Contract Routing Form

ROUTING: Routine printed on: 01/23/2018

Contract between: R.G. Huston Co., Inc.
and Dept. or Division: Engineering Division
Name/Phone Number:

Project: Vilas Park - Lagoon Bridge Replacements

Contract No.: 8062 File No.: 49944
Enactment No.: RES-18-00054 Enactment Date: 01/22/2018
Dollar Amount: 773,996.17

(Please DATE before routing)

Signatures Required	Date Received	Date Signed
City Clerk	1-24-18	1-24-18
Director of Civil Rights	1.25.18	1.26.18 FNS
Risk Manager	1.26.18	1/29/18 RN
Finance Director	01-29-2018	1/29/18 MCR
City Attorney 102	1-30-18	1-31-2018
Mayor	01.31.2018	01.31.208

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

Original + 2 Copies

Mike Sturm

01/23/2018 15:39:39 enjls - ~~Corey~~ Stelljes, 266-6518

Dis Rights: OK / N/A / Problem - Hold
Prev Wage: AA / Agency / No
Contract Value: 773,996.17
AA Plan: Approved
Amendment / Addendum # _____
Type: POS / Dvlp / Sbdv / Gov't /
Grant / (PW) / Goal / Loan / Agrmt

Sign In

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Details Reports

File #:	49944 Version: 1	Name:	Awarding Public Works Contract No. 8062, Vilas Park - Lagoon Bridge Replacements.
Type:	Resolution	Status:	Passed
File created:	12/22/2017	In control:	BOARD OF PUBLIC WORKS
On agenda:	1/16/2018	Final action:	1/16/2018
Enactment date:	1/22/2018	Enactment #:	RES-18-00054
Title:	Awarding Public Works Contract No. 8062, Vilas Park - Lagoon Bridge Replacements.		
Sponsors:	BOARD OF PUBLIC WORKS		
Attachments:	1. Contract 8062.pdf		

History (3) Text

Fiscal Note
The proposed resolution authorizes the award of Public Works Contract No. 8062,Vilas Park - Lagoon Bridge Replacements. The total estimated cost of the project is $836,000. The Parks Division 2017 Capital Budget includes $1,015,000 for the Vilas Park Improvements project (Munis 17184) funded by GO Borrowing ($215,000) and Impact Fees ($800,000). Funding is available in this project for the contract.

Title
Awarding Public Works Contract No. 8062, Vilas Park - Lagoon Bridge Replacements.

Body
BE IT RESOLVED, that the following low bids for miscellaneous improvements be accepted and that the Mayor and City Clerk be and are hereby authorized and directed to enter into a contract with the low bidders contained herein, subject to the Contractor's compliance with Section 39.02 of the Madison General Ordinances concerning compliance with the Affirmative Action provisions **and subject to the Contractor's compliance with Section 33.07 of the Madison General Ordinances regarding Best Value Contracting:**

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

See attached document (Contract No. 8062) for itemization of bids.

Sign

PROJECT	CONTRACTOR	AMOUNT OF BID

CONTRACT NO. 8062
VILAS PARK – LAGOON BRIDGE REPLACEMENTS
(BASE BID + ALTERNATE TEMP BRIDGE)

R.G. HUSTON CO., INC. $773,996.17

Acct. No. 17185-51-130:54250 (57065)	$773,996.17
Contingency 8%±	62,003.83
GRAND TOTAL	$836,000.00

Jurisdiction: Wisconsin

Demographics

Company Name: Travelers Casualty and Surety Company of America
Short Name:
SBS Company Number: 54218780
NAIC CoCode: 31194
FEIN: 06-0907370
Domicile Type: Foreign
State of Domicile: Connecticut
Country of Domicile: United States
NAIC Group Number: 3548 - Travelers Grp
Organization Type: Stock
Date of Incorporation: 07/18/1974
Merger Flag: Yes

Address

Phone, E-mail, Website

Phone

Type	Number
Business Primary Phone	(860) 277-0111
Mailing Primary Phone	(860) 277-0111
Mailing Fax Phone	(860) 277-7002
Statutory Home Office Primary Phone	(860) 277-0111
Main Admin Office Primary Phone	(860) 277-0111

Email

No results found.

Website

No results found.

Company Type

Company Type: Property and Casualty
Status: Active
Status Reason:
Status Date: 09/10/1975
Effective Date: 07/01/1997
Legacy State ID: 110846
Issue Date: 09/10/1975
Approval Date:
File Date:

Articles of Incorporation Received: No
Article No:
COA Number:

Appointments

dennis

Licensee Name	License Number	NPN	License Type	Line of Authority	Appointment Date	Effective Date	Expiration Date
DENNIS DIESSNER	365288	365288	Intermediary (Agent) Individual	Casualty	05/29/2013	03/01/2017	02/28/2018
DENNIS KUHNKE	283914	283914	Intermediary (Agent) Individual	Casualty	02/06/2015	03/01/2017	02/28/2018
DENNIS BARTON	283633	283633	Intermediary (Agent) Individual	Casualty	06/15/1993	03/01/2017	02/28/2018
JOHN DENNIS	993414	993414	Intermediary (Agent) Individual	Casualty	11/12/2015	03/01/2017	02/28/2018
DENNIS DIESSNER	365288	365288	Intermediary (Agent) Individual	Property	05/29/2013	03/01/2017	02/28/2018
DENNIS KUHNKE	283914	283914	Intermediary (Agent) Individual	Property	02/06/2015	03/01/2017	02/28/2018
DENNIS BARTON	283633	283633	Intermediary (Agent) Individual	Property	06/15/1993	03/01/2017	02/28/2018
JOHN DENNIS	993414	993414	Intermediary (Agent) Individual	Property	11/12/2015	03/01/2017	02/28/2018

First Previous 1 Next Last

Line Of Business

Filter

Line of Business	Citation Type	Effective Date
Aircraft	Aircraft	09/10/1975
Automobile	Automobile	09/10/1975
Credit Insurance	Credit Insurance	09/10/1975
Disability Insurance	Disability Insurance	09/10/1975
Fidelity Insurance	Fidelity Insurance	09/10/1975
Fire, Inland Marine and Other Property Insurance	Fire, Inland Marine and Other Property Insurance	09/10/1975

First Previous 1 2 Next Last

Contact

No results found.

Company Merger

Filter

SBS Company Number	NAIC CoCode	Non-Surviving Company	Non-Surviving Company Type	Terminated Appointments	Transferred Appointments	Merger Date	Comments
54221052	22535	Seaboard Surety Company	Property and Casualty	N	N	01/02/2009	

Companies Absorbed

First Previous 1 Next Last

Name Change History

Filter

First | Previous | 1 | Next | Last

$773,996.17
FILE

BID OF R. G. HUSTON CO., INC.

2017

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

VILAS PARK –

LAGOON BRIDGE REPLACEMENTS

CONTRACT NO. 8062

MUNIS NO. 17185 -51 -130

IN

MADISON, DANE COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL
MADISON, WISCONSIN ON **JANUARY 16, 2018**

CITY ENGINEERING DIVISION
1600 EMIL STREET
MADISON, WISCONSIN 53713

https://bidexpress.com/login

VILAS PARK -
LAGOON BRIDGE REPLACEMENTS
CONTRACT NO. 8062

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This Proposal, and Agreement have
been prepared by:

PARKS DIVISION
CITY OF MADISON
MADISON, DANE COUNTY, WISCONSIN

for Kay H. Rutledge
Eric Knepp, Parks Superintendent

EK:MS

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:	VILAS PARK - LAGOON BRIDGE REPLACEMENTS
CONTRACT NO.:	8062
SBE GOAL	6%
BID BOND	5%
SBE PRE BID MEETING (1:00 P.M.)	11/21/17
PREQUALIFICATION APPLICATION DUE (1:00 P.M)	11/27/17
BID SUBMISSION (1:00 P.M.)	12/01/17
BID OPEN (1:30 P.M.)	12/01/17
PUBLISHED IN WSJ	11/10/17, 11/17/17 & 11/24/17

SBE 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 - 2017 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.

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.

MINOR DISCREPENCIES

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

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

Building Demolition

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

Street, Utility and Site Construction

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

Bridge Construction

501 ☒ Bridge Construction and/or Repair

Building Construction

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

State of Wisconsin Certifications

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

SECTION B: PROPOSAL

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

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

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

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

SECTION C: SMALL BUSINESS ENTERPRISE

Instructions to Bidders
City of Madison
SBE Program Information

2 Small Business Enterprise (SBE) Program Information

2.1 Policy and Goal

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.2 Contract Compliance

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

2.3 Certification of SBE by City of Madison

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

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

2.4 Small Business Enterprise Compliance Report

2.4.1 Good Faith Efforts

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

2.4.1.1 Attendance at the pre-bid meeting.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.5 Appeal Procedure

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

2.6 SBE Requirements After Award of the Contract

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

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

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

2.7 SBE Definition and Eligibility Guidelines

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

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

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

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

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

SECTION D: SPECIAL PROVISIONS

VILAS PARK -
LAGOON BRIDGE REPLACEMENTS
CONTRACT NO. 8062

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 readily be made, the numbering system for the Special provisions is equivalent to that of the Specifications.

Where these Special Provisions refer to the "Standard Specifications", it shall be taken to refer to the City of Madison Standard Specifications for Public Works Construction and Supplements thereto.

Where the State of Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, as referenced in these Special Provisions, refers to the "Department", it shall be taken to refer to the City of Madison.

ARTICLE 101 DEFINITIONS AND TERMS

Relationship between the City and Strand Associates, Inc.® Strand Associates, Inc.® has been hired by the City to prepare drawings and specifications for this project. Additionally, Strand will assist the City by providing shop drawing review and responding to questions that may arise during construction. The City will provide resident engineering services and contract administration and is referred to as the City and/or Engineer in the Contract Documents.

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

During construction, the duties and responsibilities of Strand Associates, Inc.® include the following:

1. Attend one preconstruction meeting with City and Contractor.

2. Review Contractor product submittals.

3. Report to City when clarifications and interpretations of the Contract Documents are needed. Consider, evaluate, and report to City in regard to Contractor's requests for modification.

4. Provide site visits to observe the Work.

Strand Associates, Inc.® shall not:

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

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

3. Undertake any of the responsibilities of Contractor, Subcontractor, Suppliers or Contractor's superintendent.

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

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

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

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

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

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 $59,000 for a single trade contract; or equal to or greater than $288,000 for a multi-trade contract pursuant to MGO 33.07(7).

SECTION 102.9 BIDDER'S UNDERSTANDING

In the preparation of Drawings and Specifications, Strand Associates, Inc.® relied upon the following reports of explorations and tests of subsurface conditions at the Site which are attached at the end of the SPECIAL PROVISIONS:

Report dated March 7, 2017, prepared by CGC, Inc., of Madison, Wisconsin, titled: Geotechnical Exploration Report–Proposed Bridge Replacements Vilas Park Island, Madison, Wisconsin, consisting of 22 pages.

The technical data in the above report, upon which Contractor may rely, consists of boring methods, level of subsurface water, boring logs, laboratory test methods and results, and boring locations all as of the date made.

City accepts no responsibility for accuracy of the soil data or water level information. Soil borings and report, included with these Contract Documents, were not obtained for the purposes of designing excavations and trenches. Soils information was used by Strand Associates, Inc.® for design purposes of new structures only. Contractor shall assure itself by personal examination as to subsurface conditions and shall provide its own investigations and make its own assumptions to comply with OSHA and any other applicable laws and regulations regarding excavation and trenching requirements.

SECTION 103.2 AWARD OF CONTRACT

The contract shall be awarded to the lowest bidding contractor in the following manner.

1. **The City will establish a Construction Budget Dollar Value for the overall project.**
2. **The City will award the contract based on the sub totals of the BASE BID plus ALTERNATE – TEMPORARY BRIDGE until the sub total exceeds the predetermined Construction Budget Dollar Value.**
3. **The City shall have the right to proceed or not proceed with any alternate regardless of how the bid was awarded. The City retains the right to omit ALTERNATE – TEMPORARY BRIDGE pending WDNR approval of the ford crossing permit.**

The City shall have the right to reject all bids regardless of the value of the bids submitted.

SECTION 104: SCOPE OF WORK

This project consists of the replacement of two bridges at Vilas Park, Madison, WI, including but not limited to the following:

- Removal and disposal of existing bridges
- Bridge fabrication, delivery and installation

- Concrete abutment construction
- Asphalt path construction
- Site grading and restoration

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 104.4: INCREASED OR DECREASED QUANTITIES

It is agreed and understood that the quantities of any items of work shown on the plans or in the proposal are subject to increase or decrease during the progress of the work. The Engineer reserves the right to increase or decrease the quantities of any items of work, including increase or decrease of quantities by alteration of plans, as may be considered necessary or desirable during the progress of the work to satisfactorily complete the project. Such increases or decreases in quantities shall not be considered as a waiver of any conditions of the contract nor invalidate any of the provisions thereof. All terms of Section 104.5 Increase Items and Section 104.6 Decreased and Deleted Items of the Standard Specifications for Public Works Construction are applicable to this project.

SECTION 104.9 OLD MATERIAL

All old material including fill, concrete, asphalt, etc. that is removed and not used as part of the new work shall be disposed of off-site at the expense of Contractor.

SECTION 105.1: AUTHORITY OF THE ENGINEER

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

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

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

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

SECTION 105.9: SURVEYS, POINTS, AND INSTRUCTION

The Contractor shall be responsible for setting all lines and/or grades required to complete the work, per Bid Item Construction Surveying and Staking.

SECTION 105.12: COOPERATION BY CONTRACTOR

Vilas Park is a heavily used public park that will remain open during the construction time period. The park and Henry Vilas Zoo see thousands of visitors during spring and summer, including large bus trips of children from throughout Dane County. The Contactor shall insure the site is fully secured from public access and all construction materials and equipment are secured within the project site. Access to the site shall be from either Edgewood Avenue or Vilas Park Drive. Caution shall be taken entering and exiting the park area. No site access shall occur from the Henry Vilas Zoo parking lot, Drake Street or South Randall Ave. The Contractor shall secure materials at the end of each work day to deter any potential vandalism and theft.

Several utilities exist on site. The Contractor shall perform a One Call through Digger's Hotline for each site 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) 658-3087 / fax (608)267-1162).

The Contractor shall attend a pre-construction meeting prior to the start of construction. Prior to the pre-construction meeting the Contractor shall provide a Traffic Control Plan per Section 107.7 and a site access plan showing proposed construction entrances, tracking pads, paths of travel and construction staging extents for review and approval by the Engineer. The Traffic Control Plan shall be paid for under Bid Item -10701 Traffic Control, the site access plan shall be paid for under Bid Item – 10911 Mobilization.

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

The Contractor shall take care when accessing the site not to damage the existing utilities, concrete curb, sidewalk or asphalt pavement. Any damage shall be repaired by the Contractor per the Standard Specifications at no additional cost to the city.

SECTION 105.13: ORDER OF COMPLETION

The Contractor shall submit to the City a detailed schedule at or prior to the preconstruction meeting showing the sequence and anticipated dates of construction operations.

SECTION 105.18 PRECONSTRUCTION MEETING

Before starting work, a pre-construction meeting will be held 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 conference will be representatives of the City, Strand Associates, Inc.®, and Contractor.

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 106.6 SUBSTITUTE MATERIALS

Whenever in any of the Contract Documents an article or material is defined by describing a proprietary product, or by using the name of a manufacturer or vendor, the term "or equal," if not inserted, shall be implied. The specific article or material mentioned shall be understood as indicating the type, function, minimum standard of design, efficiency, and quality desired, and shall not be construed in such a manner as to exclude manufacturer's products of comparable quality, design and efficiency. If Contractor wishes to furnish or use a proposed substitute, he shall make written application to Strand Associates, Inc.®, for approval of such a substitute certifying, in writing, that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified; stating whether or not its incorporation in or use in connection with the project is subject to the payment of any license fee or royalty; and identifying all variations of the proposed substitute from that specified and indicating available maintenance service. No substitute shall be ordered or installed without the written approval of Strand Associates, Inc.®, who will be the judge of equality and may require Contractor to furnish such other data about the proposed substitute as he considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as the City may require which shall be furnished at Contractor's expense.

SECTION 107.4(i): INSURANCE FOR THE CONSTRUCTION OF BUILDINGS AND STRUCTURES

Delete the standard specification and replace with the following:

The Contractor shall purchase and maintain, property insurance written on a builder's risk "all-risk" policy form in the amount of the initial Contract sum, plus the value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire project at the site on a replacement cost basis less the cost of sitework and demolition. Such insurance shall be maintained until the date in time that the City takes occupancy of the building or possession of the structure, unless otherwise agreed to in writing by Contractor and City. This insurance shall include interests of the City, the Contractor and subcontractors. This insurance does not include Contractor's or subcontractor's property which is not intended to be incorporated into the work such as tools, sheds, hoists, canvasses, tarpaulins, mixers, scaffolding, staging towers owned or rented, or similar property not expended in the completion of, or to become a permanent part of the installation of the work. This insurance shall apply to new buildings, structures, additions, remodeling, alterations and renovations of existing buildings.

Such insurance shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and soft costs, including but not limited to additional interest costs, insurance, architect fees, engineering fees, contractor fees, legal and accounting fees, city staff costs, bond and permit fees, rental/lease costs and other administrative costs required as a result of such insured loss.

If the property insurance requires deductibles, the Contractor shall pay costs not covered because of such deductibles.

This insurance shall cover portions of the work stored off-site, and also portions of the work in transit. The Contractor shall carry sufficient all risk insurance on both the owned and leased equipment at the site of work and enroute to and from the site of work to fully protect Contractor. The Contractor shall require the same coverage of subcontractors. It is expressly understood and agreed that the City shall bear no responsibility for any loss or damage to such equipment.

Partial occupancy or use shall not commence until the insurance company or companies providing insurance have consented to such partial occupancy or use by endorsement or otherwise. The City and Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

SECTION 107.7: MAINTENANCE OF TRAFFIC

All traffic control shall conform to Part VI of the Federal Highways Administration's "Manual on Uniform Traffic Control Devices" (MUTCD), the State of Wisconsin Standard Facilities Development Manual (including Chapter 16 – Standard Detail Drawings) and the City of Madison Standards for Sidewalk and Bikeway closures.

The Contractor shall submit an acceptable, complete Traffic Control Plan, including all necessary phases and any required sidewalk, traffic lane or bike route closures, to the office of the City Traffic Engineer, at 30 W. Mifflin Street, Suite 900, Madison, WI 53701, a minimum of five (5) working days prior to the pre-construction meeting. The Traffic Control Plan shall address all requirements of this section of the Special Provisions. The Contractor shall not start work on this project until the Traffic Engineering Division has approved a traffic control plan and traffic control devices have been installed, in accordance with the approved plan. Failure of the Contractor to obtain an approved Traffic Control Plan, as specified above, may prevent the Contractor from starting work and shall be considered a delay of the project, caused by the Contractor. Please contact Jeremy Nash, City of Madison Traffic Engineering, at 266-6585 for Traffic Control Plan questions.

Access to the site shall be from Edgewood Avenue or Vilas Park Drive. Vilas Park Drive is a one-way street from Edgewood Avenue to North Wingra Drive. The drive includes a bicycle lane that is frequently used by cyclists and pedestrians. Two-way traffic shall be maintained at all times on Edgewood Avenue. This shall be done by maintaining two lanes of traffic, both at least 11 feet wide on asphalt. The bike lane and one lane of traffic at least 11 feet wide shall be maintained on Vilas Park Drive at all times. The bike lane on Vilas Park Drive shall be swept daily to prevent loose gravel and any construction materials from impacting bicyclists. If the Contractor closes any part of the bike lane or bike path, the Contractor must provide an acceptable alternative route approved by the Traffic Engineer.

Access along Vilas Park Drive is further restricted by a historic vehicle bridge that has weight and clearance limitations. As-built plans and structural assessment of the vehicle bridge will be provided to the Contractor prior to the preconstruction meeting for the development of the Traffic Control Plan. Any damage to the existing Vilas Park Drive bridge shall be repaired by the Contractor per the Standard Specifications and the direction of the Engineer at no additional cost to the City.

Access to Edgewood Avenue from Monroe Street will be affected by the City of Madison Engineering project to reconstruct Monroe Street in 2018. Further information on the project schedule and traffic limitations will be provided and updated on the project's website, located here: http://www.cityofmadison.com/engineering/projects/monroe-street. The Contractor shall be aware of the Monroe Street reconstruction access limitations and coordinate any construction material deliveries as to not delay project progress.

The Contractor may utilize parking stalls on the north side of Vilas Park Drive as shown on the plans for construction staging. The Contractor shall be responsible for posting and maintaining NO PARKING signs in accordance with City of Madison Police Department's "Guidelines for Temporary No Parking Restrictions for Construction or Special Events". Contact John Villarreal, 608-267-8756, in Parking Utility to obtain NO PARKING signs at least 3 working days prior to needing the signs. Staging areas have been identified on Parks Division property. The Contractor shall not store equipment on Vilas Park Drive or within the public right-of-way beyond the identified parking stalls.

Traffic Control shall be measured as a lump sum. Payment for the Traffic Control is full compensation for constructing, assembling, hauling, erecting, re-erecting, maintaining, restoring, and removing non permanent traffic signs, drums, barricades, and similar control devices, including arrow boards, for providing, placing, and maintaining work zone. Maintaining shall include replacing damaged or stolen traffic control devices. The Contractor shall be responsible for installing and maintaining traffic control in accordance with the approved Traffic Control Plan and as directed by the City Traffic Engineer.

Contractor shall supply all necessary mounting hardware and supports for signing. This shall also include covering and uncovering any conflicting overhead signs during the project. Contractor shall display all signing so as to be easily viewed by all users. Contractor shall mount traffic control on posts or existing poles or drive posts whenever possible. Existing poles may be used with approval of the Engineer.

The Contractor shall not remove traffic signs. For removal or replacement of traffic and parking signs, contact the City of Madison Traffic Engineering Field Operations, 1120 Sayle Street, 266-4767, 8:00 a.m. to 4:00 p.m., a minimum of 2 working days in advance of when any existing signs need to be removed. This service is provided free of charge. If the contractor removes the signs, the contractor will be billed for the reinstallation of, and any damage to, the signing equipment. The contractor shall notify The City of Madison Traffic Engineering Field Operations, 1120 Sayle Street, 266-4767 upon completion of final landscaping to have permanent signs reinstalled. The contractor shall expect a minimum of seven working days to have permanent signs reinstalled. The contractor shall leave in place all necessary traffic control until given notice by the construction engineer that permanent signing is in place and temporary traffic control may be removed.

Contractor shall inspect traffic control daily to ensure all traffic control remains in place during the project. The Traffic Control Plan may need to be altered as conditions change in the field or as unexpected conditions occur. This may include relocating existing traffic control or providing additional traffic control. The Contractor shall install and maintain any necessary modifications or additions to the traffic control, as directed by the City Traffic Engineer, at no cost to the City.

SECTION 107.13: TREE PROTECTION SPECIFICATIONS

The Contractor is advised to review Article 107.13 of the Standard Specifications for tree protection. Note that Articles 107.13(a) Underground Utility Excavation & Installation, 107.13(b) Curb Excavation and Installation, and 107.13(c) Sidewalk Excavation and Installation are not applicable to this project except as noted below.

The intent of these designs is to minimize the damage to those trees that remain following construction. No trees may be removed as part of this project. Contractor shall not grade, excavate, store materials or equipment or otherwise disturb areas within five (5) feet of any tree to remain in accordance with Article 107.2 of the Standard Specifications. Contractor shall take care at all times to conduct operations in a way that avoids damage to any trees not designated for removal. All above precautions are considered incidental to other items of the work.

It is recognized that grading operations and root cutting of some trees will need to occur in order to complete the work, and care must be taken in these areas. For trees where construction operations, including grading, trenching, stone placement, filling, etc. occur within 5 feet of the trunk, or where a tree marked No Root Cut "(NRC)" on the plan, construction operations shall be done under the supervision of a City of Madison Forestry Representative. The sequence to construct in these areas shall be as follows:

1. Trees within 5' of construction operations shall not be disturbed until inspected by a City of Madison Forestry Representative.
2. The Contractor shall place a yellow ribbon around the tree to highlight these trees for the equipment operator.
3. The ribbon shall remain until the area is fine graded and seeded or sodded. Roots shall be cut cleanly by using a saw, ax, lopping shears, chain saw, stump grinder, or other means which will produce a clean cut. Exposed roots shall be covered as soon as excavation and installation are complete. All roots over one (1) inch in diameter that are damaged shall be cleanly cut immediately back of the damaged section on the same day of the excavation. The Contractor shall not rip or pull roots out towards the trunk of a tree while excavating with a backhoe. The use of a backhoe to cut roots is NOT acceptable.

All provisions of Articles 107.13(d), 107.13(f) Bark Abrasions and Limb Damage, 107.13(g) Soil Compaction, 107.13(h) Contractor/Foreperson Acknowledgement, and 107.13(i) Cost Recovery and Liquidated Damages are applicable to this contract.

Protection of these trees is shown on the plans as No Root Cut (NRC) and shall be paid under Bid Item 10803 Root Cutting.

The normal work hours for Forestry staff: 7:00 AM – 3:00 PM, Mon-Fri.

The contact information for Forestry Staff is:

Wayne Buckley
Cell: (608) 220-0637
Office Phone: (608) 266-4892
wbuckley@cityofmadison.com

SECTION 108.2: PERMITS

The following permits have been applied for by the City of Madison:

1. City of Madison Erosion Control Permit
2. WDNR – WRAPP Permit
3. WDNR - Chapter 30 Bridge Permits
4. WDNR – Temporary Ford Crossing Permit
5. City of Madison Site Stormwater Runoff Permit

City of Madison Erosion Control permit weekly inspections will be completed by The Contractor weekly and at all times following storm events, and this work will be paid for under Bid Item 21002 Erosion Control Inspection. See **SECTION 210.1(a).** The Contractor shall meet the conditions of the permits by properly installing and maintaining the erosion control and electrical measures and items shown on the plans, specified in these Special Provisions, or as directed by the Construction Engineer or his designees. A copy of the permit is available at the City of Madison, Engineering Division office.

Copies of these permits will be provided to Contractor prior to start of construction. The Contractor must keep a copy of each individual permit on site at all times throughout construction.

The City's obtaining 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.

SECTION 109.2: PROSECUTION OF THE WORK

Work cannot start on this contract until after the "Start to Work" letter has been received. Construction work must 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 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. Definite notice of intention to start work shall be given to the Engineer at least seventy-two (72) hours in advance of beginning work.

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

The Contractor shall begin work on Vilas Park – Lagoon Bridge Replacements on or around February 16, 2018 as identified in Section 105.13 Order of Completion. The Contractor shall not start on-site construction work prior to issuance of pending WDNR and City of Madison permits. Project submittals,

shop drawing reviews and material orders may proceed prior to permit issuance. Construction shall be completed by August 15, 2018.

SECTION 110.1: MEASUREMENT OF QUANTITIES

All bid items listed in the proposal page will be paid for at the quantity listed in the proposal page, and will not be measured in the field unless otherwise indicated in these special provisions, or there is a significant change approved by the Engineer. A significant change shall be considered more than a 30% change in quantities.

SECTION 110.2: PARTIAL PAYMENTS

The City reserves the right to pay the Contractor with checks that are made payable to the Contractor and one or more subcontractors. In addition, pursuant to the requirements of Wis. Stat. Sec. 779.15, the City may also directly pay a subcontractor to satisfy a valid public improvement lien.

BID ITEM 10803 - ROOT CUTTING

A. **Description.** Work under this item shall include all costs associated root cutting as described in special provision Section 107.13 Tree Protection Specifications.

B. **Materials.** Per Standard Specifications.

C. **Construction Methods.** Per Standard Specifications.

D. **Method of Measurement.** Root Cutting shall be measured per each individual tree marked NRC on the plan.

E. **Basis of Payment.** Root Cutting 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 10911 - MOBILIZATION

A. **Description.** Work under this item shall include all costs associated with mobilization of the Contractor. Parking of equipment, storage of materials, and staging shall be allowed within the staging areas shown on the plans. The Contractor may only enter the construction site through the construction entrances as shown on the plans. The Contractor may not drive or store equipment on any portion of the park outside the construction limits unless indicated otherwise on plans or directed in the field. The Contractor shall provide a site access plan for approval by the Engineer prior to the start of construction operations.

B. **Materials.** Per Standard Specifications.

C. **Construction Methods.** Per Standard Specifications.

D. **Method of Measurement.** Mobilization shall be measured by lump sum as listed in the proposal page without measurement thereof.

E. **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

A. **Description.** Excavation Cut shall consist of the loosening, loading, hauling and disposal of all materials. Excavation cut shall be in accordance with Article 201 of the Standard Specifications.

The excavation quantities for this contract have been calculated by subtracting digital terrain models of the existing and proposed surfaces and sub surfaces within the different material areas. Cut (in place quantities) and fill have been estimated from these models. Path work cut and fill quantities have been determined based on an estimated existing asphalt depth of 2" and existing gravel depth of 6". No shrinkage factor has been applied to fill quantities to estimate net volume. Three-dimensional Microstation (.dgn) files containing the digital terrain models used for the earthwork calculations are available upon request.

The proposal quantity for excavation cut and fill was computed by Microstation InRoads surface data volume computations and the assumptions listed above. Adjustments were made for topsoil assuming excavation of six (6) inches of existing topsoil, placement of six (6) inches of proposed topsoil, and placement nine (9) inches of aggregate base and placement of three (3) inches of asphalt for path construction.

B. **Materials.** Per Standard Specifications. Excess excavated material deemed unusable shall be disposed of off-site at a suitable location determined by the Contractor at no additional cost to the City of Madison.

C. **Construction Methods.** Suitable materials (to be determined by the Engineer) may be reused as fill within the project limits. Placement of these fill materials shall be considered incidental to this bid item and shall not be compensated separately. All double handling and subsoil placement is included in this bid item.

Any additional undercut required due to field conditions shall be paid for under Bid Item 40321 – Undercut.

Test rolling for undercut determination is required at all sites and is incidental to this bid item. Test rolling shall be done with a fully loaded tri axle dump truck.

Contractor to note all excavated areas shall be filled at the end of each work day. No excavated areas shall be "open" during non-work hours.

The Contractor shall be allowed to reuse gravel, and pulverize existing gravel to be used onsite. No additional compensation shall be paid for double handling of materials.

In addition to the quantities determined by the digital terrain models, removal of all existing asphalt pavement, sod, and base course have been included in the quantities for this item and shall be paid under this item.

D. **Method of Measurement.** Excavation Cut shall be measured by the cubic yard as listed in the proposal page without measurement thereof.

E. **Basis of Payment.** Excavation Cut 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.

BID ITEM 20217 – CLEAR STONE

A. **Description.** The quantity of clear stone included in this contract is sufficient to construct two typical construction entrances as shown on plans. This item shall include the quantity of clear stone required for the construction entrance per Bid Item 21011 – Construction Entrance. If the Contractor choses to use additional clear stone it shall be at no additional cost to the City.

B. Materials. Per Standard Specifications.

C. Construction Methods. Per Standard Specifications.

D. Method of Measurement.. Clear Stone shall be measured by the ton as listed in the proposal page without measurement thereof.

E. Basis of Payment. Clear Stone 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.

BID ITEM 20221 - TOPSOIL

A. Description. This item shall include all necessary work, labor and incidentals required to distribute, dispose and/or place topsoil to meet proposed grades. Topsoil shall comply with Article 202 of the Standard Specifications.

B. Materials. Per Standard Specifications.

C. Construction Methods. Stripped topsoil can be stockpiled on site within the construction boundary.

The topsoil quantities for this contract have been computed by Microstation InRoads surface data volume computations and the assumptions listed above. Adjustments were made for topsoil assuming excavation of six (6) inches of existing topsoil, two (2) inches of existing asphalt surfacing, six (6) inches of asphalt and placement of six (6) inches of proposed topsoil. Any additional topsoil material required beyond quantities available through stripped topsoil are included in the quantities for this bid item. It is estimated an additional ~25.5 CY of topsoil will need to be imported beyond the amount stripped from the existing site.

Any excess topsoil shall be disposed offsite at a location to be determined and provided by the City at no extra cost to the City. Double handling, stockpiling and placing topsoil is included in this bid item.

Contractor to note - the City of Madison Parks Division is to be called to inspect and approve the finish grade prior to seeding and mulching.

D. Method of Measurement. Topsoil shall be measured as each SY placed in the field as listed in the proposal page without measurement thereof.

E. Basis of Payment. Topsoil 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.

BID ITEM 20501 – ADJUST SEWER ACCESS STRUCTURE

DESCRIPTION

A. Description. Work under this item shall include adjusting Sanitary Sewer Access Structure as called for on the plan set to the final proposed grades.

B. Materials. Per Standard Specifications.

C. Construction Methods. Adjust SAS Special shall be completed in accordance with Article 507.3 of the City of Madison Standard Specifications for Public Works Construction – Latest Edition.

This Sewer Access Structure adjustment work will need to be inspected by the Madison Metropolitan Sewerage District (MMSD). Contactor shall contact the MMSD Collection System Supervisor, Ray

Schneider, at 222-1201 ext. 259 or rays@madsewer.org, in advance of doing the work to arrange for inspection.

C. **Construction Methods.** This item shall be measured as a completed unit, which shall include all materials, equipment, labor, and incidentals necessary to complete the work in accordance with the description.

E. **Basis of Payment.** This item, measured as provided above, shall be paid for at the contract price bid for each sanitary Sewer Access Structure.

BID ITEM 20701 – TERRACE SEEDING

A. **Description.** This work shall consist of preparing seed beds, furnishing and sowing the required seed, furnishing and applying the required stabilizers, fertilizer, and mulching material on all disturbed areas including areas damaged by construction activities, in accordance with Article 207 of the City of Madison Standard Specifications for Public Works Construction.

B. **Materials.** Seed mixture shall be either in whole, or a mixture of the City of Madison sun terrace mix and shade terrace mix applied appropriately based on shady and sunny areas of the construction site. Since construction is limited to within the construction fence area, no additional compensation will be given for seeding quantities beyond what is specified in this contract.

C. **Construction Methods. Contractor to note - the City of Madison Parks Division is to be called to inspect and approve the finish grade prior to seeding and mulching. The Contractor is responsible for obtaining seed bed germination per Article 207 of the City of Madison Standard Specifications for Public Works Construction, regardless of site conditions.**

D. **Method of Measurement.** Terrace Seeding shall be measured by the square yard quantity as listed in the proposal page without measurement thereof.

E. **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, tools, equipment, labor, hauling, placement, and incidentals required to complete the work as set forth in the description.

BID ITEM 21011 – CONSTRUCTION ENTRANCE

A. **Description.** Work under this item shall include the placement of a stone pad and paid as a construction entrance at the location shown in the plans and in accord with the City of Madison Standard Specifications and with the approval of the Engineer.

B. **Materials.** Per Standard Specifications.

C. **Construction Methods.** Construction entrance shall be constructed at the size and location as approved by the Engineer. The Contractor shall place stone, ramping, and/or plating to avoid damage to concrete or asphalt. If any concrete or asphalt is damaged during construction the Contractor shall remove and replace damaged sections at no additional cost to the city. The Engineer shall determine any damaged sections to be replaced.

D. **Method of Measurement.** Construction Entrance shall be measured as each pad placed in the field as listed in the proposal page without measurement thereof.

E. **Basis of Payment.** Construction Entrance 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.

BID ITEM 21061 - EROSION MATTING, CLASS I URBAN TYPE A

A. Description. Work under this item shall include all work, materials, labor and incidentals necessary to install Erosion Matting, Class I Urban Type A on all seeded disturbed areas as noted in the plans.

B. Materials. The Class and Type requirements match those of the Wisconsin Department of Transportation Product Acceptability List (PAL) nomenclature. Products listed in the PAL as Class I Urban Type A are all 100 percent biodegradable, and therefore do not need to be designated ORGANIC.

C. Construction Methods. Work under this bid item shall be as set forth in the latest edition of the Standard Specifications, except the Contractor shall note that special care with anchorage devices shall be required so as to not injure park users. 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. Photobiodegradable or metal anchorage devices shall not be allowed. Materials deemed to present a hazard from splintering or spearing shall not be approved, including solid wood devices.

Erosion Matting, Class I Urban Type A shall be installed correctly with correct anchorage, staple pattern, and overlap. To verify the staple pattern, the Contractor shall provide to the Engineer 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.

D. Method of Measurement. Erosion Matting, Class I Urban Type A shall be measured by the square yard quantity as listed in the proposal page without measurement thereof, not including run out and overlap.

E. 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, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 40102 – CRUSHED AGGREGATE BASE COURSE GRADATION NO. 2

A. Description. Work under this bid item shall include all work, materials, labor and incidentals necessary for the Contractor to install 9 inches of Crushed Aggregate Base Course Gradation No. 2 for asphalt path construction.

B. Materials. Per Standard Specifications.

C. Construction Methods. Per Standard Specifications. All aggregate base course shall extend 6 inches beyond the proposed pavement edge and shall have six (6) inches of topsoil and terrace seed over the extended gravel base to be paid for under Bid Item 20221 Topsoil and Bid Item 20701 Terrace Seeding for all paved paths.

The Contractor shall contact Dan Rodman at 658-3087 at least 48 hours prior to proof subgrade elevations prior to paving.

D. Method of Measurement. Crushed Aggregate Base Course Gradation No. 2 shall be measured per Ton placed in the field as listed in the proposal page without measurement thereof.

E. Basis of Payment. Crushed Aggregate Base Course Gradation No. 2 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.

BID ITEM 40201 – 3 INCH DEPTH HMA PAVEMENT TYPE E-0.3

A. **Description.** Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to provide and install 3 Inch Depth HMA Pavement Type E-0.3 in accordance with these plans and specifications and the latest edition of the Standard Specifications.

B. **Materials.** Per Standard Specifications.

C. **Construction Methods.** Per Standard Specifications.

D. **Method of Measurement.** 3 Inch Depth HMA Pavement Type E-0.3 shall be measured by the ton as listed on the proposal page without measurement thereof.

E. **Basis of Payment.** 3 Inch Depth HMA Pavement Type E-0.3 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, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 40321 - UNDERCUT

A. **Description.** This bid item has been included in the event that undercut is necessary for construction of the asphalt paths. This item may be eliminated if undercut is not required. Contractor shall determine need and quantity for undercut and notify the Engineer of intent to undercut any areas prior to beginning undercut excavation.

B. **Materials.** Per Standard Specifications.

C. **Construction Methods.** Per Standard Specifications.

D. **Method of Measurement.** Undercut shall be measured per CY in the field as listed in the proposal page without measurement thereof.

E. **Basis of Payment.** Undercut 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.

BID ITEM 90000 - CONSTRUCTION FENCE (PLASTIC)

A. **Description.** Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to provide, install, maintain and remove construction fence from the project site as shown on the plans.

B. **Materials.** Fence shall be highly visible (orange), constructed of a plastic web, and able to withstand the expected amount of use it shall receive on a construction site. Relocation of fencing may be required as the work progresses. No extra payment shall be made for temporarily opening and re-closing the fence, or relocation of the fencing as needed to perform the work. Fencing shall be left in place until construction operations are complete.

Construction fencing shall be International Orange color, high-density polyethylene mesh conforming to the following:

- Mesh opening: 1 inch minimum to 3 inch maximum
- Height: 4 feet
- Ultimate tensile strength: Avg 3000 lb per 4' width (ASTM D638)

C. **Construction Methods.** Construction fencing shall be installed to discourage access to the construction area by the general public during the course of the project. Fencing shall be maintained throughout construction and adjusted or removed at the request of the Engineer.

D. **Method of Measurement.** Construction Fence (Plastic) shall be measured by the linear foot quantity as listed in the proposal page without measurement thereof.

E. **Basis of Payment.** Construction Fence (Plastic) 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, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 90001 – CONSTRUCTION SURVEYING AND STAKING

A. **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.

C. **Construction Methods.** 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 (608) 658-3087 at least 48 hours prior to proof all sub and finished grades.

D. **Method of Measurement.** Construction Surveying and Staking shall be measured as lump sum as completed in the field.

E. **Basis of Payment.** Construction Surveying and Staking, as measured above shall be full compensation for all materials, labor and incidentals necessary to complete the work as described above.

BID ITEM 90002 – TEMPORARY FORD CROSSING

A. **Description.** Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to install, maintain, remove a temporary ford crossing.

B. **Materials.** As shown in the plans and per WDNR and Army Corp of Engineers permit requirements.

C. **Construction Methods.** As shown in the plans and per WDNR and Army Corp of Engineers permit requirements.

D. **Method of Measurement.** Temporary Ford Crossing shall be measured as lump sum for the completed work as describe above.

E. **Basis of Payment.** Temporary Ford Crossing 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. The

City will pay separately for silt fence and turbidity barrier that is required as part of the temporary ford crossing under the Silt Fence-Complete and Turbidity Barrier-Complete bid items.

BID ITEM 90003 – SALVAGE AND INSTALLATION OF EXISTING KIOSK

A. **Description.** Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to salvage, store and reinstall the existing information kiosk on new concrete footings. Removal and disposal of the existing post concrete footings shall be incidental to this bid item.

B. **Materials.** Per Standard Specifications.

C. **Construction Methods.** The salvaged kiosk shall be installed with new concrete footings and mounting hardware. Footing(s) shall be 18" dia., 4 ft. depth, with # 4 rebar, 12" O.C., both directions. All top corners shall have a minimum 1/2 inch radius. Concrete and reinforcing is incidental to this bid item. Concrete shall be installed per City of Madison Standard Specifications for Public Works Construction, specifically Part III – Concrete and Concrete Structures.

D. **Method of Measurement.** Salvage and Installation of Existing Kiosk shall be measured as lump sum for the completed work as describe above.

E. **Basis of Payment.** Salvage and Installation of Existing Kiosk 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.

BID ITEM 90004 – REMOVABLE BOLLARD

A. **Description.** Work under this item shall include all necessary work, labor, materials and incidentals required to install removable bollard in accordance with these contract documents and plans.

B. **Materials.** Basis of Design: TimberForm® model No. 2190-RH, Color: Yellow. Manufacturer, Columbia Cascade Company, 1300 SW Sixth Avenue, Suite 310, Portland OR 97201-3464 U.S.A.

Bollard post shall be 4 inch i.d. schedule 40 mild steel pipe with a minimum wall thickness of 7/32 inch with a 1 inch schedule 40 mild steel pipe permanently and 1/4" steel lock hasp welded to bottom. *Thin wall tube is not acceptable.* Top of bollard post shall be fitted with a cast aluminum hemi-dome end cap, permanently adhered in place. *Easily vandalized friction fit end caps are not permitted.*

Embedded sleeve assembly shall include a 1-1/4 inch i.d. schedule 40 mild steel pipe permanently welded to a 3/16 inch mild steel plate, a notched 3/16 inch mild steel plate and a hinged cap assembly consisting of a 1/4 inch steel plate and hinged door. Bollard post and embedded sleeve shall interlock for padlock (by others). Embedded sleeve shall include two 9/16 inch diameter thru holes for No. 4 re-bar (by others).

Bollard post shall be a single unit. Embedded sleeve shall attach to notched plate and hinged cap assembly with tamper-resistant 1/4 inch flat head hex socket machine screws, cut washers and ESNA lock nuts. Final product shall be free of burrs.

Steel and cast iron parts shall be coated with an opaque, UV resistant exterior grade polyester powder coating applied to a minimum thickness of 6 mils. *Liquid, epoxy or lead-containing powder coatings are not acceptable.*

Preparation of the mild steel substrate shall incorporate the phosphate system. Substrate preparation shall consist first of mechanical cleaning to remove heavy mill scale, rust, varnish, grease, etc., with surfaces uniformly abraded to promote quality of finish coating. Chemical cleaning in accordance with TT-C-490C, Methods I and III shall remove impurities from the surfaces.

After the two-step cleaning process, the metal substrate shall receive a corrosion-inhibiting iron phosphate pre-coating in accordance with TT-C-490C, Type II, prior to the application of the powder color coat. The color coating shall be applied by the electrostatic method and then oven-cured at 400 degrees Fahrenheit to chemically bond the coating to the substrate and to render the coated metal resistant to abrasion, impact, chipping, weathering, and rusting.

Any proposed substitutions shall be submitted to the Engineer for consideration. The Contractor shall receive written approval from the Engineer prior to proceeding with any substitutions.

C. Construction Methods. Per Manufacturer's specifications.

D. Method of Measurement. Removable Bollard shall be measured per each item for the completed work as describe above.

E. Basis of Payment. Removable Bollard 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.

BID ITEM 90005–REMOVING OLD STRUCTURE OVER WATERWAY–SOUTH BRIDGE

BID ITEM 90006–REMOVING OLD STRUCTURE OVER WATERWAY–NORTH BRIDGE

A. Description. These special provisions describe removing existing bridges and disposing of the resulting materials.

C. Construction Methods. Construction shall be in accordance with Section 203.3 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 edition.

Submit a structure removal and clean-up plan. Do not start work under the structure removal and clean-up plan without the City's written approval of the plan. Include the following information in the structure removal and clean-up plan:

1. Methods and schedule to remove the structure.
2. Methods to control potentially harmful environmental impacts.
3. Methods for removing abutments.
4. Methods for cleaning the waterway or wetlands.

Remove the existing structures conforming to the Contractor's approved structure removal and clean-up plan. Remove all debris that falls into the waterway or wetland. Remove large pieces of the structure within 36 hours.

If stockpiling spoil material, place it on an upland site an adequate distance from the waterway, wetland, or any open water created by excavation. Install silt fence between the spoil pile and the waterway, wetland, or excavation site.

D. Method of Measurement. The City will measure each bid item as a single lump sum unit.

E. Basis of Payment. Each bid item will be paid for at the contract unit price. Payment is full compensation for breaking down and removing; storing and disposing of materials; and, unless the contract specifies Select Fill backfill, for backfilling.

If the contract specifies backfilling with Select Fill, the City will pay separately for that backfilling under the Select Fill bid item.

BID ITEM 90007–COFFERDAMS AND DEWATERING

A. Description. The work shall consist of providing and installing cofferdams and dewatering to facilitate new construction as shown on the drawings.

B. Materials. Materials shall conform to Section 206 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2017 Edition.

C. Construction Methods. The installation of cofferdams and subsequent dewatering shall be constructed as specified in Section 206 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2017 Edition.

D. Method of Measurement. Cofferdams and Dewatering shall be measured as a single lump sum.

E. Basis of Payment. Cofferdams and Dewatering shall be paid for according to the contract lump sum price. Price bid shall include providing cofferdams, cribs, sheeting, shoring, bracing, pumping, and dewatering as necessary including all materials, equipment and labor for a complete installation as required.

BID ITEM 90008–HELICAL PILES, DELIVERED AND INSTALLED

A. Description. The work consists of designing and installing compression and tension helical piles and load transfer devices used to support foundation loads shown on the drawings.

B.1 Materials. Helical piles shall be by Foundation Supportworks, Inc., 12330 Cary Circle, Omaha, NE 68128, or equal. Manufacturer of helical piles shall have at least five years of production experience manufacturing helical piles and have documentation that manufacturer's helical piles have been used successfully in at least five engineered construction projects within the last three years.

Helical piles subject to compression loading shall be hollow round shaft. Helical piles subject to tension loading shall be solid square or round shaft or hollow round shaft. Size of piles shall be determined by the designer/manufacturer based on the specific project conditions. Pile shaft sections shall be in full, direct contact within couplings so as to remove coupling bolts and coupling welds from the "in-service" axial load path. Pile shafts and couplings shall have a fit-up tolerance of 1/16-inch or less. Helix plates shall meet the following geometry and spacing criteria to minimize soil disturbance:

1. True helix-shaped plates that are normal to the shaft such that the leading and trailing edges are within 1/4-inch of parallel.
2. Helix pitch is 3 inches ($\pm$ 1/4-inch).
3. All helix plates have the same pitch.
4. Helix plates have circular edge geometry.
5. Helix spacing along the shaft shall be between 2.4 and 3.6 times the helix diameter.
6. Helix plates are arranged along the shaft such that they all theoretically track the same path as the proceeding plate.

Central steel shaft of the lead and extension sections shall be a hollow steel structural section meeting ASTM A500 Grade B or C. Shaft coupling shall be factory welded to the extension shaft and be a hollow steel structural section meeting ASTM A513 Type 5. Helix plates shall be factory welded to the lead or extension shaft sections and shall be structural steel plate material meeting ASTM A572 Grade 50. Brackets shall be structural steel plate material meeting ASTM A572 Grade 50 or ASTM A36. All steel components shall receive a hot-dipped galvanized finish system in accordance with ASTM A123 after fabrication.

All hardware shall conform to ASTM A325 and shall be hot-dipped galvanized in accordance with ASTM A153.

B.2 Design and Performance Requirements. Helical piles shall be designed to support the specified compressive or tensile load(s) as shown on the drawings. The overall length, helix configuration and minimum torsional resistance of a helical pile shall be such that the required capacity is developed by the helix plate(s) in an appropriate bearing stratum.

All structural steel pile components shall be designed within the limits provided by the American Institute of Steel Construction (AISC) Specification for Structural Steel Buildings (AISC-360) using Allowable Stress Design (ASD) method of analysis. Product testing in accordance with ICC-ES Acceptance Criteria 358 may also be considered as an acceptable means of establishing system capacities.

Except where noted otherwise on the drawings, all piles shall be installed to provide an ultimate torque-correlated capacity based on an ASD analysis using a minimum factor of safety of 2 applied to the service or nominal loading.

The required ultimate torque-correlated capacity shall be verified at each pile location by monitoring and recording the final installation torque and applying default torque correlations per ICC-ES AC358.

Except where noted otherwise on the drawings, all tension anchors shall be installed to provide a minimum factor of safety against ultimate pullout resistance of 3, a maximum axial deflection at nominal tension load of 0.5 inches, and must satisfy the deflection criteria as stated on the plans or drawings. Pre-tensioning anchors is an acceptable and common means of reducing deflection at service loads.

The pile design shall take into account group efficiency from pile spacing, pile buckling potential, soil stratification, and strain compatibility issues.

B.3 Qualifications of Installing Contractor and Designer. The installing contractor and pile designer shall submit to the City the following documentation prior to starting work. Work shall not begin until all the submittals have been received and approved by the City. All costs associated with incomplete or unacceptable submittals shall be the responsibility of the Contractor.

Evidence of installing contractor's competence in the installation of helical piles shall be provided to the City's satisfaction and shall include the following:

1. Pile manufacturer's certificate of competency for the installation of helical piles.

2. A list of at least three projects completed within the previous three years wherein the installing contractor installed helical piles similar to those shown in the drawings and specified herein. Such list to include names and phone numbers of those project representatives who can verify the installing contractor's participation in those projects.

Evidence of helical pile designer's competence shall be provided to the City's satisfaction and shall include the following:

1. Registration as a Professional Engineer in the State of Wisconsin.

2. Recommendation from the pile manufacturer or manufacturer's representative.

B.4 Submittals. Submit the following helical pile design documents for review by City prior to installation:

1. Certification from the pile designer that the proposed piles meet the requirements of this specification.

2. Qualifications of the manufacturer, installing contractor and pile designer per Sections B.1 and B.3.

3. Design calculations stamped by a professional engineer licensed in the State of Wisconsin.

4. Product designations for helical lead and extension sections and all ancillary products to be supplied at each helical pile location.

5. Individual pile nominal loads, factors of safety, and required ultimate torque correlated capacities, where applicable.

6. Individual pile loading requirements (if any).

7. Manufacturer's published allowable system capacities for the proposed pile assemblies, including load transfer devices.

8. Calculated mechanical and theoretical geotechnical capacities of the proposed piles.

9. Minimum pile termination torque requirements.

10. Maximum estimated installation torque and allowable installation torque rating of the proposed piles.

11. Minimum and/or maximum embedment lengths or other site-specific embedment depth requirements as may be appropriate for the site soil profiles.

12. Inclination angle and location tolerance requirements.

13. Copies of certified calibration reports for torque measuring equipment to be used on the project. The calibrations shall have been performed within one year of the proposed helical pile installation starting date or as recommended by the equipment manufacturer.

C.1 Construction Methods. Helical piles shall be installed in the locations indicated on the drawings and in accordance with the manufacturer's instructions. Helical piles shall be installed within 3 inches of the indicated drawing location. Helical pile shaft alignment shall be within 2 degrees of the inclination angle shown on the drawings. Depth of piles shall be sufficient to obtain the required working loads in compression, as determined by installation torque readings. Cut off tops of piles and anchor to new foundations with brackets. Top elevation of the helical piles shall be within 2 inches of the design vertical elevation.

C.2 Pile Installation. Installing contractor shall give City minimum 24-hour notice prior to start of pile installation. The helical pile installation technique shall be such that it is consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project. The lead section shall be positioned at the appropriate site survey stake location as determined from the drawings. The helical pile sections shall be advanced into the soil in a continuous manner at a rate of rotation less than 25 revolutions per minute (rpm). Sufficient crowd shall be applied to advance the helical pile sections at a rate approximately equal to the pitch of the helix plate per revolution. The rate of rotation and magnitude of down pressure shall be adjusted for different soil conditions and depths. The magnitude of down pressure shall exceed the amount of torque required to install the pile. Extension sections shall be provided to obtain the required minimum overall length and minimum torsional resistance required.

C.3 Termination Criteria. The minimum final torsional resistance and any required pile length and embedment depth criteria, as specified by the helical pile designer, must be satisfied prior to terminating the pile installation. In the event any helical pile fails to meet these production quality control termination criteria, the following remedies may be suitable, if authorized by the City:

1. If the installation fails to meet the minimum torsional resistance criterion at the minimum embedment length as determined by the pile designer:
   a. Continue the installation to greater depths until the torsional resistance criterion is met, provided that, if a maximum length constraint is applicable, continued installation does not exceed said maximum length constraint, or

b. Demonstrate acceptable pile performance through pile load or proof testing, or
c. Replace the pile with one having a different helix plate configuration. The replacement pile must not exceed any applicable maximum embedment length criteria and be embedded to a length that places the last helix plate at least equal to its own diameter beyond the depth of the first helix plate of the replaced pile and meet the minimum torsional resistance criterion or pass load or proof testing.

2. If the torsional resistance during installation reaches the helical pile's allowable torque rating prior to satisfaction of the minimum embedment length criterion:
   a. Terminate the installation at the depth obtained if approved by City, or
   b. Replace the pile with one having a shaft with a higher torsional strength rating. The replacement pile must be installed to satisfy the minimum embedment length criterion. It must also be embedded to a length that places the last helix plate at least equal to its own diameter beyond the depth of the first helix plate of the replaced pile without exceeding any applicable maximum embedment length requirements and it must meet the minimum final torsional resistance criterion, or
   c. Replace the pile with one having a different helix plate configuration. The replacement pile must be installed to satisfy the minimum embedment length criterion. It must also be embedded to a length that places the last helix plate at least equal to its own diameter beyond the depth of the first helix plate of the replaced pile without exceeding any applicable maximum embedment length requirements, and it must meet the minimum final torsional resistance criterion.

3. If the installation reaches a specified maximum embedment length, as determined by the pile designer, without achieving the minimum torsional resistance criterion:
   a. If approved by City, remove and reinstall the pile at a position at least three times the diameter of the largest helix plate away from the initial location. Original embedment length and torsional resistance criteria must be met. The pile repositioning may require the installation of additional helical piles with nominal loads adjusted for these spacing changes, or
   b. Demonstrate acceptable pile performance through pile load testing, or
   c. De-rate the load capacity of the helical pile based on default or site-specific torque correlation factors and install additional piles as necessary.

4. Replace the pile with one having a different helix plate configuration. The replacement pile must be installed to satisfy the minimum and/or maximum embedment length criterion and it must meet the minimum final torsional resistance criterion.

5. If a helical anchor fails to meet acceptance criteria in a performance or proof test:
   a. Install the anchor to a greater depth and installation torque and re-test provided that, if a maximum embedment length constraint is applicable, continued installation will not exceed said maximum length constraint, or
   b. Replace the anchor with one having more and/or larger helix plates. It must be embedded to a length that places its last helix at least three times its own diameter beyond the position of the first helix of the replaced pile without exceeding any applicable maximum embedment length requirements. This replacement pile must be re-tested, or
   c. If approved by the City, de-rate the load capacity of the helical anchor and install additional anchors. Additional anchors must be installed at positions that are at least three times the diameter of the largest helix away from any other anchor locations and are approved by the City. Anchors installed in cohesive soils shall not be spaced closer than four helix diameters.

6. If a helical pile fails a production quality control criterion as described in this Section or for any reason other than described in this Section, any proposed remedy must be approved by the City prior to initiating its implementation at the project site.

Submit copies of individual helical pile installation records within 24 hours after each installation is completed. Formal copies shall be submitted within 30 days following the completion of the helical pile installation. These installation records shall include the following information:

1. Date and time of installation.
2. Location of helical pile and pile identification number.
3. Installed helical pile model and configuration.
4. Termination depth, pile head depth, and length of installed pile.
5. Actual inclination of the pile.
6. Final torsional resistance.
7. Calculated working load capacity based on final torsional resistance.
8. Comments pertaining to interruptions, obstructions, or other relevant information.

C.3 Field Compression Load Testing. If field compression load testing is done, the installing contractor shall furnish all labor, equipment and pre-production helical piles necessary to accomplish the testing as shown in the approved pile design documentation. Installing Contractor shall apply the specified loads for the specified durations and record the specified data, for the specified number of piles. No deviations from the test plan(s) will be allowed without explicit approval in writing from the City. Pile testing shall be in general accordance with the ASTM D1143 quick test method and the following criteria:

1. Failure criteria shall be in accordance with AC358 and is when plunging occurs or when the net deflection exceeds 10% of the average helix plate diameter, whichever occurs first.

2. An alignment load equal to 5% of the anticipated failure load or maximum anticipated test load may be applied prior to the start of the test to take out slack in the load test frame.

3. Loading increments shall be performed at 5% of the anticipated failure load or maximum anticipated test load with a minimum hold time of 4 minutes at each increment.

4. Upon completion of the maximum test load hold increment, the pile shall be unloaded in 5 to 10 even increments with minimum hold times of 4 minutes at each increment.

Installing contractor shall provide the City copies of raw field test data within 24 hours after the completion of each load test. Formal test reports shall be submitted within 30 days following test completion. Formal test reports shall include the following information:

1. Name of project and Installing Contractor's representative(s) present during load testing.

2. Name of manufacturer's representative(s) present during load testing, if any.

3. Name of third party test agency and personnel present during load testing, if any.

4. Date, time, duration and type of the load test.

5. Unique test identifier and map showing the test pile location.

6. Pile model and installation information including shaft type, helix configuration, lead and extension section quantities and lengths, final pile tip depth, installation date, total test pile length and final termination torque.

7. Calibration records for applicable pile installation and test equipment.

8. Tabulated test results including cumulative pile head movement, loading increments and hold times.

9. Plots showing load versus deflection for each loading/unloading interval.

C.4 Field Pre-Tensioning for Tension Anchors. The installing contractor shall furnish all labor, equipment and materials necessary to accomplish the pre-tensioning as shown in the approved anchor design documentation. Installing contractor shall apply the specified loads for the specified durations and record the specified data, for the specified number of anchors. Anchor testing shall be in general accordance with ASTM D3689. Limit the maximum test load to 1.33 times the design load.

Installing contractor shall provide the City copies of raw field test data or reports within 24 hours after completion of each tension anchor pre-tension. Formal test reports shall be submitted within 30 days following completion of anchors. Formal test reports shall include the following information:

1. Name of project and installing contractor.
2. Name of Installing Contractor's supervisor during installation.
3. Type of test.
4. Date, time, and duration of test.
5. Unique identifier and location of helical anchor test.
6. Description of calibrated testing equipment and test set-up.
7. Actual helical anchor type and configuration.
8. Steps and duration of each load increment.
9. Cumulative anchor-head movement at each load step.

D. Method of Measurement. Helical Piles, Delivered and Installed shall be measured by a single lump sum unit.

E. Basis of Payment. Helical Piles, Delivered and Installed will be paid for at the contract unit price. Payment is full compensation for designing, fabricating, delivering, drilling, splicing, and cutting off steel helical pile foundation piles; for compression load testing of compression anchors, as needed; for pre-tensioning of tension anchors; for furnishing and installing helical pile brackets; and for disposing offsite of piling cutoffs not used.

BID ITEM 90009–EXCAVATION FOR STRUCTURES

A. Description. This special provision describes excavating for bridge.

C. Construction Methods. Construction methods shall be in accordance with Section 206.3 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

D. Method of Measurement. The City will measure the Excavation for Structures bid item as a single lump sum unit.

E. Basis of Payment. Excavation for Structures bid item will be paid for at the contract unit price.

Payment for the Excavation for Structures bid item is full compensation for removing and disposing of all excavations; for preparing foundations; and for backfilling and compacting all spaces excavated and not occupied by the new structure, unless specified elsewhere.

The City will pay separately for structure backfill, if specified, under the Select Fill bid item.

BID ITEM 90010–CONCRETE MASONRY BRIDGES

A. Description. This special provision describes constructing concrete abutments for the bridges.

B. Materials. Materials shall be in accordance with Section 502.2 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

C. Construction Methods. Construction methods shall be in accordance with Section 502.3 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

C.1 Testing and Sampling. Concrete testing shall be in accordance with Section 301.2 of the City of Madison Standard Specifications for Public Works Construction.

D. **Method of Measurement.** Concrete Masonry Bridges shall be measured by the cubic yard acceptably completed. The City will not measure work or material for forms, falsework, cofferdams, pumping, bracing, or other incidentals necessary to complete the work as required in these specifications.

E. **Basis of Payment.** Concrete Masonry Bridges bid item will be paid for at the contract unit price.

Payment for the Concrete Masonry bid item is full compensation for providing forms and falsework; for placing, finishing, curing, protecting, and heating concrete; and for all concrete testing.

If Contractor pours footings wholly, or in part without forms, the City will only pay for material placed within the footing dimensions the plans show.

If Engineer allows Contractor to substitute high early strength concrete to expedite the work as allowed under 502.2.2, Contractor will bear the additional costs associated with that substitution.

Payment for concrete for the bridge deck of the prefabricated steel truss pedestrian bridge is included in the Prefabricated Steel Truss Pedestrian Bridge LRFD bid item.

BID ITEM 90011–BAR STEEL REINFORCEMENT HIGH STRENGTH STRUCTURES
BID ITEM 90012–BAR STEEL REINFORCEMENT HIGH STRENGTH COATED STRUCTURES

A. **Description.** This special provision describes furnishing and placing high strength bar steel and coated high strength bar steel for the bridges.

B. **Materials.** Materials shall be in accordance with Section 505.2 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

C. **Construction Methods.** Construction methods shall be in accordance with Section 505.3 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

D. **Method of Measurement.** The City will measure the Bar Steel Reinforcement bid items by the pound acceptably completed. The City will compute the bar weight from the nominal weights for corresponding sizes for deformed bars in AASHTO M31. The City will not measure the extra metal used if Contractor chooses to substitute bars larger than those specified, the extra metal necessary for splices the plans do not show, or the weight of any devices used to support or fasten the steel in its correct position.

E. **Basis of Payment.** Bar Steel Reinforcement bid items shall be paid for at the contract unit price.

Payment for the Bar Steel Reinforcement bid items is full compensation for providing, transporting, and placing all reinforcement including supports.

Payment for the Coated Bar Steel Reinforcement bid item also includes coating, including epoxy-coated metal chair supports.

BID ITEM 90013–PROTECTIVE SURFACE TREATMENT

A. **Description.** This special provision describes furnishing and placing concrete protective surface treatment to the top surface of the concrete pedestrian bridge decks, concrete approaches, and top surfaces of abutment bodies and wingwalls at the bridges.

B. **Materials.** Materials shall be in accordance with Section 502.2.11 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

C. **Construction Methods.** Construction methods shall be in accordance with Section 502.3.13.2 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

D. **Method of Measurement.** Protective Surface Treatment shall be measured by the square yard acceptably completed, measured as the net area treated.

E. Basis of Payment. Protective Surface Treatment bid item will be paid for at the contract unit price. Payment is full compensation for providing the treatment including surface preparation.

BID ITEM 90014–RUBBERIZED MEMBRANE WATERPROOFING

A. Description. This special provision describes furnishing and applying rubberized membrane waterproofing to concrete surfaces of the bridges.

B. Materials. Materials shall be in accordance with Section 516.2.3 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

C. Construction Methods. Construction methods shall be in accordance with Section 516.3.3 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

D. Method of Measurement. Rubberized Membrane Waterproofing shall be measured by the square yard acceptably completed, measured as the length of concrete joint sealed times the plan width of membrane with no additional allowance for overlap at joints and intersections.

E. Basis of Payment. Rubberized Membrane Waterproofing will be paid for at the contract unit price. Payment is full compensation for heating materials; for applying prime coats, mastic, and asphalt, coal-tar pitch, or emulsified asphalt; and for placing preformed membrane.

BID ITEM 90015–PIPE UNDERDRAIN WRAPPED 6-INCH

A. Description. This special provision describes furnishing and installing pipe underdrains behind structures where shown on the drawings.

B. Materials. Materials shall be in accordance with Section 612.2 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition. Rodent shield as shown on the plans is incidental to this bid item.

C. Construction Methods. Construction methods shall be in accordance with Section 612.3 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

D. Method of Measurement. Pipe Underdrain Wrapped 6-Inch shall be measured by the linear foot acceptably completed.

E. Basis of Payment. Pipe Underdrain Wrapped 6-Inch will be paid for at the contract unit price. Payment is full compensation for providing and placing the underdrain.

BID ITEM 90016–PREFABRICATED STEEL TRUSS PEDESTRIAN BRIDGE LRFD–80-FOOT SPAN

BID ITEM 90017–PREFABRICATED STEEL TRUSS PEDESTRIAN BRIDGE LRFD–110-FOOT SPAN

A. Description. For each bridge structure, furnish a fully engineered, fabricated steel truss pedestrian bridge structure, including bearings, and transport and erect it as shown in the plans, in accordance to Part 5 Structures of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 edition, and as hereinafter provided. These specifications shall be regarded as minimum standards for design and construction.

B. Materials.

B.1 Approved Manufacturers. The bridge shall be designed and manufactured by an approved designer and supplier selected from the current State of Wisconsin Department of Transportation approved product list for prefabricated steel truss pedestrian bridge.

To be eligible for this project, pre-fabricated bridges from other manufacturers must be pre-approved prior to the bid opening date. Applications for pre-approval may be submitted to Engineer at any time for review.

B.2 Design Requirements. Structural design of the pedestrian bridge shall be by a professional engineer registered in the State of Wisconsin.

Design the bridge in accordance to the most recent edition of the AASHTO LRFD Bridge Design Specifications, all current interims, and the AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, except as modified herein.

Design welded tubular connections in accordance to the Structural Welding Code-Steel ANSI/AWS D1.1. The fracture critical requirements of ANSI/AWS D1.5 do not apply, and Charpy V-notch impact testing will not be required. Loading shall be as stated in Section 3 of the AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges. The bridge shall be a half-through truss with profile as shown on the plans with one diagonal per panel. Chords, diagonals, verticals, bracing, and floor beams may be tube steel. Tube steel shall have a minimum thickness of 1/4-inch. All other steel shapes shall have a minimum thickness of 5/16-inch. Field splices shall be bolted with ASTM A325 high strength bolts in accordance to the "Specifications for Structural Joints Using ASTM A325 or A490 Bolts". Type 3 bolts are required for weathering steel. For top and bottom chord field splices, splice plates are required on both the inside and outside surface of all four sides of the spliced tubing so that each bolt will be acting in double shear. Nuts may be welded to the splice plates to hold them in place during installation. When the collection of water inside a structural tube is a possibility, either during construction or during service, provide the tube with a drain hole at its lowest point.

If the profile grade line is on a crest vertical curve, camber the bridge to match the profile grade line shown on the plans plus the calculated dead load deflection. For a single span bridge, if the profile grade line has a constant slope (no vertical curve), camber the bridge to offset the calculated dead load deflection plus an amount equal to 1% of the bridge length. Concrete bridge decks shall be continuous over the floor beams and supported by 20-gauge, 1 1/2-inch deep corrugated galvanized steel stay-in-place deck forms or removable deck forms if specified on the contract plans. The minimum slab thickness shall be 5 1/2 inches measured from the bottom of the deck form. Design the longitudinal reinforcing steel in the slab based on a wheel load located 1 foot from the face of the curb or toe plate, or a pedestrian live load of 90 psf, whichever controls.

Concrete strength (f'_c) shall be 4,000 psi and F_y of bar steel shall be 60,000 psi. A concrete mix with a unit weight of 120 pcf or 150 pcf may be used at the option of the manufacturer/contractor. Use a design dead load of 120 pcf or 150 pcf to match the concrete mix selected. Use load factors of 1.25 for dead load and 1.75 for live load for the design of the concrete slab. Minimum concrete cover shall be 2 inches for top reinforcement and 1-inch for bottom reinforcement. Design the bridge for expansion and contraction with a temperature range of -30°F to 120°F. Utilize Teflon slip pads or other approved material on the sliding surface of the expansion bearing assembly.

B.3 Plan Requirements and Submittals. Submit the superstructure plans/shop drawings and design computations to City for review. Make the submittal no later than 12 weeks after date of notice of contract approval. Allow the following time period in the construction schedule: 20 calendar days after the first receipt of plans by City for a complete initial review of the design and plans submittal, and an additional 20 calendar days for any necessary revisions and/or corrections.

In the submittal, include the following:

1. Basic design criteria shown on the design plans.

2. Complete detailed drawings of all structural steel connections, sizes of members, span lengths between bearing points, skews, walkway widths, height of handrails and safety rails, bearing assembly details, anchor bolt locations, concrete deck reinforcement, design data, materials data, and dead and live load bearing reactions.

3. Bridge designer's certification. The plans shall be sealed, signed, and dated by a professional engineer registered in the State of Wisconsin.

4. One set of design calculations with independent checks.

City will return plans from this submittal, and any subsequent submittals, to Contractor, either indicating acceptance or marked with required revisions and/or corrections. Provide City copies of final plans to be used in fabrication and construction.

B.4 Weld Testing. An independent agency shall perform nondestructive weld testing; the manufacturer shall pay for this testing. All welds are to be visually inspected except as noted below.

Ten percent of all fillet welds shall be magnetic particle tested.

All full penetration welds of chords shall be ultrasonically or radiographically tested.

Bottom chord welded tube splices for tube thicknesses less than 3/8-inches thick shall be radiographically tested or covered with fillet welded splice plates with non-intersecting welds which develop 75% of the spliced member strength.

Submit a written testing report to Engineer upon completion.

C. Construction Methods.

C.1 Delivery and Erection. Deliver the bridge by truck to the location that is nearest to the site and accessible by road. Contractor is responsible for unloading the bridge from the trucks at the time of arrival.

The manufacturer shall notify Contractor in advance of the expected arrival time. Information regarding delays after the trucks depart the plant such as inclement weather, delays in permits, rerouting by public agencies, or other circumstances shall be passed on to Contractor as soon as possible.

The manufacturer shall provide an erection procedure to Contractor and shall advise Contractor of the actual lifting weights, attachment points, and all other pertinent information needed to install the bridge. Unloading, splicing, bolting, and providing proper lifting equipment as well as all tools, equipment, labor, and miscellaneous items required to complete the work is the responsibility of Contractor. The procedure for bolting field splices shall be given to Contractor by the manufacturer.

C.2 Finishes. All fabrications shall be produced from high strength, low alloy, atmospheric corrosion resistant ASTM A847 cold-formed welded square and rectangular tubing. ASTM A606 sheet, and/or ASTM A588, ASTM A242, or ASTM A709 Grade 50W plate and structural steel shapes (F_y=50,000 psi) with a minimum corrosion index of 5.8 per ASTM G101.

Blast-clean all exposed surfaces of weathering steel in accordance to Steel Structures Painting Council Surface Preparation Specifications No. 7 Brush-Off Blast Cleaning (SSPC-SP7), latest edition. Exposed surfaces of weathering steel shall be defined as those surfaces seen from the deck and from outside the structure. Stringers, floor beams, lower brace diagonals and the inside face of the truss below the deck, and bottom of the bottom chord do not need to be blasted.

D. Method of Measurement. Prefabricated Steel Truss Pedestrian Bridge LRFD, shall be measured as a single lump sum for the bridge, acceptably completed.

E. Basis of Payment. Prefabricated Steel Truss Pedestrian Bridge LRFD will be paid for at the contract unit price. Payment is full compensation for designing, manufacturing, transporting and erecting the pedestrian bridge; furnishing bearing plates, pads, bolts, anchors bolts, and grout. Providing and placing the concrete deck and reinforcing steel for the concrete deck is included in this work.

BID ITEM 90018–REINFORCED CONCRETE PAVEMENT APPROACH SLABS

A. Description. This special provision describes constructing reinforced concrete pavement approach slabs as shown in the drawings at the bridges.

B. **Materials.** Materials shall be in accordance with Section 415.2 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

C. **Construction Methods.** Construction methods shall be in accordance with Section 415.3 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition.

D. **Method of Measurement.** Reinforced Concrete Pavement Approach Slabs shall be measured as a single lump sum unit. The single lump sum unit will consist of four separate reinforced concrete approach slabs, one at each end of the prefabricated steel truss bridge.

E. **Basis of Payment.** Reinforced Concrete Pavement Approach Slabs will be paid for at the contract unit price. Payment is full compensation for providing and placing the concrete, bar steel reinforcement and jointing materials.

BID ITEM 90019–RAILING STEEL GALVANIZED PEDESTRIAN

A. **Description.** This special provision describes fabricating, galvanizing, painting and installing railing at the approaches to the bridges in accordance with Sections 506, 513, and 517 of the State of Wisconsin Standard Specifications for Highway and Structure Construction, 2017 Edition and the plan details, and as hereinafter provided.

B. **Materials.** All materials for railing shall be new stock, free from defects impairing strength, durability and appearance. Railing assemblies shall be galvanized and receive a two-coat paint system. Bubbles, blisters and flaking in the coating will be a basis for rejection.

B1. Coating System.

B1.1. Galvanizing. After fabrication, blast clean steel railing assemblies per SSPC-SP6 and galvanize according to ASTM A123. Vent holes shall be drilled in members as required to facilitate galvanizing and drainage. Location and size of vent holes are to be shown on the shop drawings. All burrs at component edges, corners and at holes shall be removed and sharp edges chamfered before galvanizing. Condition any thermal cut edges before blast cleaning by shallow grinding or other cleaning to remove any hardened surface layer. Remove all evident steel defects exposed in accordance to AASHTO M 160 prior to blast cleaning. Lumps, projections, globules, or heavy deposits of galvanizing, which will provide surface conditions that when painted, will produce unacceptable aesthetic and/or visual qualities, will not be permitted.

B1.2. Two-Coat Paint System. After galvanizing, paint all exterior surfaces of steel railing assemblies and inside of rail elements at field erection and expansion joints as hereinafter provided. All galvanized surfaces to be painted shall be cleaned per SSPC-SP1 to remove chlorides, sulfates, zinc salts, oil, dirt, organic matter and other contaminants. The cleaned surface shall then be brush blast cleaned per SSPC-SP16 to create a slight angular surface profile per manufacturer's recommendation for adhesion of the tie coat. Blasting shall not fracture the galvanized finish or remove any dry film thickness. After cleaning, apply a tie coat from an approved coating system that is specifically intended to be used on a galvanized surface, per manufacturer's recommendations. The tie coat shall etch the galvanized rail and prepare the surface for the top coat. Apply a top coat per manufacturer's recommendations, matching the specified color shown on the plans. Use a preapproved top coat that is resistant to the effects of the sun and is suitable for a marine environment. The tie and top coats should be of contrasting colors, and come from the same manufacturer.

Ensure that the paint manufacturer reviews the process to be used for surface preparation and application of the paint coating system with the paint applier. The review shall include a visit to the facility performing the work if requested by the paint manufacturer. Provide written confirmation, from the paint manufacturer to Engineer, that the review has taken place and that issues raised have been addressed before beginning coating work under the contract.

Use one of the qualified paint manufacturers and products given below. An equivalent system may be used with the written approval of Engineer.

Manufacturer	Coat	Products	Dry Film Min. Thickness (mils)	Min. Time[1] Between Coats (hours)
Sherwin Williams	Tie	Recoatable Epoxy Primer B67-5 Series/B67V5	2.0 to 4.0	6
Schaumburg, IL	Top	Acrolon 218 HS Polyurethane, B65-650	2.0 to 4.0	NA
	Tie	Rustbond Sealer FC	1.0	36
Carboline	Tie	Carboguard 60	4.0 to 6.0	10
St. Louis, MO	Tie	Carboguard 635	4.0 to 6.0	1
	Top	Carbothane 133 LH (satin)	4.0	NA
Wasser Corporation	Tie	MC-Ferrox B100	3.0 to 5.0	8
Auburn, WA	Top	MC-Luster 100	2.0 to 4.0	NA
PPG Protective and Marine Coatings	Tie	Amercoat 399	3.0 to 5.0	3
Little Rock, AR	Top	Amercoat 450H	2.0 to 4.0	NA

[1] Time is dependent on temperature and humidity. Contact manufacturer for more specific information.

B2. Shop Drawings. Submit shop drawings showing the details of railing construction. Show the railing height post spacing, rail location, weld sizes and locations and all dimensions necessary for the construction of the railing. Show location of shop rail splices, field erection joints and expansion joints. State the name of the paint manufacturer and the product name of the tie coat and top coat used along with the color. State the size and material type used for all components. Also show the size and location of any vent or drainage holes provided.

C. Construction Methods.

C1. Delivery, Storage and Handling. Deliver material to the site in an undamaged condition. Upon receipt at the job site, all materials shall be thoroughly inspected to ensure that no damage occurred during shipping or handling and conditions of materials is in conformance with these specifications. If coating is damaged, Contractor shall repair or replace railing assemblies to the approval of Engineer at no additional cost to the Owner. Carefully store the material off the ground to ensure proper ventilation and drainage. Exercise care so as not to damage the coated surface during railing installation. No field welding, field cutting or drilling will be permitted unless acceptable to Engineer.

C2. Touch-up and Repair. For minor damage caused by shipping, handling or installation to coated surfaces, touch-up the surface in conformance with the manufacturer's recommendations. If damage is excessive, the railing assembly shall be replaced at no additional cost to the City. Contractor shall provide Engineer with a copy of the manufacturer's recommended repair procedure and materials before repairing damaged coatings.

D. Measurement. Railing Steel Galvanized Pedestrian shall be measured by the linear foot acceptably completed.

E. Payment. Railing Steel Galvanized Pedestrian shall be paid for the measured quantity at the contract unit price. Payment is full compensation for fabricating, galvanizing, painting, transporting, and installing the railing, including any touch-up and repairs; and for furnishing all labor, tools, equipment, materials and incidentals necessary to satisfactorily complete the work.

BID ITEM 90020–EXTRA HEAVY RIPRAP SPECIAL

A. Description. The work shall consist of salvaging, furnishing and placing riprap.

B. Materials. Furnish durable field or quarry stone that is sound, hard, dense, resistant to the action of air and water, and free of seams, cracks or other structural defects. Stone shall be limestone, closely matching the existing stone adjacent to the existing pedestrian bridges. Use stone pieces with a length and width nor more than twice the thickness. Do not place material without the City's approval of the stone type, quality, size, and shape. Furnish stones conforming to the size requirements shown below. Size requirements are expressed as the percent of the gross in-place riprap volume occupied by stones within average dimension size ranges as follows:

Average Dimension Ranges (inches)	Fraction of Gross In-Place Riprap Volume Occupied by Stones
>30	0%
22-25	10% - 14%
18-22	15% - 21%
8-18	20% - 28%
<8	5% - 7%
<1	2% or less

C. Construction Methods. Construction methods shall conform to Section 606.3 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2017 Edition.

D. Method of Measurement. Extra Heavy Riprap Special shall be measured by the ton of new riprap left in place.

E. Basis of Payment. Extra Heavy Riprap Special shall be paid for according to the contract unit price. Price bid shall include furnishing, hauling, placing, and compacting the specified material, including all equipment, tools, labor and incidentals necessary to complete the work as specified. The work associated with the removal and reuse of existing boulders at the project site, as noted on the drawings, shall be incidental to this bid item.

BID ITEM 90021 – PERMEABLE PAVER

A. Description. Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to provide and install precast, permeable pavers in accordance with these plans and specifications and the latest edition of the Standard Specifications.

B. Materials. Basis of Design: Unilock, Inc., Model: Turfstone, 23.62" x 15.75" x 3.125" paver, Color: natural.

C. Construction Methods. Per Manufacturer's Specifications

D. Method of Measurement. Permeable Pavers shall be measured by lump sum as listed on the proposal page without measurement thereof. Pavers, bedding course, filter fabric, paver edging and all materials necessary to install pavers per Manufacturer's Specifications are incidental to this bid item.

E. Basis of Payment. Permeable Pavers 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, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 91000–ALTERNATE–TEMPORARY BRIDGE

A. Description. Design, construct, maintain, and remove a temporary bridge structure to allow access to the lagoon island for contractor equipment, personnel and supplies during construction in lieu of a temporary ford crossing.

B. Materials. Provide structural members that are of adequate strength, straight, and of a shape suitable for their intended use. Provide concrete in the construction of the temporary bridge that conforms to the requirements of Section 501 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2017 Edition. Used material may be used provided it is sound and suitable for the purpose intended.

C. Construction Methods. Provide a temporary structure of sufficient length so that it is a minimum of 12 inches above the normal water level of the lagoon. Design, construct and maintain the temporary structure in accordance with the requirements of AASHTO Standard Specifications for Highway Bridges, with a 40% increase in the allowable stress. Submit plans for the temporary bridge to the City for approval before ordering material or starting construction of the temporary bridge. Do not remove the temporary bridge until such removal is authorized by the City. The final cleanup of the site of the work shall include the complete removal of the temporary structure and restoring the site to its original contour. All material shall be removed from the site upon removal.

D. Method of Measurement. It the City selects this alternate, Alternate – Temporary Bridge will be measured as a single lump sum unit.

E. Basis of Payment. Alternate – Temporary Bridge will be paid for by the measured quantities at the contract unit price. Price bid shall include designing, constructing, maintaining, and removing the temporary bridge; providing barricades necessary to safeguard the public; and for furnishing all materials, equipment, tools, labor, and incidentals necessary to complete the work.

CGC, Inc.

Construction • Geotechnical
Consulting Engineering/Testing

Contract 8062
Attachment A

March 7, 2017
C17051-4

Mr. Michael Sturm
City of Madison – Parks Division
210 Martin Luther King, Jr. Boulevard, Room 104
Madison, WI 53703

Re: Geotechnical Exploration Report
Proposed Bridge Replacements
Vilas Park Island
Madison, Wisconsin

Dear Mr. Sturm:

Construction • Geotechnical Consultants, Inc. (CGC) has completed the geotechnical exploration program for the proposed bridge replacement project described above. The purpose of this exploration program was to evaluate the subsurface conditions within the proposed construction area and to provide geotechnical recommendations regarding bridge foundation design and construction. An electronic copy of this report is provided for your use, and we can provide a paper copy upon request.

PROJECT AND SITE DESCRIPTIONS

We understand that two existing timber-framed pedestrian bridges which connect the Vilas Park Island to the surrounding park areas will be replaced. The timber-pile supported bridges, which have an average clear width of 7.5 ft, are located on the north and south sides of the island in the shallow Vilas Park lagoon. The current bridge spans are approximately 73 ft and 100 ft at the north and south bridges, respectively. It is our understanding that the replacement bridges will be constructed at the same general locations and utilize existing approach paths and retaining walls. The new structures will be pile supported and have cast-in-place concrete decks with clear widths of 12 ft. In order to maintain site aesthetics and minimize site disturbance to the park, it is our understanding that existing timber piles may potentially remain in-place. However, the existing timber piles, which support the abutments, will need to be evaluated and depending on their condition, may need to be supplemented with new piles installed adjacent to the existing timber piles. Alternatively, the existing timber piles may need to be replaced with new steel driven piles constructed following removal of the existing abutments.

Although the bridges will generally experience lighter loads associated with pedestrian and bicycle traffic, occasional maintenance vehicles and infrequent emergency vehicles may also travel on the bridges. It is our understanding that the load capacity of the new bridges has not been determined, and that the City of Madison is considering designs which accommodate two alternative maximum loading criteria: 1. All City maintenance vehicles, with a maximum load of 50,000 lbs (e.g., tandem-axle dump truck), and 2. All maintenance vehicles excluding the tandem-axle dump truck, with a maximum load of 28,000 lbs (e.g., clam truck).

2921 Perry Street, Madison WI 53713
Telephone: 608/288-4100
FAX: 608/288-7887

SUBSURFACE CONDITIONS

Subsurface conditions in the vicinity of the proposed bridge abutments were explored by drilling four Standard Penetration Test (SPT) borings to depths of 24 to 39 ft below existing site grades. Note that the borings were originally planned to extend to depths of 50 to 100 ft, but were stopped short after extending the borings at least 10 to 25 ft into dense to very dense, apparent sandstone bedrock, which has also been encountered in borings completed at Henry Vilas Zoo. The borings were drilled by Badger State Drilling (under subcontract to CGC) on February 13 and 14, 2017 using an ATV-mounted D-50 drill-rig equipped with hollow-stem augers and an automatic SPT hammer. The boring locations and planned depths were selected by CGC in consultation with the City, and were located in the field by CGC based off a map provided by the City. Ground surface elevations at the boring locations were estimated by CGC using an online mapping tool (DCiMap) and should be considered approximate (± 1 ft). The boring locations are shown in plan on the Soil Boring Location Exhibit attached in Appendix A.

The subsurface profile encountered at the boring locations was fairly similar and can be described by the following strata, in descending order:

- 6 to 12 in. of ***topsoil/topsoil fill***; over
- About 3 to 8 ft of very loose to loose ***silt***, with the upper 3 to 5 ft being described as ***organic silt*** in each of the borings; underlain by
- About 5 to 8 ft of clayey soils, including medium stiff to stiff ***lean clay*** and medium dense ***clayey sand***; followed by
- About 5 ft of loose to medium dense ***sand*** with significant silt content in Borings 1 and 2; over
- Apparent dense to very dense ***weathered to increasingly competent sandstone bedrock.***

Groundwater was noted at depths of 3.5 to 6 ft below existing grades, which corresponds to approximately EL 843 to 845 ft, during drilling. As a reference, it is our understanding the normal controlled surface water elevation of nearby Lake Wingra is approximately 847.7 ft. Groundwater levels can be expected to fluctuate with seasonal variations in precipitation, infiltration, evapotranspiration, the water level in Lake Wingra, as well as 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

As mentioned above, in order to minimize site disturbance and to maintain site aesthetics, it is our understanding that the quality and structural integrity of the existing timber piles will be evaluated prior to design of the new bridges. Depending on the quality of the existing timber piles, and the capacity required for the new structures, the existing timber piles may remain in-place and be supplemented by new driven piles at each abutment. If the quality of the timber piles are not suitable for re-use, new abutments also supported by driven piles will be constructed.

Subject to the limitations discussed below and based on the subsurface exploration, it is our opinion that the proposed bridges can be supported by either: 1) The existing abutments (pending timber pile evaluation by others indicate satisfactory condition and capacity) supplemented with steel HP pile or helical piers installed through the shallow soft/loose soils to bear within the apparent sandstone bedrock underlying the site; or 2) New HP pile or helical piers supporting abutments constructed following removal of the existing abutments. Note that if the condition and capacity of the existing timber piles are determined to be satisfactory such that the existing abutments may remain and be supplemented with additional new piles constructed adjacent to the existing abutments, helical piers may prove the more feasible foundation support alternative because smaller installation equipment would likely reduce site disturbance and lower anticipated mobilization costs compared to driven piles. *Note that CGC did not complete an analysis of the existing timber piles. We recommend that the structural integrity of the existing timber piles and abutments be reviewed/evaluated by a licensed structural engineer during the design phase of this project.*

The following subsections provide our recommendations for design/construction or driven pile and helical pier bridge foundation support alternatives. Additional information regarding the conclusions and recommendations presented in this report are discussed in Appendix C,

1. Foundation Recommendation Alternatives

A. Driven Piles

In our opinion, steel HP-section piles (WisDOT *Standard Specifications*, Section 550) will likely be the preferred driven pile type for this project where piles will be driven into bedrock, and these piles are expected to encounter driving refusal (and the required driving resistance) within the very dense weathered sandstone bedrock layer. The top of the bedrock layer was observed at approximately 12 to 22 ft below existing site grades in the borings, with very dense conditions typically encountered below 25 ft in Borings 1 and 2 (north), with slightly shallower very dense conditions observed in Borings 3 and 4 (south), at between about 15 and 20 ft. HP piles driven to practical refusal are expected to drive approximately 5 to 10 ft into the very dense bedrock. Therefore, the estimated depth for HP10X42 piles to develop a maximum ultimate driving resistance of 180 tons is about 30 to 35 ft below existing grades (approximately EL 814 to 819 ft) in Borings 1 and 2, and 20 to 25 ft below existing grade (approximately EL 825 to 830 ft) in Borings 3 and 4. If a higher capacity is

required, HP12X53 are anticipated to drive to similar depths as HP10X42 piles, but have a higher maximum driving resistance of 220 tons due to the larger pile section.

The driving criteria for production piling should be established by the modified Gates formula, as discussed in the WisDOT *Bridge Manual*, Chapter 11. Using the modified Gates Formula, HP10x42 piles driven to a resistance of 180 tons will have a *factored* axial compression resistance of 90 tons, assuming a resistance factor (ϕ_{dyn}) of 0.5 (see Section 11.3.1.18.2). Similarly, HP12x53 piles driven to a maximum driving resistance of 220 tons will have a *factored* axial compression resistance of 110 tons. If dynamic or static pile load testing is completed, the resistance factor can be increased (effectively increasing the available load carrying capacity of the piles), but because the piles will be driven to refusal within the sandstone bedrock layer, we do not anticipate that the moderate to significant expense associated with pile load testing will make economic sense for this project. It may also be the case that the bridge loads are light enough such that the maximum load per pile allowed by WisDOT may not be required for this project, as has been the case for other recreational path bridges in Madison. In which case, the actual required driving resistance should be sated on the plans. We can provide additional consultation on load testing, if needed.

Based on our past experience completing drivability analyses and within piles driven to refusal within weathered bedrock, HP10X42 piles can generally be driven to refusal (or the required driving resistance) with an appropriately sized pile hammer without overstressing the piles. However, we recommend that a drivability analysis be completed by the pile driving contractor prior to construction to check that the selected pile type, cushion and hammer are compatible and do not result in the pile being overstressed. We recommend including rock tips on the ends of the HP piles to reduce the potential for damage to piles driven into bedrock: rock tips also assist in the piles driving straighter.

Other pertinent pile design parameters include the following:

- For adequate frost protection, we recommend that the abutment pile caps be founded at least 4 ft below finish grade. A minimum embedment depth of 2.5 ft is recommended for sill abutments, per *WisDOT Bridge Manual*.

- It is recommended that the minimum spacing between individual piles be no less than 2.5 ft or 2.5 times the pile diameter, whichever is greater. WisDOT recommends a maximum pile spacing of 8 ft. During driving, heaving and/or lateral displacements of driven piles may occur during subsequent nearby pile driving operations. Therefore, it is important that horizontal and vertical alignment checks be performed during pile driving operations. Piles that heave more than 0.25 in. vertically must be reseated. However, heaving is generally not a concern with HP piling since they are considered non-displacement piles.

- To minimize pile driving problems, new embankment fill material in the vicinity of the abutments or wing walls should not contain cobbles or boulders.

- Appropriate scour protection should be provided to prevent soil eroding from the below the abutments (and around the piles) in the event of high water events.

B. Helical Piers

Depending on the maximum loading of the new structures, as well as the quality of the existing timber piles at each structure, helical piers may be a more feasible alternative to provide supplemental bridge abutment support. Helical piers are a proprietary product that involves the design and installation of a deep foundation system which transfers loads through upper loose or soft soil zones to bear within more suitable bearing strata. At this site, helical piers can be designed to extend through the existing organic and softer clay soils to bear within the underlying very dense weathered sandstone bedrock, using the soil parameters summarized in Table 1. Helical piers can often be installed using lightweight, mobile equipment (e.g., skidsteer or mini-excavator with special attachments) and are often used in applications where there is limited space available, similar to this site. In addition, because the mobilization cost will likely be much lower than for driven piles (which generally require a crawler crane), helical piers may prove to be the more economical foundation support alternative.

Helical pier capacity will vary depending on the number and size of helices, depth of installation and bearing stratum. Using the computer program HeliCAP V2.0 (produced by Chance/Hubbell) we estimated the capacity of a two-helix (8 in./10 in.) helical pier installed to different depths at the two bridge locations. In general, we estimate that *ultimate* helical pier capacities (in compression) ranging from about 20 to 60 kips (potentially higher with heavy-duty helical piers) can be developed for helical piers installed to depths of 15 to 30 ft below existing site grades, within the higher end in the range of ultimate capacities developed within deeper, very dense sandstone bedrock. Based on the very dense nature of the sandstone bedrock, smaller diameter helix configurations (e.g., 8 and 10 in.) may be required to allow for the pier to penetrate into the strata to achieve required capacity. However, it should be noted that within deeper, more competent sandstone bedrock layers, the helical pier capacity at higher loads will likely be limited by the structural capacity of the helices and not from the geotechnical capacity of the soils/bedrock. *The helical pier depths and capacities should be considered approximate and since helical piers are proprietary (with a multitude of variables), the helical pier installer should determine the helix configuration and depth necessary to satisfy project requirements.*

The torque of the equipment installing the helical piers is generally correlated with axial capacity, although static load tests can also be completed to confirm the ultimate and allowable capacities. A minimum factor of safety of 2.0 to 2.5 is generally used for helical pier design. If a factor of safety of 2.0 is used to determine the allowable helical pier capacity, we recommend that one static load test be performed per bridge location to confirm the helical pier design satisfies the project requirements.

TABLE 1 - Soil Parameters for Analysis of Helical Foundations
Vilas Park Replacement Bridges
Vilas Park, Madison, WI

Soil Layer		Very Loose to Loose Silt and Medium Stiff to Stiff Clay	Loose to Medium Dense Sand	Dense to Very Dense Apparent Weathered Sandstone Bedrock
Boring 1	**Approximate Depth Below Existin Grade**	**0 to 12 ft**	**12 to 17 ft**	**Below 17 ft**
Boring 2		**0 to 16 ft**	**16 to 22 ft**	**Below 22 ft**
Boring 3		**0 to 14 ft**	**14 to 16.5 ft**	**Below 16.5 ft**
Boring 4		**0 to 8 ft**	**8 to 12 ft**	**Below 12 ft**
Estimated Soil Parameters (2)				
	Angle of internal friction, ϕ	**0**	**30**	**40**
	Cohesion (psf)	**1000**	**0**	**0**
	Total Unit Weight (pcf)	**115**	**120**	**125**
	Submerged unit weight (pcf)	**53**	**58**	**63**
Earth pressure coefficients (2)				
	Active, K_a	**1.0**	**0.33**	**0.22**
	Passive, K_p	**1.0**	**3.0**	**4.6**
Sand Strata				
	Constant of subgrade reaction, n_h (pci) (2, 3)	-	**40**	**125**
Clay/Silt Strata				
	Subgrade modulus of reaction, k_h (pci) (constant with depth)	**50 (static)**	-	-
L-Pile soil type		**Soft Clay**	**Sand**	**Sand**

Notes:

(1) Depths have been generalized to some extent. Refer to boring logs for detailed descriptions at each location.

(2) Values do not include a factor of safety (i.e., FS = 1.0)

(3) Where $k_h = (n_h)(x)$ and x is the depth below ground surface.

The static load tests should be performed on piers installed to similar installation depths and torques as production piers. Additionally, the torque of each pier should be monitored during installation to document that each pier is torqued to the minimum torque established by the static load tests or empirical correlations to ultimate capacity. If static load tests are not performed, we recommend using a minimum factor of safety of at least 2.5 in determining the allowable capacity, and the installation torque of each pier should be monitored, which is empirically correlated to the ultimate capacity. *Since there are multiple proprietary helical pier systems, it is the responsibility of the contractor to determine that their selected helical pier configuration, installation procedures and termination criteria satisfy the project requirements.*

Other helical pier considerations include the following:

- The helical pier installer should have provisions to deal with the presence of potential obstructions. If obstructions are encountered, removing obstructions with an excavator would be one method to deal with the obstructions. Using smaller diameter helix configuration may also assist in the installation process but may require deeper piers to develop capacity.

- The shallow organic and softer clay soils have relatively low lateral capacity. As such, round helical pier shafts, which have higher resistance to buckling, are recommended over square shafts. A buckling analysis should be completed to check that the pier shaft has adequate buckling resistance.

- The shallow organic soils may be slightly corrosive to steel, which may result in section loss over time. Therefore, we recommend either increasing the steel section of the shaft to accommodate potential section loss or covering the upper part of the shaft with an anti-corrosion coating to reduce the corrosion potential.

- If the existing timber piles are supplemented with helical piers (or driven piles), consideration should be given to the compatibility of the two different foundation system. Loads will tend to be attracted to the stiffer foundation elements, which may result in localized higher stresses in an abutment of mixed foundation elements. *We recommend that that the structural integrity of the existing piles be reviewed/evaluated by a licensed structural engineer.*

2. Lateral Earth Pressures

In accordance with WisDOT *Bridge Manual* procedures (Sections 12.4 and 12.8), wing walls should be designed as cantilever retaining walls extending from the abutments, and an equivalent fluid pressure of 40 psf per foot of depth and a 2 ft surcharge (240 psf) should be used in design. This recommendation is based on granular fill being used as backfill, as indicated in Section 210 of the WisDOT *Standard Specifications*. It is recommended that procedures for placement and compaction

of backfill conform to those outlined in paragraph 207.3.6.2 (Standard Compaction) of the *Standard Specifications*. The wing wall design should include surcharge loads, if applicable.

CONSTRUCTION CONSIDERATIONS

Due to variations in weather, construction methods and other factors, specific construction problems are difficult to predict. Soil related difficulties that could be encountered on the site are discussed below:

- 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 pile cap 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 in accordance with current OSHA standards.

- Based on observations made during the field exploration and depending on final abutment elevations, groundwater will likely be encountered during abutment excavation. Temporary cofferdams and dewatering inside the cofferdams will likely be required so that construction can occur "in the dry" during pile driving or helical pier installation and abutment construction. Additional water accumulating at the base of the excavation should be controlled and removed using pumps operating from filtered sump pits. A layer of clear stone at the bottom of the excavation may be useful for creating a working platform and also assist in dewatering efforts.

RECOMMENDED CONSTRUCTION MONITORING

The level of care exercised during site development will largely determine the quality of the foundations and pavement subgrades on the approaches. To check that earthwork and foundation construction proceeds in accordance with our recommendations, qualified construction inspectors should monitor the following operations:

- Pile driving observations;
- Abutment fill/backfill placement and compaction; and
- Concrete placement.

* * * * *

We trust this report addresses your present needs. General limitations regarding the conclusions and opinions presented in this report are discussed in Appendix B. If you have any questions, please contact us.

Sincerely,

CGC, Inc.

Alex J. Bina, P.E.
Staff Engineer

David A. Staab, P.E., LEED AP
Consulting Professional

Encl: Appendix A - Subsurface Exploration
Appendix B - Soil Boring Location Exhibit
Logs of Test Borings (4)
Log of Test Boring-General Notes
Unified Soil Classification System
Appendix C - Document Qualifications

APPENDIX A

SUBSURFACE EXPLORATION

APPENDIX A

SUBSURFACE EXPLORATION

Subsurface conditions in the vicinity of the proposed bridge abutments were explored by drilling four Standard Penetration Test (SPT) borings to depths of 24 to 39 ft below existing site grades. Note that the borings were originally planned to extend to depths of 50 to 100 ft, but were stopped short after extending the borings 10 to 25 ft into the dense to very dense, apparent sandstone bedrock. The borings were drilled by Badger State Drilling (under subcontract to CGC) on February 13 and 14, 2017 using an ATV-mounted D-50 drill-rig equipped with hollow-stem augers and an automatic SPT hammer. The boring locations and planned depths were selected by CGC in consultation with the City, and were located in the field by CGC based off a map provided by the City. Ground surface elevations at the boring locations were estimated by CGC using an online mapping tool (DCiMap) and should be considered approximate (± 1 ft). The boring locations are shown in plan on the Soil Boring Location Exhibit attached in Appendix A.

Soil samples were obtained at 2.5-foot intervals to a depth of 10 ft and at 5-foot intervals thereafter. The soils samples were obtained in general accordance with specifications for standard penetration testing, ASTM D 1586. The specific procedures used for drilling and sampling are described below:

1. Boring Procedures Between Samples

   The boring is extended downward, between samples, by a hollow stem auger. Before encountering groundwater, the drilling method is switched to mud rotary and the hole is advanced with a roller bit.

2. Standard Penetration Test and Split-Barrel Sampling of Soils
   (ASTM Designation: D 1586)

This method consists of driving a 2-inch outside diameter split barrel sampler using a 140-pound weight falling freely through a distance of 30 inches. The sampler is first seated 6 inches into the material to be sampled and then driven 12 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the log of borings and known as the Standard Penetration Resistance. Recovered samples are first classified as to texture by the driller.

Field screening of the soil samples for possible environmental contaminants was not conducted by the drillers, as environmental site assessment activities were not part of CGC's work scope. Upon completion of drilling, the borings were backfilled to satisfy WDNR requirements, and soil samples delivered to our laboratory for visual classification and laboratory testing. The soils were visually classified by a geotechnical engineer using the Unified Soil Classification System. The final logs prepared by the engineer and a description of the Unified Soil Classification System are presented in Appendix B.

APPENDIX B

SOIL BORING LOCATION EXHIBIT
LOGS OF TEST BORINGS (4)
LOG OF TEST BORING – GENERAL NOTES
UNIFIED SOIL CLASSIFICATION SYSTEM

Legend

⌖ Denotes Boring Location

Notes

1. Soil borings performed by Badger State Drilling in February 2017
2. Boring locations are approximate.

Scale: Reduced

Date: 2/2017	CGC, Inc.	**Soil Boring Location Exhibit** **Vilas Bridge Replacements** **Madison, WI**
Job No. C17051-4		

CGC Inc.

LOG OF TEST BORING

Project: Vilas Park Bridge Replacements

Location: Madison, Wisconsin

Boring No. 1
Surface Elevation (ft) 849 +/-
Job No. C17051-4
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
						8 in. TOPSOIL (Probable Fill)					
1		4	M	1		Very Loose, Gray Organic SILT, Trace Sand and Shels (OL - Possible Fill)					
2		14	W	9	5	Stiff, Gray Lean CLAY (CL)	(1.25)	17.6			
3		18	W	1			(1.5)	23.6			
4		16	W	13	10		(1.75)	23.5			
5		12	W	8	15	Loose, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
6		14	W	47	20	Apparent Weathered to Competent, Brown to Light Brown Sandstone Bedrock					
7		16	W	33	25						
8		1	W	50/2"	30						
9		2	W	50/2"	35	End Boring at 34 ft					
						Borehole backfilled with bentonite slurry and chips					
					40						
					45						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 3.5' Upon Completion of Drilling _____
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 2/14/17 End 2/14/17
Driller BSD Chief DB Rig D-50
Logger DD Editor ESF ATV
Drill Method 4.25" HSA to 5'; 3 7/8" RB with Mud to 34'; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Vilas Park Bridge Replacements

Location: Madison, Wisconsin

Boring No. 2
Surface Elevation (ft) 849 +/-
Job No. C17051-4
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
						8 in. TOPSOIL FILL					
1		18	M	2		Very Loose/Soft, Laminated Organic SILT and CLAY (OL - Probable Fill to 2 ft)	(0.5)				
2		18	M/W	2	5	Very Loose, Gray Organic SILT, Little to Some Shells and Sand (OL)					
3		18	W	4		Loose to Very Loose, Gray Sandy SILT (ML)					
4		18	W	8	10	Stiff, Gray Lean CLAY (CL)	(1.25)	22.2			
5		18	W	27	15	Medium Dense, Brown to Gray Clayey Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles (SC/SM)					
6		18	W	13	20	Medium Dense, Light Brown Silty Fine SAND, Little to Some Gravel (SM)					
7		18	W	33	25	Apparent Weathered to Competent, Brown to Light Brown Sandstone Bedrock					
8		3	W	50/3"	30	End Boring at 29 ft					
						Borehole backfilled with bentonite slurry and chips					
					35						
					40						
					45						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 6.0' Upon Completion of Drilling
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 2/13/17 End 2/13/17
Driller BSD Chief DB Rig D-50
Logger DD Editor ESF ATV
Drill Method 4.25" HSA to 5'; 3 7/8" RB with Mud to 29'; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Vilas Park Bridge Replacements

Location: Madison, Wisconsin

Boring No. 3
Surface Elevation (ft) 849 +/-
Job No. C17051-4
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
						6 in. TOPSOIL (Probable Fill)					
1		14	M	6		Loose to Very Loose, Gray Organic SILT, Little to Some Shells and Sand (OL) (Possible Fill to 3 ft)					
2		16	W	0	5			102.6			7.3
3		15	W	4		Loose to Very Loose, Gray Sandy SILT, Trace Shell Fragments (ML)		16.0			
4		18	W	10	10	Medium Stiff to Stiff/Medium Dense to Loose, Laminated Lean CLAY and SILT, Trace Sand (ML/CL)	(1.0)	21.8			
5		12	W	11	15	Medium Dense, Reddish-Brown Clayey Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles (SC/SM)	(1.0)				
6		14	W	78/10"	20	Apparent Weathered to Competent, Brown to Light Brown Sandstone Bedrock					
7		4	W	50/5"	25						
8		2	W	50/3"	30						
9		2	W	50/4"	35						
10		0	W	50/1"	40	End Boring at 39 ft Borehole backfilled with bentonite slurry and chips					
					45						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 3.5' Upon Completion of Drilling _____
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 2/13/17 End 2/13/17
Driller BSD Chief DB Rig D-50
Logger DD Editor ESF ATV
Drill Method 4.25" HSA to 5'; 3 7/8" RB with Mud to 40'; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Vilas Park Bridge Replacements

Location: Madison, Wisconsin

Boring No. 4
Surface Elevation (ft) 850 +/-
Job No. C17051-4
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
						12 in. TOPSOIL FILL					
1		10	M	4		FILL: Stiff, Brown Clay with Traces Sand and Topsoil	(1.5)				
2		14	W	2	5	Very Loose, Gray Organic SILT, Little to Some Shells and Sand (OL)		90.3			6.3
3		16	W	9		Stiff, Gray Lean CLAY (CL)		22.3			
4		16	W	11	10	Medium Dense, Brown to Gray Clayey Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles (SC/SM)					
5		4	W	50/5"	15	Apparent Weathered to Competent, Brown to Light Brown Sandstone Bedrock					
6		2	W	50/3"	20						
7		1	W	50/2"	25	End Boring at 24 ft due to rotary-bit refusal on presumed bedrock Borehole backfilled with bentonite slurry and chips					
					30						
					35						
					40						
					45						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 3.5' Upon Completion of Drilling _____
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 2/14/17 End 2/14/17
Driller BSD Chief DB Rig D-50
Logger DD Editor ESF ATV
Drill Method 4.25" HSA to 5'; 3 7/8" RB with Mud to 24'; Autohammer

CGC, Inc.

LOG OF TEST BORING

General Notes

DESCRIPTIVE SOIL CLASSIFICATION

Grain Size Terminology

Soil Fraction	Particle Size	U.S. Standard Sieve Size
Boulders	Larger than 12"	Larger than 12"
Cobbles	3" to 12"	3" to 12"
Gravel: Coarse	¾" to 3"	¾" to 3"
Fine	4.76 mm to ¾"	#4 to ¾"
Sand: Coarse	2.00 mm to 4.76 mm	#10 to #4
Medium	0.42 to mm to 2.00 mm	#40 to #10
Fine	0.074 mm to 0.42 mm	#200 to #40
Silt	0.005 mm to 0.074 mm	Smaller than #200
Clay	Smaller than 0.005 mm	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

General Terminology

Physical Characteristics
Color, moisture, grain shape, fineness, etc.
Major Constituents
Clay, silt, sand, gravel
Structure
Laminated, varved, fibrous, stratified, cemented, fissured, etc.
Geologic Origin
Glacial, alluvial, eolian, residual, etc.

Relative Density

Term	"N" Value
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Over 50

Relative Proportions Of Cohesionless Soils

Proportional Term	Defining Range by Percentage of Weight
Trace	0% - 5%
Little	5% - 12%
Some	12% - 35%
And	35% - 50%

Consistency

Term	q_u-tons/sq. ft
Very Soft	0.0 to 0.25
Soft	0.25 to 0.50
Medium	0.50 to 1.0
Stiff	1.0 to 2.0
Very Stiff	2.0 to 4.0
Hard	Over 4.0

Organic Content by Combustion Method

Soil Description	Loss on Ignition
Non Organic	Less than 4%
Organic Silt/Clay	4 – 12%
Sedimentary Peat	12% - 50%
Fibrous and Woody Peat	More than 50%

Plasticity

Term	Plastic Index
None to Slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to Very High	Over 22

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

SYMBOLS

Drilling and Sampling

CS – Continuous Sampling
RC – Rock Coring: Size AW, BW, NW, 2"W
RQD – Rock Quality Designation
RB – Rock Bit/Roller Bit
FT – Fish Tail
DC – Drove Casing
C – Casing: Size 2 ½", NW, 4", HW
CW – Clear Water
DM – Drilling Mud
HSA – Hollow Stem Auger
FA – Flight Auger
HA – Hand Auger
COA – Clean-Out Auger
SS - 2" Dia. Split-Barrel Sample
2ST – 2" Dia. Thin-Walled Tube Sample
3ST – 3" Dia. Thin-Walled Tube Sample
PT – 3" Dia. Piston Tube Sample
AS – Auger Sample
WS – Wash Sample
PTS – Peat Sample
PS – Pitcher Sample
NR – No Recovery
S – Sounding
PMT – Borehole Pressuremeter Test
VS – Vane Shear Test
WPT – Water Pressure Test

Laboratory Tests

q_a – Penetrometer Reading, tons/sq ft
q_a – Unconfined Strength, tons/sq ft
W – Moisture Content, %
LL – Liquid Limit, %
PL – Plastic Limit, %
SL – Shrinkage Limit, %
LI – Loss on Ignition
D – Dry Unit Weight, lbs/cu ft
pH – Measure of Soil Alkalinity or Acidity
FS – Free Swell, %

Water Level Measurement

▽ - Water Level at Time Shown
NW – No Water Encountered
WD – While Drilling
BCR – Before Casing Removal
ACR – After Casing Removal
CW – Cave and Wet
CM – Caved and Moist

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

CGC, Inc.

Madison - Milwaukee

Unified Soil Classification System

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

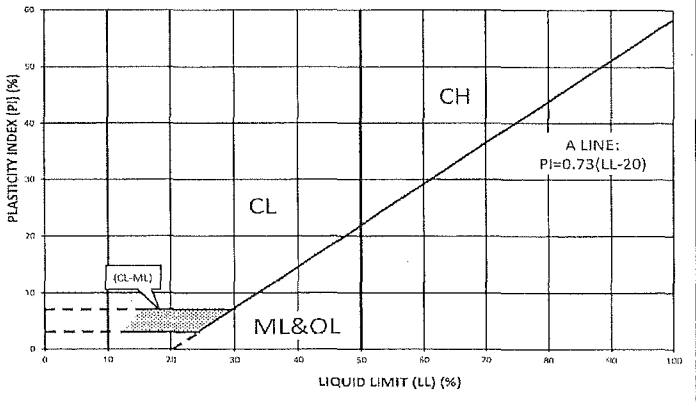
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limts below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limts above "A" line or P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols

PLASTICITY CHART



APPENDIX C

DOCUMENT QUALIFICATIONS

APPENDIX C
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

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes. While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

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.

READ THE FULL REPORT

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 geotechnical engineer performed the study. *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 subsurface 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 confirmation-dependent recommendations included in your report. *Those confirmation-dependent 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 confirmation-dependent recommendations if we do not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Confront 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. Constructors can also misinterpret a geotechnical engineering report. Confront that risk by having CGC participate in prebid and preconstruction conferences, and by providing geotechnical 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 CONSTRUCTORS A COMPLETE REPORT AND GUIDANCE

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors 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 constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors 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 constructors 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 the risk of such outcomes, 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.

ENVIRONMENTAL CONCERNS ARE NOT COVERED

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any environmental 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 environmental 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, many 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 the Geotechnical Business Council (GBC) of Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with CGC, a member of GBC, for more information.

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Geotechnical Business Council
of the Geoprofessional Business Association
8811 Colesville Road, Suite G 106
Silver Spring, MD 20910

Madison Parks Division

210 Martin Luther King, Jr. Blvd., Room 104
Madison, WI 53703
608-266-4711 • cityofmadison.com/parks

play MADISON PARKS

November 28, 2017

NOTICE OF ADDENDUM
ADDENDUM 1

CONTRACT NO.8062

Revise and amend the contract document(s) for the above project as stated in this addendum, otherwise, the original document shall remain in effect.

General

1. The geotechnical exploration report for the project has been amended to include a short discussion about potential installation challenges of helical piers on page 7 of the amended report. Other deep foundation types, such as micropiles, are permissible. Driven piles will not be acceptable due to noise issues.

Specifications

2. SECTION 102.9 BIDDER'S UNDERSTANDING
   Omit: SECTION 102.9 BIDDER'S UNDERSTANDING
   Add: SECTION 102.9 BIDDER'S UNDERSTANDING

   In the preparation of Drawings and Specifications, Strand Associates, Inc.® relied upon the following reports of explorations and tests of subsurface conditions at the Site which are attached at the end of the SPECIAL PROVISIONS:

   Report dated **November 17, 2017**, prepared by CGC, Inc., of Madison, Wisconsin, titled: Geotechnical Exploration Report–Proposed Bridge Replacements Vilas Park Island, Madison, Wisconsin, consisting of 23 pages.

   The technical data in the above report, upon which Contractor may rely, consists of boring methods, level of subsurface water, boring logs, laboratory test methods and results, and boring locations all as of the date made.

   City accepts no responsibility for accuracy of the soil data or water level information. Soil borings and report, included with these Contract Documents, were not obtained for the purposes of designing excavations and trenches. Soils information was used by Strand Associates, Inc.® for design purposes of new structures only. Contractor shall assure itself by personal examination as to subsurface conditions and shall provide its own investigations and make its own assumptions to comply with OSHA and any other applicable laws and regulations regarding excavation and trenching requirements.

3. SECTION 105.12 COOPERATION BY CONTRACTOR, last paragraph.
   Add: 'Swallow and other migratory birds' nests have been observed on or under the existing bridge. All active nests (when eggs or young are present) of migratory birds are protected under the federal Migratory Bird Treaty Act. The nesting season for swallows and other birds is usually between May 1 and August 30. The Contractor shall either prevent active nests from becoming established, or apply for a depredation permit from the US Fish and Wildlife Service for work that may disturb or destroy active nests. The need for a permit may be avoided by removing the existing bridge structure prior to nest occupation by birds, or clearing nests from all structures before the nests become active in early spring. As a last resort, the Contractor shall prevent birds from nesting by installing a suitable netting device on the remaining structure prior to nesting activity. The cost for preventing nesting and/or permitting shall be incidental to Bid Items 90005 and 90006 Removing Old Structure Over Waterway.'

4. BID ITEM 90008 – HELICAL PILES, DELIVERED AND INSTALLED
   Omit: BID ITEM 90008 – HELICAL PILES, DELIVERED AND INSTALLED
   Add: BID ITEM 90008-DEEP FOUNDATIONS – DESIGNED, DELIVERED AND INSTALLED. Per attached.

5. Contract 8062 Attachment A – Geotechnical Exploration Report.
   Omit: Contract 8062 Attachment A – Geotechnical Exploration Report, dated March 7, 2017.
   Add: Contract 8062 Attachment A – Geotechnical Exploration Report - REVISED, dated November 27, 2017. Per attached.

Plans

6. All Sheets.
   Replace: At all locations on the drawings where the word 'helical' appears, replace it with 'deep foundation'.

7. Sheet 15.
   Omit: full sheet.
   Add: Sheet 15, revision dated 11-27-17. Per attached.

Bid Tab

8. BID ITEM 90008 – HELICAL PILES, DELIVERED AND INSTALLED
   Omit: Bid item.
   Add: BID ITEM 90008-DEEP FOUNDATIONS – DESIGNED, DELIVERED AND INSTALLED.

Please acknowledge this addendum on page E1 of the contract documents and/or in Section E: Bidder's Acknowledgement on Bid Express.

Electronic version of these documents can be found on the Bid Express web site at:

http://www.bidexpress.com

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

for Eric Knepp, Parks Superintendent

BID ITEM 90008–DEEP FOUNDATIONS–DESIGNED, DELIVERED AND INSTALLED

A. Description. The work consists of designing, delivering and installing deep foundation supports for the bridge abutments. The specific type(s) of deep foundations used shall be determined by the contractor based on site conditions and the foundation loads shown on the drawings. Acceptable deep foundation types include, but are not limited to, helical piles and micropiles. The type of deep foundation used shall be suitable for the site conditions. The deep foundation system shall be designed for a minimum service life of 75 years.

B.1 Materials. If a deep foundation type other than micropiles or helical piles is used, materials used shall be determined by the deep foundation designer.

B.1.A Micropiles. Micropile materials shall be designed by the deep foundation designer.

B.1.B Helical Piles. Helical piles shall be by Foundation Supportworks, Inc., 12330 Cary Circle, Omaha, NE 68128, or equal. Manufacturer of helical piles shall have at least five years of production experience manufacturing helical piles and have documentation that manufacturer's helical piles have been used successfully in at least five engineered construction projects within the last three years.

Helical piles subject to compression loading shall be hollow round shaft. Helical piles subject to tension loading shall be solid square or round shaft or hollow round shaft. Size of piles shall be determined by the designer/manufacturer based on the specific project conditions. Pile shaft sections shall be in full, direct contact within couplings so as to remove coupling bolts and coupling welds from the "in-service" axial load path. Pile shafts and couplings shall have a fit-up tolerance of 1/16-inch or less. Helix plates shall meet the following geometry and spacing criteria to minimize soil disturbance:

1. True helix-shaped plates that are normal to the shaft such that the leading and trailing edges are within 1/4-inch of parallel.

2. Helix pitch is 3 inches ($\pm$ 1/4-inch).

3. All helix plates have the same pitch.

4. Helix plates have circular edge geometry.

5. Helix spacing along the shaft shall be between 2.4 and 3.6 times the helix diameter.

6. Helix plates are arranged along the shaft such that they all theoretically track the same path as the proceeding plate.

Central steel shaft of the lead and extension sections shall be a hollow steel structural section meeting ASTM A500 Grade B or C. Shaft coupling shall be factory welded to the extension shaft and be a hollow steel structural section meeting ASTM A513 Type 5. Helix plates shall be factory welded to the lead or extension shaft sections and shall be structural steel plate material meeting ASTM A572 Grade 50. Brackets shall be structural steel plate material meeting ASTM A572 Grade 50 or ASTM A36. All steel components shall receive a hot-dipped galvanized finish system in accordance with ASTM A123 after fabrication.

All hardware shall conform to ASTM A325 and shall be hot-dipped galvanized in accordance with ASTM A153.

B.2 Design and Performance Requirements. Deep foundations shall be designed to support the compressive or tensile load(s) as shown on the drawings.

B.2.A Micropiles. The design shall include pile design and pile-footing connection design. The design shall conform with applicable provisions of accepted industry practice.

B.2.B Helical Piles. The overall length, helix configuration and minimum torsional resistance of a helical pile shall be such that the required capacity is developed by the helix plate(s) in an appropriate bearing stratum.

All structural steel pile components shall be designed within the limits provided by the American Institute of Steel Construction (AISC) Specification for Structural Steel Buildings (AISC-360) using Allowable Stress Design (ASD) method of analysis. Product testing in accordance with ICC-ES Acceptance Criteria 358 may also be considered as an acceptable means of establishing system capacities.

Except where noted otherwise on the drawings, all piles shall be installed to provide an ultimate torque-correlated capacity based on an ASD analysis using a minimum factor of safety of 2.5 applied to the service or nominal loading.

The required ultimate torque-correlated capacity shall be verified at each pile location by monitoring and recording the final installation torque and applying default torque correlations per ICC-ES AC358.

Except where noted otherwise on the drawings, all tension anchors shall be installed to provide a minimum factor of safety against ultimate pullout resistance of 3, a maximum axial deflection at nominal tension load of 0.5 inches, and must satisfy the deflection criteria as stated on the plans or drawings. Pre-tensioning anchors is an acceptable and common means of reducing deflection at service loads.

The pile design shall take into account group efficiency from pile spacing, pile buckling potential, soil stratification, and strain compatibility issues.

B.3 Qualifications of Installing Contractor and Designer. The installing contractor and pile designer shall submit to the City the following documentation prior to starting work. Work shall not begin until all the submittals have been received and approved by the City. All costs associated with incomplete or unacceptable submittals shall be the responsibility of the Contractor.

Evidence of installing contractor's competence in the installation of proposed deep foundations shall be provided to the City's satisfaction and shall include the following:

1. If helical piles are used, pile manufacturer's certificate of competency for the installation of helical piles.

2. A list of at least three projects completed within the previous three years wherein the installing contractor installed proposed deep foundations similar in size and

scope to this project. Such list to include names and phone numbers of those project representatives who can verify the installing contractor's participation in those projects.

Evidence of deep foundation designer's competence shall be provided to the City's satisfaction and shall include the following:

1. Registration as a Professional Engineer in the State of Wisconsin.

2. If helical piles are used, recommendation from the pile manufacturer or manufacturer's representative.

B.4 Submittals. At a minimum, submit the following for review by City prior to installation:

1. Qualifications of deep foundation installer and designer.

2. Design calculations stamped by a professional engineer licensed in the State of Wisconsin.

3. Design drawings stamped by a professional engineer licensed in the State of Wisconsin.

B.4.A Micropiles. Submit qualifications, design calculations, design drawings, and product information for proposed deep foundation system.

B.4.B Helical Piles. Submit the following helical pile design documents for review by City prior to installation:

1. Certification from the pile designer that the proposed piles meet the requirements of this specification.

2. Qualifications of the manufacturer, installing contractor and pile designer per Sections B.1 and B.3.

3. Design calculations stamped by a professional engineer licensed in the State of Wisconsin.

4. Product designations for helical lead and extension sections and all ancillary products to be supplied at each helical pile location.

5. Individual pile nominal loads, factors of safety, and required ultimate torque correlated capacities, where applicable.

6. Individual pile loading requirements (if any).

7. Manufacturer's published allowable system capacities for the proposed pile assemblies, including load transfer devices.

8. Calculated mechanical and theoretical geotechnical capacities of the proposed piles.

9. Minimum pile termination torque requirements.

10. Maximum estimated installation torque and allowable installation torque rating of the proposed piles.

11. Minimum and/or maximum embedment lengths or other site-specific embedment depth requirements as may be appropriate for the site soil profiles.

12. Inclination angle and location tolerance requirements.

13. Copies of certified calibration reports for torque measuring equipment to be used on the project. The calibrations shall have been performed within one year of the proposed helical pile installation starting date or as recommended by the equipment manufacturer.

C.1 Construction Methods. Deep foundations shall be installed in accordance with deep foundation designer requirements.

C.1.A Micropiles. A record shall be kept of each pile and shall include as a minimum:

1. Length of pile installed.

2. Depth to rock.

3. Length of rock socket.

4. Theoretical grout volume.

5. Actual grout volume for primary and regrouting.

6. Conditions encountered during drilling.

7. Date and time of installation.

8. Pile number or location description.

C.1.B Helical Piles. Helical piles shall be installed in the locations indicated on the drawings and in accordance with the manufacturer's instructions. Helical piles shall be installed within 3 inches of the indicated drawing location. Helical pile shaft alignment shall be within 2 degrees of the inclination angle shown on the drawings. Depth of piles shall be sufficient to obtain the required working loads in compression, as determined by installation torque readings. Cut off tops of piles and anchor to new foundations with brackets. Top elevation of the helical piles shall be within 2 inches of the design vertical elevation.

C.2 Helical Pile Installation. Installing contractor shall give City minimum 24-hour notice prior to start of pile installation. The helical pile installation technique shall be such that it is

consistent with the geotechnical, logistical, environmental, and load carrying conditions of the project. The lead section shall be positioned at the appropriate site survey stake location as determined from the drawings. The helical pile sections shall be advanced into the soil in a continuous manner at a rate of rotation less than 25 revolutions per minute (rpm). Sufficient crowd shall be applied to advance the helical pile sections at a rate approximately equal to the pitch of the helix plate per revolution. The rate of rotation and magnitude of down pressure shall be adjusted for different soil conditions and depths. The magnitude of down pressure shall exceed the amount of torque required to install the pile. Extension sections shall be provided to obtain the required minimum overall length and minimum torsional resistance required.

C.3 Helical Pile Termination Criteria. The minimum final torsional resistance and any required pile length and embedment depth criteria, as specified by the helical pile designer, must be satisfied prior to terminating the pile installation. In the event any helical pile fails to meet these production quality control termination criteria, the following remedies may be suitable, if authorized by the City:

1. If the installation fails to meet the minimum torsional resistance criterion at the minimum embedment length as determined by the pile designer:
    a. Continue the installation to greater depths until the torsional resistance criterion is met, provided that, if a maximum length constraint is applicable, continued installation does not exceed said maximum length constraint, or
    b. Demonstrate acceptable pile performance through pile load or proof testing, or
    c. Replace the pile with one having a different helix plate configuration. The replacement pile must not exceed any applicable maximum embedment length criteria and be embedded to a length that places the last helix plate at least equal to its own diameter beyond the depth of the first helix plate of the replaced pile and meet the minimum torsional resistance criterion or pass load or proof testing.

2. If the torsional resistance during installation reaches the helical pile's allowable torque rating prior to satisfaction of the minimum embedment length criterion:
    a. Terminate the installation at the depth obtained if approved by City, or
    b. Replace the pile with one having a shaft with a higher torsional strength rating. The replacement pile must be installed to satisfy the minimum embedment length criterion. It must also be embedded to a length that places the last helix plate at least equal to its own diameter beyond the depth of the first helix plate of the replaced pile without exceeding any applicable maximum embedment length requirements and it must meet the minimum final torsional resistance criterion, or
    c. Replace the pile with one having a different helix plate configuration. The replacement pile must be installed to satisfy the minimum embedment length criterion. It must also be embedded to a length that places the last helix plate at least equal to its own diameter beyond the depth of the first helix plate of the replaced pile without exceeding any applicable maximum embedment length requirements, and it must meet the minimum final torsional resistance criterion.

3. If the installation reaches a specified maximum embedment length, as determined

by the pile designer, without achieving the minimum torsional resistance criterion:

a. If approved by City, remove and reinstall the pile at a position at least three times the diameter of the largest helix plate away from the initial location. Original embedment length and torsional resistance criteria must be met. The pile repositioning may require the installation of additional helical piles with nominal loads adjusted for these spacing changes, or
b. Demonstrate acceptable pile performance through pile load testing, or
c. De-rate the load capacity of the helical pile based on default or site-specific torque correlation factors and install additional piles as necessary.

4. Replace the pile with one having a different helix plate configuration. The replacement pile must be installed to satisfy the minimum and/or maximum embedment length criterion and it must meet the minimum final torsional resistance criterion.

5. If a helical anchor fails to meet acceptance criteria in a performance or proof test:
   a. Install the anchor to a greater depth and installation torque and re-test provided that, if a maximum embedment length constraint is applicable, continued installation will not exceed said maximum length constraint, or
   b. Replace the anchor with one having more and/or larger helix plates. It must be embedded to a length that places its last helix at least three times its own diameter beyond the position of the first helix of the replaced pile without exceeding any applicable maximum embedment length requirements. This replacement pile must be re-tested, or
   c. If approved by the City, de-rate the load capacity of the helical anchor and install additional anchors. Additional anchors must be installed at positions that are at least three times the diameter of the largest helix away from any other anchor locations and are approved by the City. Anchors installed in cohesive soils shall not be spaced closer than four helix diameters.

6. If a helical pile fails a production quality control criterion as described in this Section or for any reason other than described in this Section, any proposed remedy must be approved by the City prior to initiating its implementation at the project site.

Submit copies of individual helical pile installation records within 24 hours after each installation is completed. Formal copies shall be submitted within 30 days following the completion of the helical pile installation. These installation records shall include the following information:

1. Date and time of installation.

2. Location of helical pile and pile identification number.

3. Installed helical pile model and configuration.

4. Termination depth, pile head depth, and length of installed pile.

5. Actual inclination of the pile.

6. Final torsional resistance.

7. Calculated working load capacity based on final torsional resistance.

8. Comments pertaining to interruptions, obstructions, or other relevant information.

C.3 Helical Pile Field Compression Load Testing. If field compression load testing is done, the installing contractor shall furnish all labor, equipment and pre-production helical piles necessary to accomplish the testing as shown in the approved pile design documentation. Installing Contractor shall apply the specified loads for the specified durations and record the specified data, for the specified number of piles. No deviations from the test plan(s) will be allowed without explicit approval in writing from the City. Pile testing shall be in general accordance with the ASTM D1143 quick test method and the following criteria:

1. Failure criteria shall be in accordance with AC358 and is when plunging occurs or when the net deflection exceeds 10% of the average helix plate diameter, whichever occurs first.

2. An alignment load equal to 5% of the anticipated failure load or maximum anticipated test load may be applied prior to the start of the test to take out slack in the load test frame.

3. Loading increments shall be performed at 5% of the anticipated failure load or maximum anticipated test load with a minimum hold time of 4 minutes at each increment.

4. Upon completion of the maximum test load hold increment, the pile shall be unloaded in 5 to 10 even increments with minimum hold times of 4 minutes at each increment.

Installing contractor shall provide the City copies of raw field test data within 24 hours after the completion of each load test. Formal test reports shall be submitted within 30 days following test completion. Formal test reports shall include the following information:

1. Name of project and Installing Contractor's representative(s) present during load testing.

2. Name of manufacturer's representative(s) present during load testing, if any.

3. Name of third party test agency and personnel present during load testing, if any.

4. Date, time, duration and type of the load test.

5. Unique test identifier and map showing the test pile location.

6. Pile model and installation information including shaft type, helix configuration, lead and extension section quantities and lengths, final pile tip depth, installation

date, total test pile length and final termination torque.

7. Calibration records for applicable pile installation and test equipment.

8. Tabulated test results including cumulative pile head movement, loading increments and hold times.

9. Plots showing load versus deflection for each loading/unloading interval.

C.4 Helical Pile Field Pre-Tensioning for Tension Anchors. The installing contractor shall furnish all labor, equipment and materials necessary to accomplish the pre-tensioning as shown in the approved anchor design documentation. Installing contractor shall apply the specified loads for the specified durations and record the specified data, for the specified number of anchors. Anchor testing shall be in general accordance with ASTM D3689. Limit the maximum test load to 1.33 times the design load.

Installing contractor shall provide the City copies of raw field test data or reports within 24 hours after completion of each tension anchor pre-tension. Formal test reports shall be submitted within 30 days following completion of anchors. Formal test reports shall include the following information:

1. Name of project and installing contractor.

2. Name of Installing Contractor's supervisor during installation.

3. Type of test.

4. Date, time, and duration of test.

5. Unique identifier and location of helical anchor test.

6. Description of calibrated testing equipment and test set-up.

7. Actual helical anchor type and configuration.

8. Steps and duration of each load increment.

9. Cumulative anchor-head movement at each load step.

D. Method of Measurement. The City will measure the Deep Foundations-Designed, Delivered, and Installed bid item by a single lump sum unit.

E. Basis of Payment. The bid item will be paid for at the contract unit price. Payment is full compensation for designing, fabricating, delivering, and installing a complete deep foundation system as specified. Payment includes compression load testing of compression anchors, as needed; and for pre-tensioning of tension anchors. Changes or modifications to foundation type during construction, as required to satisfy the specification requirements, are the responsibility of the contractor.

CGC, Inc.
Construction • Geotechnical
Consulting Engineering/Testing

Attachment A

November 27, 2017
C17051-4

Mr. Michael Sturm
City of Madison – Parks Division
210 Martin Luther King, Jr. Boulevard, Room 104
Madison, WI 53703

Re: Geotechnical Exploration Report - REVISED
Proposed Bridge Replacements
Vilas Park Island
Madison, Wisconsin

Dear Mr. Sturm:

Construction • Geotechnical Consultants, Inc. (CGC) *is providing a revised geotechnical report for the proposed replacement bridge project described above to update the helical pier foundation recommendations. Other parts of the report are not changed.* The purpose of this exploration program was to evaluate the subsurface conditions within the proposed construction area and to provide geotechnical recommendations regarding bridge foundation design and construction. An electronic copy of the *revised* report is being sent to you and Keith Behrend at Strand Associates, and we can provide a paper copy upon request.

PROJECT AND SITE DESCRIPTIONS

We understand that two existing timber-framed pedestrian bridges which connect the Vilas Park Island to the surrounding park areas will be replaced. The timber-pile supported bridges, which have an average clear width of 7.5 ft, are located on the north and south sides of the island in the shallow Vilas Park lagoon. The current bridge spans are approximately 73 ft and 100 ft at the north and south bridges, respectively. It is our understanding that the replacement bridges will be constructed at the same general locations and utilize existing approach paths and retaining walls. The new structures will be pile supported and have cast-in-place concrete decks with clear widths of 12 ft. In order to maintain site aesthetics and minimize site disturbance to the park, it is our understanding that existing timber piles may potentially remain in-place. However, the existing timber piles, which support the abutments, will need to be evaluated and depending on their condition, may need to be supplemented with new piles installed adjacent to the existing timber piles. Alternatively, the existing timber piles may need to be replaced with new steel driven piles constructed following removal of the existing abutments.

2921 Perry Street, Madison WI 53713
Telephone: 608/288-4100
FAX: 608/288-7887

Although the bridges will generally experience lighter loads associated with pedestrian and bicycle traffic, occasional maintenance vehicles and infrequent emergency vehicles may also travel on the bridges. It is our understanding that the load capacity of the new bridges has not been determined, and that the City of Madison is considering designs which accommodate two alternative maximum loading criteria: 1. All City maintenance vehicles, with a maximum load of 50,000 lbs (e.g., tandem-axle dump truck), and 2. All maintenance vehicles excluding the tandem-axle dump truck, with a maximum load of 28,000 lbs (e.g., clam truck).

SUBSURFACE CONDITIONS

Subsurface conditions in the vicinity of the proposed bridge abutments were explored by drilling four Standard Penetration Test (SPT) borings to depths of 24 to 39 ft below existing site grades. Note that the borings were originally planned to extend to depths of 50 to 100 ft, but were stopped short after extending the borings at least 10 to 25 ft into dense to very dense, apparent sandstone bedrock, which has also been encountered in borings completed at Henry Vilas Zoo. The borings were drilled by Badger State Drilling (under subcontract to CGC) on February 13 and 14, 2017 using an ATV-mounted D-50 drill-rig equipped with hollow-stem augers and an automatic SPT hammer. The boring locations and planned depths were selected by CGC in consultation with the City, and were located in the field by CGC based off a map provided by the City. Ground surface elevations at the boring locations were estimated by CGC using an online mapping tool (DCiMap) and should be considered approximate (± 1 ft). The boring locations are shown in plan on the Soil Boring Location Exhibit attached in Appendix A.

The subsurface profile encountered at the boring locations was fairly similar and can be described by the following strata, in descending order:

- 6 to 12 in. of ***topsoil/topsoil fill***; over
- About 3 to 8 ft of very loose to loose ***silt***, with the upper 3 to 5 ft being described as ***organic silt*** in each of the borings; underlain by
- About 5 to 8 ft of clayey soils, including medium stiff to stiff ***lean clay*** and medium dense ***clayey sand***; followed by
- About 5 ft of loose to medium dense ***sand*** with significant silt content in Borings 1 and 2; over
- Apparent dense to very dense ***weathered to increasingly competent sandstone bedrock***.

Groundwater was noted at depths of 3.5 to 6 ft below existing grades, which corresponds to approximately EL 843 to 845 ft, during drilling. As a reference, it is our understanding the normal

controlled surface water elevation of nearby Lake Wingra is approximately 847.7 ft. Groundwater levels can be expected to fluctuate with seasonal variations in precipitation, infiltration, evapotranspiration, the water level in Lake Wingra, as well as 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

As mentioned above, in order to minimize site disturbance and to maintain site aesthetics, it is our understanding that the quality and structural integrity of the existing timber piles will be evaluated prior to design of the new bridges. Depending on the quality of the existing timber piles, and the capacity required for the new structures, the existing timber piles may remain in-place and be supplemented by new driven piles at each abutment. If the quality of the timber piles are not suitable for re-use, new abutments also supported by driven piles will be constructed.

Subject to the limitations discussed below and based on the subsurface exploration, it is our opinion that the proposed bridges can be supported by either: 1) The existing abutments (pending timber pile evaluation by others indicate satisfactory condition and capacity) supplemented with steel HP pile or helical piers installed through the shallow soft/loose soils to bear within the apparent sandstone bedrock underlying the site; or 2) New HP pile or helical piers supporting abutments constructed following removal of the existing abutments. Note that if the condition and capacity of the existing timber piles are determined to be satisfactory such that the existing abutments may remain and be supplemented with additional new piles constructed adjacent to the existing abutments, helical piers may prove the more feasible foundation support alternative because smaller installation equipment would likely reduce site disturbance and lower anticipated mobilization costs compared to driven piles. *Note that CGC did not complete an analysis of the existing timber piles. We recommend that the structural integrity of the existing timber piles and abutments be reviewed/evaluated by a licensed structural engineer during the design phase of this project.*

The following subsections provide our recommendations for design/construction or driven pile and helical pier bridge foundation support alternatives. *The revised report includes some additional considerations regarding the use of helical pier foundations.* Additional information regarding the conclusions and recommendations presented in this report are discussed in Appendix C,

1. Foundation Recommendation Alternatives

A. Driven Piles

In our opinion, steel HP-section piles (WisDOT *Standard Specifications*, Section 550) will likely be the preferred driven pile type for this project where piles will be driven into bedrock, and these piles are expected to encounter driving refusal (and the required driving resistance) within the very dense weathered sandstone bedrock layer. The top of the bedrock layer was observed at approximately 12 to 22 ft below existing site grades in the borings, with very dense conditions typically encountered

below 25 ft in Borings 1 and 2 (north), with slightly shallower very dense conditions observed in Borings 3 and 4 (south), at between about 15 and 20 ft. HP piles driven to practical refusal are expected to drive approximately 5 to 10 ft into the very dense bedrock. Therefore, the estimated depth for HP10X42 piles to develop a maximum ultimate driving resistance of 180 tons is about 30 to 35 ft below existing grades (approximately EL 814 to 819 ft) in Borings 1 and 2, and 20 to 25 ft below existing grade (approximately EL 825 to 830 ft) in Borings 3 and 4. If a higher capacity is required, HP12X53 are anticipated to drive to similar depths as HP10X42 piles, but have a higher maximum driving resistance of 220 tons due to the larger pile section.

The driving criteria for production piling should be established by the modified Gates formula, as discussed in the WisDOT *Bridge Manual*, Chapter 11. Using the modified Gates Formula, HP10x42 piles driven to a resistance of 180 tons will have a *factored* axial compression resistance of 90 tons, assuming a resistance factor (ϕ_{dyn}) of 0.5 (see Section 11.3.1.18.2). Similarly, HP12x53 piles driven to a maximum driving resistance of 220 tons will have a *factored* axial compression resistance of 110 tons. If dynamic or static pile load testing is completed, the resistance factor can be increased (effectively increasing the available load carrying capacity of the piles), but because the piles will be driven to refusal within the sandstone bedrock layer, we do not anticipate that the moderate to significant expense associated with pile load testing will make economic sense for this project. It may also be the case that the bridge loads are light enough such that the maximum load per pile allowed by WisDOT may not be required for this project, as has been the case for other recreational path bridges in Madison. In which case, the actual required driving resistance should be sated on the plans. We can provide additional consultation on load testing, if needed.

Based on our past experience completing drivability analyses and within piles driven to refusal within weathered bedrock, HP10X42 piles can generally be driven to refusal (or the required driving resistance) with an appropriately sized pile hammer without overstressing the piles. However, we recommend that a drivability analysis be completed by the pile driving contractor prior to construction to check that the selected pile type, cushion and hammer are compatible and do not result in the pile being overstressed. We recommend including rock tips on the ends of the HP piles to reduce the potential for damage to piles driven into bedrock: rock tips also assist in the piles driving straighter.

Other pertinent pile design parameters include the following:

- For adequate frost protection, we recommend that the abutment pile caps be founded at least 4 ft below finish grade. A minimum embedment depth of 2.5 ft is recommended for sill abutments, per *WisDOT Bridge Manual*.

- It is recommended that the minimum spacing between individual piles be no less than 2.5 ft or 2.5 times the pile diameter, whichever is greater. WisDOT recommends a maximum pile spacing of 8 ft. During driving, heaving and/or lateral displacements of driven piles may occur during subsequent nearby pile driving

operations. Therefore, it is important that horizontal and vertical alignment checks be performed during pile driving operations. Piles that heave more than 0.25 in. vertically must be reseated. However, heaving is generally not a concern with HP piling since they are considered non-displacement piles.

- To minimize pile driving problems, new embankment fill material in the vicinity of the abutments or wing walls should not contain cobbles or boulders.

- Appropriate scour protection should be provided to prevent soil eroding from the below the abutments (and around the piles) in the event of high water events.

B. Helical Piers

Depending on the maximum loading of the new structures, as well as the quality of the existing timber piles at each structure, helical piers may be a more feasible alternative to provide supplemental bridge abutment support. Helical piers are a proprietary product that involves the design and installation of a deep foundation system which transfers loads through upper loose or soft soil zones to bear within more suitable bearing strata. At this site, helical piers can be designed to extend through the existing organic and softer clay soils to bear within the underlying very dense weathered sandstone bedrock, using the soil parameters summarized in Table 1. Helical piers can often be installed using lightweight, mobile equipment (e.g., skidsteer or mini-excavator with special attachments) and are often used in applications where there is limited space available, similar to this site. In addition, because the mobilization cost will likely be much lower than for driven piles (which generally require a crawler crane), helical piers may prove to be the more economical foundation support alternative.

Helical pier capacity will vary depending on the number and size of helices, depth of installation and bearing stratum. Using the computer program HeliCAP V2.0 (produced by Chance/Hubbell) we estimated the capacity of a two-helix (8 in./10 in.) helical pier installed to different depths at the two bridge locations. In general, we estimate that *ultimate* helical pier capacities (in compression) ranging from about 20 to 60 kips (potentially higher with heavy-duty helical piers) can be developed for helical piers installed to depths of 15 to 30 ft below existing site grades, within the higher end in the range of ultimate capacities developed within deeper, very dense sandstone bedrock. Based on the very dense nature of the sandstone bedrock, smaller diameter helix configurations (e.g., 8 and 10 in.) may be required to allow for the pier to penetrate into the strata to achieve required capacity. However, it should be noted that within deeper, more competent sandstone bedrock layers, the helical pier capacity at higher loads will likely be limited by the structural capacity of the helices and not from the geotechnical capacity of the soils/bedrock. *The helical pier depths and capacities should be considered approximate and since helical piers are proprietary (with a multitude of variables), the helical pier installer should determine the helix configuration and depth necessary to satisfy project requirements.*

TABLE 1 - Soil Parameters for Analysis of Helical Foundations
Vilas Park Replacement Bridges
Vilas Park, Madison, WI

Soil Layer		Very Loose to Loose Silt and Medium Stiff to Stiff Clay	Loose to Medium Dense Sand	Dense to Very Dense Apparent Weathered Sandstone Bedrock
Boring 1	**Approximate Depth Below Existin Grade**	**0 to 12 ft**	**12 to 17 ft**	**Below 17 ft**
Boring 2		**0 to 16 ft**	**16 to 22 ft**	**Below 22 ft**
Boring 3		**0 to 14 ft**	**14 to 16.5 ft**	**Below 16.5 ft**
Boring 4		**0 to 8 ft**	**8 to 12 ft**	**Below 12 ft**
Estimated Soil Parameters (2)				
	Angle of internal friction, ϕ	**0**	**30**	**40**
	Cohesion (psf)	**1000**	**0**	**0**
	Total Unit Weight (pcf)	**115**	**120**	**125**
	Submerged unit weight (pcf)	**53**	**58**	**63**
Earth pressure coefficients (2)				
	Active, K_a	**1.0**	**0.33**	**0.22**
	Passive, K_p	**1.0**	**3.0**	**4.6**
Sand Strata				
	Constant of subgrade reaction, n_h (pci) (2, 3)	-	**40**	**125**
Clay/Silt Strata				
	Subgrade modulus of reaction, k_h (pci) (constant with depth)	**50 (static)**	-	-
L-Pile soil type		**Soft Clay**	**Sand**	**Sand**

Notes:

(1) Depths have been generalized to some extent. Refer to boring logs for detailed descriptions at each location.

(2) Values do not include a factor of safety (i.e., FS = 1.0)

(3) Where $k_h = (n_h)(x)$ and x is the depth below ground surface.

The torque of the equipment installing the helical piers is generally correlated with axial capacity, although static load tests can also be completed to confirm the ultimate and allowable capacities. A minimum factor of safety of 2.0 to 2.5 is generally used for helical pier design. If a factor of safety of 2.0 is used to determine the allowable helical pier capacity, we recommend that one static load test be performed per bridge location to confirm the helical pier design satisfies the project requirements. The static load tests should be performed on piers installed to similar installation depths and torques as production piers. Additionally, the torque of each pier should be monitored during installation to document that each pier is torqued to the minimum torque established by the static load tests or empirical correlations to ultimate capacity. If static load tests are not performed, we recommend using a minimum factor of safety of at least 2.5 in determining the allowable capacity, and the installation torque of each pier should be monitored, which is empirically correlated to the ultimate capacity. *Since there are multiple proprietary helical pier systems, it is the responsibility of the contractor to determine that their selected helical pier configuration, installation procedures and termination criteria satisfy the project requirements.*

Other helical pier considerations include the following (**the last two bullet points form the basis of the revised report**):

- The helical pier installer should have provisions to deal with the presence of potential obstructions. If obstructions are encountered, removing obstructions with an excavator would be one method to deal with the obstructions. Using smaller diameter helix configuration may also assist in the installation process but may require deeper piers to develop capacity.

- The shallow organic and softer clay soils have relatively low lateral capacity. As such, round helical pier shafts, which have higher resistance to buckling, are recommended over square shafts. A buckling analysis should be completed to check that the pier shaft has adequate buckling resistance.

- The shallow organic soils may be slightly corrosive to steel, which may result in section loss over time. Therefore, we recommend either increasing the steel section of the shaft to accommodate potential section loss or covering the upper part of the shaft with an anti-corrosion coating to reduce the corrosion potential.

- If the existing timber piles are supplemented with helical piers (or driven piles), consideration should be given to the compatibility of the two different foundation system. Loads will tend to be attracted to the stiffer foundation elements, which may result in localized higher stresses in an abutment of mixed foundation elements. *We recommend that that the structural integrity of the existing piles be reviewed/evaluated by a licensed structural engineer.*

- *Due to the relatively dense nature of the sandstone bedrock, it is possible that the helical piers will "spin-off" during installation when the piers reach the upper portion of bedrock, particularly if the piers are battered. Smaller helical pier lead sections designed to penetrate dense soils and weathered bedrock will likely reduce (though not necessarily eliminate) the risk of "spin off". If "spin-off" occurs, torque correlation cannot be used to estimate pile capacity. For compression piers, it is recommended that if "spin-off" occurs, full scale on-site static load tests be performed to verify capacity. For tension piers, it is recommended that if "spin-off" occurs, a pullout test be performed to check pullout capacity or an alternate foundation type be used.*

- *Due to the possibility of helical pier "spin-off" during installation, other foundation types, such as micropiles, could also be considered to provide bridge abutment support. Provided that they are properly designed, the use of a micropile foundation support system could eliminate the risk that a helical pier foundation support system does not work due to "spin-off" potential of the helical piers during installation due to the dense sandstone bedrock.*

2. <u>Lateral Earth Pressures</u>

In accordance with WisDOT *Bridge Manual* procedures (Sections 12.4 and 12.8), wing walls should be designed as cantilever retaining walls extending from the abutments, and an equivalent fluid pressure of 40 psf per foot of depth and a 2 ft surcharge (240 psf) should be used in design. This recommendation is based on granular fill being used as backfill, as indicated in Section 210 of the WisDOT *Standard Specifications*. It is recommended that procedures for placement and compaction of backfill conform to those outlined in paragraph 207.3.6.2 (Standard Compaction) of the *Standard Specifications*. The wing wall design should include surcharge loads, if applicable.

CONSTRUCTION CONSIDERATIONS

Due to variations in weather, construction methods and other factors, specific construction problems are difficult to predict. Soil related difficulties that could be encountered on the site are discussed below:

- 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 pile cap 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 in accordance with current OSHA standards.

- Based on observations made during the field exploration and depending on final abutment elevations, groundwater will likely be encountered during abutment excavation. Temporary cofferdams and dewatering inside the cofferdams will likely be required so that construction can occur "in the dry" during pile driving or helical pier installation and abutment construction. Additional water accumulating at the base of the excavation should be controlled and removed using pumps operating from filtered sump pits. A layer of clear stone at the bottom of the excavation may be useful for creating a working platform and also assist in dewatering efforts.

RECOMMENDED CONSTRUCTION MONITORING

The level of care exercised during site development will largely determine the quality of the foundations and pavement subgrades on the approaches. To check that earthwork and foundation construction proceeds in accordance with our recommendations, qualified construction inspectors should monitor the following operations:

- Pile driving observations;
- Abutment fill/backfill placement and compaction; and
- Concrete placement.

* * * * *

CGC, Inc.

We trust this report addresses your present needs. General limitations regarding the conclusions and opinions presented in this report are discussed in Appendix B. If you have any questions, please contact us.

Sincerely,

CGC, Inc.

Alex J. Bina, P.E.
Staff Engineer

David A. Staab, P.E., LEED AP
Consulting Professional

Encl: Appendix A - Subsurface Exploration
Appendix B - Soil Boring Location Exhibit
Logs of Test Borings (4)
Log of Test Boring-General Notes
Unified Soil Classification System
Appendix C - Document Qualifications

APPENDIX A
SUBSURFACE EXPLORATION

APPENDIX A

SUBSURFACE EXPLORATION

Subsurface conditions in the vicinity of the proposed bridge abutments were explored by drilling four Standard Penetration Test (SPT) borings to depths of 24 to 39 ft below existing site grades. Note that the borings were originally planned to extend to depths of 50 to 100 ft, but were stopped short after extending the borings 10 to 25 ft into the dense to very dense, apparent sandstone bedrock. The borings were drilled by Badger State Drilling (under subcontract to CGC) on February 13 and 14, 2017 using an ATV-mounted D-50 drill-rig equipped with hollow-stem augers and an automatic SPT hammer. The boring locations and planned depths were selected by CGC in consultation with the City, and were located in the field by CGC based off a map provided by the City. Ground surface elevations at the boring locations were estimated by CGC using an online mapping tool (DCiMap) and should be considered approximate (± 1 ft). The boring locations are shown in plan on the Soil Boring Location Exhibit attached in Appendix A.

Soil samples were obtained at 2.5-foot intervals to a depth of 10 ft and at 5-foot intervals thereafter. The soils samples were obtained in general accordance with specifications for standard penetration testing, ASTM D 1586. The specific procedures used for drilling and sampling are described below:

1. Boring Procedures Between Samples

   The boring is extended downward, between samples, by a hollow stem auger. Before encountering groundwater, the drilling method is switched to mud rotary and the hole is advanced with a roller bit.

2. Standard Penetration Test and Split-Barrel Sampling of Soils
   (ASTM Designation: D 1586)

This method consists of driving a 2-inch outside diameter split barrel sampler using a 140-pound weight falling freely through a distance of 30 inches. The sampler is first seated 6 inches into the material to be sampled and then driven 12 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the log of borings and known as the Standard Penetration Resistance. Recovered samples are first classified as to texture by the driller.

Field screening of the soil samples for possible environmental contaminants was not conducted by the drillers, as environmental site assessment activities were not part of CGC's work scope. Upon completion of drilling, the borings were backfilled to satisfy WDNR requirements, and soil samples delivered to our laboratory for visual classification and laboratory testing. The soils were visually classified by a geotechnical engineer using the Unified Soil Classification System. The final logs prepared by the engineer and a description of the Unified Soil Classification System are presented in Appendix B.

APPENDIX B
SOIL BORING LOCATION EXHIBIT
LOGS OF TEST BORINGS (4)
LOG OF TEST BORING – GENERAL NOTES
UNIFIED SOIL CLASSIFICATION SYSTEM

Legend

Denotes Boring Location

Notes

1. Soil borings performed by Badger State Drilling in February 2017
2. Boring locations are approximate.

Scale: Reduced

Date: 2/2017	CGC, Inc.	**Soil Boring Location Exhibit** **Vilas Bridge Replacements** **Madison, WI**
Job No. C17051-4		

CGC Inc.

LOG OF TEST BORING

Project: **Vilas Park Bridge Replacements**

Location: **Madison, Wisconsin**

Boring No. **1**
Surface Elevation (ft) **849 +/-**
Job No. **C17051-4**
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
						8 in. TOPSOIL (Probable Fill)					
1	■	4	M	1		Very Loose, Gray Organic SILT, Trace Sand and Shels (OL - Possible Fill)					
2	■	14	W	9	5	Stiff, Gray Lean CLAY (CL)	(1.25)	17.6			
3	■	18	W	1			(1.5)	23.6			
4	■	16	W	13	10		(1.75)	23.5			
5	■	12	W	8	15	Loose, Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
6	■	14	W	47	20	Apparent Weathered to Competent, Brown to Light Brown Sandstone Bedrock					
7	■	16	W	33	25						
8	■	1	W	50/2"	30						
9	■	2	W	50/2"	35	End Boring at 34 ft					
						Borehole backfilled with bentonite slurry and chips					
					40						
					45						

WATER LEVEL OBSERVATIONS

While Drilling ▽ **3.5'** Upon Completion of Drilling _____
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 **2/14/17** End **2/14/17**
Driller **BSD** Chief **DB** Rig **D-50**
Logger **DD** Editor **ESF** **ATV**
Drill Method **4.25" HSA to 5'; 3 7/8" RB with Mud to 34'; Autohammer**

CGC Inc.

LOG OF TEST BORING

Project: Vilas Park Bridge Replacements

Location: Madison, Wisconsin

Boring No. 2
Surface Elevation (ft) 849 +/-
Job No. C17051-4
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
						8 in. TOPSOIL FILL					
1		18	M	2		Very Loose/Soft, Laminated Organic SILT and CLAY (OL - Probable Fill to 2 ft)	(0.5)				
2		18	M/W	2	5	Very Loose, Gray Organic SILT, Little to Some Shells and Sand (OL)					
3		18	W	4		Loose to Very Loose, Gray Sandy SILT (ML)					
4		18	W	8	10	Stiff, Gray Lean CLAY (CL)	(1.25)	22.2			
5		18	W	27	15	Medium Dense, Brown to Gray Clayey Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles (SC/SM)					
6		18	W	13	20	Medium Dense, Light Brown Silty Fine SAND, Little to Some Gravel (SM)					
7		18	W	33	25	Apparent Weathered to Competent, Brown to Light Brown Sandstone Bedrock					
8		3	W	50/3"	30	End Boring at 29 ft					
						Borehole backfilled with bentonite slurry and chips					
					35						
					40						
					45						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 6.0' Upon Completion of Drilling _____
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 2/13/17 End 2/13/17
Driller BSD Chief DB Rig D-50
Logger DD Editor ESF ATV
Drill Method 4.25" HSA to 5'; 3 7/8" RB with Mud to 29'; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Vilas Park Bridge Replacements

Location: Madison, Wisconsin

Boring No. 3
Surface Elevation (ft) 849 +/-
Job No. C17051-4
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
						6 in. TOPSOIL (Probable Fill)					
1		14	M	6		Loose to Very Loose, Gray Organic SILT, Little to Some Shells and Sand (OL) (Possible Fill to 3 ft)					
2		16	W	0	5			102.6			7.3
3		15	W	4		Loose to Very Loose, Gray Sandy SILT, Trace Shell Fragments (ML)		16.0			
4		18	W	10	10	Medium Stiff to Stiff/Medium Dense to Loose, Laminated Lean CLAY and SILT, Trace Sand (ML/CL)	(1.0)	21.8			
5		12	W	11	15	Medium Dense, Reddish-Brown Clayey Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles (SC/SM)	(1.0)				
6		14	W	78/10"	20	Apparent Weathered to Competent, Brown to Light Brown Sandstone Bedrock					
7		4	W	50/5"	25						
8		2	W	50/3"	30						
9		2	W	50/4"	35						
10		0	W	50/1"	40	End Boring at 39 ft Borehole backfilled with bentonite slurry and chips					
					45						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 3.5' Upon Completion of Drilling _____
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 2/13/17 End 2/13/17
Driller BSD Chief DB Rig D-50
Logger DD Editor ESF ATV
Drill Method 4.25" HSA to 5'; 3 7/8" RB with Mud to 40'; Autohammer

CGC Inc.

LOG OF TEST BORING

Project: Vilas Park Bridge Replacements

Location: Madison, Wisconsin

Boring No. 4
Surface Elevation (ft) 850 +/-
Job No. C17051-4
Sheet 1 of 1

2921 Perry Street, Madison, WI 53713 (608) 288-4100, FAX (608) 288-7887

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
						12 in. TOPSOIL FILL					
1		10	M	4		FILL: Stiff, Brown Clay with Traces Sand and Topsoil	(1.5)				
2		14	W	2		Very Loose, Gray Organic SILT, Little to Some Shells and Sand (OL)		90.3			6.3
3		16	W	9	5	Stiff, Gray Lean CLAY (CL)		22.3			
4		16	W	11		Medium Dense, Brown to Gray Clayey Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles (SC/SM)					
5		4	W	50/5"	10	Apparent Weathered to Competent, Brown to Light Brown Sandstone Bedrock					
6		2	W	50/3"	15						
7		1	W	50/2"	20						
					25	End Boring at 24 ft due to rotary-bit refusal on presumed bedrock Borehole backfilled with bentonite slurry and chips					
					30						
					35						
					40						
					45						

WATER LEVEL OBSERVATIONS

While Drilling ▽ 3.5' Upon Completion of Drilling _____
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 2/14/17 End 2/14/17
Driller BSD Chief DB Rig D-50
Logger DD Editor ESF ATV
Drill Method 4.25" HSA to 5'; 3 7/8" RB with Mud to 24'; Autohammer

CGC, Inc.

LOG OF TEST BORING

General Notes

DESCRIPTIVE SOIL CLASSIFICATION

Grain Size Terminology

Soil Fraction	Particle Size	U.S. Standard Sieve Size
Boulders	Larger than 12"	Larger than 12"
Cobbles	3" to 12"	3" to 12"
Gravel: Coarse	¾" to 3"	¾" to 3"
Fine	4.76 mm to ¾"	#4 to ¾"
Sand: Coarse	2.00 mm to 4.76 mm	#10 to #4
Medium	0.42 to mm to 2.00 mm	#40 to #10
Fine	0.074 mm to 0.42 mm	#200 to #40
Silt	0.005 mm to 0.074 mm	Smaller than #200
Clay	Smaller than 0.005 mm	Smaller than #200

Plasticity characteristics differentiate between silt and clay.

General Terminology

Physical Characteristics
Color, moisture, grain shape, fineness, etc.
Major Constituents
Clay, silt, sand, gravel
Structure
Laminated, varved, fibrous, stratified, cemented, fissured, etc.
Geologic Origin
Glacial, alluvial, eolian, residual, etc.

Relative Density

Term	"N" Value
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Over 50

Relative Proportions Of Cohesionless Soils

Proportional Term	Defining Range by Percentage of Weight
Trace	0% - 5%
Little	5% - 12%
Some	12% - 35%
And	35% - 50%

Consistency

Term	q_u-tons/sq. ft
Very Soft	0.0 to 0.25
Soft	0.25 to 0.50
Medium	0.50 to 1.0
Stiff	1.0 to 2.0
Very Stiff	2.0 to 4.0
Hard	Over 4.0

Organic Content by Combustion Method

Soil Description	Loss on Ignition
Non Organic	Less than 4%
Organic Silt/Clay	4 – 12%
Sedimentary Peat	12% - 50%
Fibrous and Woody Peat	More than 50%

Plasticity

Term	Plastic Index
None to Slight	0 - 4
Slight	5 - 7
Medium	8 - 22
High to Very High	Over 22

The penetration resistance, N, is the summation of the number of blows required to effect two successive 6" penetrations of the 2" split-barrel sampler. The sampler is driven with a 140 lb. weight falling 30" and is seated to a depth of 6" before commencing the standard penetration test.

SYMBOLS

Drilling and Sampling

CS – Continuous Sampling
RC – Rock Coring: Size AW, BW, NW, 2"W
RQD – Rock Quality Designation
RB – Rock Bit/Roller Bit
FT – Fish Tail
DC – Drove Casing
C – Casing: Size 2 ½", NW, 4", HW
CW – Clear Water
DM – Drilling Mud
HSA – Hollow Stem Auger
FA – Flight Auger
HA – Hand Auger
COA – Clean-Out Auger
SS - 2" Dia. Split-Barrel Sample
2ST – 2" Dia. Thin-Walled Tube Sample
3ST – 3" Dia. Thin-Walled Tube Sample
PT – 3" Dia. Piston Tube Sample
AS – Auger Sample
WS – Wash Sample
PTS – Peat Sample
PS – Pitcher Sample
NR – No Recovery
S – Sounding
PMT – Borehole Pressuremeter Test
VS – Vane Shear Test
WPT – Water Pressure Test

Laboratory Tests

q_a – Penetrometer Reading, tons/sq ft
q_a – Unconfined Strength, tons/sq ft
W – Moisture Content, %
LL – Liquid Limit, %
PL – Plastic Limit, %
SL – Shrinkage Limit, %
LI – Loss on Ignition
D – Dry Unit Weight, lbs/cu ft
pH – Measure of Soil Alkalinity or Acidity
FS – Free Swell, %

Water Level Measurement

▽ - Water Level at Time Shown
NW – No Water Encountered
WD – While Drilling
BCR – Before Casing Removal
ACR – After Casing Removal
CW – Cave and Wet
CM – Caved and Moist

Note: Water level measurements shown on the boring logs represent conditions at the time indicated and may not reflect static levels, especially in cohesive soils.

CGC, Inc.

Madison - Milwaukee

Unified Soil Classification System

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

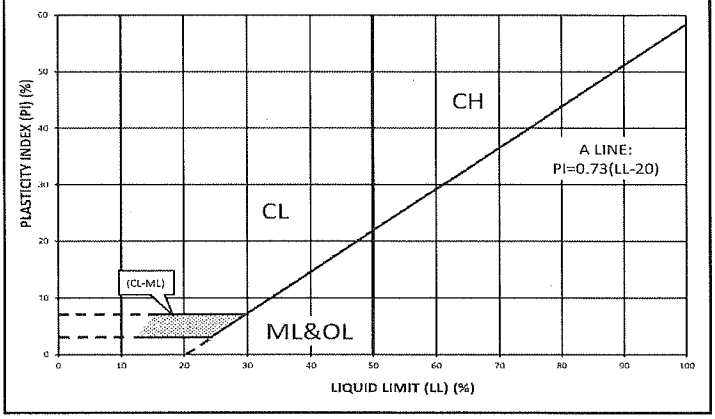
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limts below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limts above "A" line or P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols

PLASTICITY CHART



APPENDIX C

DOCUMENT QUALIFICATIONS

APPENDIX C
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

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes. While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

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.

READ THE FULL REPORT

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 geotechnical engineer performed the study. *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 subsurface 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 confirmation-dependent recommendations included in your report. *Those confirmation-dependent 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 confirmation-dependent recommendations if we do not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Confront 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. Constructors can also misinterpret a geotechnical engineering report. Confront that risk by having CGC participate in prebid and preconstruction conferences, and by providing geotechnical 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 CONSTRUCTORS A COMPLETE REPORT AND GUIDANCE

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors 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 constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors 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 constructors 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 the risk of such outcomes, 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.

ENVIRONMENTAL CONCERNS ARE NOT COVERED

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any environmental 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 environmental 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

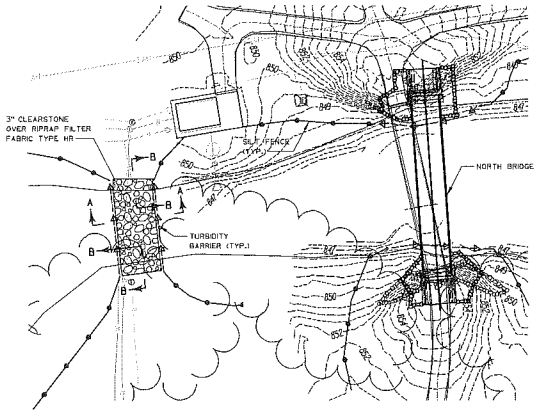
Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive 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, many 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

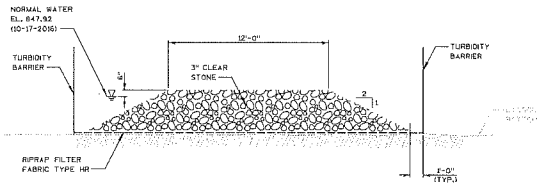
Membership in the Geotechnical Business Council (GBC) of Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with CGC, a member of GBC, for more information.

Modified and reprinted with permission from:

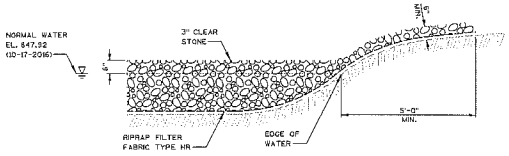
Geotechnical Business Council
of the Geoprofessional Business Association
8811 Colesville Road, Suite G 106
Silver Spring, MD 20910



TEMP FORD CROSSING PLAN



SECTION A-A



SECTION B-B

NO.	revisions	DATE
1	Addendum 1	11-27-17

TEMP. FORD CROSSING DETAILS

VILAS PARK - LAGOON BRIDGE REPLACEMENTS

CITY OF MADISON PARKS DIVISION
MADISON, WISCONSIN

JOB NO.
1020.103

PROJECT MGR.
KRB

STRAND ASSOCIATES®

SHEET
15

S:\UAD\1000--1099\1020\103\Micros\Plan\15-Temp Ford Crossing Details.dgn user: dmilbrath 11/15/2017 2:48:31 PM

Madison Parks Division

210 Martin Luther King, Jr. Blvd., Room 104
Madison, WI 53703
608-266-4711 • cityofmadison.com/parks

play MADISON PARKS

November 29, 2017

NOTICE OF ADDENDUM
ADDENDUM 2

CONTRACT NO.8062

Revise and amend the contract document(s) for the above project as stated in this addendum, otherwise, the original document shall remain in effect.

Bid Tab

1. BID ITEM 20221– TOPSOIL
   Omit: '3,225 SY'
   Add: '3,252 SY'

2. BID ITEM 20701 – TERRACE SEEDING
   Omit: '1,084 SY'
   Add: '3,252 SY'

3. BID ITEM 21061 – EROSION MATTTING, CLASS 1 URBAN TYPE A
   Omit: '1,084 SY'
   Add: '3,252 SY'

Please acknowledge this addendum on page E1 of the contract documents and/or in Section E: Bidder's Acknowledgement on Bid Express.

Electronic version of these documents can be found on the Bid Express web site at:

http://www.bidexpress.com

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

Daniel Schmidt
for Eric Knepp, Parks Superintendent

Madison Parks Division

210 Martin Luther King, Jr. Blvd., Room 104
Madison, WI 53703
608-266-4711 • cityofmadison.com/parks

play MADISON PARKS

November 30, 2017

NOTICE OF ADDENDUM
ADDENDUM 3

CONTRACT NO.8062

Revise and amend the contract document(s) for the above project as stated in this addendum, otherwise, the original document shall remain in effect.

Specifications

1. SECTION A: AVERTISEMENT FOR BIDS AND INSTRUCTIONS TO BIDDERS
   Omit: SECTION A: AVERTISEMENT FOR BIDS AND INSTRUCTIONS TO BIDDERS
   Add: SECTION A: AVERTISEMENT FOR BIDS AND INSTRUCTIONS TO BIDDERS, per attached. Note revised prequalification application, bid submission and opening dates.

2. Page A-3, Bidder Pre-Qualification Requirements
   Omit: Page A-3
   Add: Page A-3, per attached. Note revised prequalification catagories.

Please acknowledge this addendum on page E1 of the contract documents and/or in Section E: Bidder's Acknowledgement on Bid Express.

Electronic version of these documents can be found on the Bid Express web site at:

http://www.bidexpress.com

If you are unable to download plan revisions associated with the addendum, please contact the Engineering office at 608-266-4751 receive the material by another route.

for Janel Schmidt
Eric Knepp, Parks Superintendent

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:	VILAS PARK - LAGOON BRIDGE REPLACEMENTS
CONTRACT NO.:	8062
SBE GOAL	6%
BID BOND	5%
SBE PRE BID MEETING (1:00 P.M.)	11/21/17
PREQUALIFICATION APPLICATION DUE (1:00 P.M)	12/08/17
BID SUBMISSION (1:00 P.M.)	12/15/17
BID OPEN (1:30 P.M.)	12/15/17
PUBLISHED IN WSJ	11/10/17,11/17/17,11/24/17,12/01/17,12/08/17

SBE 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 - 2017 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.

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
246 ☐ Ecological Restoration
250 ☐ Landscaping, Site and Street
251 ☐ Parking Ramp Maintenance
252 ☐ Pavement Marking
255 ☐ Pavement Sealcoating and Crack Sealing
260 ☐ Petroleum Above/Below Ground Storage Tank Removal/Installation
262 ☐ Playground Installer
265 ☐ Retaining Walls, Precast Modular Units
270 ☒ Retaining Walls, Reinforced Concrete
275 ☐ Sanitary, Storm Sewer and Water Main Construction
276 ☐ Sawcutting
280 ☐ Sewer Lateral Drain Cleaning/Internal TV Insp.
285 ☐ Sewer Lining
290 ☐ Sewer Pipe Bursting
295 ☐ Soil Borings
300 ☐ Soil Nailing
305 ☐ Storm & Sanitary Sewer Laterals & Water Svc.
310 ☐ Street Construction
315 ☐ Street Lighting
318 ☐ Tennis Court Resurfacing
320 ☐ Traffic Signals
325 ☐ Traffic Signing & Marking
332 ☐ Tree pruning/removal
333 ☐ Tree, pesticide treatment of
335 ☐ Trucking
340 ☐ Utility Transmission Lines including Natural Gas, Electrical & Communications
399 ☐ Other_____

Bridge Construction

501 ☒ Bridge Construction and/or Repair

Building Construction

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

State of Wisconsin Certifications

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

SECTION E: BIDDERS ACKNOWLEDGEMENT

VILAS PARK -
LAGOON BRIDGE REPLACEMENTS
CONTRACT NO. 8062

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 - 2017 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 Nos. __1__ through __3__ to the Contract, 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 R.G. Huston Co., Inc. (name of ~~corporation, partnership, or person submitting bid~~) a corporation organized and existing under the laws of the State of Wisconsin a partnership consisting of _____; an individual trading as _____; of the City of _____ State of _____; that I have examined and carefully prepared this Proposal, from the plans and specifications and have checked the same in detail before submitting this Proposal; that I have fully authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.

R.G. HUSTON CO., INC. CORPORATE SEAL 1975 WISCONSIN

SIGNATURE

PRESIDENT
TITLE, IF ANY

Sworn and subscribed to before me this
15 day of December, 2017.

(Notary Public or other officer authorized to administer oaths)
My Commission Expires 1-10-20
Bidders shall not add any conditions or qualifying statements to this Proposal.

DENNIS RICHARDSON
Notary Public
State of Wisconsin

Contract 8062 – R. G. Huston Co., Inc.

Section F: Best Value Contracting (BVC)

This section is a required document for the bid to be considered complete. There are two methods for completing the Best Value Contracting (BVC) form. Method one: The form can be filled out online and submitted to this site to be included with your electronic bid. Method two: The form can be downloaded from the site and submitted by hand to the City of Madison.

Method of Submittal for BVC (click in box below to choose) *
I will submit Bid Express fillable online form (BVC).

Best Value Contracting
1. The Contractor shall indicate the non-apprenticeable trades used on this contract.

2. Madison General Ordinance (M.G.O.), 33.07(7), does provide for some exemptions from the active apprentice requirement. Apprenticeable trades are those trades considered apprenticeable by the State of Wisconsin. Please check applicable box if you are seeking an exemption.

☐ Contractor has a total skilled workforce of four or less individuals in all apprenticeable trades combined.

☐ No available trade training program; The Contractor has been rejected by the only available trade training program, or there is no trade training program within 90 miles.

☐ Contractor is not using an apprentice due to having a journey worker on layoff status, provided the journey worker was employed by the contractor in the past six months.

☐ First time contractor on City of Madison Public Works contract requests a onetime exemption but intends to comply on all future contracts and is taking steps typical of a "good faith" effort.

☐ Contractor has been in business less than one year.

☐ Contractor doesn't have enough journeyman trade workers to qualify for a trade training program in that respective trade.

☐ An exemption is granted in accordance with a time period of a "Documented Depression" as defined by the State of Wisconsin.

3. The Contractor shall indicate on the following section which apprenticeable trades are to be used on this contract. Compliance with active apprenticeship, to the extent required by M.G.O. 33.07(7), shall be satisfied by documentation from an applicable trade training body; an apprenticeship contract with the Wisconsin Department of Workforce Development or a similar agency in another state; or the U.S Department of Labor. This documentation is required prior to the Contractor beginning work on the project site.

☐ The Contractor has reviewed the list and shall not use any apprenticeable trades on this project.

LIST APPRENTICABLE TRADES (check all that apply to your work to be performed on this contract)

☐ BRICKLAYER
☐ CARPENTER
☐ CEMENT MASON / CONCRETE FINISHER
☐ CEMENT MASON (HEAVY HIGHWAY)
☑ CONSTRUCTION CRAFT LABORER
☐ DATA COMMUNICATION INSTALLER
☐ ELECTRICIAN
☐ ENVIRONMENTAL SYSTEMS TECHNICIAN / HVAC SERVICE TECH/HVAC INSTALL / SERVICE
☐ GLAZIER
☑ HEAVY EQUIPMENT OPERATOR / OPERATING ENGINEER
☐ INSULATION WORKER (HEAT and FROST)
☐ IRON WORKER
☐ IRON WORKER (ASSEMBLER, METAL BLDGS)
☐ PAINTER and DECORATOR
☐ PLASTERER
☐ PLUMBER
☐ RESIDENTIAL ELECTRICIAN
☐ ROOFER and WATER PROOFER
☐ SHEET METAL WORKER
☐ SPRINKLER FITTER
☐ STEAMFITTER
☐ STEAMFITTER (REFRIGERATION)
☐ STEAMFITTER (SERVICE)
☐ TAPER and FINISHER
☐ TELECOMMUNICATIONS (VOICE, DATA and VIDEO) INSTALLER-TECHNICIAN
☐ TILE SETTER

Vilas Park – Lagoon Bridge Replacements
CONTRACT No. 8062

Small Business Enterprise Compliance Report

Cover Sheet

This information **MUST** be submitted in a separate sealed envelope marked **"ENVELOPE NO. 2 – SBE COMPLIANCE REPORT".**

Prime Bidder Information:

Company: R.G. Huston Company, Inc.

Address: 2561 Coffeytown Road
Cottage Grove, WI 53527

Telephone Number: (608) 255-9223 Fax Number: (608) 839-5936

Contact Person/Title: Brad Huston, President

Prime Bidder Certification:

I, Brad Huston, President of R.G. Huston Company, Inc. certify that the information contained in this SBE Compliance Report is true and correct to the best of my knowledge and belief.

Witness' Signature

12-15-17
Date

Bidder's Signature

HUSTON CO. INC
WISCONSIN

Vilas Park - Lagoon Bridge Replacements
CONTRACT No. 8062

Small Business Enterprise Compliance Report

Summary Sheet

This information **MUST** be submitted in a separate sealed envelope marked **"ENVELOPE NO. 2 - SBE COMPLIANCE REPORT".**

SBE SUBCONTRACTORS WHO ARE NOT SUPPLIERS

Name(S) of SBEs Utilized	Type of Work	% of Total Bid Amount
Bullet	Trucking	0.4%
JR Construction	Landscape	2.6%

Subtotal SBE who are not suppliers: 3.0% %

SBE SUBCONTRACTORS WHO ARE SUPPLIERS

Name(S) of SBEs Utilized	Type of Work	% of Total Bid Amount
USSI	Railing	1.2%

Subtotal SBE who are suppliers: 1.2 % X 0.6 = 0.72 %(discounted to 60%)

Total Percentage of SBE Utilization: 3.72 %

VILAS PARK - LAGOON BRIDGE REPLACEMENTS

CONTRACT NO. 8062
DATE: 12/15/17

R.G. Huston Co., Inc.

Item	Quantity	Price	Extension
Section B: Proposal Page			
10701 - TRAFFIC CONTROL - LS	1.00	$500.00	$500.00
10803 - ROOT CUTTING - EA	19.00	$45.00	$855.00
10911 - MOBILIZATION - LS	1.00	$102,000.00	$102,000.00
20101 - EXCAVATION CUT - CY	806.00	$8.00	$6,448.00
20201 - FILL - CY	825.00	$16.70	$13,777.50
20205 - SELECT FILL - TON	344.00	$26.00	$8,944.00
20217 - CLEAR STONE - TON	130.00	$12.00	$1,560.00
20219 - BREAKER RUN - TON	135.00	$16.00	$2,160.00
20221 - TOPSOIL - SY	3252.00	$6.60	$21,463.20
20233 - RIPRAP FILTER FABRIC, TYPE HR - SY	440.00	$4.50	$1,980.00
20303 - SAWCUT ASPHALT PAVEMENT - LF	80.00	$2.00	$160.00
20501 - ADJUST SEWER ACCESS STRUCTURE - EA	1.00	$360.00	$360.00
20701 - TERRACE SEEDING - SY	3252.00	$1.25	$4,065.00
21002 - EROSION CONTROL INSPECTION - EA	18.00	$50.00	$900.00
21011 - CONSTRUCTION ENTRANCE - EA	2.00	$500.00	$1,000.00
21013 - STREET SWEEPING - LS	1.00	$670.00	$670.00
21021 - SILT FENCE - COMPLETE - LF	750.00	$3.00	$2,250.00
21041 - INLET PROTECTION, TYPE D - COMPLETE - EA	3.00	$170.00	$510.00
21061 - EROSION MATTING, CLASS I URBAN TYPE A - SY	3252.00	$1.80	$5,853.60
21093 - TURBIDITY BARRIER - COMPLETE - LF	300.00	$19.60	$5,880.00
40102 - CRUSHED AGGREGATE BASE COURSE GRADATION NO. 2 - TON	441.50	$22.00	$9,713.00
40201 - HMA PAVEMENT TYPE E-0.3 - TON	158.90	$134.85	$21,427.67
40321 - UNDERCUT - CY	67.00	$17.50	$1,172.50
90000 - CONSTRUCTION FENCE (PLASTIC) - LF	1750.00	$3.90	$6,825.00
90001 - CONSTRUCTION SURVEYING AND STAKING - LS	1.00	$11,275.00	$11,275.00
90002 - TEMPORARY FORD CROSSING - LS	1.00	$8,600.00	$8,600.00
90003 - SALVAGE AND INSTALLATION OF EXISTING KIOSK - LS	1.00	$4,350.00	$4,350.00
90004 - REMOVABLE BOLLARD - EA	4.00	$1,725.00	$6,900.00
90005 - REMOVING OLD STRUCTURE OVER WATERWAY - SOUTH BRIDGE - LS	1.00	$10,400.00	$10,400.00
90006 - REMOVING OLD STRUCTURE OVER WATERWAY - NORTH BRIDGE - LS	1.00	$10,400.00	$10,400.00
90007 - COFFERDAMS AND DEWATERING - LS	1.00	$19,500.00	$19,500.00
90008 - DEEP FOUNDATIONS - DESIGNED, DELIVERED AND INSTALLED - LS	1.00	$83,536.00	$83,536.00
90009 - EXCAVATION FOR STRUCTURES - LS	1.00	$10,125.00	$10,125.00
90010 - CONCRETE MASONRY BRIDGES - CY	156.00	$677.50	$105,690.00
90011 - BAR STEEL REINFORCEMENT HIGH STRENGTH STRUCTURES - LB	6480.00	$1.25	$8,100.00
90012 - BAR STEEL REINFORCEMENT HIGH STRENGTH COATED STRUCTURES - LB	7600.00	$1.35	$10,260.00
90013 - PROTECTIVE SURFACE TREATMENT - SY	346.00	$3.70	$1,280.20
90014 - RUBBERIZED MEMBRANE WATERPROOFING - SY	21.00	$36.50	$766.50
90015 - PIPE UNDERDRAIN WRAPPED 6-INCH - LF	304.00	$7.50	$2,280.00
90016 - PREFABRICATED STEEL TRUSS PEDESTRIAN BRIDGE LRFD - 80-FOOT SPAN - LS	1.00	$109,350.00	$109,350.00
90017 - PREFABRICATED STEEL TRUSS PEDESTRIAN BRIDGE LRFD - 110-FOOT SPAN - LS	1.00	$87,650.00	$87,650.00

VILAS PARK - LAGOON BRIDGE REPLACEMENTS

CONTRACT NO. 8062
DATE: 12/15/17

R.G. Huston Co., Inc.

Item	Quantity	Price	Extension
90018 - REINFORCED CONCRETE PAVEMENT APPROACH SLABS - LS	1.00	$10,200.00	$10,200.00
90019 - RAILING STEEL GALVANIZED PEDESTRIAN - LF	48.00	$497.00	$23,856.00
90020 - EXTRA HEAVY RIPRAP SPECIAL - TON	538.00	$18.50	$9,953.00
90021 - PERMEABLE PAVER - LS	1.00	$3,500.00	$3,500.00
45 Items	Totals		$758,446.17
Section B: Alternate - Temporary Bridge			
91000 - Alternate - Temporary Bridge. - LS	1.00	$15,550.00	$15,550.00
Total with Alternate	Totals		$773,996.17

Department of Public Works
City Engineering Division
608 266 4751

Robert F. Phillips, P.E.
City Engineer

City-County Building, Room 115
210 Martin Luther King, Jr. Boulevard
Madison, Wisconsin 53703
608 264 9275 FAX
1 866 704 2315 Textnet

Principal Engineers
Michael R. Dailey, P.E.
Christina M. Bachmann, P.E.
John S. Fahrney, P.E.
Gregory T. Fries, P.E.

Facilities & Sustainability
Jeanne E. Hoffman, Manager
James C. Whitney, A.I.A.

Operations Manager
Kathleen M. Cryan

GIS Manager
David A. Davis, R.L.S.

Financial Officer
Steven B. Danner-Rivers

Hydrogeologist
Brynn Bemis

BIENNIAL BID BOND

R.G. Huston Co., Inc.
(a corporation of the State of Wisconsin)
(individual)(~~partnership~~), (hereinafter referred to as the "Principal") and
Travelers Casualty and Surety Company of America
a corporation of the State of Conn (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, Wisconsin (hereinafter referred to as the "City"), in the sum equal to the individual proposal guaranty amounts of the total bid or bids of the Principal herein accepted by the City, for the payment of which the Principal and the Surety hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is that the Principal has submitted to the City certain bids for projects from the time period of March 20, 2017 through February 1, 2018.

If the Principal is awarded the contract(s) by the City and, within the time and manner required by law after the prescribed forms are presented for its signature, the Principal enters into (a) written contract(s) in accordance with the bid(s), and files with the City its bond(s) guaranteeing faithful performance and payment for all labor and materials, as required by law, or if the City rejects all bids for the work described, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

In the event the Principal shall fail to execute and deliver the contract(s) or the performance and payment bond(s), all within the time specified or any extension thereof, the Principal and Surety agree jointly and severally to pay to the City within ten (10) calendar days of written demand a total equal to the sum of the individual proposal guaranty amounts of the total bid(s) as liquidated damages.

The Surety, for value received, hereby agrees that the obligations of it and its bond shall be in no way impaired or affected by any extension of time within which the City may accept a bid, and the Surety does hereby waive notice of any such extension.

This bond may be terminated by the Surety upon giving thirty (30) days written notice to the City of its intent to terminate this bond and to be released and discharged therefrom, but such termination shall not operate to relieve or discharge the Surety from any liability already accrued or which shall accrue before the expiration of such thirty (30) day period.

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.

PRINCIPAL

R.G. HUSTON CO., INC.
COMPANY NAME

AFFIX SEAL

March 20, 2017
DATE

By: _____
SIGNATURE AND TITLE Sec/Treas.

R.G. HUSTON CO., INC. CORPORATE SEAL 1975 WISCONSIN

SURETY

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
COMPANY NAME

AFFIX SEAL

March 20, 2017
DATE

By: _____
SIGNATURE AND TITLE
Dennis M. Barton, Attorney in Fact

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA ★ HARTFORD, CONN

This certifies that I have been duly licensed as an agent for the Surety in Wisconsin under License No. 283633 for the year 2017-2018, and appointed as attorney in fact with authority to execute this bid bond, which power of attorney has not been revoked.

March 20, 2017
DATE

_____
AGENT
Dennis M. Barton

18550 W. Observatory Rd
ADDRESS

New Berlin, Wisconsin 53146
CITY, STATE AND ZIP CODE

414-491-5313
TELEPHONE NUMBER

Note to Surety and Principal: Any bid submitted which this bond guarantees may be rejected if the Power of Attorney form showing that the Agent of Surety is currently authorized to execute bonds on behalf of Surety is not attached to this bond.

TRAVELERS

POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 219817 Certificate No. 002293954

KNOW ALL MEN BY THESE PRESENTS: That Seaboard Surety Company is a corporation duly organized under the laws of the State of New York, that St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, that Farmington Casualty Company, Travelers Casualty and Surety Company, and Travelers Casualty and Surety Company of America are corporations duly organized under the laws of the State of Connecticut, that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc. is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Elizabeth M. Fedyn, Joseph L. Vigna, Dennis M. Barton, Daniel G. Johnson, and Michael T. Burg

of the City of Brookfield, State of Wisconsin, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 27th day of March, 2008.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

State of Connecticut
City of Hartford ss.

By: George W. Thompson
George W. Thompson, Senior Vice President

On this the 27th day of March, 2008, before me personally appeared George W. Thompson, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2011.

MARIE C. TETREAULT NOTARY PUBLIC CONNECTICUT

Marie C. Tetreault
Marie C. Tetreault, Notary Public

58440-5-07 Printed in U.S.A.

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such power of attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kori M. Johanson, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 20th day of March, 2017.

Kori M. Johanson, Assistant Secretary

To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

SECTION H: AGREEMENT

THIS AGREEMENT made this 17 day of JANUARY in the year Two Thousand and Eighteen between R. G. HUSTON CO., INC. hereinafter called the Contractor, and the City of Madison, Wisconsin, hereinafter called the City.

WHEREAS, the Common Council of the said City of Madison under the provisions of a resolution adopted JANUARY 16, 2018, 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 SEVEN HUNDRED SEVENTY-THREE THOUSAND NINE HUNDRED NINETY-SIX AND 17/100 ($773,996.17) Dollars being the amount bid by such Contractor and which was awarded to him/her as provided by law.

4. **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.)

5. Substance Abuse Prevention Program Required. Prior to commencing work on the Contract, the Contractor, and any Subcontractor, shall have in place a written program for the prevention of substance abuse among its employees as required under Wis. Stat. Sec. 103.503.

6. **Contractor Hiring Practices.**

Ban the Box - Arrest and Criminal Background Checks. (Sec. 39.08, MGO)

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

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

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

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

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

1. Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant's arrest and conviction record, as defined herein.

2. Refrain from asking an applicant in any manner about their arrest or conviction record until after conditional offer of employment is made to the applicant in question.

3. Refrain from conducting a formal or informal background check or making any other inquiry using any privately or publicly available means of obtaining the arrest or conviction record of an applicant until after a conditional offer of employment is made to the applicant in question.

4. Make information about this ordinance available to applicants and existing employees, and post notices in prominent locations at the workplace with information about the ordinance and complaint procedure using language provided by the City.

5. Comply with all other provisions of Sec. 39.08, MGO.

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

1. Hiring for a position where certain convictions or violations are a bar to employment in that position under applicable law, or

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

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

VILAS PARK – LAGOON BRIDGE REPLACEMENTS
CONTRACT NO. 8062

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:

R. G. HUSTON CO., INC.
Company Name

1.5.18
Witness Date

1/5/18
President Date

1/5/18
Witness Date

1/5/18
Secretary Date

R. G. HUSTON CO., INC. CORPORATE SEAL 1975 WISCONSIN

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 31st day of January, 20 18

Witness

Mayor 31 January 2018
Date

Witness

City Clerk 1-24-18
Date

Bond No. 106730029
Executed in Three Copies

SECTION 1: PAYMENT AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we **R. G. HUSTON CO., INC.** as principal, and Travelers Casualty and Surety Company of America Company of Hartford, Connecticut as surety, are held and firmly bound unto the City of Madison, Wisconsin, in the sum of **SEVEN HUNDRED SEVENTY-THREE THOUSAND NINE HUNDRED NINETY-SIX AND 17/100 ($773,996.17)** 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:

VILAS PARK – LAGOON BRIDGE REPLACEMENTS
CONTRACT NO. 8062

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 17th day of January, 2018

Countersigned:

Witness

Secretary

R. G. HUSTON CO., INC.
Company Name (Principal)

President

Seal

R. G. HUSTON CO., INC. CORPORATE SEAL 1975 WISCONSIN

Approved as to form:

City Attorney

Travelers Casualty and Surety Company of America
Surety

☐ Salary Employee ☒ Commission

By
Attorney-in-Fact Dennis M. Barton

Seal

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA HARTFORD, CONN

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under National Producer Number 283633 for the year 20 18 and appointed as attorney-in-fact with authority to execute this payment and performance bond which power of attorney has not been revoked.

January 17, 2018
Date

Agent Signature

TRAVELERS

POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 232082

Certificate No. 007269869

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

Anthony S. Von Rueden, Todd Looker, Robert E Flath, Dennis M Barton, Joseph L Vigna, and Elizabeth M Fedyn

of the City of Milwaukee/Waukesha, State of Wisconsin, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 19th day of June, 2017.

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

State of Connecticut
City of Hartford ss.

By: _____
Robert L. Raney, Senior Vice President

On this the 19th day of June, 2017, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2021.

MARIE C. TETREAULT NOTARY PUBLIC CONNECTICUT

_____
Marie C. Tetreault, Notary Public

58440-5-16 Printed in U.S.A.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 17th day of January, 20 18.

Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER