

BID OF _____

2018

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

BRITTINGHAM DOG PARK IMPROVEMENTS

CONTRACT NO. 8267

MUNIS NO. 17384-51-130:54250

IN

MADISON, DANE COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL
MADISON, WISCONSIN ON _____

CITY ENGINEERING DIVISION
1600 EMIL STREET
MADISON, WISCONSIN 53713

<https://bidexpress.com/login>

**BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO. 8267**

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This Proposal, and Agreement have
been prepared by:

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


Eric Knepp, Parks Superintendent

EMK: SCL

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:	BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO.:	8267
SBE GOAL	6%
BID BOND	5%
SBE PRE BID MEETING (1:00 P.M.)	10/22/2018
PREQUALIFICATION APPLICATION DUE (2:00 P.M.)	10/18/2018
BID SUBMISSION (2:00 P.M.)	10/25/2018
BID OPEN (2:30 P.M.)	10/25/2018
PUBLISHED IN WSJ	10/4/2018, 10/11/2018 & 10/18/2018

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 - 2018 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. Notwithstanding 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 Synthetic Turf Installer

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. Notwithstanding 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.

**BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO. 8267**

Small Business Enterprise Compliance Report

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

Cover Sheet

Prime Bidder Information

Company: _____

Address: _____

Telephone Number: _____ Fax Number: _____

Contact Person/Title: _____

Prime Bidder Certification

I, _____, _____ of
Name Title
_____ certify that the information
Company

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

Witness' Signature

Bidder's Signature

Date

**BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO. 8267**

Small Business Enterprise Compliance Report

Summary Sheet

SBE Subcontractors Who Are NOT Suppliers

Name(s) of SBEs Utilized	Type of Work	% of Total Bid Amount
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
Subtotal SBE who are NOT suppliers:	_____	%

SBE Subcontractors Who Are Suppliers

Name(s) of SBEs Utilized	Type of Work	% of Total Bid Amount
		%
		%
		%
		%
		%
		%
Subtotal Contractors who are suppliers:	_____ % x 0.6 = _____	% (discounted to 60%)

Total Percentage of SBE Utilization: _____ %.

**BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO. 8267**

Small Business Enterprise Compliance Report

SBE Contact Report

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

SBE Information

Company: _____

Address: _____

Telephone Number: _____

Contact Person/Title: _____

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

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

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

Yes No

3. Did this SBE submit a bid? Yes No

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

Yes No

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

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

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

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

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

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

6. Describe any other good faith efforts:

SECTION D: SPECIAL PROVISIONS

BRITTINGHAM DOG PARK IMPROVEMENTS CONTRACT NO. 8267

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

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

SECTION 102.11: BEST VALUE CONTRACTING

This Contract shall be considered a Best Value Contract if the Contractor's bid is equal to or greater than \$61,000 for a single trade contract; or equal to or greater than \$297,500 for a multi-trade contract pursuant to MGO 33.07(7).

SECTION 102.1 PREQUALIFICATION OF BIDDERS

Prior to beginning work on the contract, any combination of the General Contractor and subcontractor must be prequalified in Category 399 – Synthetic Turf Installer. Those allowable combinations are as follows:

- 1) General Contractor (bidder) is presently prequalified in Category 399 – Synthetic Turf Installer.
- 2) General Contractor (bidder) is presently pre-qualified in other required prequalification categories and his / her subcontractor becomes prequalified in Category 399 – Synthetic Turf Installer.

All bidders and subcontractors should become familiar with the requirements to become prequalified. The Technical Requirements to meet for Category 399 Synthetic Turf Installer are listed in this special provision. The General Contractor shall provide the name of the respective sub-contractor that will be attempting to become prequalified. This submittal shall be made within 1 working day of bid opening, to Project Manager Sarah Lerner (608-261-4281 or slerner@cityofmadison.com) at the City of Madison Parks Department.

If the General Contractor or sub contractor fails to meet prequalification requirements for category 399 – Synthetic Turf Installer. The Contractor shall be required to select a Synthetic Turf Installer that meets prequalification requirements and special provisions listed under BID ITEM 90010 – Synthetic Turf with no increase in bid proposal price for this bid item.

PRE-QUALIFICATION SUBMISSION REQUIREMENTS FOR CATEGORY #399 SYNTHETIC TURF INSTALLER:

The scope of the installation at Brittingham Dog Park requires extensive knowledge in the installation of synthetic turf. The Contractor in this category must have experience with installation of synthetic dog turf projects of similar scope and scale to the work described in the plans and specifications.

A resumé of qualifications shall be submitted to determine if the Contractor performing the work will be prequalified under item #399, Other: Synthetic Turf Installer.

To become prequalified in this Category, The Contractor must have prior synthetic turf installation experience.

Along with the Prequalification application, the Contractor shall submit the following:

1. Provide a minimum of 5 projects that include installation of synthetic dog turf surfacing and have employed personnel that will also be used on this project.
2. Provide three (3) references who can attest to the work performed on the projects cited above.

Submission of the above information does not constitute qualification. Qualification may be denied for other portions of the prequalification application

SECTION 103.2 AWARD OF CONTRACT

This bid consists of a BASE BID items and three (3) ALTERNATE BID items (Bid Items 90014, 90015 & 90016). The Contractor must completely fill in Unit Prices for the BASE BID items and Unit Prices for the three (3) ALTERNATE BID items.

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 items plus ALTERNATE 1 and ALTERNATE 2 and ALTERNATE 3 until the sub total is within the predetermined Construction Budget Dollar Value.

The City shall have the right to proceed or not proceed with any ALTERNATE regardless of how the bid was awarded. The City shall have the right to reject all bids regardless of the value of the bids submitted.

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. All bid items listed in the proposal page shall be paid for at the quantity listed in the proposal page, and shall not be measured in the field unless otherwise indicated in these special provisions, or there is a significant change approved by the Engineer. Bid items that are not used may be eliminated.

SECTION 105.1: AUTHORITY OF THE ENGINEER

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

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

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

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

SECTION 105.12: COOPERATION BY THE CONTRACTOR

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.

The Contractor shall secure materials at the end of each work day to deter any potential vandalism and theft.

The Contractor shall attend a pre-construction meeting prior to the start of construction.

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

The Contractor 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 and considered incidental to this contract. The Contractor shall note that there is a shallow sanitary sewer located within the project work zone. If the sewer is found to be damaged as a result of the construction work, sewer repair and replacement shall be the responsibility of the Contractor. The City shall televise the sewer before the project begins, and after the project is completed.

The Railroad property is not to be used for this project. In the event the RR property is needed for construction purposes a Temporary Authorization permit is required through the Wisconsin Department of Transportation. All work on the Railroad Right of Way will also require Railroad protective insurance and flag protection through the Wisconsin Southern Railroad

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 all construction activities.

SECTION 107.13: TREE PROTECTION SPECIFICATIONS

The Contractor is advised to review Article 107.13 of the Standard Specifications for tree protection.

The intent of this design is to minimize the damage to those trees that remain following construction. Trees that must be protected are designated on the plans. It is recognized that grading operations and root cutting of some trees will need to occur within 5 feet of trees in order to complete the work, and care must be taken in these areas. For trees where construction operations, including grading, stone placement, filling, etc. occur within 5 feet of the trunk, construction operations near these trees shall be done under the supervision of a City of Madison Forestry Representative.

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.

Protection of these trees shall be paid under BID ITEM 10803 – ROOT CUTTING.

SECTION 107.7: MAINTENANCE OF TRAFFIC

All signing and barricading shall conform to Part VI of the Federal Highways Administrations “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.

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 the work zone. Maintaining shall include replacing damaged or stolen traffic control devices. Temporary pavement markings and electronic message boards shall be paid for as separate bid items. Traffic control to install temporary or permanent pavement markings shall be included in the Traffic Control Lump Sum Bid Item. The contractor shall refer to Chapter 6 in the MUTCD to provide adequate signs and taper lengths. The contractor may use drums as a channelizing device to separate traffic from work zone. Type A warning lights shall be installed on all barricades used in the project per State of Wisconsin S.D.D. 15C2-4B. Contractor shall also place Type C warning lights on any barrels used to taper traffic or lane closures.

The contractor shall maintain all lanes in all directions on S. Broom Street, John Nolen Drive and North Shore Drive at all times.

Maintain pedestrian crossings at all times on at least one side of each street. If sidewalk must be closed for construction purposes, contractor shall insure that sidewalk on opposite side of the street is open and that all crosswalks at the end of the closed sidewalk block are fully open. In areas of sidewalk construction, provide a temporary surface for pedestrian access at all times. The temporary surface shall meet Americans with Disabilities Act Accessibility Guidelines (ADAAG) requirements and shall consist of temporary asphaltic surface, any grade of concrete, skid resistant steel plating, or alternative material as approved by the Construction Engineer. Gravel or base course material is not acceptable. Maintaining sidewalk is considered incidental to the contract.

No construction equipment or materials shall be stored in the roadway or street right-of-way that is open to traffic during non-working hours. Construction equipment and materials are not to be stored within the street right-of-way that is outside the project limits as shown on the approved plan.

The work areas shall be backfilled, plated, or protected by traffic control devices during non-working hours. If steel plates are used, the Contractor shall notify the City of Madison Streets Division, 266-4681, one (1) working day prior to placement of the plates.

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.

Contact Sean Malloy, Traffic Engineering Division, smalloy@cityofmadison.com, 266-5987, with any questions concerning these traffic control specifications.

SECTION 108.2: PERMITS

The following permits have been applied for and received:

1. City of Madison Erosion Control Permit

It shall be the responsibility of the Contractor to obtain the permits listed below, if required, and to pay all applicable charges and fees associated with these permits.

- Wisconsin DNR Dewatering
- City of Madison Plumbing Permit
- City of Madison Electrical Permit
- City of Madison Building Permit (kiosk)
- City of Madison Street Terrace Permit
- MGE Application for New Service
- Water Service Application Form
- Water Meter Application Form

All permit costs shall be considered incidental to the Mobilization bid item for the Contract.

The Contractor shall meet the conditions of all permits and must keep a copy of each individual permit on site at all times throughout construction.

The Contractor shall be responsible for erosion control inspections as defined in these special provisions.

The Contractor shall meet the conditions of the permits involving including properly installing and maintaining the erosion control measures shown on the plans, specified in these Special Provisions, or as directed by the Construction Engineer or his designees. This work will be paid for under the appropriate bid items, or if appropriate items are not included in the contract, they shall be paid for as Extra Work.

The Railroad property is not to be used for this project. In the event the RR property is needed for construction purposes a Temporary Authorization permit is required through the Wisconsin Department of Transportation. All work on the Railroad Right of Way will also require Railroad protective insurance and flag protection through the Wisconsin Southern Railroad

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 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 Brittingham Dog Park Improvements on or before April 15, 2019 and shall be completed by July 15, 2019.

SECTION 110.1: MEASUREMENT OF QUANTITIES

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

BID ITEM 10701 - TRAFFIC CONTROL

DESCRIPTION

Work under this item shall include all costs associated with traffic control including labor, equipment, materials, and incidentals as described in special provision Section 107.7 Maintenance of Traffic.

BID ITEM 10803 - ROOT CUTTING

DESCRIPTION

Work under this item shall include all costs associated with root cutting including labor, equipment, materials, and incidentals as described as described in special provision Section 107.13 Tree Protection Specifications.

METHOD OF MEASUREMENT

Root Cutting shall be measured per each individual tree marked NRC on the plan.

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

DESCRIPTION

Work under this item shall include all costs associated with mobilization of the Contractor to the site. Parking of equipment, storage of materials, and staging shall be allowed within project limits as shown on plans. The Contractor may only enter the construction site through the construction entrance as shown on the plans. The Contractor may stage in the small area between the basketball court and existing ATC easement, but shall not under any circumstance be allowed to store materials over the ATC easement. The Contractor shall store light materials on the existing basketball court as approved by the Engineer. Regardless of approval, the Contractor is responsible for repairing any existing conditions damaged as a result of staging materials or construction access. Construction staging will be determined by the Engineer depending on the weight, longevity, and methods for staging.

Construction staging outside of the disturbance limits shall be protected with construction fence, which has been added to quantities of fencing in BID ITEM 90000 – CONSTRUCTION FENCE (PLASTIC). The Contractor may not drive or store equipment on any other portion of the park outside the approved construction limits as determined by the Engineer.

BID ITEM 20101 - EXCAVATION CUT

DESCRIPTION

Work under this item shall include 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. No shrinkage factor has been applied to fill quantities to estimate net volume. The Contractor shall be responsible to review attached earthwork calculations identified in APPENDIX B – Design Computations. Three-dimensional Microstation (.dgn) files containing the digital terrain models used for the earthwork calculations are available.

Removal of existing pavers and concrete sidewalk shall be incidental to this bid item.

Excavation Cut required for construction of the following bid items shall be incidental to each respective bid items:

BID ITEM 20132 – FIELD UNDERDRAIN
BID ITEM 20326 – REMOVE FENCE
BID ITEM 40321 – UNDERCUT
BID ITEM 50202 – TYPE II DEWATERING
BID ITEM 50301 – 8 INCH PVC SANITARY SEWER PIPE
BID ITEM 50361 – WASTEWATER CONTROL
BID ITEM 50702 - DIA. SANITARY SAS (DOGHOUSE STYLE)
BID ITEM 50780 – CLEANOUT
BID ITEM 50781 – SANITARY SEWER TAP
BID ITEM 50801 – UTILITY LINE OPENING
BID ITEM 60234 – FURNISH AND INSTALL 1 ½ INCH PVC (SCHEDULE FOR CONDUIT)
BID ITEM 60261 – ELECTRICAL TRENCH
BID ITEM 60704 – CONSTRUCT ELECTRICAL HANDHOLD TYPE 3
BID ITEM 70009 – HORIZONTAL DIRECTIONAL DRILL 2” HDPE PIPE AND FITTINGS
BID ITEM 70032 – FURNISH AND INSTALL 8-INCH WATER VALVE
BID ITEM 90001 – DRINKING FOUNTAIN
BID ITEM 90002 – CHAIN LINK FENCING
BID ITEM 90003 – CHAIN LINK FENCE DOG PARK VESTIBULE
BID ITEM 90004 – CHAIN LINK 12’ MAINTENANCE GATE
BID ITEM 90005 – REMOVE EXISTING KIOSK
BID ITEM 90006 - INSTALL KIOSK
BID ITEM 90009 – IRRIGATION SYSTEM
BID ITEM 90011 – PLUMBING
BID ITEM 90012 – ELECTRICAL SERVICE
BID ITEM 90014 – ORNAMENTAL FENCE UPGRADE
BID ITEM 90015 – ORNAMENTAL FENCE DOG VESTIBULE UPGRADE
BID ITEM 90016 – ORGANMENTAL FENCE 12’ MAINTENANCE GATE UPGRADE

Excess excavated material (except topsoil) deemed unusable shall be disposed of at a suitable location determined by the Contractor at no additional cost to the City of Madison. Excess topsoil shall be disposed to city stockpile location at Yahara Golf Course located at 6701 US-12, Madison, WI.

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.

Test rolling for undercut determination is required and incidental to this bid item.

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.

Excavation Cut for subgrade drainage is incidental to this bid item.

BID ITEM 20131 - UNDERDRAIN COLLECTOR – 8”

DESCRIPTION

This work shall include all labor, equipment, materials, and incidentals required to install 8” underdrain, including ¾” clear stone and geotextile fabric sock as shown on the plans or as directed by the Engineer.

All costs associated with the construction of the underdrain, as shown on the plans or as directed by the Engineer, shall be considered incidental to this item including stone, pipe, geotextile fabric and excavation cut. The work involved with the placement of the perforated pipe shall be in accordance with Sections 612.2.5 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation.

Pipe wrapping shall comply with the requirements of Section 612.2.8 of the latest edition of the Standard Specification for Highway and Structure Construction of the State of Wisconsin, Department of Transportation.

Open Graded Base Course shall meet the requirements of size No. 2 of 501.2.5.4.5 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation.

Geotextile Fabric shall comply with Geotextile Fabric, Type SAS (Non-Woven) of the City of Madison Standard Specifications for Public Works Construction.

Flexible drain pipe will not be allowed.

Installation of collars, couplings, and other ties for all in-line joints are incidental to this bid item.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

Installation of the sanitary access structure shall be paid separately under BID ITEM 50702 – 5’ DIA. SANITARY SAS (DOGHOUSE STYLE). Connection to this new SAS structure shall be paid under BID ITEM 50791 – SANITARY SEWER TAP.

BID ITEM - 20132 FIELD UNDERDRAIN

DESCRIPTION

This work shall include all labor, equipment, materials, and incidentals required to install flat panel athletic field underdrain as shown on the plans.

All costs associated with the construction of the underdrain, as shown on the plans or as directed by the Engineer. The work involved with the placement of the field underdrain shall be in accordance with Sections 612.2.5 or 612.2.6 of the latest edition of the Standard Specifications for Highway and Structure Construction of the State of Wisconsin, Department of Transportation.

The Contractor shall be required to submit proposed material for approval by the Engineer prior to fabrication.

Installation of collars, couplings, and other ties for all in-line joints are incidental to this bid item.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

Pipe shall be installed to provide continuous slope in the direction of flow. Place ends of flat underdrain directly into the perimeter collection trench as indicating in the drawings.

The Contractor shall be required to test sub drainage system with approval by the Engineer prior to backfilling.

BID ITEM 20217 – CLEAR STONE

DESCRIPTION

Work under this item shall include the quantity of clear stone required for the construction entrance per BID ITEM 21011 – CONSTRUCTION ENTRANCE.

BID ITEM 20210 - SELECT FILL - LIMESTONE SCREENINGS

DESCRIPTION

Work shall consist of furnishing and placing a 3" surface layer of limestone screenings accordance with the plans and details, applicable provisions of Article 401 of the Standard Specifications, and as provided herein. Material shall be 3/8-inch minus limestone screenings, produced by crushing as typically used for unpaved trail surface.

The Contractor shall provide a sample of the material for approval by the Engineer prior to placing material on site.

Turf currently exists in the area of limestone screenings. The Contractor shall remove existing turf with herbicide, then place weed barrier fabric prior to installation of limestone screenings as shown on the plans. All work and materials required for herbicide application and installation of weed barrier fabric shall be incidental to this contract. Herbicide application must be applied by a licensed applicator and shall comply with the City of Madison pesticide policy.

<https://www.cityofmadison.com/engineering/pesticidepolicy.cfm>

All work shall be in accordance with applicable provisions of Article 401 of the Standard Specifications for crushed aggregate base course, including placement, shaping and compaction.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Select Fill – Limestone Screenings shall be measured by the cubic yard as listed in the proposal page.

BASIS OF PAYMENT

Select Fill – Limestone Screenings shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, furnishing and installing reinforcement steel, materials, tools, equipment, labor, hauling, placement, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 20211 - SELECT FILL - PEA GRAVEL

DESCRIPTION

Work shall consist of furnishing and placing a 6" surface layer of pea gravel accordance with the plans and details, applicable provisions of Article 401 of the Standard Specifications, and as provided herein.

The Contractor shall provide a sample of the material for approval by the Engineer prior to placing material on site.

All work and materials required for installation of weed barrier fabric shall be incidental to this contract. Herbicide application must be applied by a licensed applicator.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Select Fill – Pea Gravel shall be measured by the cubic yard as listed in the proposal page.

BASIS OF PAYMENT

Select Fill – Pea Gravel shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, furnishing and installing reinforcement steel, materials, tools, equipment, labor, hauling, placement, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 20221 - TOPSOIL

DESCRIPTION

Work under this item shall include all necessary work, labor and incidentals required to place and distribute **six (6) inches** of topsoil to meet proposed grades. Topsoil shall comply with Article 202 of the Standard Specifications.

Stripped topsoil can be stockpiled on site within the construction fence boundary.

The topsoil quantities for this contract have been computed by Microstation InRoads surface data volume computations and the assumptions listed in Appendix B. It is estimate that approximately 178 cubic yards of topsoil shall be made available for topsoil placement through topsoil stripping.

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.

BID ITEM 20701 – TERRACE SEEDING

DESCRIPTION

Work under this bid item 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 Standard Specifications. 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 site.

Contractor to note – the Engineer shall be called to inspect and approve the finish grade prior to seeding and mulching.

Contractor is responsible for obtaining seed bed germination per Article 207 of the Standard Specifications, regardless of site conditions.

BID ITEM 20971 – TREE INSTALLATION

DESCRIPTION

Work under this item shall include all necessary work, labor and incidentals required to install (1) 1 1/2" caliper balled and burlapped Ivory Silk Japanese Tree Lilac at the location shown on the plan and per Article 209 of the latest edition of the City of Madison Standard Specifications for Public Works Contract and standard detail drawing 2.02.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Tree Installation shall be measured individual tree quantity as listed in the proposal page.

BASIS OF PAYMENT

Tree Installation 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 Contractor shall submit a copy of the online submitted report to be paid for the completed inspection.

BID ITEM 20972 – MULCH

DESCRIPTION

Work under this item shall include all necessary work, labor and incidentals required to install a 6' diameter of 3" depth shredded hardwood mulch ring around existing trees at the location shown on the plan and per Article 209 of the latest edition of the City of Madison Standard Specifications for Public Works Contract.

The Contractor shall provide a sample of the material for approval by the Engineer prior to placing material on site.

METHOD OF MEASUREMENT

Mulch shall be measured per cubic foot quantity as listed in the proposal page.

BASIS OF PAYMENT

Mulch 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 21024 – SILT SOCK (12 INCH) - COMPLETE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to install, maintain, and remove 12 inch silt sock in accordance with the City of Madison Standard Specifications for Public Works Construction.

100 linear feet have been added to the proposal page for undistributed silt sock to be used around soil stockpiles. The quantity of this item may be reduced, increased, or eliminated based as needed for emergency sediment control and perimeter control around soil stockpiles.

BID ITEM 30212 - CONCRETE CURB – 6”x12”

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install reinforced concrete curb at the location and grade as shown in the plan and details including installation of rebar, control joints, and expansion joints.

All concrete work and reinforcing steel shall comply with Article 301 and 302 of the latest edition of the Standard Specifications for Public Works Construction.

The Contractor shall submit a jointing plan for Engineer approval.

Crushed aggregate base course shall be incidental to this bid item.

METHOD OF MEASUREMENT

Concrete Curb – 6” x 12” shall be measured by the plan linear foot quantity as listed in the proposal page.

BASIS OF PAYMENT

Concrete Curb – 6” x 12” shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, furnishing and installing reinforcement steel, materials, tools, equipment, labor, hauling, placement, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 30213 - CONCRETE CURB – 24”x12”

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install reinforced concrete curb at the location and grade as shown in the plan and details including installation of rebar, control joints, and expansion joints.

All concrete work and reinforcing steel shall comply with Article 301 and 302 of the latest edition of the Standard Specifications for Public Works Construction.

The Contractor shall submit a jointing plan for Engineer approval. Crushed aggregate base course shall be incidental to this bid item.

METHOD OF MEASUREMENT

Concrete Curb – 24” x 12” shall be measured by the plan linear foot quantity as listed in the proposal page.

BASIS OF PAYMENT

Concrete Curb – 24” x 12” shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, furnishing and installing reinforcement steel, materials, tools, equipment, labor, hauling, placement, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 30301 - 5 INCH CONCRETE SIDEWALK

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install reinforced concrete sidewalk at the location and grade as shown in the plan and details including installation of thickened edge, rebar, woven wire mesh, control joints, expansion joints, and aggregate base.

All concrete work and reinforcing steel shall comply with Article 301 and 302 of the latest edition of the Standard Specifications for Public Works Construction.

The Contractor shall submit a jointing plan for Engineer approval prior to installation. Crushed aggregate base course shall be considered incidental to this bid item.

METHOD OF MEASUREMENT

5 Inch Concrete Sidewalk shall be measured by the plan linear foot quantity as listed in the proposal page.

BASIS OF PAYMENT

5 Inch Concrete Sidewalk shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, furnishing and installing reinforcement steel, materials, tools, equipment, labor, hauling, placement, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 30302 - 7 INCH CONCRETE SIDEWALK

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install reinforced concrete sidewalk at the location and grade as shown in the plan and details including installation of thickened edge, rebar, woven wire mesh, control joints, expansion joints, and aggregate base.

All concrete work and reinforcing steel shall comply with Article 301 and 302 of the latest edition of the Standard Specifications for Public Works Construction.

The Contractor shall submit a jointing plan for Engineer approval prior to installation.

Crushed aggregate base course shall be considered incidental to this bid item.

METHOD OF MEASUREMENT

7 Inch Concrete Sidewalk shall be measured by the plan linear foot quantity as listed in the proposal page.

BASIS OF PAYMENT

7 Inch Concrete Sidewalk shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, furnishing and installing reinforcement steel, materials, tools, equipment, labor, hauling, placement, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 40105 - CRUSHED AGGREGATE BASE COURSE DRAINABLE

DESCRIPTION

Work under this item includes furnishing and installing drainable base aggregate below the synthetic turf surface at the location and thickness indicated in the plans.

Crushed Aggregate Base Course Drainable shall be crushed stone free of clay, shale, and organic matter; graded in accordance with the following limits of 3/8" to 5/8" clean compactable angular stone with no fines.

The Contractor shall provide a sample of the material for approval by the Engineer and Synthetic Turf Manufacturer prior to placing material on site.

CONSTRUCTION

Installation shall be performed in full compliance with Synthetic Turf Manufacturer's recommendation.

Surface to receive crushed aggregate base course - drainable shall be graded at 0.5% from the outside edge of the turf towards the underdrain collector as shown on the plans. Grading of subgrade shall be incidental to BID ITEM 20101 EXCAVATION CUT.

Prior to installation of synthetic turf, the subgrade drainage shall be inspected and certified by the Synthetic Turf Installer. Surface shall be maintained in clean condition throughout construction process.

The Contractor shall place materials adjacent to walls and other structures only after they have been set to required grade and level. Roll testing shall begin at sides and progress to center of crowned areas, and shall begin at low sides and progress toward high side of sloped areas. Rolling shall continue until material does not creep or wave ahead of roller wheels.

The Contractor shall be required to maintain slope established in sub-base construction and keep completed aggregate course clean and uncontaminated.

Portions of aggregate base course that is contaminated, softened, or dislodged by passing of traffic or otherwise damaged shall be cleaned, replaced or otherwise repaired to conform to Contract Documents before proceeding to next operation.

Base course shall be compacted to at least 90%.

METHOD OF MEASUREMENT

Crushed Aggregate Base Course Drainable shall be measured by the ton as listed on the proposal page. Quantities listed on the proposal page include addition stone required for 0.5% drainage of subgrade.

BASIS OF PAYMENT

Crushed Aggregate Base Course Drainable 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, and incidentals required to complete the work as set forth in the description.

BID ITEM 50202 - DEWATERING

This bid item shall not be paid if work is not needed or performed.

BID ITEM 50780 - CLEANOUT

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

BID ITEM 70009 – HORIZONTAL DIRECTIONAL DRILL 2” HDPE PIPE & FITTINGS

DESCRIPTION

Work under this item shall include all work, assemble, materials, labor and incidentals necessary for the Contractor to install and test horizontal directionally drilled 2” HDPE water service from a 2” copper valve installed by the water utility at a minimum 6’ depth in accordance with the latest edition of Article 7 of the City of Madison Standard Specifications for Public Works Construction and these special provisions.

Incidental to this bid item are:

- a.) Excavating boring pits and other trenches. Backfilling and compacting said excavations.
- b.) Exposing existing water mains and laterals to verify location and depth.
- c.) Installing tracer wire, joint adapters, bracing, plugs and other accessories
- d.) Hard-rock drilling.
- e.) Disposing of surplus material
- f.) Restoring the work area.
- g.) Resolving all obstructions found during boring.

MATERIALS

- 1) Refer to Article 702 and this section.
- 2) High-Density Polyethylene (HDPE), as described herein, is the approved standard pipe material for Horizontal Directional-Drilling pipe installations.
 - a) If proposing to use pipe material other than HDPE for horizontal directional-drilling, submit full material specifications to the Engineer for review per Article 703 – ‘Repairs and Alterations.’
 - b) Any proposed alternative material needs to have been used on a minimum of five similarly sized horizontal directional-drilling projects within the last three years to be considered.
- 3) HDPE Pipe Requirements
 - a) In compliance with AWWA C906 – latest edition, ASTM F714 – latest edition.
 - b) 200 psi pressure rating.
 - c) DR-11 dimension ratio.
 - d) Match inside diameter as closely as practical to the inside diameter of the connection pipe.
 - e) Outside diameters shall be Ductile Iron Outside Diameter (DIOD).
 - f) Comply with the requirements of the Safe Drinking Water Act and certified as suitable for drinking water by ANSI/NSF Standard 61.
 - g) Identified as water with either a factory installed co-extruding longitudinal blue stripe in the pipe or blue underground warning tape with “Caution Buried Water Line Below” imprinted on it, placed 2-feet above the new pipe.
 - h) Cuts or gouges in the HDPE pipe, per ASTM F585 are acceptable up to 10% of the wall
 - i) thickness. Cut out and remove any pipe sections where cuts or gouges are greater than 10% of the wall thickness and butt fuse the ends.
- 4) Joining HDPE pipe to HDPE pipe or HDPE fittings:
 - a) Thermal butt fusion.
 - b) Thermal butt fusion is to be executed in accordance with the requirements of the pipe and/or fitting manufacturer. Equipment used to execute the thermal butt fusion joints shall be furnished or approved by the pipe and/or fitting manufacturer
- 5) Mechanical Joint Adapters:
 - a) Join HDPE pipe to mechanical joint bells in accordance with the requirements of ANSI/AWWA C111/A21.11.
 - b) Mechanical joint adapters shall be certified to meet the requirements of ANSI/AWWA C901 and C906 requirements (latest revisions).

- c) Thermal butt fusion is required at joints between mechanical joint adapters and HDPE pipe.
- 6) Tracer Wire:
 - a) Galvanized or stainless steel.
 - b) ¼-inch diameter braided cable.
 - c) 2,000-lb minimum breaking strength.
 - d) Protective PVC coating (to resist corrosion and damage during installation).
 - e) Includes valve box at each end of tracer wire installation.

CONSTRUCTION

- 1) Refer to Article 703 and this section.
- 2) Prior to bidding, become familiar with anticipated subsurface and existing field conditions that will affect the location of the bore pits and the lengths and depths of the pipe installation, as well as any equipment, tools and materials required to keep the necessary installation within the limits identified on the drawings.
- 3) The Contract Documents represent the best information available with regard to anticipated field conditions; however, any provisions necessary for encountering hard-rock drilling are to be included and are considered incidental to the installation.
- 4) Exposing existing water mains to verify location is considered incidental to the installation.
- 5) Submit a horizontal directional-drilling plan, sequence of work, and drilling schedule to the Engineer for review prior to commencing work. At a minimum, include:
 - a) Detailed site plan drawing which depicts location and size of boring pits and staging areas.
 - b) Proposed sequence and schedule of HDD operations.
 - c) Method of controlling and monitoring and recording the bore location, accuracy, and depth.
 - d) Drilling mud storage, handling and contingency plan.
 - e) Any other applicable details regarding how the work will progress and be controlled.
- 6) The Engineer will review the precision of the installed pipe. For gross misalignment, the Engineer reserves the right to require that the pipe be reinstalled at no cost to the City. Maintain liability for all costs associated with modifying to easements due to HDPE installation alignment errors. Pipe installation accuracy requirements:
 - i) Horizontal accuracy of +/- 3-feet.
 - ii) Vertical accuracy of plus 6-inches and minus 3-feet.
- 7) Perform pipe joining with personnel trained by the thermal fusion equipment manufacturer in the use of the equipment for thermal butt fusion/electro-fusion of HDPE pipe.
- 8) Do not proceed with installation of the pipe until mechanical end seals are securely installed.
- 9) Do not make ductile iron connections to the fused HDPE adapters on the same day the HDPE pipe was installed. Allow 24-hours for initial contraction of the HDPE pipe upon removal of the installation pull force loads.
- 10) Install tracer wire along the full length of the pipe. Bring the tracer wire up to finish grade at each end of the bore inside a valve box to allow access for future use. Securely clamp or weld the tracer wire to the valve box. Provide accessible connection point to allow for extension of grounding wire from a locating device. Center the valve box over the mechanical joint transition fitting.

There are several utility crossings that must be avoided with the directional drilling. Incidental to this bid item are any work, materials, labor and incidentals necessary for the Contractor to determine depths of utilities necessary to determine drilling depths.

ATC Electrical Line

There are two parallel existing high pressure ATC electrical lines that must be crossed with directional drilling. A utility line opening was performed on this line with an ATC representative. Elevations of this line are included on plans. Copy of the ATC plans at this location are included in Attachment X. The existing ATC pipes are 6" in diameter. The Contractor shall maintain a minimum of 2' of clearance between the bottom of the ATC pipe and the water line. The Contractor shall be responsible for arranging for an ATC representative (Doug Vosberg at 608-877-7650) to be onsite to supervise directional drilling under ATC line. The Contractor shall be required to horizontally drill below this line.

Care must be taken during any work around pipe. If it is necessary to expose the HPFF pipe cable, it must be exposed using small hand tools or vacuum excavation. The HPFF pipe cable must be inspected for defects in the coating while exposed.

Any backfill over ATC easement must be replaced with approved material as stated in the ATC Construction Specification GD-2500.

City of Madison Sanitary Sewer

There is also an existing abandoned sanitary line with depth unknown but is approximately 7-9' deep. The Contractor shall be required to horizontally drill below this sanitary line.

Wisconsin DOA Fiber Optic Line

There is an existing DOA fiber optic line. The depth of this line is unknown. The Contractor shall be required to horizontally drill below this line.

City of Madison Storm Sewers

There are two existing box culverts and 2 existing steel 78" RCP storm sewers that must be crossed with directional drilling. The Contractor shall be required to horizontally drill below these storm sewers.

Utility line openings shall be required at every utility crossing and shall be paid separately under BID ITEM 50801 – UTILITY LINE OPENING.

METHOD OF MEASUREMENT

Horizontal Directional Drill 2" HDPE Pipe & Fittings shall be measured by the linear foot as listed in the proposal page.

BASIS OF PAYMENT

Horizontal Directional Drill 2" HDPE Pipe & Fittings 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, and incidentals required to complete the work as set forth in the description.

BID ITEM 90000 - CONSTRUCTION FENCE (PLASTIC)

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.

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.

An additional 400' of construction fencing has been added to protect locations identified in the field for construction staging per BID ITEM 10911. This quantity may be eliminated or reduced.

This 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)

METHOD OF MEASUREMENT

Construction Fence (Plastic) shall be measured by the linear foot quantity as listed in the proposal page without measurement thereof aside from 400 feet of construction fencing that may be eliminated or reduced based on fencing required for protecting construction staging.

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, labor, tools, equipment, disposal, and incidentals required to complete the work as set forth in the description.

BID ITEM 90001 – DRINKING FOUNTAIN

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to assemble and install Haws Model 3602 with dog bowl, ADA arm attachment, and lockable mountable hose bib drinking fountain per manufacturer's specifications, with clear stone, blow out components, and valve box as shown in plans and as detailed in Sheet 7.2. Installation of related components shall be considered incidental to this bid item. The drinking fountain shall be surface mounted.

Drinking fountain shall be ordered by the Contractor and delivered to the Contractor's receiving location. The Contractor shall provide equipment and labor for off-loading, loading, and trucking as needed. Contractor is responsible for securing all deliveries and insuring the completeness of the order prior to installation. Contractor is required to inspect all deliveries received for damage and shall notify the Engineer when materials have been received and inspected. Inspection by the Contractor shall occur upon delivery. If materials are found to have been damaged upon delivery to Contractor, Contractor shall inform vendor and provide photographs of damage, and, if necessary, store the materials at the receiving location. If the materials are damaged after delivery to Contractor but before installation is complete, Contractor shall be responsible for securing replacement materials. Original packing slips from each shipment shall be provided to the Engineer.

Concrete and water supply line for drinking fountain shall be paid for under BID ITEM 30301 – 5 INCH CONCRETE SIDEWALK and BID ITEM 70050 – FURNISH AND INSTALL 2 INCH SERVICE LATERALS, respectively.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Drinking Fountain shall be measured per each individual installed bench as listed in the proposal page.

BASIS OF PAYMENT

Drinking Fountain 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 90002 – CHAIN LINK FENCE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary to install new chain link fencing at Brittingham dog park at the location shown on plans and as detailed on Sheet 10.3. The Contractor shall submit color samples for the powder coated railing and the vinyl coated fence fabric for approval by the Engineer prior to fabrication.

Chain link fencing shall meet the below manufacturing requirements:

	O.D.	Wall	lbs/ft	Length	Type
Gate posts	2.5"	0.154	3.65	10.5'	Sch. 40
Gate frame	2"	0.145	2.72		Sch. 40
End/Corner Posts	2.5"	0.154	3.65	10.5'	Sch. 40
Line Posts	2"	0.145	2.72	8'	Sch. 40
Rails	1 5/8"	0.14	2.27		
	Height	Mesh	Gauge	Selvage	Finish
Fabric	4'-0"	2"	10	KK	Black Vinyl Coated

All poles shall be patched with hydraulic cement. All rails and schedule 40 posts shall be powder coated black.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

BASIS OF PAYMENT

Chain Link Fence shall be measured by the linear foot of fence as shown on the proposal page.

METHOD OF MEASUREMENT

Chain Link Fence 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 90003 – CHAIN LINK FENCE DOG VESTIBULE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary to install new vestibule chain link fencing and gates at the location shown on plans and as shown on Sheet 9.9. All fencing materials and construction shall meet special provisions defined in BID ITEM 90002 – CHAIN LINK FENCING.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Chain Link Fence Dog Vestibule shall be measured by each installed dog vestibule as described above.

BASIS OF PAYMENT

Chain Link Fence Dog Vestibule 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 90004 – CHAIN LINK FENCE 12’ MAINTENANCE GATE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary to install new 12’ long maintenance gate with industrial gate fork hinge at the location shown on plans and as shown on Sheet 9.9. All fencing materials and construction shall meet special provisions defined in BID ITEM 90002 – CHAIN LINK FENCING.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Chain Link Fence 12’ Maintenance Gate shall be measured by each installed gate as described above.

BASIS OF PAYMENT

Chain Link Fence 12’ Maintenance Gate 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 90005 – REMOVE EXISTING KIOSK

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to remove and dispose of the existing park kiosk.

Excess excavated material deemed unusable shall be disposed of at a suitable location determined by the Contractor at no additional cost to the City of Madison.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Remove Existing Kiosk shall be paid in lump sum.

BASIS OF PAYMENT

Remove 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, tools, equipment, labor, hauling, placement, and incidentals required to complete the work as described above.

BID ITEM 90006 – INSTALL KIOSK

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install a kiosk as specified in these special provisions and as shown in the plan.

The kiosk shall be an all steel frame two-post gabled shelter with table and benches and lockable message board. Park shelter shall be 6'x6'x8' entry height. Basis of design is the RCP Shelters, Inc. AS-GO608-2P-04-TB anchor bolt mounted. Proposed equivalents must be submitted to the Engineer for approval.

The Contractor shall provide sealed Wisconsin engineer drawings.

The kiosk shall be ordered by the Contractor and delivered to the Contractor's receiving location. The Contractor shall provide equipment and labor for off-loading, loading, and trucking as needed. Contractor is responsible for securing all deliveries and insuring the completeness of the order prior to installation. Contractor is required to inspect all deliveries received for damage and shall notify the Engineer when materials have been received and inspected. Inspection by the Contractor shall occur upon delivery. If materials are found to have been damaged upon delivery to Contractor, Contractor shall inform vendor and provide photographs of damage, and, if necessary, store the materials at the receiving location. If the materials are damaged after delivery to Contractor but before installation is complete, Contractor shall be responsible for securing replacement materials. Original packing slips from each shipment shall be provided to the Engineer.

This bid item includes all work, materials, labor and incidentals necessary to coordinate delivery of the park shelter with the manufacturer; deliver the shelter to the construction site; and install the shelter in accordance with plans and manufacturer's instructions.

The Contractor shall submit color samples for approval by the Engineer prior to fabrication.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Install Kiosk shall be paid lump sum.

BASIS OF PAYMENT

Install 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, tools, equipment, labor, hauling, placement, and incidentals required to complete the work as described above.

Contractor is responsible for securing all deliveries and insuring the completeness of the order prior to installation.

BID ITEM 90007 – PICNIC TABLES

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install picnic tables as specified in these special provisions and as shown in the plan.

Picnic tables shall be DuMor, Inc, Picnic Table 295 with three seats with recycled plastic seats or approved equal. Picnic tables shall not be anchor bolted to the ground, but should have option for future anchor bolting.

The Contractor shall submit color samples for the recycled plastic slats for approval by the Engineer prior to fabrication.

This bid item includes all work, materials, labor and incidentals necessary to coordinate delivery of the park shelter with the manufacturer; deliver the shelter to the construction site; and install the shelter in accordance with plans and manufacturer's instructions.

Picnic tables shall be ordered by the Contractor and delivered to the Contractor's receiving location. The Contractor shall provide equipment and labor for off-loading, loading, and trucking as needed. Contractor is responsible for securing all deliveries and insuring the completeness of the order prior to installation. Contractor is required to inspect all deliveries received for damage and shall notify the Engineer when materials have been received and inspected. Inspection by the Contractor shall occur upon delivery. If materials are found to have been damaged upon delivery to Contractor, Contractor shall inform vendor and provide photographs of damage, and, if necessary, store the materials at the receiving location. If the materials are damaged after delivery to Contractor but before installation is complete, Contractor shall be responsible for securing replacement materials. Original packing slips from each shipment shall be provided to the Engineer.

METHOD OF MEASUREMENT

Picnic Tables shall be paid per each individual installed picnic table.

BASIS OF PAYMENT

Picnic Tables 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 described above.

Contractor is responsible for securing all deliveries and insuring the completeness of the order prior to installation.

BID ITEM 90008 – ROOT BARRIER

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install NDS SM-1820 Root Barrier Sheet Material at the locations shown on plans.

METHOD OF MEASUREMENT

Root Barrier measurement shall be based on linear foot completed work as described above and listed on the proposal page.

BID ITEM 90007 – PICNIC TABLES

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install picnic tables as specified in these special provisions and as shown in the plan.

Picnic tables shall be DuMor, Inc, Picnic Table 295 with three seats with recycled plastic seats or approved equal. Picnic tables shall not be anchor bolted to the ground, but should have option for future anchor bolting.

The Contractor shall submit color samples for the recycled plastic slats for approval by the Engineer prior to fabrication.

This bid item includes all work, materials, labor and incidentals necessary to coordinate delivery of the picnic tables with the manufacturer; deliver the shelter to the construction site; and install the picnic tables in accordance with plans and manufacturer's instructions.

Picnic tables shall be ordered by the Contractor and delivered to the Contractor's receiving location. The Contractor shall provide equipment and labor for off-loading, loading, and trucking as needed. Contractor is responsible for securing all deliveries and insuring the completeness of the order prior to installation. Contractor is required to inspect all deliveries received for damage and shall notify the Engineer when materials have been received and inspected. Inspection by the Contractor shall occur upon delivery. If materials are found to have been damaged upon delivery to Contractor, Contractor shall inform vendor and provide photographs of damage, and, if necessary, store the materials at the receiving location. If the materials are damaged after delivery to Contractor but before installation is complete, Contractor shall be responsible for securing replacement materials. Original packing slips from each shipment shall be provided to the Engineer.

METHOD OF MEASUREMENT

Picnic Tables shall be paid per each individual installed picnic table.

BASIS OF PAYMENT

Picnic Tables 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 described above.

Contractor is responsible for securing all deliveries and insuring the completeness of the order prior to installation.

BID ITEM 90008 – ROOT BARRIER

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to furnish and install NDS SM-1820 Root Barrier Sheet Material at the locations shown on plans.

METHOD OF MEASUREMENT

Root Barrier measurement shall be based on linear foot completed work as described above and listed on the proposal page.

BASIS OF PAYMENT

Root Barrier 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, double handling, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 90009 – IRRIGATION DISTRUBUTION SYSTEM

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to an irrigation distribution system in accordance with local code requirements, and Section 32 84 00 – Irrigation Distribution System included in this contract.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

METHOD OF MEASUREMENT

Irrigation Distribution System measurement shall be lump sum for work as described above.

BASIS OF PAYMENT

Irrigation Distribution System 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, double handling, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 90010 – SYNTHETIC TURF

DESCRIPTION

This bid item shall be performed by a Contractor prequalified in Category 399: Synthetic Turf Installer. Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to provide, install, and warranty the synthetic turf system as indicated on the drawings and specified by the synthetic turf manufacturer including plastic perimeter boards and anchorage devices.

Shop drawings for field layout, field marking, roll/seaming layout, and methods of attachment shall be provided for review and approval by the Engineer prior to fabrication.

The Contractor shall submit manufacturer's warranty, maintenance and cleaning instructions.

The components, as well as the installation methods utilized, shall be designed and executed in a manner to hold up to the unique challenges dogs present. The materials as hereinafter specified shall withstand full climatic exposure in the location of the play yard/dog run, be resistant to insect infestation, rot, fungus, mold and mildew, shall also withstand ultra-violet rays and heat degradation, and airborne pollutants and allow the free flow of water vertically through the surface and into the drainage system below.

MATERIALS

Synthetic turf fibers shall be tufted with a blend of monofilament and curled polyethylene fiber that layer. Yarn shall be built with anti-microbial additives. The fibers shall be tufted to a finished pile height of minimum 3/4-inches.

All components and their installation method shall be designed and manufactured for use on municipal dog parks.

The finished synthetic turf surface shall appear as mowed grass with no irregularities and shall afford excellent traction for conventional athletic events of all types. The finished surface shall resist abrasion and cutting from normal use. The system shall be suitable for recreational use.

Polyethylene pile yarn shall be proven caliber yarn designed specifically for outdoor use and stabilized to resist the effect of ultraviolet degradation, heat, foot traffic, water, and airborne pollutants. The pile fiber shall have a minimum 9,000 yard denier.

The carpet shall consist of polyethylene fibers tufted into a primary backing with a secondary backing. The carpet shall be furnished in 15-foot wide rolls. Rolls shall be long enough to extend from end to end without splicing.

The fiber shall be low friction, UV-resistant fiber measuring not less than 3/4-inches high with anti-microbial coating. The fiber must be certified as lead free.

There shall be no infill materials required for this grass to perform as intended.

The Contractor shall submit to the Engineer the proposed turf manufacturer prior for approval prior to bid opening.

Approved manufacturer's include:

- Perfect Turf, LLC.
- Forever Lawn K9 Grass Lite
- Approved Equals: The City of Madison Parks Division may reject proposed alternative synthetic turf products if all specifications and qualifications are not met. Failure to comply may result in rejection of proposed alternates. Approved equals must be approved by the Engineer prior to bid opening. The Contractor must submit a product sample and product literature for approval prior to the bid opening.

Above listed approved manufacturer's only approves the product and does not guarantee that these manufacturers will meet the City of Madison prequalification requirements see Section 102.1

PREQUALIFICATION OF BIDDERS.

All work, materials, labor and incidentals necessary for the Installation of a synthetic nailer board is incidental to this contract. Synthetic nailer board shall be installed before the drainage aggregate.

Install synthetic nailer board around perimeter and all penetrating objects. Nailer board shall be flush to grade (or as specified in site detail drawings) when adjacent to soft surface (i.e. natural grass, mulch). Nailer board shall be 1/2" below grade when adjacent to hard surface (i.e. concrete or tile).

CONSTRUCTION METHODS

This bid item shall be installed by technicians, factory-trained in the installation of synthetic turf system.

The Synthetic Turf Installer shall inspect and certify sub-base to determine its adequacy to receive synthetic field surfacing system prior to installation and must be clean as installation commences. Surface shall be maintained in clean condition throughout installation process. Synthetic Turf Installer shall accept sub-base and drainage system in writing. Acceptance will depend on test results indicating that compaction, planarity, permeability, and drainage are in compliance with synthetic turf manufacturer's requirements.

The seams of all system components shall provide a permanent, tight, secure, and hazard free surface. The installed synthetic grass and drainage system shall allow for drainage and water flow through the system at a rate that is acceptable to the Engineer.

A drainage test shall be performed to illustrate an infiltration rate greater than or equal to rate required by Turf Manufacturer. Drainage test shall illustrate capacity of entire field drainage system, including panel drains and trench drains. A high capacity low pressure hose would be acceptable for drainage test.

Synthetic Turf Installer shall convene a pre-installation meeting at site to include Engineer, Sub-base Contractor, Subcontractors whose work requires coordination, Manufacturers Representative, and Inspection and Testing Services representative. Agenda shall include a review of material selections, installation procedures, coordination of work, and other related items.

Installation of synthetic turf system shall be performed in full compliance with turf manufacturer's written instructions and approved shop drawings. Any variance from these requirements must be accepted in writing, by the Turf Manufacturer's onsite representative and submitted to the Engineer, verifying that the changes do not in any way affect the warranty.

Seams shall be flat, tight and permanent with no separate or fraying. Grass rolls must be installed with pile leaning in the same direction. After final layout and seaming of the synthetic turf, the turf material shall be at a minimum secured on the top of the plastic nailer board firmly anchored to sidewalk or curb making. The turf shall be attached to the plastic nailer board by stainless steel staples, screws or nails. Soil or surfacing material outside of the defined synthetic turf area shall be backfilled against turf wrapped perimeter edge and have zero transition edge to synthetic turf unless otherwise specified.

Concrete and solid surfaces shall be ½" higher than the top of the board.

Contractor shall protect finished synthetic turf field surface and sub-base drainage system until time of certificate of substantial completion. All accumulated sediment and infill material must be removed from the drainage system.

Contractor shall be responsible for repair or replacement of any damaged areas during construction as directed by Engineer and to satisfaction of Owner until the certificate of completion is completion is issued.

Synthetic Turf shall be ordered by the Contractor and delivered to the Contractor's receiving location. The Contractor shall provide equipment and labor for off-loading, loading, and trucking as needed. Contractor is responsible for securing all deliveries and insuring the completeness of the order prior to installation. Contractor is required to inspect all deliveries received for damage and shall notify the Engineer when materials have been received and inspected. Inspection by the Contractor shall occur upon delivery. If materials are found to have been damaged upon delivery to Contractor, Contractor shall inform vendor and provide photographs of damage, and, if necessary, store the materials at the receiving location. If the materials are damaged after delivery to Contractor but before installation is complete, Contractor shall be responsible for securing replacement materials. Original packing slips from each shipment shall be provided to the Engineer.

WARRANTY

The Contractor shall provide single-source written guarantee from Synthetic Turf Manufacturer covering materials and workmanship for all components that comprise synthetic turf system for a minimum of a minimum of eight (8) years from the date of certificate of substantial completion.

Warranty shall provide for removal of defective materials and workmanship and furnishing and installation of new materials to repair synthetic surfacing to original condition satisfactory to and at no cost to Owner.

Warranty shall be in writing and signed by Contractor and synthetic field surfacing materials manufacturer.

METHOD OF MEASUREMENT

Synthetic Turf measurement shall be based on square foot completed work as described above as listed on the proposal. Run overlap, square footage overage to cover shapes, and overhang shall be incidental to this bid item and are not calculated in the proposal page square foot price. It is the responsibility of the Contractor to determine run overlap and overhang and include that with their bid price.

BASIS OF PAYMENT

Synthetic Turf 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, double handling, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 90011 – PLUMBING

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to install plumbing as shown on plans and in these special provisions. This shall include installation of curb stop, air connection, water meter w/ by pass, back flow preventer and all connections and components. Plumbing shall be installed in accordance with Sections 22 00 00 – Plumbing and 33 11 00 Water Utility Distribution Piping and the City of Madison Standard Specifications for Public Works Contracts.

Procurement and installation of stainless steel enclosure and locking clasp and concrete pad, and compacted stone base.

Procurement and installation of drinking fountain shall be paid separately under BID ITEM 90001 – DRINKING FOUNTAIN.

The Contractor shall contact both City of Madison Building Inspection – Plumbing and Steve Elmer (608-209-8700) to inspect plumbing throughout project and prior to backfilling.

METHOD OF MEASUREMENT

Plumbing measurement shall be based on lump sum of completed work as described above.

BASIS OF PAYMENT

Plumbing 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, double handling, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 90012 – ELECTRICAL SERVICE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to install metered electrical service and irrigation controller in accordance with local electrical utility requirements, Section 26 00 00 – Electrical Specifications included in this contract, and the City of Madison Standard Specifications for Public Works Contract including disconnects and new service to irrigation controller.

Excavation cut necessary to perform work outlined in this special provision is incidental to this bid item. Excess material shall be disposed offsite at a location to be determined by the Contractor at no additional charge to the City.

The Contractor shall contact both City of Madison Building Inspection – Electrical and Paul Janes (608-209-3578) to inspect electrical service throughout project and prior to backfilling.

METHOD OF MEASUREMENT

Electrical Service measurement shall be lump sum for work as described above.

BASIS OF PAYMENT

Electrical Service 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, double handling, disposal and incidentals required to complete the work as set forth in the description.

BID ITEM 90013 – LIGHT FIXTURE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary for the Contractor to procure and install the McGraw Edison TLM-E06-LED-E1SL3-AP-P-MS/2-L25+MA1017-AP (TETON ADAPTER) light onto the existing pole as shown on plans.

METHOD OF MEASUREMENT

Light Fixture measurement shall be lump sum for work as described above.

BASIS OF PAYMENT

Light Fixture 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, double handling, disposal and incidentals required to complete the work as set forth in the description.

BID ITEMS 90014, 90015 and 90016 – ORNAMENTAL FENCE ITEMS

Alternate 1 (bid item 90014), Alternate 2 (bid item 90015) and Alternate 3 (bid item 90016) involve upgraded fencing related to bid items 90002, 90003 and 90004.

The unit price for bid item 90014 shall be the incremental cost to provide the upgraded fence item. If the City awards Alternate 1 (bid item 90014) the contractor will be paid for both items 90002 and 90014.

The unit price for bid item 90015 shall be the incremental cost to provide the upgraded fence item. If the City awards Alternate 2 (bid item 90015) the contractor will be paid for both items 90003 and 90015.

The unit price for bid item 90016 shall be the incremental cost to provide the upgraded fence item. If the City awards Alternate 3 (bid item 90016) the contractor will be paid for both items 90004 and 90016.

BID ITEM 90014 – ORNAMENTAL FENCE UPGRADE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary to upgrade the chain link fencing under BID ITEM 90002 – CHAIN LINK FENCING to fencing with material Ameristar Echelon Plus® fencing with Puppy Panel (or approved equal) for all dog park fencing. This bid item shall be an alternate for all locations proposed for chain link fencing as detailed on Sheets 8.0 and 9.9

This bid item is an alternate and may be removed or added to the contract per SECTION 103.2.

Echelon Plus® with Puppy Panel (or approved equal) shall be installed in Majestic™ Style, with a flush top rail.

All fencing rails and associated components shall be powder coated black.

Anchor bolt construction to base plate as shown on the plans and on Sheet 9.9 shall be incidental to this bid item.

The Contractor shall submit shop drawings for approval by the Engineer. The Contractor shall also submit post layout for approval by the Engineer if it differs from plans.

BASIS OF PAYMENT

Ornamental Fence Upgrade measurement shall be per linear foot for the additional costs related to upgrading proposed chain link fencing to ornamental fencing as described above.

METHOD OF MEASUREMENT

Ornamental Fence Upgrade 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 90015 – ORNAMENTAL FENCE DOG VESTIBULE UPGRADE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary to upgrade the chain link dog vestibule including fencing and gates from chain link fencing under BID ITEM 90003 – CHAIN LINK FENCE DOG VESTIBULE to fencing with material Ameristar Echelon Plus® fencing with Puppy Panel (or approved equal) for all dog park vestibule fencing including gates. This bid item shall be an alternate to all locations proposed for chain link dog vestibule as detailed on Sheets 8.0 and 9.9.

This bid item is an alternate and may be removed or added to the contract per SECTION 103.2.

All gates shall be installed with an industrial fork hinge for easy and quick entry into the dog park

Echelon Plus® with Puppy Panel (or approved equal) shall be installed in Majestic™ Style, with a flush top rail.

All fencing rails and associated components shall be powder coated black.

The Contractor shall submit shop drawings for approval by the Engineer. The Contractor shall also submit post layout for approval by the Engineer if it differs from plans.

BASIS OF PAYMENT

Ornamental Fence Dog Vestibule Upgrade measurement shall be per each 16'x12' dog vestibule including gates for the additional costs related to upgrading proposed chain link fence dog vestibule to ornamental fence dog vestibule as described above.

METHOD OF MEASUREMENT

Ornamental Fence Dog Vestibule Upgrade 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 90016 – ORNAMENTAL FENCE 12' MAINTENANCE GATE UPGRADE

DESCRIPTION

Work under this item shall include all work, materials, labor and incidentals necessary to upgrade the chain link dog vestibule including fencing and gates from chain link fencing under BID ITEM 90004 – 12' MAINTENANCE GATE to a 12' gate with material Ameristar Echelon Plus® fencing with Puppy Panel (or approved equal). This bid item shall be an alternate to all locations proposed for chain link 12' maintenance gate and shall be installed as detailed on Sheets 8.0 and 9.9.

This bid item is an alternate and may be removed or added to the contract per SECTION 103.2.

All gates shall be installed with an industrial fork hinge for easy and quick entry into the dog park. The maintenance gate shall be two 6' wide gates with a pin gate system.

Echelon Plus® with Puppy Panel (or approved equal) shall be installed in Majestic™ Style, with a flush top rail.

All fencing rails and associated components shall be powder coated black.

The Contractor shall submit shop drawings for approval by the Engineer. The Contractor shall also submit post layout for approval by the Engineer if it differs from plans.

BASIS OF PAYMENT

Ornamental Fence 12' Maintenance Gate Upgrade measurement shall be per each 12' gate for the additional costs related to upgrading proposed chain link fence dog vestibule to ornamental fence dog vestibule as described above.

METHOD OF MEASUREMENT

Ornamental Fence 12' Maintenance Gate 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.

**SPECIAL PROVISIONS CONTINUED
ADDITIONAL TECHNICAL SPECIFICATIONS TABLE OF CONTENTS**

- Specifications 22 00 00 - Plumbing**
- Specifications 26 00 00 – Electrical**
- Specifications 32 84 00 – Irrigation Distribution System**
- Specifications 33 11 00 – Water Utility Distribution**

1 **SECTION 22 00 00 - PLUMBING**

2
3
4 **PART 1 - GENERAL**

5
6 **1.01 DESCRIPTION**

7
8 A. Work Included: Provide plumbing where shown on the Drawings, as specified herein, and as
9 needed for a complete and proper installation including, but not necessarily limited to:

- 10
11 1. Domestic Cold Water Piping.
12 2. Drain, Waste, and Vent Systems.
13 3. Plumbing Fixtures and Trim.
14 4. Irrigation Backflow Prevention.
15 5. Pad-mounted enclosure - water meter/backflow preventer.

16
17 B. Related Work:

- 18
19 1. Documents affecting work of this Section include, but are not necessarily limited to,
20 General Conditions, Supplementary Conditions, and Sections in Division 1 of these
21 Specifications.
22 2. Demolition and deactivation of plumbing systems in existing facilities as noted on the Site
23 Drawings.

24
25 C. Work of Other Sections:

- 26
27 1. Openings for new Plumbing work in new construction walls, floors, roof, ceiling, etc. shall
28 be provided by the General Contractor. Location and size of these openings shall be the
29 responsibility of the Plumbing Contractor.
30 2. Electrical line voltage wiring (110 volts and greater) by the Electrical Contractor. Wiring
31 diagrams shall be furnished to the Electrical Contractor by the Plumbing Contractor.
32 3. Roofing, exterior wall and related exterior openings shall be caulked, sealed and patched
33 by the General Contractor.
34 4. Exterior site utilities - refer to Division 33 requirements.

35
36 **1.02 GENERAL PROVISIONS**

37
38 A. This specification Section is a general description of the work requirements. The particular
39 descriptions are not intended to be all-inclusive. Bidders shall also refer to the Drawings.

40
41 B. Prior to submitting a bid, the Contractor shall call the Engineer's attention (in writing only) to any
42 materials or items of work believed to be inadequate. Bidders are required to visit the premises,
43 take measurements, inspect existing conditions and limitations, and obtain first hand information
44 necessary to submit a bid. The intent of the Contract is to obtain complete system installations,
45 tested, ready for operation. No extras will be allowed because Contractor's misunderstanding of
46 the scope work involved.

47
48 C. Everything essential for the completion of the work implied to be covered by these Specifications
49 to make the system ready for normal and proper operation must be furnished and installed by this
50 Contractor. Accordingly, any omission from either the plans or the Specifications, or both of
51 details necessary for the proper installation and operation of the system shall not relieve this
52 Contractor from furnishing such detail in full and proper manner.

53
54 D. The Drawings show various details indicating the general arrangement of the plumbing work,
55 sizes and locations of piping, equipment, etc. The said Drawings with figures, lettering, etc., shall
56 be considered a part of these Specifications and no charge or alternation shall be made in any
57 case unless ordered by the Engineer.
58

- 1 E. In addition to the Plumbing work, refer to the Plumbing work shown on the general Construction
2 Drawings of the building as being part of this Contract, unless specified to be done by other
3 contractors.
4

5 **1.03 QUALITY ASSURANCE**
6

- 7 A. Use adequate number of skilled workmen who are thoroughly trained and experienced in the
8 necessary crafts and who are completely familiar with the specified requirements and the
9 methods needed for proper performance of the work of this Section.
10
11 B. Without additional cost to the Owner, provide such other labor and materials as required to be
12 complete the work of the Section in accordance, with the requirements of governmental agencies
13 having jurisdiction, regardless of whether such materials and associated labor are called for
14 elsewhere in the Contract Documents.
15
16 C. In acceptance or rejection of installed work, the Architect or Engineer shall make no allowance for
17 lack of skill on the part of the Workmen.
18
19 D. For the actual field fabrication, installation and testing of the Plumbing work, use only thoroughly
20 trained and experienced workmen complete familiar with the items required and manufacturer's
21 current recommended methods of installation.
22

23 E. Reference Standards:
24

25	ANSI	American National Standards Institute
26	ASME	American Society of Mechanical Engineers
27	ASSE	American Society of Sanitary Engineering
28	ASTM	American Society of Testing and Material
29	AWWA	American Waterworks Association
30	CISPI	Cast Iron Soil Pipe Institute
31	FM	Factory Mutual
32	MCA	Mechanical Contractors Association
33	NEC	National Electric Code
34	NEMA	National Electrical Manufacturers Association
35	NFPA	National Fire Protection Association
36	NSF	National Sanitation Foundation
37	WQA	Water Quality Association

38
39 **1.04 CODES AND PERMITS**
40

- 41 A. This contractor must comply with building codes and other ordinances in force where the building
42 is located as far as same apply to his work.
43
44 B. Plumbing work shall meet all Federal, State, Local Codes, ordinances and utility regulations.
45
46 1. In the event of conflict between or among specified requirements and pertinent
47 regulations, the more stringent requirement will govern when so directed by the Engineer.
48
49 C. Plumbing Contractor must secure permits from proper offices and pay all legal fees as may be
50 necessary for fulfilling the requirements of these specifications.
51
52 D. Submit one (1) copy of all permits to the Owner.
53

54 **1.05 COORDINATION**
55

- 56 A. Cooperate and coordinate with other trades to assure that all systems pertaining to the Plumbing
57 work shall be installed in the best feasible arrangement. Coordinate as required with all other
58 trades to share space in common areas and to provide the maximum of access to each system.
59

- 1 B. Arrange plumbing work in neat, well organized manner with piping and similar services running
2 with primary lines of building construction, and with minimum of 8 foot overhead clearance, where
3 possible.
4
- 5 C. Locate equipment properly to provide easy access, and arrange entire plumbing work with
6 adequate access for operation and maintenance.
7
- 8 D. Give right-of-way to piping, which must slope for drainage.
9
- 10 E. Where Plumbing work is to connect to existing, the Contractor must field verify all connection
11 points before beginning any rough-in work. Verify gravity flow lines and proper invert elevations
12 required prior to starting piping installation.
13

14 **1.06 PAINTING PLUMBING WORK**

- 15
- 16 A. General: All field painting of plumbing equipment shall be done by the General Contractor,
17 unless equipment is specified otherwise or is to be furnished with factory-applied finish coats.
18
- 19 B. All equipment shall be provided with factory-applied prime and final coat paint finish, unless
20 otherwise specified.
21
- 22 C. If factory-applied paint finish in any Plumbing equipment furnished by the Plumbing Contractor is
23 damaged in shipment or during construction of the building, the equipment shall be refinished by
24 the Plumbing Contractor to the satisfaction of the Architect or Engineer.
25
- 26 D. Prime paint all field-fabricated metal work under plumbing work, comply with applicable
27 provisions of Division 9.
28

29 **1.07 PLUMBING SYSTEM IDENTIFICATION**

- 30
- 31 A. General: Provide adequate marking of plumbing system and control equipment to allow
32 identification and coordination of maintenance activities and maintenance manuals.
33
- 34 1. Furnish and install adequate marking, tagging and labeling of all *accessible and exposed*
35 Plumbing equipment, piping and control devices, per ANSI A13.1-1981. Accessible
36 locations shall include all ceiling spaces above accessible ceilings.
37
- 38 B. Equipment: Identify all major Plumbing equipment with plastic-laminate signs of 2" high painted
39 stencils and contrasting background. Provide test of sufficient clarity and lettering to convey
40 adequate information at each location and mount permanently. Identify control equipment by 1-
41 1/2" x 4" plastic laminate nameplates with 1/4" high lettering.
42
- 43 C. Piping: Identify piping once every 30 feet at each branch, at termination of lines, and near valve
44 or equipment connections. Place flow directional arrows at each piping system for identification
45 of flow direction. Provide lettering of the appropriate size to convey information on wrap-around
46 signage, adhesive-backed or paint stenciled labels.
47
- 48 D. Valves: Identify all valves with 1-1/2" diameter polished brass tags with stamp-engraved labels or
49 plastic laminate tags. Prefix or color-code tags for each generic piping service. Prepare and
50 submit valve tag schedule, listing location, service and tag description, and incorporate in
51 Instruction Operations Manual.
52
- 53 E. Operational Labels: *Where* needed for proper or adequate information on operation and
54 maintenance of Plumbing systems, provide tags or labels of plastic or laminated card stock,
55 typewritten to convey the message.
56

57 **1.08 FLOOR, WALL, ROOF AND CEILING OPENINGS**

58

- 1 A. The General Contractor will be required to leave openings in ceiling, floors, walls, roof, partitions,
2 etc., as required to install the Plumbing work specified or shown on the Drawings. The Plumbing
3 Contractor is responsible for correct size and location of his openings. Where penetrations
4 through existing construction are required, they shall be the responsibility of the Plumbing
5 Contractor.
6
7 1. Pipe Sleeves: Schedule 40 black steel pipe, 1" larger than carrier pipe.
8
9 B. The Plumbing Contractor shall set sleeves and anchors for all equipment, etc., and shall provide
10 watertight seals on pipes through exterior walls, floors and roof and where noted on the
11 Drawings.
12
13 C. Pack annular space between sleeves and pipe with fiberglass insulation and seal with approved
14 caulking materials. Where penetrations occur through fire-rated walls or floors, fill space with
15 fire-resistive insulation similar to high-temperature mineral wool, US Gypsum Thermafiber batts
16 or Cera-blanket FS insulation by Tremco. Seal openings with UL approved fire-resistive fire stop
17 caulk/sealant or assembly.
18
19 1. Fireproof plastic piping through fire-rated construction per approved UL listed assembly.
20
21 D. Provisions for openings, holes and clearances through walls, floors, ceilings and partitions to be
22 made in advance of construction of such parts of the building.
23
24 E. If the Plumbing Contractor should neglect to inform the General Contractor of his opening
25 requirements and that portion of the Building construction has been completed, the Plumbing
26 Contractor shall pay the General Contractor for providing such openings.
27
28 F. Make arrangements with various other contractors for all special framing, spacing and chases.
29 Mason will leave chases in mason work, but Plumbing Contractor is responsible for correct size and
30 location.

31 **1.09 CUTTING AND PATCHING**

- 32
33 A. General: Refer to Division 1 General Requirements.
34
35 B. Perform all cutting and patching required for complete installation of the HVAC systems, unless
36 specifically noted otherwise. Provide all materials required for patching unless otherwise noted.
37
38 1. All cutting and patching necessary of structural members to install any Plumbing work
39 shall not be done without permission, and then only carefully done under the direction of
40 the Architect and General Contractor.
41
42 C. The Contractor shall not endanger any work of other trades by demolition, cutting, digging or
43 otherwise. Any cost caused by defective or ill-timed cutting and patching work shall be borne by
44 the contractor responsible. Each contractor requiring cutting and patching shall hire men skilled
45 in such cutting and patching to do the work.
46
47 1. All patching work in existing areas shall match existing work and restore the finish to
48 its original condition in material, quality, texture, finish and color unless specifically noted
49 or scheduled otherwise.
50

51 **1.10 TESTS AND INSPECTIONS:**

- 52
53 A. All plumbing tests shall be conducted in the presence of and to the satisfaction of the Governing
54 Authorities, Architect/ Engineer, and Owner or his authorized representative.
55
56 B. The Plumbing Contractor shall be responsible for applying tests and ordering inspections as
57 required by Federal, State and local Code and Inspection authorities.
58

1. All work shall remain exposed until it has been tested, inspected and approved.

1.11 TEMPORARY SERVICES

A. Provide temporary services for all plumbing services to the existing facility to maintain function of sanitary, storm, natural gas and water services during the construction period.

1.12 TRENCHING AND BACKFILLING

A. Trench, excavate and tunnel to place all piping and other related work necessary at the elevations indicated or required, as shown on the Drawings.

1. Cut bottom of trench to grade, make trench 12" wider than the widest dimension of the pipe.
2. All pipes shall be laid on a compacted bed of sand 6" deep. Do not lay piping on large stones, rocks or bricks.

B. Backfill in layers and compact sufficiently to prevent settlement. Backfill with damp sand and fine gravel mixture.

1. Exterior locations shall be backfilled to 12" of grade with sand and fine gravel mixture and the remainder with native compacted topsoil.
2. Do not start backfill operations until plumbing work has been properly inspected and approved.

1.13 CONCRETE FOR PLUMBING WORK

A. General: Comply with pertinent provisions of Division 1 and Division 3.

B. All concrete work for equipment pads by the Plumbing Contractor.

C. Concrete Equipment Pads: For each piece of floor or ground mounted HVAC equipment as indicated on the Drawings, provide a 4" concrete housekeeping pad at a minimum of 4 inches wider than the full size of the respective equipment's base. Equipment pads are required for the following equipment:

1. Water Meter.
2. Backflow Preventer.

1.14 EQUIPMENT ACCESS

A. General: All valves, equipment and accessories shall be installed to permit access to equipment for maintenance, servicing or repairs. Relocation of piping, or equipment to accomplish equipment access shall be completed by this Contractor at no additional cost.

B. Location: Provide access doors where equipment is located in chases or inaccessible locations. Access panels shall be furnished by this Contractor and installed by the specific trade responsible for the material in which the access panels are installed.

C. Construction: Access doors in fire-rated construction must have UL label. Access doors shall be of size to provide adequate access to equipment concealed in wall, ceiling and furred-in spaces. Milcor or approved equal, 14-gauge steel frame and door, prime-coated, except stainless steel in areas subject to excessive moisture.

1.15 EQUIPMENT SUPPORTS

1 A. General: Provide all supporting steel and related materials not indicated on structural drawings
2 as required for the installation of equipment and materials, including angles, channels, beams
3 and hangers.

4
5 1. Prime coat paint all metal supports.

6 **1.16 EQUIPMENT GUARDS**

7
8 A. General: Provide equipment guards over belt-driven assemblies, pump shafts, exposed fans
9 and related elsewhere, as indicated in this specification or required by Code.

10
11 1. All belt guards shall be OSHA-approved types.

12
13 **1.17 GUARANTEE**

14
15 A. All material and workmanship must be new and first class in every respect; the plumbing
16 equipment must be turned over to the owner in complete working order and free from mechanical
17 or performance defects.

18
19 B. The Plumbing Contractor must guarantee all labor and materials for one (1) year from the
20 completion of the plumbing system. Maintain and repair plumbing equipment for the above
21 period, unless such defects are clearly the result of bad management after plumbing system is
22 turned over to the Owner.

23
24 C. Before final acceptance of the plumbing work, the Plumbing Contractor shall have the entire
25 apparatus and system in complete and satisfactory operation and shall maintain same in
26 satisfactory and continuous operation for a period of ten days prior to the date of acceptance; fuel
27 to be furnished by Owner.

28
29 D. The Plumbing Contractor shall submit to the Engineer in triplicate, at the completion of his work, a
30 certified statement, signed by a principal of the firm, stating that the system has been fully installed
31 and is operating within the intent of the Drawings and Specifications and that all system components
32 have been tested and adjusted. This statement shall be submitted before the system is presented to
33 the Owner for final inspection.

34
35 **1.18 SUBMITTALS**

36
37 A. Refer to Division 1 for additional submittal requirements.

38
39 B. The Plumbing Contractor will be held responsible for correction of work deemed necessary by the
40 Engineer due to proceeding with the work without shop drawings that have the
41 Architect/Engineers final approval.

42
43 C. Shop drawings shall include data on physical dimensions, gauges, materials of construction and
44 capacities.

45
46 1. Incomplete drawings will be disapproved.

47
48 D. This Contractor will be responsible for all figures and dimensions shown on the shop drawings.
49 Approval of shop drawings describing equipment that cannot fit in the space allotted does not
50 relieve this Contractor from providing equipment that will meet the space requirements.

51
52 E. Submit six (6) copies of shop drawings to the Architect/Engineer for approval, with complete
53 detail for all equipment, materials, etc., to be furnished and installed for this project as follows:

- 54
55 1. Valves.
56 2. Pipe and piping specialties.
57 3. Plumbing fixtures.
58 6. Plumbing enclosures.

1 7. As-built Drawings(1 copy).
2

3 **1.19 HOUSEKEEPING AND CLEANUP**
4

- 5 A. Periodically as work progress and/or as directed by the Architect/Engineer, the Contractor shall
6 remove waste materials from the building and leave the area of the work room clean. Upon
7 completion of work remove all tools, scaffolding, broken and waste materials, etc., from the site.
8

9 **1.20 LUBRICATION**

- 10
11 A. Upon completion of the work and before turning over to the Owner, clean and lubricate all
12 bearings except sealed and permanently lubricated bearings. Use only lubricant recommended
13 by the manufacturer.
14

15 1. The Contractor is responsible for maintaining lubrication of all mechanical equipment
16 under his contract until work is accepted by the Owner.
17

- 18 B. Furnish a chart with each piece of equipment listed, itemizing location for lubricant required and
19 recommended periods of lubrication. Incorporate chart in Instruction Manual.
20

21 **1.21 INSTRUCTIONS AND MANUALS**
22

- 23 A. Upon completion of the installation, but before final acceptance of the system, the Plumbing
24 Contractor shall instruct the Owner on the care and operation of all parts of the Plumbing system.
25

- 26 B. Assemble two (2) complete sets of manufacturer's printed operating and maintenance
27 instructions for all mechanical equipment and installed under this contract. Prepare in bound
28 copies complete with index tabs. Information must include parts lists, equipment warranties, and
29 wiring diagrams. Submit bound copies to Architect for disbursement.
30

31 **1.22 AS-BUILT DRAWINGS**
32

- 33 A. During construction maintain a set of prints showing installed as-built work for the project.
34

- 35 B. Upon completion of construction before final acceptance, provide a set of as-built drawings to the
36 Architect/Engineer.
37
38

39 **PART 2 - PRODUCTS**
40

41 **2.01 DOMESTIC WATER PIPE SCHEDULE**
42

- 43 A. Above Ground Piping:
44

45 1. Type 'L' copper water tube, H(hard drawn) temper, ASTM B88; with cast copper fittings,
46 ANSI B16.18; wrought copper fittings, ANSI B16.22; lead-free(less than 0.2%) solder,
47 ASTM B32; flux ASTM B813.
48

- 49 B. Below Ground: 2-1/2" and Smaller:
50

51 1. Type 'K' copper water tube, O(annealed-soft) temper, ASTM B88; with cast copper
52 fittings, ANSI B16.18; wrought copper fittings, ANSI B16.22; lead-free(less than 0.2%)
53 solder, ASTM B32; flux ASTM B813; or cast copper flared pressure fittings, ANSI B16.26.
54 2. PEXa tubing approved for potable water piping: Crosslinked Polyethylene, ASTM F876
55 & ASTM F877. Fittings: Insert type fittings with cold flaring memory type fittings equal to
56 Uponsor. Crimp or compression ring fittings will not be allowed.
57
58

59 **2.02 DRAIN, WASTE AND VENT PIPE SCHEDULE**

1
2 A. Above Ground:
3

- 4 1. Cast iron soil pipe and fittings, hub and spigot, service weight, ASTM A74; with gasketed
5 neoprene joints.
6 2. Hubless cast iron soil pipe and fittings, CISPI 301; with no-hub couplings, CISPI 310.
7 3. PVC plastic pipe, Schedule 40, Class 12454-B(PVC 112), ASTM D1785; PVC plastic
8 drain, waste and vent pipe and fittings, ASTM D2665; socket fitting patterns, ASTM
9 D3311; primer, ASTM F656; solvent cement, ASTM D2564.
10 4. Galvanized steel vent pipe, Schedule 40, zinc-coated, ASTM 120 or 53 Grade B;
11 malleable iron threaded fittings, zinc-coated.
12 5. Type "DWV" copper water tube, H(hard drawn) temper, ASTM B88; with cast copper
13 drainage fittings(DWV), ANSI B16.23; wrought copper drainage fittings(DWV) , ANSI
14 B16.29; lead-free(less than 0.2%) solder, ASTM B32; flux, ASTM B813.
15

16 B. Below Ground:
17

- 18 1. Cast iron soil pipe and fittings, hub and spigot, service weight, ASTM A74; with gasketed
19 neoprene joints.
20 2. PVC plastic pipe, Schedule 40, Class 12454-B(PVC 112), ASTM D1785; PVC plastic
21 drain, waste and vent pipe and fittings, ASTM D2665; socket fitting patterns, ASTM
22 D3311; primer, ASTM F656; solvent cement, ASTM D2564.
23

24 **2.03 VALVES**
25

26 A. Approved Manufacturers:
27

- 28 1. Conbraco Apollo;
29 2. Milwaukee;
30 3. Watts;
31 4. Nibco.
32

33 B. Check valves:
34

- 35 1. 2" and smaller: Bronze, screwed, Y-pattern, 200# WOG, swing check type.
36

37 C. Ball valves:
38

- 39 1. 2" and smaller: Two or Three piece, bronze-body, chrome-plated bronze ball, Teflon
40 seat and packing, 400 pig WOG, with stem extensions on insulated piping. Appollo 70-
41 200 series.
42

43 **2.04 PIPE HANGERS**
44

45 A. Piping:
46

- 47 1. Split ring hangers with supporting rods.
48 2. Adjustable clevis.
49

50 B. Multiple or Trapeze Hangers:
51

- 52 1. Steel channels with welded spacers and hanger rods.
53

54 C. Floor Support:
55

- 56 1. Painted steel pipe saddle, stand and bolted floor flange.
57

58 D. Copper Pipe Supports:
59

1. All supports, fasteners, clamps, etc. directly connected to copper piping shall be copper-plated or polyvinylchloride(PVC)-coated.
2. Where steel strut supports are used, provide isolation collar between supports/clamp and copper piping.

E. *Approved Manufacturers:* Fee and Mason, B-line, Grinnell or approved equal.

2.05 CLEANOUTS

A. Exterior: Smith #4253 with XH cast iron top in concrete areas.

B. Interior Floors: Smith 4930-PB square nickel-bronze top.

C. Finished walls: Smith #4532 stainless steel with access plate and screw.

D. Provide cleanout plugs of extra heavy bronze

E. *Approved Manufacturers:* Josam, Smith, Wade, Zurn or approved equal.

2.06 ACCESS ENCLOSURE

A. General: All piping, conduit and accessories shall be installed to permit access to equipment for maintenance. Any relocation of piping, equipment or accessories required to provide maintenance access shall be accomplished by the Contractor at no additional cost.

B. Pad-Mounted Stainless Steel Enclosure: Provide custom fabricated enclosure with hinged access cover. Refer to the Drawings for and dimensional requirements and construction details.

1. Provide units of type, style, design, material and finish approved by the City of Madison Water Utility.
2. 304 stainless steel construction, 12 gage thickness.
3. Angle supports - 1"x1"x1/8" stainless steel welded in place.
4. Continuous stainless steel piano hinge.
5. Lifting handle and lockable clasp.
6. Pad mounting with flanges for anchoring with stainless steel fasteners.

2.07 WATER HAMMER ARRESTORS

A. Provide Smith #5000 series or equal, stainless steel or air chambers at each fixture group utilizing a flush valve or fast closing solenoid valve, as sized and recommended by the manufacturer.

B. *Approved Manufacturers:* Josam, PPP, Smith, Wade, Zurn or approved equal.

2.12 FIXTURES AND EQUIPMENT

A. General: Provide plumbing fixture, trim, and equipment as shown on the "**Fixture and Equipment Schedule**" on the Contract Drawings, and as specified herein.

1. Engineer will evaluate and make final decision on whether submitted fixture is equal to specified fixture.
2. Other fixture manufacturers who consider their products equal to those specified are required to request pre-approval for bidding as base bid in accord with Instructions to Bidders section.

2.14 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

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PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 SITE UTILITIES

- A. Verify all flow lines to the septic system sewer prior to installing any underground sewer piping. Advise the General Contractor of site conditions or inverts inconsistent with the plumbing layout and proposed flow line prior to proceeding.

3.03 PLUMBING SYSTEM LAYOUT

- A. Lay out the plumbing system in careful coordination with the Drawings, determining proper elevations for all components of the system and using only the minimum number of bends to produce a satisfactorily functioning system.
- B. Follow the general layout shown on the Drawings in all cases except where other work may interfere.
- C. Lay out pipes to fall within partition, wall, or roof cavities, and to not require furring other than as shown on the Drawings.
- D. Where work is to connect to existing, Plumbing contractor must field verify all connection points before beginning any rough-in work. Verify all connecting invert elevations and flow lines of new work connected to existing gravity drainage.

3.04 TRENCHING AND BACKFILLING

- A. Perform trenching and backfilling associated with the work of this Section in strict accordance with the provisions of Division 2 of these Specifications and consistent with the national, state and local plumbing codes.
- B. Cut bottom of trenches to grade. Make trenches 12" wider than the greatest dimension of the pipe.
- C. Bedding and backfilling:
 - 1. Install piping promptly after trenching. Keep trenches open as short a time as practicable.
 - 2. Under the building, install pipes on a 6" bed of damp sand. Backfill to bottom of slab with damp sand.
 - 3. Outside the building, install underground piping on a 6" bed of damp sand. Backfill to within 12" of finish grade with damp sand. Backfill remainder with native topsoil.
 - 4. Do not backfill until installation has been approved and until Project Record Documents have been properly annotated.

3.05 INSTALLATION OF PIPING AND EQUIPMENT, GENERAL

- A. General:
 - 1. Proceed as rapidly as the building construction will permit.

- 1 2. Thoroughly clean items before installation. Cap pipe openings to exclude dirt until
- 2 fixtures are installed and final connections have been made.
- 3 3. Cut pipe accurately, and work into place without springing or forcing properly clearing
- 4 window, doors, and other openings. Excessive cutting or other weakening of the building
- 5 will not be permitted.
- 6 4. Show no tool marks or threads on exposed plated, polished, or enameled connections
- 7 from fixtures. Tape all finished surfaces to prevent damage during construction.
- 8 5. Make changes in directions with fittings; make changes in main sizes with eccentric
- 9 reducing fittings. Unless otherwise noted, install water supply and return piping with
- 10 straight side of eccentric fittings at top of the pipe.
- 11 6. Run horizontal sanitary piping at a uniform grade of 1/4" per ft., unless otherwise noted.
- 12 Run horizontal water piping with an adequate pitch upwards in direction of flow to allow
- 13 complete drainage.
- 14 7. Provide sufficient swing joint, ball joints, expansion loops, and devices necessary for a
- 15 flexible piping system, whether or not shown on the Drawings.
- 16 8. Support piping independently at pumps, coils, tanks, and similar locations, so that weight
- 17 of pipe will not be supported by the equipment.
- 18 9. Pipe the drains from pump glands, drip pans, relief valves, air vents, and similar
- 19 locations, to spill an open sight drain, floor drain, or other acceptable discharge point,
- 20 and terminate with a plain and unthreaded pipe 6" above the drain.
- 21 10. Securely bolt all equipment, isolators, hangers, and similar items in place.
- 22 11. Support each item independently from other pipes. Do not use wire for hanging or
- 23 strapping pipes.
- 24 12. Provide complete dielectric isolation between ferrous and non-ferrous metals.
- 25 13. Provide union and shut off valves suitably located to facilitate maintenance and removal
- 26 of equipment and apparatus.

27
28 **B. Equipment access:**

- 29 1. Install piping, equipment, and accessories to permit access for maintenance. Relocate
- 30 items as necessary to provide such access, and without additional cost to the Owner.
- 31 2. Provide access doors where valves, motors, or equipment requiring access for
- 32 maintenance are located in wall or chases or above ceilings. Coordinate location of
- 33 access doors with other trades as required.
- 34
- 35

36 **3.06 PIPE JOINTS**

37
38 **A. Copper tubing:**

- 39 1. Cut square, remove burrs, and clean inside of female fitting to a bright finish.
- 40 a. Apply solder flux with brush to tubing.
- 41 b. Remove internal parts of solder-end valves prior to soldering.
- 42 2. Provide dielectric unions at points of connection of copper tubing to ferrous piping and
- 43 equipment.
- 44 3. For joining copper tubing, use the following:
- 45 a. Water piping 3" and smaller: 95-5 solder;
- 46 b. Water piping larger than 3": "Sil-fos" brazing;
- 47 c. Underground: "Sil-fos" brazing.
- 48
- 49

50 **B. Screwed piping:**

- 51 1. Deburr cuts.
- 52 a. Do not ream exceeding internal diameter of the pipe.
- 53 b. Thread to requirements of ANSI B2.1.
- 54 2. Use Teflon tape on male thread prior to joining other services.
- 55 3. Use litharge and glycerin on joint prior to cleaning for air and oil piping.
- 56
- 57

58 **C. PEX Tube Joints**

59

1. Installed per ASTM F-1807 with insert-type fittings with cold memory flaring as manufactured by Uponor are approved.
2. Brass compression type fittings with threaded nut, compression ring and insert will not be acceptable.
3. Provide copper type L manifolds, where manifold distribution is used with labeled quarter turn ball valve stops for each service line.
4. Install piping and fittings per manufacturers recommendations.

D. Leaky joints:

1. Remake with new material.
2. Remove leaking section and/or fitting as directed.
3. Do not use thread cement or sealant to tighten joint.

3.07 PIPE SUPPORTS

- A. Support suspended piping with clevis or trapeze hangers and rods.
- B. Space hangers and support for horizontal steel pipes according to the following schedule:

<u>Pipe size:</u>	<u>Maximum spacing on centers:</u>
1-1/4" and smaller:	8'-0"
1-1/2" to 3":	10'-0"
4" to 5":	14'-0"

- C. Space hangers and supports for horizontal copper tubing according to the following schedule:

<u>Tube size:</u>	<u>Maximum spacing on centers:</u>
1" and smaller:	6'-0"
1-1/2":	7'-0"
2":	8'-0"
2-1/2":	9'-0"
3" and larger:	10'-0"

- D. Provide sway bracing on hangers longer than 18".
- E. Support vertical piping with riser clamps secured to the piping and resting on the building structure. Provide at each floor unless otherwise noted.
- F. Provide insulation continuous through hangers and rollers. Protect insulation by galvanized steel shields.
- G. Arrange pipe supports to prevent excessive deflection, and to avoid excessive bending stress.
- H. Hubless piping:
1. Provide hangers on the piping at each side of, and within 6" of, hubless pipe coupling so the coupling will bear no weight.
 2. Do not provide hangers on couplings.
 3. Provide hangers adequate to maintain alignment and to prevent sagging of the pipe.
 4. Make adequate provision to prevent shearing and twisting of the pipe and the joint.

3.08 SLEEVES AND OPENINGS

- A. Provide sleeves for each pipe passing through walls, partitions, floors, roofs, and ceilings.
1. Set pipe sleeves in place before concrete is placed.
 2. For uninsulated pipe, provide sleeves two pipe sizes larger than the pipe passing through, or provide a minimum of 1/2" clearance between inside and outside of the pipe.

- 1 3. For insulated pipe, provide sleeves of adequate size to accommodate the full thickness of
2 pipe covering, with clearance for packing and caulking.
3
4 B. Caulk the space between sleeve and pipe or pipe covering, using a noncombustible, permanently
5 plastic, waterproof, non-staining compound which leaves a smooth finished appearance, or pack
6 with noncombustible asbestos cotton, or fiberglass to within 1/2" of both wall faces, and provide
7 the waterproof compound described above.
8
9 C. Finish and escutcheons:
10
11 1. Smooth up rough edges around sleeves with plaster or spackling compound.
12 2. Provide 1" wide chrome or nickel plated escutcheons on all pipes exposed to view where
13 passing through walls, floors, partitions, ceilings, and similar locations.
14 a. Size the escutcheons to fit pipe and covering.
15 b. Hold escutcheons in place with set screw.
16

17 **3.09 CLEANOUTS**

- 18
19 A. Secure the Architect's approval of locations for cleanouts in finished areas prior to installation.
20
21 B. Provide cleanouts of same nominal size as the pipes they serve; except where cleanouts are
22 required in pipes 4" and larger provide 4" cleanouts.
23
24 C. Make cleanouts accessible. After pressure tests are made and approved, thoroughly graphite
25 the cleanout threads.
26

27 **3.10 VALVES**

- 28
29 A. Provide valves in water and gas systems. Locate and arrange so as to give complete regulation
30 of apparatus, equipment, and fixtures.
31
32 B. Provide valves in at least the following locations:
33
34 1. In branches and/or headers of water piping serving a group of fixtures.
35 2. On both sides of apparatus and equipment.
36 3. For shutoff of risers and branch mains.
37 4. For flushing and sterilizing the system.
38 5. Where shown on the Drawings.
39
40 C. Locate valves for easy accessibility and maintenance.
41

42 **3.11 WATER HAMMER ARRESTORS**

- 43
44 A. Provide water hammer arrestors on hot water lines and cold water lines.
45
46 1. Install in upright position at all quick closing valves, isolated plumbing fixtures, and supply
47 headers at plumbing fixture groups.
48 2. Locate and size as specified, locate in accordance with Plumbing and Drainage Institute
49 Standard WH-201.
50 3. Install water hammer arrestors behind access panels.
51

52 **3.12 BACKFLOW PREVENTION**

- 53
54 A. Protect plumbing fixtures, faucets with hose connections, and other equipment having plumbing
55 connection, against possible back siphonage.
56
57 B. Arrange for testing of backflow devices as required by the governmental agencies having
58 jurisdiction.
59

1 **3.13 PLUMBING FIXTURE INSTALLATION**

2
3 A. Installation:

- 4
5 1. Set fixtures level and in proper alignment with respect to walls and floors, and with
6 fixtures equally spaced.
7 2. Provide supplies in proper alignment with fixtures and with each other.

8
9 B. Grout wall and floor mounted fixtures watertight where the fixtures are in contact with walls and
10 floors.

11
12 C. Caulk deck-mounted trim at the time of assembly, including fixture and casework mounted.
13 Caulk self-rimming sinks installed in casework.

14
15 **3.14 DISINFECTION OF WATER SYSTEMS**

16
17 A. Disinfect hot and cold water systems.

- 18
19 1. Perform disinfection under the Architect's observation. Notify the Architect at least 48
20 hours prior to start of the disinfection process.
21 2. Upon completion of disinfecting, secure and submit the Certificate of Performance,
22 stating system capacity, disinfectant used, time and rate of disinfectant applied, and
23 resultant residuals in ppm at completion.
24 3. Use disinfectant method approved by the Architect.

25
26 B. When disinfection operation is completed, and after final flushing, secure an analysis by a
27 laboratory approved by the Architect, based on water samples from the system, showing test
28 negative for coli-aerogene organisms. Provide a total plate count of less than 100 bacteria per
29 cc, or equal to the control sample.

30
31 C. If analysis results are not satisfactory, repeat the disinfection procedures and retest until specified
32 standards are achieved.

33
34 **3.15 OTHER TESTING AND ADJUSTING**

35
36 A. Provide personnel and equipment, and arrange for and pay the costs of, all required tests and
37 inspections required by governmental agencies having jurisdiction.

38
39 B. Where test show materials or workmanship to be deficient, replace or repair as necessary, and
40 repeat the tests until the specified standards are achieved.

41
42 C. Adjust the system to optimum standards of operation.

43
44 **END OF SECTION**

1 **SECTION 26 00 00 - ELECTRICAL**

2
3
4 **PART 1 - GENERAL**

5
6 **1.01 DESCRIPTION**

7
8 A. Work Included: Provide complete electrical service and distribution system with equipment and
9 materials where shown on the Drawings, as specified herein, and as needed for a complete and
10 proper installation including, but not necessarily limited to:

- 11
12 1. Underground Electric Service (100-amp, 1-phase, 120/240 volt), service disconnect -
13 meter pedestal cabinet with service ground, main circuit breaker and sub-breakers;
14 2. Branch circuit wiring, for lighting, receptacles, motors and equipment;
15 3. Lighting fixtures;
16 4. Wall cabinet;
17 5. Power to irrigation control panels by others.
18 6. Hangers, anchor sleeves, chase supports for fixtures, and other electrical materials and
19 equipment;
20 7. Other items and services required to complete the electrical systems.

21
22 B. Related Work:

- 23
24 1. Documents affecting work of this Section include, but are not necessarily limited to,
25 General Conditions, Supplementary Conditions, and Sections in Division 1 of these
26 Specifications;
27 2. Equipment structural supports, etc.;
28 3. All line voltage control wiring and starter interlocks, where specified;
29 4. Final equipment electrical connections.

30
31 C. Work of Other Sections:

- 32
33 1. Low-voltage (less than 100 volts) cabling and controls for Irrigation and Plumbing trades.
34

35 **1.02 GENERAL PROVISIONS**

36
37 A. Everything essential for the completion of the work implied to be covered by these Specifications
38 to make the system ready for normal and proper operation must be furnished and installed by this
39 Contractor. Accordingly, any omission from either the plans or the Specifications, or both, of
40 details necessary for the proper installation and operation of the system shall not relieve this
41 Contractor from furnishing such detail in full and proper manner.

42
43 B. In addition to the electrical plans, see General Plans of the building, as all electrical work
44 appearing on the latter plans will be part of this contract unless especially specified to be done by
45 other contractors, as well as, the said work detailed on the electrical plans.

46
47 **1.03 QUALITY ASSURANCE**

48
49 A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the
50 necessary crafts and who are completely familiar with the specified requirements and methods
51 needed for proper performance of the work of this Section.

52
53 B. Without additional cost to the Owner, provide such other labor and materials as required to
54 complete the work of this Section in accordance with the requirements of governmental agencies
55 having jurisdiction, regardless of whether such materials and associated labor are called for
56 elsewhere in these Contract Documents.

1 C. Reference Standard: The following standards are imposed, as applicable to the work:

2		
3	ASTM	American Society of Testing and Materials
4	NEC	National Electrical Code
5	NEMA	National Electrical Manufacturers Association
6	NFPA	National Fire Protection Association
7	UL	Underwriters Laboratories
8		

9 **1.04 CODES AND PERMITS**

10
11 A. The Contractor must comply with national, state of Wisconsin and city of Madison building and
12 electrical codes and other ordinances in force where the building is located as far as same apply
13 to his work.

- 14
15 1. IBC 2015;
16 2. IEEC 2015;
17 3. NEC 2014;
18 4. Wisconsin Electrical Code SPS sections.

19
20 B. He must secure permits from proper offices and pay fees as may be necessary for fulfilling the
21 requirements of these Specifications.

22
23 C. One (1) copy of all permits must be furnished to the Owner.

24
25 D. Electric Service Fee: Electrical Contractor shall secure and pay all fees for new electrical service
26 from electric utility, including temporary power services.

27
28 **1.05 COORDINATION**

29
30 A. Cooperate and coordinate with other trades to assure that all systems in the electrical work may
31 be installed in the best arrangement. Coordinate as required with all other trades to share space
32 in common areas and to provide the maximum of access to each system.

- 33
34 1. Coordinate removal of existing wiring from street lighting pole with City of Madison Traffic
35 Engineering(Mike Benzschawel 266-9031) with at least 48 hours advance notice.

36
37 B. Arrange electrical work in neat, well-organized manner with piping and similar running parallel
38 with primary lines of building construction.

39
40 C. Locate operating and control equipment properly to provide easy access, and install entire
41 electrical systems with adequate access for operation and maintenance.

42
43 D. Give right-of-way to piping which must slope for drainage.

44
45 **1.06 ELECTRICAL PROVISIONS OF THE MECHANICAL WORK**

46
47 A. Line Voltage Wiring: The Electrical Contractor shall make all line voltage (100 volts and greater)
48 electrical wiring, final connections and motor wiring for Mechanical equipment.

49
50 B. Control Wiring: Low-voltage (less than 100 volts) control wiring in conjunction with Mechanical
51 work shall be by the Mechanical Contractor in strict accordance with the applicable sections of
52 the Electrical Specifications.

53
54 C. Motors, Starters, and Disconnects: All motors starter and disconnects shall be provided by the
55 Electrical Contractor, unless provided with the equipment or indicated otherwise.

56

- 1 1. Mechanical Contractors shall furnish list of and location of all Mechanical equipment and
2 requirements for electrical connections, along with wiring diagrams.
3

4 **1.07 FLOOR, WALL, ROOF AND CEILING OPENINGS** 5

- 6 A. The General Contractor will be required to leave openings in new construction ceiling, floors,
7 walls, roof, partitions, etc., as required to install the Electrical work specified or shown on the
8 Drawings. The Electrical Contractor is responsible for correct size and location of openings.
9
10 B. Provisions for openings, holes and clearances through new construction walls, floors, ceilings
11 and partitions are to be made in advance of construction of such parts of the building.
12
13 C. The Electrical Contractor shall set sleeves and anchors for all equipment, etc., and shall provide
14 watertight seals on pipes through exterior walls, floors and roof locations, and where noted on the
15 Drawings.
16

17 **1.08 CUTTING AND PATCHING** 18

- 19 A. General: Refer to Division 1 General Requirements.
20
21 B. Perform all cutting and patching required for complete installation of the Electrical systems,
22 unless specifically noted otherwise. Provide all materials required for patching unless otherwise
23 noted.
24
25 1. All cutting and patching necessary of structural members to install any Electrical work
26 shall not be done without permission, and then only carefully done under the direction of
27 the Architect and General Contractor.
28

29 **1.09 TRENCHING AND BACKFILLING** 30

- 31 A. Comply with pertinent provisions of Division 1.
32
33 B. Perform trenching and backfilling associated with the work of this Section in strict accordance
34 with the provisions of Division 2 of the Specifications.
35

36 **1.10 SUBMITTALS** 37

- 38 A. Comply with pertinent provisions of Division 1.
39
40 B. Shop Drawing Submittals: Submit electronic PDF copy of shop drawings to the Architect for
41 approval, with complete detail for all equipment, materials, etc., to be furnished and installed for
42 this project as follows:
43
44 1. Electric Service Equipment;
45 2. Main circuit breaker;
46 3. Light Fixtures;
47 4. Electrical Devices
48 5. Electric Enclosures;
49
50 C. Shop Drawings:
51
52 1. The Electrical Contractor will be held responsible for correction of work deemed
53 necessary by the Engineer due to proceeding with the electrical work without approved
54 shop drawings that have the Architect/Engineers final approval.
55 2. Shop drawings shall include data on physical dimensions, gauges, materials of
56 construction and capacities. Incomplete drawings will be disapproved.
57 3. This Contractor will be responsible for all figures, quantities and dimensions shown on
58 the shop drawings.

1 4. Approval of shop drawings describing equipment that cannot fit in the space allotted does
2 not relieve this Contractor from responsibility of resubmitting equipment that will meet the
3 space requirements.
4

5 D. O & M Manual: Upon completion of this portion of the Work, and as a condition of its
6 acceptance, deliver to the Architect two (2) copies of an operation and maintenance manual
7 compiled in accordance with the provisions of Division 1 of these Specifications. Include the
8 following within the bound O&M manual:
9

- 10 1. Copy of the approved Record Documents for this portion of the Work;
- 11 2. Copies of all warranties and guaranties.
- 12 3. As-built drawings.

13
14 E. As-built Drawings: Record installation as-built on a set of blueline prints during construction.
15 Plan shall represent actual locations, materials and circuiting of equipment installed.
16

17 **1.11 PRODUCT HANDLING**

18
19 A. Comply with pertinent provisions of Division 1.
20

21 **1.12 WARRANTY**

22
23 A. In addition to standard one year warranty on all labor and materials, provide an additional
24 warranty on ballasts for all new fluorescent and HID lighting fixtures as specified.
25

26 **1.13 HOUSEKEEPING AND CLEAN-UP**

27
28 A. Periodically as work progresses and/or as directed by the Architect, the Contractor shall remove
29 waste materials from the building and leave the area of the workroom clean. Upon completion of
30 work remove all tools, scaffolding, broken and waste materials, etc., from the site.
31

32 **1.14 TEMPORARY SERVICES**

- 33
34 A. This Contractor shall provide temporary lighting and power as required throughout the
35 construction period.
36
37 B. Arrange for temporary electrical utility with local electrical utility. Electrical Contractor shall pay all
38 temporary electrical service and usage fees.
39
40

41 **PART 2 - PRODUCTS**

42 **2.01 GENERAL**

43
44
45 A. Provide only materials that are new, of the type and quality specified. Where Underwriters'
46 Laboratories, Inc. has established standards for such materials, provide only materials bearing
47 the UL label.
48

49 **2.02 SERVICE ENTRANCES AND METERING**

- 50
51 A. New Service: Provide new underground 100A, 120/240 volt, 1-phase, 3-wire electric service
52 from pad-mounted transformer as required by the local electrical utility(MG&E) and as shown on
53 Drawings.
54
55 B. Metering: Provide combination pedestal meter socket with service circuit breaker(100A/2P), dual
56 sub-breakers(20A/1p), service ground bar for exterior mounting and related metering equipment
57 per local electrical utility requirements(MG&E).

- 1
2 1. Utility approved metering equipment: Milbank U5701-O-5T9-CB with UQFBH-M-100
3 main breaker & series feed K5194 pedestal or approved equal.
4 2. Service AIC = 22K.

5
6 C. Main Switches: Provide a 100-amp 2-pole main circuit breaker in the service metering cabinet
7 with current limiting capabilities(22K) to meet utility AIC requirements(14K).
8

9 D. Sub-Breakers: Provide a two(2) 20-amp 1-pole main circuit breakers(10 AIC) in the service
10 metering cabinet
11

12 **2.03 GROUNDING SYSTEM**

13
14 A. Ground all equipment, including switches, transformers, conduit systems, motors, and other
15 apparatus, by conduit or conductor to cold water main and to independent electrode, using
16 ground clamps manufactured by Burndy or T&B, and approved by the Engineer.
17

18 B. Provide new service grounding electrode system. Add ground rods, foundation rebar ground and
19 water service grounding electrodes as required per NEC 250.50 for a common grounding
20 electrode system.
21

22 C. Provide grounding jumper from electrical devices to the metallic device boxes.
23

24 D. GFI receptacles shall be provided with separate insulated ground wire conductor to the main
25 service ground bar.
26

27 E. Ground all motor and equipment connections with dedicated ground conductor.
28

29 **2.04 IDENTIFICATION**

30
31 A. Junction and pull boxes shall be stenciled utilizing a coded identification system. The following
32 junction and pull boxes shall be identified using a coded system. Coding shall be submitted to
33 Engineer for approval.
34

35 1. Light and Power - 120/240V;
36

37 B. Label circuit numbers for all accessible line voltage power distribution raceways and junction
38 boxes.
39

40 C. Laminated Bakelite Plates: Engraved plastic nameplate shall be securely fastened to the
41 following equipment. Size 1" x 4" with 3/8" high letters unless space available dictates differently.
42

43 1. Electrical Enclosures.
44

45 D. Identify all conductors per NEC:
46

47 120/240V - Phase A - Black
48 - Phase B - Red
49 - Neutral - White
50 - Ground - Green
51

52 **2.05 ELECTRICAL ENCLOSURES**

53
54 A. General:
55

56 1. Electrical enclosures shall be provided at each location shown on the plans or called for
57 in the Specifications.

1
2 B. Electrical Enclosures:

- 3
4 1. Nema 3R enclosure.
5 2. UL listed.
6 3. 304 stainless steel construction.
7 4. Hinged access door with locking clasp.
8

9 **2.06 WIRING DEVICES**

10
11 A. General:

- 12
13 1. Devices shall be provided at each location shown on the plans or called for in the
14 Specifications.
15 2. All devices shall be of one manufacturer. Acceptable manufacturers: Leviton, Pass and
16 Seymour, Hubbell or General Electric.
17 3. Device catalog references herein and on the plans are to be considered as standards of
18 comparison. Comparable devices manufactured by the other manufacturer will be
19 considered as an optional choice.
20 4. Device finish color to be selected by Architect.
21

22 B. Receptacles:

- 23
24 1. GFCI Receptacle: Industrial-specification grade, NEMA 5-15R or 20R with indicator light
25 and feed through. Provide tamper resistant devices in public areas.
26 a. 20-amp: Leviton 7899; tamper resistant: Leviton T7899
27

28 C. Switches:

- 29
30 1. All toggle switches used to control lighting shall be 20 amp rated for 120/277 volts, A.C.,
31 industrial-specification grade.
32 2. 15 amp switches shall not to be used unless specifically shown otherwise for special
33 control.
34 3. Switches to be back and side wired, silent or quiet type.
35 4. The following catalog numbers refer to Leviton, Inc.:
36 a. single pole – 1221-2;
37 b. three way – 1223-2;
38 c. four way – 1224-2;
39 d. Single pole with pilot light – 1221-PLR;
40

41 D. Plates:

- 42
43 1. Provide as required for each outlet, single or multiple gang.
44 2. Provide blank covers on all empty boxes or outlets.
45 3. Plates shall be 304 stainless steel construction in all areas.
46 4. Provide single gang die-cast weather resistant in-use covers equal to Leviton M5979 on
47 receptacles in damp areas and exterior locations.
48

49 **2.06 RACEWAY SYSTEM**

50
51 A. Steel Conduit: Galvanized or sheradized steel intermediate or rigid metal conduit, or electrical
52 metallic tubing (EMT) with steel set screw or compression ring type fittings.
53

- 54 1. Provide rigid galvanized steel conduits as all exterior exposed areas.
55 2. Where conduit is installed underground or in the floor slab, provide rigid galvanized steel
56 conduit, or PVC coated steel conduit is acceptable.
57 3. Provide liquid-tight flexible conduit in all exterior locations

1
2 B. Conduit:

- 3
4 1. Rigid Threaded: Steel, ANSI C80.1
5 2. Electrical Metallic Tubing: ANSI C80.3
6 3. Rigid Nonmetallic Tubing: Schedule 40 PVC; NEMA TC-2 & WC-1094
7

8 C. Rigid Steel Conduit and Fittings:

- 9
10 1. Manufactured to ANSI C80.1 standards
11 2. Fittings: Threaded steel type as per ANSI/NEMA FB1
12

13 D. Liquid-Tight Flexible Conduit Fittings:

- 14
15 1. Conduit: Flexible metal conduit with PVC jacket.
16 2. Fittings as per ANSI/NEMA FB1.
17

18 E. Provide sleeves and chases where conduits pass through slabs.
19

20 **2.07 CONDUCTORS**

21
22 A. Wire and Cable (600 Volt): Provide 600 V insulated copper wire and cable, NEC standard, of
23 types specified below for different applications, with UL label, and color coded as required by
24 governmental agencies having jurisdiction. Use only copper wires and cables.
25

- 26 1. With conductors No. 4 and larger, provide insulating bushings.
27 2. Wire and cable shall be THHN or THWN.
28 3. Branch circuit wiring installed in wiring channels of continuous row-mounted fixtures shall
29 be provided. UL listed type RHH or other approved 90 degree C wires, rated at 600 V.
30 4. Wire No. 10 and smaller shall be solid or stranded wire; wire larger than No. 10 shall be
31 stranded wire.
32 5. Wire in conduits subjected to direct sunlight shall be THWN or RHWN.
33 6. Provide XHHW/CU wiring in underground exterior conduit or cabinets.
34 7. Identify feeder neutrals with white tape or white paint.
35 8. All low-voltage wiring located in accessible areas shall be installed in metallic conduit.
36 9. Provide separate identified neutral conductor for emergency and exit lighting circuits.
37 10. All branch circuit conductors shall be connected by means of a screw terminal.
38

39 **2.08 LIGHTING FIXTURES**

40
41 A. Provide fixtures of the types shown on the Drawings, and with the following accessories as
42 applicable.
43

44 B. Light Fixtures:

- 45
46 1. Provide units having a UL label.
47 2. Provide local label in addition if so required by governmental agencies having jurisdiction.
48 3. Verify all ceiling types as shown on final architectural plans and be responsible for
49 ordering proper fixtures and accessories for the proper ceiling.
50

51 C. LED Lighting:

- 52
53 1. The manufacturer of the LED lighting fixture shall utilize high-brightness LEDs and high-
54 efficiency electronic LED drivers, dimmed or no dimmed as required.
55 2. The LED fixture shall be thermally designed as to not exceed the maximum junction
56 temperature of the LED for the ambient temperature of the location the fixture is to be
57 installed

3. Light output of the LED system shall be the absolute photometry following IESNA LM-79 and IESNA LM-80 requirements and guidelines.
4. Minimum power factor of 0.90.
5. LED lighting fixture shall be mercury-free, lead-free and RoHS compliant.
6. The LED lighting fixture shall maintain 70% lumen output for a minimum of 50,000 hours.
7. All components of the LED lighting fixture shall be replaceable.
8. The LED lighting fixture shall carry a limited 3-year warranty minimum.

D. Acceptable Lighting Fixture Manufacturers:

1. Refer to **Fixture Schedule**. Engineer will evaluate and make final decision on whether submitted fixture is equal to specified light fixture.
2. Other fixture manufacturers who consider their products equal to those specified are required to request pre-approval for bidding as base bid in accord with Instructions to Bidders section.

2.09 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. Coordination:

1. Coordinate as necessary with other trades to assure proper and adequate provision in the work of those trades for interface with the work of this Section.
2. Coordinate the installation of electrical items with the schedule for work of other trades to prevent unnecessary delays in the work schedule.
3. Where lighting fixtures and other electrical items are shown in conflict with locations of structural members and mechanical or other equipment, provide required supports and wiring to clear the encroachment.

- B. Data indicated on the Drawings and in these Specifications are as exact as could be secured, but their absolute accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only for guidance in such regard.

- C. Where outlets are not specifically located on the Drawings, locate as determined in the field by the Architect. Where outlets are installed without such specific direction, relocate as directed by the Architect and at no additional cost to the Owner.

- D. Verify all measurements at the building. No extra compensation will be allowed because of differences between work shown on the drawings and actual measurements at the site of construction.

- E. The Electrical Drawings are diagrammatic, but are required to be followed closely as actual construction and work of other trades will permit. Where deviations are required to conform with

1 actual construction and the work of other trades, make such deviations without additional cost to
2 the Owner.

3.03 INSTALLATION OF ELECTRIC SERVICE

- 6 A. Coordinate installation with local utility as required for a complete electric service installation.
- 7
- 8 B. Installation shall be approved by the local utilities.
- 9

3.04 TRENCHING AND BACKFILLING

- 11 A. Perform trenching and backfilling associated with the work of this Section in strict
12 accordance with the provisions of Division 2 of these Specifications.
- 13
- 14
- 15 B. Cut bottom of trench to grade, make trench 12" wider than the widest dimension of the pipe.
- 16
- 17 C. Bedding and backfilling:
 - 18
 - 19 1. Install piping promptly after trenching. Keep trenches open as short a time as
 - 20 practicable.
 - 21 2. *Under the building slab:* Install all pipes on a compacted bed of damp sand 6" deep. Do
 - 22 not lay piping on large stones, rocks or bricks.
 - 23 3. *Outside the building:* Install all underground piping on a compacted bed of damp sand
 - 24 6" deep. Backfill to within 12" of finish grade with damp sand. Backfill the remainder with
 - 25 native topsoil. Backfill in layers and compact sufficiently to prevent settlement.
 - 26 4. Do not start backfill operations until underground plumbing work has been properly
 - 27 inspected and approved by governing authorities.
 - 28

3.05 INSTALLATION OF RACEWAYS AND FITTINGS

- 29
- 30
- 31 A. Where conduit is installed concealed in walls or above ceiling, or exposed in work areas, provide
32 rigid galvanized conduit or electrical metallic tubing with compression type fittings.
33
 - 34 1. Seal joints to prevent entrance of water.
 - 35 2. Provide ground wire of proper size per NEC 250.
 - 36 3. Use nylon (rather than steel) fish tape.
 - 37
- 38 B. Use flexible conduit only for short motor connections, or where subject to vibration.
- 39
- 40 C. Provide necessary sleeves and chases where conduits pass through floors and walls and provide
41 other necessary openings and spaces, arranging for proper time to prevent unnecessary cutting
42 in connection with the Work.
43
- 44 D. Where conduit is exposed, run parallel to or at right angle with lines of the building.
- 45
- 46 E. Securely and rigidly support conduits throughout the work.
- 47

3.06 INSTALLATION OF CONDUCTORS

- 48
- 49
- 50 A. Unless otherwise shown on the Drawings or noted in these Specifications, use No. 12 AWG
51 conductors for all branch circuits, protected by 20 amp circuit breakers. For runs exceeding 100
52 feet, use larger wires to limit voltage drops.
53
- 54 B. Use identified (white) neutrals and color-coded phase wires for all branch circuit wiring.
55
 - 56 1. Make splices electrically and mechanically secure with pressure-type connectors.

2. Provide "Scotchlok", Buchanon "B-cap", or Ideal "Wing-nut" connectors for wires sizes 6 AWG and smaller.
3. Provide Burndy compression-type connectors, "Hydent" or equal applied with a mechanical tool and die equipment for wire sizes 4 AWG and larger.
4. Insulate splices with a minimum of two half-lapped layers of Scotch Branch No. 33 vinyl-plastic electrical tape where insulation is required.

3.07 INSTALLATION OF LIGHTING FIXTURES

- A. Install lighting fixtures complete and ready for service in accordance with the Lighting Fixture Schedule shown on the Drawings.
- B. Wire fixtures with fixture wiring of at least 90 degrees C rating. Where fixtures are mounted in continuous rows, provide conductors in wiring channels of the same size as the circuit wires supplying the row of fixtures.

3.08 TESTING AND INSPECTION

- A. Provide personnel and equipment, make required tests, and secure required approvals from the Architect and governmental agencies having jurisdiction.
- B. Make written notice to the Architect adequately in advance of each of the following stages of construction:
 1. Test all parts of the electrical system and prove that all such items provided under this Section function electrically in the required manner.
 2. Immediately submit to the Architect a report of maximum and minimum voltages and a copy of the recording volt-meter chart.
 3. Also measure voltages between phases and between phase wires and neutrals and report these voltages to the Architect.

3.09 PROJECT COMPLETION

- A. Upon completion of the work of this Section, thoroughly clean all exposed portions of the electrical installation, removing all traces of soil, labels, grease, oil, and other foreign material, and using only the type cleaner recommended by the manufacturer of the item being cleaned.
- B. Thoroughly indoctrinate the Owner's operation and maintenance personnel in the contents of the operations and maintenance manual required to be submitted under Article 1.3 of this Section of these Specifications.

END OF SECTION

SECTION 328400

IRRIGATION DISTRIBUTION SYSTEM

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Attention is directed to the Bidding and Contract Requirements and General and Supplemental Requirements, which are hereby made a part of this Section.

1.02 DESCRIPTION OF WORK

- A. Furnish all labor, materials, supplies, equipment, tools, and transportation, and perform all operations in connection with and reasonably incidental to the complete installation of the irrigation system, and guarantee/warranty as shown on the drawings, the installation details, and as specified herein. The system shall be constructed to grades and conform to areas and locations as shown on the drawings. Removal and or restoration of existing improvements, excavation and back-fill, and all other work in accordance with plans and specifications are required. Contractor to acquire all registrations, inspections and permits to complete the irrigation system.
- B. Extent of irrigation system work is shown on drawings and by provisions of this Section.
- C. Sprinkler lines shown on the drawings are essentially diagrammatic. Spacing of the sprinkler heads or quick coupling valves are shown on the drawings and shall be exceeded only with the permission of the Owner's authorized representative.
- D. The irrigation system shall include a controlled valve distribution system. CONTRACTOR shall furnish and install equipment, associated piping and incidentals as shown and specified.
- E. Items of work specifically included, but not limited to are:
 - 1) Procurement of all applicable licenses, permits, and fees.
 - 2) Coordination of all utilities.
 - 3) Installation of the system
 - 4) Sleeving for irrigation pipe and wire.
 - 5) Restoration of trenches
 - 6) As-Built Drawings

1.03 RELATED WORK

- A. Division 2-Site Work:
 - 1) Section 22 00 00 – Plumbing

1.04 QUALITY ASSURANCE

- A. The "Contractor" shall maintain continuously a competent superintendent, satisfactory to the Owner, with authority to act for him in all matters pertaining to the work. The "Contractor" shall coordinate his work with the other trades.
- B. The "Contractor" shall confine his operations to the area to be improved and to the areas allotted him by the Owner's representative for material and equipment storage.

- C. The "Contractor" shall have a minimum of 5 years' experience installing systems of comparable size and complexity. The contractor shall also have suitable financial status to meet obligations for this project.

1.05 SUBMITTALS

- A. Submit samples under provisions of Section 01300-Submittals.

Materials List: Include valves, pipe, fittings, valve boxes, swing joints and quick couplers to be used on the project prior to purchasing materials. Quantities of material need not be included.

- B. Manufacturer's Data: Submit manufacturer's catalog cuts, specifications, and operating instructions for the equipment mentioned above and equipment shown on the materials list.
- C. Shop Drawings: Upon irrigation system acceptance, submit written operating and maintenance instructions. Provide format and contents as directed by the Engineer/owner's representative. Include instruction sheets and parts lists for all operating equipment. If the contractor has an approved equal change, submit shop drawings for the change.
- D. Project Record (As-Built) Drawings
 - 1) The CONTRACTOR is to provide the OWNER a scaled drawing of the completed field "As-Built" of the system.
 - 2) All components of the system are to be drawn and referenced to the base drawing on the site from two known points. All components of the as-built are to be reference the original drawing and layout and tied into those points.
 - 3) Components of the system but not limited to all PVC piping, sleeves, electric valves, quick couplers, PVC and HDPE pipe and sizing,
 - 4) All PVC piping shall be referenced in the trench for lengths of run, change in direction and distance and locations of all components referenced.
 - 5) Two final hard copies of the overall drawings with dimension and notes are to be provided to the OWNER'S REPRESENTATIVE and one copy of the As-Built in AutoCAD 2018.dwg digital format at the same scale drawing as provided to the Contractor. The contractor is to provide in the original size and 11 x 17" format. Both submittals shall be laminated and provided to the owner.
 - 6) The contractor is to submit proof of daily field As-Built with pay submittal for each area the pay submittal is being submitted for. Payment will not be approved if progress drawings are not submitted.
 - 7) Contractor is to provide a picture log of the daily installation for piping, and all related components. Submit this picture log after the first 2 days of installation for format approval. Submit the project picture log at the end of the project in digital form and place on a memory stick for the owner.

1.06 RULES AND REGULATIONS

- A. Work and materials shall be in accordance with the latest edition of the National Electric Code, the Uniform Plumbing Code as published by the Western Plumbing Officials Association, and applicable laws and regulations of the governing authorities.

- B. When the contract documents call for materials or construction of a better quality or larger size than required by the above-mentioned rules and regulations, provide the quality and size required by the contract documents.
- C. If quantities are provided either in these specifications or on the drawings, these quantities are provided for information only. It is the "Contractor's" responsibility to determine the actual quantities of all material, equipment, and supplies required by the project and to complete an independent estimate of quantities and wastage.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver irrigation system components in manufacturer's original undamaged and unopened containers with labels intact and legible.
- B. Deliver plastic piping in bundles, packaged to provide adequate protection of pipe ends either threaded or plain.
- C. Store and handle materials to prevent damage and deterioration.
- D. Provide secure, locked storage for valves and similar components that cannot be immediately replaced, to prevent installation delays.

1.08 CODES AND STANDARDS

- A. The entire installation shall fully comply with local and state laws and ordinances and with all established codes applicable thereto.
- B. Any permits for the installation or construction of the work included under this contract which are required by any of the legally constituted authorities having jurisdiction, shall be obtained and paid for by the "Contractor", each at the proper time. He shall also arrange for and pay all costs concerning any inspections and examinations required by these authorities.
- C. In all cases where inspection of the system work is required and/or where portions of the work are specified to be performed under the direction and/inspection of the Owner's authorized representative, the "Contractor" shall notify the Owner's authorized representative at least 48 hours in advance of the time and such inspection and/or direction is required.
- D. Any necessary re-excavation or alterations to the system needed because of failure of the "Contractor" to have the required inspections, in the opinion of the Engineer/owner's representative, shall be performed at the "Contractor's" own expense.

1.09 TESTING

- A. Notify the OWNER'S REPRESENTATIVE three days in advance of testing.
- B. Pipelines jointed with rubber gaskets or threaded connections may be subjected to a pressure test at any time after partial completion of backfill. Pipelines jointed with solvent-welded PVC joints shall be allowed to cure at least 24 hours before testing.
- C. Subsections of mainline pipe may be tested independently, subject to the review of the engineer/owner's representative.

- D. Furnish clean, clear water, pumps, labor, fittings, and equipment necessary to conduct test or retests.
- E. Volumetric Leakage Test:
 - 1) Cap riser of mainline components for volumetric pressure tests. Backfill to prevent pipe from moving under pressure. Expose coupling and fitting.
 - 2) Purge all air from the pipeline before test.
 - 3) Subject mainline pipe to the anticipated operating pressure for two hours. Maintain constant pressure. Test complete system under full line pressure. Pressure must be maintained with less than 2lbs loss in the system for 4 hours. If the system does not hold pressure, repair leaks and retest system until the system maintains pressure.
 - 4) All necessary testing equipment shall be furnished by CONTRACTOR.
 - 5) Cement or caulking to seal leaks is prohibited.
- F. Operational Test:
 - 1) Activate each hose bib. The OWNER'S REPRESENTATIVE will visually observe operation and leakage.
 - 2) Replace appurtenance to correct operational deficiencies.
 - 3) Replace defective pipe, fitting, joint, valve, or appurtenance to correct leakage problems. Cement or caulking to seal leaks is prohibited.
 - 4) Repeat test(s) until each lateral passes all tests. Repeat tests, replace components, and correct deficiencies at no additional cost to the owner.

1.10 CONSTRUCTION REVIEW

- A. The purpose of on-site reviews by the OWNER'S Representatives to periodically observe the work in progress, the "Contractor's" interpretation of the construction documents, and to address questions with regard to the installation.
- B. Scheduled reviews such as those for irrigation system layout or testing must be scheduled with the engineer/owner's representative's/owner's representative as required by these specifications.
- C. Impromptu reviews may occur at any time during the project.
- D. A review may occur at the completion of the irrigation system installation and project record (as-built) drawing submittal.

1.11 GUARANTEE/WARRANTY AND REPLACEMENT

- A. It shall be the "Contractor's" responsibility to ensure and guarantee satisfactory operation of the entire system and the workmanship and restoration of the area. The entire system shall be guaranteed to be complete and perfect in every detail for a period of one year from the date of its final acceptance and he hereby agrees to repair or replace any such defects occurring within that year, free of expense to the Owner.
- B. Minor maintenance and adjustment shall be by the Owner.
- C. For a period of one year from final acceptance, fill and repair depressions or settling more than one (1") inch. Restore landscape or structural features damaged by the settlement of irrigation trenches or excavation. Repair damage to the premises caused by a defective item.

- D. Make repairs within seven (7) days of notification from the engineer/owner's representative.
- E. Contract documents govern replacements identically as with new work. Make replacements at no additional cost to the contract price.
- F. Guarantee/warranty applies to originally installed materials, equipment, and replacements made during the guarantee/warranty period.

1.12 WINTERIZATION AND SPRING START-UP

- A. Coordinate the winterization and start-up with the Owner's landscape maintenance personnel.
- B. "Contractor" shall winterize the system the first year as part of this contract and will provide written instructions to the Owner for future service and maintenance.
- C. Return to the site during the subsequent spring season and demonstrate to the Owner the proper procedures for the system start-up, operation and proper maintenance. Repair any damage caused in improper winterization at no additional cost to the owner.
- D. After completion, testing and acceptance of the system, the "Contractor" will instruct the Owner's personnel in the operation and maintenance of the system.
- E. The owner will supply the air compressor, but the contractor will need to be present, coordinate timing with the owner and complete the blow out.

PART 2 – MATERIALS

2.01 GENERAL

Use materials that are new and without flaws or defects of any type, and which are the best of their class and kind. All material overages at the completion of the installation are the property of the "Contractor" and are to be removed from the site.

- A. Each major component of equipment shall have manufacturer's name, address, catalog and serial number permanently attached in a conspicuous place.
- B. The same brand or manufacturer shall be used for each specific application of valves, fittings, controls, and other equipment.
- C. All materials shall be new and of the quality specified.
- D. All equipment shall be listed, approved or rated by a nationally recognized testing and rating bureau of recognized manufacturer's association responsible for setting industry standards.
 - 1) Acceptable irrigation manufacturers – as indicated or approved equal but must be approved as equal to that product shown on the plans and in the specifications.
- E. It is the intent of this specification to establish a uniform equipment pallet for this and phases of the project. Substitutions will only be allowed if in the opinion of the OWNER'S REPRESENTATIVE it is deemed to be equal or an upgrade and offers the same features that were originally specified.

2.02 SUBSTITUTIONS

- A. Equipment Substitutions
- 1) Whenever a piece of equipment or material is identified by a manufacturer's trade name, catalog number, etc., it is intended to establish a standard; and any equipment of another manufacturer which will perform adequately the requirements of design and is of equal or greater quality than the specifications in the opinion of the OWNER'S REPRESENTATIVE will be considered equally acceptable.
 - 2) It is the intent of this specification to permit use of materials of any nationally recognized manufacturer so long as they are fully equal to quality and performance of named item in opinion of OWNER'S REPRESENTATIVE. Materials or equipment of other manufacturers may be used upon following conditions.
 - a. Proposed substitute is equal in design, materials, construction and performance in opinion of OWNER'S REPRESENTATIVE. No compromise in quality level will be allowed.
 - b. Service capabilities, availability of service parts, and stability of manufacturer is adequate in opinion of OWNER'S REPRESENTATIVE.
 - c. CONTRACTOR assumes responsibility for any modifications required for installation of substitute equipment and for accommodation of such substitution by work of other contractors. Any additional expense on part of other contractors or OWNER due to substitution of equipment shall be borne by CONTRACTOR making such substitution.
 - d. Substitute equipment shall fit into space provided with adequate provisions for service and maintenance.
 - e. All Substitutions must be **approved in writing prior to bidding**.

The Contractor shall use materials as specified. Material other than specified will be permitted only after written application by the "Contractor" and written approval by the Engineer/owner's representative. Substitutions will only be allowed when in the best interest of the Owner.

2.03 SLEEVING/BORE

- A. Install separate sleeve beneath paved areas to route each run of irrigation pipe or wiring bundle.
- 1) Sleeving material beneath pedestrian pavements shall be PVC Class 200 pipe with solvent welded joints.
 - 2) Sleeving beneath drives and streets shall be PVC Class 200 pipe with solvent welded joints.
 - 3) Sleeving diameter: equal to twice that of the pipe or as indicated on drawings.

2.04 PIPE AND FITTINGS

- A. Mainline Pipe, and Fittings:
- 1) Use rigid, plasticized polyvinyl chloride (PVC) 1120, 1220 National Sanitation Foundation (NSF) approved pipe, extruded from material meeting the requirements of Cell Classification 12454-A or 12454-B, ASTM Standard D1784, with an integral belled end.
 - 2) Use Class 200, SDR-21, rated at 200 PSI, conforming to the dimensions and tolerances established by ASTM Standard D2241. Use PVC pipe rated at higher pressures than Class 200 in the case of small nominal diameters that are not manufactured in Class 200.

- 3) Use rubber-gasketed pipe equipped with Reiber Gasket System for mainline pipe with a nominal diameter 3-inches and greater. Use rubber-gasketed deep bell ductile iron fitting conforming to ASTM A-536 and ASTM F-477 by LEEMCO or equal. Use lubricant approved by the pipe manufacturer. Size slip fitting socket taper to permit a dry unsoftened pipe end to be inserted no more than halfway into the socket. Cross fittings are not permitted. Mainline pipe going through sleeves shall be solvent weld. No gasketed pipe is allowed in sleeves.
- 4) Use solvent weld pipe for mainline pipe with a nominal diameter 2 1/2" inches and less or where a pipe connection occurs in a sleeve. Use Schedule 40, Type 1, PVC solvent weld fittings by Lasco conforming to ASTM Standard D2466 and D1784. Use primer approved by the pipe manufacturer. Solvent cement to conform to ASTM Standard D2564.
- 5) Provide pipe homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles and dents.
- 6) Provide pipe continuously and permanently marked with manufacturer's name and trademark, size schedule and type of pipe working pressure at 73 degrees F. and (NSF) approval.
- 7) Pipe sizes referenced in the construction documents are minimum sizes and may be increased at the option of the "Contractor" at no cost to the Owner.
- 8) All pipes damaged or rejected because of defects shall be removed from the site at the time of said rejection.
- 9) All mainlines and sleeves are to have a metallic tracer tape placed 6" from the surface. The tape shall be 3" wide and indicate buried water below. Sleeves shall have tape brought just below the surface at the ends for ease of locating or terminated in valve boxes.
- 10) Contractor to run a #16 ga direct bury wire in the mainline and loop to gate valves, quick couplers or other main line components. All lateral HDPE piping runs shall have a tracer wire from the electric valve following the pipe run and looping up to the head and zip tied to the head. Label all wire loops in valve boxes. Tracer wire to be red. Tracer wire shall not be spliced.
- 11) Test all tracer wire runs and show engineer/project manager how they are traced.
- 12) Restore, re-top soil with 6" of topsoil, seed and matt all areas disturbed by trenching, system installation or boring activities.

B. Lateral Pipe and Fitting – HDPE Pipe: Hunter I-40 zones

- 1) Pipe shall be manufactured from a PE 4710/ 3608 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material will meet the specifications of ASTM D3350-05 with a cell classification of PE 345464C. Pipe shall be manufactured to the dimensions and requirements of ASTM F714. Pipe shall be DR 13.5. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. All HDPE pipe shall be in straight lengths. The Pipe shall be supplied by Flying W or equal.
- 2) The supplier must have the capability to train the contractor's employees in butt fusion, electrofusion and socket fusion of HDPE pipe and fittings.
- 3) The supplier must be capable of providing a "Hot Line" phone number to assist in fusion and fusion equipment questions.
- 4) The supplier must be capable of providing a trained representative on site upon the request of the contractor, owner or consultant to address any problems that are encountered during the installation.
- 5) The supplier must be capable to rent or arrange to rent and service fusion equipment.

- 6) Lateral lines to electric valves shall be done with a fused transition fitting.
 - 7) Lateral lines to Hunter I-40 heads shall be done with a stainless-steel saddle RSST saddle by Leemco.
 - 8) The supplier must furnish a written 5-year limited warranty for HDPE pipe and fittings for Turf Irrigation Applications.
 - 9) Recommended supplier: Flying W or approved equal.
- C. Mainline Fittings – HDPE Pipe:
- 1) Butt Fusion Fittings - Fittings shall be DR 13.5 PE4710/3608 HDPE, Cell Classification of PE 345464C as determined by ASTM D3350-05. Butt Fusion Fittings shall have a manufacturing standard of ASTM D3261. Molded & fabricated fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans. Fabricated fittings are to be manufactured using a DataLogger. Reference to the DataLogger Quality Control records should be referenced from an indented stamp in each fusion bead of each fitting. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the quality control records.
 - 2) Use butt fused tees, 90's and 45 were whenever needed on laterals. Do not use saddles for mainline tees on main line.
- D. Electrofusion– HDPE Pipe:
- 1) Electrofusion may be used where the butt fusion method cannot be used. Electrofusion couplings and fittings shall be PE4710/3608 HDPE, Cell Classification of PE 345464C as determined by ASTM D3350-05. Electrofusion couplings or fittings shall have a manufacturing standard of ASTM F1055. Couplings and fittings shall have the same pressure rating as the pipe unless otherwise specified on the plans.
- E. Pipe Inspection:
- 1) Inspect the pipe for defects before installation and fusion. Defective, damaged or unsound pipe will be rejected.
 - 2) Protect plain ends of the pipe while inserting through sleeves. It is important that there are no scratches on the plain ends.
- F. Testing:
- 1) Hydrostatic testing shall be in accordance with 1.12above Testing
- G. Contractor Qualification- HDPE:
1. The contractor shall have successfully installed high density polyethylene pipe in golf/turf irrigation projects.
If a contractor has not previously successfully installed HDPE pipe for golf/turf irrigation projects within the past five years, he will be required to have a qualified fusion technician from the pipe supplier for a period of three days (at the expense of the contractor). The technician must have been trained and have fusion certification. The training must have been completed within the past twelve months. A designated person or persons will be trained by the technician. The training will include the following:
 - a. butt fusion, saddle fusing
 - b. socket fusion
 - c. electrofusion
 - d. If electro fusion or side wall fusion is required, this training must also be complete while the technician is on site.
 2. If the contractor has experience, provide the certification certificate of the individual that will be on-site at all time of the fusing.
- H. Contractor Equipment Qualification- HDPE:

1. If the contractor owns butt fusion equipment, the equipment must be serviced prior to use for this project. The machine must be environmentally friendly and satisfactory working order. The hydraulic system must be leak free. The pressure gage must be checked for accuracy and the thermometer checked.
 2. If a butt fusion machine is rented, it must be rented from company that has a fusion machine service center or centers certified by the butt fusion machine manufacturer. The machine must arrive with certification that the pressure gage and heater thermometer were accurate when shipped.
- I. HDPE Warranty:
- 1) The HDPE pipe is to be 5 Year Limited Warranty.
 2. Seller warrants that, for a period of five years from the date of final acceptance for turf application, it will replace any section of HDPE pipe product that is defective in materials or workmanship.
 3. Contractor warrants that, for a period of five years from the date of final acceptance, it will re-fuse or repair a fusion connection that is defective in workmanship and promptly notifies Contractor of the defect and, allows the Contractor to inspect at the place of installation. If it is determined the fused connection to be defective, Contractor will re-fuse or repair the connection at the jobsite.
- J. Specialized Pipe and Fittings:
- 1) Assemblies calling for threaded pipe connections shall use PVC Schedule 80 nipples and PVC Schedule 40 threaded fittings.
 - 2) Joint sealant: Use only Teflon-type tape on plastic threads.
- K. Thrust Blocks:
- Use thrust blocks for fitting on pipe utilizing a rubber gasket pipe.
- 1) Use 3,000 –PSI poured concrete, concrete blocks of any type are not allowed.
 - 2) Use 2-mil plastic to encapsulate the fitting or valve.
 - 3) Size thrust blocks per piping manufacturer's recommendations for pipe size and soils encountered.

2.05 WATERING SYSTEM COMPONENTS:

- A. Controllers – Hunter I-Core six station Stainless Steel controller.
- 1) The controller shall be mounted on the existing wooden pole.
 - 2) All wiring to be run in electrical conduit to and from the controller.
 - 3) Controller is to be installed and grounded per manufacturer recommendations.
 - 4) Power to the controller area will be provided by the Owner. The contractor will be responsible for making the connection from the power drop to the controller. The controller will be mounted as directed by the Owner.
- B. Sprinkler Heads – Gear Drive - 6" Hunter I-40-06-SS
1. The large diameter gear drive sprinklers shall be a Hunter I-40 w/ check series pop up sprinkler or approved equal. Part circle heads to be I40-06- Sprinkler shall be mounted flush with final grade.
 2. Retraction shall be achieved by a heavy-duty steel retraction spring. Sprinkler shall have a rubber cover. Sprinkler housing shall be of high impact molded plastic. Sprinkler shall have a large strainer so as to prevent nozzle clogging. Sprinkler shall be constructed such that it is serviceable from top in that drive assembly, screen, and all internal components are accessible throughout top of sprinkler without disturbing case installation. The drive shall be water lubricated and have a drain

check valve for up to 14 feet. Radius reductions shall be adjustable by up to 25% by means of adjustment screws accessible from top of cap when sprinkler is properly installed.

3. Type and location of heads shall be as shown on plan. Sprinkler heads shall be mounted on a 1" S-80 PVC swing joint by Lasco or approved equal. Riser length of pipe to be minimum 12". Contractor is responsible to verify lay length and provide the correct riser length for the pipe depth.

C. Electric Control Valves

- 1) All valves shall be of globe or globe/angle configuration with a female pipe thread inlet and outlet connections. Diaphragm assembly shall be sonically welded to form a solid-piece component. The diaphragm shall be of rubber construction to retain flexibility and provide maximum sealing throughout its area.
- 2) Electric valves shall be Hunter 1.5" PGV series electric valves with or approved equal. The valve shall have a manual flow control with a hand-operated, rising-type flow control stem with control wheel/handle and an internal manual bleed assembly. Size per plan.
- 3) All parts shall be serviceable without removing valve from line. Valve may be installed at any angle without affecting valve operation.
- 4) 22" solenoid lead wires shall be attached to a 24 VAC solenoid with waterproof molded coil capable of being removed by turning coil. Valve shall be held normally closed by internal water pressure with manual bleed screw.
- 5) The legend and flow arrow shall be applied at all valve locations. Valve numbering shall be located so as to be conspicuous and legible. The controller and valve numbering shall be engraved in black on a yellow plastic tag, by Christy's Enterprise or equal. The tag size shall be standard size of 2.25" x 2.66".

D. Valve Boxes

- 1) Valve boxes shall be manufactured by RainBird VB Series or approved equal and shall be rectangular, 12" /w 6" extension or 10" round and have "T" lid tops. All cover to be green.
- 2) Valve box shall be of a size that provides adequate space for valve repairs. A 10" round valve box may be used for isolation valves, quick couplers, wire splices and wire drops only.
- 3) The valve box cover shall have the component markings engraved or heat stamped into the cover. Use the following symbols for corresponding components in the valve box.
QC – for Quick Coupler
EV – Electric Valve
The final valve numbering shall also be branded into the tops with electric valves. Contractor may find an example of the branding tool at Brand New Industries Inc., Product # VB2x3.

E. Quick Coupler Valves

- 1) Valves shall be 1" Hunter HQ-44LRC series valves or approved equal. The quick coupling shall have a locking purple vinyl cover. The matching Key shall be Hunter HK-44A. The quick coupler is to have stabilizer wings. If the valve does not have stabilizers originally installed, use attachable stabilizers manufactured by LEEMCO or approved equal.
- 2) The Quick coupler valves are to be mounted on a Lasco swing joint with brass male threads entering the quick coupler and placed in a 10" round valve box. The valve box is to be filled with 3/8" clear chip gravel as detailed. Ensure proper height when backfilling.

- 3) The contractor is to provide one (1) quick coupler keys and hose swivels for quick coupler.
- 4) The contractor is to provide a key for each quick coupler for the locking cover of the quick coupler.

F. Swing Joints

- 1) Swing Joints - Unitized, Factory-Assembled, 1" inlet and outlet styles, shall be rated at 315 psi maximum working pressure @ 73° F when tested in accordance with ASTM D3139, including internal hydrostatic pressure @ 787 psi for 60 minutes and short-term pressure of 1008 psi without leakage or failure. Their performance shall be warranted for five years to installers and owners of irrigation systems. Swing Joints shall be molded of rigid polyvinyl chloride (PVC). Type 1, Cell classification 12454-B per ASTM specification D 1784, with NPT threads and pipe sockets per ASTM D 2464 and D2466, respectively. Each rotating joint shall be sealed with a O-ring, installed pre-compressed in a sealing groove free of parting lines to prevent leakage. Modified stub ACME threads shall have special engineered (S.E.) diameters and clearances to allow full circle (360°) movement and to reduce stress concentrations and joint fracture at thread roots. Swing Joints riser assemblies shall have a working pressure rating of 315 psi @73F. The swing joint riser assemblies will be molded of Rigid Poly (vinyl) Chloride (PVC) Type 1, Cell Classification 12454-B per ASTM Standard D 1784. It shall be manufactured in such a way, that both the male and female O-ring sealing areas be free from mold parting lines. The burst pressure tested per ASTM D2467 and the long-term pressure tested at 1,000psi for 1,000 hours.
- 2) The swing joint shall have a five-year warranty for the swing joint. The quick coupler swing joints shall have a minimum length 12" riser for quick couplers and be by Lasco or approved equal. The threads shall correlate to sprinklers, quick couplers and related components. Quick Coupler Swing Joints are to have a brass male threaded outlet 90 ell outlet to enter the bottom of the quick coupler. Swing joints will be 1.5" MIPT x 1" Brass MIPT.
- 3) The contractor is responsible to determine the final lay length of the swing joint to provide a 45-degree angle of the swing joint.

F. Solvent Weld Fittings

- 1) Fittings on 2.5" and smaller shall be Solvent weld PVC fittings shall be Schedule 40 and S-80, ASTM D-2466 and ASTM D-1784. PVC fittings shall be produced from PVC Type 1, Cell Classification 1245B. Fittings shall be manufactured by Lasco or approved equal. All solvents and cements shall be that recommended by the manufacturer.
- 2) S-80 PVC fittings may be used and may be threaded or solvent weld. S-80 TOE Nipples with S-80 couplings for plastic to metal connections. (S-80 nipples cut in half will not be allowed)

G. Tracer and Signal Wire

- 1) All 24-volt wiring shall be done with an UL listed 3M DBY/R-6 splice kit. All wiring is to be installed following existing local and state codes.
- 2) All signal wire shall include a solid copper conductor and polyethylene (PE) insulation UL Listed. It shall be rated for 600 volts and manufactured by Paige Electric or equal. Minimum wire size shall be #16 gauge. Jacket color to follow the color chart.
- 3) Bring tracer wire into all valve boxes and loop label all ends on water proof tags and water proof "Tag" pen labeling.
- 4) All wire splices and wire routes shall be shown on the as-built.

2.06 OTHER COMPONENTS

- A. Tools and Extra Equipment
 - 1) The contractor is to provide to the Owner, two (2) sets of tools to repair and work on all equipment specified in this irrigation section.
 - 2) The contractor shall provide to the Owner, one (1) keys Hunter HK-44 A and one (1) hose swivels, Hunter HS-1 matching the quick coupling valve installed.
 - 3) The contractor shall provide 1 key per quick coupler locking cover.
 - 4) The contractor to provide one (1) swing joint assemblies for quick couplers and one (1) electric valve used and one (1) sprinkler head used, 4 wire splice kits.
- B. Other Materials: Provide imported fill material as required to complete this work. Provide other materials or equipment shown on the drawings or installation details, which are part of the irrigation system, although such items may not have been referenced in these specifications.

PART 3 – EXECUTION

3.01 INSPECTION AND REVIEWS

- A. Site Inspections:
 - 1) The bidder acknowledges that he has examined the site, plans and specifications, and the submission of a proposal shall be considered evidence that examination has been made.
 - 2) Verify construction site conditions and note irregularities affecting work of this section. It shall be the contracting installer's responsibility to report to the Owner's authorized representative any deviations between drawings, specifications and the site. Failure to do so before the installing of equipment and resulting in replacing and/or relocation of equipment shall be done at the "Contractor's" expense.
 - a. Examine final grades and installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.
 - b. Beginning work of this section implies acceptance of existing conditions.
- B. Utility Locations:
 - 1) The exact location of all existing utilities and structures and underground utilities are not indicated on the drawings; their locations shall be determined by the "Contractor", and he shall conduct his work so as to prevent interruption of service or damage to them.
 - 2) Arrange for and coordinate with local authorities the location of all underground utilities.
 - 3) Repair any underground utilities damaged during construction. Make repairs at no additional cost above the contract price.
 - 4) The "Contractor" shall protect existing structures and utility services and be responsible for their replacement if damaged by him.
 - 5) The owner will locate the existing water lines, coordinate with owner for marking prior to beginning construction.
- C. Irrigation System Layout Review:
 - 1) Irrigation system layout review will occur after the staking has been completed unless specifically waived by the Engineer/owner's representative. Notify the OWNER'S REPRESENTATIVE one week in advance of review.

- 2) The OWNER'S REPRESENTATIVE at this review will identify modifications.

3.02 INSTALLATION OF CONTROL SYSTEM COMPONENTS

- A. Irrigation Controller Unit:
 1. The location of the controller unit as depicted on the drawings is approximate the Owner's representative will determine the exact site location during sprinkler layout review.
 2. Attach wire markers to the ends of control wires inside the controller unit housing. Label wires with the identification numbers (see drawings) of the remote-control valve to which the control wire is connected.
 3. Connect control wires to the corresponding controller terminal.
- B. Control Wire:
 1. Provide a 24-inch excess length of wire in an 8-inch diameter loop at 90-degree change of direction, at both ends of sleeves and at 100-foot intervals along continuous runs of wiring. Do not tie wiring loop. Coil 24-inch length of wire within each remote-control valve box.
 2. No splices are allowed in the 24-v system from the controller to the electric valve.
 3. Protect wire not installed with mainline pipe with a continuous run of warning tape placed in the backfill six inches above the wiring.

3.02 LAYOUT OF WORK

- A. Stake out the irrigation system. Items staked include: pipe, quick coupling valves, air release, pressure regulation, hose bibs, sleeves, bores and isolation valves.
- B. Install all mainline pipe and mainline components inside of project property lines.
- C. Minor adjustments in system layout will be permitted to clear existing fixed obstructions. Final system layout shall be acceptable to the Engineer/owner's representative.

3.03 EXCAVATION, TRENCHING, AND BACKFILLING

- A. Excavating shall be considered unclassified and shall include all materials encountered, except materials that cannot be excavated by normal mechanical means.
- B. Excavate to permit the pipes to be laid at the intended elevations and to permit work space for installing connections and fittings.
- C. Minimum cover (distance from top of pipe or control wire to finish grade):
 - 1) 22-inch over mainline and lateral pipe.
- D. PVC mainlines or PVC, PE lateral pipes 21/2" and smaller may be pulled into the soil using a vibratory plow device specifically manufactured for pipe pulling, if in the opinion of the OWNER'S REPRESENTATIVE that conditions are suitable. Minimum burial depths equal minimum cover listed above provided soil moisture content and other conditions are suitable to allow for full depth of the right to determine suitability or conditions.
- E. Backfill only after lines have been reviewed and tested.
- F. Excavated material is generally satisfactory for backfill. Backfill shall be free from

rubbish, vegetable matter, and stones larger than 2 inches in maximum dimension. Remove material not suitable for backfill. Backfill placed next to pipe shall be free of sharp objects, which may damage the pipe.

- G. Backfill unsleeved pipe by depositing the backfill material equally on both sides of the pipe in 6-inch layers and compacting each layer to 90% Standard Proctor Density, ASTM D698-78. Use of water for compaction, "puddling," will not be permitted.
- H. Enclose pipe and wiring beneath roadways, walks, curbs, etc., in sleeves. Minimum compaction of backfill for sleeves shall be 95% Standard Proctor Density. ASTM D698-78. Use of water for compaction around sleeve, "puddling," will not be permitted.
- I. Dress backfilled areas to original grade. Incorporate excess backfill into existing site grades.
- J. Where utilities conflict with irrigation trenching and pipe work, contact the OWNER'S REPRESENTATIVE for trench depth adjustments.
- K. Provide approved fine-grained earth fill or sand to point 4" above the top of pipe, where soil conditions are rocky or otherwise objectionable.
- L. Excavate trenches and install piping and backfill during the same working day. Do not leave open trenches or partially-filled trenches open overnight.
- M. The CONTRACTOR will be responsible for all finish and fine grading of trenches, disturbed areas around sprinklers heads, electric valves and any other excavated or disturbed areas by the CONTRACTOR. Contractor will also be responsible for all trench settling throughout the project during the one-year warranty period. If settling occurs, the contractor will repair and bring back to originally set grade.
- N. When additional backfill, material is needed to replace the unsuitable materials, it will be the CONTRACTOR'S responsibility and expense to supply such material. It will also be the CONTRACTOR'S responsibility to dispose of the unsuitable material.
- O. Restore, re-top soil with 6" of topsoil, seed and matt all areas disturbed by trenching, system installation or boring activities.

3.04 WORKMANSHIP

- A. All work shall be done by qualified irrigation installers that are knowledgeable and experienced in operations they are performing. Installation methods, procedures and materials shall be in accordance with accepted industry practice and with standards of manufacturing and contracting associations applicable to the work. All work shall be neatly done with special emphasis on appearance of work exposed to view.

3.05 SLEEVING AND BORING

- A. Install sleeving at a depth that permits the encased pipe or wiring to remain at the specified burial depth.
- B. Extend sleeve ends 2 feet beyond the edge of the paved surface. Cover pipe ends and mark with stakes

- C. Bore for sleeves under obstructions that cannot be removed. Employ equipment and methods designed for horizontal boring.
- D. Saw cut all sleeves under roads, compact and patch asphalt.

3.06 ASSEMBLING PIPE AND FITTING:

- A. General:
 - 1) Keep pipe free from dirt and pipe scale. Cut pipe ends square and deburr. Clean pipe ends.
 - 2) Keep ends of assembled pipe capped. Removed caps only when necessary to continue assembly.
 - 3) All mainline and continuously pressurized pipe is to be installed using open trenches. Trenches may be curved to change direction or avoid obstructions within the limits of the curvature of the pipe.
- B. Mainline and Fittings:
 - 1) Use only strap-type friction wrenches for threaded plastic pipe.
 - 2) PVC Rubber-Gasketed Pipe:
 - a. Use pipe lubricant. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.
 - b. Epoxy-coated steel fittings shall not be struck with a metallic tool. Cushion blows with a wood block or similar shock absorber.
 - 3) PVC Solvent Weld Pipe:
 - a. Use a primer and solvent cement. Join pipe in a manner recommended by the manufacturer and in accordance with accepted industry practices.
 - b. Cure for 30 minutes before handling and 24 hours before allowing water in pipe.
 - c. Snake pipe from side to side within the trench.
 - 4) Fittings: the uses of cross type fittings are not permitted.
 - 5) Install thrust blocks on the mainline pipe work in accordance with pipe manufacturer's written instructions.
 - 6) All mainlines and sleeves are to have a metallic tracer tape placed 6" from the surface. The tape shall be 3" wide and indicate buried water below. Sleeves shall have tape brought just below the surface at the ends for ease of locating or terminated in valve boxes.
 - 7) All mainline fittings shall be Ductile Iron fittings by LEEMCO or similar.
- C. Specialized Pipe and Fitting:
 - 1) Galvanized Steel Pipe:
 - a. Join pipe in the manner recommended by manufacturer and in accordance with accepted industry practices.
 - b. Use factory-made threads whenever possible. Field-cut threads will be permitted only where necessary. Cut threads on axis using clean, sharp dies.
 - c. Apply Teflon-type tape to the male threads only.
 - 2) PVC Threaded Connections:
 - a. Use only factory-formed threads. Field-cut threads are not permitted.
 - b. Use only Teflon-type tape.
 - 3) Threaded Connections:
 - a. Make metal-to-metal, threaded connections with Teflon-type tape applied to the male threads only.

3.07 INSTALLATION OF WATER COMPONENTS:

- A. Tools and Spare Parts: Prior to the review at completion of construction, supply to the owner operating keys, servicing tools, spare parts, test equipment and any other items indicated in general notes on the drawings.
- B. Other Materials: Install other materials or equipment shown on the drawings or installation details which are part of the irrigation system, even though such items may not have been referenced in these specifications.

3.08 BALANCING AND ADJUSTING

- A. The Contractor will be responsible for the balancing and adjustments of the various components of the system so the overall operation of the system is the most efficient.

3.09 REQUIREMENT FOR SUBSTANTIAL COMPLETION

- A. Cleaning Equipment and Premises
 - 1) Thoroughly clean all parts of the piping, valves and equipment.
 - 2) Remove all construction debris, excess materials and equipment.
- B. Operating and Maintenance Manuals
 - 1) CONTRACTOR shall furnish to OWNER'S REPRESENTATIVE two operating manuals for furnished equipment. Information sheets shall be bound in standard three-ring binders labeled to show contractor's name, address, regular business phone number, emergency phone number and date. Operating manuals shall be submitted prior to completion of work to allow time for review. Manual shall contain following information:
 - List (keyed with identification numbers used) each item of equipment which requires service, giving the name of the item, model number, manufacturer's name and address, and providing the name, address and phone number of the nearest representative of authorized service organization.
 - Cut sheets to be included for the following, but not limited to: isolation valves, swing joints and valve boxes. A copy of the shop drawing for each item changed.
 - 2) A complete operating and maintenance manual, parts list, wiring diagrams, lubrication requirements, and service instructions for each major item.
 - 3) Properly executed registrations and registered manufacturer's warranties.
 - 4) After completion of work and when OWNER has had sufficient time to examine operating manuals and become somewhat familiar with operation of equipment, a meeting will be arranged by the Contractor with the Owner for purpose of instructing OWNER in proper maintenance of system and to answer questions he/she may have regarding it's operation.

3.10 ACCEPTANCE

- A. Instruct the Owner's designated personnel in the operation of the system, valves.... Once contractor has trained the owner's representative, the system is fully operational and has completed the punch list, the project will be accepted. A written acceptance and date will be provided, which will begin the warranty and maintenance periods.

3.11 CLEANING

- A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soils, debris and equipment. Repair damage resulting from sprinkler system installation.

END OF SECTION 328400

1 **SECTION 33 11 00 - WATER UTILITY DISTRIBUTION PIPING**

2
3
4 **PART 1 - GENERAL**

5
6 **1.01 SCOPE**

7
8 A. The work under this section shall consist of providing all work, materials, labor, equipment, and
9 supervision necessary to provide water distribution system components and other work, as
10 required in these specifications, on the drawings and as otherwise deemed necessary to complete
11 the work.

- 12
13 1. All materials and methods shall meet the City of Madison public works standards
14 Articles 701 thru 704.

15
16 **1.02 REFERENCE**

17
18 A. Applicable provisions of Division 1 shall govern all work under this Section.

19
20 **1.03 REFERENCE STANDARDS**

- 21
22 A. American Society for Testing and Materials (ASTM):
23 B88 Standard Specifications for Seamless Copper Water Tube
24 C504-00 Rubber-Seated Butterfly Valves
25 C509-01 Resilient-Seated Gate Valves for Water Supply Service
26 C515-01 Reduced Wall, Resilient Seated Gate Valves for Water Supply Service
27 C800-01 Underground Service Line Valves and Fittings

28
29 **1.03 SUBMITTALS**

30
31 A. Provide manufacturers product information (cut sheets) and O&M information for watermain
32 materials including:

- 33
34 1. Pipe
35 2. Fittings
36 3. Valves

37
38 B. Provide reports that document pressure and continuity testing procedures and results.

39
40 C. Provide copies of record drawings.

41
42 **1.04 QUALITY ASSURANCE**

43
44 A. Maintain and submit record drawings.

45
46 B. Conduct pressure testing, continuity testing and safe sampling as required in Part 3 – Execution.

47
48 **1.05 PERMITS/FEES**

49
50 A. Contractor shall be solely responsible for obtaining all permits necessary to complete the work.
51 Contractor shall pay all fees associated with obtaining permits. These include, but are not
52 limited to permits for work within public right-of-way, street opening permits, utility
53 connection permits, and plumbing permits.

54
55 **1.06 SURVEY AND STAKING**

56
57 A. Contractor shall be responsible for transferring benchmarks, control points, lines and grades
58 necessary to complete his work.

1
2 **1.07 RECORD DOCUMENTS**
3

- 4 A. Maintain record drawings that show the actual locations, sizes and types of utilities and other
5 features encountered.
6
7 1. Note any modifications to proposed watermain size, alignment, or grades.
8 2. Record any other deviations from the original design.
9

10
11 **PART 2 - PRODUCTS**
12

13 **2.01 Ductile Iron Pipe:**
14

- 15 A. Ductile iron pipe and accessories shall conform to the requirements of American National
16 Standard for Ductile Iron Pipe, Centrifugally Cast, for Water (ANSI/AWWA C151/A21.51 - latest
17 revision).
18
19 B. Pipe requirements:
20
21 1. Class 52 ductile iron.
22 2. Cement lined.
23 3. Push-on joint.
24 4. Furnished with all necessary accessories.
25 5. Bonding straps to provide electrical conductivity.
26

27 **2.02 Gaskets:**
28

- 29 A. Gaskets shall conform to the requirements of American National Standard for Rubber-Gasket
30 Joints for Ductile Iron Pressure Pipe and Fittings (ANSI/AWWA C111/A21.11 - latest revision).
31
32 B. Gasket Requirements:
33
34 1. Plain rubber gaskets.
35 2. Restrained-joint locking gaskets.
36 a. Use restrained joint locking gaskets when electing to or are otherwise required
37 to meet thrust-restraint requirements by means of restrained-joint pipe.
38 b. Restrained-joint locking gaskets must be certified as compliant for use with the
39 furnished pipe material by the pipe manufacturer.
40 c. Nitrile or Fluorocarbon gaskets may be required if water mains are near
41 contaminated soils.
42

43 **2.03 Polyethylene Encasement:**
44

- 45 A. Polyethylene encasement materials shall conform to the requirements of the American National
46 Standard for Polyethylene Encasement for Ductile Iron Pipe Systems (ANSI/AWWA C105/A21.5 -
47 latest revision).
48
49 B. Polyethylene Encasement Requirements:
50
51 1. 8-mil thickness (minimum).
52 2. Furnish in either tube or sheet form.
53

54 **2.04 Mechanical Joint Fittings:**
55

- 56 A. Mechanical joint fittings are to conform to the requirements of American National Standard for
57 Ductile Iron and Gray Iron Fittings, 3-inch through 48-inch, for Water (ANSI/AWWA C110/A21.10 -
58 latest revision).
59

- 1 B. Mechanical Joint Fitting Requirements:
- 2
- 3 1. Class 250 mechanical joint pipe fittings.
- 4 2. Cement lined.
- 5 3. All bells.
- 6 4. Entire fitting tarred.
- 7 5. Conductive mechanical joint (no lead)
- 8 6. Furnished with all necessary accessories (rubber gaskets, flanges, bolts, etc.).
- 9

10 **2.05 Mechanical Joint Restraints:**

- 11 A. EBAA Iron Inc. - MEGALUG® Series 1100, or approved equal.
- 12
- 13

14 **2.06 Nuts and Bolts:**

- 15 A. Comply with AWWA C111/A21.11. - latest revision.
- 16
- 17 B. Ensure that bolts are of sufficient length such that a minimum of ½-inch of threads are exposed beyond the end of the nut when tightened.
- 18
- 19
- 20 C. Refer to the following table for the numbers, diameters, and lengths of bolts to be used:
- 21
- 22

Pipe Dia (inches)	No Bolts	Bolt Dia (inches)	Bolt Length (inches)	Bolt Lenth for MEGALUG® (inches)
3	4	5/8	3	3-1/2
4	4	3/4	3-1/2	4
6	6	3/4	3-1/2	4

28

29 **2.07 COPPER WATER SERVICE**

- 30
- 31 A. Type K, soft copper tubing meeting the requirements of ASTM B88.
- 32
- 33 B. Copper watermain 1½" inch diameter and larger shall be provided in straight lengths, not roll stock.
- 34
- 35

36 **2.08 SADDLES**

- 37 A. Saddles are required at:
- 38
- 39
- 40 1. All 1-½-inch and 2-inch service lateral taps.
- 41 2. All service lateral taps on PVC, HDPE, or CIPP-lined water mains.
- 42
- 43 B. Approved saddles:
- 44
- 45 1. Ford Series 202B double strap brass saddle.
- 46 2. A.Y. McDonald - Series 3825 saddles (double strap).
- 47

48 **2.09 COUPLINGS**

- 49 A. Couplings shall be copper-to-copper fittings.
- 50
- 51
- 52 1. Compression couplings are only permitted when reconnecting existing copper tubing to new copper tubing.
- 53
- 54
- 55 B. Allowable couplings:
- 56
- 57 1. Mueller H15400.
- 58 2. Mueller HI5405.
- 59 3. Mueller H5403.

- 4. Mueller P15403.
- 5. Ford C44-33 / 44 / 66 / 77

2.10 CORPORATION STOPS & SERVICE FITTINGS

- A. 1½-inch and 2-inch diameter Service Fittings (1/8 bends):
 - 1. Mueller H – 15470.
- B. Supply all Service Fittings (1/8 bends) with a fiber gasket.

2.11 CURB STOPS

- A. 1 ½-inch and 2-inch diameter Curb Stops:
 - 1. Mueller H15201.

2.12 CURB BOXES

- A. Ensure that all curb boxes are complete, with covers marked "WATER".
 - 1. Mark cover for air blowout connection "AIR CONNECTION".
- B. Curb Box Assemblies shall include the following:
 - 1. Brass screws.
 - 2. 2½-inch new style flush fit cover.
 - 3. 54-inch rods and guide rings.
 - 4. 2½-inch screw type shaft.
 - 5. 37-inch bottom section.
 - 6. 29-inch top section.
 - 7. 16-inch center section.

- C. 1½-inch and 2-inch diameter Curb Boxes:
 - 1. Tyler or Bingham and Taylor (Standard Valve Box).
 - 2. No rods or rings.

2.13 DISINFECTION CHEMICALS

- A. Dry chemicals:
 - 1. Chloride of Lime.
 - 2. HTH.
 - 3. Pittchlor.
 - 4. Or equal (65 % available Chlorine), granular form only.
- B. Liquid:
 - 1. Only to be used with Engineer's written authorization.
 - 2. Sodium hypochloric.

2.14 BOARD INSULATION

- A. Rigid, closed-cell, extruded polystyrene insulation. Insulation shall be suitable for buried installation.
- B. Individual boards shall have minimum dimensions of 8'x4'x2".\

1 C. Dow Styrofoam, or approved equal.

2
3 **2.15 LOCATOR TAPE**

4
5 A. Detectable metallic locator tape, specifically manufactured for marking utilities.

6
7 B. Tape shall be a minimum of 6" wide and designed to be detectable at a depth of 18".

8
9 C. Tape shall be marked "WATER" and blue colored.

10
11 **2.16 PIPE JOINT LUBRICANT**

12
13 A. Petroleum free pipe lubricant formulated for use with potable water systems. Product shall meet
14 the requirements of ANSI/NSF Standard #61.

15
16
17 **PART 3 - EXECUTION**

18
19 **3.01 GENERAL**

20
21 A. Complete exploratory excavations at utility crossings as shown on the plans and as necessary to
22 complete the work.

23
24 B. Maintain clearances between watermains and existing or proposed sewer lines as follows:

- 25
26 1. 8' horizontal separation (measured center to center) between watermains and existing or
27 proposed sanitary or storm sewers.
28 2. 6" vertical separation (measured from outsides of pipes) where watermains cross over
29 sanitary or storm sewers.
30 3. 18' vertical separation (measured from outsides of pipes) where watermains cross under
31 sanitary or storm sewers.

32
33 C. Store and handle pipe in accordance with manufacturers recommendations. Keep pipes clean of
34 soil, debris and animals.

35
36 **3.02 EXCAVATION**

37
38 A. Construct water mains and appurtenances in open trenches and in a manner to protect the pipe and
39 appurtenances from unusual stresses at all times.

40
41 B. Trench Excavation:

- 42
43 1. All excavation, sheeting, shoring and bracing shall be done in accordance with the latest
44 edition OSHA regulations and any additional requirements specified in the Plans or
45 Contract Documents.
46 2. Provide all sheeting, bracing and/or shoring necessary to protect the work, existing
47 property, utilities, pavement, etc., and to provide safe working conditions in the trench.
48 All costs of sheeting, bracing and/or shoring is considered incidental to any work which
49 necessitates it.
50 3. When not in use, remove sheeting and bracing, unless permission to leave in-place has
51 been given in writing by the Engineer.
52 4. Excavate trenches in conformity with the required alignment and grades as shown on
53 the drawings and as laid out in the field by the Engineer.
54 5. Remove all vegetation and topsoil along the trench line to the width of the proposed trench
55 before beginning excavation.
56 6. Deposit material excavated from the trench on the sides of the trenches and excavations,
57 beyond the reach of slides. Transport material to spoil banks as an alternative.
58

- 1 C. Properly dispose of surplus material at no additional cost to the City. Surplus material
2 includes but is not necessarily limited to:
3
 - 4 1. Vegetation from the trench line.
 - 5 2. Excavated rock or cobbles in excess of 6-inches in diameter.
 - 6 3. All other material from excavation not needed or suitable for backfilling trenches.
- 7
- 8 D. For water main construction, the width of the trench shall be such as to leave a clear space of not
9 less than 6-inches between the earth wall, or the supporting sheeting or bracing where such is
10 used, and the sides of the pipe. The trench width established by this pipe clearance, measured at
11 the spring line, shall be applicable to that portion of the trench from 1-foot above the top of the pipe
12 to the bottom of the trench.
- 13
- 14 E. On streets opened to traffic, on restricted easements, and other specified locations, minimize the
15 width of the trench at the ground surface to the extent possible to accommodate the pipe installation
16 and any necessary sheeting or bracing.
- 17
- 18 F. The Engineer reserves the right to limit the extent of excavation depending on the nature of the soil
19 and other conditions.
20
 - 21 1. As ordered by the Engineer due to trees, fences, buildings, shrubs, etc., dig trenches by
22 hand.

23
24 **3.03 EXCAVATION IN POOR SOILS**

- 25
- 26 A. If, in the opinion of the Engineer, an artificial foundation is necessary because of the nature of the
27 excavated material, excavate the unsuitable material and replace with suitable specified material to
28 produce an acceptable pipe foundation.
- 29
- 30 B. The undercut depth shall be as directed by the Engineer but shall be a minimum of 1-foot below the
31 bottom of the pipe. Any work involved in forming a satisfactory foundation at depths of 1- foot or less
32 below the bottom of pipe will be considered to be incidental to the work.
- 33
- 34 C. Backfill this portion of the trench with specified approved bedding material and mechanically
35 compact the select fill prior to laying the pipe. Limit the width of the trench excavation to the outside
36 diameter of the pipe plus 2-feet, plus the amount necessary for sheeting and/or bracing.

37
38 **3.04 DEWATERING**

- 39
- 40 A. In accordance with these Specifications, remove by pumping, bailing, or otherwise, any water that
41 may accumulate or be found in the trenches and other excavations.
- 42
- 43 B. Form all dams, flumes or other works necessary to keep the trenches or excavations entirely clear
44 of water while the water mains and their appurtenances are being installed.
- 45
 - 46 1. Direct all water from excavations, so as not to flow over or damage private or public
47 property.
 - 48 2. All costs of dewatering are considered to be incidental to the associated work.

49
50 **3.05 BACKFILL REQUIREMENTS**

- 51
- 52 A. Backfill trenches and excavations immediately after the water main and appurtenances have been
53 installed.
- 54
- 55 B. Close trenches at the end of every day.
- 56
- 57 C. Backfill to the original surface elevation or otherwise specified elevation. In the event of a shortage
58 of material to perform this work, including replacement as may be required by rock excavation or
59 removal of boulders, provide the necessary fill material at no cost to the City.

- 1
- 2 D. Except as may be necessary in compacting and backfilling, do not walk or work on installed pipe
- 3 until the trench has been backfilled to an elevation at least 2-feet above the top of the pipe. Do not
- 4 take backfill material from trench walls below an elevation 2-feet above the top of pipe.
- 5
- 6 E. Evenly place backfill material so that no unbalanced pressures are placed upon the water system.
- 7 Backfill material may be dumped directly into the trench from trucks when the amount of material to
- 8 be dumped is controlled by proper equipment.
- 9
- 10 F. Deposit, spread and level backfill material in layers not exceeding 12-inches in thickness before
- 11 compacting. Compact each layer to the density specified herein before placing the succeeding
- 12 layer. When the material being compacted is of a granular nature and the compacting equipment
- 13 is adaptable for the purpose, the thickness of the layer may be increased to a maximum of 24-
- 14 inches at the Engineer's discretion, provided the required compaction density is obtained.
- 15
- 16 G. Only use heavy equipment in the trench for compaction or other purposes if the pipe is adequately
- 17 protected and the Engineer approves. Trucks, vehicles, or other equipment are not allowed within
- 18 the limits of the trench prior to the completion of the backfilling operations.
- 19
- 20 H. Dump imported backfill material along the top of the trench beyond the reach of slides. Do not store
- 21 imported material such that it increases the stresses on the trench section.
- 22
- 23 I. Carefully draw and remove any required sheathing and bracing such that it will not disturb the
- 24 completed work. Carefully fill and compact any voids created by the removal of sheathing and
- 25 bracing with approved backfill material.
- 26
- 27 J. Whenever possible, backfill trenches and other excavations with materials excavated during the
- 28 course of the work.
- 29
- 30 K. Do not include vegetation, stones, or fragments of broken rock in excess of 6-inches in any
- 31 dimension in the backfill.
- 32
- 33 L. Note that the Engineer may reject material due to:
- 34
- 35 1. Unacceptable moisture content.
- 36 2. Unacceptable gradation or composition
- 37 3. The presence of frozen material.
- 38 4. Remove all rejected materials from the site.
- 39

40 **3.06 CAMPACTION REQUIREMENTS**

- 41
- 42 A. Mechanically compact backfill layers in trenches and excavations to thoroughly consolidate the
- 43 material to the density specified and to not damage or disturb the pipe or other structures.
- 44
- 45 B. Begin mechanical compaction of the backfill material when the depth of the backfill material is 2-feet
- 46 above the top of the pipe. (In the case of structures, begin compaction of the backfill material with
- 47 the placing of the first layer of backfill material).
- 48
- 49 C. The Engineer will perform compaction testing as necessary to verify uniformity of compaction.
- 50
- 51 D. Compaction Density Requirements:
- 52
- 53 E. From 2-feet over the pipe to within 3-feet of the bottom of subgrade:
- 54
- 55 1. A minimum of 90% of maximum density.
- 56
- 57 F. Within 3-feet of the bottom of subgrade:
- 58
- 59 1. A minimum of 95% of maximum density.

- 1
- 2 G. Determine maximum density in accordance with the Standard Method of Test for the Moisture-
- 3 Density Relations of Soils, ASTM Designation: D 1557, Method D, latest revision. Replace the
- 4 fraction of material retained on a ¾-inch sieve, with No. 4 to ¾-inch material.
- 5
- 6 H. Determine the density of compacted backfill in accordance with one of the following: Test for
- 7 Density of Soil-in-Place by the Sand-Cone Method, ASTM Designation: D 1556, latest revision, or
- 8 Test for Density of Soil and Soil-Aggregate in Place by Nuclear Methods, ASTM Designation: D
- 9 2922, latest revision.
- 10
- 11 I. In the event that the material in the density sample differs in percentage of aggregate retained on a
- 12 No. 4 sieve from that in the sample upon which maximum density was determined, adjust the
- 13 maximum density in accordance with approved procedures.
- 14
- 15 J. In the event of inadequate moisture in the backfill materials, add water as necessary to obtain the
- 16 required compaction.
- 17
- 18 K. Whenever the work of installing water pipes takes place during freezing weather, follow the
- 19 specifications for trench compaction above, if practicable. If the specified compaction cannot be
- 20 achieved, and the Engineer determines that the work may not be suspended until more favorable
- 21 weather conditions exist, proceed as follows:
- 22
- 23 1. Remove all frozen material in the trench at the beginning of the day's work.
- 24 2. Do not compact frozen materials.
- 25 3. Compact material in 6-inch maximum lifts.
- 26 4. Compact to densities specified herein.
- 27
- 28 L. If the top 3-feet of material does not meet 95% of maximum density, remove the material and place
- 29 Select Fill using 6-inch maximum lifts and compact to 95% of maximum density.
- 30
- 31 M. As a guideline, no construction will be permitted when the temperatures are too cold to achieve the
- 32 specified compaction of the backfill. Ensure that temperatures are at least 15°F and rising, with
- 33 winds less than 10 mph, before considering working in freezing conditions.
- 34

35 **3.07 BEDDING AND INITIAL COVER**

- 36
- 37 A. Watermain and water service piping shall be provided with 4" of bedding material and 12" of
- 38 initial cover material (both measured at the bell of the pipe).
- 39
- 40 B. Bedding and cover material for various types of pipe shall consist of the following:
- 41
- 42 1. Copper Water Services: Bedding sand or crushed stone screenings.
- 43

44 **3.08 INSTALLING FITTINGS AND VALVES**

- 45
- 46 A. Install fittings and valves at locations shown on the drawings.
- 47
- 48 B. Unless otherwise shown, provide mechanical joint connections. Install materials in accordance
- 49 with manufacturer's recommendations.
- 50
- 51 C. Maintain electrical continuity through all fittings, valves and hydrants. Provide and install suitable
- 52 jumper cables for epoxy coated valves.
- 53
- 54 D. tall valve box so that bonnet rests on compacted initial backfill material at the same elevation as
- 55 the top of the valve stuffing box. Center the valve box over the valve nut.
- 56
- 57 E. Install valve box plumb and level, backfilling evenly. Extend valve box to proposed final grade;
- 58 provide valve box extensions as necessary. Valve boxes that shift during backfilling or restoration
- 59 shall be excavated and re-set.

1 **3.09 CONNECTING TO EXISTING WATER MAINS**

- 2
- 3 A. There are three types of connections to existing mains:
- 4
- 5 1. A plug-removal connection is a connection that requires the removal of a slip or
- 6 mechanical joint plug from an existing fitting or the end of a water main.
- 7 2. A cut-in connection is a connection that requires the installation of a new fitting or
- 8 valve in an existing water main.
- 9 3. A live-tap is a connection in which the main is tapped under pressure and in-service while a
- 10 tapping valve is installed by the City. Furnish the ditch as necessary for the City to make the
- 11 tap and perform the associated cut-off and cap of the existing water main. Isolate and
- 12 depressurize all live-tap connections on any PVC, HDPE and CIPP-lined water mains prior
- 13 to providing the ditch to the City.
- 14

15 **3.10 WATER MAIN SHUTOFFS**

- 16
- 17 A. Do not interrupt water service without prior notification to all affected residents and property owners.
- 18 Ensure that all street-facing and/or visible entrances and all addresses of multi-unit properties are
- 19 included separately in the notification distribution.
- 20
- 21 B. With notification distributions, it is recommended to include a request to avoid using water fixtures,
- 22 faucets or water-sensitive appliances during the service interruption, and then opening an outside
- 23 spigot or cold water faucet on the lowest level of the property after service has been restored.
- 24
- 25 C. When requested and furnished by the Engineer, post terrace signs as part of the notification
- 26 distribution. Carefully remove and return all posted terrace signs to the Engineer upon
- 27 completion of the service interruption.
- 28
- 29 D. In the case of an emergency or an unplanned shut-off, notify all affected residents and property
- 30 owners during or immediately after the water is turned off.
- 31
- 32 E. Minimum requirements for all planned shut-offs:
- 33
- 34 1. Provide 2 working days notice to affected water users.
- 35 2. The shut-off may not begin earlier than 8:00 AM.
- 36 3. The shut-off may not exceed 8-hours.
- 37
- 38 F. In the event a planned shut-off is anticipated to require more than 8-hours, re-notify all affected
- 39 water users prior to the expiration of the time limit listed on the original notification.
- 40
- 41 G. Perform all shut-offs as proposed in the Contract Documents. The proposed shut-offs are
- 42 provided for reference purposes to aide planning connection point isolation and preparing water
- 43 user notification lists for planned outages.
- 44
- 45 H. Obtain prior authorization from the Engineer and be responsible for all valve turnings. Be
- 46 properly equipped at all times for doing such work.
- 47
- 48 I. Any water service or plumbing problems which arise as a result of either planned or emergency
- 49 water main shutoffs or any associated work, are the Contractor's responsibility to promptly
- 50 resolve at no cost to the City or Madison Water Utility.
- 51
- 52 J. To reduce the likelihood of draining private water systems and/or associated private plumbing
- 53 problems, it is required to close all service valves and/or curb stops on all 1.5-inch or larger
- 54 laterals prior to removing the main from service.
- 55
- 56 K. Additionally, it is required to close all service valves and/or curb stops at properties without
- 57 accessible hose spigots or other outside plumbing connections.
- 58

59 **3.11 MECHANICAL JOINT PIPE AND FITTINGS.**

- 1
- 2 A. A mechanical pipe joint is made by compressing a rubber gasket between a bell, cast on the end
- 3 of one pipe, and a gland that slides along the plain end of the pipe to be joined. The joints are
- 4 tightened using nuts and bolts.
- 5
- 6 B. Assemble mechanical joints in accordance with AWWA C600 – latest revision.
- 7
- 8 C. Restrained joints using MEGALUG® Series 1100 or approved equal mechanical joint-restraint
- 9 retainer glands shall have bolts tightened in accordance with the manufacturer's installation
- 10 specifications.
- 11
- 12 D. Before slipping the gland and the gasket onto the plain end for joint assembly, lubricate both the
- 13 gasket and the plain end of the pipe with an approved pipe lubricant meeting the requirements of
- 14 ANSI/AWWA C111/A21.11 - latest revision.
- 15
- 16 E. Place the gland on the plain end with the lip extension toward the joint, followed by the gasket with
- 17 the narrow edge toward the joint. Insert the pipe into the bell and press the gasket firmly and evenly
- 18 into the gasket recess in the bell keeping the joint straight during assembly. Push the gland toward
- 19 the bell and center it around the pipe, with the flange lip against the gasket. Insert bolts and hand
- 20 tighten nuts. Deflect pipe after assembly, but before tightening bolts.
- 21

22 **3.12 INSTALLATION OF COPPER WATER SERVICES AND BRASS FITTINGS**

- 23
- 24 A. Connect copper water service piping to watermain, wellhouse, or other supply as shown on the
- 25 drawings.
- 26
- 27 B. Watermain taps shall be made under pressure using a tapping machine specifically designed to
- 28 tap and install corporation stops. Dry watermain taps are not allowed.
- 29
- 30 C. Service saddles shall installed on services where the corporation stop is 1 ½" nominal diameter or
- 31 greater.
- 32
- 33 D. Provide a horizontal offset adjacent to the main for all copper services. Comply with pipe
- 34 manufacturer's requirements with respect to minimum radius on bends.
- 35
- 36 E. Install curb stops as shown on the drawings. If specific curb stop location is not shown on the
- 37 plans, consult with DFD Construction Representative to determine acceptable location prior to
- 38 installing.
- 39
- 40 F. Place curb stop box on a 4"x8"x8" solid concrete masonry unit set on compacted ground. Orient
- 41 box so that no portion of the box bears on the water service or curb stop.
- 42
- 43 G. Install curb stop box plumb and level, backfilling evenly. Extend curb stop box to proposed final
- 44 grade; provide extensions as necessary. Curb stop boxes that shift during backfilling or restoration
- 45 shall be excavated and re-set.
- 46
- 47 H. Mark all curb stop boxes with a steel "U" fence post to protect them from damage.
- 48
- 49 I. Install copper water service as shown on the drawings. Limit the number of water service joints,
- 50 using full lengths of pipe whenever possible.
- 51
- 52 J. Prepare copper pipe joints in accordance with pipe and fitting manufacturer recommendations.
- 53 Cut pipe squarely, remove burrs and round ends as necessary.
- 54
- 55 K. Install fittings in accordance with manufacturers recommendations. Torque compression
- 56 connections to recommended tightness; do not over-tighten compression joints.
- 57

1 L. Provide dead-end copper water services with compression connectors fitted with plugs. Do not tap
2 he ends of copper water services shut. Mark the location of dead-end services with an 8' long
3 4x4 timber and steel "U" fence post.
4

5 **3.13 COPPER SERVICE LATERALS**
6

7 A. Provide and install saddles on all 1-1/2-inch and 2-inch services and at all service lateral taps on
8 new or existing PVC, HDPE, or CIPP-lined water mains. Use a standard valve box in lieu of a curb
9 box, with no rod or rings required, for all 1-1/2-inch and 2-inch services.

10 B. Use a pipe cutter to cut all copper tubing. Hacksaws or other such devices to cut copper tubing are
11 not permitted.
12

13 C. Excavate and expose the area on the water main for new service connections, as noted on the
14 drawings or as otherwise instructed by the Engineer. Maintain a separation distance of at least 18-
15 inches between adjacent service taps and between a service tap and a pipe joint or fitting. Locate
16 the tap on the upper half of the main at a 45° angle from the vertical plane, perpendicular to the
17 water main and on the side of the main to which the service extends.
18

19 D. Tap the water main and install the corporation stop using a tapping machine specifically designed to
20 tap water main under pressure. No other method of tapping the water main will be allowed. Repair
21 and replace any cut or removed polyethylene encasement following the tap to ensure that the water
22 main is fully protected.
23

24 E. After the tap has been made and the corporation stop and bend have been inserted, loop the
25 copper tubing out and then back toward the main, then back away from the main to form the shape
26 of a vertical "S". Ensure that the "S" loop is of sufficient size so that it uses a minimum of 2-feet of
27 copper tubing. Ensure that the highest portion of the loop is not higher than the top of the water
28 main.
29

30 F. Lay the service flat to the property line or otherwise indicated point of termination. Provide a
31 minimum of 6-feet of cover below finished grade.
32

33 G. Place at least 1-foot of approved bedding material around the copper service pipe. The bedding
34 material is considered incidental to the cost of backfilling the service lateral trenches. Protect all
35 laterals and appurtenances from damage when backfilling. Stones 3-inches in diameter or larger
36 are not allowed within 18-inches of the copper service. Backfill containing rocks 3-inches or larger
37 may not be placed around curb boxes.
38

39 H. Restore any disturbed terrace or turf areas associated with the lateral installation work. Any terrace
40 or turf restoration work is considered incidental to any work associated with service laterals.
41

42 I. Coordinate with property owners to allow for flushing service laterals both prior to and immediately
43 after any work impacting a service. Resolve any problems with property owners, including but not
44 limited to problems regarding discolored water or low/no water flow.
45

46 **3.14 FILLING WATERMAIN**
47

48 A. Fill watermain after main has been installed and completely backfilled.
49

50 B. Fill main slowly to limit entrapped air and evenly distribute calcium hypochlorite. Open all
51 hydrants completely to allow air to escape and monitor filling.
52

53 C. Once main is full, allow a minimum of 48 hours time for disinfection to occur before flushing.
54

55 **3.15 PRESSURE TESTING**
56

57 A. Pressure test all watermain and copper water services.
58
59

- 1 B. Provide all valves fittings, joint restraints, hoses, compressors, and water and power supply as
 2 necessary to complete pressure testing. Utilize testing apparatus that is fabricated specifically for
 3 testing watermains. Calibrate pressure gauges as necessary.
 4
- 5 C. Flush main as necessary to remove air prior to testing. Comply with the requirements of this
 6 section with respect to flushing.
 7
- 8 D. For longer installations or installations consisting of watermain and copper water service, the
 9 Contractor may elect to pressure test the system in short segments.
 10
- 11 E. All pressure testing shall be conducted in the presence of the Owner's representative. Provide
 12 minimum of 48 hours advanced notice of testing.
 13
- 14 F. Conduct a combined pressure/leakage test for 1 hour at a pressure equal to 150% of system
 15 normal operating pressure (as measured at the lowest point in the system), or a minimum
 16 pressure of 150 psig.
 17
- 18 G. When conducting test, pressure test equipment shall be set-up as close to the highest point in the
 19 line as possible.
 20
- 21 H. Make-up water for the test shall be clean potable water supplemented with ½ oz of dry calcium
 22 hypochlorite per 35 gallons of water.
 23
- 24 I. Leakage for test shall not exceed gallons per hour as allowed by the attached formula:
 25
- 26
$$G = (ND\sqrt{P})/7400$$

 27
- 28 Where: G= Allowable leakage (gallons per hour of test)
 29 N=Number of joints under test
 30 D=Nominal diameter of main (inches)
 31 P=Average pressure during test (psig)
 32
- 33 J. Record and document pressure test by recording the following information:
 34
- 35 1. Date of test
 - 36 2. Section tested
 - 37 3. Diameter and length of main under test
 - 38 4. Number of fittings, valves hydrants, etc.
 - 39 5. Results of test including test length, pressure, actual water loss
 - 40 6. Calculation of allowable leakage
 - 41 7. If a failed test, describe actions taken to eliminate leaks and results of re-testing
- 42
- 43 K. Submit reports documenting pressure testing.
 44

45 **3.16 CONTINUITY TESTING**
 46

- 47 A. At the request of the Owner's Representative, conduct continuity test on all ductile iron watermain
 48 and copper water services.
 49
- 50 B. The continuity test shall be performed using an multi-meter to verify electrical continuity of the
 51 watermain system.
 52
- 53 C. The Contractor shall furnish all labor and equipment necessary to conduct the continuity test.
 54
- 55 D. Document continuity testing by recording the following information:
 56
- 57 1. Date of test
 - 58 2. Test methods and equipment
 - 59 3. Section tested

- 1 4. Diameter and length of main under test
- 2 5. Number of fittings, valves hydrants, etc.
- 3 6. Results of test including resistance
- 4 7. If a failed test, describe actions taken to eliminate leaks and results of re-testing
- 5
- 6 E. Submit reports documenting continuity testing.
- 7

8 **3.17 DISINFECTION/FLUSHING**

- 9
- 10 A. After filling the main, allow a minimum of 48 hours time for disinfection to occur before flushing.
- 11
- 12 B. Flush all sections of watermain and water service. When possible, utilize hydrants or other
- 13 large diameter orifices to complete flushing and achieve 2.5 fps water velocity. If needed, utilize
- 14 services or temporary connections to complete flushing.
- 15
- 16 C. All watermain and services shall be flushed for a minimum of 10 minutes, or as necessary to
- 17 obtain a sediment-free and bacteriologically safe sample.
- 18
- 19 D. Utilize diffusers, hoses, settling basins and other devices as necessary to limit erosion and other
- 20 damage to the site and downstream areas.
- 21
- 22 E. Contractor shall be responsible for providing all necessary fitting, valves, joint restraints, hydrants
- 23 and other materials necessary to conduct flushing.
- 24
- 25 F. Submit reports documenting disinfection and flushing.
- 26

27 **3.18 BACTERIOLOGICAL SAMPLE**

- 28
- 29 A. Following all pressure testing and flushing, the contractor shall collect a sample from the newly
- 30 installed watermain or water service(s). Samples shall be submitted to the State Laboratory of
- 31 Hygiene, or other licensed testing laboratory for bacteriological (colliform bacteria) analysis.
- 32
- 33 B. The Contractor shall be responsible for all costs associated with sample collection(s) and
- 34 analysis.
- 35
- 36 C. Document bacteriological sample collection and analysis by recording the following information:
- 37
 - 38 1. Date of sample collection
 - 39 2. Sample collection methods and equipment
 - 40 3. Person collecting the sample
 - 41 4. Location(s) sample was collected
 - 42 5. Results of sample analysis
 - 43
- 44 D. If sample results indicate water is "Unsafe – Colliform Bacteria Present", Contractor shall re-
- 45 disinfect watermain and water services by introducing additional chlorine into the line and re-
- 46 flushing the main. This process shall be repeated as necessary until a clean sample is obtained.
- 47 The Contractor shall be responsible for all costs associated with all efforts necessary to obtain a
- 48 "Safe – Coliform Bacteria Not Present" sample.
- 49
- 50 E. Submit reports documenting bacteriological sample collection and analysis.
- 51
- 52

END OF SECTION

SECTION E: BIDDERS ACKNOWLEDGEMENT
BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO. 8267

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 - 2018 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. _____ through _____ 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 _____ (name of corporation, partnership, or person submitting bid) a corporation organized and existing under the laws of the State of _____ a partnership consisting of _____; an individual trading as _____; of the City of _____ State of _____; that I have examined and carefully prepared this Proposal, from the plans and specifications and have checked the same in detail before submitting this Proposal; that I have fully authority to make such statements and submit this Proposal in (its, their) behalf; and that the said statements are true and correct.

SIGNATURE

TITLE, IF ANY

Sworn and subscribed to before me this _____ day of _____, 20_____.

(Notary Public or other officer authorized to administer oaths)
My Commission Expires _____

Bidders shall not add any conditions or qualifying statements to this Proposal.

SECTION F: BEST VALUE CONTRACTING
BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO. 8267

Best Value Contracting

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

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

- Contractor has a total skilled workforce of four or less individuals in all apprenticeable trades combined.
- No available trade training program; The Contractor has been rejected by the only available trade training program, or there is no trade training program within 90 miles.
- Contractor is not using an apprentice due to having a journey worker on layoff status, provided the journey worker was employed by the contractor in the past six months.
- First-time Contractor on City of Madison Public Works contract requests a onetime exemption but intends to comply on all future contracts and is taking steps typical of a "good faith" effort.
- Contractor has been in business less than one year.
- Contractor doesn't have enough journeyman trade workers to qualify for a trade training program in that respective trade.
- An exemption is granted in accordance with a time period of a "Documented Depression" as defined by the State of Wisconsin.

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

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

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

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

SECTION G: BID BOND

KNOW ALL MEN BY THESE PRESENT, THAT Principal and Surety, as identified below, are held and firmly bound unto the City of Madison, (hereinafter referred to as the "Obligee"), in the sum of five per cent (5%) of the amount of the total bid or bids of the Principal herein accepted by the Obligee, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that, whereas the Principal has submitted, to the City of Madison a certain bid, including the related alternate, and substitute bids attached hereto and hereby made a part hereof, to enter into a contract in writing for the construction of:

BRITTINGHAM DOG PARK IMPROVEMENTS CONTRACT NO. 8267

1. If said bid is rejected by the Obligee, then this obligation shall be void.
2. If said bid is accepted by the Obligee and the Principal shall execute and deliver a contract in the form specified by the Obligee (properly completed in accordance with said bid) and shall furnish a bond for his/her faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation shall be void.

If said bid is accepted by the Obligee and the Principal shall fail to execute and deliver the contract and the performance and payment bond noted in 2. above executed by this Surety, or other Surety approved by the City of Madison, all within the time specified or any extension thereof, the Principal and Surety agree jointly and severally to forfeit to the Obligee as liquidated damages the sum mentioned above, it being understood that the liability of the Surety for any and all claims hereunder shall in no event exceed the sum of this obligation as stated, and it is further understood that the Principal and Surety reserve the right to recover from the Obligee that portion of the forfeited sum which exceed the actual liquidated damages incurred by the Obligee.

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

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year set forth below.

Seal PRINCIPAL

Name of Principal

By

Date

Name and Title

Seal SURETY

Name of Surety

By

Date

Name and Title

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under National Provider No. _____ for the year _____, and appointed as attorney in fact with authority to execute this bid bond and the payment and performance bond referred to above, which power of attorney has not been revoked.

Date

Agent Signature

Address

City, State and Zip Code

Telephone Number

NOTE TO SURETY & PRINCIPAL

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

Power of Attorney showing that the agent of Surety is currently authorized to execute bonds on behalf of the Surety, and in the amounts referenced above.

Certificate of Biennial Bid Bond

TIME PERIOD - VALID (FROM/TO)
NAME OF SURETY
NAME OF CONTRACTOR
CERTIFICATE HOLDER <p style="text-align: center;">City of Madison, Wisconsin</p>

This is to certify that a biennial bid bond issued by the above-named Surety is currently on file with the City of Madison.

This certificate is issued as a matter of information and conveys no rights upon the certificate holder and does not amend, extend or alter the coverage of the biennial bid bond.

Cancellation: Should the above policy be cancelled before the expiration date, the issuing Surety will give thirty (30) days written notice to the certificate holder indicated above.

Signature of Authorized Contractor Representative

Date

SECTION H: AGREEMENT

THIS AGREEMENT made this _____ day of _____ in the year Two Thousand and Eighteen between _____ hereinafter called the Contractor, and the City of Madison, Wisconsin, hereinafter called the City.

WHEREAS, the Common Council of the said City of Madison under the provisions of a resolution adopted _____, and by virtue of authority vested in the said Council, has awarded to the Contractor the work of performing certain construction.

NOW, THEREFORE, the Contractor and the City, for the consideration hereinafter named, agree as follows:

1. **Scope of Work.** The Contractor shall, perform the construction, execution and completion of the following listed complete work or improvement in full compliance with the Plans, Specifications, Standard Specifications, Supplemental Specifications, Special Provisions and contract; perform all items of work covered or stipulated in the proposal; perform all altered or extra work; and shall furnish, unless otherwise provided in the contract, all materials, implements, machinery, equipment, tools, supplies, transportation, and labor necessary to the prosecution and completion of the work or improvements:

BRITTINGHAM DOG PARK IMPROVEMENTS CONTRACT NO. 8267

2. **Completion Date/Contract Time.** Construction work must begin within seven (7) calendar days after the date appearing on mailed written notice to do so shall have been sent to the Contractor and shall be carried on at a rate so as to secure full completion SEE SPECIAL PROVISIONS, the rate of progress and the time of completion being essential conditions of this Agreement.
3. **Contract Price.** The City shall pay to the Contractor at the times, in the manner and on the conditions set forth in said specifications, the sum of _____ (\$ _____) Dollars being the amount bid by such Contractor and which was awarded to him/her as provided by law.
4. **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 origin 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.

**BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO. 8267**

IN WITNESS WHEREOF, the Contractor has hereunto set his/her hand and seal and the City has caused these presents to be sealed with its corporate seal and to be subscribed by its Mayor and City Clerk the day and year first above written.

Countersigned:

	Company Name
Witness	Date
Witness	Date

	President
Witness	Date
Witness	Date

	Secretary

CITY OF MADISON, WISCONSIN

Provisions have been made to pay the liability that will accrue under this contract.

Approved as to form:

Finance Director	City Attorney
Signed this _____ day of _____, 20_____	
Witness	Date
Witness	Date

	Mayor
Witness	Date
Witness	Date

	City Clerk

SECTION I: PAYMENT AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____
as principal, and _____
Company of _____ as surety, are held and firmly bound unto the City of
Madison, Wisconsin, in the sum of _____ (\$_____) Dollars, lawful money of the United
States, for the payment of which sum to the City of Madison, we hereby bind ourselves and our
respective executors and administrators firmly by these presents.

The condition of this Bond is such that if the above bounden shall on his/her part fully and faithfully
perform all of the terms of the Contract entered into between him/herself and the City of Madison for the
construction of:

**BRITTINGHAM DOG PARK IMPROVEMENTS
CONTRACT NO. 8267**

in Madison, Wisconsin, and shall pay all claims for labor performed and material furnished in the
prosecution of said work, and save the City harmless from all claims for damages because of negligence
in the prosecution of said work, and shall save harmless the said City from all claims for compensation
(under Chapter 102, Wisconsin Statutes) of employees and employees of subcontractor, then this Bond is
to be void, otherwise of full force, virtue and effect.

Signed and sealed this _____ day of _____

Countersigned:

Company Name (Principal)

Witness

President Seal

Secretary

Approved as to form:

Surety Seal
 Salary Employee Commission

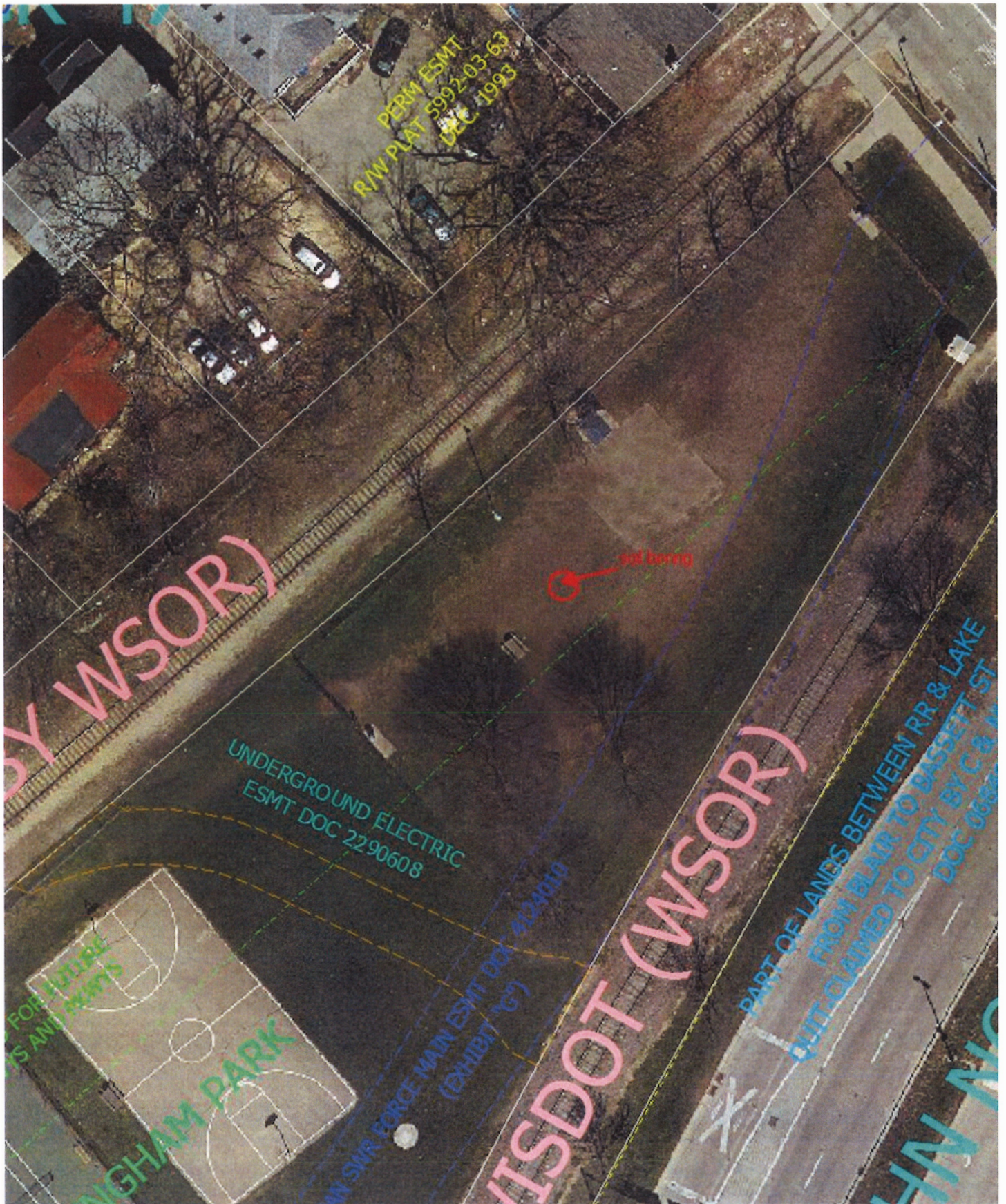
City Attorney

By _____
Attorney-in-Fact

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under
National Producer Number _____ for the year _____, and appointed as attorney-in-fact
with authority to execute this payment and performance bond which power of attorney has not been
revoked.

Date

Agent Signature



Sarah Lerner, LEED AP, RLA
Landscape Architect
City of Madison Parks Division

Brittingham Dog Park
Boring Location Map



LOG OF TEST BORING

Project Madison City Parks
Brittingham Dog Park
 Location City of Madison, Dane Co., WI

Boring No. BDP-1
 Surface Elevation (ft) _____
 Job No. C17051-35
 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
					± 11 in. TOPSOIL (OL)					
1	█	14	M	8	FILL: Loose, Brown Fine to Medium Sand, Some Silt, Little Gravel, and Tan Fine to Medium Sand, Some Gravel, Trace Silt, Scattered Cobbles					
					Very Loose, Brown Fine to Medium SAND, Little Gravel, Trace Silt, Scattered Cobbles/Boulders (SP)					
2	█	10	W	3						
					Loose, Dark Gray Fine to Medium SAND, Little Gravel, Trace to Little Silt, Scattered Cobbles/Boulders (SP/SP-SM)					
3	█	6	W	6						
					End of Boring at 8 ft Borehole Backfilled with Bentonite Chips					
					10-					

WATER LEVEL OBSERVATIONS					GENERAL NOTES					
While Drilling	<input checked="" type="checkbox"/>	NW	Upon Completion of Drilling	<input type="checkbox"/>	Wet	Start	10/6/17	End	10/6/17	Driller <u>SE</u> Chief <u>MDB</u> Rig <u>Geoprobe</u> Logger <u>MDB</u> Editor <u>TFG</u> <u>7822DT</u> Drill Method <u>2.25" HSA; Autohammer</u>
Time After Drilling					at 4.7'	Driller		Chief		
Depth to Water					▼	Logger		Editor		
Depth to Cave in					4.7'	Drill Method				
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.										

APPENDIX B - DESIGN COMPUTATIONS

Brittingham Park Dog Park Improvements - Contract 8267

City of Madison, WI Parks Div

Date Revised: 10/1/2018

Notes:

Positive volumes are cuts, negative volumes are fills.

Not all parts of all surface models (Digital Terrain Models) are used for computations or intended for actual construction.

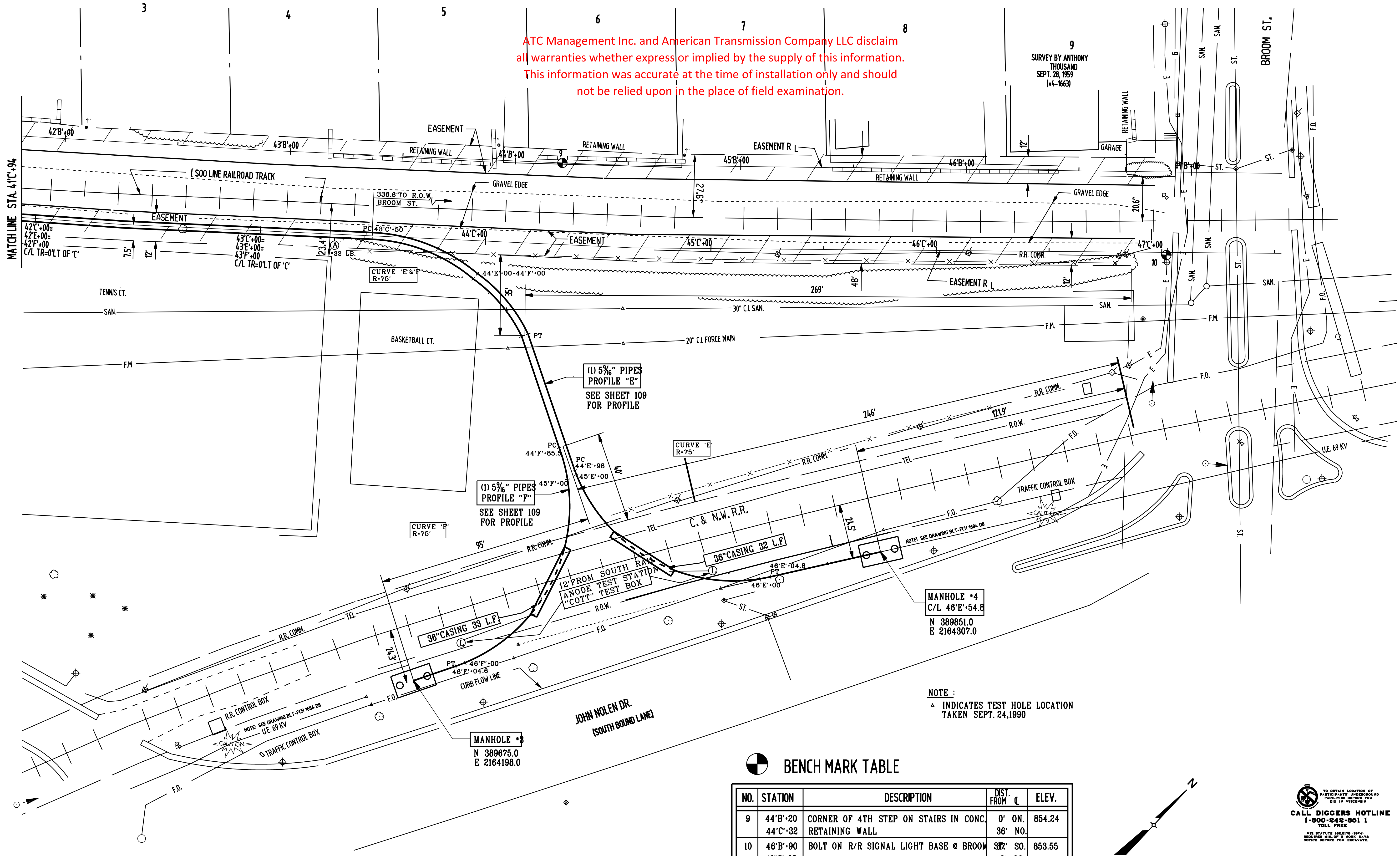
Existing Brit_Survey2018-08-14_DogComb.dtm ("Ex")
Proposed Pro1.dtm ("Pro")

Sort	Grp	Material	Item	From Surface Model	To Surface Model	area (sq ft)	depth (ft)	Unfactored volume (cu ft)	Unfactored volume (cu yd)	Expansion Factor (%)	Factored (Uncompacted) Volume (cu yd)
1.1	Conc_NoChange	(placeholder volume)	existing east entrance sidewalk within grading limits but not being removed	n/a	n/a	101	0.00	0	0.0	0%	0.0
2.1	Conc_to_ArtTurf	Sidewalk Excavate	Remove west trash bin pad (assumed 5in thick)	n/a	n/a	39	0.42	16	0.6	0%	0.6
2.2	Conc_to_ArtTurf	Gravel Excavate	Remove existing gravel under pad (assume 2in thick)	n/a	n/a	39	0.17	7	0.2	0%	0.2
2.3	Conc_to_ArtTurf	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-7in	Pro-4.5in	39	varies	0	0.0	0%	0.0
2.4	Conc_to_ArtTurf	Subsoil Place	Fill subsoil to proposed subgrade	Ex-7in	Pro-4.5in	39	varies	-10	-0.4	0%	-0.4
2.5	Conc_to_ArtTurf	Artificial Turf Stone Base Place	Place 4in crushed aggregate under artificial turf	n/a	n/a	39	-0.33	-13	-0.5	0%	-0.5
2.6	Conc_to_ArtTurf	Artificial Turf Place	Place artificial turf (assumed 1/2-inch thickness)	n/a	n/a	39	-0.04	-2	-0.1	0%	-0.1
3.1	Conc_to_PeaGravel	Sidewalk Excavate	Remove concrete pad at existing kiosk (assumed 5in thick)	n/a	n/a	24	0.42	10	0.4	0%	0.4
3.2	Conc_to_PeaGravel	Gravel Excavate	Remove existing gravel under pad (assume 2in thick)	n/a	n/a	24	0.17	4	0.1	0%	0.1
3.3	Conc_to_PeaGravel	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-7in	Pro-6in	24	varies	0	0.0	0%	0.0
3.4	Conc_to_PeaGravel	Subsoil Place	Fill subsoil to proposed subgrade	Ex-7in	Pro-6in	24	varies	0	0.0	0%	0.0
3.5	Conc_to_PeaGravel	Pea Gravel Place	Place 6in pea gravel	n/a	n/a	24	-0.50	-12	-0.4	0%	-0.4
4.1	Conc_to_Sidewalk5in	Sidewalk Excavate	Remove east entrance sidewalk panel (for utility installation) - note subgrade work incidental to utility item	n/a	n/a	29	0.42	12	0.4	0%	0.4
4.2	Conc_to_Sidewalk5in	Sidewalk 5in Place	Place new sidewalk 5in thick	n/a	n/a	29	-0.42	-12	-0.4	0%	-0.4
5.1	Conc_to_Sidewalk7in	Sidewalk Excavate	Remove concrete pad at existing kiosk (assumed 5in thick)	n/a	n/a	375	0.42	156	5.8	0%	5.8
5.2	Conc_to_Sidewalk7in	Gravel Excavate	Remove existing gravel under pad (assume 2in thick)	n/a	n/a	375	0.17	63	2.3	0%	2.3
5.3	Conc_to_Sidewalk7in	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-7in	Pro-13in	375	varies	186	6.9	0%	6.9
5.4	Conc_to_Sidewalk7in	Subsoil Place	Fill subsoil to proposed subgrade	Ex-7in	Pro-13in	375	varies	0	0.0	0%	0.0
5.5	Conc_to_Sidewalk7in	Concrete Gravel Base Place	Place gravel base 6in thick under sidewalk	n/a	n/a	375	-0.50	-188	-6.9	0%	-6.9
5.6	Conc_to_Sidewalk7in	Sidewalk 7in Place	Place concrete sidewalk 7in thick	n/a	n/a	375	-0.58	-219	-8.1	0%	-8.1
6.1	Pavers_to_ArtTurf	Pavers Excavate	Remove existing pavers by kiosk (est 5in thick)	n/a	n/a	438	0.42	183	6.8	0%	6.8
6.2	Pavers_to_ArtTurf	Gravel Excavate	Remove existing gravel under pavers (assume 2in thick)	n/a	n/a	438	0.17	73	2.7	0%	2.7
6.3	Pavers_to_ArtTurf	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-7in	Pro-4.5in	438	varies	0	0.0	0%	0.0
6.4	Pavers_to_ArtTurf	Subsoil Place	Fill subsoil to proposed subgrade	Ex-7in	Pro-4.5in	438	varies	-222	-8.2	0%	-8.2
6.5	Pavers_to_ArtTurf	Artificial Turf Stone Base Place	Place 4in crushed aggregate under artificial turf	n/a	n/a	438	-0.33	-146	-5.4	0%	-5.4
6.6	Pavers_to_ArtTurf	Artificial Turf Place	Place artificial turf (assumed 1/2-inch thickness)	n/a	n/a	438	-0.04	-18	-0.7	0%	-0.7
7.1	Pavers_to_Sidewalk7in	Pavers Excavate	Remove existing pavers by kiosk (est 5in thick)	n/a	n/a	554	0.42	231	8.5	0%	8.5
7.2	Pavers_to_Sidewalk7in	Gravel Excavate	Remove existing gravel under pavers (assume 2in thick)	n/a	n/a	554	0.17	92	3.4	0%	3.4

Sort	Grp	Material	Item	From Surface Model	To Surface Model	area (sq ft)	depth (ft)	Unfactored volume (cu ft)	Unfactored volume (cu yd)	Expansion Factor (%)	Factored (Uncompacted) Volume (cu yd)
7.3	Pavers_to_Sidewalk7in	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-7in	Pro-13in	554	varies	173	6.4	0%	6.4
7.4	Pavers_to_Sidewalk7in	Subsoil Place	Fill subsoil to proposed subgrade	Ex-7in	Pro-13in	554	varies	0	0.0	0%	0.0
7.5	Pavers_to_Sidewalk7in	Concrete Gravel Base Place	Place gravel base 6in thick under sidewalk	n/a	n/a	554	-0.50	-277	-10.3	0%	-10.3
7.6	Pavers_to_Sidewalk7in	Sidewalk 7in Place	Place concrete sidewalk 7in thick	n/a	n/a	554	-0.58	-323	-12.0	0%	-12.0
8.1	Pavers_to_TreeHole	Pavers Excavate	Remove existing pavers by kiosk (est 5in thick)	n/a	n/a	25	0.42	10	0.4	0%	0.4
8.2	Pavers_to_TreeHole	Gravel Excavate	Remove existing gravel under pavers (assume 2in thick)	n/a	n/a	25	0.17	4	0.2	0%	0.2
8.3	Pavers_to_TreeHole	(placeholder volume)	placeholder to balance volume computations (not actual cut/fill). Tree installation volumes incidental to bid item.	Ex-7in	Pro	25	varies	-19	-0.7	0%	-0.7
9.1	Turf_to_ArtTurf	Topsoil Excavate	strip existing topsoil (est 4in depth)	n/a	n/a	9267	0.33	3089	114.4	0%	114.4
9.2	Turf_to_ArtTurf	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-4in	Pro-4.5in	9267	varies	176	6.5	0%	6.5
9.3	Turf_to_ArtTurf	Subsoil Place	Fill subsoil to proposed subgrade	Ex-4in	Pro-4.5in	9267	varies	-1763	-65.3	0%	-65.3
9.4	Turf_to_ArtTurf	Artificial Turf Stone Base Place	Place 4in crushed aggregate under artificial turf	n/a	n/a	9267	-0.33	-3089	-114.4	0%	-114.4
9.5	Turf_to_ArtTurf	Artificial Turf Place	Place artificial turf (assumed 1/2-inch thickness)	n/a	n/a	9267	-0.04	-386	-14.3	0%	-14.3
10.1	Turf_to_Curb	Topsoil Excavate	strip existing topsoil (est 4in depth)	n/a	n/a	373	0.33	124	4.6	0%	4.6
10.2	Turf_to_Curb	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-4in	Pro-18in	373	varies	421	15.6	0%	15.6
10.3	Turf_to_Curb	Subsoil Place	Fill subsoil to proposed subgrade	Ex-4in	Pro-18in	373	varies	0	0.0	0%	0.0
10.4	Turf_to_Curb	Concrete Gravel Base Place	Place gravel base 6in thick under curb	n/a	n/a	373	-0.50	-187	-6.9	0%	-6.9
10.5	Turf_to_Curb	Curb Place	Place concrete curb 12in depth	n/a	n/a	373	-1.00	-373	-13.8	0%	-13.8
11.1	Turf_to_Limestone	Limestone Place	Place 3in limestone screenings (excludes tree mulch areas)	n/a	n/a	3266	-0.25	-817	-30.2	0%	-30.2
11.2	Turf_to_Limestone	(placeholder volume)	Placeholder to balance volume computations (not actual cut/fill).	n/a	n/a	3266	varies	355	13.1	0%	13.1
12.1	Turf_to_Limestone	Mulch Place	Place 3in mulch around trees in limestone area	n/a	n/a	85	-0.25	-21	-0.8	0%	-0.8
12.2	Turf_to_Limestone	(placeholder volume)	Placeholder to balance volume computations (not actual cut/fill).	n/a	n/a	85	varies	21	0.8	0%	0.8
13.1	Turf_to_PeaGravel	Topsoil Excavate	strip existing topsoil (est 4in depth)	n/a	n/a	750	0.33	250	9.3	0%	9.3
13.2	Turf_to_PeaGravel	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-4in	Pro-6in	750	varies	120	4.4	0%	4.4
13.3	Turf_to_PeaGravel	Subsoil Place	Fill subsoil to proposed subgrade	Ex-4in	Pro-6in	750	varies	-1	0.0	0%	0.0
13.4	Turf_to_PeaGravel	Pea Gravel Place	Place 6in pea gravel	n/a	n/a	750	-0.50	-375	-13.9	0%	-13.9
14.1	Turf_to_Sidewalk5in	Topsoil Excavate	strip existing topsoil (est 4in depth)	n/a	n/a	548	0.33	183	6.8	0%	6.8
14.2	Turf_to_Sidewalk5in	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-4in	Pro-7in	548	varies	52	1.9	0%	1.9
14.3	Turf_to_Sidewalk5in	Subsoil Place	Fill subsoil to proposed subgrade	Ex-4in	Pro-7in	548	varies	-10	-0.4	0%	-0.4
14.4	Turf_to_Sidewalk5in	Concrete Gravel Base Place	Place 2in gravel under 5in sidewalk	n/a	n/a	548	-0.17	-91	-3.4	0%	-3.4
14.5	Turf_to_Sidewalk5in	Sidewalk 5in Place	Place 5in sidewalk	n/a	n/a	548	-0.42	-228	-8.5	0%	-8.5
15.1	Turf_to_Sidewalk7in	Topsoil Excavate	strip existing topsoil (est 4in depth)	n/a	n/a	2565	0.33	855	31.7	0%	31.7
15.2	Turf_to_Sidewalk7in	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-4in	Pro-13in	2565	varies	1314	48.7	0%	48.7
15.3	Turf_to_Sidewalk7in	Subsoil Place	Fill subsoil to proposed subgrade	Ex-4in	Pro-13in	2565	varies	0	0.0	0%	0.0
15.4	Turf_to_Sidewalk7in	Concrete Gravel Base Place	Place 6in gravel under 7in sidewalk	n/a	n/a	2565	-0.50	-1283	-47.5	0%	-47.5
15.5	Turf_to_Sidewalk7in	Sidewalk 7in Place	Place 7in sidewalk	n/a	n/a	2565	-0.58	-1496	-55.4	0%	-55.4
16.1	Turf_to_Turf	Topsoil Excavate	strip existing topsoil (est 4in depth)	n/a	n/a	887	0.33	296	11.0	0%	11.0
16.2	Turf_to_Turf	Subsoil Excavate	Cut subsoil to proposed subgrade	Ex-4in	Pro-6in	887	varies	139	5.2	0%	5.2

Sort	Grp	Material	Item	From Surface Model	To Surface Model	area (sq ft)	depth (ft)	Unfactored volume (cu ft)	Unfactored volume (cu yd)	Expansion Factor (%)	Factored (Uncompacted) Volume (cu yd)
16.3	Turf_to_Turf	Subsoil Place	Fill subsoil to proposed subgrade	Ex-4in	Pro-6in	887	varies	0	0.0	0%	0.0
16.4	Turf_to_Turf	Topsoil Place	Place 6in topsoil	n/a	n/a	887	-0.50	-444	-16.4	0%	-16.4
17.1	Adjustment	Sidewalk 5in Place	Extra concrete volume for thickened edge along artificial turf. Additional 3.5in thick x avg 10in width x 36 ft	n/a	n/a	n/a	varies	-9	-0.3	0%	-0.3
17.2	Adjustment	Sidewalk 7in Place	Extra concrete volume for thickened edge along artificial turf. Additional 3.5in thick x avg 10in width x 133 ft	n/a	n/a	n/a	varies	-32	-1.2	0%	-1.2
17.3	Adjustment	Subsoil Excavate	Extra subsoil cut equal to extra gravel base volumes above	n/a	n/a	n/a	varies	41	1.5	0%	1.5
18.1	Adjustment	Concrete Gravel Base Place	Extra volume for 2in thick gravel out 6in horizontally beyond edge of 5in sidewalk	n/a	n/a	58	-0.17	-10	-0.4	0%	-0.4
18.2	Adjustment	Concrete Gravel Base Place	Extra volume for 6in thick gravel out 6in horizontally beyond edge of 7in sidewalk & curbs	n/a	n/a	508	-0.50	-254	-9.4	0%	-9.4
18.3	Adjustment	Subsoil Excavate	Extra subsoil cut equal to extra gravel base volumes above	n/a	n/a	566	varies	264	9.8	0%	9.8
19.1	Adjustment	Subsoil Excavate	Extra subsoil cut equal to extra gravel base volumes above to grade subsoil towards underdrain	n/a	n/a	9754	0.13	1219	45.2	0%	45.2
19.2	Adjustment	Artificial Turf Stone Base Place	Extra stone to fill for grading subsoil towards underdrain	n/a	n/a	9754	-0.13	-1268	-47.0	0%	-47.0

ATC Management Inc. and American Transmission Company LLC disclaim all warranties whether express or implied by the supply of this information. This information was accurate at the time of installation only and should not be relied upon in the place of field examination.

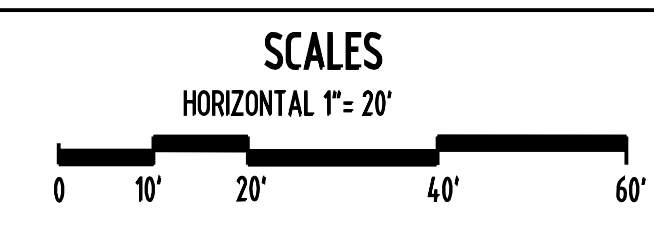


NOTE:
 ▲ INDICATES TEST HOLE LOCATION TAKEN SEPT. 24, 1990

BENCH MARK TABLE

NO.	STATION	DESCRIPTION	DIST. FROM CL	ELEV.
9	44'B+20	CORNER OF 4TH STEP ON STAIRS IN CONC.	0' ON.	854.24
	44'C+32	RETAINING WALL	36' NO.	
10	46'B+90	BOLT ON R/R SIGNAL LIGHT BASE @ BROOM ST.	37' SO.	853.55
	47'C+02		2' SO.	

M-1



DESIGNED BY: *Foth & Van Dyke*
 DESIGNED: WRS DATE: NOV'90 APPROVED: _____
 DRAWN: WRS DATE: NOV'90
 CHECKED: JGH DATE: NOV'90

SURVEY BY: *Donohue*
 SURVEYOR: R.D.S. DATE: _____
 DATES OF SURVEY: 8-22-89 8-25-89
 DRAWN: _____ DATE: _____
 CHECKED: _____ DATE: _____
 APPROVED: _____ DATE: _____

DESIGNED FOR: **mgde** MADISON GAS and ELECTRIC COMPANY
 DRAWING NO. 89-ECA-JND-128
 MADISON, WISCONSIN

EAST CAMPUS - JOHN NOLEN DRIVE
 TRANSMISSION LINES
 PLAN
 STATION 47C+94 AND 46F+51

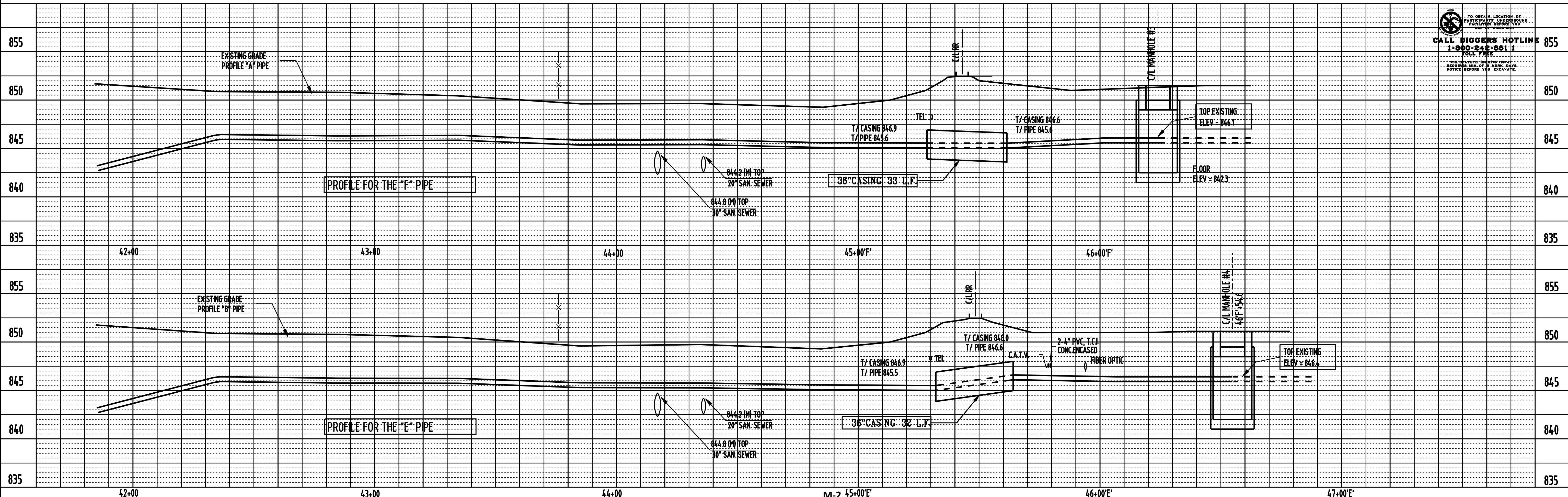
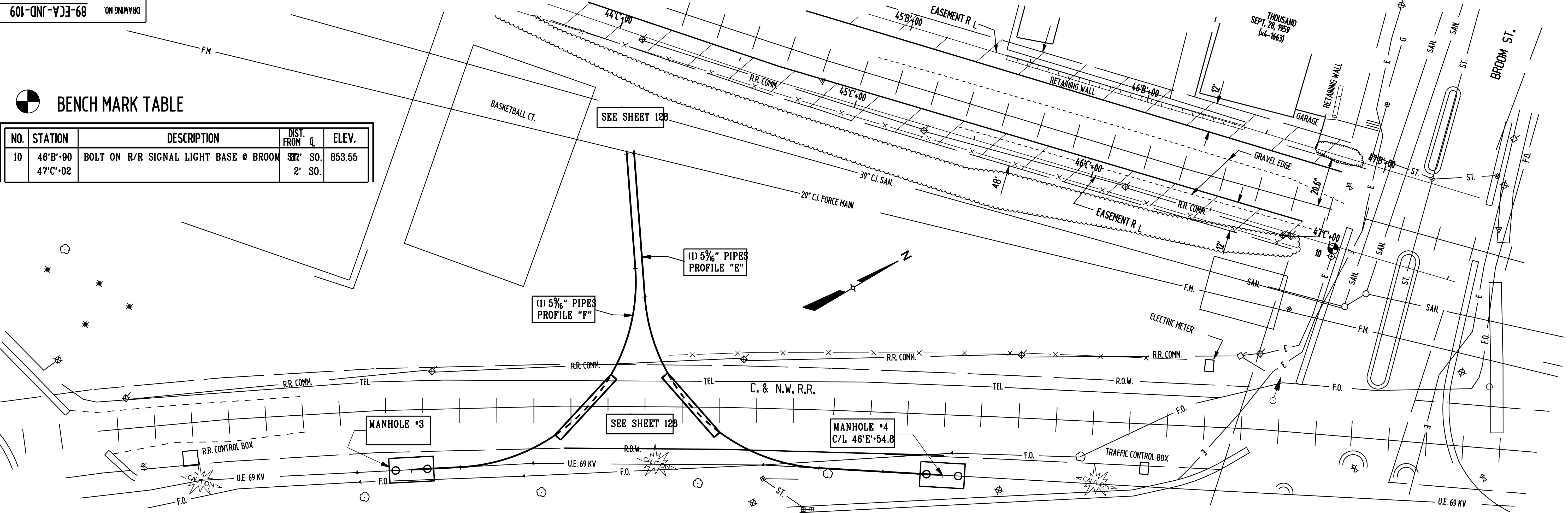
DRAWING NO. 89-ECA-JND-128
 REV. C

REVISIONS
FILMED
ADDED PIPE DESIGN
FILMED
12/90
ADDED CASINGS & CATHODIC PROTECTION
FILMED
4/91
AS BUILT

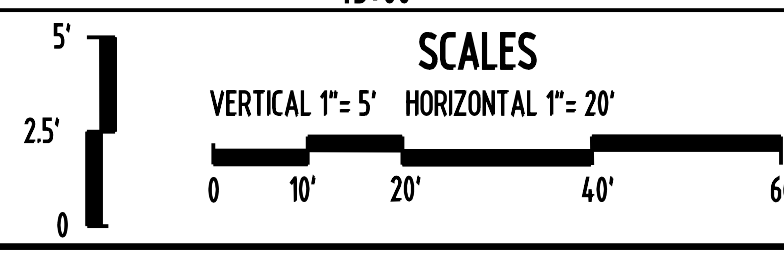
TO OBTAIN LOCATION OF PARTICIPATING UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN
CALL DIGGERS HOTLINE
 1-800-242-8611
 TOLL FREE
WIS. STATUTE 198.015 (1974) REQUIRES MARK OF A WORK DATE NOTICE BEFORE YOU EXCAVATE.

BENCH MARK TABLE

NO.	STATION	DESCRIPTION	DIST. FROM C/L	ELEV.
10	46'B+90 47'C+02	BOLT ON R/R SIGNAL LIGHT BASE @ BROOM ST.	31'2" SO. 2' SO.	853.55



TO OBTAIN LOCATION OF PARTICIPATING UNDERGROUND UTILITIES BEFORE DIGGING
CALL DIGGERS HOTLINE
 1-800-242-8611
 TOLL FREE
 SEE US WITH YOUR HOME
 ADDRESS, MIN. OF 3 WORK DAYS
 NOTICE BEFORE 5:00 P.M. DATE



DESIGNED BY: **Foth & Van Dyke**
 DESIGNED: WRS DATE: NOV'90
 DRAWN: WRS DATE: NOV'90
 CHECKED: JGH DATE: NOV'90

SURVEY BY: **Donohue**
 Engineer - & Architect -
 SURVEYOR: R.D.S. DATE: 8-22-89
 DATES OF SURVEY: 8-22-89 8-25-89
 DRAWN: DATE: _____
 CHECKED: DATE: _____
 APPROVED: DATE: _____

DESIGNED FOR: **Madison Gas and Electric Company**
 DRAWING NO. 89-ECA-JND-108
 MADISON, WISCONSIN

EAST CAMPUS - JOHN NOLEN DRIVE
 TRANSMISSION LINES
 PLAN & PROFILE
 STATION 41'C+94 TO 46'E+56 AND 46'E+51

REV. B
 DRAWING NO. 89-ECA-JND-109