, lack of fusion, bad undercut or other defects ascertained by visual or other means of inspection. Replace and re-weld at no cost to Owner.

E. Field Welding:

1. Procedure: Comply with AWS code of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

2. Protection: Protect all adjacent surfaces from damage due to weld sparks, spatter, or tramp metal.

3.09 SURFACE TREATMENT AND PROTECTIVE COATINGS

A. Cleaning:

1. Thoroughly clean all mill scale, rust, dirt, grease and other foreign matter from ferrous metal prior to any galvanizing, or painting.

2. Conditions which are too severe to be removed by hand cleaning, shall be cleaned using appropriate methods for solvent cleaning, power tool cleaning and brush-off blast cleaning.

B. Exterior Ferrous Metal:

1. Grind smooth all welds, burrs, and rough surfaces. Clean and hot-phosphate treat completed assembly. Hot phosphate treatment not required on items which are not exposed in the finish work or on those items where size prohibits such treatment.

2. GALVANIZE ferrous metal items unless specified.

3. Indicate on Shop Drawings where treatment is proposed to be omitted, if any.

3.10 CLEAN-UP

A. Keep all areas of work clean, neat and orderly at all times. Keep paved areas clean during installation.

B. Clean up and remove all debris from the entire work area prior to Final Acceptance to satisfaction of Owner’s Representative.

END OF SECTION 05500

SECTION 05710
ORNAMENTAL METALS

PART 1 – GENERAL

1.1 SUMMARY

A. Work Included: Provide Fencing, Entry Gate and Signage Posts, complete, as shown and as specified.

B. Related Work:
1. Section 05510: Ornamental Metals – Skate Park
2. Section 03310: Cast-In-Place Concrete – Skate Park
3. Section 09900: Painting – Skate Park

1.2 REFERENCES

A. AWS - "Code for Arc and Gas Welding in Building Construction" of American Welding Society, AWS D1.0

B. ASTM - American Society for Testing and Materials

C. SSPC - Steel Structures Painting Manual, Vol. 2.

1.3 SUBMITTALS

A. Product Data: Manufacturers' catalog cuts and current printed specifications of the following:
1. Primer
2. Intermediate Coat
3. Finish Coats

B. Shop Drawings: Minimum 3/8 inch scale showing dimensions, sizes, thicknesses, gauges, finishes, joining, attachments, and relationship of work to adjoining construction.
1. Verification: Verify measurements at the job site. Where items must fit and coordinate with finished surfaces and/or constructed spaces, take measurements at site and not from drawings.
2. Coordination: Where concrete, or other materials must be set to exact locations to receive work, furnish assistance and direction necessary to permit other trades to properly locate their work.
3. Setting Diagrams for Welded Connectors, Concrete Inserts: Where required to receive work, show exact locations and furnish all such Drawings to the trades responsible for installing the connectors or inserts.
4. Catalogue Work Sheets: Show illustrated cuts of item to be furnished, scaled details and dimensions.

C. Samples:
1. Fencing: One (1) – 18 inch [45.72cm] long square tube painted per submittal spec.
2. Signage: One (1) – 12 inch [30.48cm] long round tube painted per submittal spec.

D. Certificate: Certification that painting has been done in strict compliance with paint manufacturer's current specifications.

1.4 QUALITY ASSURANCE

A. Welding:
1. All construction and testing per AWS codes and recommendations.

2. All structural welding shall be by welders holding current certificates validated by an independent lab & having current experience in type of weld called for. The contractor shall submit welding certificates for each welder prior to commencing the work.
3. All non-structural welding shall be by qualified welders with experience in type of weld called for.
4. Field Welds: Comply with AWS code of manual shielded metal-arc welding.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver fabricated units and components completely identified per Shop Drawings. No materials with defects or scratches on exposed finishes will be accepted.

B. Storage: Protect work at site from damage and from weather until installed and work has been accepted. Do not remove protective wrappings from shop-painted finishes until installation.

C. Handling: Disassemble units only as necessary for shipping and handling limitations.

D. Replacement: Replace damaged work at no cost to Owner.

1.6 SEQUENCING AND SCHEDULING

A. Acceptance: Do not install work of this section prior to acceptance by Owner's Representative of area to receive such work.

B. Coordination: Coordinate with the work of other sections to insure the following:
1. Templates and Built-ins: Furnish anchors, fastenings, sleeves, setting templates and layouts affecting or installed in the work of other trades so that work or progress of work is not delayed. Be responsible for proper location of such items.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Steel Tubing: ASTM A500, cold-formed, Grade A, welded or seamless.

B. Steel Pipe:
1. For Bending: ASTM A53, Type E or S, Grade A.
2. Straight: ASTM 120.

2.2 SPECIALLY FABRICATED PRODUCTS

A. Ferrous Metal Fence:
1. Square Tube Fencing and Signage Post: Mild steel with connections welded.
2. Pipe Railings: I.P.S. unless otherwise noted. Fabricate in largest sections practicable. Weld and grind shop joints. Conceal field joints with sleeves and pins.

B. Grout:
1. Type: Non-shrinking, non-staining grout.
2. Color: Match adjacent concrete paving.
3. Product: "Embeco 153" by Master Builder's, (216) 831-5500; "Metal-Mix Grout", by Conrad Sovig's, (415) 863-3803; "Ferrolith G Redi-Mixed Grout" by Sonneborn Building Products, (415) 889-9899 or (612) 835-3434 or "Upco Non-shrink", by Upco Co., (216) 881-0033, or equal.

2.3 FINISHES

A. Refer to Section 09900 – Painting

2.4 FABRICATION

A. Shop Assembly:
   1. Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly.
   2. Tolerances: Provide surfaces free of file marks, dents, hammer marks, wire edges or any unsightly surface defects.
   3. Bends, twists, open joints in finished members, and projecting edges or corners at connections not permitted.

B. Welding:
   1. Standards: Weld and grind shop joints per AWS Code D1.0. (ASTM A36 for structural steel.)
   2. Preparation: Remove rust, paint, scale and other foreign matter. Wire brush flame-cut edges. Clamp members as required and alternate welds, as necessary to prevent warping or misalignment.
   3. Exposed Welds: Uniformly make and ground smooth welds normally exposed to view in the finished work.
   4. Galvanized Units: Do not weld after fabrication.
   5. Faulty and Defective Welding: Chip out and replace welding showing cracks, slag inclusion, lack of fusion, bad undercut or other defects ascertained by visual or other means of inspection. Replace and re-weld at no cost to Owner.

C. Shop Factory/Finishing:
   1. Cleaning:
      a. Thoroughly clean mill scale, rust, dirt, grease and other foreign matter from ferrous metal prior to any painting.
      b. Conditions which are too severe to be removed by hand cleaning methods, shall be cleaned per SSPC "Surface Preparation Specifications", "Solvent Cleaning, SSPC SP-1"; "Power Tool Cleaning, SSPC-SP"; or "Brush-Off Blast Cleaning, SSPC-SP7" as required.
   2. Exterior Ferrous Metal:
      a. Grind smooth welds, burrs, and rough surfaces. Clean and hot-phosphate treat completed assembly. Hot phosphate treatment not required on items which are not exposed in the finish work or on those items where size prohibits such treatment.
      b. Shop coat ferrous metal items unless specified; use metal primer as specified.
      c. Indicate on shop drawings where treatment is proposed to be omitted, if any.

D. Painting:
   1. Refer to Section 09900 – Painting.

PART 3 – PART 3 EXECUTION

3.1 3.01 EXAMINATION

A. Condition of Surfaces: Inspect surfaces and layout to receive Fencing and report defects which would interfere with installation.

B. Acceptance: Starting work implies acceptance of surfaces as satisfactory.

3.2 PREPARATION

A. Layout: Verify entire layout. Set work plumb, true and rigid.

B. Fitting: Fit exposed connections accurately together to form tight hairline joints.

3.3 INSTALLATION

A. Attachments and Reinforcements:
   1. Do cutting, shearing, drilling, punching, threading, and tapping required for site metalwork or for attachment of adjacent work. Drill or punch holes; do not use cutting torch. Shearing and punching shall leave true lines and surfaces.
   2. Set fence posts and similar items shown or required to be set in core drilled hole with quick setting non-shrink grout or anchor cement. Provide approximately 1/4 inch [6.35mm] clearance around fence posts.
   3. Provide reinforcements for hardware and other miscellaneous attachments.

B. Field Welding:
   1. Procedure: Comply with AWS code of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.
   2. Protection: Protect adjacent surfaces from damage due to weld sparks, spatter, or tramp metal.

3.4 TOUCH-UP AND PROTECTION

A. Touch-up: Immediately after erection, clean field welds, bolted connections and abraded areas of shop paint. Paint exposed areas with same material to same dry-film thickness as used for shop painting.

B. Protection: Protect the work from damage or discoloration until acceptance of work.

3.5 3.05 CLEANING

A. Spills: Clean up over spill from installation. Do not use caustic chemicals to remove stains where adjacent surfaces may be damaged.

END OF SECTION 05710

SECTION 09900
PAINTING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section includes surface preparation and field painting of the following:

1. Miscellaneous exposed exterior items and surfaces.

B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Owner Representative will select from standard colors and finishes available.

1. Painting includes field painting of exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Finished metal surfaces include the following if used:

a. Stainless steel.
b. Bronze and brass.
c. Iron

2. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

D. Related Sections include the following:

1. Division 5 Section "Metal Fabrications" for shop priming ferrous metal.

1.03 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.

2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.

3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.

4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.

5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.04 SUBMITTALS

A. Product Data: For each paint system specified. Include block fillers and primers.

1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.

3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

1. After color selection, the City Representative will furnish color chips for surfaces to be coated.

C. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.

1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.

2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.

3. Submit Samples on the following substrates for the City Representative's review of color and texture only:

a. Ferrous Metal: Provide two 4-inch- (100-mm-) square samples of flat metal and two 8-inch- (200-mm-) long samples of solid metal for each color and finish.

D. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Owner Representatives and owners, and other information specified.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.

C. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.07 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 deg F (10 and 32 deg C).

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45 and 95 deg F (7.2 and 35 deg C).

C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1.08 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.

1. Quantity: Furnish the City with an additional 5 percent, but not less than 1 gal. (3.785 L) or 1 case, as appropriate, of each material and color applied.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.

2.02 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: Provide color selections made by the City's Representative.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the City Representative about anticipated problems using the materials specified over substrates primed by others.

3.02 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Provide barrier coats over incompatible primers or remove and re-prime.

2. Ferrous Metals: Clean un-galvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use

solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.

a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.

2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.

3. Use only thinners approved by paint manufacturer and only within recommended limits.

3.03 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the schedules.

2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

3. Provide finish coats that are compatible with primers used.

4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, covers, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

5. Sand lightly between each succeeding enamel, or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.

2. Omit primer on metal surfaces that have been shop primed and touchup painted.

3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.

2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturers recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

E. Fillers: Apply fillers at a rate to ensure complete coverage of pores filled.

F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags or other surface imperfections will not be acceptable.

H. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

1. After completing painting, clean paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.05 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Owner Representative.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

3.06 EXTERIOR PAINT SCHEDULE

A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.

1. Semi-gloss, Acrylic-Enamel Finish: 2 finish coats over a rust-inhibitive primer.

a. Primer: Rust-inhibitive metal primer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.3 mil.

1) Devoe: 13101 Mirrolac Rust Penetrating Metal Primer.
2) Fuller: 621-04 Blox-Rust Alkyd Metal Primer.
3) Glidden: 5205 Glid-Guard Tank & Structural Primer, Red.
4) Moore: IronClad Retardo Rust-Inhibitive Paint #163.
5) PPG: 6-208 Speedhide Interior/Exterior Rust Inhibitive Steel Primer.
6) P & L: S/D 1009 Suprime "9" Interior/Exterior Alkyd Metal Primer.

b. First and Second Coats: Semi-gloss, exterior, acrylic-latex enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mil.

END OF SECTION 09900

APPENDIX B
ELECTRICAL

TABLE OF CONTENTS

END TABLE OF CONTENTS

SECTION 26 05 00
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Requirements applicable to all Division 26 Sections. Also refer to Division 1 - General Requirements.

B. All materials and installation methods shall conform to the applicable standards, guidelines and codes referenced in each specification section.

1.2 SCOPE OF WORK

A. This Specification and the associated drawings govern furnishing, installing, testing and placing into satisfactory operation the Electrical Systems.

B. The Contractor shall furnish and install all new materials as indicated on the drawings, and/or in these specifications, and all items required to make his portion of the Electrical Work a finished and working system.

C. Description of Systems shall be as follows:

1. Electrical power system to and including light fixtures, equipment, motors, devices, etc.

2. Grounding system.

1.3 WORK SEQUENCE

A. All work that will produce excessive noise or interference with normal building operations, as determined by the Owner, shall be scheduled with the Owner. It may be necessary to schedule such work during unoccupied hours. The Owner reserves the right to determine when restricted construction hours are required.

1.4 QUALITY ASSURANCE

A. Contractor’s Responsibility Prior to Submitting Pricing/Bid Data:

1. The Contractor is responsible for constructing complete and operating systems. The Contractor acknowledges and understands that the Contract Documents are a two-dimensional representation of a three-dimensional object, subject to human interpretation. This representation may include imperfect data, interpreted codes, utility guides, three-dimensional conflicts, and required field coordination items. Such deficiencies can be corrected when identified prior to ordering material and starting installation. The Contractor agrees to carefully study and compare the individual Contract Documents and report at once in writing to the Architect/Engineer any deficiencies the Contractor may discover. The Contractor further agrees to require each subcontractor to likewise study the documents and report at once any deficiencies discovered.

2. The Contractor shall resolve all reported deficiencies with the Architect/Engineer prior to awarding any subcontracts, ordering material, or starting any work with the Contractor’s own employees. Any work performed prior to receipt of instructions from the Architect/Engineer will be done at the Contractor’s risk.

B. Qualifications:

1. Only products of reputable manufacturers as determined by the Architect/Engineer are acceptable.

2. All Contractors and subcontractors shall employ only workmen who are skilled in their trades. At all times, the number of apprentices at the job site shall be less than or equal to the number of journeymen at the job site.

C. Compliance with Codes, Laws, Ordinances:

1. Conform to all requirements of the City of Madison, Wisconsin Codes, Laws, Ordinances and other regulations having jurisdiction over this installation.

2. If there is a discrepancy between the codes and regulations and these specifications, the Architect/Engineer shall determine the method or equipment used.

3. If the Contractor notes, at the time of bidding, any parts of the drawings or specifications that do not comply with the codes or regulations, he shall inform the Architect/Engineer in writing, requesting a clarification. If there is insufficient time for this procedure, he shall submit with his proposal a separate price to make the system comply with the codes and regulations.

4. All changes to the system made after the letting of the contract to comply with codes or the requirements of the Inspector, shall be made by the Contractor without cost to the Owner.

5. If there is a discrepancy between manufacturer's recommendations and these specifications, the manufacturer's recommendations shall govern.

6. If there are no local codes having jurisdiction, the current issue of the National Electrical Code shall be followed.

D. Permits, Fees, Taxes, Inspections:

1. Procure all applicable permits and licenses.

2. Abide by all laws, regulations, ordinances, and other rules of the State or Political Subdivision where the work is done, or as required by any duly constituted public authority.

3. Pay all charges for permits or licenses.

4. Pay all fees and taxes imposed by State, Municipal, and other regulatory bodies.

5. Pay all charges arising out of required inspections by an authorized body.

6. Pay all charges arising out of required contract document reviews associated with the project and as initiated by the Owner or authorized agency/consultant.

7. Where applicable, all fixtures, equipment and materials shall be listed by Underwriter’s Laboratories, Inc. or a nationally recognized testing organization.

E. Examination of Drawings:

1. The drawings for the electrical work are completely diagrammatic, intended to convey the scope of the work and to indicate the general arrangements and locations of equipment, outlets, etc., and the approximate sizes of equipment.

2. Contractor shall determine the exact locations of equipment and rough-ins, and the exact routing of raceways so as to best fit the layout of the job.

3. Scaling of the drawings will not be sufficient or accurate for determining these locations.

4. Where job conditions require reasonable changes in arrangements and locations, such changes shall be made by the Contractor at no additional cost to the Owner.

5. Because of the scale of the drawings, certain basic items, such as junction boxes, pull boxes, conduit fittings, etc., may not be shown, but where required by other sections of the specifications or required for proper installation of the work, such items shall be furnished and installed.

6. If an item is either shown on the drawings or called for in the specifications, it shall be included in this contract.

7. The Contractor shall determine quantities and quality of material and equipment required from the documents. Where discrepancies arise between drawings, schedules and/or specifications, the greater and better quality number shall govern.

8. Where used in electrical documents the word “furnish” shall mean supply for use, the word “install” shall mean connect up complete and ready for operation, and the word “provide” shall mean to supply for use and connect up complete and ready for operation.

9. Any item listed as furnished shall also be installed unless otherwise noted.

10. Any item listed as installed shall also be furnished unless otherwise noted.

F. Electronic Media/Files:

1. Construction drawings for this project have been prepared utilizing AutoCAD MEP.

2. Contractors and Subcontractors may request electronic media files of the contract drawings and/or copies of the specifications. Specifications will be provided in PDF format.

3. Upon request for electronic media, the Contractor shall complete and return a signed “Electronic File Transmittal” form provided by KJWW.

4. If the information requested includes floor plans prepared by others, the Contractor will be responsible for obtaining approval from the appropriate Design Professional for use of that part of the document.

5. The electronic contract documents can be used for preparation of shop drawings and as-built drawings only. The information may not be used in whole or in part for any other project.

6. The drawings prepared by KJWW for bidding purposes may not be used directly for ductwork layout drawings or coordination drawings.

7. The use of these CAD documents by the Contractor does not relieve them from their responsibility for coordination of work with other trades and verification of space available for the installation.

8. The information is provided to expedite the project and assist the Contractor with no guarantee by KJWW as to the accuracy or correctness of the information provided. KJWW accepts no responsibility or liability for the Contractor's use of these documents.

G. Field Measurements:

1. Verify all pertinent dimensions at the job site before ordering any conduit, conductors, wireways, bus duct, fittings, etc.

1.5 SUBMITTALS

A. Submittals shall be required for the following items, and for additional items where required elsewhere in the specifications or on the drawings.

1. Submittals list:

Referenced Specification Section	**Submittal Item**
26 56 68	Sports Lighting

B. General Submittal Procedures: In addition to the provisions of Division 1, the following are required:

1. Transmittal: Each transmittal shall include the following:

a. Date
b. Project title and number
c. Contractor's name and address
d. Division of work (e.g., electrical, plumbing, heating, ventilating, etc.)
e. Description of items submitted and relevant specification number
f. Notations of deviations from the contract documents
g. Other pertinent data

2. Submittal Cover Sheet: Each submittal shall include a cover sheet containing:

a. Date
b. Project title and number
c. Architect/Engineer
d. Contractor and subcontractors' names and addresses
e. Supplier and manufacturer's names and addresses
f. Division of work (e.g., electrical, plumbing, heating, ventilating, etc.)
g. Description of item submitted (using project nomenclature) and relevant specification number
h. Notations of deviations from the contract documents
i. Other pertinent data
j. Provide space for Contractor's review stamps

3. Composition:

a. Submittals shall be submitted using specification sections and the project nomenclature for each item.

b. Individual submittal packages shall be prepared for items in each specification section. All items within a single specification section shall be packaged together where possible. An individual submittal may contain items from multiple specifications sections if the items are intimately linked (e.g., pumps and motors).

c. All sets shall contain an index of the items enclosed with a general topic description on the cover.

4. Content: Submittals shall include all fabrication, erection, layout, and setting drawings; manufacturers' standard drawings; schedules; descriptive literature, catalogs and brochures; performance and test data; wiring and control diagrams; dimensions; shipping and operating weights; shipping splits; service clearances; and all other drawings and descriptive data of materials of construction as may be required to show that the materials, equipment or systems and the location thereof conform to the requirements of the contract documents.

5. Contractor's Approval Stamp:

a. The Contractor shall thoroughly review and approve all shop drawings before submitting them to the Architect/Engineer. The Contractor shall stamp, date and sign each submittal certifying it has been reviewed.

b. Unstamped submittals will be rejected.

c. The Contractor's review shall include, but not be limited to, verification of the following:

1) Only approved manufacturers are used.
2) Addenda items have been incorporated.
3) Catalog numbers and options match those specified.
4) Performance data matches that specified.
5) Electrical characteristics and loads match those specified.
6) Equipment connection locations, sizes, capacities, etc. have been coordinated with other affected trades.
7) Dimensions and service clearances are suitable for the intended location.
8) Equipment dimensions are coordinated with support steel, housekeeping pads, openings, etc.
9) Constructability issues are resolved (e.g., weights and dimensions are suitable for getting the item into the building and into place, sinks fit into countertops, etc.).

d. The Contractor shall review, stamp and approve all subcontractors' submittals as described above.

e. **The Contractor's approval stamp is required on all submittals. Approval will indicate the Contractor's review of all material and a complete understanding of exactly what is to be furnished. Contractor shall clearly mark all deviations from the contract documents on all submittals. If deviations are not marked by the Contractor, then the item shall be required to meet all drawing and specification requirements.**

6. Submittal Identification and Markings:

a. The Contractor shall clearly mark each item with the same nomenclature applied on the drawings or in the specifications.

b. The Contractor shall clearly indicate the size, finish, material, etc.

c. Where more than one model is shown on a manufacturer's sheet, the Contractor shall clearly indicate exactly which item and which data is intended.

d. All marks and identifications on the submittals shall be unambiguous.

7. Schedule submittals to expedite the project. Coordinate submission of related items.

8. Identify variations from the contract documents and product or system limitations that may be detrimental to the successful performance of the completed work.

9. Reproduction of contract documents alone is not acceptable for submittals.

10. Incomplete submittals will be rejected without review. Partial submittals will only be reviewed with prior approval from the Architect/Engineer.

11. Submittals not required by the contract documents may be returned without review.

12. The Architect/Engineer's responsibility shall be to review one set of shop drawing submittals for each product. If the first submittal is incomplete or does not comply with the drawings and/or specifications, the Contractor shall be responsible to bear the cost for the Architect/Engineer to recheck and handle the additional shop drawing submittals.

13. Submittals shall be reviewed and approved by the Architect/Engineer **before** releasing any equipment for manufacture or shipment.

14. Contractor’s responsibility for errors, omissions or deviation from the contract documents in submittals is not relieved by the Architect/Engineer’s approval.

C. Electronic Submittal Procedures:

1. Distribution: Email submittals as attachments to all parties designated by the Architect/Engineer, unless a web-based submittal program is used.

2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.

3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.

4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.

a. Submittal file name: 26 XX XX.description.YYYYMMDD
b. Transmittal file name: 26 XX XX.description.YYYYMMDD

5. File Size: Electronic file size shall be limited to a maximum of 4MB. Larger files shall be transmitted via a pre-approved method.

1.6 SCHEDULE OF VALUES

A. The requirements herein are in addition to the provisions of Division 1.

B. Format:

1. Use AIA Document Continuation Sheets G703 or another similar form approved by the Owner and Architect/Engineer.
2. Submit in Excel format.
3. Support values given with substantiating data.

C. Preparation:

1. Itemize the cost for each of the following:

    a. Overhead and profit.
    b. Bonds.
    c. Insurance.
    d. General Requirements: Itemize all requirements.

2. Itemize work required by each specification section and list all providers. All work provided by subcontractors and major suppliers shall be listed on the Schedule of Values. List each subcontractor and supplier by company name.

    a. Contractor's own labor forces.
    b. All subcontractors.
    c. All major suppliers of products or equipment.

3. Break down all costs into:

    a. Material: Delivered cost of product with taxes paid.
    b. Labor: Labor cost, excluding overhead and profit.

4. For each line item having an installed cost of more than $5,000, break down costs to list major products or operations under each item. At a minimum, provide material and labor cost line items for the following:

    a. Each piece of equipment requiring shop drawings. Use the equipment nomenclature (SB-1, PANEL P-1, etc.) on the Schedule of Values.
    b. Each type of small unitary equipment (e.g., FDS, FCS, CS, etc.). Multiple units of the same type can be listed together provided quantities are also listed so unit costs can be determined.
    c. Each conduit system (medium voltage, normal, emergency, low voltage systems, etc.). In addition, for larger projects breakdown the material and labor for each conduit system based on geography (building, floor, and/or wing).
    d. Site utilities (5' beyond building)
    e. Testing
    f. Commissioning
    g. Record drawings
    h. Punchlist and closeout

D. Update Schedule of Values when:

1. Indicated by Architect/Engineer.
2. Change of subcontractor or supplier occurs.
3. Change of product or equipment occurs.

1.7 CHANGE ORDERS

A. A detailed material and labor takeoff shall be prepared for each change order, along with labor rates and markup percentages. Change orders with inadequate breakdown will be rejected.

B. Change order work shall not proceed until authorized.

1.8 PRODUCT DELIVERY, STORAGE, HANDLING AND MAINTENANCE

A. Exercise care in transporting and handling to avoid damage to materials. Store materials on the site to prevent damage.

B. Keep all materials clean, dry and free from damaging environments.

C. Coordinate the installation of heavy and large equipment with the General Contractor and/or Owner. If the Electrical Contractor does not have prior documented experience in rigging and lifting similar equipment, he/she shall contract with a qualified lifting and rigging service that has similar documented experience. Follow all equipment lifting and support guidelines for handling and moving.

D. Contractor is responsible for moving equipment into the building and/or site. Contractor shall review site prior to bid for path locations and any required building modifications to allow movement of equipment. Contractor shall coordinate his/her work with other trades.

1.9 WARRANTY

A. Provide one-year warranty for all fixtures, equipment, materials, and workmanship.

B. The warranty period for all work in this specification Division shall commence on the date of Substantial Completion or successful system performance whichever occurs later. The warranty may also commence if a whole or partial system or any separate piece of equipment or component is put into use for the benefit of any party other than the installing contractor with prior written authorization of the Owner. In this instance, the warranty period shall commence on the date when such whole system, partial system or separate piece of equipment or component is placed in operation and accepted in writing by the Owner.

C. Warranty requirements extend to correction, without cost to the Owner, of all work found to be defective or nonconforming to the contract documents. The Contractor shall bear the cost of correcting all damage due to defects or nonconformance with contract documents excluding repairs required as a result of improper maintenance or operation, or of normal wear as determined by the Architect/Engineer.

1.10 INSURANCE

A. This Contractor shall maintain insurance coverage as set forth in Division 1 of these specifications.

1.11 MATERIAL SUBSTITUTION

A. Where several manufacturers' names are given, the manufacturer for which a catalog number is given is the basis of design and establishes the quality required.

B. Equivalent equipment manufactured by the other named manufacturers may be used. Contractor shall ensure that all items submitted by these other manufacturers meet all requirements of the drawings and specifications, and fit in the allocated space. The Architect/Engineer shall make the final determination of whether a product is equivalent.

C. Any material, article or equipment of other unnamed manufacturers which will adequately perform the services and duties imposed by the design and is of a quality equal to or better than the material, article or equipment identified by the drawings and specifications may be used if approval is secured in writing from the Architect/Engineer via addendum. The Contractor assumes all costs incurred as a result of using the offered material, article or equipment, on his part or on the part of other Contractors whose work is affected.

D. Voluntary add or deduct prices for alternate materials may be listed on the bid form. These items will not be used in determining the low bidder. This Contractor assumes all costs incurred as a result of using the offered material or equipment on his part or on the part of other Contractors whose work is affected.

E. All material substitutions requested after the final addendum must be listed as voluntary changes on the bid form.

PART 2 - PRODUCTS

2.1 GENERAL

A. All items of material having a similar function (e.g., safety switches, panelboards, switchboards, contactors, motor starters, dry type transformers) shall be of the same manufacturer unless specifically stated otherwise on drawings or elsewhere in specifications.

PART 3 - EXECUTION

3.1 JOBSITE SAFETY

A. Neither the professional activities of the Architect/Engineer, nor the presence of the Architect/Engineer or his or her employees and subconsultants at a construction site, shall relieve the Contractor and any other entity of their obligations, duties and responsibilities including, but not limited to, construction means, methods, sequence, techniques or procedures necessary for performing, superintending or coordinating all portions of the work of construction in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. The Architect/Engineer and his or her personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The Contractor is solely responsible for jobsite safety. The Architect/Engineer and the Architect/Engineer's consultants shall be indemnified and shall be made additional insureds under the Contractor's general liability insurance policy.

3.2 EXCAVATION, FILL, BACKFILL, COMPACTION

A. General:

1. Prior to the commencement of any excavation or digging, the Contractor shall verify all underground utilities with the regional utility locator. Provide prior notice to the locator before excavations. Contact information for most regional utility locaters can be found by calling 811.

2. The Contractor shall do all excavating, filling, backfilling, compacting, and restoration in connection with his work.

B. Excavation:

1. Make all excavations to accurate, solid, undisturbed earth, and to proper dimensions.

2. If excavations are carried in error below indicated levels, concrete of same strength as specified for the foundations or thoroughly compacted sand-gravel fill, as determined by the Architect/Engineer shall be placed in such excess excavations under the foundation. Place thoroughly compacted, clean, stable fill in excess excavations under slabs on grade, at the Contractor's expense.

3. Trim bottom and sides of excavations to grades required for foundations.

4. Protect excavations against frost and freezing.

5. Take care in excavating not to damage surrounding structures, equipment or buried pipe. Do not undermine footing or foundation.

6. Perform all trenching in a manner to prevent cave-ins and risk to workmen.

7. Where original surface is pavement or concrete, the surface shall be saw cut to provide clean edges and assist in the surface restoration.

8. If satisfactory bearing soil is not found at the indicated levels, immediately notify the Architect/Engineer or their representative, and do no further work until the Architect/Engineer or their representative gives further instructions.

9. Excavation shall be performed in all ground conditions, including rock, if encountered. Bidders shall visit the premises and determine the soil conditions by actual observations, borings, or other means. The cost of all such inspections, borings, etc., shall be borne by the bidder.

10. If a trench is excavated in rock, a compacted bed with a depth of 3" (minimum) of sand and gravel shall be used to support the conduit unless masonry cradles or encasements are used.

11. Mechanical excavation of the trench to line and grade of the conduit or to the bottom level of masonry cradles or encasements is permitted, unless otherwise indicated on the electrical drawings.

12. Mechanical excavation of the trench to line and grade where direct burial cables are to be installed is permitted provided the excavation is made to a depth to permit installation of the cable on a fine sand bed at least 3 inches deep.

C. Dewatering:

1. Furnish, install, operate and remove all dewatering pumps and pipes needed to keep trenches and pits free of water.

D. Underground Obstructions:

1. Known underground piping, conduit, feeders, foundations, and other obstructions in the vicinity of construction are shown on the drawings. Review <u>all</u> Bid Documents for all trades on the project to determine obstructions indicated. Take great care in making installations near underground obstructions.

2. If objects not shown on the drawings are encountered, remove, relocate, or perform extra work as directed by the Architect/Engineer.

E. Fill and Backfilling:

1. No rubbish or waste material is permitted for fill or backfill.

2. Furnish all necessary sand for backfilling.

3. Dispose of the excess excavated earth as directed.

4. Backfill materials shall be suitable for required compaction, clean and free of perishable materials, frozen earth, debris, earth with a high void content, and stones greater than 4 inches in diameter. Water is not permitted to rise in unbackfilled trenches.

5. Backfill all trenches and excavations immediately after installing of conduit, or removing forms, unless other protection is directed.

6. Around piers and isolated foundations and structures, backfill and fill shall be placed and consolidated simultaneously on all sides to prevent wedge action and displacement. Spread fill and backfill materials in 6” uniform horizontal layers with each layer compacted separately to required density.

7. For conduits that are not concrete encased, lay all conduits on a compacted bed of sand at least 3" deep. Backfill around conduits with sand, in 6" layers and compact each layer.

8. Conduits that are concrete encased or in a ductbank, conduit spacers, and cradles shall be installed on a bed of compacted CA-6 gravel.

9. Backfill with sand up to grade for all conduits under slabs or paved areas. All other conduits shall have sand backfill to 6" above the top of the conduit.

10. Place all backfill above the sand in uniform layers not exceeding 6” deep. Place then carefully and uniformly tamp each layer to eliminate lateral or vertical displacement.

11. Where the fill and backfill will ultimately be under a building, floor or paving, each layer of fill shall be compacted to 95% of the maximum density as determined by AASHTO Designation T-99 or ASTM Designation D-698. Moisture content of soil at time of compaction shall not exceed plus or minus 2% of optimum moisture content as determined by AASHTO T-99 or ASTM D-698 test.

12. After backfilling of trenches, no superficial loads shall be placed on the exposed surface of the backfill until a period of 48 hours has elapsed.

F. Surface Restoration:

1. Where trenches are cut through graded, planted or landscaped areas, the areas shall be restored to the original condition. Replace all planting and landscaping features removed or damaged to its original condition. At least 6” of topsoil shall be applied where disturbed areas are to be seeded or sodded. All lawn areas shall be sodded unless seeding is called out in the drawings or specifications.

2. Concrete or asphalt type pavement, seal coat, rock, gravel or earth surfaces removed or damaged shall be replaced with comparable materials and restored to original condition. Broken edges shall be saw cut and repaired as directed by Architect/Engineer.

3.3 ARCHITECT/ENGINEER OBSERVATION OF WORK

A. The contractor shall provide seven (7) calendar days' notice to the Architect/Engineer prior to:

1. Placing fill over underground and underslab utilities.

2. Covering exterior walls, interior partitions and chases.

B. The Architect/Engineer will review the installation and provide a written report noting deficiencies requiring correction. The contractor's schedule shall account for these reviews and show them as line items in the approved schedule.

3.4 PROJECT CLOSEOUT

A. The following paragraphs supplement the requirements of Division 1.

B. Final Jobsite Observation:

1. In order to prevent the Final Jobsite Observation from occurring too early, the Contractor shall review the completion status of the project and certify that the job is ready for the final jobsite observation.

2. It is understood that if the Architect/Engineer finds the job not ready for the final observation and additional trips and observations are required to bring the project to completion, the cost of the additional time and expenses incurred by the Architect/Engineer will be deducted from the Contractor's final payment.

3. Contractor shall notify Architect/Engineer 48 hours prior to installation of ceilings or lay-in ceiling tiles.

C. The following must be submitted before Architect/Engineer recommends final payment:

1. Operation and maintenance manuals with copies of approved shop drawings.

2. Record documents including reproducible drawings and specifications.

3. A report documenting the instructions given to the Owner's representatives complete with the number of hours spent in the instruction. The report shall bear the signature of an authorized agent of this Contractor and shall be signed by the Owner's representatives.

4. Provide spare parts, maintenance, and extra materials in quantities specified in individual specification sections. Deliver to project site and place in location as directed and submit receipt to Architect/Engineer.

5. Inspection and testing report by the fire alarm system manufacturer.

6. Start-up reports on all equipment requiring a factory installation or start-up.

3.5 OPERATION AND MAINTENANCE MANUALS

A. General:

1. Provide an electronic copy of the O&M manuals as described below for Architect/Engineer's review and approval. The electronic copy shall be corrected as required to address the Architect/Engineer's comments. Once corrected, electronic copies and paper copies shall be distributed as directed by the Architect/Engineer.

2. Approved O&M manuals shall be completed and in the Owner's possession prior to Owner's acceptance and at least 10 days prior to instruction of operating personnel.

B. Electronic Submittal Procedures:

1. Distribution: Email the O&M manual as attachments to all parties designated by the Architect/Engineer.

2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.

3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.

4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.

   a. O&M file name: O&M.div23.contractor.YYYYMMDD
   b. Transmittal file name: O&Mtransmittal.div23.contractor.YYYYMMDD

5. File Size: Electronic file size shall be limited to a maximum of 4MB. Larger files shall be divided into files that are clearly labeled as "1 of 2", "2 of 2", etc.

6. Provide the Owner with an approved copy of the O&M manual on compact discs (CD), digital video discs (DVD), or flash drives with a permanently affixed label, printed with the title "Operation and Maintenance Instructions", title of the project and subject matter of disc/flash drive when multiple disc/flash drives are required.

7. All text shall be searchable.

8. Bookmarks shall be used, dividing information first by specification section, then systems, major equipment and finally individual items. All bookmark titles shall include the nomenclature used in the construction documents and shall be an active link to the first page of the section being referenced.

C. Paper Copy Submittal Procedures:

1. Once the electronic version of the manuals has been approved by the Architect/Engineer, two (2) paper copies of the O&M manual shall be provided to the Owner. The content of the paper copies shall be identical to the corrected electronic copy.

2. Binder Requirements: The Contractor shall submit three sets of O&M manuals in heavy duty, locking three ring binders. Incorporate clear vinyl sheet sleeves on the front cover and spine for slip-in labeling. "Peel and stick" labels are **not** acceptable. Sheet lifters shall be supplied at the front of each notebook. The three-ring binders shall be 1/2"12mm thicker than initial material to allow for future inserts. If more than one notebook is required, label in consecutive order. For example; 1 of 2, 2 of 2. No other form of binding is acceptable.

3. Binder Labels: Label the front and spine of each binder with "Operation and Maintenance Instructions", title of project, and subject matter.

4. Index Tabs: Divide information by specification section, major equipment, or systems using index tabs. All tab titling shall be clearly printed under reinforced plastic tabs. All equipment shall be labeled to match the identification in the construction documents.

D. Operation and Maintenance Instructions shall include:

1. Title Page: Include title page with project title, Architect, Engineer, Contractor, all subcontractors, and major equipment suppliers, with addresses, telephone numbers, website addresses, email addresses and point of contacts. Website URLs and email addresses shall be active links in the electronic submittal.

2. Table of Contents: Include a table of contents describing specification section, systems, major equipment, and individual items.

3. Copies of all final approved shop drawings and submittals. Include Architect's/Engineer's shop drawing review comments. Insert the individual shop drawing directly after the Operation and Maintenance information for the item(s) in the review form.

4. Copies of all factory inspections and/or equipment startup reports.

5. Copies of warranties.

6. Schematic wiring diagrams of the equipment that have been updated for field conditions. Field wiring shall have label numbers to match drawings.

7. Dimensional drawings of equipment.

8. Detailed parts lists with lists of suppliers.

9. Operating procedures for each system.

10. Maintenance schedule and procedures. Include a chart listing maintenance requirements and frequency.

11. Repair procedures for major components.

12. Replacement parts and service material requirements for each system and the frequency of service required.

13. Instruction books, cards, and manuals furnished with the equipment.

14. Include record drawings of the one-line diagrams for each major system. The graphic for each piece of equipment shown on the one-line diagram shall be an active link to its associated Operation & Maintenance data.

3.6 INSTRUCTING THE OWNER'S REPRESENTATIVE

A. Adequately instruct the Owner's designated representatives in the maintenance, care, and operation of the complete systems installed under this contract.

B. Provide verbal and written instructions to the Owner's representatives by FACTORY PERSONNEL in the care, maintenance, and operation of the equipment and systems.

C. The Owner has the option to make a video recording of all instructions. Coordinate schedule of instructions to facilitate this recording.

D. The instructions shall include:

1. Maintenance of equipment.
2. Start-up procedures for all major equipment.

E. Notify the Architect/Engineer of the time and place for the verbal instructions to the Owner's representative so his representative can be present if desired.

F. Minimum hours of instruction time for each item and/or system shall be as indicated in each individual specification section.

G. Operating Instructions:

1. Contractor is responsible for all instructions to the Owner’s representatives for the electrical and specialized systems.

2. If the Contractor does not have staff that can adequately provide the required instructions, he shall include in his bid an adequate amount to reimburse the Owner for the Architect/Engineer to perform these services.

3.7 RECORD DOCUMENTS

A. The following paragraphs supplement the requirements of Division 1.

B. Maintain at the job site a separate and complete set of electrical drawings and specifications with all changes made to the systems clearly and permanently marked in complete detail.

C. Mark drawings and specifications to indicate approved substitutions; Change Orders, and actual equipment and materials used. All Change Orders, RFI responses, Clarifications and other supplemental instructions shall be marked on the documents. Record documents that merely reference the existence of the above items are not acceptable. Should this Contractor fail to complete Record Documents as required by this contract, this Contractor shall reimburse Architect/Engineer for all costs to develop record documents that comply with this requirement. Reimbursement shall be made at the Architect/Engineer’s hourly rates in effect at the time of work.

D. Record changes daily and keep the marked drawings available for the Architect/Engineer's examination at any normal work time.

E. Upon completing the job, and before final payment is made, give the marked-up drawings to the Architect/Engineer.

3.8 PAINTING

A. Paint all equipment that is marred or damaged prior to the Owner's acceptance. Paint and color shall match original equipment paint and shall be obtained from the equipment supplier if available. All equipment shall have a finished coat of paint applied unless specifically allowed to be provided with a prime coat only.

B. Equipment in finished areas that will be painted to match the room decor will be painted by others. Should this Contractor install equipment in a finished area after the area has been painted, he shall have the equipment and all its supports, hangers, etc., painted to match the room decor. Painting shall be performed as described in project specifications.

C. Equipment cabinets, casings, covers, metal jackets, etc., located in equipment rooms or concealed spaces, shall be furnished in standard finish, free from scratches, abrasions, chippings, etc.

D. Equipment in occupied spaces, or if standard to the unit, shall have a baked primer with baked enamel finish coat free from scratches, abrasions, chipping, etc. If color option is specified or is standard to the unit, verify with the Architect his color preference before ordering.

E. Paint all equipment in unfinished areas such as boiler room, mechanical spaces, and storage rooms. Equipment furnished with a suitable factory finish need not be painted; provided the factory applied finish is not marred or spattered. If so, equipment shall be refinished with the same paint as was factory applied.

F. All electrical conduit and equipment, fittings, hangers, structural supports, etc., in unfinished areas, such as equipment and storage room area, shall be painted two (2) coats of oil paint of colors selected by the Architect.

G. Do NOT paint electric conduits in crawl spaces, tunnels, or spaces above suspended ceilings except that where conduit is in a damp location give exposed threads at joints two coats of sealer after joint is made up.

H. After surfaces have been thoroughly cleaned and are free of oil, dirt or other foreign matter, paint all raceway and equipment with the following:

1. Bare Metal Surfaces - Apply one coat of metal primer suitable for the metal being painted. Finish with two coats of Alkyd base enamel paint.

2. Plastic Surfaces - Paint plastic surfaces with two coats of semi-gloss acrylic latex paint.

3.9 ADJUST AND CLEAN

A. Thoroughly clean all equipment and systems prior to the Owner's final acceptance of the project.

B. Clean all foreign paint, grease, oil, dirt, labels, stickers, etc. from all equipment.

C. Remove all rubbish, debris, etc., accumulated during construction from the premises.

3.10 SPECIAL REQUIREMENTS

A. Coordinate the installation of all equipment, controls, devices, etc., with other trades to maintain clear access area for servicing.

B. Install all equipment to maximize access to parts needing service or maintenance. Review the final location, placement, and orientation of equipment with the Owner's representative prior to setting equipment.

C. Installation of equipment or devices without regard to coordination of access requirements and confirmation with the Owner's representative will result in removal and reinstallation of the equipment at the Contractor's expense.

3.11 SYSTEM COMMISSIONING

A. The electrical systems shall be complete and operating. System start-up, testing, balancing, and satisfactory system performance is the responsibility of the Contractor. This includes all calibration and adjustment of electrical controls, balancing of loads, troubleshooting and verification of software, and final adjustments that may be needed.

B. All operating conditions and control sequences shall be tested during the start-up period. Testing all interlocks, safety shut-downs, controls, and alarms.

1. The Contractor, subcontractors, and equipment suppliers shall have skilled technicians to ensure that all systems perform properly. If the Architect/Engineer is requested to visit the job site for trouble shooting, assisting in start-up, obtaining satisfactory equipment operation, resolving installation and/or workmanship problems, equipment substitution issues or unsatisfactory system performance, including call backs during the warranty period, through no fault of the design; the Contractor shall reimburse the Owner on a time and materials basis for services rendered at the Architect/Engineer's standard hourly rates in effect when the services are requested. The Contractor shall pay the Owner for services required that are product, installation or workmanship related. Payment is due within 30 days after services are rendered.

3.12 FIELD QUALITY CONTROL

A. General:

1. Conduct all tests required during and after construction.

2. Supply necessary instruments, meters, etc., for the tests. Supply competent technicians with training in the proper testing techniques.

3. All cables and wires shall be tested for shorts and grounds following installation and connection to devices. Replace shorted or grounded wires and cables.

4. Any wiring device, electrical apparatus or lighting fixture, if grounded or shorted on any integral "live" part, shall have all defective parts or materials replaced.

B. Other Equipment:

1. Give other equipment furnished and installed by the Contractor all standard tests normally made to assure that the equipment is electrically sound, all connections properly made, phase rotation correct, fuses and thermal elements suitable for protection against overloads, voltage complies with equipment nameplate rating, and full load amperes are within equipment rating.

C. If any test results are not satisfactory, make adjustments, replacements and changes as needed and repeat the tests and make additional tests as the Architect/Engineer or authority having jurisdiction deem necessary.

END OF SECTION

SECTION 26 05 13
WIRE AND CABLE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building wire
B. Remote control and signal cable

1.2 REFERENCES

A. NEMA WC 70 - Power Cables Rated 2,000V or Less for the Distribution of Electrical Energy

B. UL 44 – Thermoset-Insulated Wires and Cables

C. UL 83 – Thermoplastic-Insulated Wires and Cables

D. UL 854 – Service-Entrance Cables

E. UL 1581 – Standard for Electrical Wires, Cables, and Flexible Cords

PART 2 - PRODUCTS

2.1 BUILDING WIRE

A. Feeders and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600 volt insulation, THHN/THWN.

B. Feeders and Branch Circuits Larger than 6 AWG in Underground Conduit: Copper, stranded conductor, 600 volt insulation, THWN.

C. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation, THHN/THWN. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, solid or stranded conductor, unless otherwise noted on the drawings.

D. Control Circuits: Copper, stranded conductor 600 volt insulation, THHN/THWN.

E. Each 120 and 277 volt branch circuit shall have a dedicated neutral conductor. Neutral conductors shall be considered current-carrying conductors for wire derating.

2.2 REMOTE CONTROL AND SIGNAL CABLE

A. Control Cable for Class 1 Remote Control and Signal Circuits: Copper conductor, 600 volt insulation, rated 60°C, individual conductors twisted together, shielded, and covered with a PVC jacket.

B. Control Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60ºC, individual conductors twisted together, shielded, and covered with a PVC jacket; UL listed.

C. Plenum Cable for Class 2 or Class 3 Remote Control and Signal Circuits: Copper conductor, 300 volt insulation, rated 60°C, individual conductors twisted together, shielded, and covered with a nonmetallic jacket; UL listed for use in air handling ducts, hollow spaces used as ducts, and plenums.

PART 3 - EXECUTION

3.1 WIRE AND CABLE INSTALLATION SCHEDULE

A. Above Accessible Ceilings: Building wire in raceways.

B. All Other Locations: Building wire in raceway.

C. Above Grade: All conductors installed above grade shall be type “THHN”.

D. Underground or In Slab: All conductors shall be type “THWN”.

3.2 CONTRACTOR CHANGES

A. The Contractor shall be responsible for derating and sizing conductors and conduits to equal or exceed the ampacity of the basis of design circuits, if he/she chooses to use methods or materials other than the basis of design.

3.3 GENERAL WIRING METHODS

A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.

B. Use no wire smaller than 18 AWG for low voltage control wiring (<100 volts).

C. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 75 feet, and for 20 ampere, 277 volt branch circuit home runs longer than 200 feet.

D. Use no wire smaller than 8 AWG for outdoor lighting circuits.

E. The ampacity of multiple conductors in one conduit shall be derated per National Electrical Code, Article 310. In no case shall more than 4 conductors be installed in one conduit to such loads as motors larger than 1/4 HP, panelboards, motor control centers, etc.

F. Where installing parallel feeders, place an equal number of conductors for each phase of a circuit in same raceway or cable.

G. Splice only in junction or outlet boxes.

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

I. Make conductor lengths for parallel circuits equal.

J. All conductors shall be continuous in conduit from last outlet to their termination.

K. Terminate all spare conductors on terminal blocks, and label the spare conductors.

L. Cables or wires shall not be laid out on the ground before pulling.

M. Cables or wires shall not be dragged over earth or paving.

N. Care shall be taken so as not to subject the cable or wire to high mechanical stresses that would cause damage to the wire and cable.

O. At least six (6)-inch loops or ends shall be left at each outlet for installation connection of luminaires or other devices.

P. All wires in outlet boxes not connected to fixtures or other devices shall be rolled up, spliced if continuity of circuit is required, and insulated.

3.4 WIRING INSTALLATION IN RACEWAYS

A. Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.

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

C. Pulling shall be continuous without unnecessary stops and starts with wire or cable only partially thru raceway.

D. Where reels of cable or wire are used, they shall be set up on jacks close to the point where the wire or cable enters the conduit or duct so that the cable or wire may be unreeled and run into the conduit or duct with a minimum of change in the direction of the bend.

E. Conductors shall not be pulled through conduits until plastering or masonry work is completed and conduits are free from moisture. Care shall be taken so that long pulls of wire or pulls around several bends are not made where the wire may be permanently stretched and the insulation damaged.

F. Only nylon rope shall be permitted to pull cables into conduit and ducts.

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

3.5 CABLE INSTALLATION

A. Provide protection for exposed cables where subject to damage.

B. Use suitable cable fittings and connectors.

C. Run all open cable in a neat and symmetrical manner. Follow the routing as illustrated on the drawings as closely as possible. If routing is not illustrated then the Contractor shall choose his own routing, but in any case it shall be run in a manner previously stated.

D. Open cable shall be supported by the appropriate size bridle rings or other means if called for on the drawings. Wire and cable from different systems shall not be installed in the same bridle rings.

E. Open cable installed above suspended ceilings shall not rest on the suspended ceiling construction, nor utilize the ceiling support system for wire and cable support.

F. Where open cables are grouped, they shall be neatly bundled and held together with nylon tie wraps placed every 2.5 ft. on the bundle. Where tie bundle passes through a bridle ring it shall be fastened to the ring with a tie wrap.

G. Bridle ring supports shall be installed at a minimum of five foot (5') intervals. All rings shall be installed where completely accessible and not blocked by piping, ductwork, inaccessible ceilings, etc.

H. Open cable shall only be installed where specifically shown on the drawings, or permitted in these specifications.

3.6 WIRING CONNECTIONS AND TERMINATIONS

A. Splice and tap only in accessible junction boxes.

B. Use solderless, tin-plated copper, compression terminals (lugs) applied with circumferential crimp for copper conductor terminations, 8 AWG and larger.

C. Use solderless, tin-plated, compression terminals (lugs) applied with indenter crimp for copper conductor terminations, 10 AWG and smaller.

D. Use solderless pressure connectors with insulating covers for copper wire splices and taps, 8 AWG and smaller. For 10 AWG and smaller, use insulated spring wire connectors with plastic caps.

E. Use copper, compression connectors applied with circumferential crimp for copper wire splices and taps, 6 AWG and larger. Tape uninsulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor.

F. Thoroughly clean wires before installing lugs and connectors.

G. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

H. Phase Sequence: All apparatus shall be connected to operate in the phase sequence A-B-C representing the time sequence in which the phase conductors so identified reach positive maximum voltage.

I. As a general rule, applicable to switches, circuit breakers, starters, panelboards, switchgear and the like, the connections to phase conductors are intended thus:

1. Facing the front and operating side of the equipment, the phase identification shall be:

    a. Left to Right - A-B-C
    b. Top to Bottom - A-B-C

J. Connection revisions as required to achieve correct rotation of motors shall be made at the load terminals of the starters or disconnect switches.

3.7 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 1.

B. Building Wire and Power Cable Testing: Test shall be made by means of an insulation testing device such as a “Megger” using not less than 500 volts D.C. test potential.

C. Inspect wire and cable for physical damage and proper connection.

D. Torque test conductor connections and terminations to manufacturer's recommended values.

E. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.

END OF SECTION

SECTION 26 05 26
GROUNDING AND BONDING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Equipment grounding system
B. Grounding electrode system

1.2 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with UL 467 Grounding and Bonding Equipment.

C. Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system.

D. Comply with NFPA 70; for overhead-line construction and medium-voltage underground construction, comply with IEEE/ANSI C2 National Electrical Safety Code (NESC).

1.3 SUMMARY

A. This section includes grounding of electrical systems and equipment. Grounding requirements specified in this Section may be supplemented by special requirements of systems described in other Sections.

PART 2 - PRODUCTS

2.1 GROUNDING CONDUCTORS

A. For insulated conductors, comply with Division 26 Section 26 05 13 "Wire and Cable".

B. Material: Copper.

C. Equipment Grounding Conductors: Insulated with green-colored insulation.

D. Grounding Electrode Conductors: Stranded cable.

E. Underground Conductors: Bare, tinned, stranded, unless otherwise indicated.

2.2 CONNECTOR PRODUCTS

A. Comply with UL 467; listed for use for specific types, sizes, and combinations of conductors and connected items.

B. Connectors: Hydraulic compression type or exothermic-welded type, in kit form, and selected per manufacturer’s written instructions.

C. Bolted Connectors: Bolted-pressure-type connectors.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel.

PART 3 - EXECUTION

3.1 CONNECTIONS

A. General: Make connections so galvanic action or electrolysis possibility is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.

1. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer to order of galvanic series.

2. Make connections with clean, bare metal at points of contact.

3. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.

4. Make aluminum-to-galvanized steel connections with tin-plated copper jumpers and mechanical clamps.

5. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

B. Exothermic-Welded Connections: Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.

C. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by connector manufacturer. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.

D. Equipment Grounding Conductor Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.

E. Noncontact Metal Raceway Terminations: If metallic raceways terminate at metal housings without mechanical and electrical connection to housing, terminate each conduit with a grounding bushing. Connect grounding bushings with a bare grounding conductor to grounding bus or terminal in housing. Bond electrically non-continuous conduits at entrances and exits with grounding bushings and bare grounding conductors, unless otherwise indicated.

F. Structural Steel Connection: Exothermic-welded connections to structural steel. Coordinate with structure to provide physical protection.

G. Underground Connections: Exothermic-welded connections or hydraulic compression connection. Use for underground connections, except those at test wells.

H. Connections at Test Wells: Use compression-type connectors on conductors and make two bolted- and clamped-type connections between conductors and ground rods.

I. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A.

J. Moisture Protection: If insulated grounding conductors are connected to ground rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.2 INSTALLATION

A. Use only copper conductors for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.

B. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage. Each grounding conductor that passes through a below grade wall must be provided with a waterstop.

C. Grounding electrode conductor (GEC) shall be protected from physical damage by rigid polyvinyl chloride conduit (PVC) in exposed locations.

D. In raceways, use insulated equipment grounding conductors.

E. Underground Grounding Conductors: Use copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade or bury 12 inches above duct bank when installed as part of the duct bank.

3.3 EQUIPMENT GROUNDING SYSTEM

A. Comply with NFPA 70, Article 250, for types, sizes, and quantities of equipment grounding conductors, unless specific types, larger sizes, or more conductors than required by NFPA 70 are indicated.

B. Install equipment grounding conductors in all feeders and circuits. Terminate each end on a grounding lug or bus.

C. Nonmetallic Raceways: Install an equipment grounding conductor in nonmetallic raceways unless they are designated for telephone or data cables.

3.4 FIELD QUALITY CONTROL

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

3.5 GRADING AND PLANTING

A. Restore surface features, including vegetation, at areas disturbed by Work of this Section. Reestablish original grades, unless otherwise indicated. If sod has been removed, replace it as soon as possible after backfilling is completed. Restore areas disturbed by trenching, storing of dirt, cable laying, and other activities to their original condition. Include application of topsoil, fertilizer, lime, seed, sod, sprig, and mulch. Comply with Division 2. Maintain restored surfaces. Restore disturbed paving.

END OF SECTION

SECTION 26 05 27
SUPPORTING DEVICES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Conduit and equipment supports
B. Fastening hardware

1.2 QUALITY ASSURANCE

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

1.3 COORDINATION

A. Coordinate size, shape and location of concrete pads with Section on Cast-in-Place Concrete or Concrete Topping.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Allied Support Systems
B. Cooper B-Line
C. Erico, Inc.
D. Hilti
E. Power Fasteners

2.2 MATERIAL

A. Support Channel: Stainless steel for wet/damp locations; painted steel for interior/dry locations. All field cut ends shall be touched up with matching finish to inhibit rusting.

B. Hardware: Corrosion resistant.

C. Anchorage and Structural Attachment Components:

1. Strength: Defined in reports by ICBO Evaluation Service or another agency acceptable to Authorities Having Jurisdiction.

    a. Structural Safety Factor: Strength in tension and shear of components used shall be at least two times the maximum seismic forces to which they will be subjected.

2. Through Bolts: Structural type, hex head, high strength. Comply with ASTM A 325.

3. Welding Lugs: Comply with MSS-SP-69, Type 57.

4. Beam clamps for Steel Beams and Joists: Double sided. Single-sided type is not acceptable.

5. Bushings for Floor-Mounted Equipment Anchors: Neoprene units designed for seismically rated rigid equipment mountings, and matched to the type and size of anchor bolts and studs used.

6. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for seismically rated rigid equipment mountings, and matched to the type and size of attachment devices used.

7. Concrete Anchors: Fasten to concrete using cast-in or post-installed anchors designed per the requirements of Appendix D of ACI 318-05. Post-installed anchors shall be qualified for use in cracked concrete by ACI-355.2.

8. Masonry Anchors: Fasten to concrete masonry units with expansion anchors or self-tapping masonry screws. For expansion anchors into hollow concrete block, use sleeve-type anchors designed for the specific application. Do not fasten in masonry joints. Do not use powder actuated fasteners, wooden plugs, or plastic inserts.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Fasten hanger rods, conduit clamps, and outlet and junction boxes to building structure using expansion anchors in concrete and beam clamps on structural steel.

B. 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 anchor on concrete surfaces; sheet metal screws in sheet metal studs; and wood screws in wood construction.

C. Do not fasten supports to ceiling systems, piping, ductwork, mechanical equipment, or conduit, unless otherwise noted.

D. Do not use powder-actuated anchors without specific permission.

E. Do not drill structural steel members.

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

G. In wet locations and on all building floors below exterior earth grade install free-standing electrical equipment on concrete pads.

H. Install cabinets and panelboards with minimum of four anchors. Provide horizontal backing/support framing in stud walls for rigid mounting.

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

J. Do not exceed 25 lbs. per hanger and a minimum spacing of 2’-0” on center when attaching to metal roof decking (excludes concrete on metal deck). This 25 lbs. load and 2’-0” spacing include adjacent electrical and mechanical items hanging from deck. If the hanger restrictions cannot be achieved, supplemental framing off steel framing will need to be added.

K. Refer to Section 26 05 33 for special conduit supporting requirements.

3.2 FINISH

A. Prime coat exposed steel hangers and supports. Hangers and supports in crawl spaces, pipe shafts, and above suspended ceiling spaces are not considered exposed.

B. Trim all ends of exposed field fabricated steel hangers, slotted channel and threaded rod to within 1” of support or fastener to eliminate potential injury to personnel unless shown otherwise on the drawings. Smooth ends and install elastomeric insulation with two coats of latex paint if exposed steel is within 6’-6” of finish floor and presents potential injury to personnel.

END OF SECTION

SECTION 26 05 33
CONDUIT AND BOXES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Rigid metallic conduit and fittings
B. Intermediate metallic conduit and fittings
C. Electrical metallic tubing and fittings
D. Flexible metallic conduit and fittings
E. Liquidtight flexible metallic conduit and fittings
F. Rigid polyvinyl chloride conduit and fittings
G. High density polyethylene conduit and fittings
H. Wall and ceiling outlet boxes
I. Electrical connection
J. Pull and junction boxes
K. Handholes
L. Accessories

1.2 REFERENCES

A. American National Standards Institute (ANSI):

1. ANSI C80.1 - Rigid Steel Conduit, Zinc-Coated
2. ANSI C80.3 - Electrical Metallic Tubing, Zinc-Coated and Fittings
3. ANSI C80.4 - Fittings for Rigid Metal Conduit and Electrical Metallic Tubing
4. ANSI C80.6 – Intermediate Metal Conduit, Zinc Coated
5. ANSI/NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports
6. ANSI/NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports

B. Federal Specifications (FS):

1. A–A–50553A – Fittings for Conduit, Metal, Rigid, (Thick-Wall and Thin-Wall (EMT) Type
2. A–A–55810 – Specification for Flexible Metal Conduit

C. NECA “Standards of Installation”

D. National Electrical Manufacturers Association (NEMA):

1. ANSI/NEMA FB 1 – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
2. RN 1 – Polyvinyl chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit
3. TC 2 – Electrical Polyvinyl Chloride (PVC) Conduit
4. TC 9 – Fittings for PVC Plastic Utilities Duct for Underground Installation

E. National Fire Protection Association (NFPA):

1. ANSI/NFPA 70 – National Electrical Code

F. Underwriters Laboratories (UL): Applicable Listings

1. UL 1 – Flexible Metal Conduit
2. UL 6 – Rigid Metal Conduit
3. UL 360 – Liquid Tight Flexible Steel Conduit
4. UL514-B – Conduit Tubing and Cable Fittings
5. UL651-A – Type EB and a PVC Conduit and HDPE Conduit
6. UL651-B – Continuous Length HDPE Conduit
7. UL746A – Standard for Polymeric Materials – Short Term Property Evaluations
8. UL797 – Electrical Metal Tubing
9. UL1242 – Intermediate Metal Conduit

G. American Standard of Testing and Materials (ASTM):

1. ASTM D 570 - Standard Test Method for Water Absorption of Plastics
2. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics
3. ASTM D 648 - Standard Test Method for Deflection Temperature of Plastics under Flexural Load in the Edge Wise Position
4. ASTM D 2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
5. ASTM D 2447 - Standard Specification for Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on Outside Diameter
6. ASTM D 3350 - Standard Specification for Polyethylene Plastic Pipe and Fittings Material

H. Definitions:

1. Fittings: Conduit connection or coupling.

2. Body: Enlarged fittings with opening allowing access to the conductors for pulling purposes only.

3. Mechanical Spaces: Enclosed areas, usually kept separated from the general public, where the primary use is to house service equipment and to route services. These spaces generally have exposed structures, bare concrete and non-architecturally emphasized finishes.

4. Finished Spaces: Enclosed areas where the primary use is to house personnel and the general public. These spaces generally have architecturally emphasized finishes, ceilings and/or floors.

5. Concealed: Not visible by the general public. Often indicates a location either above the ceiling, in the walls, in or beneath the floor slab, in column coverings, or in the ceiling construction.

6. Above Grade: Not directly in contact with the earth. For example, an interior wall located at an elevation below the finished grade shall be considered above grade but a wall retaining earth shall be considered below grade.

7. Slab: Horizontal pour of concrete used for the purpose of a floor or sub-floor.

PART 2 - PRODUCTS

2.1 RIGID METALLIC CONDUIT (RMC) AND FITTINGS

A. Acceptable Manufacturers:

1. Acceptable Manufacturers: Allied, LTV, Steelduct, Wheatland Tube Co, O-Z Gedney, or approved equal.

2. Acceptable Manufacturers of RMC Conduit Fittings: Appleton Electric, O-Z/Gedney Co., Electroline, Raco, Bridgeport, Midwest, Regal, Thomas & Betts, Crouse-Hinds, Killark, or approved equal.

B. Minimum Size Galvanized Steel: 3/4 inch (19mm), unless otherwise noted.

C. Fittings and Conduit Bodies:

1. End Bell Fittings: Malleable iron, hot dip galvanized, threaded flare type with provisions for mounting to form.

2. Expansion Joints: Malleable iron and hot dip galvanized providing a minimum of 4 inches of movement. Fitting shall be watertight with an insulating bushing and a bonding jumper.

3. Expansion Joint for Concrete Encased Conduit: Neoprene sleeve with bronze end coupling, stainless steel bands and tinned copper braid bonding jumper. Fittings shall be watertight and concrete-tight.

4. Conduit End Bushings: Malleable iron type with molded-on high impact phenolic thermosetting insulation. Where required elsewhere in the contract documents, bushing shall be complete with ground conductor saddle and clamp. **High impact phenolic threaded type bushings are not acceptable.**

5. All other fittings and conduit bodies shall be of malleable iron construction and hot dip galvanized.

D. PVC Externally Coated Conduit: NEMA RN 1; rigid steel conduit with external 20 40 mil PVC coating and internal galvanized surface. All fittings and conduit bodies shall be complete with coating. Acceptable Manufacturers: Robroy, Permacote, or approved equal.

2.2 INTERMEDIATE METALLIC CONDUIT (IMC) AND FITTINGS

A. Minimum Size Galvanized Steel: 3/4 inch, unless otherwise noted.

B. Acceptable Manufacturers: Allied, LTV, Steelduct, Wheatland Tube Co, O-Z Gedney, or approved equal.

C. Fittings and Conduit Bodies:

1. End Bell Fittings: Malleable iron, hot dip galvanized, threaded flare type with provisions for mounting to form.

2. Expansion Joints: Malleable iron and hot dip galvanized providing a minimum of 4 inches of movement. Fitting shall be watertight with an insulating bushing and a bonding jumper.

3. Expansion Joint for Concrete Encased Conduit: Neoprene sleeve with bronze end coupling, stainless steel bands and tinned copper braid bonding jumper. Fittings shall be watertight and concrete-tight.

4. Conduit End Bushings: Malleable iron type with molded-on high impact phenolic thermosetting insulation. Where required elsewhere in the contract documents, bushing shall be complete with ground conductor saddle and clamp. **High impact phenolic threaded type bushings are not acceptable.**

5. All other fittings and conduit bodies shall be of malleable iron construction and hot dip galvanized.

2.3 ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS

A. Minimum Size Electrical Metallic Tubing: 3/4 inch, unless otherwise noted.

B. Acceptable Manufacturers of EMT Conduit: Allied, LTV, Steelduct, Wheatland Tube Co, or approved equal.

C. Fittings and Conduit Bodies:

1. 2" Diameter or Smaller: Compression type of steel designed for their specific application.

2. Larger than 2": Compression type of steel designed for their specific application.

3. Acceptable Manufacturers of EMT Conduit Fittings: Appleton Electric, O-Z/Gedney Co., Electroline, Raco, Bridgeport, Midwest, Regal, Thomas & Betts, or approved equal.

2.4 FLEXIBLE METALLIC CONDUIT (FMC) AND FITTINGS

A. Minimum Size Galvanized Steel: 3/4 inch, unless otherwise noted. Lighting branch circuit wiring to an individual luminaire may be a manufactured, UL listed 3/8" flexible metal conduit with #12 AWG THHN conductors and an insulated ground wire.

B. Acceptable Manufacturers: American Flex, Alflex, Electri-Flex Co, or approved equal.

C. Construction: Flexible steel, approved for conduit ground, zinc coated, threadless type formed from a continuous length of spirally wound, interlocked zinc coated strip steel. Provide a separate equipment grounding conductor when used for equipment where flexibility is required.

D. Fittings and Conduit Bodies:

1. Threadless hinged clamp type, galvanized zinc coated cadmium plated malleable cast iron or screw-in type, die-cast zinc.

2. Fittings and conduit bodies shall include plastic or cast metal inserts supplied by the manufacturer to protect conductors from sharp edges.

3. Acceptable Manufacturers: O-Z/Gedney Co., Thomas & Betts, Appleton Electric, Electroline, Bridgeport, Midwest, Regal, or approved equal.

2.5 LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT (LFMC) AND FITTINGS

A. Acceptable Manufacturers: Anaconda Type UA, Electri-Flex Type LA, Alflex, Carlon (Lamson & Sessions), or approved equal.

B. Construction: Flexible steel, approved for conduit ground, zinc coated, threadless type formed from a continuous length of spirally wound, interlocked zinc coated strip steel and an extruded PVC cover.

C. Fittings and Conduit Bodies:

1. Watertight, compression type, galvanized zinc coated cadmium plated malleable cast iron, UL listed.

2. Fittings and conduit bodies shall include plastic or cast metal inserts supplied by the manufacturer to protect conductors from sharp edges.

3. Acceptable Manufacturers: Appleton Electric, O-Z/Gedney Co., Electroline, Bridgeport, Thomas & Betts, Midwest, Regal, Carlon (Lamson & Sessions), or approved equal.

2.6 RIGID NON-METALLIC CONDUIT (PVC) AND FITTINGS

A. Minimum Size Rigid Smooth-Wall Nonmetallic Conduit: 3/4 inch, unless otherwise noted.

B. Acceptable Manufacturers: Carlon (Lamson & Sessions) Type 40, Cantex, J.M. Mfg., or approved equal.

C. Construction: Schedule 40 and Schedule 80 rigid polyvinyl chloride (PVC), UL labeled for 90°C.

D. Fittings and Conduit Bodies: NEMA TC 3; sleeve type suitable for and manufactured especially for use with the conduit by the conduit manufacturer.

E. Plastic cement for joining conduit and fittings shall be provided as recommended by the manufacturer.

2.7 HIGH DENSITY POLYETHYLENE

A. Minimum Size: 2 inch, unless noted otherwise.

B. Acceptable Manufacturers: Carlon, Chevron Phillips Chemical Company, or approved equal.

C. Materials used for the manufacture of polyethylene pipe and fittings shall be extra high molecular weight, high-density polyethylene resin. The material shall be listed by PPI (Plastic Pipe Institute) and shall meet the following resin properties:

ASTM Test	Description	Values HDPE
D-1505	Density g/CM 3	< .941
D-1238	Melt Index, g/10 min Condition E	> .55 grams/10 min.
D-638	Tensile Strength at yield (psi)	3000 min.
D-1693	Environmental Stress Crack Resistance Condition B, F 20	96 hrs.
D-790	Flexural Modulus, MPa (psi)	< 80,000
D-746	Brittleness Temperature	-75°C Max

D. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same raw material, including both the base resin and coextruded resin. The pipe shall be homogeneous throughout and free of visible cracks, holes, voids, foreign inclusions, or other defects that may affect the wall integrity.

E. Fitting and Conduit Bodies:

1. Directional Bore and Plow Type Installation: Electrofusion or Universal Aluminum threaded couplings. Tensile strength of coupled pipe must be greater than 2,000 lbs.

2. For all other type of installation: Coupler must provide a water tight connection. The tensile strength of coupled pipe must be greater than 1,000 lbs.

3. E-loc type couplings are not acceptable in any situations.

4. Acceptable Manufacturers: ARCON, Carlon, or approved equal.

2.8 OUTLET BOXES

A. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1; galvanized steel, minimum of 14 gauge, with 1/2 inch male fixture studs where required.

B. Nonmetallic Outlet Boxes: ANSI/NEMA OS 2.

C. Cast Boxes: NEMA FB1, Type FD, Aluminum or cast feralloy, deep type, gasketed cover, threaded hubs.

D. Outlet boxes for luminaires to be not less than 1-1/2" deep, deeper if required by the number of wires or construction. The box shall be coordinated with surface luminaires to conceal the box from view or provide a finished trim plate.

E. Switch outlet boxes for local light control switches, dimmers and occupancy sensors shall be 4 inches square by 2-1/8 inches deep, with raised cover to fit flush with finish wall line. Multiple gang switch outlets shall consist of the required number of gang boxes appropriate to the quantity of switches comprising the gang. Where walls are plastered, provide a plaster raised cover. Where switch outlet boxes occur in exposed concrete block walls, boxes shall be installed in the block cavity with a raised square edge tile cover of sufficient depth to extend out to face of block or masonry boxes.

F. Outlet boxes for telephone substations in walls and columns shall be 4 inches square and 2-1/8 inches deep with single gang raised cover to fit flush with finished wall line equipped with flush telephone plate.

G. Wall or column receptacle outlet boxes shall be 4 inches square with raised cover to fit flush with finished wall line. Boxes in concrete block walls shall be installed the same as for switch boxes in block walls.

2.9 ELECTRICAL CONNECTION

A. Electrical connection to equipment and motors, sized per NEC. Coordinate requirements with contractor furnishing equipment or motor. Refer to specifications and general installation notes for terminations to motors.

2.10 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: ANSI/NEMA OS 1; galvanized steel.

B. Sheet metal boxes larger than 12 inches in any dimension that contain terminations or components: Continuous hinged enclosure with 1/4 turn latch and white back panel for mounting terminal blocks and electrical components.

C. Cast Metal Boxes for Outdoor and Wet Location Installations: NEMA 250; Type 4 and Type 6, flat-flanged, surface-mounted junction box, UL listed as raintight. Galvanized cast iron box and cover with ground flange, neoprene gasket, and stainless steel cover screws.

D. Cast Metal Boxes for Underground Installations: NEMA 250; Type 4, inside flanged, recessed cover box for flush mounting, UL listed as raintight. Galvanized cast iron box and plain cover with neoprene gasket and stainless steel cover screws.

E. Flanged type boxes shall be used where installed flush in wall.

2.11 HANDHOLES

A. Handhole, composite polymer concrete body and cover. Stainless steel hardware. Bolted non-skid cover rated for 10,000 pounds. Design load occasional non-deliberate vehicular traffic. Stack units to achieve depth shown on plans. Units in landscaped areas shall be green in color. 11”W, 18”L, 18”D or dimensions as shown on plans.

PART 3 - EXECUTION

3.1 CONDUIT SIZING

A. Size conduit as shown on the drawings and specifications. Where not indicated in the contract documents, conduit size shall be according to N.E.C. (Latest Edition). Conduit and conductor sizing shall be coordinated to limit conductor fill to less than 40%, maintain conductor ampere capacity as required by the National Electrical Code (to include enlarged conductors due to temperature and quantity derating values) and to prevent excessive voltage drop and pulling tension due to long conduit/conductor lengths.

B. Minimum Conduit Size (Unless Noted Otherwise):

1. Above Grade: 3/4 inch. (The use of 1/2 inch would be allowed for installation conduit to individual light switches, individual receptacles and individual fixture whips from junction box.)

2. Below Grade 5' or less from Building Foundation: 1 inch.

3. Below Grade More than 5' from Building Foundation: 1 inch.

4. Controls Conduit: 3/4 inch.

C. Conduit sizes shall change only at the entrance or exit to a junction box, unless specifically noted on the drawings.

3.2 CONDUIT ARRANGEMENT

A. In general, conduit shall be installed concealed in walls, in finished spaces and where possible or practical, or as noted otherwise. In unfinished spaces, mechanical and utility areas, conduit may run either concealed or exposed as conditions dictate and as practical unless noted otherwise on drawings. Installation shall maintain headroom in exposed vicinities of pedestrian or vehicular traffic.

B. Conduit shall not share the same cell as structural reinforcement in masonry walls.

C. Conduit routing on drawings less shall be considered diagrammatic, unless noted otherwise. The correct routing, when shown diagrammatically shall be chosen by the Contractor based on information in the contract documents, in accordance with

manufacturer's written instructions, applicable codes, the NECA's "Standard of Installation", in accordance with recognized industry standards, and coordinated with other contractors.

D. Contractor shall adapt his work to the job conditions and make such changes as required and permitted by the Architect/Engineer, such as moving to clear beams and joists, adjusting at columns, avoiding interference with windows, etc., to permit the proper installation of other mechanical and/or electrical equipment.

E. Contractor shall cooperate with all Contractors on the project. He shall obtain details of other Contractor's work in order to ensure fit and avoid conflict. Any expense due to the failure of This Contractor to do so shall be paid for in full by him. The other trades involved as directed by the Architect/Engineer shall perform the repair of work damaged as a result of neglect or error by This Contractor. The resultant costs shall be borne by This Contractor.

3.3 CONDUIT SUPPORT

A. Conduit runs installed above a suspended ceiling shall be properly supported. In no case shall conduit rest on the suspended ceiling construction, nor utilize ceiling support system for conduit support.

B. Conduit shall <u>not</u> be supported from ductwork, water, sprinkler piping, or other non-structural members, unless approved by the Architect/Engineer. All supports shall be from structural slabs, walls, structural members, and bar joists, and coordinated with all other applicable contractors, unless noted otherwise.

C. Conduit shall be held in place by the correct size of galvanized one-hole conduit clamps, two-hole conduit straps, patented support devices, clamp back conduit hangers, or by other means if called for on the drawings.

D. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.

E. Spring-steel conduit clips specifically designed for supporting single conduits or tubing may be used in lieu of malleable-iron hangers for 1" and smaller raceways serving lighting and receptacle branch circuits above accessible ceilings and for securing raceways to slotted channel and angle supports.

F. Group conduits in parallel runs where practical and use conduit racks or trapeze hangers constructed of steel channel, suspended with threaded solid rods or wall mounted from metal channels with conduit straps or clamps. Provide space in each rack or trapeze for 25% additional conduits.

G. Do not exceed 25 lbs. per hanger and a minimum spacing of 2’-0” on center when attaching to metal roof decking (excludes concrete on metal deck). This 25 lbs. load and 2’-0” spacing include adjacent electrical and mechanical items hanging from deck. If the hanger restrictions cannot be achieved, supplemental framing off steel framing will need to be added.

H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.

I. Supports for metallic conduit shall be no greater than 10 feet. A smaller interval may be used if necessitated by building construction, but in no event shall support spans exceed the National Electrical Code requirements. Conduit shall be securely fastened within 3 feet of each outlet box, junction box, device box, cabinet, or fitting.

J. Supports of flexible conduit shall be within 12 inches of each outlet box, junction box, device box, cabinet, or fitting and at intervals not to exceed 4.5 feet.

K. Supports for non-metallic conduit shall be at sufficiently close intervals to eliminate any sag in the conduit. The manufacturer's recommendations shall be followed, but in no event shall support spans exceed the National Electrical Code requirements.

L. Where conduit is to be installed in poured concrete floors or walls, provide concrete-tight conduit inserts securely fastened to forms to prevent conduit misplacement.

M. Finish:

1. Prime coat exposed steel hangers and supports. Hangers and supports in crawl spaces, pipe shafts, and above suspended ceiling spaces are not considered exposed.

2. Trim all ends of exposed field fabricated steel hangers, slotted channel and threaded rod to within 1” of support or fastener to eliminate potential injury to personnel unless shown otherwise on the drawings. Smooth ends and install elastomeric insulation with two coats of latex paint if exposed steel is within 6’-6” of finish floor and presents potential injury to personnel.

3.4 CONDUIT INSTALLATION

A. Conduit Connections:

1. Shorter than standard conduit lengths shall be cut square using industry standards. The ends of all conduits cut shall be reamed or otherwise finished to remove all rough edges.

2. Metallic conduit connections in slab on grade installation shall be sealed and one coat of rust inhibitor primer applied after the connection is made.

3. Where conduits with tapered threads cannot be coupled with standard couplings, then approved split or Erickson couplings shall be used. Running threads will not be permitted.

4. Install expansion/deflection joints where conduit crosses structure expansion/seismic joints.

B. Conduit terminations for all low voltage wiring shall have nylon bushings installed on each end of every conduit run.

C. Conduit Bends:

1. Use a hydraulic one-shot conduit bender or factory elbows for bends in conduit 2" in size or larger. All steel conduit bending shall be done cold; no heating of steel conduit shall be permitted.

2. All bends of rigid polyvinyl chloride conduit (PVC) shall be made with the manufacturer's approved bending equipment. The use of spot heating devices will not be permitted (i.e. blow torches).

3. A run of conduit shall not contain more than the equivalent of four (4) quarter bends (360°), including those bends located immediately at the outlet or body.

4. Telecommunications conduits shall have no more than two (2) 90 degree bends between pull points and contain no continuous sections longer than 100 feet. Insert pull points or pull boxes for conduits exceeding 100 feet in length.

    a. A third bend is acceptable if:

        1) The total run is not longer than (33) feet.
        2) The conduit size is increased to the next trade size.

5. Telecommunications pull boxes shall not be used in lieu of a bend. Align conduits that enter into the pull box from opposite ends with each other. Pull box size shall be twelve (12) times the diameter of the largest conduit. Slip sleeves or gutters can be used in place of a pull box.

6. Telecommunications conduit bend radius shall be six (6) times the diameter for conduits under 2” and ten (10) times the diameter for conduits over 2”.

7. Rigid polyvinyl chloride conduit (PVC) runs longer than 100 feet or runs which have more than two 90° equivalent bends (regardless of length) shall use rigid metal or RTRC factory elbows for bends.

8. Use conduit bodies to make sharp changes in direction (i.e. around beams).

D. Conduit Placement:

1. Conduit shall be mechanically continuous from source of current to all outlets. Conduit shall be electrically continuous from source of current to all outlets, unless a properly sized grounding conductor is routed within the conduit. All metallic conduits shall be bonded per the National Electrical Code.

2. Route exposed conduit and conduit above suspended ceilings (accessible or not) parallel/perpendicular to the building structural lines, and as close to building structure as possible. Wherever possible, route horizontal conduit runs above water and steam piping.

3. Route conduit through roof openings provided for piping and ductwork where possible. If not provided or routing through provided openings is not possible, route through roof jack with pitch pocket. Coordinate roof penetrations with other trades.

4. Conduits, raceway, and boxes shall not be installed in concealed locations in metal deck roofing or less than 1.5” below bottom of roof decking.

5. Avoid moisture traps where possible. Where unavoidable, provide a junction box with drain fitting at conduit low point.

6. All conduits through walls shall be grouted or sealed into openings. Where conduit penetrates firewalls and floors, seal with a UL listed sealant. Seal penetrations with intumescent caulk, putty, or sheet installed per manufacturer's recommendations. All materials used to seal penetrations of firewalls and floors shall be tested and certified as a system per ASTM E814 Standard for fire tests or through-penetration fire stops as manufactured by 3M or approved equal.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN MASONRY OR EXTERIOR WALLS UNDER THIS DIVISION. A QUALIFIED MASON AT THE EXPENSE OF THIS CONTRACTOR SHALL REPAIR ALL OPENINGS TO MATCH EXISTING CONDITIONS.

8. Seal interior of conduit at exterior entries, air handling units, coolers/freezers, etc., and where the temperature differential can potentially be greater than 20°F, to prevent moisture penetration. Seal shall be placed where conduit enters warm space. Conduit seal fitting shall be a drain/seal, with sealing compound, equal to O-Z/Gedney type EYD.

9. Conduits, if run in concrete structure, shall be in middle one-third of slab thickness, and leave at least 3” min. concrete cover. Conduits shall run parallel to each other and spaced at least 8” apart centerline to centerline. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement. Maximum conduit outside diameter 1”.

10. No conduits are allowed in concrete on metal deck unless expressly approved in writing by the Structural Engineer.

11. Do not route conduits across each other in slabs on grade.

12. Rigid polyvinyl chloride conduit (PVC) shall be installed when material surface temperatures and ambient temperature are greater than 40°F.

13. Where rigid polyvinyl chloride conduit (PVC) conduit is used below grade, in a slab, below a slab, etc., a transition to rigid galvanized steel or PVC-coated steel conduit shall be installed before conduit exits earth. The metallic conduit shall extend a minimum of 6" into the surface concealing the non-metallic conduit.

14. Contractor shall provide suitable mechanical protection around all conduits stubbed out from floors, walls or ceilings during construction to prevent bending or damaging of stubs due to carelessness with construction equipment.

15. Contractor shall provide a polypropylene pull cord with 2000 lbs. tensile strength in each empty conduit (indoor and outdoor), except in sleeves and nipples.

16. Telecommunications conduits that protrude through the structural floor shall be installed 1 to 3” above finished floor (AFF).

17. Telecommunications conduits that enter into Telecommunications rooms below the finished ceiling shall terminate a minimum of 4” below ceiling and as close to the wall as possible.

18. Telecommunications conduits that are below grade and enter into a building shall terminate a minimum of 4” above finished floor (AFF) and as close to the wall as possible.

3.5 CONDUIT TERMINATIONS

A. Where conduit bonding is indicated or required in the contract documents, the bushings shall be a grounding type sized for the conduit and ground bonding conductor as manufactured by O-Z/Gedney, Appleton, Thomas & Betts, Burndy, Regal, or approved equal.

B. Conduits with termination fittings shall be threaded for one (1) lock nut on the outside and one (1) lock nut and bushing on the inside of each box.

C. Where conduits terminate in boxes with knockouts, they shall be secured to the boxes with lock nuts and provided with approved screw type tinned iron bushings or fittings with plastic inserts.

D. Where conduits terminate in boxes, fittings, or bodies with threaded openings, they shall be tightly screwed against the shoulder portion of the threaded openings.

E. Conduit terminations to all motors shall be made with flexible metallic conduit (FMC), unless noted otherwise. Final connections to roof exhaust fans, or other exterior motors and motors in damp or wet locations shall be made with liquidtight flexible metallic conduit (LFMC). Motors in hazardous areas, as defined in the National Electrical Code, shall be connected using flexible conduit rated for the environment. Flexible conduit shall not exceed 6' in length. Route equipment ground conductors from circuit ground to motor ground terminal through flexible conduit.

F. Rigid polyvinyl chloride conduit (PVC) conduit shall be terminated using fittings and bodies produced by the manufacturer of the conduit, unless noted otherwise. Prepare conduit as per manufacturer's recommendations before joining. All joints shall be solvent welded by applying full even coat of plastic cement to the entire areas that will be joined. Turn the conduit at least a quarter to one half turn in the fitting and let the joint cure for 1-hour minimum or as per the manufacturer's recommendations.

G. All conduit ends shall be sealed with plastic immediately after installation to prevent the entrance of any foreign matter during construction. The seals shall be removed and the conduits blown clear of any and all foreign matter prior to any wires or pull cords being installed.

3.6 UNDERGROUND CONDUIT INSTALLATION

A. Conduit Connections:

1. Conduit joints in a multiple conduit run shall be staggered at least one foot apart.

B. Conduit Bends (Lateral):

1. Conduits shall have long sweep radius elbows instead of standard elbows wherever special bends are indicated and noted on the drawings, or as required by the manufacturer of the equipment or system being served.

2. Telecommunications conduit bend radius shall be six times the diameter for conduits under 2" and ten times the diameter for conduits over 2". Where long cable runs are involved, sidewall pressures may require larger radius bends. Coordinate with Architect/Engineer prior to conduit installation to determine bend radius.

C. Conduit Elbows (vertical):

1. Minimum metal or RTRC elbow radiuses shall be 30 inches for primary conduits (>600V) and 18 inches for secondary conduits (<600V). Increase radius, as required, based on pulling tension calculation requirements.

D. Conduit Placement:

1. Conduit runs shall be pitched a minimum of 4" per 100 feet to drain toward the terminations. Duct runs shall be installed deeper than the minimum wherever required to avoid any conflicts with existing or new piping, tunnels, etc.

2. For parallel runs, use suitable separators and chairs installed not greater than 4' on centers. Band conduit together with suitable banding devices. Securely anchor conduit to prevent movement during concrete placement or backfilling.

3. Where concrete is required, the materials for concreting shall be thoroughly mixed to a minimum f'c = 2500 and immediately placed in the trench around the conduits. No concrete that has been allowed to partially set shall be used.

4. Before the Contractor pulls any cables into the conduit he shall have a mandrel 1/4" smaller than the conduit inside diameter pulled through each conduit and if any concrete or obstructions are found, the Contractor shall remove them and clear the conduit. Spare conduit shall also be cleared of all obstructions.

5. Conduit terminations in manholes, masonry pull boxes, or masonry walls shall be with malleable iron end bell fittings.

6. All spare conduits not terminated in a covered enclosure shall have its terminations plugged as described above.

7. Ductbanks and conduit shall be installed a minimum of 24" below finished grade, unless otherwise noted on the drawings or elsewhere in these specifications.

8. All non-metallic conduit installed underground outside of a slab shall be rigid.

E. Horizontal Directional Drilling:

1. Entire drill path shall be accurately surveyed, with entry and exit stakes placed and coordinated with other contractors. If using a magnetic guidance system, entire drill path shall be surveyed for any surface geo-magnetic variations or anomalies.

2. Any utility locates within 20 feet of the bore path shall have the exact location physically verified by hand digging or vacuum excavation. Restore inspection holes to original condition after verification.

F. Raceway Seal:

1. Where a raceway enters a building or structure, it shall be sealed with a sealing bushing or duct seal to prevent the entry of liquids or gases. Seal must be compatible with conductors and raceway system. Spare or unused raceway shall also be sealed.

2. All telecommunications conduits and innerducts, including those containing cables, shall be plugged at the building and vault with “JackMoon” or equivalent duct seal, capable of withstanding a 10 foot head of water (5 PSI).

3.7 CONDUIT INSTALLATION SCHEDULE

A. In the event the location of conduit installation represents conflicting installation requirements as specified in the following schedule, a clarification shall be obtained from the Architect/Engineer. If This Contractor is unable to obtain a clarification as outlined above, concealed rigid galvanized steel conduit installed per these specifications and the National Electrical Code shall be required.

B. The following schedule shall be adhered to unless they constitute a violation of applicable codes or are noted otherwise on the drawings. The installation of RMC conduit will be permitted in place of any and all conduit specified in this schedule.

1. Exposed:

a. Branch Circuits (lighting, receptacles, controls, etc.): EMT.

b. Mechanical Equipment Feeders (pumps, AHU's, chillers, etc.): EMT.

c. Controls: EMT painted blue or dyed blue.

2. Finished Spaces/Concealed: EMT.

3. Wet or Damp Locations: RMC conduit, boxes and fittings, installed and equipped so as to prevent water from entering the conduit system.

4. In or Under Slabs on Grade or Site Conduits:

a. Within 5' from the Exterior Perimeter of a Building Foundation: RMC conduit with a minimum of 3" thickness between the surface of the concrete and the nearest conduit. Concrete to be doweled into the foundation.

b. 5' or Greater from the Exterior Perimeter of a Building Foundation: PVC or RMC.

c. Under Roads, Drives, and Vehicle Traveled Ways: Directional boring: HDPE with pressurized grout backfill.

5. Interior Locations:

a. Exposed: EMT conduit.

1) Exposed Controls Conduit: EMT painted blue or dyed blue.

b. Concealed: EMT.

3.8 BOX INSTALLATION SCHEDULE

A. Galvanized steel boxes may be used in:

1. Concealed interior locations above ceilings and in hollow studded partitions.
2. Exposed interior locations in mechanical rooms and in rooms without ceilings; higher than 8’ above the highest platform level.
3. Direct contact with concrete except slab on grade.
4. Recessed in stud wall of kitchens and laundries.

B. Cast boxes shall be used in:

1. Exterior locations.
2. Hazardous locations.
3. Exposed interior locations within 8’ of the highest platform level.
4. Direct contact with earth.
5. Direct contact with concrete in slab on grade.
6. Wet locations.
7. Kitchens and laundries when exposed on wall surface.

3.9 COORDINATION OF BOX LOCATIONS

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

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

C. Locate and install boxes to allow access. Avoid interferences with ductwork, piping, structure, equipment, etc. Where installation is inaccessible, provide access doors. Coordinate locations and sizes of required access doors with the Architect/Engineer and General Contractor.

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

E. Coordinate locations with Heating Contractor to avoid baseboard radiation cabinets.

3.10 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. Do not install boxes back-to-back in walls.

1. Provide a minimum horizontal separation of 6 inches between boxes installed on opposite sides of non-rated stud walls.

2. Provide a minimum horizontal separation of 24 inches between boxes installed on opposite sides of fire-rated walls. When the minimum separation cannot be maintained, install fire-rated moldable pads to all five sides of the back box to maintain the fire rating of the wall. Install moldable pads in accordance with UL listing for the specific product. Sound insulation pads are not acceptable for use in fire-rated wall applications unless the product carries the necessary fire rating.

D. Install sound insulation pads on all five sides of the back of all boxes in sound-rated wall assemblies. Sound-rated wall assemblies are defined as partition types carrying a Sound Transmission Class (STC) rating.

3.11 EXPOSED BOX INSTALLATION

A. Boxes shall be secured to the building structure with proper size screws, bolts, hanger rods, or structural steel elements.

B. On brick, block and concrete walls or ceilings, exposed boxes shall be supported with no less than two (2) Ackerman-Johnson, Paine, Phillips, or approved equal screw anchors or expansion shields and round head machine screws. Cast boxes shall not be drilled.

C. On steel structures, exposed boxes shall be supported to the steel member by drilling and tapping the member and fastening the boxes by means of round head machine screws.

D. Boxes may be supported on steel members by APPROVED beam clamps if conduit is supported by beam clamps.

E. Boxes shall be fastened to wood structures by means of a minimum of two (2) wood screws adequately large and long to properly support. (Quantity depends on size of box.)

F. Wood, plastic, or fiber plugs shall not be used for fastenings.

G. Explosive devices shall not be used unless specifically allowed.

END OF SECTION

SECTION 26 05 53
ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Nameplates and tape labels
B. Wire and cable markers
C. Conductor color coding
D. Pole identification

1.2 REFERENCES

A. ANSI C2 – National Electrical Safety Code

B. NFPA 70 – National Electrical Code

C. ANSI A13.1 – Standard for Pipe Identification

D. ANSI Z535.4 – Standard for Product Safety Signs and Labels

PART 2 - PRODUCTS

2.1 ELECTRICAL IDENTIFICATION PRODUCTS

A. Colored Adhesive Marking Tape for banding Raceways, Wires, and Cables: Self-adhesive vinyl tape not less than 3 mils thick by 1 inch to 2 inches in width.

B. Pretensioned Flexible Wraparound Colored Plastic Sleeves for Cable Identification: flexible acrylic bands sized to suit the cable diameter and arranged to stay in place by pre-tensioned gripping action when coiled around the cable.

C. Wire/Cable Designation Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound, cable/conductor markers with preprinted numbers and letter.

D. Cable Ties: Fungus-inert, self-extinguishing, one-piece, self-locking nylon cable ties, 0.18-inch minimum width, 50-lb minimum tensile strength, and suitable for a temperature range from minus 50°F to 350°F. Provide ties in specified colors when used for color coding.

E. Underground Plastic Markers: Bright colored continuously printed plastic ribbon tape of not less than 6 inches wide by 4 mil thick, printed legend indicating type of underground line, manufactured for direct burial service. Tape shall contain a continuous metallic wire to allow location with a metal detector.

F. Aluminum, Wraparound Marker Bands: 1" in width, .014 inch thick aluminum bands with stamped or embossed legend, and fitted with slots or ears for permanently securing around wire or cable jacket or around groups of conductors.

G. Brass or aluminum Tags: 2" by 2" by .05-inch metal tags with stamped legend, punched for fastener.

H. Indoor/Outdoor Number and Letters: Outdoor grade vinyl label, minimum of 3/4” high x 9/16” wide, with acrylic adhesive designed for permanent application in severe indoor and outdoor environments.

2.2 NAMEPLATES AND SIGNS

A. Engraved, Plastic-Laminated Labels, Signs and Instruction Plates: Engraving stock melamine plastic laminate, 1/16-inch minimum thick for signs up to 20 square inches, or 8 inches in length; 1/8 inch thick for larger sizes. Labels shall be punched for mechanical fasteners. Engraving legend shall be as follows:

1. Black letters on white face for normal power.

2. White letters on red face for emergency power.

3. White letters on green face for grounding.

4. Black letter on yellow face for Caution or UPS.

B. Baked–Enamel Signs for interior Use: Preprinted aluminum signs, punched, or drilled for fasteners, with colors, legend, and size required for application. Mounting ¼" grommets in corners.

C. Exterior, Metal-Backed, Butyrate Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with .0396 inch galvanized-steel backing: and with colors, legend, and size required for application. Mounting ¼" grommets in corners.

D. Safety Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145.

E. Fasteners for Plastic-Laminated Signs; Self-tapping stainless steel screws or number 10/32 stainless steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lettering and Graphics: Coordinate names, abbreviations, colors, and other designations used in electrical identification work with corresponding designations specified or indicated. Install numbers, lettering, and colors as required by code.

B. Install identification devices in accordance with manufacturer's written instruction and requirements of NEC.

C. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work. All mounting surfaces shall be cleaned and degreased prior to identification installation.

D. Identify Junction, Pull and Connection Boxes: Labeling shall be 3/8-inch Kroy tape or Brother self-laminating vinyl label, or permanent magic marker (color coded), neatly hand printed. In rooms that are painted out, provide labeling on inside of cover.

E. Circuit Identification: Tag or label conductors as follows:

1. Multiple Power or Lighting Circuits in Same Enclosure: Where multiple branch circuits are terminated or spliced in a box or enclosure, label each conductor with source and circuit number.

2. Multiple Control Wiring and Communication/Signal Circuits in Same Enclosure: For control and communications/signal wiring, use wire/cable marking tape at terminations in wiring boxes, troughs, and control cabinets. Use consistent letter/number conductor designations throughout on wire/cable marking tape.

3. Match identification markings with designations used in panelboards shop drawings, Contract Documents, and similar previously established identification schemes for the facility's electrical installations.

F. Apply warning, caution and instruction signs as follows:

1. Install warning, caution or instruction signs where required by NEC, where indicated, or where reasonably required to assure safe operation and maintenance of electrical systems and of the items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions or explanations are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.

2. Emergency Operating Signs: Install, where required by NEC, where indicated, or where reasonably required to assure safe operation and maintenance of electrical systems and of the items to which they connect, engraved laminate signs with white legend on red background with minimum 3/8-inch high lettering for emergency instructions on power transfer, load shedding, or other emergency operations.

G. Apply circuit/control/item designation labels of engraved plastic laminate for pushbuttons, pilot lights, alarm/signal components, and similar items, except where labeling is specified elsewhere.

H. Install labels parallel to equipment lines at locations as required and at locations for best convenience of viewing without interference with operation and maintenance of equipment.

I. Underground Electrical Lines: For exterior underground power, control, signal, and communication lines, install continuous underground plastic line marker located directly above line at 6 to 8 inches below grade. Where width of multiple lines installed in a common trench or concrete envelope does not exceed 16 inches overall, use a single marker. Install line marker for underground wiring, both direct-buried cables and cables in raceway.

3.2 BOX LABELING

A. All junction, pull, and connection boxes shall be identified as follows:

1. For power and lighting circuits, indicate system voltage and identity of contained circuits ("120V, 1LA1-3,5,7").

2. For other wiring, indicate system type and description of wiring ("FIRE ALARM NAC #1").

B. Box covers shall be painted to correspond with system type as follows:

1. Fire Alarm: Red
2. Orange
3. Optional Emergency Branch: Yellow
4. Temperature Control/Building Automation: Blue

3.3 CONDUCTOR COLOR CODING

A. Color coding shall be applied at all panels, switches, junction boxes, pull boxes, vaults, manholes etc., where the wires and cables are visible and terminations are made. The same color coding shall be used throughout the entire electrical system, therefore maintaining proper phasing throughout the entire project.

B. Where more than one nominal voltage system exists in a building or facility, the identification of color coding used in the panelboard or equipment shall be permanently posted on the interior of the door or cover.

C. All wires and cables, 6 AWG or larger, used in motor circuits, main feeders, sub-main feeders and branch circuits, shall be coded by the application of plastic tape. The tape shall be 3-M, Plymouth or Permacel, in colors specified below. The tape shall be applied at each conductor termination with two 1-inch tape bands at 6-inch centers. Contractor option to use colored cabling in lieu of the tape at each end for conductor 6 AWG to 500 KCM.

D. Wire and cables smaller than 6 AWG shall be color coded by the manufacturer.

E. Colored cable ties shall be applied in groups of three ties of specified color to each conductor at each terminal or splice point starting 3 inches from the termination and spaced at 3- inches centers. Tighten to a snug fit, and cut off excess length.

F. Where more than one nominal voltage system exists in a building or facility, each ungrounded conductor of a multi-wire branch circuit, where accessible, shall be identified by phase and system.

G. Conductors shall be color coded as follows:

1. 120/240 Volt, 3-Wire:

    a. A-Phase – Black
    b. B-Phase – Red
    c. Neutral – White
    d. Ground Bond – Green

2. 208Y/120 Volt, 4-Wire:

    a. A-Phase – Black
    b. B-Phase – Red
    c. C-Phase – Blue
    d. Neutral – White
    e. Ground Bond – Green

3. 480Y/277 Volt, 4-Wire:

    a. A-Phase – Brown
    b. B-Phase – Orange
    c. C-Phase – Yellow
    d. Neutral – Gray
    e. Ground Bond – Green

3.4 CONTROL EQUIPMENT IDENTIFICATION

A. Provide identification on the front of all control equipment, such as disconnect switches, starters, VFDs, contactors, motor control centers, etc. Nameplate text shall be a minimum of 1/4” high.

B. Labeling shall include:

1. Equipment type and contract documents designation of equipment being served.
2. Location of equipment being served if it is not located within sight.
3. Voltage and phase of circuit(s).

4. Panel and circuit number(s) serving the equipment.

EXHAUST FAN EF-1 ("LOCATED ON ROOF") 480V, 3-PHASE FED FROM “1HA1-1”

3.5 POLE IDENTIFICATION

A. Lighting poles, bollards and overhead distribution poles shall be individually indentified with a unique number, for maintenance purposes. Apply the vinyl label number above the hand hole cover or 24” above grade. Bollards may be identified with a number applied inside the luminaire that is visible from the exterior.

END OF SECTION

SECTION 26 56 68
EXTERIOR ATHLETIC LIGHTING

PART 1 – GENERAL

1.1 SUBMITTALS

A. Submit COMPLETE product data and performance evaluations as required by this specification for review by the Architect/Engineer. The following performance criterion establishes the minimum performance level that must be achieved. Failure to comply with the following performance criteria and specifications will require complete re-submittals with all necessary revisions to the sports field lighting system. ALL REVISIONS WILL BE AT NO COST TO THE OWNER. FAILURE TO COMPLY SHALL BE CONSIDERED REASONABLE CAUSE FOR REJECTION OF BID.

B. The performance evaluations shall consist of the following venues/areas:

1. Outdoor skate park

C. Include scaled drawings/prints, on a minimum 22” x 34” size drawing, of the entire field, for each of the evaluations showing manufacturer’s photometric performance and summary to verify compliance with design criteria as outlined in this specification.

D. Include scaled drawings/prints of the “spill light” out to a radius of 450’ from center of each field. Provide horizontal initial foot candle calculations. Take into account elevation change.

E. Include technical specification cutsheet of lamp used in calculations indicating initial lumens at 100 hours burn in and mean lumens at 40% rated life for both vertical and horizontal lamp positioning. Include rated lamp life in hours.

F. Include technical specification cutsheets of fixtures, remote ballast enclosures, poles, engineered base design per pole, and all necessary mounting hardware and accessories.

G. Include electrical load summary table with specific KVA load per pole. KVA load shall include actual ballast load or input KVA and not just lamp wattage total.

1.2 LIGHTING PERFORMANCE

A. Performance Requirements: Playing surfaces shall be lit to an average constant light level and uniformity as specified in the chart below. Light levels shall be held constant for 25 years. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Average illumination level shall be measured in accordance with the IESNA LM-5-04. Light levels shall be guaranteed from the first 100 hours of operation for the maximum warranty period.

Area of Lighting	Average Constant Light Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Skate Park	30 footcandles	5.0:1.0	194	10’ x 10’

1. Lumen maintenance control strategy: A constant light system shall use automatic power adjustments to achieve a lumen maintenance control strategy as described in the IESNA Lighting Handbook 10th Edition, Lighting Controls Section, page 16-8: "Lumen maintenance involves adjusting lamp output over time to maintain constant light output as lamps age, and dirt accumulation

reduces luminaire output. With lumen maintenance control, either lamps are dimmed when new, or the lamp's current is increased as the system ages."

2. Independent Test Report: Manufacturers bidding any form of a constant light system must provide an independent test report certifying the system meets the lumen maintenance control strategy above and verifying the field performance of the system for the duration of the useful life of the lamp based on lamp replacement hours. Report shall be signed by a licensed professional engineer with outdoor lighting experience. If report is not provided at least 10 days prior to bid opening, the manufacturer shall provide the initial and maintained designs called for in this specification under Alternate Manufacturers, section 1.8.

3. Project References: Manufacturers bidding any form of a constant light system must provide a minimum of five (5) project references within the state of Wisconsin that have been completed within the last calendar year utilizing this exact technology. Manufacturer will include project name, project city, and if requested, contact name and contact phone number for each reference.

B. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, the pole mounting heights from the playing field surface shall be 50'.

1.3 LIFE-CYCLE COSTS

A. Energy Consumption: The average kW consumption for the field lighting system shall be 16.8 or less.

B. Complete Lamp Replacement: Manufacturer shall include all group lamp replacements required to provide 25 years of operation based upon 300 usage hours per year.

C. Preventative and Spot Maintenance: Manufacturer shall provide all preventative and spot maintenance, including parts and labor for 25 years from the date of equipment shipment. Individual lamp outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

D. Remote Monitoring System: System shall monitor lighting performance, including on/off status, hours of usage and lamp outages. If luminaire outages that affect playability are detected, manufacturer shall contact owner so that maintenance can be proactively scheduled. The controller shall determine switch position (Manual or Auto) and contactor status (open or closed).

E. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields, to only having permission to execute "early off" commands by phone.

Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

F. Management Tools: Manufacturer shall provide a web-based database of actual field usage and provide reports by facility and user group.

Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

1. Cumulative hours: shall be tracked to show the total hours used by the facility

2. Current lamp hours: shall be tracked separately to reflect the amount of hours on the current set of lamps being used, so relamping can be scheduled accurately

G. Communication Costs: Manufacturer shall include communication costs for operating the control and monitoring systems for a period of 25 years.

H. 25-Year Life-cycle Cost: Manufacturer shall submit 25-year life-cycle cost calculations as follows. Equipment price and total life-cycle cost shall be entered separately on bid form.

1.	Luminaire energy consumption # luminaires x __kW demand per luminaire x 0.08 kWh rate x 300 annual usage hours x 25 years	
2.	Cost for spot relamping and maintenance over 25 years Assume 7.5 repairs at $ 500 each if not included with the bid	+
3.	Cost to relamp all luminaires during 25 years 300 annual usage hours x 25 years / 2100 hours x $125 lamp & labor x # luminaires if not included with the bid	+
4.	Extra energy used without base bid automated control system $ Energy consumption in item a. x 10% if control system not included with the bid	+
	TOTAL 25-Year Life-cycle Operating Cost	=

1.4 WARRANTY AND GUARANTEE

A. 25-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 25 years OR for the maximum hours of coverage based on the estimated annual usage, whichever occurs first. Warranty shall guarantee light levels; lamp replacements; system energy consumption; monitoring, maintenance and control services, spill light control, and structural integrity. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty may exclude fuses, storm damage, vandalism, abuse and unauthorized repairs or alterations. Group lamp replacements for constant light systems must occur in accordance with the independent test report provided by the manufacturer; alternate systems must relamp every 2100 hours.

1.5 DELIVERY TIMING

A. Equipment On-Site: The equipment must be on-site 4-6 weeks from receipt of approved submittals and receipt of complete order information.

1.6 PRESUBMITTAL REQUIREMENTS

A. The drawings and specifications were prepared based on MUSCO's Light Structure Green system. A Qualite Sports Lighting system utilizing the manufacturer's International Visored Fixture may be submitted for review. A complete substitute submittal shall be provided for approval as specified herein. The substitute system must meet or exceed the standards set by the approved Skate Park Lighting Variance listed at the end of this specification section. If the substitute system is approved, the Contractor shall be responsible for all costs associated with any changes required to accommodate the substitute equipment including, but not limited to, structural, electrical, and site work. The Contractor shall also pay additional costs necessary for revisions of drawings and/or specifications by the Owner's Engineer.

B. Substitute Submittal: The Contractor shall provide a complete submittal package for the substitute lighting system for approval as outlined in the SUBMITTALS portion of this specification by 2:00 PM, May 21th, 2014.

C. Design Approval: The owner/engineer will review pre-bid submittals to ensure compliance to the specification. An addendum will be issued the Wednesday before the bid opening (May 28th, 2014), listing any other approved lighting manufacturers and designs.

1.7 ALTERNATE SYSTEM REQUIREMENTS

A. Compliance to Specifications: Acceptance of a bid alternate does not negate the contractor and lighting manufacturer's responsibility to comply fully with the requirements of these specifications. Any exceptions to the specifications must be clearly stated in the prior approval submittal documents.

B. Light Level Requirements: Manufacturer shall provide computer models guaranteeing light levels on the field over 25 years. If a constant light level cannot be provided, the specified maximum Recoverable Light Loss Factor and maintenance/group relamping schedule shall be provided in accordance with recommendations in the Pennsylvania State University report "Empirical Light Loss Factors for Sports Lighting", presented at the 2009 IESNA Annual Conference.

Lamp Replacement Interval (hours)	Recoverable Light Loss Factor (RLLF)
2100	0.69

For alternate systems, scans for both initial and maintained light levels are required.

Area of Lighting	Average Initial Light Levels	Average Target/Maintained Light Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Skate Park	43.5 footcandles	30 footcandles	5.0:1.0	194	10' x 10'

C. Revised Electrical Distribution: Manufacturer shall provide revised electrical distribution plans to include changes to service entrance, panel, and wire sizing.

PART 2 – PRODUCT

2.1 LIGHTING SYSTEM CONSTRUCTION

A. System Description: Lighting system shall consist of the following:

1. Galvanized steel poles and crossarm assembly
2. Pre-stressed concrete base embedded in concrete backfill allowed to cure for 24 hours before pole stress is applied. Alternate may be an anchor bolt foundation designed such that the steel pole and any exposed steel portion of the foundation is located a minimum of 18 inches above final grade. The concrete for anchor bolt foundations shall be allowed to cure for a minimum of 28 days before the pole stress is applied, unless shorter cure time is allowed by structural engineer of record.
3. All luminaires shall be constructed with a die-cast aluminum housing or external hail shroud to protect the luminaire reflector system.
4. All luminaires, visors, and crossarm assemblies shall withstand 150 mph winds and maintain luminaire aiming alignment.
5. Manufacturer will remote all ballasts and supporting electrical equipment in aluminum enclosures mounted on pole approximately 10' above grade. The enclosures shall be touch-safe, and include ballast, capacitor and fusing, with indicator lights on fuses to indicate when a fuse is to be replaced for each luminaire.

6. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.

7. Control and Monitoring Cabinet (NEMA Type 4) to provide on-off control and monitoring of the lighting system, constructed of aluminum. Communication method shall be provided by manufacturer. Cabinet shall contain custom configured contactor modules for 30, 60, and 100 amps, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.

B. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, ballast and other enclosures shall be factory assembled, aimed, wired and tested.

C. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the crossarms, pole, or electrical components enclosure.

D. Lightning Protection: Manufacturer shall provide integrated lightning grounding via concrete encased electrode grounding system as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.

If grounding is not integrated into the structure, the Manufacturer shall supply grounding electrodes, copper down conductors and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780. The grounding electrode shall be not less than 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.

E. Safety: All system components shall be UL Listed for the appropriate application.

F. Electric Power Requirements for the Sports Lighting Equipment:

1. Electric power: 208 Volt, single phase

2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.

2.2 STRUCTURAL PARAMETERS

A. Wind Loads: Wind loads shall be based on the 2009 International Building Code. Wind loads to be calculated using ASCE 7-05, a design wind speed of 90mph, exposure category C and wind importance factor of 1.0.

B. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2009 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-5).

C. Foundation Design: The foundation design shall be based on soils that meet or exceed those of a Class 5 material as defined by 2009 IBC Table 1806.2.

PART 3 – EXECUTION

3.1 SOIL QUALITY CONTROL

A. It shall be the Contractor’s responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner’s approval / payment for additional costs associated with:

1. Providing engineered foundation embedment design by a registered engineer in the State of Wisconsin for soils other than specified soil conditions;
2. Additional materials required to achieve alternate foundation;
3. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

3.2 FIELD QUALITY CONTROL

A. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.

B. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles, uniformity ratios, and maximum kilowatt consumptions are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be liable to any or all of the following:

1. Manufacturer shall at his expense provide and install any necessary additional luminaires to meet the minimum lighting standards. The Manufacturer shall also either replace the existing poles to meet the new wind load (EPA) requirements or verify by certification by a licensed structural engineer that the existing poles will withstand the additional wind load.
2. Manufacturer shall minimize the Owner's additional long-term luminaire maintenance and energy consumption costs created by the additional luminaires by reimbursing the Owner the amount of $1,000.00 (one thousand dollars) for each additional luminaire required.
3. Manufacturer shall remove the entire unacceptable lighting system and install a new lighting system to meet the specification.

END OF SECTION

VARIANCE FEES
MGO $50.00
COMM $490.00
Priority – Double above

Amount Paid

PETITION FOR VARIANCE APPLICATION

City of Madison
Building Inspection Division
215 Martin Luther King Jr. Blvd.
Madison, WI 53703
(608) 266-4568

Name of Owner City of Madison Parks Division	Project Description New Lighting System for the Central Park Skatepark	Agent, architect, or engineering firm Musco Lighting
Company (if applies) Attn: Mike Sturm		No. & Street
No. & Street 210 MLK Jr. Blvd Room 104	Tenant name (if any)	City, State, Zip Code
City, State, Zip Code Madison, WI 53701	Building Address 201 S. Ingersoll Street	Phone (920) 460-5879
Phone (608) 267-4921	Madison, WI	Name of Contact Person Greg Smidt
e-mail msturm@cityofmadison.com		e-mail greg.smidt@musco.com

1. The rule being petitioned reads as follows: (Cite the specific rule number and language. Also, indicate the nonconforming conditions for your project.)

(1) See Attached Madison General Ordinance 10.085 (Attachment A).
(2)Light trespass requirement of .5 foot-candles measured 10 ft. beyond the property line.

2. The rule being petitioned cannot be entirely satisfied because:

Skateparks need to be lit to the same standard as other athletic facilities. There isn't an athletic field lighting system on the market that can meet the ordinance trespass standards for the given site.

3. The following alternatives and supporting information are proposed as a means of providing an equivalent degree of health, safety, and welfare as addressed by the rule:

Note: Please attach any pictures, plans, or required position statements.

(1) The Central Park Master Plan indentifies the skatepark's location between two existing railroad corridors. It also Illustrates the future expansion of the park to the south.
(2) Photometric studies provided by Musco Lighting show the necessary light levels for the skatepark and the light trespass levels relative to the railroad corridor extents. The ordinance requirements are met once beyond the railroad property line to the north, and for the majority of the skatepark length beyond the south property line.
(3) The proposed Musco Green light fixtures are the latest technology in sharp cut-off, reduced glare and dark sky compliant athletic lighting luminiares.

VERIFICATION BY OWNER – PETITION IS VALID ONLY IF NOTARIZED AND ACCOMPANIED BY A REVIEW FEE AND ANY REQUIRED POSITION STATEMENTS.

Note: Petitioner must be the owner of the building. Tenants, agents, contractors, attorneys, etc. may not sign the petition unless a Power of Attorney is submitted with the Petition for Variance Application.

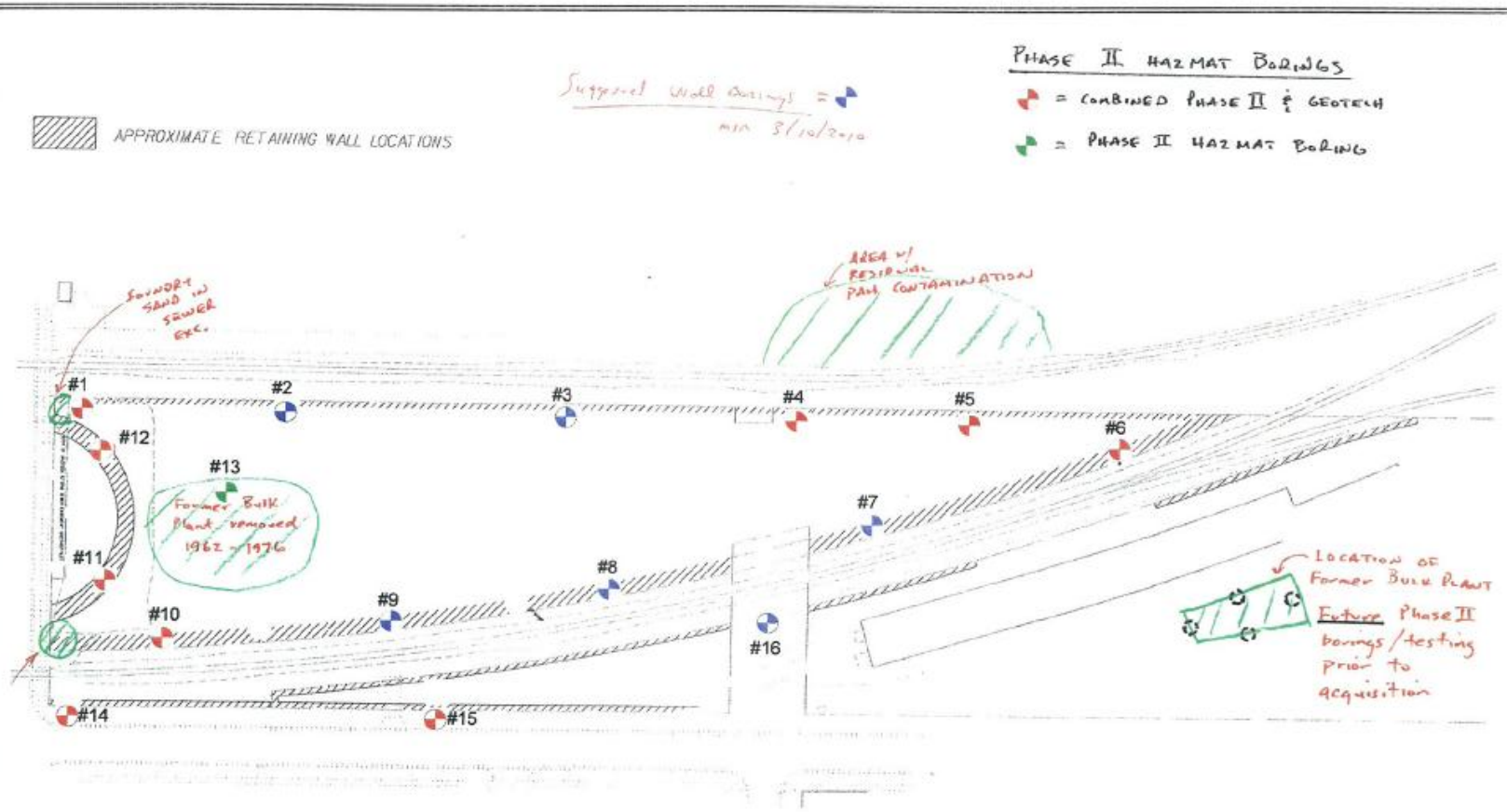
_____, being duly sworn, I state as petitioner that I have read the foregoing
Print name of owner
petition, that I believe it to be true, and I have significant ownership rights in the subject building or project.

Signature of owner	Subscribed and sworn to before me this date:
Notary public	My commission expires:

NOTE: ONLY VARIANCES FOR COMMERCIAL CODES ARE REQUIRED TO BE NOTARIZED.

APPLICATION INSTRUCTIONS

APPENDIX C
SOIL BORINGS



Notes

1. Soil borings drilled by Badger State Drilling in May 2010

DWN: -	APP'D: MNS	Date: 06/10	C10041-3	CGC, Inc.	SOIL BORING LOCATION MAP Central Park Madison, Wisconsin

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **1**
Surface Elevation (ft) **851.4**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qs) (tsf)	W	LL	PL	LI
						FILL: Mix of Clay, Sand, Gravel and Silt with Trace Cinders to 4 ft					
1		16	M	22							
2		12	M	6		Gray Sandy Clay to 5.5 ft	(1.0-1.5)				
					5						
						Very Loose to Loose Black Sedimentary PEAT, Trace Sand (PT)					
3		10	M	5				69.2			19.9
						Loose to Very Loose, Gray SILT with Alternating Lenses of Lean Clay and Sandy Silt (ML)	(0.5)				
4		18	W	4			(0.5)				
					10						
						Loose, Gray Sandy SILT (ML)					
5		18	W	9							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 11'
Time After Drilling 24 hrs
Depth to Water 11' ▼
Depth to Cave in 13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/12/10 End 5/12/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **2**
Surface Elevation (ft) **853.7**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Graph	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	q_u (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Topsoil to 0.5 ft Brown Clay with Sand and Gravel to 2.5 ft					
1		12	M	26			(3.5)				
						Black and Brown Clay with Trace Sand and Wood Chips to 5 ft					
2		10	M	17			(1.75)				
					5	Brown Clay Layered with Tan Sand to 7.5 ft					
3		10	M	5							
						Medium Stiff, Gray/Brown Mottled Sandy Lean CLAY (CL)					
4		14	M	5			(0.7)				
					10	Dense, Light Brown Fine SAND, Trace to Little Silt (SP/SP-SM)					
5		14	W	33							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **13.5'** Upon Completion of Drilling **13'**
Time After Drilling **15 min**
Depth to Water **9.5'** ▼
Depth to Cave in **11.5'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/10/10** End **5/10/10**
Driller **Badger** Chief **AP** Rig **D-120**
Logger **AP** Editor **ESF**
Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **3**
Surface Elevation (ft) **853.9**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft Brown Fine to Medium Sand, Some Silt and Gravel to 2.5 ft					
1		14	M	18							
						Brown Clay to 4.5 ft					
2		14	M	14			(2.5-3.0)				
					5	Black Foundry Sand to 5 ft Brown Silty Sand with Gravel and Clay to 7.5 ft					
3		10	M	4							
						Medium Stiff, Gray Brown Mottled Sandy Lean CLAY (CL)	(0.75)				
4		14	W	13		Medium Dense, Brown Fine SAND, Trace to Little Silt (SP/SP-SM)					
					10	Stiff, Gray Silty CLAY with Fine Sand Partings (CL)					
5		14	W	10			(1.25)				
					15	End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 9.6'	Upon Completion of Drilling		10'
Time After Drilling				24 hrs
Depth to Water				10' ▼
Depth to Cave in				11'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/10/10** End **5/10/10**
Driller **Badger** Chief **AP** Rig **D-120**
Logger **AP** Editor **ESF**
Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **4**
Surface Elevation (ft) **854.4**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
					FILL: Brown Clay with Sand, Silt and Gravel to 4'					
1	14	M	16							
2	16	M	28		Black Foundry Sand to 4.5 ft					
				5	Brown Fine to Medium Sand, Trace to Little Silt and Gravel to 7.5 ft					
3	16	W	12							
					Stiff, Gray Brown Sandy Mottled Lean CLAY (CL)					
4	18	M	6			(1.5)				
				10						
					Stiff, Gray Lean CLAY, Occasional Sand Partings (CL)					
5	14	M	6			(1.75)				
				15	End Boring at 15 ft					
					Borehole backfilled with bentonite chips					
				20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 6.0' Upon Completion of Drilling

Time After Drilling

Depth to Water 11' ▼

Depth to Cave in 13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/10/10** End **5/10/10**

Driller **Badger** Chief **BR** Rig **D-120**

Logger **KD** Editor **ESF**

Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **5**
Surface Elevation (ft) **853.1**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
					FILL: Brown Silty Sand to 2 ft					
1	14	M	4		Brown Clay with Sand to 3.5 ft	(2.0)				
2	12	M	13	5	Brown Sand Mixed with Silt and Clay, Occasional Cinders/Foundry Sand to 7.5 ft					
3	8	M/W	29							
					Loose, Dark Brown-Black Sedimentary PEAT, Trace Sand (OL/PT)		52.8			22.2
4	14	W	12		Medium Stiff to Stiff, Gray Mottled Lean CLAY (CL)	(1.0)				
				10	Medium Dense, Brown Fine to Medium SAND, Little Silt, Trace Gravel (SP-SM)					
5	14	W	10		Interbedded with Layers of Gray Silt and Clay at 14'					
				15	End Boring at 15 ft Borehole backfilled with bentonite chips					
				20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 6.0'			Upon Completion of Drilling	9'
Time After Drilling				24 hrs
Depth to Water				9' ▼
Depth to Cave in				10'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/11/10** End **5/11/10**
Driller **Badger** Chief **BR** Rig **D-120**
Logger **KD** Editor **ESF**
Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **6**
Surface Elevation (ft) **852.6**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft					
1		16	M	14		Black Foundry Sand with Cinders to 1 ft Brown and Black Sand with Silt to 4.5 ft					
2		12	M	12							
					5	Medium Stiff, Gray Lean CLAY, Trace to Little Sand (CL)					
3		14	M	6			(0.6-0.75)				
						Medium Stiff, Gray Brown Mottled Lean CLAY (CL)					
4		16	W	8			(0.75)				
					10	Medium Dense, Gray Silty SAND to Sandy SILT (SM/ML)					
5		12	W	11							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 8.0'	Upon Completion of Drilling	8.5'
Time After Drilling			2 hrs
Depth to Water			8.5' ▼
Depth to Cave in			10'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/10/10** End **5/10/10**
Driller **Badger** Chief **BR** Rig **D-120**
Logger **KD** Editor **ESF**
Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **7**
Surface Elevation (ft) **853.1**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
					FILL: Dark Brown Clayey Topsoil to 0.5 ft					
1	12	M	37		Brown Clay with Sand and Gravel to 3 ft	(2.0)				
					Brown and Tan Silty Sand to 5 ft (Possible Foundry Sand Mixed In)					
2	14	M	12	5						
					Dark Brown to Black Clay to 7 ft					
3	10	M	7			(1.5)				
					Loose, Black Organic SILT, Trace Sand (OL) (Possible Buried Topsoil)					
4	12	M/W	16		Medium Dense, Tan fine SAND, Trace to Little Silt (SP/SP-SM)					
				10						
					Soft to Medium Stiff, Gray Lean CLAY, Trace Sand (CL)					
5	12	W	6			(0.5)				
				15	End Boring at 15 ft					
					Borehole backfilled with bentonite chips					
				20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 9.6'	Upon Completion of Drilling	10'	
Time After Drilling			15 min	
Depth to Water			10'	▼
Depth to Cave in			11'	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/10/10** End **5/10/10**
Driller **Badger** Chief **AP** Rig **D-120**
Logger **AP** Editor **ESF**
Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **8**
Surface Elevation (ft) **853.2**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clay Topsoil to 0.5 ft					
1		14	M	6		Brown Fine Sand to 2 ft	(2.5)				
						Dark Brown Clay to 3 ft					
2		14	M	13		Black Foundry Sand to 5 ft					
					5	Medium Stiff, Black Organic CLAY, Trace Sand (OL) (Possible Buried Topsoil)					
3		10	M	6			(0.75)	39.2			13.9
						Loose to Medium Dense, Brown Sandy SILT, Trace to Little CLAY (ML)					
4		12	M	10			(1.50)				
					10						
						▼					
						▽					
5		14	W	21		Medium Dense, Gray Clayey Fine to Coarse SAND, Trace Gravel (SC)					
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **12.5'** Upon Completion of Drilling _____
Time After Drilling _____ **15 min**
Depth to Water _____ **12'** ▼
Depth to Cave in _____ **13'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/10/10** End **5/10/10**
Driller **Badger** Chief **AP** Rig **D-120**
Logger **AP** Editor **ESF**
Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 9
Surface Elevation (ft) 852.2
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft					
1		14	M	10		Brown Sand with Silt, Gravel, Clay and Occasional Cinders to 5 ft					
2		6	M	6			(0.5)				
					5	Medium Stiff, Gray/Brown Mottled Lean CLAY (CL)					
3		14	M	6			(0.8)				
						Medium Dense, Brown Silty Fine SAND, Some Gravel (SM)					
4		12	M	18							
					10	Medium Dense, Gray-Brown Fine to Medium Silty SAND to Sandy SILT (SM/ML)					
5		14	W	12							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 13.5' Upon Completion of Drilling

Time After Drilling	15 min
Depth to Water	12.5' ▼
Depth to Cave in	13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief AP Rig D-120
Logger AP Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **10**
Surface Elevation (ft) **851.7**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Sand with Silt and Gravel, Trace Cinders to 3 ft					
1		6	M	11							
						Brown Silty Sand to Sandy Silt to 4.5 ft					
2		12	W/M	6			(0.25)				
					5	Brown Clay to 5.5 ft					
						Medium Stiff, Brown/Gray Mottled Lean CLAY (CL)					
3		14	M	5			(0.6)				
					▽						
4		12	W	4	▼	Less Mottling with Depth	(0.75)				
					10						
						Loose, Brown Fine to Medium SAND, Some Gravel, Trace to Little Silt (SP/SP-SM)					
5		18	W	9							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **8.0'** Upon Completion of Drilling **12'**
Time After Drilling **2 hrs**
Depth to Water **9'** ▼
Depth to Cave in **12'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/12/10** End **5/12/10**
Driller **Badger** Chief **BR** Rig **D-120**
Logger **KD** Editor **ESF**
Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **11**
Surface Elevation (ft) **851.4**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Crushed Aggregate to 1 ft					
1		18	M	12		Brown-Black Sand with Foundry Sand and Cinders to 3.5 ft					
2		16	W	4	5	Brown sand with Silt to 5.5 ft					
3		18	W	9		Medium Stiff, Brown-Gray Sandy Lean CLAY (CL)	(0.75)				
4		18	W	7	10	Medium Stiff to Stiff at 9 ft	(1.0)				
5		8	W	11	15	Medium Dense, Brown Silty Fine SAND, Trace Gravel (SM)					
					20	End Boring at 15 ft Borehole backfilled with bentonite chips					

WATER LEVEL OBSERVATIONS

While Drilling	▽ 5.0'	Upon Completion of Drilling	10'	
Time After Drilling			1 hr	
Depth to Water			10'	▼
Depth to Cave in			12'	

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/12/10** End **5/12/10**
Driller **Badger** Chief **BR** Rig **D-120**
Logger **KD** Editor **ESF**
Drill Method **2 1/4 in. HSA**

CGC Inc.

LOG OF TEST BORING

Project: Central Park
Location: Madison, Wisconsin

Boring No. 12
Surface Elevation (ft) 851.6
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Crushed Aggregate to 1 ft					
1		16	M	23		Brown Sand with Silt and Gravel to 3.5 ft					
2		12	W	4		Brown Fine to Medium Sand, Little Silt and Gravel to 5.5 ft					
					5						
3		12	M	3		Medium Stiff, Brown/Gray Mottled Lean CLAY (CL)	(0.75)				
4		18	W	3		Soft to Medium Stiff, Gray Lean CLAY with Sand Partings (CL)	(0.5)				
					10						
						Loose, Gray Sandy SILT (ML)					
5		18	W	7							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 4.0'	Upon Completion of Drilling	10'
Time After Drilling			2 hrs
Depth to Water			10' ▼
Depth to Cave in			12'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/12/10 End 5/12/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park
Location: Madison, Wisconsin

Boring No. 13
Surface Elevation (ft) 853.1
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft Dark Brown to Black Clay with Sand to 2 ft					
1		12	M	9			(2.0)				
						Dark Gray to Black Silty Sand, Sandy Silt with Gravel, Foundry Sand and Cinders to 8 ft					
2		14	M	20							
					5						
3		12	M	9							
						Soft to Medium Stiff, Gray Lean CLAY (CL) Occasional Partings and Thin (1/4") Seams of Sand					
4		14	W	11			(0.5)				
					10	Medium Dense, Silty Fine SAND to Sandy SILT (SM/ML)					
						End Boring at 13 ft					
5		10	W	27		Borehole backfilled with bentonite chips					
					15						
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 7.5'
Time After Drilling
Depth to Water 7.5' ▼
Depth to Cave in 11'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/12/10 End 5/12/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 14
Surface Elevation (ft) 851.5
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft Brown Sand to 3 ft					
1		10	W/M	23							
						Dark Gray Clay with Sand to 5.5 ft					
2		6	W	3			(0.25)				
					5	Soft, Blue-Gray Lean CLAY (CL)					
3		12	M	3			(0.3)				
						Medium Dense, Gray Fine to Medium SAND, Little to some Silt (SP-SM/SM)					
4		18	W	20	10						
						Medium Dense, Gray Sandy SILT, Some Clay, Trace to Little Gravel (ML)					
5		10	W	14	15						
						End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 3.5' Upon Completion of Drilling 6.5'
Time After Drilling 24 hrs
Depth to Water 6.5' ▼
Depth to Cave in 9'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/11/10 End 5/11/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 15
Surface Elevation (ft) 852.1
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	Type	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: 8 in. Topsoil					
1		14	M	17		Brown Fine to Medium SAND with GRAVEL, Trace Silt to 3 ft					
						Stiff, Gray-Brown Lean CLAY, Trace to Little Sand (CL) (Possible Fill)					
2		18	M	7	5		(1.25)				
3		18	M	10		Medium Stiff to Stiff, Brown Lean CLAY (CL)	(1.0)				
						Stiff, Gray-Brown Sandy Lean CLAY, Some Gravel (CL)					
4		16	M	15	10		(1.5)				
						Medium Dense, Brown Silty Fine to Medium SAND, Some Gravel (SM)					
5		14	W	14							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 13.5' Upon Completion of Drilling 9'
Time After Drilling
Depth to Water ▼
Depth to Cave in

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/11/10 End 5/11/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: **Central Park**

Location: **Madison, Wisconsin**

Boring No. **16**
Surface Elevation (ft) **850.8**
Job No. **C10041-3**
Sheet **1** of **1**

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Clayey Topsoil to 0.2 ft Gray-Brown Clayey Mixed with Sand and Gravel to 5 ft					
1		12	M	6							
2		14	M	6			(.75)				
					5	Medium Stiff, Gray Lean CLAY, Trace Sand and Gravel (CL)					
3		14	M	8			(0.75-1.0)				
					▽						
4		12	W	11			(.75-1.0)				
					10 ▼	Medium Dense, Gray-Brown Silty Fine to Medium SAND, Some Gravel (SM)					
5		14	W	15							
					15	End Boring at 15 ft Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **8.0'** Upon Completion of Drilling **11'**
Time After Drilling **15 min**
Depth to Water **10.5** ▼
Depth to Cave in **13'**

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start **5/10/10** End **5/10/10**
Driller **Badger** Chief **AP** Rig **D-120**
Logger **WK** Editor **ESF**
Drill Method **2 1/4 in. HSA**

APPENDIX D
GEOTECHNICAL REPORT

CGC, Inc.

Construction • Geotechnical
Consulting Engineering/Testing

March 7, 2014
C10041-3

Mr. Mike Sturm
City of Madison Parks Division
City-County Building, Suite 104
210 Martin Luther King, Jr. Blvd
Madison, WI 53701-2987

Re: Geotechnical Recommendations
Central Park Skate Park
Madison, Wisconsin

Dear Mr. Sturm:

Construction • Geotechnical Consultants, Inc. (CGC) has completed our review of the subsurface conditions for the above-referenced project. The purpose of this program was to evaluate the subsurface conditions within the proposed construction area and to provide geotechnical recommendations regarding site preparation, foundation, exterior slab and retaining wall design/construction. We are sending you this electronic copy of our report and can provide a paper copy upon request. We are also sending pdf copies of this report to Mr. Kanten Russell of Stantec, the skate park designer; and Ms. Jaime Kurten of MSA Professional Services, the project civil engineer.

PROJECT DESCRIPTION

Final design is proceeding on the skateboard park portion of the Central Park project with the intent to begin construction in the summer of 2014. Work will include concrete retaining walls, slabs and bowl structures, as well as foundations for a number of 50-ft tall light poles. The latest plans include retaining walls up to about 5.5 ft in height, with comparable fill heights. We understand that one of the limitations on the site will be that it is unlikely that easements will be available from the adjacent railroad property. As a result, the retaining wall along the north side will need to be set back from the property line a sufficient distance such that any special subgrade preparation that is required during construction will not encroach on the adjacent property.

Several of the skateboard bowls will extend 1.5 to 4 ft below grade. We understand that gravel drainage layers and sumps will be provided below the bowls to prevent buoyancy forces from developing in the event a high groundwater condition develops.

The light poles will be supported on precast concrete bases that will be set directly in the ground and backfilled with concrete. Details on the dimensions of the precast base were not provided, but we anticipate the bases will require a drilled shaft on the order of 2.5 to 3.5 ft in diameter.

SUBSURFACE CONDITIONS

Subsurface conditions on site were previously explored by CGC by drilling a total of 16 Standard Penetration Test (SPT) soil borings to depths of 15 ft below existing site grades. The borings were

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performed for the overall Central Park project, and the results were provided in a report we prepared in 2010 (see CGC report C10041-3, dated June 14, 2010). For purposes of this report, we are relying on the four borings closest to the skate park end of the project, Borings 4 through 7, which are attached with a location map in Appendix A.

The subsurface profile at these four boring locations is variable but can generally be described by the following strata (in descending order):

- 4.5 to 7.5 ft of a ***miscellaneous fill***, including clay, silt, sand and gravel with pockets or layers of topsoil, foundry sand and cinders, underlain by
- 1 to 7.5 ft of soft to stiff ***lean clay***, interspersed with
- Layers of medium dense fine to medium ***sand*** with varying silt contents.

An 8 to 12-in. thick layer of peat or organic silt was found in Borings 5 and 7 below the fill at a depth of about 7 ft. The clay strata extend to the maximum depths explored in Borings 4 and 7, while Borings 5 and 6 terminated in sand layers.

Groundwater was encountered at 6 to 9.6 ft below the ground surface in the borings while drilling. In general, we would expect to find the water table at an elevation intermediate between the typical lake levels in Lakes Mendota (EL ~850) and Monona (EL ~846). Groundwater levels are expected to fluctuate with seasonal variations in lake levels, precipitation, infiltration, evapotranspiration and other factors. A more detailed description of the site soil and groundwater conditions is presented on the Soil Boring Logs attached in Appendix B.

DISCUSSION AND RECOMMENDATIONS

Subject to the limitations discussed below and based on the subsurface exploration, it is our opinion that the site is generally suitable for the proposed construction (with some limitations) and that the structures can be supported by conventional spread footing foundations after special subgrade preparation. Our recommendations for site preparation, foundation, slab and retaining wall design/construction are presented in the following subsections. Additional information regarding the conclusions and recommendations presented in this report is discussed in Appendix C.

1. Site Preparation – Slab and Bowl Features

We recommend that the surficial topsoil be stripped/removed at least 5 ft beyond the proposed construction areas, including areas required for cuts and fills beyond the proposed skate park footprint. Tree roots (if present) should also be removed at this time. The topsoil can be stockpiled on-site and re-used as fill in landscaped areas.

Following topsoil removal, the exposed subgrades are expected to consist of miscellaneous fill. Exposed soils in areas to receive fill should be proof-rolled with a large, rubber-tired piece of construction equipment (i.e., loaded dump truck, scraper, or front-end loader). If soft/yielding areas are detected, they should be undercut/removed. Grade should be re-established using granular backfill compacted to at least

95% compaction based on modified Proctor methods (ASTM D1557) or compacted coarse stone (breaker run, select crushed material or 3-in. dense graded base course, as described in Appendix C).

We recommend using granular soils as structural fill (i.e., below structures and pavement), as these soils are generally easier to place and compact in most weather conditions. For the most part, we anticipate that this will require importing fill material from an offsite borrow source. We do not recommend using clay/silt soils as structural fill because moisture conditioning will likely be required to achieve desired compaction levels, which could delay construction progress. Instead, silt/clay soils can be used as fill in landscaped areas.

Following proof-rolling and stabilization (where needed), excavating for the bowl structures and filling in raised areas may proceed. In general, we do not anticipate that groundwater would be encountered in the bowl excavations, but if necessary, dewatering should be performed by the contractor following recommendations described later in the report. Structural fill/backfill should be compacted to at least 95% (ASTM D1557) in accordance with our Recommended Compacted Fill Specifications presented in Appendix D. Periodic field density tests should be taken by CGC staff within the fill/backfill to document the adequacy of compactive effort.

Note that portions of the existing fill soils may contain materials that are considered waste (e.g., foundry sand, cinders, etc.). If such materials are to be removed from the site, it is likely that they will require disposal in a licensed landfill. We understand that the City has been evaluating the presence of possible environmental contaminants on site, and we presume that proper protocols will be developed for dealing with these potential issues.

To the extent practical, site filling should be done as early in the construction sequence as possible. We estimate that raising site grades by 3 to 6 ft (including the concrete slab) will result in about 1 to 1.5 in. of settlement in the soft to stiff lean clay strata underlying the site. Placing fill 2 to 4 weeks prior to constructing the concrete slab could reduce the post construction settlement to less than 1 in. However, we understand that the concrete slab and bowls will be founded on a layer of crushed stone or gravel, will be fairly heavily reinforced, and will be dowelled together. As such, the entire structure is expected to be relatively rigid and tolerant of estimated total settlement on the order of 1.5 in.

Provided the slabs for the proposed structures will be supported on proof-rolled/stabilized existing fill or on new, well-compacted granular fill, it is our opinion that they may be designed using a subgrade modulus of 100 pci. Prior to slab construction, the subgrades should be recompacted to densify soils that may become disturbed or loosened during construction activities. The design subgrade modulus is based on a recompacted subgrade such that non-yielding conditions are developed.

2. Retaining Wall Foundation Design

The layer of existing fill and underlying peat/organic silt found in the four borings in this section of Central Park is considered unsuitable for direct support of foundations for the retaining walls to be located around the perimeter of the skate park. The fill is highly variable in its composition, apparent compaction levels and quality, and the organic silt and peat layers are considered moderately to highly compressible

under concentrated footing loads. For these reasons, we recommend that these soils be undercut and replaced below retaining wall footings, following these guidelines:

- A minimum undercut of 2 ft below bottom of footing is recommended where miscellaneous fill is encountered.
- The undercut should extend deeper where the organic silt/peat layers are found (e.g., near Borings 5 and 7) to remove these layers in their entirety.
- The undercut depth can be reduced to less than 2 ft, but in no case less than 1 ft, where *native* medium dense sand or medium stiff clay (with pocket penetrometer readings of 0.75 tsf or better) are found at the base of the excavation.
- The undercut excavation should be widened 1 ft (in total width) for each foot of undercut below the bottom of footing. For example, a 2-ft undercut below a 3-ft wide footing should be at least 5 ft wide at the bottom of the excavation.
- Undercut excavations should be restored with compacted clear stone (3/4-in. up to 3 in. in size) which is compacted with a large vibratory plate compactor in thin lifts (8 in. or less) until no further consolidation of the stone is evident. A layer of non-woven geotextile fabric (Mirafi 140N or equivalent) should first be placed on the bottom of the excavation and then wrapped up on the sides and top to envelope the stone layer.
- If undercut excavations extend below the water table, dewatering will be required. For excavations extending a foot or less below the groundwater level, pumping from sumps in the stone layer may be sufficient. For excavations extending greater than 1 ft below water, well points or deep wells may be required. Means and methods of dewatering are the contractor's responsibility.
- CGC should be present during footing excavations to check that adequate soil conditions exist or recommend corrective measures, if necessary.

In our opinion, the proposed retaining walls can be supported on reinforced concrete spread footing foundations bearing on subgrades prepared as described above, with the following parameters used for foundation design:

• Maximum net *allowable* bearing pressure:	1,500 psf
• *Ultimate* bearing capacity (for LRFD analysis):	4,000 psf
• Minimum footing depths for exterior footings:	4 ft
• Estimated settlement[1]	
-- Total	1 in.
-- Differential	0.5 to 0.75 in.

We recommend using a smooth-edged backhoe bucket for footing excavations. The stone subgrade should be recompacted prior to forming footings.

[1] Settlement estimate presumes site grades near retaining wall are raised at least two weeks prior to constructing the wall. If site grades are raised after the wall is constructed, estimated settlement will be about 1.5 in. total and 1 in. differential.

3. Retaining Wall - Lateral Pressures

We anticipate that the retaining walls at the perimeter of the skate park will be independent of the slabs and bowls in order to accommodate differential frost heave between the shallow slabs and the deeper retaining wall footings. Because the retaining walls will not be laterally restrained and will therefore be free to rotate slightly, it is our opinion that they can be designed for *active lateral earth pressure*. We further anticipate that water would be prevented from infiltrating behind the wall by the continuous concrete slab and bowl structure. To minimize the development of lateral earth pressures, we recommend that a granular backfill with less than 12 percent passing the No. 200 sieve should be placed within 4 to 6 ft of the walls. Compaction of the backfill within 3 to 5 ft of the walls should be performed with lightweight compaction equipment. The granular backfill should be compacted to a minimum of 92% modified Proctor (ASTM D1557) following Appendix C guidelines.

Walls constructed in accordance with the above recommendations may be designed for an equivalent *active* lateral fluid pressure of 35 psf per foot of depth. An equivalent fluid pressure of 175 psf per foot of depth can be used for calculating *passive* resistance in front of the wall. This value includes a factor of safety of 2.0 to reduce lateral deflection.

We understand that because of the relatively low allowable bearing pressure achievable on this site that it may be necessary to reduce the lateral load on the highest section of retaining wall in order to keep the footing at a reasonable width. To accomplish this, we recommend using EPS (expanded polystyrene) Geofoam as backfill for at least a portion of the total wall height. General site fill that is sloped toward the back of the wall at a stable slope of 2H:1H will effectively apply no pressure on the wall due to the weight of material above the toe of slope. Using Geofoam to backfill the wedge between the sloping fill and the back of the wall will therefore apply negligible loads against the wall. Assuming the Geofoam will be completely covered with concrete slabs, we recommend using EPS 12 foam (ASTM D6817) for this purpose. We can provide product literature, installation guidelines, and more detailed recommendations if warranted.

4. Light Tower Foundations

We anticipate that the design of the foundations for the light poles will be primarily controlled by lateral loads as opposed to vertical. Therefore, even though the allowable bearing capacity is somewhat limited for the potential bearing strata encountered in the borings on this part of the site, we anticipate that conditions will be adequate for support of the towers on drilled shaft foundations into which precast concrete bases will be set. We recommend that shafts extend at least 12 to 15 ft deep, through the shallow fill, peat and organic silt layers, and preferably terminate in the deeper sand stratum. Recommendations and pertinent geotechnical parameters for design of laterally loaded drilled shafts are presented in Table 1. The soil parameters are referenced to generalized soil types (A through C) that correspond to soil types indicated on the boring logs. As conditions vary somewhat across the site, the drilled shaft lengths or diameters may need to be adapted for each individual case, based on conditions shown in the nearest boring. Appropriate safety factors need to be applied to the parameters in the table.

Table 1
Recommended Soil Parameters for Drilled Shaft Foundations
Central Park Skate Park

Soil Layer (1)	Soil Type A	Soil Type B	Soil Type C
	Miscellaneous FILL (Clay, Sand, Foundry Sand) (2)	**Medium Stiff to Stiff Lean CLAY**	**Medium Dense SAND to Sandy SILT**
Approximate Depth (3)	**0 to 8 ft**	**8 to 12 ft**	**12 to 15 ft**
Estimated Soil Parameters			
Short-term Loading Conditions			
Angle of internal friction, ϕ	**26** degrees	**0** degrees	**30** degrees
Cohesion	**0** lb/sq ft	**600** lb/sq ft	**0** lb/sq ft
Long-term Loading Conditions			
Angle of internal friction, ϕ	**26** degrees	**27** degrees	**30** degrees
Cohesion	**0** lb/sq ft	**0** lb/sq ft	**0** lb/sq ft
Moist unit weight	**115** lb/cu ft	**115** lb/cu ft	**125** lb/cu ft
Submerged unit weight	**53** lb/cu ft	**53** lb/cu ft	**63** lb/cu ft
Earth pressure coefficients ***(4)***			
Active, Ka	**0.39**	**1.00**	**0.33**
Passive, Kp	**2.56**	**1.00**	**3.00**
Allowable End Bearing (FS = 3)	**not recommended**	**1,500** lb/sq ft	**4,500** lb/sq ft

Notes:
(1) Refer to soil boring logs for more detailed descriptions of soil types.
(2) Includes 6 to 12 in. of peat in a few locations.
(3) Depths have been generalized to some degree. Refer to boring logs for more precise layer thicknesses at each location.
(4) Does not include a factor of safety (i.e., FS = 1). Values are calculated for short-term live load conditions (such as wind loading) which are assumed to control the design for lateral loads.

Due to the presence of granular soils below the groundwater level in the borings, temporary casing may be required during drilled shaft construction to both control groundwater and prevent collapse of the shaft through the sand/silt strata. If groundwater collects to a depth of more than 2 in. in the base of the shaft, it should be removed before concrete placement. If the use of casing does not effectively control groundwater seepage, drilling under slurry conditions and placement of concrete by tremie methods may be required.

Concrete used to construct the drilled shafts should have a minimum slump of five to six inches. Higher slumps may be used, if desired, but should be achieved in a manner that does not reduce concrete strength. A positive head of concrete should be kept in the casing, if used, to prevent the development of voids in the shafts.

CONSTRUCTION CONSIDERATIONS

Due to variations in weather, construction methods and other factors, specific construction problems are difficult to predict. Soil related difficulties which could be encountered on the site are discussed below:

- Due to the potentially sensitive nature of some of the on-site soils, we recommend that final site grading activities be completed during dry weather, if possible. Construction traffic should be avoided on prepared subgrades to minimize potential disturbance.
- Contingencies in the project budget for subgrade stabilization with breaker run stone in slab areas should be increased if the project schedule requires that work proceed during adverse weather conditions.
- Earthwork construction during the early spring or late fall could be complicated as a result of wet weather and freezing temperatures. During cold weather, exposed subgrades should be protected from freezing before and after footing construction. Fill should never be placed while frozen or on frozen ground.
- Excavations extending greater than 4 ft in depth below the existing ground surface should be sloped or braced in accordance with current OSHA standards.
- Based on observations made during the field exploration, groundwater infiltration into undercut excavations for bowl structures and retaining wall footings should be expected. Water accumulating at the base of excavations as a result of precipitation or seepage can usually be controlled and quickly removed using pumps operating from filtered sump pits for excavations extending no more than a foot below the water table. Deeper excavations may require dewatering in advance with wells or well points.

RECOMMENDED CONSTRUCTION MONITORING

The quality of the foundation, floor slab and pavement subgrades will be largely determined by the level of care exercised during site development. To check that earthwork and foundation construction proceeds in accordance with our recommendations, the following operations should be monitored by CGC:

- Topsoil stripping/subgrade proof-rolling within the construction areas;
- Fill/backfill placement and compaction;
- Foundation excavation/subgrade preparation;
- Concrete placement;
- Drilling during shaft construction to document that the subsurface conditions are consistent with those anticipated from the borings; and
- Placement of concrete and use of casing/slurry, if needed.

* * * * *

It has been a pleasure to serve you on this project. If you have any questions or need additional consultation, please contact us.

Sincerely,

CGC, Inc.

William W. Wuellner, P.E.
Senior Geotechnical Engineer

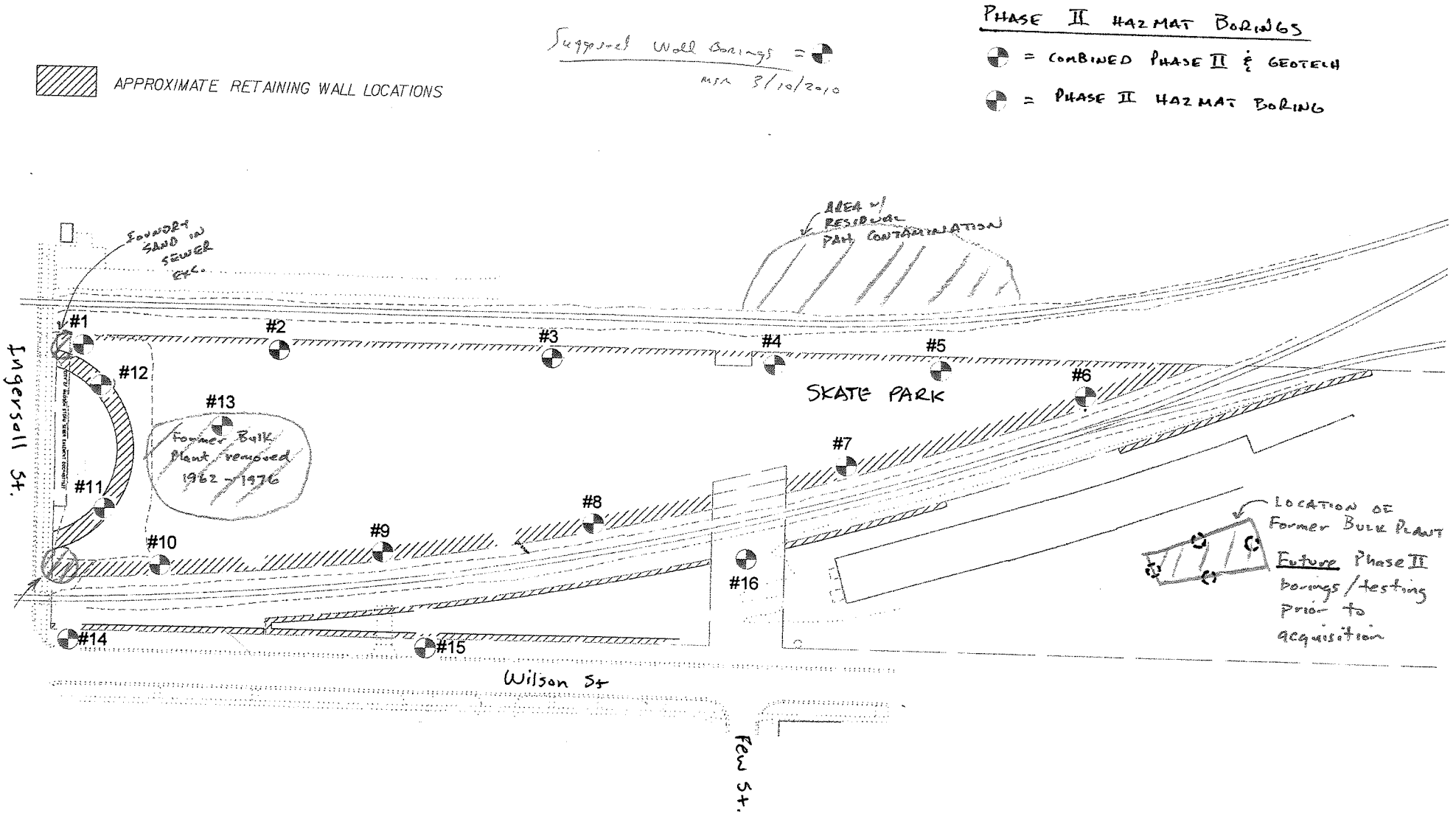
Michael N. Schultz, P.E.
Principal/Consulting Professional

Encl: Appendix A - Soil Boring Location Plan
Logs of Test Borings (4)
Log of Test Boring-General Notes
Unified Soil Classification System
Appendix B - Document Qualifications
Appendix C - Recommended Compacted Fill Specifications

cc: Ms. Jaime Kurten, P.E., MSA Professional Services (jkurten@msa-ps.com)
Mr. Kanten Russell, Stantec (Kanten.Russell@stantec.com)

APPENDIX A

SOIL BORING LOCATION MAP
LOGS OF TEST BORING (4)
LOG OF TEST BORING - GENERAL NOTES
UNIFIED SOIL CLASSIFICATION SYSTEM



Notes

1. Soil borings drilled by Badger State Drilling in May 2010

DWN: -	APP'D: MNS	Date: 06/10	C10041-3	CGC, Inc.	**SOIL BORING LOCATION MAP** **Central Park** **Madison, Wisconsin**

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 4
Surface Elevation (ft) 854.4
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Clay with Sand, Silt and Gravel to 4'					
1		14	M	16							
						A					
2		16	M	28		Black Foundry Sand to 4.5 ft					
					5	Brown Fine to Medium Sand, Trace to Little Silt and Gravel to 7.5 ft					
3		16	W	12							
						Stiff, Gray Brown Sandy Mottled Lean CLAY (CL)					
4		18	M	6			(1.5)				
						B					
					10						
						Stiff, Gray Lean CLAY, Occasional Sand Partings (CL)					
						B					
5		14	M	6			(1.75)				
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 6.0' Upon Completion of Drilling _____
Time After Drilling _____
Depth to Water 11' ▼
Depth to Cave in 13'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 5
Surface Elevation (ft) 853.1
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						FILL: Brown Silty Sand to 2 ft					
1		14	M	4			(2.0)				
						Brown Clay with Sand to 3.5 ft (A)					
2		12	M	13		Brown Sand Mixed with Silt and Clay, Occasional Cinders/Foundry Sand to 7.5 ft					
					5						
3		8	M/W	29	▽						
						Loose, Dark Brown-Black Sedimentary PEAT, Trace Sand (OL/PT) (A)		52.8			22.2
4		14	W	12	▼	Medium Stiff to Stiff, Gray Mottled Lean CLAY (CL) (B)	(1.0)				
					10	Medium Dense, Brown Fine to Medium SAND, Little Silt, Trace Gravel (SP-SM) (C)					
5		14	W	10		Interbedded with Layers of Gray Silt and Clay at 14'					
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 6.0' Upon Completion of Drilling 9'
Time After Drilling 24 hrs
Depth to Water 9' ▼
Depth to Cave in 10'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/11/10 End 5/11/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 6
Surface Elevation (ft) 852.6
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft					
1		16	M	14		Black Foundry Sand with Cinders to 1 ft Brown and Black Sand with Silt to 4.5 ft					
						(A)					
2		12	M	12							
					5	Medium Stiff, Gray Lean CLAY, Trace to Little Sand (CL)					
						(B)					
3		14	M	6			(0.6-0.75)				
					▽						
4		16	W	8		Medium Stiff, Gray Brown Mottled Lean CLAY (CL)	(0.75)				
					10	(B)					
						Medium Dense, Gray Silty SAND to Sandy SILT (SM/ML)					
						(C)					
5		12	W	11							
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 8.0' Upon Completion of Drilling 8.5'
Time After Drilling 2 hrs
Depth to Water 8.5' ▼
Depth to Cave in 10'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief BR Rig D-120
Logger KD Editor ESF
Drill Method 2 1/4 in. HSA

CGC Inc.

LOG OF TEST BORING

Project: Central Park

Location: Madison, Wisconsin

Boring No. 7
Surface Elevation (ft) 853.1
Job No. C10041-3
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE No.	TYPE	Rec (in.)	Moist	N	Depth (ft)	VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES qu (qa) (tsf)	W	LL	PL	LI
						FILL: Dark Brown Clayey Topsoil to 0.5 ft					
1		12	M	37		Brown Clay with Sand and Gravel to 3 ft (A)	(2.0)				
						Brown and Tan Silty Sand to 5 ft (Possible Foundry Sand Mixed In)					
2		14	M	12							
					5	Dark Brown to Black Clay to 7 ft					
3		10	M	7			(1.5)				
						Loose, Black Organic SILT, Trace Sand (OL) (Possible Buried Topsoil) (B)					
4		12	M/W	16		Medium Dense, Tan fine SAND, Trace to Little Silt (SP/SP-SM) (C)					
					10						
						Soft to Medium Stiff, Gray Lean CLAY, Trace Sand (CL) (B)					
5		12	W	6			(0.5)				
					15	End Boring at 15 ft					
						Borehole backfilled with bentonite chips					
					20						

WATER LEVEL OBSERVATIONS

While Drilling	▽ 9.6'	Upon Completion of Drilling		10'
Time After Drilling				15 min
Depth to Water				10' ▼
Depth to Cave in				11'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

GENERAL NOTES

Start 5/10/10 End 5/10/10
Driller Badger Chief AP Rig D-120
Logger AP Editor ESF
Drill Method 2 1/4 in. HSA

APPENDIX B

DOCUMENT QUALIFICATIONS

APPENDIX B
DOCUMENT QUALIFICATIONS

I. GENERAL RECOMMENDATIONS/LIMITATIONS

CGC, Inc. should be provided the opportunity for a general review of the final design and specifications to confirm that earthwork and foundation requirements have been properly interpreted in the design and specifications. CGC should be retained to provide soil engineering services during excavation and subgrade preparation. This will allow us to observe that construction proceeds in compliance with the design concepts, specifications and recommendations, and also will allow design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction. CGC does not assume responsibility for compliance with the recommendations in this report unless we are retained to provide construction testing and observation services.

This report has been prepared in accordance with generally accepted soil and foundation engineering practices and no other warranties are expressed or implied. The opinions and recommendations submitted in this report are based on interpretation of the subsurface information revealed by the test borings indicated on the location plan. The report does not reflect potential variations in subsurface conditions between or beyond these borings. Therefore, variations in soil conditions can be expected between the boring locations and fluctuations of groundwater levels may occur with time. The nature and extent of the variations may not become evident until construction.

II. IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one - not even you* - should apply the report for any purpose or project except the one originally contemplated.

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or project ownership.

As a general rule, , *always* inform your geotechnical engineer of project changes - even minor ones - and request an assessment of their impact. *CGC cannot accept responsibility or liability for problems that occur because our reports do not consider developments of which we were not Informed.*

SUBSURFACE CONDITIONS CAN CHANGE

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

MOST GEOTECHNICAL FINDINGS ARE PROFESSIONAL OPINION

Site exploration identifies subsurface conditions only at those points where surface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgement to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ - sometimes significantly - from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A REPORT'S RECOMMENDATIONS ARE NOT FINAL

Do not over-rely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgement and opinion, geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. *CGC cannot assume responsibility or liability for the report's recommendations if we do not perform construction observation.*

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having CGC participate in prebid and preconstruction conferences, and by providing construction observation.

DO NOT REDRAW THE ENGINEER'S LOGS

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

GIVE CONTRACTORS A COMPLETE REPORT AND GUIDANCE

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

READ RESPONSIBILITY PROVISIONS CLOSELY

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce such risks, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineer's responsibilities begin and end, to help others recognize their own responsibilities and risks. Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.

GEOENVIRONMENTAL CONCERNS ARE NOT COVERED

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

OBTAIN PROFESSIONAL ASSISTANCE TO DEAL WITH MOLD

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

RELY ON YOUR GEOTECHNICAL ENGINEER FOR ADDITIONAL ASSISTANCE

Membership in ASFE exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with CGC, a member of ASFE, for more information.

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ASFE/The Best People on Earth
881 Colesville Road, Suite G 106
Silver Spring, MD 20910

APPENDIX C

RECOMMENDED COMPACTED FILL SPECIFICATIONS

APPENDIX C

CGC, INC.

RECOMMENDED COMPACTED FILL SPECIFICATIONS

General Fill Materials

Proposed fill shall contain no vegetation, roots, topsoil, peat, ash, wood or any other non-soil material which by decomposition might cause settlement. Also, fill shall never be placed while frozen or on frozen surfaces. Rock, stone or broken concrete greater than 6 in. in the largest dimension shall not be placed within 10 ft of the building area. Fill used greater than 10 ft beyond the building limits shall not contain rock, boulders or concrete pieces greater than a 2 sq ft area and shall not be placed within the final 2 ft of finish subgrade or in designated utility construction areas. Fill containing rock, boulders or concrete pieces should include sufficient finer material to fill voids among the larger fragments.

Special Fill Materials

In certain cases, special fill materials may be required for specific purposes, such as stabilizing subgrades, backfilling undercut excavations or filling behind retaining walls. For reference, WisDOT gradation specifications for various types of granular fill are attached in Table 1.

Placement Method

The approved fill shall be placed, spread and leveled in layers generally not exceeding 10 in. in thickness before compaction. The fill shall be placed at moisture content capable of achieving the desired compaction level. For clay soils or granular soils containing an appreciable amount of cohesive fines, moisture conditioning will likely be required.

It is the Contractor's responsibility to provide all necessary compaction equipment and other grading equipment that may be required to attain the specified compaction. Hand-guided vibratory or tamping compactors will be required whenever fill is placed adjacent to walls, footings, columns or in confined areas.

Compaction Specifications

Maximum dry density and optimum moisture content of the fill soil shall be determined in accordance with modified Proctor methods (ASTM D1557). The recommended field compaction as a percentage of the maximum dry density is shown in Table 2. Note that these compaction guidelines would generally not apply to coarse gravel/stone fill. Instead, a method specification would apply (e.g., compact in thin lifts with a vibratory compactor until no further consolidation is evident).

Testing Procedures

Representative samples of proposed fill shall be submitted to CGC, Inc. for optimum moisture-maximum density determination (ASTM D1557) prior to the start of fill placement. The sample size should be approximately 50 lb.

CGC, Inc. shall be retained to perform field density tests to determine the level of compaction being achieved in the fill. The tests shall generally be conducted on each lift at the beginning of fill placement and at a frequency mutually agreed upon by the project team for the remainder of the project.

Table 1
Gradation of Special Fill Materials

Material	WisDOT Section 311	WisDOT Section 312	WisDOT Section 305			WisDOT Section 209		WisDOT Section 210
	Breaker Run	Select Crushed Material	3-in. Dense Graded Base	1 1/4-in. Dense Graded Base	3/4-in. Dense Graded Base	Grade 1 Granular Backfill	Grade 2 Granular Backfill	Structure Backfill
Sieve Size	Percent Passing by Weight							
6 in.	100							
5 in.		90-100						
3 in.			90-100					100
1 1/2 in.		20-50	60-85					
1 1/4 in.				95-100				
1 in.					100			
3/4 in.			40-65	70-93	95-100			
3/8 in.				42-80	50-90			
No. 4			15-40	25-63	35-70	100 (2)	100 (2)	25-100
No. 10		0-10	10-30	16-48	15-55	75 (2)		
No. 40			5-20	8-28	10-35	15 (2)	30 (2)	
No. 200			2-12	2-12	5-15	8 (2)	15 (2)	15 (2)

Notes:

1. Reference: Wisconsin Department of Transportation *Standard Specifications for Highway and Structure Construction.*
2. Percentage applies to the material passing the No. 4 sieve, not the entire sample.
3. Per WisDOT specifications, both breaker run and select crushed material can include concrete that is 'substantially free of steel, building materials and other deleterious material'.

Table 2
Compaction Guidelines

Area	Percent Compaction (1)	
	Clay/Silt	Sand/Gravel
Within 10 ft of building lines		
Footing bearing soils	93 - 95	95
Under floors, steps and walks		
- Lightly loaded floor slab	90	90
- Heavily loaded floor slab and thicker fill zones	92	95
Beyond 10 ft of building lines		
Under walks and pavements		
- Less than 2 ft below subgrade	92	95
- Greater than 2 ft below subgrade	90	90
Landscaping	85	90

Notes:

1. Based on Modified Proctor Dry Density (ASTM D 1557)

SECTION E: BIDDERS ACKNOWLEDGEMENT

SKATE PARK - CENTRAL PARK, MADISON
CONTRACT NO. 7408

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 - 2014 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

SKATE PARK - CENTRAL PARK, MADISON
CONTRACT NO. 7408

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)

SKATE PARK - CENTRAL PARK, MADISON
CONTRACT NO. 7408

Best Value Contracting

1. The Contractor shall indicate the non-apprenticeable trades used on this contract.

_____

_____

2. Madison General Ordinance (M.G.O.), 33.07(7), does provide for some exemptions from the active apprentice requirement. Apprenticeable trades are those trades considered apprenticeable by the State of Wisconsin. Please check applicable box if you are seeking an exemption.

☐ Contractor has a total skilled workforce of four or less individuals in all apprenticeable trades combined.

☐ No available trade training program; The Contractor has been rejected by the only available trade training program, or there is no trade training program within 90 miles.

☐ Contractor is not using an apprentice due to having a journey worker on layoff status, provided the journey worker was employed by the contractor in the past six months.

☐ First-time Contractor on City of Madison Public Works contract requests a onetime exemption but intends to comply on all future contracts and is taking steps typical of a "good faith" effort.

☐ Contractor has been in business less than one year.

☐ Contractor doesn't have enough journeyman trade workers to qualify for a trade training program in that respective trade

3. The Contractor shall indicate on the following section which apprenticeable trades are to be used on this contract. Compliance with active apprenticeship, to the extent required by M.G.O. 33.07(7), shall be satisfied by documentation from an applicable trade training body; an apprenticeship contract with the Wisconsin Department of Workforce Development or a similar agency in another state; or the U.S Department of Labor. This documentation is required prior to the Contractor beginning work on the project site.

☐ The Contractor has reviewed the list and shall not use any apprenticeable trades on this project.

LIST APPRENTICABLE TRADES (check all that apply to your work to be performed on this contract)

- ☐ BRICKLAYER
- ☐ CARPENTER
- ☐ CEMENT MASON / CONCRETE FINISHER
- ☐ CEMENT MASON (HEAVY HIGHWAY)
- ☐ CONSTRUCTION CRAFT LABORER
- ☐ DATA COMMUNICATION INSTALLER
- ☐ ELECTRICIAN
- ☐ ENVIRONMENTAL SYSTEMS TECHNICIAN / HVAC SERVICE TECH/HVAC INSTALL / SERVICE
- ☐ GLAZIER
- ☐ HEAVY EQUIPMENT OPERATOR / OPERATING ENGINEER
- ☐ INSULATION WORKER (HEAT & FROST)
- ☐ IRON WORKER
- ☐ IRON WORKER (ASSEMBLER, METAL BLDGS)
- ☐ PAINTER & DECORATOR
- ☐ PLASTERER
- ☐ PLUMBER
- ☐ RESIDENTIAL ELECTRICIAN
- ☐ ROOFER & WATER PROOFER
- ☐ SHEET METAL WORKER
- ☐ SPRINKLER FITTER
- ☐ STEAMFITTER
- ☐ STEAMFITTER (REFRIGERATION)
- ☐ STEAMFITTER (SERVICE)
- ☐ TAPER & FINISHER
- ☐ TELECOMMUNICATIONS (VOICE, DATA & VIDEO) INSTALLER-TECHNICIAN
- ☐ TILE SETTER

SECTION G: BID BOND

KNOW ALL MEN BY THESE PRESENT, THAT _____ (a corporation of the State of _____) (individual), (partnership), hereinafter referred to as the "Principal") and _____, a corporation of the State of _____ (hereinafter referred to as the "Surety") and licensed to do business in the State of Wisconsin, are held and firmly bound unto the City of Madison, (hereinafter referred to as the "Obligee"), in the sum of five per cent (5%) of the amount of the total bid or bids of the Principal herein accepted by the Obligee, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that, whereas the Principal has submitted, to the City of Madison a certain bid, including the related alternate, and substitute bids attached hereto and hereby made a part hereof, to enter into a contract in writing for the construction of:

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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	Date
By:	
Name of Surety	
By:	
	Date

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under License 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 Fourteen 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:

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2. **Completion Date/Contract Time.** Construction work must begin within seven (7) calendar days after the date appearing on mailed written notice to do so shall have been sent to the Contractor and shall be carried on at a rate so as to secure full completion SEE SPECIAL PROVISIONS, the rate of progress and the time of completion being essential conditions of this Agreement.

3. **Contract Price.** The City shall pay to the Contractor at the times, in the manner and on the conditions set forth in said specifications, the sum of _____($_____) 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.

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.)

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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:

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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 License No. _____ for the year 20_____, 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

PREVAILING WAGE RATE DETERMINATION
Issued by the State of Wisconsin
Department of Workforce Development
Pursuant to s. 66.0903, Wis. Stats.
Issued On: 01/06/2014
Amended On: 02/28/2014

DETERMINATION NUMBER: 201400001

EXPIRATION DATE: Prime Contracts MUST Be Awarded or Negotiated On Or Before 12/31/2014. If NOT, You MUST Reapply.

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

PROJECT LOCATION: MADISON CITY, DANE COUNTY, WI

CONTRACTING AGENCY: CITY OF MADISON-ENGINEERING

CLASSIFICATION:	Contractors are responsible for correctly classifying their workers. Either call the Department of Workforce Development (DWD) with trade or classification questions or consult DWD's Dictionary of Occupational Classifications & Work Descriptions on the DWD website at: dwd.wisconsin.gov/er/prevailing_wage_rate/Dictionary/dictionary_main.htm.
OVERTIME:	Time and one-half must be paid for all hours worked: - over 10 hours per day on prevailing wage projects - over 40 hours per calendar week - Saturday and Sunday - on all of the following holidays: January 1; the last Monday in May; July 4; the 1st Monday in September; the 4th Thursday in November; December 25; - The day before if January 1, July 4 or December 25 falls on a Saturday; - The day following if January 1, July 4 or December 25 falls on a Sunday. Apply the time and one-half overtime calculation to whichever is higher between the Hourly Basic Rate listed on this project determination or the employee's regular hourly rate of pay. Add any applicable Premium or DOT Premium to the Hourly Basic Rate before calculating overtime. A DOT Premium (discussed below) may supersede this time and one-half requirement.
FUTURE INCREASE:	When a specific trade or occupation requires a future increase, you MUST add the full hourly increase to the "TOTAL" on the effective date(s) indicated for the specific trade or occupation.
PREMIUM PAY:	If indicated for a specific trade or occupation, the full amount of such pay MUST be added to the "HOURLY BASIC RATE OF PAY" indicated for such trade or occupation, whevenever such pay is applicable.
DOT PREMIUM:	This premium only applies to highway and bridge projects owned by the Wisconsin Department of Transportation and to the project type heading "Airport Pavement or State Highway Construction." DO NOT apply the premium calculation under any other project type on this determination.
APPRENTICES:	Pay apprentices a percentage of the applicable journeyperson's hourly basic rate of pay and hourly fringe benefit contributions specified in this determination. Obtain the appropriate percentage from each apprentice's contract or indenture.
SUBJOURNEY:	Subjourney wage rates may be available for some of the trades or occupations indicated below with the exception of laborers, truck drivers and heavy equipment operators. Any employer interested in using a subjourney classification on this project MUST complete Form ERD-10880 and request the applicable wage rate from the Department of Workforce Development PRIOR to using the subjourney worker on this project.

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

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

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

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

s. 66.0903 (10) RECORDS; INSPECTION; ENFORCEMENT.
(a) Each contractor, subcontractor, or contractor's or subcontractor's agent performing work on a project of public works that is subject to this section shall keep full and accurate records clearly indicating the name and trade or occupation of every person performing the work described in sub. (4) and an accurate record of the number of hours worked by each of those persons and the actual wages paid for the hours worked.

s. 66.0903 (11) LIABILITY AND PENALTIES.
(a) 1. Any contractor, subcontractor, or contractor's or subcontractor's agent who fails to pay the prevailing wage rate determined by the department under sub. (3) or who pays less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor is liable to any affected employee in the amount of his or her unpaid wages or his or her unpaid overtime compensation and in an additional amount as liquidated damages as provided under subd. 2., 3., whichever is applicable.
2. If the department determines upon inspection under sub. (10) (b) or (c) that a contractor, subcontractor, or contractor's or subcontractor's agent has failed to pay the prevailing wage rate determined by the department under sub. (3) or has paid less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor, the department shall order the contractor to pay to any affected employee the amount of his or her unpaid wages or his or her unpaid overtime compensation and an additional amount equal to 100 percent of the amount of those unpaid wages or that unpaid overtime compensation as liquidated damages within a period specified by the department in the order.
3. In addition to or in lieu of recovering the liability specified in subd. 1. as provided in subd. 2., any employee for and in behalf of that employee and other employees similarly situated may commence an action to recover that liability in any court of competent jurisdiction. If the court finds that a contractor, subcontractor, or contractor's or subcontractor's agent has failed to pay the prevailing wage rate determined by the department under sub. (3) or has paid less than 1.5 times the hourly basic rate of pay for all hours worked in excess of the prevailing hours of labor, the court shall order the contractor, subcontractor, or agent to pay to any affected employee the amount of his or her unpaid wages or his or her unpaid overtime compensation and an additional amount equal to 100 percent of the amount of those unpaid wages or that unpaid overtime compensation as liquidated damages.
5. No employee may be a party plaintiff to an action under subd. 3. unless the employee consents in writing to become a party and the consent is filed in the court in which the action is brought. Notwithstanding s. 814.04 (1), the court shall, in addition to any judgment awarded to the plaintiff, allow reasonable attorney fees and costs to be paid by the defendant.

BUILDING OR HEAVY CONSTRUCTION

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

SKILLED TRADES

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
101	Acoustic Ceiling Tile Installer	30.48	15.90	46.38
102	Boilermaker Future Increase(s): Add $1.50/hr on 1/01/2015; Add $1.50/hr. on 01/01/2016	32.05	28.04	60.09
103	Bricklayer, Blocklayer or Stonemason Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.01	17.35	49.36
104	Cabinet Installer	30.48	15.90	46.38
105	Carpenter	30.48	15.90	46.38
106	Carpet Layer or Soft Floor Coverer	30.48	15.90	46.38
107	Cement Finisher	31.58	16.13	47.71
108	Drywall Taper or Finisher	24.80	16.60	41.40
109	Electrician Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	34.07	19.25	53.32
110	Elevator Constructor	42.86	23.84	66.70
111	Fence Erector	24.72	0.00	24.72
112	Fire Sprinkler Fitter	36.07	18.73	54.80
113	Glazier	38.03	13.42	51.45
114	Heat or Frost Insulator	33.68	24.31	57.99
115	Insulator (Batt or Blown)	15.00	9.50	24.50
116	Ironworker	31.25	19.46	50.71
117	Lather	30.48	15.90	46.38

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
118	Line Constructor (Electrical)	38.25	17.31	55.56
119	Marble Finisher	26.89	19.18	46.07
120	Marble Mason	32.01	17.35	49.36
121	Metal Building Erector	22.00	10.00	32.00
122	Millwright	32.11	15.95	48.06
123	Overhead Door Installer	20.95	4.94	25.89
124	Painter	24.50	16.60	41.10
125	Pavement Marking Operator	30.00	0.00	30.00
126	Piledriver	30.98	15.90	46.88
127	Pipeline Fuser or Welder (Gas or Utility)	30.79	19.74	50.53
129	Plasterer	31.03	17.71	48.74
130	Plumber Future Increase(s): Add $1/hr on 6/1/2014.	36.42	16.87	53.29
132	Refrigeration Mechanic	41.60	16.71	58.31
133	Roofer or Waterproofer	29.40	6.25	35.65
134	Sheet Metal Worker	34.45	22.57	57.02
135	Steamfitter Future Increase(s): Add $1.70/hr on 6/1/2014.	42.95	17.81	60.76
137	Teledata Technician or Installer Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	22.25	12.24	34.49
138	Temperature Control Installer	32.94	18.80	51.74
139	Terrazzo Finisher	26.89	19.18	46.07
140	Terrazzo Mechanic	30.20	18.42	48.62
141	Tile Finisher	23.85	17.18	41.03
142	Tile Setter	29.81	17.18	46.99
143	Tuckpointer, Caulker or Cleaner	35.25	13.15	48.40
144	Underwater Diver (Except on Great Lakes)	34.48	15.90	50.38
146	Well Driller or Pump Installer	25.32	15.65	40.97
147	Siding Installer	25.92	18.04	43.96

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.16	14.34	43.50
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	30.60	14.86	45.46
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	26.78	13.63	40.41
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.86	12.97	37.83
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	12.70	34.45

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	32.39	18.46	50.85
203	Three or More Axle	18.00	22.88	40.88
204	Articulated, Euclid, Dumptor, Off Road Material Hauler	32.89	18.96	51.85
205	Pavement Marking Vehicle	18.00	22.88	40.88
207	Truck Mechanic	18.00	22.88	40.88

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 Premium Increase(s): Add $1.00/hr for certified welder; Add $.25/hr for mason tender	24.21	14.63	38.84
302	Asbestos Abatement Worker	24.36	14.44	38.80
303	Landscaper	21.01	9.37	30.38
310	Gas or Utility Pipeline Laborer (Other Than Sewer and Water)	21.01	13.63	34.64
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased) Premium Increase(s): DOT PREMIUMS: Pay two times the hourly basic rate on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	18.33	13.65	31.98
314	Railroad Track Laborer	23.46	3.30	26.76
315	Final Construction Clean-Up Worker	16.00	0.00	16.00

HEAVY EQUIPMENT OPERATORS
SITE PREPARATION, UTILITY OR LANDSCAPING WORK ONLY

Fringe Benefits Must Be Paid On All Hours Worked

CODE	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).	33.42	18.96	52.38
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).	32.89	18.96	51.85
503	Air Compressor (&/or 400 CFM or Over); Augers (Vertical & Horizontal); Compactor (Self-Propelled 84 Ft Total Drum Width & Under, or Tractor Mounted, Towed & Light Equipment); Crusher, Screening or Wash Plant; Farm or Industrial Type Tractor; Forklift; Generator (&/or 150 KW or Over); Greaser; High Pressure Utility Locating Machine (Daylighting Machine); Mulcher; Oiler; Post Hole Digger or Driver; Pump (3 Inch or Over) or Well Points; Refrigeration Plant or Freeze Machine; Rock, Stone Breaker; Skid Steer Loader (With or Without Attachments); Vibratory Hammer or Extractor, Power Pack.	30.82	18.96	49.78
504	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	38.80	20.17	58.97
505	Work Performed on the Great Lakes Including Crane or Backhoe Operator; Assistant Hydraulic Dredge Engineer; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder; 70 Ton & Over Tug Operator. Premium Increase(s): Add $.50/hr for Friction Crane, Lattice Boom or Crane Certification (CCO).	41.65	21.71	63.36
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.	37.10	21.57	58.67

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.	34.50	20.04	54.54

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

Fringe Benefits Must Be Paid On All Hours Worked

CODE	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. 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.	35.62	18.96	54.58
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).	36.35	6.95	43.30
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).	33.42	18.96	52.38
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).	32.89	18.96	51.85

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.	30.82	18.96	49.78
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.	24.19	17.89	42.08
514	Gas or Utility Pipeline, Except Sewer & Water (Primary Equipment).	36.34	21.14	57.48
515	Gas or Utility Pipeline, Except Sewer & Water (Secondary Equipment). Future Increase(s): Add $1.60/hr on 06/01/2014; Add $1.65/hr on 06/01/2015.	32.32	18.55	50.87
516	Fiber Optic Cable Equipment Future Increase(s): Add $1.75/hr on 02/01/2014.	27.89	17.20	45.09

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	TRADE OR OCCUPATION Fringe Benefits Must Be Paid On All Hours Worked	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
103	Bricklayer, Blocklayer or Stonemason 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.	35.10	18.40	53.50
105	Carpenter Future Increase(s): Add $1.25/hr on 6/2/2014. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	33.68	19.81	53.49
107	Cement Finisher Future Increase(s): Add $1.87 on 6/1/14; Add $1.87 on 6/1/15; Add $1.75 on 6/1/16. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.40/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	33.51	16.13	49.64
109	Electrician Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	32.82	22.61	55.43
111	Fence Erector	24.72	0.00	24.72
116	Ironworker	31.25	19.46	50.71
118	Line Constructor (Electrical)	38.25	17.31	55.56
125	Pavement Marking Operator	16.00	7.35	23.35
126	Piledriver	30.98	15.90	46.88
130	Plumber	33.75	14.07	47.82
135	Steamfitter	42.45	16.71	59.16
137	Teledata Technician or Installer	21.89	11.85	33.74

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
143	Tuckpointer, Caulker or Cleaner	35.25	13.15	48.40
144	Underwater Diver (Except on Great Lakes)	38.80	20.17	58.97
146	Well Driller or Pump Installer	25.32	15.65	40.97
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.16	14.34	43.50
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	30.60	14.86	45.46
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	26.78	13.63	40.41
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.86	12.97	37.83
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	12.70	34.45

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	30.00	15.00	45.00
203	Three or More Axle	16.00	7.35	23.35
204	Articulated, Euclid, Dumptor, Off Road Material Hauler	32.89	18.96	51.85
205	Pavement Marking Vehicle	16.00	7.35	23.35
207	Truck Mechanic	16.00	7.35	23.35

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 Premium Increase(s): Add $.20 for blaster, bracer, manhole builder, caulker, bottomman and power tool; Add $.55 for pipelayer; Add $1.00 for tunnel work 0-15 lbs. compressed air; Add $2.00 for over 15-30 lbs. compressed air; Add $3.00 for over 30 lbs. compressed air.	25.60	14.62	40.22
303	Landscaper	25.28	11.46	36.74
304	Flagperson or Traffic Control Person	24.70	10.72	35.42
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	18.31	12.67	30.98
314	Railroad Track Laborer	23.46	3.30	26.76

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 all >45 Ton lifting capacity cranes	34.62	18.96	53.58
522	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Boring Machine (Directional); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump (Over 46 Meter), Concrete Conveyor (Rotec or Bidwell Type); Concrete Spreader & Distributor; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity of 4,000 Lbs. & Under; Dredge (NOT Performing Work on the Great Lakes); Milling Machine; Skid Rig; Telehandler; Traveling Crane (Bridge Type).	33.42	18.96	52.38
523	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Boring Machine (Horizontal or Vertical); Bulldozer or Endloader (Over 40 hp); Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Concrete Pump (46 Meter & Under), Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Hydro-Blaster (10,000 PSI or Over); Manhoist; Material or Stack Hoist; Mechanic or Welder; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yd or More Capacity; Screed (Milling Machine); Sideboom; Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Tractor or Truck Mounted Hydraulic Crane (10 Tons or Under); Trencher (Wheel Type or Chain Type Having Over 8-Inch Bucket).	32.89	18.96	51.85

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
524	Backfiller; Broom or Sweeper; Bulldozer or Endloader (Under 40 hp); Compactor (Self-Propelled 85 Ft Total Drum Width & Over, or Tractor Mounted, Towed & Light Equipment); Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Conveyor System; Concrete Finishing Machine (Road Type); Environmental Burner; Fireman (Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Hoist (Tugger, Automatic); Grout Pump; Jeep Digger; Lift Slab Machine; Mulcher; Power Subgrader; Pump (3 Inch or Over) or Well Points; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Screw or Gypsum Pumps; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Stump Chipper; Tining or Curing Machine; Trencher (Wheel Type or Chain Type Having 8-Inch Bucket & Under); Winches & A-Frames. Future Increase(s): Add $1.05/hr on 6/2/2014; Add $1.55/hr on 6/1/2015. Premium Increase(s): Add $.25/hr for operating tower crane.	35.11	19.45	54.56
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.	30.19	20.94	51.13
526	Boiler (Temporary Heat); Forklift; Greaser; Oiler.	24.19	17.89	42.08
527	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	38.80	20.17	58.97
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.	38.80	20.17	58.97
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.	34.50	20.04	54.54
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.	34.50	20.04	54.54

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	32.01	17.35	49.36
105	Carpenter	30.48	15.90	46.38
107	Cement Finisher Future Increase(s): Add $1.87 on 6/1/14; Add $1.87 on 6/1/15; Add $1.75 on 6/1/16. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.40/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	33.51	16.13	49.64
109	Electrician Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	34.07	19.25	53.32
111	Fence Erector	24.72	0.00	24.72
116	Ironworker	31.25	19.46	50.71
118	Line Constructor (Electrical)	38.25	17.31	55.56
124	Painter	21.87	11.37	33.24
125	Pavement Marking Operator	30.00	0.00	30.00
126	Piledriver	30.98	15.90	46.88
133	Roofer or Waterproofer	29.40	6.25	35.65
137	Teledata Technician or Installer	21.89	11.85	33.74
143	Tuckpointer, Caulker or Cleaner	35.25	13.15	48.40
144	Underwater Diver (Except on Great Lakes)	34.48	15.90	50.38
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	34.43	15.24	49.67
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	35.50	15.89	51.39

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	26.78	13.63	40.41
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.86	12.97	37.83
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	12.70	34.45

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	34.22	19.90	54.12
203	Three or More Axle Future Increase(s): Add $1.30/hr on 6/1/2014. Premium Increase(s): DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.	24.52	17.77	42.29
204	Articulated, Euclid, Dumptor, Off Road Material Hauler Future Increase(s): Add $1.75/hr on 6/1/14); Add $1.25/hr on 6/1/15); Add $1.30/hr on 6/1/16); Add $1.25/hr on 6/1/17. 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	29.27	20.40	49.67
205	Pavement Marking Vehicle	23.31	17.13	40.44
206	Shadow or Pilot Vehicle	34.22	19.90	54.12
207	Truck Mechanic	23.31	17.13	40.44

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 $1.60/hr on 6/1/2014. Premium Increase(s): Add $.10/hr for topman, air tool operator, vibrator or tamper operator (mechanical hand operated), chain saw operator and demolition burning torch laborer; Add $.15/hr for bituminous worker (raker and luteman), formsetter (curb, sidewalk and pavement) and strike off man; Add $.20/hr for blaster and powderman; Add $.25/hr for bottomman; Add $.35/hr for line and grade specialist; Add $.45/hr for pipelayer. / DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	29.32	14.63	43.95
302	Asbestos Abatement Worker	24.36	14.44	38.80
303	Landscaper Future Increase(s): Add $1.60/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	29.32	14.63	43.95
304	Flagperson or Traffic Control Person Future Increase(s): Add $1.60/hr on 6/1/2014. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.	25.67	14.63	40.30
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	18.31	12.67	30.98
314	Railroad Track Laborer	23.46	3.30	26.76

HEAVY EQUIPMENT OPERATORS
AIRPORT PAVEMENT OR STATE HIGHWAY CONSTRUCTION

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
531	Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Traveling Crane (Bridge Type). Future Increase(s): Add $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	36.72	20.40	57.12
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 $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	36.22	20.40	56.62

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 $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	35.72	20.40	56.12

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 $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	35.46	20.40	55.86
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 $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	35.17	20.40	55.57
536	Fiber Optic Cable Equipment.	26.69	16.65	43.34
537	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	38.80	20.17	58.97
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.	38.80	20.17	58.97

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.	34.50	20.04	54.54
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.	34.50	20.04	54.54

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	32.01	17.35	49.36
105	Carpenter	32.93	19.93	52.86
107	Cement Finisher	31.48	15.68	47.16
109	Electrician	31.27	22.81	54.08
111	Fence Erector	24.72	0.00	24.72
116	Ironworker	31.25	19.46	50.71
118	Line Constructor (Electrical)	38.25	17.31	55.56
124	Painter	24.50	16.60	41.10
125	Pavement Marking Operator	30.00	0.00	30.00
126	Piledriver	30.98	15.90	46.88
133	Roofer or Waterproofer	29.40	6.25	35.65
137	Teledata Technician or Installer	21.89	11.85	33.74
143	Tuckpointer, Caulker or Cleaner	35.25	13.15	48.40
144	Underwater Diver (Except on Great Lakes)	38.80	20.17	58.97
150	Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	34.43	15.24	49.67
151	Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	30.60	14.86	45.46
152	Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	26.78	13.63	40.41
153	Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.86	12.97	37.83
154	Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	12.70	34.45

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	30.00	15.00	45.00

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
203	Three or More Axle	17.00	0.00	17.00
204	Articulated, Euclid, Dumptor, Off Road Material Hauler	32.89	18.96	51.85
205	Pavement Marking Vehicle	17.00	0.00	17.00
206	Shadow or Pilot Vehicle	30.00	15.00	45.00
207	Truck Mechanic	17.00	0.00	17.00

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer	28.07	13.25	41.32
303	Landscaper Future Increase(s): Add $1.60/hr on 6/1/14. Premium Increase(s): DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).	29.04	14.63	43.67
304	Flagperson or Traffic Control Person	24.70	10.72	35.42
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	18.31	12.67	30.98
314	Railroad Track Laborer	23.46	3.30	26.76

HEAVY EQUIPMENT OPERATORS
CONCRETE PAVEMENT OR BRIDGE WORK

Fringe Benefits Must Be Paid On All Hours Worked

CODE	TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
541	Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic. Future Increase(s): Add $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	36.72	20.40	57.12
542	Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With a Lifting Capacity of 4,000 Lbs. & Under; Crane, Tower Crane Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver. Future Increase(s): Add $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	36.22	20.40	56.62

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
543	Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Automatic Subgrader (Concrete); Backhoe (Track Type) Having a Mfgr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Boring Machine (Directional, Horizontal or Vertical); Bridge (Bidwell) Paver; Bulldozer or Endloader; Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & Distributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Manhoist; Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A-Frames. Future Increase(s): Add $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	35.72	20.40	56.12
544	Backfiller; Belting, Burlap, Texturing Machine; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Jeep Digger; Joint Sawer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (WIth or Without Attachments); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler; Tining or Curing Machine.	33.96	19.79	53.75
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.	30.32	18.46	48.78
546	Fiber Optic Cable Equipment.	26.69	16.65	43.34

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
547	Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	38.80	20.17	58.97
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.	38.80	20.17	58.97
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.	34.50	20.04	54.54
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.	34.50	20.04	54.54

HEAVY EQUIPMENT OPERATORS
ASPHALT PAVEMENT OR OTHER WORK

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
551	Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self Erecting Tower Crane With a Lifting Capacity of Over 4,000 Lbs., Crane With Boom Dollies; Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads and/or Jib Lengths Measuring 176 Ft or Over; Master Mechanic.	35.12	18.46	53.58
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 $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	36.22	20.40	56.62

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.	32.89	18.96	51.85
554	Backfiller; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Asphalt Plant, Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Hoist (Tugger, Automatic); Jeep Digger; Joint Sawer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Self-Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler.	33.67	19.48	53.15
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 $1.75/hr on 6/1/2014); Add $1.25/hr on 6/1/2015); 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://www.dot.wi.gov/business/civilrights/laborwages/pwc.htm.	35.17	20.40	55.57
556	Fiber Optic Cable Equipment.	26.69	16.65	43.34

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 Future Increase(s): Add $1.25/hr on 6/2/2014.	33.68	19.81	53.49
102	Boilermaker	26.00	4.73	30.73
103	Bricklayer, Blocklayer or Stonemason	32.01	13.26	45.27
104	Cabinet Installer	22.00	1.05	23.05
105	Carpenter	30.48	3.24	33.72
106	Carpet Layer or Soft Floor Coverer	23.68	3.20	26.88
107	Cement Finisher	20.93	5.94	26.87
108	Drywall Taper or Finisher	22.50	0.88	23.38
109	Electrician	27.50	7.47	34.97
110	Elevator Constructor	42.86	23.84	66.70
111	Fence Erector	18.52	4.89	23.41
112	Fire Sprinkler Fitter	52.82	5.54	58.36
113	Glazier	38.03	13.42	51.45
114	Heat or Frost Insulator	30.00	0.00	30.00
115	Insulator (Batt or Blown)	19.00	14.33	33.33
116	Ironworker	31.25	19.46	50.71
117	Lather	30.48	3.24	33.72
119	Marble Finisher	26.89	19.18	46.07
120	Marble Mason	32.01	13.26	45.27
121	Metal Building Erector	17.00	3.82	20.82
123	Overhead Door Installer	12.00	0.00	12.00
124	Painter	20.00	4.22	24.22

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
125	Pavement Marking Operator	30.00	0.00	30.00
129	Plasterer	25.00	0.00	25.00
130	Plumber	30.00	10.62	40.62
132	Refrigeration Mechanic	19.75	8.56	28.31
133	Roofer or Waterproofer	17.00	3.72	20.72
134	Sheet Metal Worker	21.03	3.40	24.43
135	Steamfitter	31.72	16.10	47.82
137	Teledata Technician or Installer	24.75	8.09	32.84
138	Temperature Control Installer	22.50	0.70	23.20
139	Terrazzo Finisher	26.89	19.18	46.07
140	Terrazzo Mechanic	30.20	18.42	48.62
141	Tile Finisher	23.77	16.50	40.27
142	Tile Setter	21.00	0.00	21.00
143	Tuckpointer, Caulker or Cleaner	32.50	0.02	32.52
146	Well Driller or Pump Installer	27.60	5.80	33.40
147	Siding Installer	20.18	0.00	20.18

TRUCK DRIVERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
201	Single Axle or Two Axle	28.05	4.16	32.21
203	Three or More Axle	18.00	2.37	20.37
205	Pavement Marking Vehicle	18.00	2.37	20.37
207	Truck Mechanic	19.00	1.85	20.85

LABORERS

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
301	General Laborer	18.14	10.16	28.30
302	Asbestos Abatement Worker	17.00	3.86	20.86

CODE	Fringe Benefits Must Be Paid On All Hours Worked TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
303	Landscaper	30.00	0.00	30.00
311	Fiber Optic Laborer (Outside, Other Than Concrete Encased)	18.31	12.67	30.98
315	Final Construction Clean-Up Worker	16.00	0.00	16.00

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.	29.70	20.08	49.78
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.	29.70	16.00	45.70

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