

Contract Routing Form

ROUTING: Urgent Rush

printed on: 01/28/2022

Contract between: Raymond P. Cattell, Inc.  
and Dept. or Division: Engineering Division  
Name/Phone Number:

Project: South Point Rd Truck Scale and Fuel Point

Contract No.: 8606  
Enactment No.: RES-22-00036  
Dollar Amount: 2,529,676.57

File No.: 68886  
Enactment Date: 01/24/3033

(Please DATE before routing)

Signatures Required	Date Received	Date Signed
City Clerk	1-28-2022	1-28-2022
Director of Civil Rights	1-31-2022	1-31-2022
Risk Manager	1-31-22	1-31-22
Finance Director	1-31-22	1-31-22
City Attorney	2-3-22	2-3-22
Mayor	2-3-22	2-3-22

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

Original + 2 Copies

01/28/2022 14:25:53 enjls - Randy Wiesner 267-8679



Legislation Details (With Text)

**File #:** 68886      **Version:** 1      **Name:** Awarding Public Works Contract No. 8606, South Point Rd Truck Scale and Fuel Point

**Type:** Resolution      **Status:** Passed

**File created:** 12/17/2021      **In control:** Engineering Division

**On agenda:** 1/18/2022      **Final action:** 1/18/2022

**Enactment date:** 1/24/2022      **Enactment #:** RES-22-00036

**Title:** Awarding Public Works Contract No. 8606, South Point Rd Truck Scale and Fuel Point. (1st AD)

**Sponsors:** BOARD OF PUBLIC WORKS

**Indexes:**

**Code sections:**

**Attachments:** 1. 8606BidOpeningTab.pdf, 2. 8606 contract.pdf

Date	Ver.	Action By	Action	Result
1/18/2022	1	COMMON COUNCIL	Adopt Under Suspension of Rules 2.04, 2.05, 2.24, and 2.25	Pass
1/5/2022	1	BOARD OF PUBLIC WORKS	RECOMMEND TO COUNCIL TO ADOPT UNDER SUSPENSION OF RULES 2.04, 2.05, 2.24, & 2.25 - REPORT OF OFFICER	Pass
12/17/2021	1	Engineering Division	Refer	

The proposed resolution authorizes awarding the contract for the South Point Road Truck Scale and Fuel Point at a total estimated cost of \$2,732,050 including contingency. Funding for the project is available in Munis 12444-44-140. No additional appropriation is required.

Awarding Public Works Contract No. 8606, South Point Rd Truck Scale and Fuel Point. (1st AD)  
 BE IT RESOLVED, that the following low bids for miscellaneous improvements be accepted and that the Mayor and City Clerk be and are hereby authorized and directed to enter into a contract with the low bidder contained herein, subject to the Contractor's compliance with Section 39.02 of the Madison General Ordinances concerning compliance with the Affirmative Action provisions **and subject to the Contractor's compliance with Section 33.07 of the Madison General Ordinances regarding Best Value Contracting:**

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

See attached document (Contract No. 8606) for itemization of bids.

*EN- Steve Danner-Rivers*

PROJECT

CONTRACTOR

AMOUNT OF BID

CONTRACT NO. 8606  
SOUTH POINT RD TRUCK SCALE AND FUEL POINT

RAYMOND P. CATTELL, INC.

\$2,529,676.57

Acct. No. 12444-44-140: 54250 (90924)  
Contingency 8%±

\$2,529,676.57  
202,373.43

GRAND TOTAL

\$2,732,050.00



RPC

### Demographics

**Company Name:** Ohio Casualty Insurance Company, The  
**SBS Company Number:** 54218499  
**Domicile Type:** Foreign  
**NAIC Group Number:** 111 - LIBERTY MUT GRP  
**Merger Flag:** No

**NAIC CoCode:** 24074  
**State of Domicile:** New Hampshire  
**Organization Type:** Stock

**Short Name:**  
**FEIN:** 31-0396250  
**Country of Domicile:** United States  
**Date of Incorporation:** 01/01/1919

### Address

**Business Address**  
 175 Berkeley Street  
 Boston, MA 02116  
 United States

**Mailing Address**  
 175 Berkeley Street  
 Boston, MA 02116  
 United States

**Statutory Home Office Address**  
 100 Liberty Way  
 Dover, NY 03820  
 United States

**Main Administrative Office Address**  
 175 Berkeley Street  
 Boston, MA 02116  
 United States

### Phone, Email, Website

Phone Type	Number
Business Primary Phone	(617) 357-9500
Toll Free Phone	(800) 843-6446
Fax Phone	(617) 574-5955

**Email**  
 No results found.

**Website**  
 No results found.

### Company Type

**Company Type:** Property and Casualty  
**Status:** Active  
**Effective Date:** 10/01/2012  
**Issue Date:** 08/02/1929  
**Articles of Incorporation Received:** No

**Status Reason:**  
**Legacy State ID:** 110565  
**Approval Date:**  
**Article No:**

**Status Date:** 08/02/1929  
**Expiration Date:**  
**File Date:**  
**COA Number:**

### Appointments

Show 10 entries

Showing 6911 to 6920 of 8387 entries

Filter

Licensee Name	License Number	NPN	License Type	Line of Authority	Appointment Date	Effective Date	Expiration Date
ERIC WOLFE	19367030	19367030	Intermediary (Agent) Individual	Casualty	01/31/2020	02/04/2021	03/15/2022
DANIEL KUNKEL	1853982	1853982	Intermediary (Agent) Individual	Casualty	01/22/2020	02/04/2021	03/15/2022
DANIEL KUNKEL	1853982	1853982	Intermediary (Agent) Individual	Property	01/22/2020	02/04/2021	03/15/2022
CHRISTOPHER KOMANETSKY	16937783	16937783	Intermediary (Agent) Individual	Property	02/04/2020	02/04/2021	03/15/2022
CHRISTOPHER KOMANETSKY	16937783	16937783	Intermediary (Agent) Individual	Casualty	02/04/2020	02/04/2021	03/15/2022
TODD RUSNIAK	342544	342544	Intermediary (Agent) Individual	Property	01/02/2020	02/04/2021	03/15/2022
TODD RUSNIAK	342544	342544	Intermediary (Agent) Individual	Casualty	01/02/2020	02/04/2021	03/15/2022
TRACY KRAUSE	8996012	8996012	Intermediary (Agent) Individual	Casualty	12/31/2019	02/04/2021	03/15/2022
TRACY KRAUSE	8996012	8996012	Intermediary (Agent) Individual	Property	12/31/2019	02/04/2021	03/15/2022
UWE KIRCH	3408160	3408160	Intermediary (Agent) Individual	Property	01/28/2020	02/04/2021	03/15/2022

First Previous 690 691 692 693 694 Next Last

### Line Of Business

Show 10 entries

Showing 1 to 10 of 11 entries

Filter

Line of Business	Citation Type	Effective Date
Aircraft	Aircraft	08/02/1929
Automobile	Automobile	08/02/1929
Credit Insurance	Credit Insurance	08/02/1929
Disability Insurance	Disability Insurance	08/02/1929
Fidelity Insurance	Fidelity Insurance	08/02/1929
Fire, Inland Marine and Other Property Insurance	Fire, Inland Marine and Other Property Insurance	08/02/1929
Liability and Incidental Medical Expense Insurance (other than automobile)	Liability and Incidental Medical Expense Insurance (other than automobile)	08/02/1929
Miscellaneous	Miscellaneous	08/02/1929
Ocean Marine Insurance	Ocean Marine Insurance	08/02/1929
Surety Insurance	Surety Insurance	08/02/1929

First Previous 1 2 Next Last

### Contact

Contact Type	Preferred Name	Name	E-mail	Phone	Address
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\$2,529,676.57  
CONTRACTOR'S OFFICE COPY

BID OF RAYMOND P. CATTELL, INC.

2022

PROPOSAL, CONTRACT, BOND AND SPECIFICATIONS

FOR

SOUTH POINT RD TRUCK SCALE AND FUEL POINT

CONTRACT NO. 8606

MUNIS NO. 12444

IN

MADISON, DANE COUNTY, WISCONSIN

AWARDED BY THE COMMON COUNCIL  
MADISON, WISCONSIN ON JANUARY 18, 2022

CITY ENGINEERING DIVISION  
1600 EMIL STREET  
MADISON, WISCONSIN 53713

<https://bidexpress.com/login>

**SOUTH POINT RD TRUCK SCALE AND FUEL POINT  
CONTRACT NO. 8606**

**INDEX**

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

SECTION B: PROPOSAL SECTION.....B-1

SECTION C: SMALL BUSINESS ENTERPRISE ..... C-1

SECTION D: SPECIAL PROVISIONS..... D-1

SECTION E: BIDDER'S ACKNOWLEDGEMENT ..... E-1

SECTION F: BEST VALUE CONTRACTING ..... F-1

SECTION G: BID BOND..... G-1

SECTION H: AGREEMENT..... H-1

SECTION I: PAYMENT AND PERFORMANCE BOND ..... I-1

Attachments in Bid Express:

- Attachment A: Plan Set
- Attachment B: Specifications
- Attachment C: Wetland Disturbance and NHI Protocol
- Attachment D: Site Survey
- Attachment E: Soil Borings

This Proposal, and Agreement have  
been prepared by:

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



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

RFP: rw

## 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:	SOUTH POINT RD TRUCK SCALE AND FUEL POINT
CONTRACT NO.:	8606
SBE GOAL	3%
BID BOND	5%
SBE PRE BID MEETING	See Pre Bid Meeting info below
PRE BID CONFERENCE (11 A.M.)	December 9, 2021
PREQUALIFICATION APPLICATION DUE (2:00 P.M.)	December 9, 2021
BID SUBMISSION (2:00 P.M.)	December 16, 2021
BID OPEN (2:30 P.M.)	December 16, 2021
PUBLISHED IN WSJ	Nov. 18, 25 & Dec. 2 & 9, 2021

**SBE PRE BID MEETING:** Small Business Enterprise Pre-Bid Meetings are not being held in person at this time. Contractors can schedule one-on-one phone calls with Juan Pablo Torres Meza in Affirmative Action to count towards good faith efforts. Juan Pablo can be reached at (608) 261-9162 or by email, [jtorresmeza@cityofmdison.com](mailto:jtorresmeza@cityofmdison.com).

**PREQUALIFICATION APPLICATION:** Forms are available on our website, [www.cityofmadison.com/engineering/developers-contractors/contractors/how-to-get-prequalified](http://www.cityofmadison.com/engineering/developers-contractors/contractors/how-to-get-prequalified). 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.

**Pre-bid Conference:** The City of Madison is conducting one (1) Pre-Bid Walk Through session at the project site. All contractors are encouraged to attend the walk through to become fully aware of existing site conditions.

This is the only time contractors shall be allowed access to non-public areas of the project area. You may review public areas at any time during normal operating hours.

Please use available parking on the shoulders of the east/west access road. High Visibility vests should be worn on site.

**Questions and Clarifications:** Any questions or requests for clarifications regarding plans and specifications shall be submitted directly to the City Project Manager via email.

- See the contract contact information at the end of Section D-Special Provisions for names and email addresses.
- Emails shall have "**Contract 8606 - Questions and Clarifications**" in the subject line.

The **deadline** for receiving questions and clarifications shall be **12:00 PM on Friday, December 10, 2021**. No additional questions or requests for clarifications will be received after this deadline.

All responses shall be published in the form of an addendum.

**Publishing Addendums:** The City of Madison shall publish bidding addenda as needed during the bidding period. The last addenda (if needed) shall be published on or about 12:00 PM, Tuesday, December 14, 2021 to give all contractors sufficient time to review the addenda before bids are due. The City of Madison reminds all General Contractors you that you must acknowledge having read all addenda when submitting your bid. Failure to acknowledge all addenda shall disqualify your bid.

BIDS TO BE SUBMITTED: by hand to 1600 EMIL ST., MADISON, WI 53713 or online at [www.bidexpress.com](http://www.bidexpress.com).

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

Bids may be submitted on line through Bid Express or in person at 1600 Emil St. The bids will be posted on line after the bid opening. If you have any questions, please call Alane Boutelle at (608) 267-1197, or John Fahrney at (608) 266-9091.

#### STANDARD SPECIFICATIONS

The City of Madison's Standard Specifications for Public Works Construction - 2021 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/engineering/developers-contractors/standard-specifications](http://www.cityofmadison.com/engineering/developers-contractors/standard-specifications).

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). 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](http://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 (City of Madison form) 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  Hydro Excavating
- 243  Infrared Seamless Patching
- 245  Landscaping, Maintenance
- 246  Ecological Restoration
- 250  Landscaping, Site and Street
- 251  Parking Ramp Maintenance
- 252  Pavement Marking
- 255  Pavement Sealcoating and Crack Sealing
- 260  Petroleum Above/Below Ground Storage Tank Removal/Installation
- 262  Playground Installer

- 265  Retaining Walls, Precast Modular Units
- 270  Retaining Walls, Reinforced Concrete
- 275  Sanitary, Storm Sewer and Water Main Construction
- 276  Sawcutting
- 280  Sewer Lateral Drain Cleaning/Internal TV Insp.
- 285  Sewer Lining
- 290  Sewer Pipe Bursting
- 295  Soil Borings
- 300  Soil Nailing
- 305  Storm & Sanitary Sewer Laterals & Water Svc.
- 310  Street Construction
- 315  Street Lighting
- 318  Tennis Court Resurfacing
- 320  Traffic Signals
- 325  Traffic Signing & Marking
- 332  Tree pruning/removal
- 333  Tree, pesticide treatment of
- 335  Trucking
- 340  Utility Transmission Lines including Natural Gas, Electrical & Communications
- 399  Other \_\_\_\_\_

Bridge Construction

- 501  Bridge Construction and/or Repair

Building Construction

- 401  Floor Covering (including carpet, ceramic tile installation, rubber, VCT)
- 402  Building Automation Systems
- 403  Concrete
- 404  Doors and Windows
- 405  Electrical - Power, Lighting & Communications
- 410  Elevator - Lifts
- 412  Fire Suppression
- 413  Furnishings - Furniture and Window Treatments
- 415  General Building Construction, Equal or Less than \$250,000
- 420  General Building Construction, \$250,000 to \$1,500,000
- 425  General Building Construction, Over \$1,500,000
- 428  Glass and/or Glazing
- 429  Hazardous Material Removal
- 430  Heating, Ventilating and Air Conditioning (HVAC)
- 433  Insulation - Thermal
- 435  Masonry/Tuck pointing

- 437  Metals
- 440  Painting and Wallcovering
- 445  Plumbing
- 450  Pump Repair
- 455  Pump Systems
- 460  Roofing and Moisture Protection
- 464  Tower Crane Operator
- 461  Solar Photovoltaic/Hot Water Systems
- 465  Soil/Groundwater Remediation
- 466  Warning Sirens
- 470  Water Supply Elevated Tanks
- 475  Water Supply Wells
- 480  Wood, Plastics & Composites - Structural & Architectural
- 499  Other \_\_\_\_\_

State of Wisconsin Certifications

- 1  Class 5 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for quarries, open pits and road cuts.
- 2  Class 6 Blaster - Blasting Operations and Activities 2500 feet and closer to inhabited buildings for trenches, site excavations, basements, underwater demolition, underground excavations, or structures 15 feet or less in height.
- 3  Class 7 Blaster - Blasting Operations and Activities for structures greater than 15' in height, bridges, towers, and any of the objects or purposes listed as "Class 5 Blaster or Class 6 Blaster".
- 4  Petroleum Above/Below Ground Storage Tank Removal and Installation (Attach copies of State Certifications.)
- 5  Hazardous Material Removal (Contractor to be certified for asbestos and lead abatement per the Wisconsin Department of Health Services, Asbestos and Lead Section (A&LS).) See the following link for application: [www.dhs.wisconsin.gov/Asbestos/Cert](http://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](http://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/civil-rights/contract-compliance/targeted-business-enterprise-programs/targeted-business-enterprise](http://www.cityofmadison.com/civil-rights/contract-compliance/targeted-business-enterprise-programs/targeted-business-enterprise).

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/civil-rights/contract-compliance/targeted-business-enterprise-programs/targeted-business-enterprise](http://www.cityofmadison.com/civil-rights/contract-compliance/targeted-business-enterprise-programs/targeted-business-enterprise). 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.



## SECTION D: SPECIAL PROVISIONS

### SOUTH POINT RD TRUCK SCALE AND FUEL POINT CONTRACT NO. 8606

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 \$65,000 for a single trade contract; or equal to or greater than \$318,000 for a multi-trade contract pursuant to MGO 33.07(7).

#### **SECTION 102.8 EXAMINATION OF SITES OF WORK**

The City of Madison is conducting a Pre-Bid Walk through session for this project located at 402 South Point Rd. on Thursday, December 9, 2021 from 11:00am to 12:00pm. Please be aware of the following:

- Use the east-west service road located off South Point Rd.
- Safety vest is required to be on site.
- Park on the east side of the Warm Storage Building or on either shoulder of the service road before the gate.
- Meet the City Project Manager for sign-in under shed roof on the east side of the Warm Storage Building.
- Contractors are highly encouraged to attend this meeting. Any questions/concerns presented will be recorded and published in an addendum to all bidding contractors.
- Contractors may walk the site at any time since most of the project area is outside the existing security fence.

#### **SECTION 102.9 BIDDERS UNDERSTANDING**

All Contractors are reminded that this is a Public Works contract for The City of Madison and is exempt from State Sales Tax. Refer to this section of the City Standard Specification for Public Works and Specification 00 62 76.13 in Exhibit B for more information.

#### **ARTICLE 103 AWARD AND EXECUTION OF THE CONTRACT**

The bidder must completely fill in the unit price and total bid for each bid item shown on the proposal page and provide the grand total at the bottom of the page.

After the initial bid advertisement and prior to bid opening the City will establish a Construction Budget Dollar Value. This contract shall be awarded to the lowest bidder whose grand total bid is below the Construction Budget Dollar Value.

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

The Awarded Contractor shall completely execute the signing of all contract documents and submit them to City Engineering (1600 Emil St) prior to **12:00pm on Thursday, January 20, 2022.** Delays in turning in the required completed contract documents will not adjust the project completion date.

Payment and Performance Bonds shall be dated no sooner than Wednesday January 19, 2022.

## **ARTICLE 104**                    **SCOPE OF WORK**

This contract is for site preparation and installation of a truck weigh scale, fuel dispensing equipment, interior roadways, and a small CMU building (Gas Hut), as well as utility installations and/or relocations of existing utilities for electrical service, gas service, sanitary sewer, storm sewer water, fiber optic and storm water management basins. The scope of work as detailed in the plans, details, and specifications shall include but not be limited to all of the following:

- Excavation of the site for construction of internal vehicle roadways, fuel point, truck scale and utilities, stock piling existing topsoil on site and hauling/disposal of undesirable soils off site.
- Select fill as per specifications and details for all of the above.
- Site preparation, electrical rough-in, and concrete work for the installation of a truck weigh scale.
  - The scale shall be installed by others and is not part of this contract. The Contractor shall be responsible for all concrete forming/pouring/finishing of ramps and approaches as indicated in the plans and specifications. The Contractor shall also be responsible for the pouring/finishing of the concrete in the scale pan once the scale has been installed.
- Construction of a concrete masonry building with wood trusses including all plumbing, heating, electrical and solar PV components.
- Fuel Dispensing Equipment, including but not limited to buried tanks, pumps, valves, piping, conduits and wiring, dispensing units, and monitoring equipment, as outlined in the plans and specifications. The bidding contractor shall be responsible for sub-contracting all related work with a State of Wisconsin Certified Fuel Tank and Dispensing Equipment Installer (here after referred to as "Fuel Equipment Contractor").
- Concrete and asphalt paving according to the plans and specifications.
- Storm sewer, sanitary sewer, and water main installation as per the plans and specifications.
- Miscellaneous work including but not limited to fencing/gates, landscaping/seeding, pole mounted area lights, and other work as noted in the plans and specifications.
- Coordination and scheduling of work by others
  - Installation of new electrical service by local utility company (Alliant)
  - Relocation of existing gas main by local utility company (MG&E)
  - Installation of City Fiber Optic line by City of Madison Engineering and Traffic Engineering
  - Installation of scale and scale equipment by the scale vendor (Cream City Scales)
  - Scheduling of field visits for compaction testing, concrete sampling, and asphalt sampling by a vendor supplied by the City of Madison
  - Installation of data cabling and equipment, and security cabling and equipment shall be by a vendor supplied by the City of Madison. Conduit for this work by Electrical Contractor, see plans and specifications.
  - Installation of Bio-retention plantings by owner

The scope of work for the bidding contractor and all sub-contractors includes the furnishing of all labor, materials, equipment, tools, and other services necessary to complete the work in accordance with the intent of this contract. All Contractors shall use properly functioning equipment capable of performing the tasks required. All Contractors shall furnish workers who perform quality work and who are experienced and knowledgeable in the work proposed.

In addition, the Contractors shall include all costs of disposal, equipment rental, utility service installations, temporary services, and any other costs whatsoever which may be required for execution of this contract.

**SECTION 104.1      LANDS FOR WORK**

All work under this contract shall be conducted on Public Works lands operated by the City of Madison Streets Division and located at 402 South Point Road, Madison, WI.

All Contractors shall be aware that this site is actively used by the public as a yard waste drop off site. Speed limits, erosion control, and street sweeping will be adhered to at all times.

**SECTION 104.2      INTENT AND COORDINATION OF CONTRACT DOCUMENTS**

The contract documents are complimentary of each other and consist of all of the following:

- The City of Madison Standard Specifications for Public Works Construction, 2021 Edition
- These Special Provisions
- All Addendums to the bidding documents
- Exhibit A: Contract Plan Set
- Exhibit B: Miscellaneous Contract Specifications
  - 00 62 76.13 Sales Tax Form
  - 01 26 13 Request for Information (RFI)
  - 01 26 46 Construction Bulletin (CB)
  - 01 26 57 Change Order Request (COR)
  - 01 26 63 Change Order (CO)
  - 01 29 76 Progress Payment Procedures
  - 01 31 13 Project Coordination
  - 01 31 19 Project Meetings
  - 01 31 23 Project Management Website
  - 01 32 16 Construction Progress Schedules
  - 01 32 19 Submittals Schedule
  - 01 32 23 Survey and Layout Data
  - 01 32 26 Construction Progress Reporting
  - 01 32 33 Photographic Documentation
  - 01 33 23 Submittals
  - 01 45 16 Field Quality Control Procedures
  - 01 45 29 Testing Laboratory Services
  - 01 50 00 Temporary Facilities and Controls
  - 01 60 00 Product Requirements
  - 01 71 23 Field Engineering
  - 01 74 13 Progress Cleaning
  - 01 74 19 Construction Waste Management and Disposal
  - 01 75 00 Protecting Installed Construction
  - 01 77 00 Closeout Procedures
  - 01 78 13 Completion and Correction List
  - 01 78 23 Operation and Maintenance Data
  - 01 78 36 Warranties
  - 01 78 39 As-Built Drawings
  - 01 79 00 Demonstration and Training
  - 08 11 13 Hollow Metal Doors and Frames
  - 08 70 00 Door Hardware
  - 23 10 00 Fuel Dispensing
  - 26 27 29 Electric Vehicle Charging Station
  - 26 31 00 Photovoltaic System Performance Requirements FWGS
  - 32 31 13 Chain Link Fences and Gates
- Exhibit C: WDNR Wetland Disturbance Permit and NHI Protocol
- Exhibit D: Site Survey
- Exhibit E: Soils Boring Report

## **SECTION 105.5            INSPECTION OF WORK**

The Contractor shall be responsible for coordinating all required regulatory inspections associated with items and installations during the execution of this contract.

CGC, Inc. is under contract with the City of Madison for earthwork and pavement testing services related to this contract. **The Contractor SHALL NOT include these testing services in their bid.**

The Contractor shall provide access to all of the work associated with this contract to the staff and consultants of the City design team.

The Contractor shall be aware that additional city staff shall review work for quality control compliance to the City Standard Specifications for Public Works. QC reviews are in addition to any code required inspections under various permits. QC review may require higher levels of materials and workmanship under the City Standard Specifications for Public Works than what is typically required by Building Inspection for code compliance. These reviews shall include but not be limited to excavation, base, paving, storm, sanitary, water, and building installations.

The Contractor shall review Specification 01 32 33 Photographic Documentation and provide Time Lapse Photography on site as outlined in the specification. The Contractor shall coordinate the camera location with the City Project Manager and the Streets Division.

## **SECTION 105.6            CONTRACTORS RESPONSIBILITY FOR WORK**

The Contractor shall not take advantage of any discrepancy in the plans or specifications. This shall include but not be limited to apparent errors, omissions, and interpretations involving codes, regulations, and standards.

All Contractors have a responsibility to review all contract documents noted in Section 104.2 above. No Contractor shall assume that information shown incorrectly on plans for other trades is not their responsibility.

Any Contractor who identifies such a discrepancy during the bidding process shall notify the City Project Manager of the discrepancy prior to the "Questions and Clarifications Deadline" as noted in Section A of the bid documents for clarification of the bid documents, by addendum, prior to the bid due deadline.

Any Contractor who identifies such a discrepancy after the contract has been awarded shall immediately notify the City Project Manager of the discrepancy through the RFI (Request For Information) process for clarification prior to ordering materials and or beginning work.

Review Specification 01 31 13 Project Coordination for additional responsibilities.

## **SECTION 105.9            SURVEY, POINTS, AND INSTRUCTIONS**

The Contractor shall be required to contract with a Registered Land Surveyor (RLS), licensed by the State of Wisconsin, for all survey work required within the plans and specifications for this contract. The Contractor shall provide a copy of the RLS surveyors license to the City Project Manager at the pre-construction meeting. The RLS license shall be current and shall not expire prior to the completion of the contract.

The City of Madison shall provide the RLS with a digital point file for use in executing the construction layout. No further survey assistance will be provided by the City of Madison.

The RLS scope of work shall include but not be limited to the following:

- Project layout including stations, offsets, reference lines, horizontal control points, and vertical control points.

- Verifying depth of cuts and fill for all site excavation, trenches, foundations, and roadways.
- Verifying finished floor and concrete pad elevations.
- Capturing required data for a final digital as built of the contract including but not limited to:
  - Locations of all buried utilities (including fuel dispensing equipment).
  - Depths of all structures and pipe inverts.
  - Locations of all buried items such as bends and caps. Items shall be digitally captured prior to backfilling
  - Locations of all hydrants, valves, and access covers (including Fiber Optic work done by the City of Madison).
  - Corners and edges of all pavements, building and truck scale, including spot elevations.
  - Location of perimeter fencing.

The Contractor and RLS shall review Specifications 01 31 23 Survey and Layout Data and 01 78 39 As-Built Drawings located in Exhibit B of the contract documents for more information prior to bidding this contract.

## **SECTION 105.12      COOPERATION BY THE CONTRACTOR**

The Contractor shall review the site plan for site constraints and adjust his/her bid according to those constraints.

### **Access to Properties**

The Contractor shall maintain access to all properties along Yard Drive at all times. This includes businesses, mail delivery, garbage/recycling pickup and emergency vehicles. Notice shall be given to businesses on Yard Drive 48 hours before any work is done that would obstruct their driveways.

The site location shall remain fully operational to City of Madison staff, work crews, and local residents utilizing the site for yard waste drop off. The Contractor shall limit his daily operations to within the construction zones specified. If additional short term space is needed the contractor shall make coordination through the City Project Manager a minimum of 5 working days in advance of needing the extra space.

The Contractor shall coordinate with the City Project Manager and the Streets Division when the existing service road will be closed for modifications. This coordination shall be a minimum of ten (10) working days prior to closing the service road so Streets Division can relocate the yard waste pick up site.

- The service road shall be accessible during any periods of salt delivery
- The service road shall be accessible and able to be plowed during the winter
- The service road shall be accessible in fall and spring for City staff to shuttle seasonal equipment to/from the site as needed.

### **Temporary Facilities and Controls**

The Contractor shall be responsible for all temporary facilities including heat, toilet facilities, power, etc. as necessary for this contract. Temporary facilities shall include any fuel or service required to operate or maintain the temporary facility. Review Specification 01 50 00 Temporary Facilities and Controls.

### **Work By Others**

The Contractor shall coordinate and schedule work by others as noted in Article 104-Scope of Work above. The Contractor shall include Work By Others in their overall project schedule and coordinate this work well in advance of needing the work to be performed.

### **Scale Pan Concrete**

The Contractor shall coordinate with and provide concrete, crew, and equipment for pouring the concrete into the scale pan after the Vendor has installed the scale equipment. Very strict State of

Wisconsin Weights and Measures requirements apply to this pour and shall be done within the tolerances required by the scale vendor. See the plans and specifications for more details.

**SECTION 105.13      ORDER OF COMPLETION**

The Contractor shall be responsible for all means and methods associated with scheduling the completion of all work related with this contract to include but not be limited to incorporating work by others into their schedule as follows:

- Truck Scale Work:
  - After pouring the scale foundation pad, ramps and approaches the newly formed concrete is required to set for 28 days. (7 and 28 day concrete test reports shall be verified at the end of these periods)
  - During this time the Contractor may work on other site requirements at his/her discretion
  - After the 28 day test has been verified the Scale Installer shall install all components of the scale and the Electrical Subcontractor shall work with the scale contractor to make all final connections to the scale equipment.
  - Upon completion of installing the scale components by the Scale Installer the Contractor shall order and pour the scale pan concrete to the standards and finish described in the plans.
- Site Security; Portions of the existing fence line and vehicle gate are to be removed and relocated during this contract. The Contractor at his/her discretion may move the fencing and install all gates per plans and specifications at anytime during the contract but all daily work shall be completed so as to keep the existing site secure at the end of each work day. Temporary openings are permissible and are to be included in the Contractors general conditions for temporary facilities. Any damage to the new fence line during the contract shall be replaced by the Contractor at no additional cost to the contract.
- Fuel Dispensing Work; All required inspections/testing shall be completed prior to burying any fuel dispensing equipment.
- All buried utilities and services shall be surveyed prior to burying the work.

**SECTION 105.15      SUBSTANTIAL COMPLETION**

The Contractor shall refer to Specification 01 77 00 Closeout Procedures for definitions and procedures related to Substantial Completion.

**SECTION 107.13      TREE PROTECTION SPECIFICATIONS**

The Contractor shall review this section of the City Standard Specifications for Public Works and the amendments noted in Section 3.3 of Specification 01 76 00 Protecting Installed Construction. See the plans and specifications for locations of protected trees, trees to be relocated and trees to be removed.

**SECTION 108.2      PERMITS AND LICENSING**

The City Project Manager as already submitted Building Plans and Mechanical Plans for the Gas Hut plan review. The GC and/or sub contractors shall be responsible for pulling permits and paying for permit fees for Building, Plumbing, Heating, and Electrical trades.

The Fuel Dispensing System is a design/build system. The Fuel Equipment Contractor shall be responsible for all applications, permits, fees and inspections associated with this work..

Where a fee covers initial inspections associated with the permit the Contractor shall be responsible for paying for any fees associated with re-inspections.

The City Project Manager through the Parking Lot and Site Review process has already secured the following Permits. The General Contractor shall not make application for the permits and shall not include any fees for them in their bid:

- City of Madison Erosion Control Permit
- City of Madison Storm Water Management Permit
- Wisconsin Department of Natural Resources (WDNR) NR216 Permit
- Wisconsin Department of Natural Resources (WDNR) Wetland Disturbance Permit GP-SC-2021-13-02477 (see Exhibit C). The Contractor shall read and review the referenced exhibit. He/she is responsible for with all requirements within the permit.

**SECTION 109.7**            **TIME OF COMPLETION**

Work shall begin only after the contract is completely executed and the Start Work Letter is received. It is anticipated that the start work letter shall be issued on or about February 15, 2022.

After receiving the SWL the Contractor shall begin turn-in of submittals and schedules in anticipation of beginning site work in early spring. This shall include the required design of the fuel dispensing equipment. No additional time will be added to the contract for late, improper, or rejected submittals.

The Contractor shall have reached a level of **Construction Closeout - NO LATER THAN Friday December 2, 2022**. See Exhibit B, Specification 01 77 00 for the definition of construction Closeout.

**SECTION 109.14**        **MOBILIZATION**

Only one Mobilization (see City Standard Specifications for Public Works) shall be permitted for this contract. Additional mobilizations shall not be permitted due to weather, contract scheduling, material/equipment deliveries and other similar reasons.

**SECTION 202.3(c)**      **SPECIAL COMPACTION**

See City of Madison Standard Specifications for Public Works Contracts for more complete information.

CGC, Inc. is under contract with the City of Madison for earthwork and pavement testing services related to this contract. The Contractor shall be responsible for contacting CGC for all compaction testing, asphalt and concrete sampling, and other testing services as noted in the contract documents. **The Contractor SHALL NOT include these testing services in their bid.**

Compaction shall meet the requirements specified in the City Standard Specifications:

- All compaction shall be completed with vibratory type equipment. Compaction by ramming using a backhoe bucket will not be permitted.
- Compaction below the concrete ramps, approaches and scale foundation shall achieve a minimum of 1,500 PSF bearing capacity.
- Compaction below Gas Hut footings shall achieve a minimum of 2,000 PSF bearing capacity
- The Contractor shall verify and achieve the minimum soil bearing capacities of all buried fuel equipment with the Fuel Equipment Contractor.

**ARTICLE 210**            **Erosion Control**

See City of Madison Standard Specifications for Public Works Contracts Article 210 for more complete information.

The Contractor shall include all costs for the materials, installation, maintenance, and removal of all storm water management Best Management Practices (BMP) required for the site.

The Contractor shall be required to perform all required inspections, reporting, corrective actions, and fines associated with the requirements of the permits and City of Madison Ordinances.

**SECTION 210.1(d)     STREET SWEEPING**

When required, either by the erosion control plan or the Construction Engineer, the Contractor shall perform mechanical street sweeping on all streets or paved surfaces affected by construction equipment, hauling or related construction activities that result in mud tracking or siltation. Mechanical street sweeping shall be completed as directed by the Construction Engineer and shall remove all loose material to the satisfaction of the Construction Engineer. Depending on site conditions, construction activities, and hauling methods utilized by the Contractor mechanical street sweeping may be required multiple times throughout the day with an absolute minimum that all streets are clean at the end of the work day.

**SECTION 301.10     CONCRETE WASTE MANAGEMENT**

Due to the close proximity of established wetlands and retention ponds the Contractor shall only use pre-fabricated washout containers for this contract. Use of lined excavated areas will not be permitted on this site.

The Contractor shall do all of the following:

- Provide sufficient containers, constructed and lined to city standards, to handle the washout requirements for the concrete delivery
- Monitor the washout operations to ensure drivers are properly using the devices and washout is being contained within the container
- Monitor the waste level in the container to ensure waste levels remain at least 6" below the top of the container
- Immediately clean any spillage and prevent spillage from reaching any inlets, pond, or wetland. Remove any spillage contained within surrounding soils.

The Contractor shall review the entire Concrete Waste Management section of the City of Madison Standard Specifications for Public Works contracts for more information.

The cost of supplying containers and disposing of the concrete waste is incidental to all bid items involving the pouring of concrete or the use of mortar.

**SECTION 403.5     Asphalt Tack Coat**

It is anticipated that all new asphalt pavement layers shall be placed on the same day. If paving takes place over multiple days the Contractor shall provide and install tack coat per the Standard Specifications at their own expense.

Asphalt tack coat shall be applied to all existing asphalt and concrete edges prior to placing new asphalt. The cost of the applying tack coat to edges of existing asphalt is incidental to installing the new asphalt.

**SECTION 403.5     Asphalt Lower Layer**

The new asphalt lower layer shall be a 3-1/2 inch average compacted thickness of 3 MT 58-28 S.

**SECTION 403.5     Asphalt Upper Layer**

The new asphalt lower layer shall be a 2 inch average compacted thickness of 4 MT 58-28 H.

**ARTICLE 500     SEWER AND SEWER STRUCTURES GENERAL**

The stormwater management designer is Phil Gaebler ([pgaebler@cityofmadison.com](mailto:pgaebler@cityofmadison.com) or (608) 266-4059). The sanitary sewer and storm sewer designer for this project is Daniel Olivares ([daolivares@cityofmadison.com](mailto:daolivares@cityofmadison.com) or (608) 261-9285).



## **SANITARY SEWER GENERAL**

8" ASTM D3034 SDR-35 & SDR-26 sewer main and lateral as called for on the plan set shall be payable under Sanitary Sewer Main (Bid Item 50301) and 4" Sanitary Lateral (Bid Item 503531).

All new sanitary sewer access structures shall include Neenah R-1550 castings with the new City of Madison casting detail (see S.D.D. 5.7.16) of the City of Madison Standard Specifications for Public Works Construction, 2021 Edition. All new sewer main connections may be factory cored and shall be included in the structure. All existing main connections shall be field cored to accommodate existing conditions and shall be compensated under Sanitary Sewer Tap (Bid Item 50791). All sewer main not slated for replacement that are damaged during the installation of a structure shall be replaced by the Contractor and shall be considered incidental to the project. All benches and flowlines shall have a smooth trowel finish.

It is advised that the Contractor visit the site prior to bidding to determine the type of trench protection that will be necessary for the sanitary sewer main installation.

## **STORM SEWER GENERAL**

Storm sewer pipe work shall include removing, salvaging, replacing, newly installing and/or protecting the existing storm sewer system to install the sanitary sewer.

Reconnection of existing pipes at new or existing structures, or new pipes at new or existing structures, shall be considered to be part of the work required to construct the new structure or to construct the new sewer pipe and shall not be rewarded with additional compensation. However, if the structure being removed is larger than the new structure, thus requiring additional pipe, the new pipe shall be paid under the appropriate bid item and the connection of the old pipe to the new pipe shall be accomplished with a concrete collar. All private storm connections to a new structure are incidental to the new structure. If a private connection is not shown on the plan, additional compensation shall be paid for as a private reconnection unless the structure is field poured.

Where a new structure is to be constructed at an existing pipe, it is expected that the Contractor shall saw cut the existing pipe in the required location to accommodate the placement of the new structure. If the Contractor for his or her convenience deems it more suitable to remove the existing pipe to a full joint, the additional pipe and concrete collar required to reconnect to the new structure shall be the Contractor's responsibility and shall not be compensated.

Precast structures are only allowed where specifically called for or where field poured structures are not specifically called for, and no precast structures are allowed until ULO's are completed and approval of the design engineer has been received.

Salvaged castings, grates, apron end, and gates may be reinstalled where feasible at the discretion of the Engineer and/or Inspector.

The Contractor shall install the construction fencing prior to completing any work adjacent to the wetland, apart from tree removals.

## **PART VII Water Mains and Service Laterals**

All Articles, Sections, and Standard Detail Drawings associated with Part VII of the City of Madison Standard Specifications for Public Works Contracts shall apply for this contract.

The Contractor shall only use materials specified and allowed. Provide complete shop drawings of all pipes, fittings, hydrants and other related materials for approval prior to ordering materials.

The Contractor shall not bury any water pipe or service until City Staff have reviewed the installation for proper installation testing.

**STANDARD BID ITEMS**

**Note:** The Contractor shall be responsible for reviewing the descriptions, methods of measurement, and basis of payment of all standard bid items as described in the City of Madison Standard Specifications for Public Works Construction, 2021 Edition. The following Standard Bid Items described in these special provisions have been modified for this contract.

**BID ITEM 20101 – EXCAVATION CUT**

**DESCRIPTION**

Work under this item shall include all excavation under the topsoil and fill required for the site development on the grading plan and stormwater plans.

The plan quantity for excavation includes all necessary removal of material under the topsoil and existing asphalt and base course for the site development. Reusing material as fill from on-site shall be considered incidental to Excavation Cut. Materials cannot be mined onsite adjacent to the project. These items shall be in accordance with Article 201 and 202 of the Standard Specifications.

The Contractor shall be responsible for determining a suitable off-site disposal location for excess or unsuitable material with the exception of topsoil. The Contractor shall be responsible for all hauling of excess and/or unsuitable material with the exception of topsoil generated on site, which shall be considered incidental to Excavation Cut. Contractor shall comply with all laws and permit conditions for off-site disposal.

No bulking/expansion or shrink factors were used in determining earthwork quantities for this project. A detailed summary of the earthwork quantities (unadjusted) is as follows:

Excavation Cut

- Estimated cut material after topsoil is removed, 5,700 CY
  - Removal calculated within proposed pavement area.
  - This material shall be used for portions of the site development that need to be filled after the topsoil is removed. Soil borings indicate clay soils under the topsoil.
  - Estimated fill material used from on-site, 1,000 CY
  - The removal of existing asphalt and base course (Yard Drive cul-de-sac and existing southern driveway) is included with calculation.
- Estimated cut material, 1,000 CY
  - Removal calculated within southeast bio-filter.
- Estimated cut material, 600 CY
  - Removal calculated within northwest bio-filter.
- Estimated cut material, 300 CY
  - Removal calculated within swale between proposed driveway and northwest bio-filter.

Total Unclassified Excavation (paid under item 20101).....7,600 CY

**METHOD OF MEASUREMENT**

Excavation Cut shall be measured as Cubic Yard calculated based on the plans and details.

**BASIS OF PAYMENT**

Excavation Cut shall be paid as a pay plan quantity.

## **BID ITEM 20219 – BREAKER RUN**

### **DESCRIPTION**

Work under this item shall include all work and incidentals required to place, grade, and compact Breaker Run base under the Select Fill, Crushed Stone layer at a thickness of 12-inches. Breaker Run base for this contract shall be crushed aggregate, Gradation No. 5.

Compaction shall meet the requirements specified in the Standard Specifications. The Contractor shall be responsible for ensuring compaction testing and final reports prior to installing Select Fill, Crushed Stone.

### **METHOD OF MEASUREMENT**

Breaker Run shall be measured as Ton for a complete installation of this bid item. The Contractor shall provide the City Project Manager with a copy of each weigh ticket. The weigh ticket shall clearly identify the source, fill type and quantity.

### **BASIS OF PAYMENT**

Breaker Run shall be paid at the contract unit price for all labor, equipment, tools, hauling, and incidentals necessary to complete the Breaker Run sub-base work.

## **BID ITEM 20221 – TOPSOIL**

### **DESCRIPTION**

Work under this item shall include all work, materials, labor and incidentals necessary to provide and place topsoil as necessary throughout the project site. Topsoil shall be installed at the locations indicated on the plans and details per the Standard Specifications, article 202.2 (f), except as described in this special provision.

The Contractor may reuse stripped topsoil from on site for restoration of disturbed areas as indicated on the plans or as directed by the Construction Engineer. All salvaged topsoil material from on-site must meet the requirements of the Standard Specifications, article 202.2 (f), and it shall be free of noxious/ invasive weeds, stones, debris, and vegetable material, and free of excess peat, sand, or clay. Salvaged topsoil used within the project limits shall be shredded. The topsoil stripped shall be stored on-site. All salvaged topsoil shall be stored in an appropriate manner, which includes storing the material in an upland area and surrounding the stockpile with two (2) layers of silt fence.

In locations where topsoil is to be placed, the Contractor shall install a minimum of 6" of topsoil.

Un-used topsoil shall remain stockpiled on-site.

### **METHOD OF MEASUREMENT**

Topsoil shall be measured by the Square Yard of material placed within project limits.

### **BASIS OF PAYMENT**

Topsoil, measured as provided above, will be paid at by the contract Square Yard, which price shall be payment in full compensation for storing, hauling, placing, and compacting the specified material, including all equipment, tools, labor and incidentals necessary to complete the work as specified.

## **BID ITEM 20404 – CLEARING**

## **BID ITEM 20409 – GRUBBING**

### **DESCRIPTION**

These bid items are to be used for Clearing and Grubbing trees and brush that are part of a tree or brush line as shown on the plans. All work for clearing and grubbing the tree and brush lines shall be completed per Article 204 of the Standard Specifications except the Contractor shall be paid for the removal of trees/brush under 3 inches.

**METHOD OF MEASUREMENT**

These bid items for Clearing and Grubbing are to be measured and paid by the Lump Sum for completed work.

**BASIS OF PAYMENT**

These items, measured as provided above, will be paid at the contract lump sum, which price shall be payment in full for all labor, equipment, tools, hauling and incidentals necessary to complete the work.

**BID ITEM 50797 - EXTERNAL SEWER ACCESS STRUCTURE JOINT SEAL**

**DESCRIPTION**

Work under this item shall include all work, materials, equipment, and incidentals required to provide and install External Sewer Access Structure Joint Seal in accordance with Article 507.3 of the City of Madison Standard Specifications for Public Works Construction Latest Edition.

**METHOD OF MEASUREMENT**

EXTERNAL JOINT SEAL shall be measured by each structure installation acceptably completed.

**BASIS OF PAYMENT**

EXTERNAL JOINT SEAL shall be paid for at the contract price, which shall be full compensation for all work as outlined in the description.

**BID ITEM 50801 – UTILITY LINE OPENING (ULO)**

The work under this item shall be completed in accordance with Article 508 of the Standard Specifications for Public Works Construction latest edition. It is the discretion of the Contractor to locate utilities by either a trench excavation or by a pothole technique. However, the Contractor shall not be compensated more than once for multiple utilities located within a maximum distance of five (5) feet long.

This contract includes 2 additional undistributed ULOs to be performed at the direction of the Engineer.

**NON STANDARD BID ITEMS**

**Note:** The Contractor shall be responsible for reviewing the descriptions, methods of measurement, and basis of payment of all Non Standard bid items as described below.

**BID ITEM 90001 – 9” CONCRETE DRIVE**

Concrete through the driveway at the location indicated on the plans shall be constructed to a thickness of 9 inches. All work shall be performed in accordance with Part III of the standard specifications.

**BID ITEM 90002 – REINFORCED TYPE ‘A’ CONCRETE CURB & GUTTER**

**DESCRIPTION**

Work under this item shall include all work, materials, labor, equipment, and incidentals necessary to install typical Type ‘A’ Concrete Curb and Gutter per the Standard Specifications with steel reinforcement as shown on the plans and details.

**MATERIALS**

3 – ½-inch diameter epoxy coated bars and 9-inch long tie bars shall be used at the location indicated on the plans.

**METHOD OF MEASUREMENT**

Reinforced Type ‘A’ Concrete Curb & Gutter shall be measured by the linear foot along the face of curb.

**BASIS OF PAYMENT**

Reinforced Type 'A' Concrete Curb & Gutter shall be measured as described above which shall be full compensation for all work, materials and incidentals to complete the work as described above.

**BID ITEM 90003 – REMOVING DEBRIS****DESCRIPTION**

Work under this item shall include but not limited to all work, material, equipment, and incidentals necessary to remove piles of metal, concrete, brick, asphalt, boulders, construction lumber, plastic, concrete barrier, and concrete parking stops. All items shall be removed within the project site or as directed by the Construction Engineer.

**METHOD OF MEASUREMENT**

The bid item Removing Debris is to be measured and paid by the Lump Sum for completed work.

**BASIS OF PAYMENT**

Removing Debris, measured as provided above, will be paid at the contract lump sum, which price shall be payment in full for all labor, equipment, tools, hauling and incidentals necessary to complete the work.

**BID ITEM 90004 – REMOVE PERMANENT TYPE III BARRICADE****DESCRIPTION**

This bid item includes all work, materials, equipment, labor, transporting and disposing necessary to Remove Permanent Type III Barricade as shown on Plan Sheet P-1.

**METHOD OF MEASUREMENT**

Remove Permanent Type III Barricade shall be measured on a per unit basis acceptably removed.

**BASIS OF PAYMENT**

Remove Permanent Type III Barricade shall be paid at the contract unit price, which shall be full compensation for all work as provided in the description.

**BID ITEM 90005 –SEEDING – AGGRESSIVE MIX****DESCRIPTION**

Work under this bid item shall include all labor, equipment, and incidentals necessary to provide, store, and install Seeding – Aggressive Mix as shown on G-1. All work, including the addition of soil stabilizers, fertilizers, and the addition of the specified cover crop, shall be completed in accordance with Article 207 of the Standard Specifications. Following seeding, the site shall be stabilized with erosion matting as shown on the plans, which shall be paid separately under the appropriate bid item.

- Indian grass (*Sorghastrum nutans*) 10 lbs PLS (pure live seed) per acre = 16 lbs = ~\$275
- Big bluestem (*Andropogon gerardii*) 10 lbs PLS/acre = 16 lbs = ~\$250
- Black eyed Susan (*Rudbeckia hirta*) 2 lbs/acre = 3.2 lbs = ~\$100

This seed mix shall be accompanied with a cover crop consisting of 50 pounds per acre of Oats. This cover crop shall be used regardless of what time of year the site is seeded.

**METHOD OF MEASUREMENT**

Seeding – Aggressive Mix within the limits shown on the plan set shall be paid per Square Yard.

**BASIS OF PAYMENT**

Seeding – Aggressive Mix shall be measured as described above and shall be paid at the contract unit price, which shall constitute full compensation for provision and placement of seed, including the cover crop, as defined in this section and Article 207 of the Standard Specifications.

## **BID ITEM 90006 – CONCRETE FLUME**

### **DESCRIPTION**

Work under this bid item shall include all work, materials, equipment, and incidentals necessary to construct a concrete flume that connect the proposed curb and gutter to the bioinfiltration basin.

The flumes shall be constructed as shown in the City of Madison Engineering Division Standard Detail Drawing 5.4.10: Curb to Ditch Transition Asphalt Flume, with the exception that 4-inch concrete shall be used instead of asphalt.

### **METHOD OF MEASUREMENT**

Concrete Flume shall be measured by Each unit installed.

### **BASIS OF PAYMENT**

Concrete Flume shall be paid at the contract unit price, which shall be considered full compensation for construction of an individual concrete flume.

## **BID ITEM 90007 – GEOSYNTHETIC REINFORCEMENT FABRIC**

### **DESCRIPTION**

Work under this item shall include all work, materials, equipment, and incidentals necessary to provide and install Mirafi RS580i, TerraTex HPG HM58b, or an approved equal.

### **CONSTRUCTION METHODS**

The Geosynthetic Reinforcement Fabric shall be installed in accordance with the manufacturer's recommendations. The Breaker Run shall be placed directly over the Geosynthetic Reinforcement Fabric in 12-inch loose lifts. Rubber-tired vehicles may be driven at low speeds, 10 mph or less, and in straight paths over the exposed Geosynthetic Reinforcement Fabric.

### **METHOD OF MEASUREMENT**

The Geosynthetic Reinforcement Fabric shall be measured by the square yard, in place. Any overlap of the rolls, measured either longitudinally or transversely, shall be included in the pay quantity.

### **BASIS OF PAYMENT**

Geosynthetic Reinforcement Fabric shall be measured as described above, which shall be full compensation for all work, materials, equipment and incidentals to complete the work as described above.

## **BID ITEM 90008 – EXCAVATION TOPSOIL CUT**

### **DESCRIPTION**

Work under this item shall include all topsoil required for the site development on the grading plan and stormwater plans.

The plan quantity for excavation topsoil includes all necessary topsoil stripping for the site development. Reusing topsoil material from on-site shall be paid separately.

No bulking/expansion or shrink factors were used in determining earthwork quantities for this project. A detailed summary of the earthwork quantities (unadjusted) is as follows:

#### Excavation Topsoil Cut

- Estimated topsoil stripping, 5,500 CY.
  - Removal calculated within proposed pavement area.
  - Soil borings indicate topsoil depth 8-inches – 20-inches.
    - Calculation based on an average topsoil removal depth of 12-inches.
    - All topsoil needs to be removed regardless of depth.

- The topsoil stripped from the site shall be stored at the location shown on the grading plan.
- The Contractor shall add the topsoil stripped with this project onto or near the existing topsoil pile onsite.
- The Contractor shall leave the excess topsoil onsite for future use by City of Madison.
  - The excess topsoil pile (including pre-construction pile) shall be protected with silt fence, the silt fence shall be paid separately.

Total Unclassified Excavation Topsoil (paid under item 90008).....5,500 CY

**METHOD OF MEASUREMENT**

Excavation Topsoil Cut shall be measured as Cubic Yard calculated based on the plans and details.

**BASIS OF PAYMENT**

Excavation Topsoil Cut shall be paid as a pay plan quantity.

**BID ITEM 90030 – BIORETENTION SOUTH OUTLET**

**DESCRIPTION**

This bid item shall include all work required to construct the Southern bioretention basin outlet structure. The structure consists of 24" RCP pipe set vertically. The gate is set inside the bell end. Two 6" orifice are at 1068.2' and a 15" RCP and an 8" perforated drain tile connects at 1064.0'. See sheet U-5 for a detail of the structure.

**METHOD OF MEASUREMENT**

Bioretention South Outlet shall be measures as a completed and satisfactorily installed.

**BASIS OF PAYMENT**

Bioretention South Outlet shall be paid as a lump sum for all materials, work, and incidental costs related to construction.

**BID ITEM 90031 – BIORETENTION NORTH OUTLET**

**DESCRIPTION**

This bid item shall include all work required to construct the northern bioretention basin outlet structure. The structure consists of a 3' diameter access structure with a weir plate with a 2' wide sharp crested rectangular weir at 1064.75. A 12" RCP enters the structure from the bioretention and an 8" underdrain connects downstream of the weir plate. A 15" RCP drains the structure downstream of the weir plate. See Sheet U-2 for a detail of the structure.

**METHOD OF MEASUREMENT**

Bioretention North Outlet shall be measures as a completed and satisfactorily installed.

**BASIS OF PAYMENT**

Bioretention North Outlet shall be paid as a lump sum for all materials, work, and incidental costs related to construction.

**BID ITEM 90032 - 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.

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 lump sum quantity as properly installed and approved.

#### **BASIS OF PAYMENT**

Construction Fence (Plastic) shall be measured as described above and shall be paid for at the contract unit price which shall be full compensation for all work, materials, tools, equipment, labor, hauling, placement, disposal and incidentals required to complete the work as set forth in the description.

#### **BID ITEM – 90033 8” DRILLED PVC UNDERDRAIN**

##### **DESCRIPTION**

This work shall consist of providing and installing an 8” diameter SCH 35 PVC pipe with a 4 3/8” drilled holes every 6 linear inches. The pipe is to be wrapped in filter fabric and placed at the elevation detailed in the bioretention cross section. The underdrain is attached to the bioretention outlet but is paid as a separate item.

##### **CONSTRUCTION METHOD**

This item places a 8” schedule 35 PVC pipe at the interface of the native soil and engineered fill within the bioretention devices.

##### **METHOD OF MEASUREMENT**

The 8” drilled underdrain pipe shall be measured per plan quantity.

##### **BASIS OF PAYMENT**

This item, measured as provided above, shall be paid at the contract unit price, which shall include all work, materials, and incidentals necessary to complete the item of work as set forth in the description.

#### **BID ITEM – 90034 ENGINEERED SOIL**

##### **DESCRIPTION**

This work shall consist of providing engineered fill as described in 211.2(a) of the City of Madison standard specifications and placing it in the bioretention devices as shown in sheets U-2 and U-5.

##### **CONSTRUCTION METHOD**

This item places engineered fill within the bioretention devices.

##### **METHOD OF MEASUREMENT**

The engineered fill shall be measured per plan quantity..

##### **BASIS OF PAYMENT**

This item, measured as provided above, shall be paid at the contract unit price, which shall include all work, materials, and incidentals necessary to complete the item of work as set forth in the description.



**BID ITEM – 90035 8” SCH 35 SWEEP AND CLEAN OUT**

**DESCRIPTION**

This work shall consist of providing and installing an 8” diameter SCH 35 PVC sweep clean out and an 8” screw cap with square nut flush with the top of the engineered soil in the bioretention devices.

**CONSTRUCTION METHOD**

This item places an 8” schedule 35 PVC sweep clean out and an 8” screw cap with square nut at the ends of the 8” drilled PVC underdrains.

**METHOD OF MEASUREMENT**

The 8” sweep and clean outs shall be measured per plan quantity.

**BASIS OF PAYMENT**

This item, measured as provided above, shall be paid at the contract unit price, which shall include all work, materials, and incidentals necessary to complete the item of work as set forth in the description.

**BID ITEM – 90036 PLANTING MIX TOPSOIL**

**DESCRIPTION**

Planting Mix Topsoil, shall be a mix of 2:1:1 pulverized and/or shredded general use topsoil (as described above), sand and compost respectively. Planting Mix Topsoil shall be thoroughly mixed off-site before spreading. Planting Mix Topsoil shall be used on the sideslopes of the bioretention areas and shall be a layer 6” thick.

**CONSTRUCTION METHOD**

This item places planting soil mix on the side slopes of the bio retention devices at a depth of 6” in order to achieve the final grade of the bioretention devices.

**METHOD OF MEASUREMENT**

The Planting mix topsoil shall be measured per plan quantity in units of SY.

**BASIS OF PAYMENT**

This item, measured as provided above, shall be paid at the contract unit price, which shall include all work, materials, and incidentals necessary to complete the item of work as set forth in the description.

**BID ITEM 90099 – CONSTRUCTION SURVEYING**

**DESCRIPTION**

BID ITEM 90099 shall be for all work associated with providing Construction Surveying to complete the work in this contract. See Section 105.9 Survey, Points, and Instructions in these Special Provisions, Specification 01 31 23 Survey and Layout Data, and Specification 01 78 39 As-Built drawings in Exhibit B of the contract documents for more information.

**METHOD OF MEASUREMENT**

BID ITEM 90099 shall be measured as LUMP SUM (LS) for completing all survey requirements as described above.

**BASIS OF PAYMENT**

BID ITEM 90099 shall be paid at the contract unit price for all labor, and equipment necessary to perform this work. Partial payments may be made against the surveyors work as follows:

- 30% of bid price after initial project setup and staking
- 30% of bid price at project 50% completion (+/- interior road networks are in and cut to rough grade, building and scale foundations are set)
- 20% of bid price at project 75% completion (+/- interior road networks are filled and ready for paving)
- 20% of bid price after paper and digital As-Builts have been turned into and accepted by the City of Madison.

## **BID ITEM 90100 – TRUCK SCALE CONCRETE WORK (RAMPS AND SCALE FOUNDATION SLAB)**

### **DESCRIPTION**

Bid Item 90100 shall include all forming, reinforcing bar (rebar) installation, miscellaneous steel installation, under slab drain piping, concrete pouring, and concrete finishing needed to install the ramps, approaches, and scale foundation slab indicated in the plans and details. All rebar shall be epoxy coated in sizes and lengths noted in the rebar schedule of the plan set. Lengths noted are design lengths, Contractor is responsible for providing sufficient material for required lapping of all bars.

The Contractor shall provide the City Project Manager with concrete mix specifications and rebar submittals for approval before beginning excavation.

The Contractor shall notify the City Project Manager to review the installed forms, rebar, and under slab drain piping before each concrete pour. At the Contractors discretion the ramps, approaches, and scale foundation may be poured as a single monolithic pour.

The Contractor shall be responsible for ordering, pouring and finishing the concrete associated with this bid item. The concrete shall be 3000psi at 28 days strength and shall have a broom sweep finish. The Contractor shall notify the City Project Manager and the Scale Contractor within 24 hours of completing the concrete ramps, approaches and foundation. Provide 7 and 28 day test reports on all concrete pours to the City Project Manager and the Scale Installer.

Under slab drain piping shall be 6" diameter PVC Schedule 40 pipe as shown in the details and notes. Drain pipes shall be continuous lengths of pipe cemented with couplings as needed, provide and install slotted drain covers for each end. All materials and labor required to install the required drain piping shall be incidental to this bid item.

### **METHOD OF MEASUREMENT**

Bid Item 90100 shall be measured as SQUARE FOOT (SF) for a complete installation of the scale foundation, ramps, approaches, and shoulders as described above.

### **BASIS OF PAYMENT**

Bid Item 90100 shall be paid at the contract unit price for all labor, materials, equipment, and incidentals associated with completing the work described above. Twenty-five (25) percent of this bid item may be paid after delivery of reinforcing and miscellaneous steel. Seventy-five (75) percent of this bid item shall be paid upon completion of the work described above.

## **BID ITEM 90101 – TRUCK SCALE CONCRETE WORK (SHOULDERS AND POLE SUPPORT PADS)**

### **DESCRIPTION**

Bid Item 90101 shall include the concrete pouring and finishing required for the concrete shoulders and pole support pads, for the antenna and remote display poles, as identified on the site plan.

Shoulders and pole support pads shall be installed after the MGS rail posts have been located and installed.

The Contractor shall provide and install 5/8" epoxy coated rebar for the pole support pads as noted in the plans and details.

The Contractor shall furnish and install 1/2" expansion joint material and joint sealant wherever the concrete shoulders abut existing buildings, concrete ramps, scale foundation slab, and pole support pads. Refer to the City Standard Specifications for Public Works Section 303.2(d) Joints for material specifications and installation requirements of the expansion joint material and joint sealant.

The Contractor shall be responsible for ordering, pouring and finishing the concrete associated with this bid item. The concrete shall be 3000psi at 28 days strength and shall have a broom sweep finish.

This bid item DOES NOT include work associated with the installation of the truck scale area lights.

**METHOD OF MEASUREMENT**

Bid Item 90101 shall be measured as SQUARE FOOT (SF) for a complete installation of the scale foundation, ramps, approaches, and shoulders as described above.

**BASIS OF PAYMENT**

Bid Item 90101 shall be paid at the contract unit price for all labor, materials, equipment, incidentals associated with completing the work described above. Materials and labor to install the expansion joint and sealant materials shall be incidental to this bid item.

**BID ITEM 90102 – TRUCK SCALE CONCRETE WORK (SCALE PAN)**

**DESCRIPTION**

Bid Item 90102 shall include the concrete pouring and finishing required inside of the scale pan being installed by others.

The Scale Installer cannot install the scale load cell plates, load cells, and steel scale pan until all previous concrete has been allowed to cure for 28 days. The Scale Installer shall provide the City Project Manager and the Contractor notice that the pan installation is complete. The Contractor shall then remobilize within 5 working days to pour and finish the scale pan concrete.

The Contractor shall be responsible for ordering, pouring and finishing the scale pan concrete. The concrete shall be 3000psi at 28 days strength, have a 1" longitudinal crown down the centerline of the pan width and shall have a broom sweep finish. The Contractor shall verify all concrete requirements with the Scale Installer prior to ordering the concrete.

**METHOD OF MEASUREMENT**

Bid Item 90102 shall be measured as SQUARE FOOT (SF) for a complete installation of the scale foundation, ramps, approaches, and shoulders as described above.

**BASIS OF PAYMENT**

Bid Item 90102 shall be paid at the contract unit price for all labor, materials, equipment, and incidentals associated with completing the work described above.

**BID ITEM 90103 – ELECTRICAL AND DATA WORK FOR TRUCK SCALE**

**DESCRIPTION**

Bid Item 90103 shall include all of the following electrical work for a complete installation of the truck scale. Refer to the project site plans, truck scale electrical schematic, and gas hut electrical plan on for installation requirements:

- Install Scale Control Panel:
  - Coordinate the location and installation of concrete bollards (installed by General Contractor as Bid Item 90122)
  - Install unistrut and minimum 3/4" exterior grade plywood backer board between bollards
  - Mount PC Cabinet (provided by Scale Vendor) to plywood backer board
- Provide and install properly sized conduits and wiring as required from electrical panel 'A' to the PC Cabinet for all dedicated circuits and data cabling.
  - The Electrical Contractor shall coordinate all conduit runs to the truck scale and future salt barn with the General Contractor and Excavation Contractor. Due to the required depth of cut for general site excavation the EC shall lay conduit in open air

prior to the site being backfilled. No additional trenching for conduit shall be allowed for this bid item.

- Back fill around all conduit shall be as per the City Standard Specifications.
- All bends shall be large radius sweeps to minimize the use of pull boxes. The use of pull boxes below grade is not allowed.
- Provide, install, and correctly label dedicated circuits at electrical panel 'A' and PC Cabinet (provided by Scale Vendor).
- Provide and install data cable from the Data Cabinet located in the gas hut to the PC Cabinet at truck scale. Data cable to be by others.
- Provide and install weather proof (WP) outlets and covers as noted in the schematic for courtesy outlets and scale equipment scale equipment.
- Install and connect all cables and wires provided by the scale installer. Connections to scale equipment shall be by the scale installer.
- Installation of all conduit shall include all boxes, wire, hangers, and other miscellaneous materials required to complete the installation of each conduit run.

This bid item DOES NOT include work associated with the installation of the truck scale area lights. See Bid Item 90130 below for requirements of installing all (truck scale and fuel island) area lights.

#### **METHOD OF MEASUREMENT**

Bid Item 90103 shall be measured as LUMP SUM (LS) for a complete code compliant installation described above and as shown in the plans.

#### **BASIS OF PAYMENT**

Bid Item 90103 shall be paid at the contract unit price for all labor, materials, and equipment required to complete the installation described above for each site. Partial payments may be approved by the City Project Manager based on the percentage of electrical work completed.

#### **BID ITEM 90104 – TRUCK SCALE MIDWEST GUARDRAIL SYSTEM (MGS)**

##### **DESCRIPTION**

Bid Item 90104 shall include all steel posts, wood blockouts, W-beam rails, and miscellaneous bolts and fasteners to install a complete Midwest Guardrail System (MGS) as shown in the plans and details.

The Contractor shall use details, materials, and installation methods as depicted in Wisconsin DOT Standard Details Drawings SDD 14b42-a and 14b42-b. Post locations and top of beam heights shall be as indicated in the plans, any modifications shall be approved by the City Project Manager before installing the system. Inside clearance between beams shall be 15'-0" centered on the width of the ramps and approaches

##### **METHOD OF MEASUREMENT**

Bid Item 90104 shall be measured as LUMP SUM for a complete installation of the Midwest Guardrail System.

##### **BASIS OF PAYMENT**

Bid Item 90104 shall be paid at the contract unit price for all labor, materials, equipment, and incidentals associated with completing the work described above. Twenty-five (25) percent of this bid item may be paid after delivery of MGS system materials. Seventy-five (75) percent of this bid item shall be paid upon completion of the work described above.

#### **BID ITEM 90110 – CONCRETE WORK (FUEL POINT)**

##### **DESCRIPTION**

Bid Item 90110 shall include all concrete pouring and finishing required for a complete installation of the concrete fueling pads and dispensing island curb work as show in the plans and details.

This bid item SHALL NOT include any concrete work that may be required by the fuel equipment Contractor for tank pads or dead man anchors required for the buried fuel tanks.

The Contractor shall be responsible for ordering, pouring and finishing the the fuel pads to a medium broom sweep finish, dispensing island curbs shall be trowel finished. The concrete shall meet the depth specifications as shown in the plans and details and the City of Madison Standard Specifications for Heavy Duty Concrete.

**METHOD OF MEASUREMENT**

Bid Item 90110 shall be measured as SQUARE FOOT (SF) for a complete installation of all concrete fueling pads and dispensing equipment islands.

**BASIS OF PAYMENT**

Bid Item 90110 shall be paid at the contract unit price for all labor, materials, equipment, and incidentals associated with completing the work described above.

**BID ITEM 90115 – FUEL DISPENSING EQUIPMENT DESIGN AND INSTALLATION**

**DESCRIPTION**

Bid Item 900115 shall include all fees associated with the design, permitting, and inspections, required for a complete installation of the Fuel Point as shown in the plans and details. Work shall include but not be limited to tank excavation; concrete for tank pads and dead man tie downs; buried fiberglass tanks; tank back fill; pumps and piping; conduit, wiring and connections; product dispensing equipment; access structures with lids; dispenser monitoring equipment and other ancillary equipment required to complete a code approved fuel dispensing installation. Refer to Specification 23 10 00 Fuel dispensing in Appendix B for more information.

This bid item DOES NOT include the concrete work for the fuel pads, curb work for the raised fuel dispensing islands, the installation of area lights or the dedicated electrical panel 'B'.

The Fuel Equipment Contractor shall be responsible for coordinating all work, material ordering, and deliveries associated with this bid item with the General Contractor.

**METHOD OF MEASUREMENT**

Bid Item 90115 shall be measured as LUMP SUM (LS) for a complete installation of the scale foundation, ramps, approaches, and shoulders as described above.

**BASIS OF PAYMENT**

Bid Item 90115 shall be paid at the contract unit price for all labor, materials, equipment, incidentals, and remobilization associated with completing the work described above.

**BID ITEM 90120 – GAS HUT CONSTRUCTION**

**DESCRIPTION**

Bid Item 90120 shall include the complete installation of the gas hut as per the plans and details including but not limited to:

- Excavations, footings, foundations, and buried utility pipes, all backfill and compaction.
  - Due to the required depth of cut for general site excavation the additional excavation for footings and foundations, sanitary lateral, and water service is anticipated to be minimal. Any additional excavation for required for these items shall be incidental to this bid item.
  - Back fill around all conduits and piping shall be as per the City Standard Specifications.
  - All bends shall be large radius sweeps to minimize the use of pull boxes. The use of pull boxes below grade is not allowed
- Building construction of all walls, doors window and roof systems

- All plumbing, heating, and electrical systems, including all connections to sanitary, water, and electrical power supply.
- Raised sidewalk, handicap ramp, metal tube railings, and flexible corner bollards (type B-3).

The Contractor shall review all plans and specifications for specific building components, framing details, structural requirements, finish requirements and other related information.

All Contractors shall coordinate their work with other contractors prior to rough-in and installations. The City of Madison will not pay for redoing any work caused by installation conflicts.

This bid item DOES NOT include the installation of the Photovoltaic Solar System. See bid item 90134 for more information.

**METHOD OF MEASUREMENT**

Bid Item 90120 shall be measured as LUMP SUM (LS) for a complete installation of the Gas Hut as described above.

**BASIS OF PAYMENT**

Bid Item 90120 shall be paid at the contract unit price for all labor, materials, equipment, incidentals associated with completing the work described above. Partial payments will be permitted based on the amount of progress made on the construction of the Gas Hut and all related systems as described above.

**BID ITEM 90130 – POLE MOUNTED AREA LIGHTS**

**DESCRIPTION**

Bid Item 90130 shall include the excavation (as needed); forming and pouring of concrete bases (including rebar); conduit and wiring; light poles, including all hardware and cover plates; lights and other related materials for the complete installation of all area lights located at the truck scale, the fuel islands, and the electric vehicle charging station, as noted in the plans and details.

- The General Contractor shall be responsible for coordinating all rough-in of electrical conduits and grounding wires with the installation of rebar, for the concrete area light bases.
- The Electrical Contractor shall provide and install properly sized conduits and wiring as required from electrical panel 'A' to the scale, the fuel island, and between each area light at the scale and fuel islands.
- The Electrical Contractor shall coordinate all conduit runs to the area lights with the General Contractor, Excavation Contractor, and Fuel Equipment Contractor. Due to the required depth of cut for general site excavation the EC shall lay conduit in open air prior to the site being backfilled. No additional trenching for conduit shall be allowed for this bid item.
- Back fill around all conduit shall be as per the City Standard Specifications.
- All bends shall be large radius sweeps to minimize the use of pull boxes. The use of pull boxes below grade is not allowed.
- Area lights shall be inspected by the City Project Manager or designee for completeness of rebar, conduit, and grounding rod/wires prior to forming and pouring the concrete base.

**METHOD OF MEASUREMENT**

Bid Item 90130 shall be measured as EACH (EA) for a complete installation of one area light per the description above.

**BASIS OF PAYMENT**

Bid Item 90130 shall be paid at the contract unit price for all labor, materials, equipment, incidentals, associated with completing the work described above for all pole mounted area lights.

**BID ITEM 90131 – 6” STEEL PIPE BOLLARDS “B-1”**

**DESCRIPTION**

Bid Item 90131 shall include the excavation; 6” diameter steel piping, pouring and finishing of concrete, pipes primed and painted as indicated in the plans and details.

**METHOD OF MEASUREMENT**

Bid Item 90131 shall be measured as EACH (EA) for a complete installation of one type B-1 bollard as described above.

**BASIS OF PAYMENT**

Bid Item 90131 shall be paid at the contract unit price for all labor, materials, equipment, incidentals, associated with completing the work described above for all type B-1 Bollards.

**BID ITEM 90132 – 3” STEEL PIPE BOLLARDS “B-2”**

**DESCRIPTION**

Bid Item 90132 shall include the excavation; 3” diameter steel piping, pouring and finishing of concrete, pipes primed and painted as indicated in the plans and details.

**METHOD OF MEASUREMENT**

Bid Item 90132 shall be measured as EACH (EA) for a complete installation of one type B-2 bollard as described above.

**BASIS OF PAYMENT**

Bid Item 90132 shall be paid at the contract unit price for all labor, materials, equipment, incidentals, associated with completing the work described above for all type B-2 Bollards.

**BID ITEM 90133 – ELECTRIC VEHICLE CHARGING STATION**

**DESCRIPTION**

Bid Item 90133 shall include the excavation, sub-base and base materials, compaction, reinforcing, forming, concrete and finishing, and all conduits, box and similar items necessary to complete the concrete bases for the electric vehicle charging stations. This bid item is for the rough-in and base work only. ECVS equipment is by others.

**METHOD OF MEASUREMENT**

Bid Item 90133 shall be measured as EACH (EA) for a complete installation of one type B-2 bollard as described above.

**BASIS OF PAYMENT**

Bid Item 90133 shall be paid at the contract unit price for all labor, materials, equipment, incidentals, associated with completing the work described above for all type B-2 Bollards.

**BID ITEM 90134 – PHOTOVOLTAIC (PV) SOLAR SYSTEM**

**DESCRIPTION**

Bid Item 90134 shall be for all PV panels, mounting hardware, disconnects, and other related materials required for a complete PV Solar System as described in the plans and Specification 26 31 00 "Photovoltaic System Performance Requirements".

The PV Contractor shall provide the City of Madison with an approved "Utility Interconnection Agreement" prior to ordering and installing an components of the PV system.

**METHOD OF MEASUREMENT**

Bid Item 90134 shall be measured as LUMP SUM (LS) for a complete installation of the PV System as described above.

## **BASIS OF PAYMENT**

Bid Item 90134 shall be paid at the contract unit price for all labor, materials, equipment, incidentals, associated with completing the work described. Twenty (20) percent of bid item may be paid after acceptance of all required submittals and documentation prior to ordering materials. Eighty (80) percent of bid item may be paid after all materials have been installed and passed all required inspections.

## **BID ITEM 90135 – CHAIN LINK FENCING AND GATES**

### **DESCRIPTION**

Bid Item 90135 shall include all of the following work related to installing new perimeter fencing and gates. The Contractor shall refer to Specification 32 31 13 in Exhibit B for more detailed information on this Work.

- Demolition, salvage (for reuse/relocation), and recycling, of existing perimeter fencing materials and vehicle gate.
- Removal and re-installation of existing vehicle gate and operating equipment. Installation shall include providing new gate support poles and all related poles and hardware necessary for completing a secure installation adjacent to the perimeter fence.
- Installation of new vehicle gate and operating equipment. Installation shall include providing all related poles and hardware necessary for completing a secure installation adjacent to the perimeter fence.
- Installation of the new perimeter fence line including fence post excavation and concrete bases. General site excavation is not part of this bid item.

### **METHOD OF MEASUREMENT**

Bid Item 90135 shall be measured as LUMP SUM (LS) for a complete installation of all perimeter fencing and gates as described in the plans and specifications.

### **BASIS OF PAYMENT**

Bid Item 90135 shall be paid at the contract unit price for all labor, materials, equipment, incidentals, associated with completing the work described above. Partial payments of this item shall be permitted as follows:

- Ten (10) percent of bid item may be paid after acceptance of all required submittals and documentation prior to ordering materials.
- Twenty-Five (25) percent of bid item may be paid after all materials have been received on site and properly stored, ready for installation.
- Twenty-Five (25) percent of bid item may be paid after the fence perimeter has been completely staked, all gate and corner posts have been installed and approximately thirty (30) percent of the fence line posts have been installed.
- Twenty-Five (25) percent of bid item may be paid after all posts, fencing, caps, and barbed wire and other related materials have been installed.
- Fifteen (15) percent of bid item may be paid after fencing installation is complete including all gates operating according to specifications, Owners training has been conducted and the Owner has accepted the installation.

## **BID ITEM 90136 – TIME LAPSE PHOTOGRAPHY**

### **DESCRIPTION**

Bid Item 90136 shall include all of the following work related to providing, installing, and removing all supports, cameras, cables, and other required items including all equipment rentals, licenses, and service/support, necessary to provide time lapse photography for this project. Refer to Specification 01 32 33 Photographic Documentation for more information.

### **METHOD OF MEASUREMENT**

Bid Item 90136 shall be measured as LUMP SUM (LS) for a complete installation and removal of the time lapse photography system.



**BASIS OF PAYMENT**

Bid Item 90136 shall be paid at the contract unit price for all labor, materials, equipment, incidentals, associated with completing the work described above. Partial payments of this item shall be permitted as follows:

- Twenty-Five (25) percent of bid item may be paid after equipment has been installed, is fully operational, and City project staff have been given access information to the camera and website.
- Fifty (50) percent of bid item may be paid after when the project is approximately seventy-five (75) percent complete.
- Twenty-Five (25) percent of bid item may be paid after the project is complete, installation has been removed, restoration of materials is complete, and digital copy of the time lapse has been given to the City Project Manager.

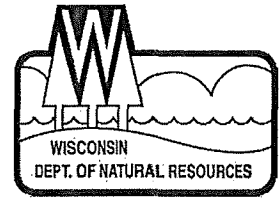
**POINT OF CONTACT**

The Project Manager for City Engineering, Facility Management for this contract is:

Randy Wiesner  
PH: (608) 267-8679  
Email: [RWiesner@cityofmadison.com](mailto:RWiesner@cityofmadison.com)  
210 Martin Luther King Jr. Blvd  
Room 115  
Madison, WI 53703

State of Wisconsin  
DEPARTMENT OF NATURAL RESOURCES  
3911 Fish Hatchery Rd.  
Fitchburg, WI 53711

Tony Evers, Governor  
Preston D. Cole, Secretary  
Telephone 608-266-2621  
Toll Free 1-888-936-7463  
TTY Access via relay - 711



07/20/2021

Robert Phillips  
210 Martin Luther King Jr Blvd  
Madison, WI 53703

GP-SC-2021-13-02477

RE: Coverage under the wetland statewide general permit to impact wetlands for municipal activities, located at T7N R8E S28 in the City of MADISON, Dane County, docket GP-SC-2021-13-02477.

Dear Mr. Phillips:

Thank you for submitting an application for a General Permit to impact wetlands for municipal activities located in the NW 1/4, SE 1/4, Sec. 28, T. 07, R. 08E, City of MADISON, Dane County.

You have certified that your project meets the eligibility criteria for this activity. Based upon your signed certification you may proceed with your project. Please take this time to re-read the permit standards and conditions. The eligibility standards can be found on your application checklist or in the statewide general permit (found at <http://dnr.wi.gov/topic/waterways/> - keyword: general permits). The permit conditions are attached to this letter. **You are responsible for meeting all general permit eligibility standards and permit conditions.** This includes notifying the Department before starting the project, and submitting photographs within one week of project completion. Please note your coverage is valid for 5 years from the date of the department's determination or until the activity is completed, whichever occurs first.

The Department conducts routine and annual compliance monitoring inspections. Our staff may follow up and inspect your project to verify compliance with state statutes and codes. If you need to modify your project please contact your local Water Management Specialist, Allen Ramminger at (608) 228-4067 or email [Allen.Ramminger@wisconsin.gov](mailto:Allen.Ramminger@wisconsin.gov) to discuss your proposed modifications.

The Department of Natural Resources appreciates your willingness to comply with wetland regulations, which help to protect the water quality, fish and wildlife habitat, recreational value and other functions and values wetlands provide to current and future generations. You are responsible for obtaining any other local, state or federal permits that are required before starting your project.

Sincerely,



Allen Ramminger  
Water Management Specialist

Copy to:

Al Ramminger, WMS  
USACE Project Manager  
County Zoning Administrator  
Dane County Warden  
Phil Gaebler, Engineer

You agree to comply with the following conditions:

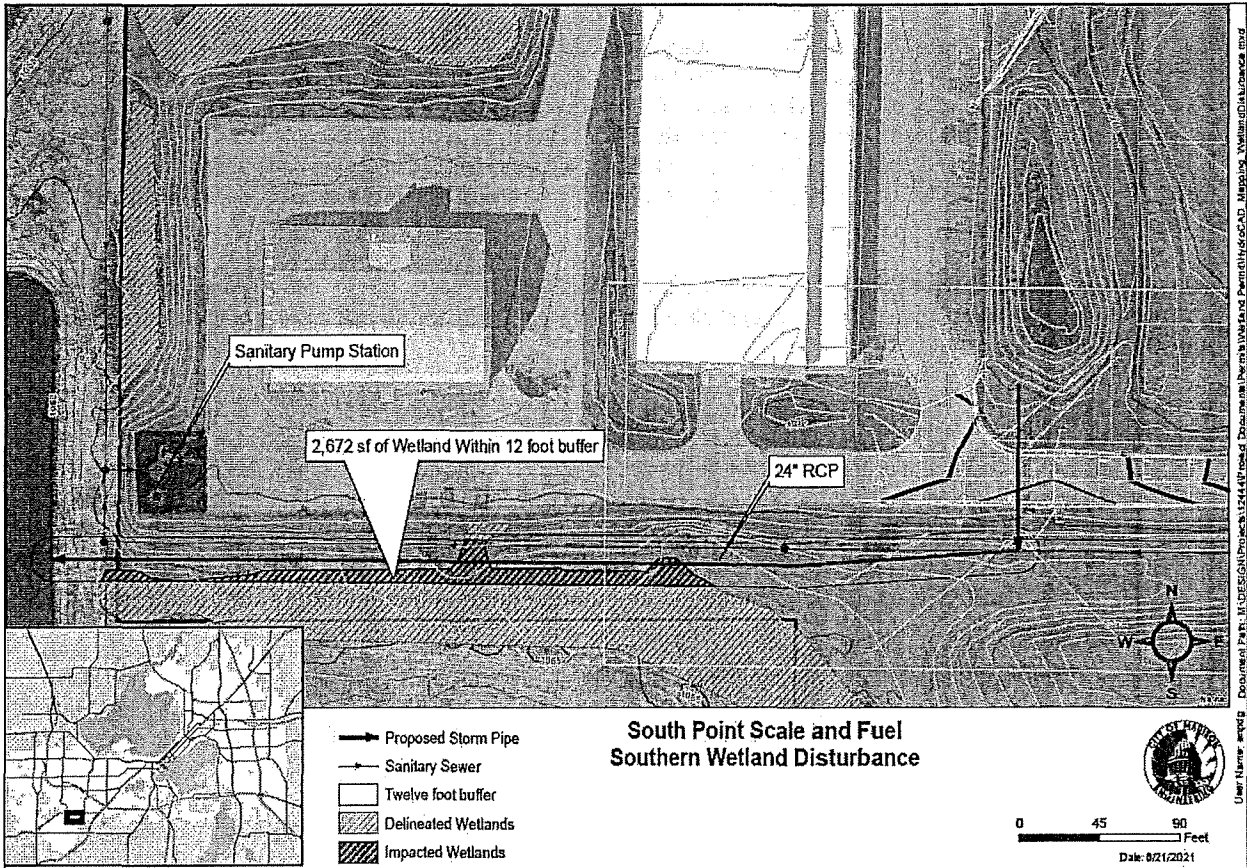
1. **Application.** You shall submit a complete application package to the Department as outlined in the application materials and Section 2 of this permit. If requested, you shall furnish the Department, within a reasonable timeframe, any information the Department needs to verify compliance with the terms and conditions of this permit.
2. **Certification.** Acceptance of general permit WDNR-GP11-2015 and efforts to begin work on the activities authorized by this general permit signifies that you have certified the project meets all eligibility standards outlined in Section 1 of this permit and that you have read, understood and have agreed to follow all terms and conditions of this general permit.
3. **Reliance on Applicant's Data.** The determination by this office that confirmation of authorization is not contrary to wetland water quality standards will be based upon the information provided by the applicant and any other information required by the Department.
4. **Project Plans.** This permit does not authorize any work other than what is specifically described in the notification package and plans submitted to the Department and you certified is in compliance with the terms and conditions of WDNR-GP11-2015.
5. **Expiration.** This WDNR-GP11-2015 expires on July 20, 2026. The time limit for completing work authorized by the provisions of WDNR-GP11-2015 ends 5 years after the date on which the discharge is considered to be authorized under WDNR-GP11-2015 or until the discharge is completed, whichever occurs first.
6. **Other Permit Requirements.** You are responsible for obtaining any other approvals required by other state agencies, local ordinances, the US Army Corps of Engineers, or any other federal agency before starting your project.
7. **Authorization Distribution.** You must supply a copy of the permit coverage authorization to every contractor working on the project.
8. **Project Start.** You shall notify the Department before starting construction.
9. **Permit Posting.** You must post a copy of this permit coverage letter at a conspicuous location on the project site before beginning the permitted activity, and keep it posted until five (5) days after the area of the permitted activity has been stabilized. You must also have a copy of the permit coverage letter and approved plan available at the project site at all times until the project is complete.
10. **Permit Compliance.** The department may modify or revoke coverage of this permit if the project is not constructed or carried out in compliance with the terms and conditions of this permit, or if the Department determines the project will be detrimental to wetland water quality standards. Any act of noncompliance with this permit constitutes a permit violation and is grounds for enforcement action. Additionally, if any applicable conditions of this permit are found to be invalid or unenforceable, authorization for all activities to which that condition applies is denied.
11. **Construction Timing.** Once wetland work commences, all wetland construction activities must be continuous until the permitted activity is completed and the site is stabilized.
12. **Construction.** No other area of the wetland may be disturbed beyond the area designated in the submitted plans and approved by coverage granted under this permit.
13. **Project Completion.** Within one week of completing the regulated activity, you shall submit to the Department photographs of the activities authorized by this permit and a statement certifying the project complies with all the terms and conditions of this permit and. The statement must reference the Department-issued docket number and must be submitted to the Department staff member that authorized coverage.
14. **Proper Maintenance.** You must maintain the activity authorized by WDNR-GP11-2015 in good condition and in conformance with the terms and conditions of this permit using best management practices. Any structure or fill authorized shall be properly maintained to ensure no additional impacts to the remaining wetlands.

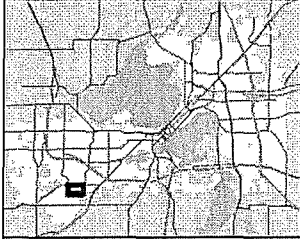
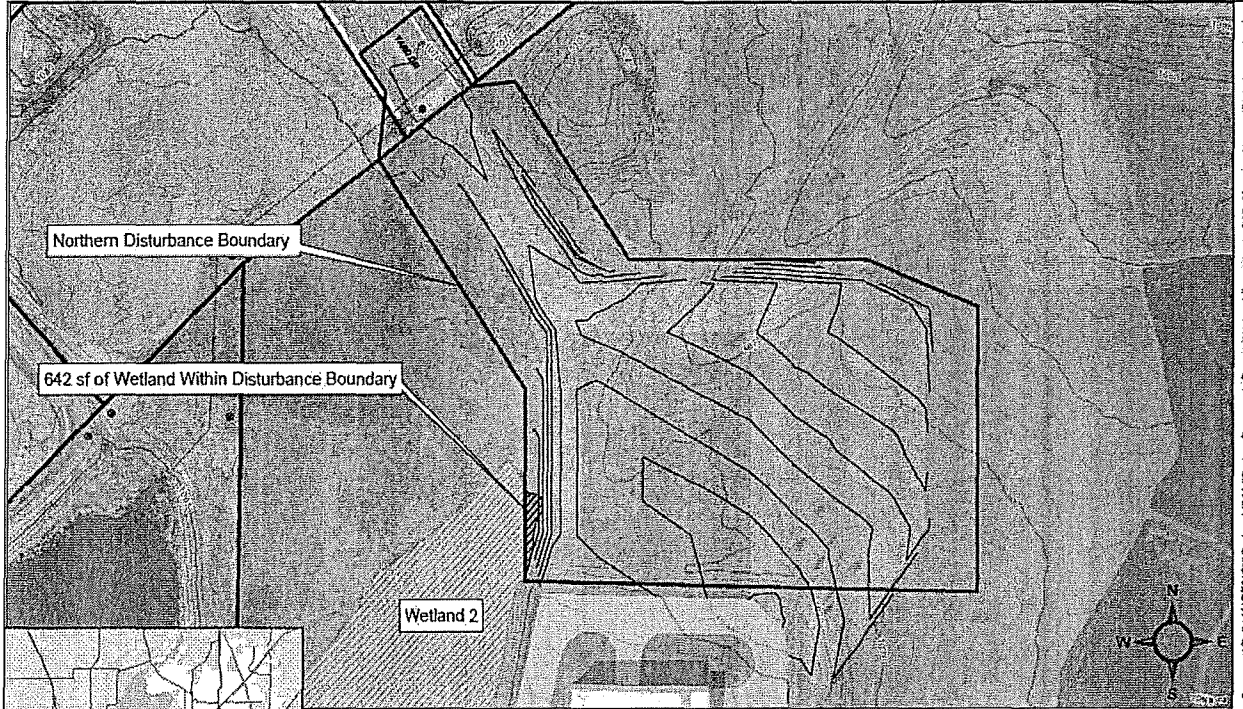
15. **Site Access.** Upon reasonable notice, you shall allow access to any privately owned area of the site to any Department employee who is investigating the project's construction, operation, or maintenance or its compliance with the terms and conditions of WDNR-GP11-2015 and applicable laws.
16. **Erosion and Sediment Control Practices.** The project site shall implement erosion and sediment control measures that adequately control or prevent erosion, and prevent damage to waterways and wetlands as outlined in NR 151.11(6m), Wis. Adm. Code.
17. **Invasive Species.** All project equipment shall be decontaminated for removal of invasive species prior to and after each use on the project site by utilizing other best management practices to avoid the spread invasive species as outlined in ch. NR 40, Wis. Admin. Code. For more information, go to <http://dnr.wi.gov/topic/invasives/bmp.html>.
18. **Federal and State Threatened and Endangered Species.** WDNR-GP11-2015 does not affect the Department's responsibility to insure that all authorizations comply with Section 7 of the Federal Endangered Species Act and s. 29.604, Wis. Stats., and any other applicable state laws. No DNR authorization under this permit will be granted for projects found not to comply with these Acts/laws. No activity is authorized which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act and/or State law or which is likely to destroy or adversely modify the critical habitat of a species as identified under the Federal Endangered Species Act.
19. **Special Concern Species.** If the Wisconsin National Heritage Inventory lists a known special concern species to be present in the project area you will take reasonable action to prevent significant adverse impacts or to enhance the habitat for the species of concern.
20. **Historic Properties and Cultural Resources.** WDNR-GP11-2015 does not affect the Department's responsibility to insure that all authorizations comply with Section 106 of the National Historic Preservation Act and s. 44.40, Wis. Stats. No Department authorization under this permit will be granted for projects found not to comply with these Acts/laws. Information on the location and existence of historic resources can be obtained from the State Historic Preservation Office and the National Register of Historic Places. If cultural, archaeological, or historical resources are unearthed during activities authorized by this permit, work must be stopped immediately and the State Historic Preservation Officer must be contacted for further instruction.
21. **Preventive Measures.** Measures must be adopted to prevent potential pollutants from entering a wetland or waterbody. Construction materials and debris, including fuels, oil, and other liquid substances, will not be stored in the construction area in a manner that would allow them to enter a wetland or waterbody as a result of spillage, natural runoff, or flooding. If a spill of any potential pollutant should occur, it is your responsibility to remove such material, to minimize any contamination resulting from this spill, and to immediately notify the State Duty Officer at 1-800-943-0003.
22. **Suitable fill material.** All fill authorized under this permit must consist of clean suitable soil material, as defined by s. NR 500.03(214), Wis. Admin. Code, free from hazardous substances as defined by s. 289.01(11), Wis. Stats., free from solid waste as defined by s. 289.01(33), Wis. Stats.
23. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege. The permit does not authorize any injury or damage to private property or any invasion of personal rights, or any infringement of federal, state or local laws or regulations.
24. **Transfers.** Coverage under this permit is transferable to any person upon prior written approval of the transfer by the Department.
25. **Limits of State Liability.** In authorizing work, the State Government does not assume any liability, including for the following:
- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
  - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the State in the public interest.

- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
- d. Design or construction deficiencies associated with the permitted work.
- e. Damage claims associated with any future modification, suspension, or revocation of this WDNR-GP11-2015.

26. **Reevaluation of Decision.** The Department may suspend, modify or revoke authorization of any previously authorized activity and may take enforcement action if any of the following occurs:

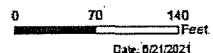
- a. The applicant fails to comply with the terms and conditions of WDNR-GP11-2015.
- b. The information provided in support of the permit application proves to have been false, incomplete, or inaccurate.
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.





- Proposed Grading
- North Disturbance Boundary
- ▨ Delineated Wetlands
- ▩ Impacted Wetlands

**South Point Scale and Fuel  
Northern Wetland Disturbance**



Date: 02/2021



User Name: en09 Document Path: M:\DESIGN\Projects\1244\Project Documents\Perms\Wetland Permit\HydroCAD\_Maps\03\_WetlandDisturbance\_North.mxd

South Point Refueling station

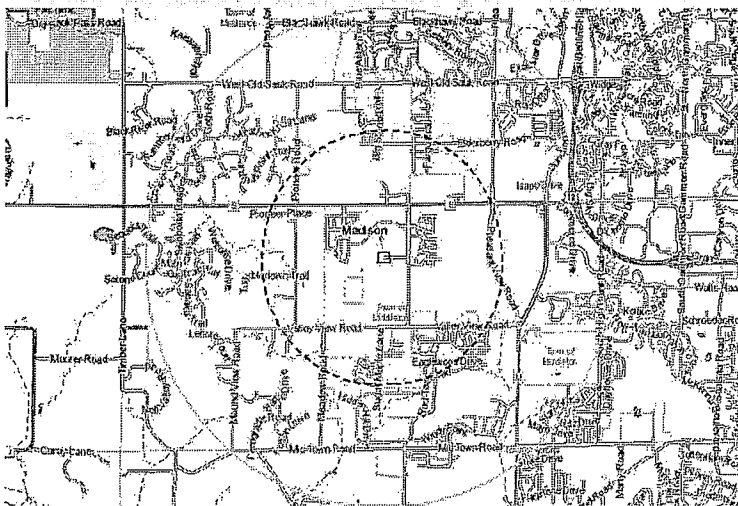
**Reviewer Information**

Reviewer Name	allen Ramminger
Review Date	7/7/2021
Bureau / Org Name	Watershed Management
Work Station	Dane

**General Information**

Project Title	South Point Refueling station
Project No	gp 02477
Federal Nexus	No
Project Timing	July 17, 2021
Property Type	

**Map**



**Project Location**

County	Dane
PLSS Description	T07N R08E S28
Township Name	
Ownership Type	
Landowner Name	

**Project Information**

Description	Install drain pipe from storm water pond to outlet.
Habitat Description	Canary grass dominated wet meadow.
Impacts to Wetlands and Waterbodies	.07 acres. Temporary disturbance by digging and refilling wetland soils back into trench.
Additional DNR and Other Permits	

**Element Occurrences**

Actions that need to be taken to comply with state and/or federal endangered species laws: **None**

Actions recommended to help conserve Wisconsin's Endangered Resources:

• **Rusty Patched Bumble Bee Federal High Potential Zone - Bee**

**State Status: NA Federal Status: HPZ**

<b>Impact Type</b>	Impact possible
<b>Recommended Measures</b>	Other
<b>Description of Recommended Measures</b>	<ul style="list-style-type: none"><li>• use native trees, shrubs and flowering plants in landscaping,</li><li>• provide plants that bloom from spring through fall (refer to the USFWS RPBB Midwest Plant Guide),</li><li>• remove and control invasive plants in any habitat used for foraging, nesting, or overwintering</li></ul>

Additional Recommendations: **None**

No actions are required or recommended for the following endangered resources: **None**

**Disclaimer**

This ER Review may contain Natural Heritage Inventory data (<http://dnr.wi.gov/topic/NHI>), including specific locations of endangered resources, which are considered sensitive and are not subject to Wisconsin's Open Records Law. As a result, information contained in this ER Review may be shared only with individuals or agencies that require this information in order to carry out specific roles in the permitting, planning and implementation of the proposed project. Specific locations of endangered resources may not be released or reproduced in any publicly disseminated documents.

Details related to project location, design, and timing of disturbance are important for determining both the endangered resources that may be impacted by the project and any necessary follow-up actions. If the project plans change, new details become available, or more than a year passed, please renew this review.





Construction • Geotechnical  
Consulting Engineering/Testing

December 11, 2020  
C20051-31

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
Engineering Division – Facilities and Sustainability  
City-County Building, Room 115  
210 Martin Luther King, Jr. Blvd.  
Madison, Wisconsin 53703

Re: Preliminary Geotechnical Exploration Report  
Proposed 2021 Site Expansion  
City of Madison DPW – 402 South Point Road  
Madison, Wisconsin

Dear Mr. Gall:

Construction • Geotechnical Consultants, Inc. (CGC) has completed the subsurface exploration program for the above-referenced project. The purpose of this program was to evaluate the subsurface conditions within the proposed construction area and to provide preliminary geotechnical recommendations regarding site preparation, foundation, floor slab, site pavement, retaining wall, roadway and utility design/construction. A determination of the site class for seismic design is also included, along with a preliminary discussion of the on-site stormwater infiltration potential. We are sending you an electronic copy of this report, and we can provide a paper copy upon request.

#### PROJECT AND SITE DESCRIPTION

We understand that the existing City of Madison Department of Public Works facility at 402 South Point Road is proposed to be expanded in 2021. The project area, located north of the existing facility, is currently undeveloped/former farmland with variable topography. Based on a provided topographic site plan (Burse Surveying & Engineering; 1-ft contour lines), existing site grades range between about EL 1,066 and 1,081 ft throughout the project area. Site grades within the existing facility (near the warm storage building that is closest to the planned expansion) appear to be near EL 1,070 to 1,071 ft, and roadway grades at the current dead-end of Yard Drive are near EL 1,070 ft.

Planned improvements involve a new truck scale, fueling islands and site preparation for a future salt storage shed to the north/northeast of the existing facility. Possible additional improvements for 2021 include a stormwater management area to the east of the new fueling islands, an extension of Yard Drive northwest and north of the planned site expansion, and a possible retaining wall associated with the road extension.

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 2

*Note that when final building details and finished grades have been determined, CGC should be provided with the latest development details for review with relation to the recommendations provided herein.*

## SUBSURFACE CONDITIONS

Subsurface conditions for this study were explored by drilling nine Standard Penetration Test (SPT) soil borings at locations selected and field-staked by CGC: B-1 and B-2, planned depths of 25 ft below current site grades, in the area of the planned salt storage building; B-3 and B-4, planned depths of 15 ft below current site grades, in the area of the planned fueling islands; B-5, planned depth of 10 ft below the ground surface, along the planned Yard Drive alignment; B-6 and B-7, planned depths of 20 and 30 ft below current site grades, respectively, near the proposed retaining wall along Yard Drive; as well as B-8 and B-9, planned depths of 20 ft below current site grades, within the proposed stormwater management area. The borings were conducted by Badger State Drilling (under subcontract to CGC) on November 16, 2020 using a track-mounted CME-45 rotary drill rig equipped with hollow stem augers and an automatic SPT hammer. The specific procedures used for drilling and sampling are described in Appendix A, and the boring locations are shown in plan on the Soil Boring Location Exhibit presented in Appendix B. Ground surface elevations at the boring locations were estimated by CGC based on the 1-ft contour lines shown on the provided topographic site plan (Burse), and the elevations should therefore be considered approximate.

The subsurface profiles at the boring locations varied to some degree, but the following strata were typically encountered (in descending order):

- About 8 to 20 in. of *topsoil*; underlain by
- About 2 to 7 ft of medium stiff to hard *lean clay* to *sandy lean clay* layers; over
- Loose to dense *sand* strata, generally containing significant amounts of silt and gravel, as well as scattered cobbles/boulders, to the maximum depths explored.

As an exception to the above generalized subsurface profile, approximately 5 ft of very stiff *cohesive fill* were encountered below the topsoil in Boring 1. It must be noted that the existing fill soils were found to contain scattered *asphalt pieces* and/or *possible cinders*. In addition, a possible petroleum/chemical odor was noted in Sample 2 (lower sample of the fill soils) of Boring 1. Fill soils containing odors, cinders and other debris may be environmentally impacted and could potentially require landfill disposal if excavated and hauled off-site. We recommend that the City's environmental staff be consulted to provide further recommendations regarding these issues.

The native clay layers that were encountered near existing site grades within most of the soil borings were generally medium stiff to hard, as previously noted, but occasional softer zones should be expected near the bottom of the clay soils in isolated areas, at the transition from the clays to the underlying sand soils (see B-8 for example). Natural moisture contents in representative native clay samples were determined to range from 17.1% to 28.4%. Based on natural moisture contents, pocket penetrometer readings ( $q_p$ -values; an estimate of the unconfined compressive strength of cohesive

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 3

soils) and SPT blow counts (N-values), the cohesive soils should be considered slightly to moderately compressible. Shallow clay soils were not encountered in Boring 3, where the topsoil was directly underlain by native granular soils.

As previously noted, the sand soils underlying this site were generally found to contain significant silt and gravel contents, as well as scattered cobbles/boulders. However, occasional silt horizons or sandy zones with lower fines-content were also encountered in the soil borings. Two representative samples obtained from the granular soils in Boring 8 were combined into a composite sample and analyzed for their particle size distribution (gradation) to aid in their classification. With a composite P200-content ("fines") of 20.8%, the samples classify as silty sand (SM) and gravelly sandy loam (GRSL) per the USCS and USDA classification systems, respectively.

Groundwater was generally not encountered in the borings during and/or upon the completion of drilling, with the exception of Boring 2. In this boring, apparent groundwater was first encountered at a depth of about 22 ft during drilling (corresponding to approximately EL 1,046 ft). Approximately 30 minutes after the completion of drilling, prior to backfilling the borehole, a second groundwater level reading showed an apparent water level at about 21 ft below the ground surface, corresponding to approximately EL 1,047 ft. Groundwater levels are expected to fluctuate with seasonal variations in precipitation, infiltration, evapotranspiration, the level in nearby waterbodies and other factors.

A more detailed description of the site soil and groundwater conditions is presented on the individual soil boring logs attached in Appendix B, which also contain the laboratory test results, as well as on the WDSPPS *Soil and Site Evaluation – Storm* forms for the two Stormwater Borings (B-8 and B-9) contained in Appendix F. The particle size distribution test report is also attached in Appendix B.

## DISCUSSION AND RECOMMENDATIONS

Subject to the limitations discussed below and based on the subsurface exploration, it is our opinion that the site is generally suitable for the proposed DPW facility expansion and that the planned structures can be supported by conventional reinforced concrete spread footing foundation systems with the understanding that undercutting of existing fill and marginal native soils will likely be required below the bottom of footings on an isolated basis. Our preliminary recommendations for site preparation, foundation, floor slab, site pavement, retaining wall, roadway and utility design/construction, along with our assessment of the site class for seismic design and the stormwater infiltration potential, are presented in the following subsections. *As finish site and structure grades were not available to us at the time of this report, the recommendations contained herein should be considered preliminary, and CGC should be allowed to review these recommendations and adjust them, as needed, once the expansion plans have been finalized and provided to us.* Additional information regarding the conclusions and recommendations presented in this report is discussed in Appendix C.

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 4

## 1. Site Preparation

We recommend that topsoil and vegetation be stripped at least 10 ft beyond the proposed construction area, including areas requiring fill beyond the building footprint and pavement limits. The topsoil can be stockpiled on-site and later re-used as fill in landscaped areas. As mentioned earlier, topsoil was about 8 to 20 in. thick in the borings, but variable topsoil thicknesses may be encountered between and beyond boring locations due to previous agricultural and grading activities.

After topsoil stripping, subgrades are anticipated to largely consist of stiff to hard clay, but granular soils may also be encountered below the topsoil in isolated areas, or where grades need to be cut. In areas remaining at-grade or requiring fill, we recommend cohesive and fine-grained subgrades be statically recomacted (i.e., without vibration) and subsequently proof-rolled with a piece of heavy rubber-tire construction equipment, such as a loaded tri-axle dump truck, to check for soft/yielding areas. If soft/yielding areas are observed, these soils should be undercut and replaced with granular backfill compacted to at least 95% compaction based on modified Proctor methods (ASTM D1557) in accordance with our Recommended Compacted Fill Specifications presented in Appendix D. Alternatively, 3-in. dense graded base (DGB) that is placed in loose 10-in. lifts and compacted until deflection ceases can also be used to restore grades in undercut areas. Granular subgrades should be thoroughly recomacted with a vibratory smooth-drum roller, and zones that remain loose after recompaction should be undercut and replaced or stabilized as described above. Areas subsequently receiving fill should be checked for their pavement, floor slab and footing support suitability prior to fill placement, as applicable. *Due to the presence of clay (natural and fill) near existing site grades in isolated areas, some undercutting/stabilization should generally be expected to create firm and stable subgrades in new pavement and floor slab areas, and we recommend that the project budget contain a contingency for such operations.*

Following the development of a firm and stable subgrade, fill placement to establish site, pavement and building grades can proceed. To the extent possible, we recommend using granular soils (i.e., sands/gravels, including native granular soils if selectively excavated and stockpiled) as structural fill within the building envelope, along retaining wall alignments and upper 2 to 3 ft in pavement areas because these soils are relatively easy to place and compact in most weather conditions compared to clay/silt soils. Clay and silt soils excavated on-site are generally not recommended as structural fill because moisture conditioning by discing and drying (aeration) will likely be required to achieve desired compaction levels, which is highly weather-dependent (i.e., dry, warm and windy conditions) and could delay construction progress. In our opinion, clay/silt soils are best used as fill in landscaping or potentially as lower lifts in pavement areas provided the moisture contents can be sufficiently lowered from the natural states to facilitate compaction efforts. We recommend that structural fill be compacted to at least 95% compaction based on modified Proctor methods (ASTM D1557) following Appendix D guidelines. Periodic field density tests should be taken by CGC staff within the fill to document the adequacy of compactive efforts.

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 5

2. **Building Foundations**

Based on presumed finish site grades near EL 1,071 ft surrounding the planned salt storage building (similar to the existing site) and assuming that footings of the new building will bear at frost depth, a minimum of 4 ft below finish site grades, foundation subgrades are expected to consist of existing cohesive fill or medium stiff to very stiff native clay soils. We recommend that existing fill soils be undercut below the bottom of footings due to the potential for long-term settlement of the fill exceeding typically tolerable levels. Foundation grades should be restored with well-compacted structural fill, where necessary.

We recommend the following parameters be used for *preliminary* foundation design:

- Maximum net allowable bearing pressure: 2,000 psf
- Minimum foundation widths:
  - Continuous wall footings: 18 in.
  - Column pad footings: 30 in.
- Minimum footing depths below finish site grades:
  - Exterior/perimeter footings: 4 ft
  - Interior footings: no minimum requirement

Recognizing that subsurface conditions will vary across the building footprint, footing subgrades should be checked by a CGC field representative to document that the subgrade soils are suitable for footing support or otherwise advise on corrective measures, such as undercutting. We recommend using a smooth-edged backhoe bucket for footing and undercut excavations. Where required, the base of undercut excavations should be widened beyond the footing edges at least 0.5 ft in each direction for each foot of undercut depth for stress distribution purposes. Granular soils exposed at footing grade or at the bottom of undercut excavations should be thoroughly recompacted with a large vibratory plate compactor or an excavator-mounted hoe-pack prior to backfilling and formwork/concrete placement to densify soils loosened during the excavation process. Soils potentially susceptible to disturbance from vibratory compaction (e.g., cohesive/fine-grained soils or sands with elevated moisture content) should be hand-trimmed. OSHA slope guidelines should be followed if workers need to enter footing excavations.

As previously discussed, we recommend that existing fill soils be undercut and replaced below the bottom of footings. Undercutting will also be required where natural clay soils with  $q_p$ -values of less than 1.0 tsf are present at and slightly below the bottom of footings designed for an allowable bearing pressure of 2,000 psf. Similarly, loose native granular and fine-grained soils that cannot be recompacted satisfactorily should also be undercut at and slightly below footing grades. In order to re-establish footing grade in undercut areas, we recommend using granular backfill compacted to at least 95% compaction based on modified Proctor methods (ASTM D1557), in accordance with the Recommended Compacted Fill Specifications presented in Appendix D. Alternatively, 3-in. DGB

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 6

that is placed in loose 10-in. lifts and compacted until deflection ceases can also be used to restore grades in undercut areas.

Provided the *preliminary* foundation design/construction recommendations discussed above are followed, we estimate that total and differential settlements should be on the order of 1.0 and 0.5 in., respectively.

*Final site and building grades should be provided to CGC once available, and CGC should be allowed to review the recommendations contained herein and adjust them, as needed, in light of the final expansion plans.*

### 3. Seismic Site Class

In our opinion, the average soil properties in the upper 100 ft of the site (based on N-values projected to be between 15 and 50 blows/ft, on average, in the granular/fine-grained soils underlying the site) may be characterized as a stiff soil profile. This characterization would place the site in Site Class D for seismic design according to the International Building Code and ASCE 7.

### 4. Floor Slabs

Based on presumed finish site and floor slab grades in the area of the planned salt storage building near EL 1,071 ft, we anticipate that the floor slab will be supported on existing, very stiff cohesive fill or on newly-placed structural fill over very stiff clay soils (fill or native). Contrary to footing subgrades, the existing fill soils may potentially remain in-place below the floor slab provided they are firm and stable at the time of construction, which should be evaluated by thoroughly proof-rolling the floor slab area and checking the composition of the existing fill exposed at the sidewalls of footing excavations. Prior to slab construction, granular subgrade soils should be thoroughly recompacted with a vibratory smooth-drum roller to densify soils that may become disturbed or loosened during construction activities. Cohesive and fine-grained subgrades will require static recompaction and subsequent proof-rolling. Areas of disturbed soil or soils that remain loose after recompaction, as well as soft/yielding zones observed during proof-rolling should be undercut and replaced with compacted 3-in. DGB or granular fill. *Some undercutting may be required where floor slab subgrades consist of existing fill or natural clay that are wet or have become unstable/disturbed by construction activities, and we recommend that the project budget include a contingency for floor slab subgrade improvement.*

To act as a capillary break below the slab, we recommend including a minimum 4 to 6-in. thick layer of well-graded sand/gravel with less than 5% by weight passing the No. 200 U.S. standard sieve. Note, however, that some structural engineers require a layer of dense graded base, such as 1¼-in. DGB, rather than sand/gravel below the floor slab to increase the subgrade modulus immediately below the slab. To further reduce the potential for moisture migration through the slab, a plastic vapor barrier can also be utilized. Fill and base layer material below the floor slab should be placed as described in the Site Preparation section of this report. Slabs constructed on a minimum 6-in.

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 7

thick dense graded base layer may be designed utilizing a subgrade modulus of 150 pci, and a subgrade modulus of 100 pci should be used for the design of slabs that are constructed on a sand/gravel layer. The design subgrade moduli are based on a firm or adequately stabilized, recompacted subgrade such that non-yielding conditions are developed. The slab should be structurally separated from the footings with a compressible filler and have construction joints and reinforcement for crack control.

## 5. Site Pavement

We anticipate that new pavement design will be controlled by the native clay and existing cohesive fill soils. Subgrades should be prepared as described in the Site Preparation section of this report, with recompaction/proof-rolling completed prior to base course and asphalt placement. *Based on the presence of fill near existing site grades in isolated areas, as well as natural clay soils that are considered moisture sensitive, we recommend that the budget include a contingency for subgrade undercutting/stabilization, which could potentially include about 12 in. of additional coarse aggregate (e.g., 3-in. DGB) over biaxial geogrid (e.g., Tensar BX Type 1 or equivalent).* The need for undercutting below the pavement section will likely be reduced where site grades are raised at least 2 ft above existing grade with high-quality granular fill.

We anticipate that some asphalt pavement on this site, such as smaller parking areas (i.e., less than 50 stalls) or low traffic volume-driveways, will be exposed to primarily automobile traffic with less than one 18-kip equivalent single axle load (ESAL) per day. In view of this, we have assumed Traffic Class I following Wisconsin Asphalt Pavement Association (WAPA) recommendations for smaller parking areas and driveways that are mainly used by light passenger vehicles. However, main sections of driveways are likely to experience heavier traffic loads from truck traffic. For pavement areas where trucks will routinely travel, as well as larger parking lots (i.e., 50 stalls or more, if any), we have assumed a traffic load of up to 10 ESALs per day and Traffic Class II according to WAPA. We have also included a heavy-duty pavement section where higher truck traffic loads (up to 50 ESALs per day, Traffic Class III) are expected. The pavement sections summarized in Table 1 below were selected assuming a Soil Support Value "SSV" of about 4.0 for a firm or adequately stabilized clay or fill subgrade and a design life of 20 years.

**TABLE 1 – Recommended Pavement Sections**

Material	Thicknesses (in.)			WDOT Specification <sup>(1)</sup>
	Traffic Class I (Light Duty)	Traffic Class II (Medium Duty)	Traffic Class III (Heavy Duty)	
Bituminous Upper Layer <sup>(2,3)</sup>	1.5	1.75	2.0	Section 460, Table 460-1, 9.5 mm (light duty), 12.5 mm (medium and heavy duty)
Bituminous Lower Layer <sup>(2,3)</sup>	2.0	2.25	3.0	Section 460, Table 460-1, 12.5 mm (light duty), 19 mm (medium and heavy duty)
Dense Graded Base Course <sup>(2,4)</sup>	8.0	10.0	12.0	Sections 301 and 305, 3 in. and 1¼ in.
<b>Total Thickness</b>	<b>11.5</b>	<b>14.0</b>	<b>17.0</b>	

Notes:

- 1) Wisconsin DOT *Standard Specifications for Highway and Structure Construction*, latest edition, including supplemental specifications, and Wisconsin Asphalt Pavement Association *2020 Asphalt Pavement Design Guide*.
- 2) Compaction requirements:
  - Bituminous concrete: Refer to Section 460-3.
  - Base course: Refer to Section 301.3.4.2, Standard Compaction
- 3) Mixture Type LT bituminous; refer to Section 460, Table 460-2 of the *Standard Specifications*. Mixture type MT is recommended in heavy duty traffic areas. Note that an “H Grade” asphalt surface layer is recommended where there will be slow moving heavy truck traffic making turning movements.
- 4) The upper 4 in. should consist of 1¼-in. DGB; the bottom part of the layer can consist of 3-in. DGB.



Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 9

The recommended pavement sections assume that regular maintenance (crack sealing, etc.) will occur, as needed. Note that if traffic volumes are greater than those assumed, CGC should be allowed to review the recommended pavement sections and adjust them accordingly. Alternative pavement designs may prove acceptable and should be reviewed by CGC. If there is a delay between subgrade preparation and placing the base course, the subgrade should be recompacted.

Where concrete pavement may be used, such as in pavement areas subjected to concentrated wheel loads (e.g., dumpster pads, containment area around fueling islands, etc.), we recommend that the concrete pavement be at least 6-in. thick, be underlain by at least 6 in. of DGB and contain adequate reinforcement for crack control. Concrete slabs underlain by a minimum 6-in. thick dense graded base layer over a firm or stabilized subgrade can be designed utilizing a subgrade modulus of 150 pci. Note that a thicker pavement section (more than 6 in. of concrete) may be required depending on pavement loads, which should be evaluated by a structural engineer.

#### 6. Yard Drive Retaining Wall

It is understood that a retaining wall is planned on the north side of the planned Yard Drive extension, in an area where the road is expected to cut into an existing ridge (possible glacial feature). Considering the maximum existing ground surface elevation on the back side of the planned retaining wall of about EL 1,081 ft and a presumed finish roadway grade of about EL 1,071 ft, the maximum exposed retaining wall height is estimated to be approximately 10 ft.

We expect that retaining wall construction will involve backsloping of the retained soils, and the excavation to construct the new wall should be sloped according to OSHA requirements. The on-site sands with significant amounts of fines, typically classified as OSHA "Type B" soils, are anticipated to control excavation slopes, and slopes of 1H:1V are expected to be at least temporarily stable. Flatter excavation slopes may be required where perched or seeping water is present that may destabilize the slopes, or if cleaner sand soils are present within the limits of the excavation. *The appropriate excavation slopes should be determined by a competent person completing the earthwork in accordance with OSHA slope guidelines.*

Foundation subgrades for the new wall are expected to consist of stiff to hard clay or loose to medium dense sand and silt soils. Granular soils anticipated at foundation grade should be thoroughly recompacted with a large vibratory plate compactor or an excavator-mounted hoe-pack prior to placing the leveling pad (or footing) to densify soils loosened during the excavation process. Soils potentially susceptible to disturbance from vibratory compaction (e.g. cohesive/fine-grained soils or sands with elevated moisture content) should be hand-trimmed. Loose/disturbed soils that cannot be recompacted satisfactorily will require undercutting (excavation below subgrade – EBS) and replacement below the bottom of the new retaining wall. Where required, the EBS zone should extend laterally in front of and behind the bottom of the retaining wall [and potentially behind the reinforced zone if a mechanically stabilized earth (MSE) wall will be constructed], a minimum of 0.5 ft for each foot of EBS depth. Following the recompaction of the EBS base, foundation subgrades should subsequently be restored with granular backfill (including native sand soils

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 10

excavated on-site) that are compacted to at least 95% compaction based on modified Proctor methods (ASTM D1557), in accordance with the Recommended Compacted Fill Specifications presented in Appendix D. Alternatively, 3-in. DGB that is placed in loose 10-in. lifts and compacted until deflection ceases can also be used to restore grades in undercut areas.

Based on the soil borings and assuming finish roadway grades near EL 1,071 ft, it is our opinion that an allowable bearing pressure of 2,500 psf may be used for *preliminary* retaining wall foundation design, which will be controlled by stiff clay and looser sand/silt soils anticipated at or slightly below foundation grades. If the design will be based on Load and Resistance Factor Design (LRFD) procedures, we recommend a *nominal (i.e., unfactored)* bearing resistance of 7.5 ksf<sup>1</sup> be used for *preliminary* foundation design. Furthermore, we recommend an *ultimate* friction factor/*nominal* sliding resistance at the base of the retaining wall of 0.3 be utilized for *preliminary* wall design, assuming a clay subgrade. Appropriate resistance factors need to be applied to the nominal bearing and sliding resistance values.

*Once more details regarding the planned wall type and geometry become available, this information should be provided to CGC, and CGC should be allowed to review the preliminary foundation recommendations contained herein and adjust them, as needed.*

After the new wall has been constructed, we recommend that the work space behind the wall be backfilled with *imported, free-draining granular material*, and the following soil parameters for structural backfill can be used for wall design:

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<sup>1</sup> As details regarding the planned retaining wall type and foundation were not available at the time of this report, the *preliminary* nominal bearing resistance was calculated by multiplying the *preliminary* allowable bearing pressure [which, in turn, is based on SPT blow counts (N-values)] by the LRFD load factor (1.35) and dividing the product by the LRFD resistance factor (0.45).

**TABLE 2 – Recommended Soil Parameters for Imported Wall Backfill**

Parameter	Design Value
P200 Content (%)	<12 (USCS Classification SP, SP-SM, GP or GP-GM)
Minimum Compaction Level, based on Modified Proctor (%)	90
Moist Unit Weight (pcf)	120
Saturated Unit Weight (pcf)	130
Buoyant Unit Weight (pcf)	68
Angle of Internal Friction (degrees)	30
Active Lateral Earth Pressure Coefficient	0.3
Passive Lateral Earth Pressure Coefficient	3.0
At-Rest Lateral Earth Pressure Coefficient	0.5

**7. Utilities**

Based on the available soil and groundwater information, it appears that new utility construction can proceed using traditional open-cut methods. It is expected that excavation sidewalls will be sloped back for relatively shallow installations (i.e., less than 4 ft in depth) and that a trench shield and/or internal bracing will be used for deeper excavations. The following are our recommendations regarding trench excavation, dewatering, and backfilling:

- Excavation: Open cuts should be sloped and/or braced in accordance with OSHA guidelines. The sands with significant amounts of fines, generally classified as OSHA “Type B” soils, are expected to control the excavation slopes, and slopes of 1H:1V or flatter are expected to be at least temporarily stable. Note that flatter side slopes may also be required where groundwater or perched water is present that destabilizes the side slopes, or where cleaner sand layers are encountered. *The appropriate utility trench excavation side slopes should be determined by a competent person completing the earthwork in accordance with OSHA slope guidelines.*

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 12

- Dewatering: Based on the observations in the soil borings, groundwater infiltration into utility excavations is generally not expected. However, water accumulating at the base of utility excavations as a result of precipitation or seepage from perched layers should be quickly removed, with dewatering means and methods being the responsibility of the utility contractor.
- Rock Removal: We do not anticipate the need for rock removal during utility excavations.
- Backfilling: Excavation backfilling may proceed using the following guidelines:
  - Although clayey and silty excavation spoils may be used to backfill the utility trenches above the pipe and associated granular bedding material, to the extent possible, we recommend that granular soils be used as backfill below paved areas because sand/gravel soils are relatively easy to place and compact in most weather conditions compared to cohesive and fine-grained soils. Silt and clay soils will likely require moisture conditioning prior to placement and compaction, as previously discussed, which could delay construction progress. Granular soils containing cobbles and boulders should not be used in direct contact with utility lines.
  - Backfill material should be placed in accordance with Appendix D guidelines and/or applicable City of Madison requirements.
  - Compaction recommendations:
    - o Within 10 ft of buildings or the planned retaining wall: 95% modified Proctor (ASTM D1557);
    - o Depths greater than 3 ft below grade in pavement areas: 90% modified Proctor;
    - o Final 3 ft in pavement areas: 95% modified Proctor; and
    - o Landscape areas: 85% modified Proctor.

## 8. Yard Drive Extension

### A. Soil Mapping

Using the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS) *Web Soil Survey* website, we identified an area approximately encompassing the proposed Yard Drive extension, extending from the current dead end of Yard Drive to South Point Road, just south of Fire Station 12. The soil mapping for the project area is shown on the Soil Map, generated through the USDA-NRCS *Web Soil Survey* website, which is attached in Appendix E. Several soil series are mapped within the area of interest, including (from west to east) Troxel silt loam (denoted TrB on the Soil Map), Plano silt loam (PoA and PoB), Griswold loam (GwC) and

Mr. Matt Gall, LEED AP  
 City of Madison Department of Public Works  
 December 11, 2020  
 Page 13

again Plano silt loam (PnC2). Table 3 includes key parameters for evaluating the soils' suitability for pavement support, which have been taken from published WisDOT references and are based on decades of WisDOT and AASTHO experience. Note that the parameters in the table are representative of the B horizon (e.g., the soil layer directly below the naturally occurring organic topsoil A horizon).

**Table 3 – Summary of Soil Properties**

Soil Series	Symbols	Design Group Index, DGI	Frost Index, FI	Modulus of Subgrade Reaction, K Factor (pci)
Griswold loam	GwC	14	F-3	100
Plano silt loam	PoA, PoB, PnC2	14	F-3	100
Troxel silt loam	TrB	16	F-4	75

The Griswold and Plano soils are described as well drained and derived from loamy till or loess over glacial loamy till on till plains or from loess over loamy, sandy and gravelly outwash on outwash plains. Typical Griswold and Plano profiles involve finer-grained clay loam, silty clay loam, silt loam and loam over coarser-grained sandy loam to gravelly sandy loam and stratified gravelly sand. The depth to the seasonal high-water table within Griswold and Plano soils is typically more than 6 ft below the ground surface, except in the area designated PnC2, where the seasonal high-water table may be within about 3 to 4 ft of the ground surface. Shallower seasonal high-water levels of about 3 to 6 ft below the ground surface may also be experienced within Troxel soils, which are described as moderately well drained soils that formed from silty colluvium on moraines and depressions. Troxel soils typically involve deeper deposits of fine-grained silt loam and silty clay loam. The soil mapping is in general agreement with the subsurface profiles encountered in the soil borings.

Based on the soil mapping and soil borings, it is our opinion that pavement design will be controlled by near-surface clay soils having characteristics similar to those described for the soils summarized in Table 3.

***B. Pavement Subgrade Preparation***

After utility installation, where required, and site grading to establish roadway subgrades, the exposed soils are generally expected to consist of native clay, silt and sand soils, as well as new fill to raise site grades (where required) and potentially granular utility trench backfill, which was discussed in the *Site Preparation* and *Utilities* sections of this report, respectively. The exposed soil subgrades should be thoroughly recompacted and proof-rolled as discussed in the *Site Preparation* section. *Proof-rolling should not be performed within 48 hours of a rainfall exceeding ¼-inch.*

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 14

If soft/yielding areas are encountered within the subgrade, these soils should be selectively undercut (e.g., excavation below subgrade, EBS) and replaced with coarse aggregate [e.g., 3-in. dense graded base (DGB) or select crushed material (SCM), WisDOT *Standard Specification for Highway and Structure Construction*, Sections 305 and 312, respectively] prior to base course placement. The thickness of the undercut/stabilization layer should be determined in the field during proof-rolling, and the required thickness of the layer will likely vary along the alignment. If long, continuous sections of soft/yielding soils are encountered, a geogrid [e.g., Tensar Type 1 or 2 (BX 1100 or 1200) or equivalents] could be considered to provide additional reinforcement, and potentially reduce the thickness of the aggregate stabilization layer.

*Based on the soil mapping and subsurface profiles encountered in the soil borings, we expect that some soft/yielding areas may be encountered during proof-rolling. It has been our experience that clay soils with  $q_p$ -values of less than about 1.5 tsf, and/or moisture contents in excess of about 20%, will likely require some undercutting/stabilization if encountered at/near pavement subgrade elevations. We recommend that the project budget include a contingency to address weak/unstable subgrade conditions.*

A “final” proof-roll should be performed on the base course prior to asphalt paving to check for soft/yielding conditions. Soft/yielding areas should be undercut/stabilized, as described above.

### **C. Pavement Design Parameters**

The pavement design parameters contained herein assume a firm or stabilized clay subgrade is present or has been developed according to the recommendations and techniques discussed previously. The recommended design soil parameters outlined in Table 4, which are conservatively based on the Troxel soils, should be used in conjunction with anticipated traffic loads to develop the design pavement section. The following parameters are based on pavement design methods discussed in the WisDOT *Geotechnical Manual*:

Mr. Matt Gall, LEED AP  
 City of Madison Department of Public Works  
 December 11, 2020  
 Page 15

**TABLE 4 – Recommended Pavement Design Parameters**

Soil Parameter	Recommended Design Values
USCS	CL/CL-ML/ML
AASHTO Classification	A-4/A-6
Frost Index, FI	F-4
Design Group Index, DGI	16
Soil Support Value, SSV	3.6
Subgrade Modulus, K (pci)	75

Note: These values are based on the following assumptions (based on WisDOT *Geotechnical Manual*):

- 1) The subgrade has been closely monitored.
- 2) The subgrade has been thoroughly and adequately compacted.
- 3) Wet zones have been dried, drained, or removed.
- 4) Pockets of dissimilar material have been removed, replaced or mixed to achieve a homogeneous subgrade.
- 5) Adequate subgrade drainage has been achieved.
- 6) Lower quality soils have been undercut, where encountered.

Note that although we anticipate selective undercutting (EBS) will be completed, where deemed necessary, the soil support value and subgrade modulus can potentially be increased if a systematic stabilization layer is included below *the entire* planned pavement section, as described in the WisDOT *Facilities Development Manual (FDM)* Section 14-5 incorporating *select materials in subgrade*. The ten alternatives for select materials are discussed in the FDM Section 11-5-15, Attachment 15.2. However, we do not recommend adjusting the recommended pavement design parameters if only isolated undercutting/stabilization will be completed. We can provide additional information upon request.

Assuming a firm/non-yielding subgrade is developed, including undercutting/stabilization of lower quality soils discussed previously, and assumed traffic loading conditions, consisting of a combination of light passenger vehicles and heavy truck traffic [e.g., less than 10 daily 18-kip Equivalent Single-Axle Loads (ESALs)], a typical flexible pavement design is 4.5 to 5.5 in. of asphalt pavement and 12 to 14 in. of dense graded base course. However, the pavement design should be based on traffic count data, past City of Madison projects and the provided soil parameters.

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 16

9. Stormwater Infiltration

We understand that a ¼-acre stormwater basin is envisioned to the east of the proposed fueling islands. The profiles in Borings B-8 and B-9, which were performed in the area of the planned stormwater basin, were fairly consistent and involved lower-permeability *silty clay loam* and *sandy clay loam* strata to depths between about 7 and 8 ft below current site grades, underlain by more permeable/granular *sandy loam*, *gravelly sandy loam*, *loamy fine sand* and *sand* layers to the maximum depths explored. Provided that the infiltration system extends through the shallow lower-permeability soils and into the granular layers (or lower-permeability soils are undercut below the bottom of the infiltration system and replaced with appropriate sandier soils), it is our opinion that some stormwater infiltration will likely be possible on this site.

However, it must be noted that lower-permeability seams of *clay loam* and relatively thin horizons of *silt loam* were observed within the granular soils, which will likely limit the infiltration rate. In an effort to improve the infiltration potential, we recommend that granular soils containing fairly thin lower-permeability seams/layers be excavated and blended (or deep tilling, ripping, etc.) to break up the lower-permeability seams. *Thicker silt and clay layers will require excavation and removal.* After removal of the overlying lower-permeability strata, we recommend that the deep-tilling process extend at least 5 ft (potentially deeper pending field observations) below the bottom of the infiltration system. Samples of the mixed soils should be collected during construction to document that the gradations of the mixed samples are consistent with the soil texture that the design infiltration rate is based upon (per Table 2 of WDNR Tech. Std. 1002). *Variability in the soil conditions should be expected across the site and within the stormwater basin that could result in a wide range of undercut depths to reach soil suitable for the design infiltration rate.*

**Infiltration Potential:** The following is a summary of the estimated infiltration rates for the soils encountered in Borings 8 and 9, per Table 2 of the WDNR Conservation Practice Standard 1002, *Site Evaluation for Storm Water Infiltration*. *Note that where lower-permeability soil (e.g., silt loam, clay loam, etc.) seams/layers exist within otherwise more permeable soils (e.g., granular, coarse-grained soils), the infiltration rate of the lower-permeability seams/layers will control the vertical infiltration rate, unless the lower-permeability seams are removed or the layer (with scattered seams) is excavated and blended (or deep tilling, ripping, etc.), as discussed previously.* The estimated infiltration rates are as follows:

- Clay loam (CL) 0.03 in./hr
- Silty clay loam (SiCL) 0.04 in./hr
- Sandy clay loam (SCL) 0.11 in./hr
- Silt loam (SiL) 0.13 in./hr
- Sandy loam (SL) 0.50 in./hr
- Gravelly sandy loam (GRSL) 0.50 in./hr
- Loamy fine sand (LFS) 0.50 in./hr
- Sand (S) 3.60 in./hr



Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 17

Note that the infiltration rates should be considered very approximate since they are merely based on soil texture and do not account for in-place soil density and other factors, which will affect the infiltration rate. We recommend that the soils at and several feet below the bottom of stormwater management system be checked by a certified soil tester *in conjunction with the basin designer* to document that the soils are appropriate for the design infiltration rate or recommend remedial measures, if necessary. The Wisconsin Department of Safety & Professional Services *Soil and Site Evaluation – Storm* form for Borings 8 and 9 is contained in Appendix F.

It must be cautioned that the results of the soil borings have limitations with regard to the evaluation of the on-site stormwater infiltration potential, as actual soil horizon transitions may vary from those shown on the boring logs and infiltration forms. The reviewing agency may require test pits to be excavated at a later date prior to finalizing the stormwater design. *The results of the test pits may require revisions to the stormwater management design if the design has been based solely on the soil borings.*

**Groundwater:** Groundwater was not encountered in the Stormwater Borings B-8 and B-9, and the soil mapping (see Appendix E) indicates the seasonal high-water level in the approximate area of the planned stormwater basin (mapped as Plano/Griswold soils) to generally remain more than 6 ft below the ground surface. However, redoximorphic features (redox or mottling), partially in combination with low-chroma/high-value (gray) matrix color, in the native clay soils indicate the level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater. Since groundwater was not encountered in the underlying granular soils and under consideration of the soil mapping, it is our opinion that the redox and gray matrix color can likely be attributed to perched conditions and/or surface water infiltration. Groundwater levels/seasonal high levels and groundwater mounding effects must be carefully considered during the design (i.e., establishing design bottom elevation) since it is a limiting factor for infiltration and may preclude the ability to infiltrate. Adequate separation distance must be maintained per WDNR requirements.

**Bedrock:** Bedrock was not encountered in the soil borings. The depth of bedrock should be expected to vary across the site.

During construction, appropriate erosion control should be provided to prevent eroded soil from contaminating the stormwater management area. Where appropriate, the stormwater system design should include pretreatment to remove fine-grained soils (silt/clay) and clogging materials (oils/greases) from stormwater prior to entering the infiltration area. Additionally, a regular maintenance plan should be developed to remove silt/clay soils and clogging materials that may accumulate in the bottom of the stormwater management area over time. Failure to adequately

Mr. Matt Gall, LEED AP  
City of Madison Department of Public Works  
December 11, 2020  
Page 18

control fine-grained soils and clogging materials from entering the infiltration area or failure to regularly remove fine-grained soils and clogging materials that accumulate at the base of the stormwater infiltration system will likely cause the stormwater management system to fail. Additionally, it is important that the soils in the bottom of the infiltration system do not become compacted during construction or measures are taken to mitigate soils that are compacted during construction. Refer to WDNR Conservation Practice Standards 1002, 1003 and 1004, as well as NR151 for additional information.

### **CONSTRUCTION CONSIDERATIONS**

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

- Due to the potentially sensitive nature of some of the on-site soils, we recommend that final site grading activities be completed during dry weather, if possible. Construction traffic should be avoided on prepared subgrades to minimize potential disturbance.
- Contingencies in the project budget for subgrade stabilization with coarse aggregate in pavement and floor slab areas should be increased if the project schedule requires that work proceed during adverse weather conditions.
- Earthwork construction during the late fall through early spring could be complicated as a result of wet weather and freezing temperatures. During cold weather, exposed subgrades should be protected from freezing before and after footing construction. Fill should never be placed while frozen or on frozen ground.
- Excavations extending greater than 4 ft in depth below the existing ground surface should be sloped or braced in accordance with current OSHA standards.
- Based on the observations made during our field exploration, we generally do not anticipate groundwater to be encountered during construction. However, water accumulating at the bottom of excavations as a result of precipitation or seepage should be quickly removed. Dewatering means and methods are the contractor's responsibility.



Mr. Matt Gall, LEED AP  
 City of Madison Department of Public Works  
 December 11, 2020  
 Page 19

**RECOMMENDED CONSTRUCTION MONITORING**

The quality of the foundation, floor slab and pavement subgrades will be largely determined by the level of care exercised during site development. To check that earthwork and foundation construction proceed in accordance with our recommendations, the following operations should be monitored by CGC:

- Topsoil stripping and subgrade proof-rolling/compaction;
- Fill/backfill placement and compaction;
- Foundation excavation/subgrade preparation; and
- Concrete placement.

\* \* \* \* \*

It has been a pleasure to serve you on this project. If you have any questions or need additional consultation, please contact us.

Sincerely,

**CGC, Inc.**

Tim F. Gassenheimer, EIT, CST  
 Staff Engineer

Ryan J. Portman, PE, CST  
 Senior Consulting Professional

- Encl: Appendix A - Field Exploration  
 Appendix B - Soil Boring Location Exhibit  
           Logs of Test Borings (9)  
           Particle Size Distribution Test Report (1)  
           Log of Test Boring-General Notes  
           Unified Soil Classification System  
 Appendix C - Document Qualifications  
 Appendix D - Recommended Compacted Fill Specifications  
 Appendix E - USDA-NRCS *Web Soil Survey* Map and Legend  
 Appendix F - WDSPS *Soil and Site Evaluation – Storm* Form (2 Borings)

**APPENDIX A**  
**FIELD EXPLORATION**

## APPENDIX A

### FIELD EXPLORATION

Subsurface conditions for this study were explored by drilling nine Standard Penetration Test (SPT) soil borings to planned depths between 10 and 30 ft below current site grades, which were generally sampled at 2.5-ft intervals to a depth of 10 ft and at 5-ft intervals thereafter. As an exception, the two borings performed within the planned stormwater management area, B-8 and B-9, were sampled at 2.5-ft intervals to the final depths at 20 ft below grade. The samples were obtained in general accordance with specifications for standard penetration testing, ASTM D1586, and the specific procedures used for drilling and sampling are described below.

1. Boring Procedures between Samples

The boring is extended downward, between samples, by a hollow-stem auger.

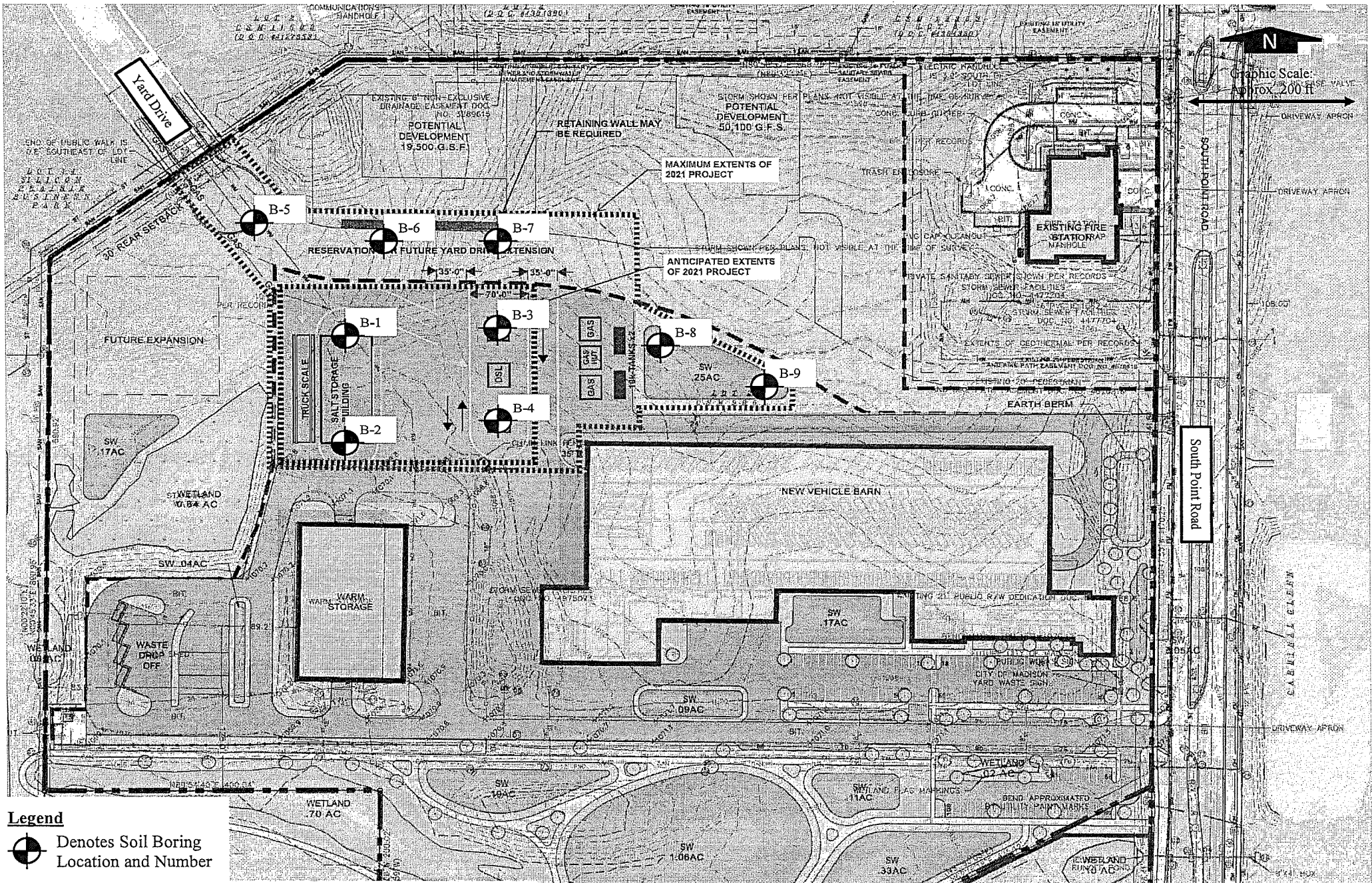
2. Standard Penetration Test and Split-Barrel Sampling of Soils  
(ASTM Designation: D 1586)

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

During the field exploration, the driller visually classified the soil and prepared a field log. *Field screening of the soil samples for possible environmental contaminants was not conducted by the driller as these services were not part of CGC's work scope.* Water level observations were made in each boring during and after drilling and are shown at the bottom of each boring log. Upon completion of drilling, the borings were backfilled with bentonite to satisfy WDNR regulations and the soil samples were delivered to our laboratory for visual classification and laboratory testing. The soils were visually classified by a geotechnical engineer using the Unified Soil Classification System (USCS). The samples from the two Stormwater Borings B-8 and B-9 were additionally classified using the USDA classification system. The final boring logs prepared by the engineer, including laboratory test results, along with a Soil Boring Location Exhibit and a description of the Unified Soil Classification System are presented in Appendix B.

**APPENDIX B**

**SOIL BORING LOCATION EXHIBIT  
LOGS OF TEST BORINGS (9)  
PARTICLE SIZE DISTRIBUTION TEST REPORT (1)  
LOG OF TEST BORING-GENERAL NOTES  
UNIFIED SOIL CLASSIFICATION SYSTEM**



Job No.:  
C20051-31

Date:  
Dec. 2020



**SOIL BORING LOCATION EXHIBIT**  
**Proposed 2021 Site Expansion**  
**City of Madison DPW – 402 South Point Rd.**  
**Madison, Wisconsin**



# LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
 City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 1  
 Surface Elevation (ft) 1072±  
 Job No. C20051-31  
 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.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					8± in. TOPSOIL FILL					
1	18	M	9		FILL: Very Stiff, Brown/Dark Gray Lean Clay, Little Sand, Trace Gravel, Scattered Asphalt Pieces/Possible Cinders	(2.0-2.25)				
2	18	M	8		FILL: Very Stiff, Gray to Dark Gray Sandy Lean Clay, Trace to Little Gravel, Scattered Asphalt Pieces/Possible Cinders	(2.5-3.5)				
3	18	M	9		*Possible Petroleum/Chemical Odor is Sample 2* Medium Stiff to Very Stiff, Gray/Brown (Mottled) Lean CLAY, Trace to Little Sand, Trace Gravel (CL)	(1.75-2.25)	28.4			
4	18	M/W	6		Loose to Medium Dense, Light Brown Silty Fine SAND to Sandy SILT, Trace Gravel (SM/ML)	(0.75-1.0)	22.3			
5	18	M	17		Medium Dense, Light Brown Fine to Medium SAND, Some Silt, Little to Some Gravel, Scattered Cobbles/Boulders (SM)					
6	18	M/W	16							
7	18	M/W	13							
					End of Boring at 25 ft  Borehole Backfilled with Bentonite Chips					

## WATER LEVEL OBSERVATIONS

While Drilling  NW Upon Completion of Drilling NW  
 Time After Drilling \_\_\_\_\_  
 Depth to Water \_\_\_\_\_  
 Depth to Cave in \_\_\_\_\_

## GENERAL NOTES

Start 11/16/20 End 11/16/20  
 Driller BSD Chief MC Rig CME-45  
 Logger GB Editor TFG  
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.





## LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
 City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 2  
 Surface Elevation (ft) 1068±  
 Job No. C20051-31  
 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.	Rec (in.)	Moist	N	Depth (ft)		q <sub>u</sub> (qa) (tsf)	W	LL	PL	LI
					18± in. TOPSOIL					
1	18	M	9		Very Stiff, Brown Lean CLAY, Little Sand, Trace Gravel (CL)	(3.25-3.75)	19.3			
2	3	M	16		Loose to Medium Dense, Brown Fine to Medium SAND, Some Silt, Trace Gravel (SM)					
3	18	M	4		Loose, Tan Fine SAND, Trace Silt and Gravel (SP)					
4	18	M	8		Medium Dense to Dense, Light Brown Fine to Medium SAND, Some Silt, Little to Some Gravel, Scattered Cobbles/Boulders (SM)					
5	18	M/W	12							
6	18	M/W	25							
7	18	W	41		End of Boring at 25 ft					
					Borehole Backfilled with Bentonite Chips					

### WATER LEVEL OBSERVATIONS

### GENERAL NOTES

While Drilling  $\nabla$  22.0'      Upon Completion of Drilling \_\_\_\_\_  
 Time After Drilling \_\_\_\_\_      30 mins.  
 Depth to Water \_\_\_\_\_  
 Depth to Cave in \_\_\_\_\_ 21.0'

Start 11/16/20 End 11/16/20  
 Driller BSD Chief MC Rig CME-45  
 Logger GB Editor TFG  
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



## LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
 City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 3  
 Surface Elevation (ft) 1074±  
 Job No. C20051-31  
 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 E	Rec (in.)	Moist	N		Depth (ft)	q <sub>u</sub> (qa) (tsf)	W	LL	PL
					0	18± in. TOPSOIL				
1	3	M	10		1	Loose to Medium Dense, Brown Fine to Medium SAND, Some Silt, Trace Gravel (SM)  Medium Dense, Light Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)  Medium Dense, Light Brown Fine SAND, Some Silt, Trace to Little Gravel (SM)				
2	18	M	15	5						
3	18	M	18	10						
4	18	M	21	15						
5	18	M	22	15						
End of Boring at 15 ft						Borehole Backfilled with Bentonite Chips				
Borehole Backfilled with Bentonite Chips										
Borehole Backfilled with Bentonite Chips										
Borehole Backfilled with Bentonite Chips										
Borehole Backfilled with Bentonite Chips										

### WATER LEVEL OBSERVATIONS

### GENERAL NOTES

While Drilling  NW Upon Completion of Drilling NW  
 Time After Drilling \_\_\_\_\_  
 Depth to Water \_\_\_\_\_  
 Depth to Cave in \_\_\_\_\_

Start 11/16/20 End 11/16/20  
 Driller BSD Chief MC Rig CME-45  
 Logger GB Editor TFG  
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



### LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
 City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 4  
 Surface Elevation (ft) 1071±  
 Job No. C20051-31  
 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.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					8± in. TOPSOIL					
1	18	M	12		Very Stiff to Hard, Brown Lean CLAY, Little Sand, Trace Gravel (CL)	(3.25-4.5+)	17.1			
2	18	M	15		Medium Dense to Dense, Light Brown Fine to Medium SAND, Some Silt, Little to Some Gravel, Scattered Lean Clay Seams and Cobbles/Boulders (SM)					
3	18	M	17							
4	18	M	19							
5	18	M	42		End of Boring at 15 ft					
					Borehole Backfilled with Bentonite Chips					

WATER LEVEL OBSERVATIONS	GENERAL NOTES
While Drilling <input checked="" type="checkbox"/> <u>NW</u> Upon Completion of Drilling <input type="checkbox"/> <u>NW</u> Time After Drilling _____ Depth to Water _____ Depth to Cave in _____	Start <u>11/16/20</u> End <u>11/16/20</u> Driller <u>BSD</u> Chief <u>MC</u> Rig <u>CME-45</u> Logger <u>GB</u> Editor <u>TFG</u> Drill Method <u>2.25" HSA; Autohammer</u>
The stratification lines represent the approximate boundary between soil types and the transition may be gradual.	



### LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
 City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 5  
 Surface Elevation (ft) 1069±  
 Job No. C20051-31  
 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.	Rec (in.)	Moist	N	Depth (ft)		q <sub>u</sub> (qa) (tsf)	W	LL	PL	LI
				0	8± in. TOPSOIL					
1	8	M	5	5	Very Stiff, Brown Lean CLAY, Trace to Little Sand (CL)	(2.0-3.0)	26.2			
2	16	M	5	5	Stiff, Gray/Reddish Brown (Mottled) Lean CLAY, Trace to Little Sand (CL)	(1.0-1.5)				
3	18	M	17	17	Medium Dense, Light Brown Fine to Medium SAND, Little to Some Silt, Trace Gravel, Interbedded with Stiff, Gray Lean CLAY, Trace Sand (SP-SM/SM/CL)	(1.25-1.75)				
4	18	M	21	21	Medium Dense, Tan Fine to Coarse SAND, Trace to Little Silt, Trace Gravel, Scattered Silt Seams (SP/SP-SM)					
End of Boring at 10 ft										
Borehole Backfilled with Bentonite Chips										
				10						
				15						
				20						
				25						
				30						

#### WATER LEVEL OBSERVATIONS

#### GENERAL NOTES

While Drilling ∇ NW Upon Completion of Drilling NW  
 Time After Drilling \_\_\_\_\_  
 Depth to Water \_\_\_\_\_  
 Depth to Cave in \_\_\_\_\_

Start 11/16/20 End 11/16/20  
 Driller BSD Chief MC Rig CME-45  
 Logger GB Editor TFG  
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



## LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
 City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 6  
 Surface Elevation (ft) 1071±  
 Job No. C20051-31  
 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.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					12± in. TOPSOIL					
1	10	M	5		Stiff, Brown/Gray (Lightly Mottled) Lean CLAY, Trace Sand (CL)	(1.25-2.0)	28.2			
2	18	M	10	5	Loose to Medium Dense, Tan Fine to Medium SAND, Little to Some Silt, Trace Gravel (SP-SM/SM)					
3	18	M	16		Medium Dense, Tan Fine to Coarse SAND, Little Gravel, Trace Silt, Scattered Silt Seams (SP)					
4	18	M	17	10	Medium Dense, Light Brown Silty Fine SAND to Sandy SILT, Trace Gravel (SM/ML)					
5	18	M	19	15	Medium Dense, Light Brown Fine to Medium SAND, Some Silt and Gravel, Scattered Cobbles/Boulders (SM)					
6	18	M	24	20	End of Boring at 20 ft  Borehole Backfilled with Bentonite Chips					

### WATER LEVEL OBSERVATIONS

### GENERAL NOTES

While Drilling  NW      Upon Completion of Drilling NW  
 Time After Drilling \_\_\_\_\_  
 Depth to Water \_\_\_\_\_  
 Depth to Cave in \_\_\_\_\_

Start 11/16/20 End 11/16/20  
 Driller BSD Chief MC Rig CME-45  
 Logger GB Editor TFG  
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



### LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 7  
 Surface Elevation (ft) 1080±  
 Job No. C20051-31  
 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.	Rec (in.)	Moist	N	Depth (ft)		q <sub>u</sub> (qa) (tsf)	W	LL	PL	LI
					20± in. TOPSOIL					
1	18	M	10		Very Stiff to Hard, Brown Lean CLAY, Trace to Little Sand (CL)	(3.25)				
2	18	M	10			(3.5-4.5+)	23.0			
3	18	M	6		Very Stiff, Gray/Orange Brown (Mottled) Lean CLAY, Trace Sand (CL)	(2.25-2.5)	27.8			
4	18	M	8							
					Loose, Brown Silty Fine SAND to Sandy SILT, Trace Gravel (SM/ML)					
					Medium Dense, Light Brown SILT, Trace Sand (ML)					
5	18	M	23		Medium Dense to Dense, Light Brown Fine to Medium SAND, Some Silt, Little to Some Gravel, Scattered Cobbles/Boulders (SM)					
6	18	M	27							
7	18	M/W	31		Dense, Light Brown Gravelly Fine to Coarse SAND, Little to Some Silt (SP-SM/SM)					
8	18	M/W	33							
					End of Boring at 30 ft					
					Borehole Backfilled with Bentonite Chips					

#### WATER LEVEL OBSERVATIONS

#### GENERAL NOTES

While Drilling  NW      Upon Completion of Drilling NW  
 Time After Drilling \_\_\_\_\_  
 Depth to Water \_\_\_\_\_  
 Depth to Cave in \_\_\_\_\_

Start 11/16/20 End 11/16/20  
 Driller BSD Chief MC Rig CME-45  
 Logger GB Editor TFG  
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



## LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
 City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 8  
 Surface Elevation (ft) 1078±  
 Job No. C20051-31  
 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.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
				0	12± in. TOPSOIL					
1	14	M	6	1	Stiff, Brown/Gray (Lightly Mottled) Lean CLAY, Trace Sand (CL) <i>USDA: 10YR 5/3 (Redox: f1f 10YR 5/1) Silty Clay</i>	(1.75)				
2	18	M/W	3	3	<i>Loam</i>	(0.5-0.75)				
3	18	M/W	3	5	Medium Stiff, Brown/Gray (Mottled) Lean CLAY, Trace to Little Sand, Trace Gravel (CL) <i>USDA: 10YR 5/3 (Redox: c2d 10YR 5/1) Silty Clay</i>	(0.25-0.5)				
4	18	M	12	10	Soft/Very Loose, Brown Sandy Lean CLAY to Clayey Fine SAND, Trace Gravel (CL/SC) <i>USDA: 10YR 5/3 Sandy Clay Loam</i>					
5	18	M	17	15	Medium Dense, Dark Brown Fine to Coarse SAND, Some Silt, Little Gravel (SM) <i>USDA: 10YR 4/3 Sandy Loam</i>		5.8			
6	18	M	24	20	Medium Dense, Light Brown Fine to Medium SAND, Some Silt, Little to Some Gravel, Scattered Lean Clay Seams and Cobbles/Boulders (SM) <i>USDA: 10YR 6/4 Gravelly Sandy Loam, Scattered Clay Loam Seams</i>					
7	18	M	26	22						
8	18	M	30	24						
				20	End of Boring at 20 ft					
				25	Borehole Backfilled with Bentonite Chips					
				30						

### WATER LEVEL OBSERVATIONS

### GENERAL NOTES

While Drilling ∇ NW Upon Completion of Drilling NW  
 Time After Drilling \_\_\_\_\_ Next Day  
 Depth to Water \_\_\_\_\_ NW ∇  
 Depth to Cave in \_\_\_\_\_ 16.0'

Start 11/16/20 End 11/16/20  
 Driller BSD Chief MC Rig CME-45  
 Logger GB Editor TFG  
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



### LOG OF TEST BORING

Project Proposed 2021 Site Expansion  
 City of Madison DPW - 402 South Point Rd.  
 Location Madison, Wisconsin

Boring No. 9  
 Surface Elevation (ft) 1078±  
 Job No. C20051-31  
 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.	Rec (in.)	Moist	N	Depth (ft)		qu (qa) (tsf)	W	LL	PL	LI
					18± in. TOPSOIL					
1	18	M	16		Hard, Brown/Gray (Lightly Mottled) Lean CLAY, Trace Sand (CL)	(4.25-4.5)				
2	18	M	8		USDA: 10YR 5/3 (Redox: f1f 10YR 5/1) Silty Clay Loam	(1.5-1.75)				
3	18	M	3		Stiff, Brown/Gray (Mottled) Lean CLAY, Trace to Little Sand, Trace Gravel (CL)	(0.75)				
4	18	M	14		USDA: 10YR 5/3 (Redox: c2d 10YR 5/1) Silty Clay Loam					
5	18	M	21		Medium Stiff, Gray/Reddish Brown (Mottled) Lean CLAY, Trace Sand (CL)					
6	18	M	19		USDA: 2.5Y 6/1 (Redox: c3p 10YR 3/6) Silty Clay Loam					
7	18	M	29		Very Loose to Medium Dense, Tan Fine SAND, Little to Some Silt, Trace Gravel (SP-SM/SM)					
8	18	M	26		USDA: 10YR 7/4 Loamy Fine Sand					
					Medium Dense, Tan Fine to Coarse SAND, Trace Silt and Gravel (SP)					
					USDA: 10YR 7/3 Sand					
					Medium Dense, Light Brown SILT, Trace Sand (ML)					
					USDA: 10YR 6/3 Silt Loam					
					Medium Dense, Light Brown Fine to Medium SAND, Some Silt, Little to Some Gravel, Scattered Lean Clay Seams and Cobbles/Boulders (SM)					
					USDA: 10YR 6/4 Gravelly Sandy Loam, Scattered Clay Loam Seams					
					End of Boring at 20 ft					
					Borehole Backfilled with Bentonite Chips					

#### WATER LEVEL OBSERVATIONS

#### GENERAL NOTES

While Drilling ∇ NW Upon Completion of Drilling NW  
 Time After Drilling \_\_\_\_\_ Next Day  
 Depth to Water \_\_\_\_\_ NW ∇  
 Depth to Cave in \_\_\_\_\_ 16.5'

Start 11/16/20 End 11/16/20  
 Driller BSD Chief MC Rig CME-45  
 Logger GB Editor TFG  
 Drill Method 2.25" HSA; Autohammer

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.



# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	15.4	11.4	2.3	7.7	42.4	20.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
3/4	84.6		
1/2	77.2		
3/8	76.0		
#4	73.2		
#8	71.4		
#10	70.9		
#16	69.6		
#30	67.3		
#40	63.2		
#50	56.1		
#80	36.3		
#100	31.1		
#200	20.8		

**Material Description**

Brown Fine to Medium Sand, Some Silt and Gravel

**Atterberg Limits**

PL=                      LL=                      PI=

**Coefficients**

D<sub>90</sub>= 21.3687      D<sub>85</sub>= 19.2213      D<sub>60</sub>= 0.3506  
D<sub>50</sub>= 0.2533      D<sub>30</sub>= 0.1429      D<sub>15</sub>=  
D<sub>10</sub>=                      C<sub>u</sub>=                      C<sub>c</sub>=

**Classification**

USCS= SM                      AASHTO=

**Remarks**

Natural Moisture = 5.8%

\* (no specification provided)

Sample Number: B-8 / S 5 & 6

Date: 11/30/20

	<p>Client: City of Madison Engineering  Project: DPW 402 South Point Road</p> <p>Project No: C20051-31</p>	<p>Figure</p>
--	--	---------------

Tested By: DRW

Checked By: KJS

**LOG OF TEST BORING**  
*General Notes*

**DESCRIPTIVE SOIL CLASSIFICATION**

Grain Size Terminology

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

Plasticity characteristics differentiate between silt and clay.

General Terminology

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

Relative Density

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

Relative Proportions Of Cohesionless Soils

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

Consistency

Term	q <sub>u</sub> -tons/sq. ft
Very Soft.....	0.0 to 0.25
Soft.....	0.25 to 0.50
Medium.....	0.50 to 1.0
Stiff.....	1.0 to 2.0
Very Stiff.....	2.0 to 4.0
Hard.....	Over 4.0

Organic Content by Combustion Method

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

Plasticity

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

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

**SYMBOLS**

Drilling and Sampling

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

Laboratory Tests

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

Water Level Measurement

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

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

# CGC, Inc.









Madison - Milwaukee

# Unified Soil Classification System

## UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART








### COARSE-GRAINED SOILS

(more than 50% of material is larger than No. 200 sieve size)

GRAVELS		Clean Gravels (Less than 5% fines)	
More than 50% of coarse fraction larger than No. 4 sieve size		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)		
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS		Clean Sands (Less than 5% fines)	
50% or more of coarse fraction smaller than No. 4 sieve size		SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)		
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures

### FINE-GRAINED SOILS

(50% or more of material is smaller than No. 200 sieve size.)

SILTS AND CLAYS	Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS	Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils	

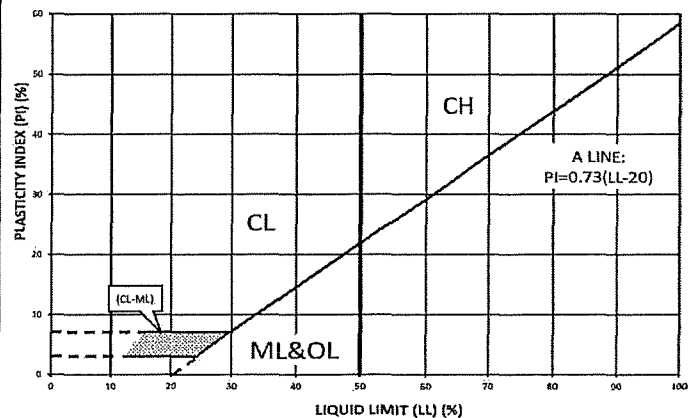
## LABORATORY CLASSIFICATION CRITERIA

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

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

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

## PLASTICITY CHART



**APPENDIX C**

**DOCUMENT QUALIFICATIONS**

## APPENDIX C DOCUMENT QUALIFICATIONS

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### I. GENERAL RECOMMENDATIONS/LIMITATIONS

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CGC, Inc. should be provided the opportunity for a general review of the final design and specifications to confirm that earthwork and foundation requirements have been properly interpreted in the design and specifications. CGC should be retained to provide soil engineering services during excavation and subgrade preparation. This will allow us to observe that construction proceeds in compliance with the design concepts, specifications and recommendations, and also will allow design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction. CGC does not assume responsibility for compliance with the recommendations in this report unless we are retained to provide construction testing and observation services.

This report has been prepared in accordance with generally accepted soil and foundation engineering practices and no other warranties are expressed or implied. The opinions and recommendations submitted in this report are based on interpretation of the subsurface information revealed by the test borings indicated on the location plan. The report does not reflect potential variations in subsurface conditions between or beyond these borings. Therefore, variations in soil conditions can be expected between the boring locations and fluctuations of groundwater levels may occur with time. The nature and extent of the variations may not become evident until construction.

---

### II. IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

---

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

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one - not even you* - should apply the report for any purpose or project except the one originally contemplated.

#### READ THE FULL REPORT

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

#### A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes - even minor ones - and request an assessment of their impact. *CGC cannot accept responsibility or liability for problems that occur because our reports do not consider developments of which we were not informed.*

#### SUBSURFACE CONDITIONS CAN CHANGE

A geotechnical engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

#### MOST GEOTECHNICAL FINDINGS ARE PROFESSIONAL OPINION

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgement to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ - sometimes significantly - from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most

effective method of managing the risks associated with unanticipated conditions.

#### **A REPORT'S RECOMMENDATIONS ARE NOT FINAL**

Do not over-rely on the confirmation-dependent recommendations included in your report. *Those confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgement and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *CGC cannot assume responsibility or liability for the report's confirmation-dependent recommendations if we do not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

#### **A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION**

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical engineering report. Confront that risk by having CGC participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

#### **DO NOT REDRAW THE ENGINEER'S LOGS**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

#### **GIVE CONSTRUCTORS A COMPLETE REPORT AND GUIDANCE**

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time* to perform additional study. Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

#### **READ RESPONSIBILITY PROVISIONS CLOSELY**

Some clients, design professionals, and constructors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic

expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineer's responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

#### **ENVIRONMENTAL CONCERNS ARE NOT COVERED**

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

#### **OBTAIN PROFESSIONAL ASSISTANCE TO DEAL WITH MOLD**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention.* *Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

#### **RELY ON YOUR GEOTECHNICAL ENGINEER FOR ADDITIONAL ASSISTANCE**

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

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

**APPENDIX D**

**RECOMMENDED COMPACTED FILL SPECIFICATIONS**

## **APPENDIX D**

### **CGC, INC.**

#### **RECOMMENDED COMPACTED FILL SPECIFICATIONS**

##### **General Fill Materials**

Proposed fill shall contain no vegetation, roots, topsoil, peat, ash, wood or any other non-soil material which by decomposition might cause settlement. Also, fill shall never be placed while frozen or on frozen surfaces. Rock, stone or broken concrete greater than 6 in. in the largest dimension shall not be placed within 10 ft of the building area. Fill used greater than 10 ft beyond the building limits shall not contain rock, boulders or concrete pieces greater than a 2 sq ft area and shall not be placed within the final 2 ft of finish subgrade or in designated utility construction areas. Fill containing rock, boulders or concrete pieces should include sufficient finer material to fill voids among the larger fragments.

##### **Special Fill Materials**

In certain cases, special fill materials may be required for specific purposes, such as stabilizing subgrades, backfilling undercut excavations or filling behind retaining walls. For reference, WisDOT gradation specifications for various types of granular fill are attached in Table 1.

##### **Placement Method**

The approved fill shall be placed, spread and leveled in layers generally not exceeding 10 in. in thickness before compaction. The fill shall be placed at moisture content capable of achieving the desired compaction level. For clay soils or granular soils containing an appreciable amount of cohesive fines, moisture conditioning will likely be required.

It is the Contractor's responsibility to provide all necessary compaction equipment and other grading equipment that may be required to attain the specified compaction. Hand-guided vibratory or tamping compactors will be required whenever fill is placed adjacent to walls, footings, columns or in confined areas.

##### **Compaction Specifications**

Maximum dry density and optimum moisture content of the fill soil shall be determined in accordance with modified Proctor methods (ASTM D1557). The recommended field compaction as a percentage of the maximum dry density is shown in Table 2. Note that these compaction guidelines would generally not apply to coarse gravel/stone fill. Instead, a method specification would apply (e.g., compact in thin lifts with a vibratory compactor until no further consolidation is evident).

##### **Testing Procedures**

Representative samples of proposed fill shall be submitted to CGC, Inc. for optimum moisture-maximum density determination (ASTM D1557) prior to the start of fill placement. The sample size should be approximately 50 lb.

CGC, Inc. shall be retained to perform field density tests to determine the level of compaction being achieved in the fill. The tests shall generally be conducted on each lift at the beginning of fill placement and at a frequency mutually agreed upon by the project team for the remainder of the project.



**Table 1**  
**Gradation of Special Fill Materials**

Material	WisDOT Section 311	WisDOT Section 312	WisDOT Section 305			WisDOT Section 209		WisDOT Section 210
	Breaker Run	Select Crushed Material	3-in. Dense Graded Base	1 1/4-in. Dense Graded Base	3/4-in. Dense Graded Base	Grade 1 Granular Backfill	Grade 2 Granular Backfill	Structure Backfill
Sieve Size	Percent Passing by Weight							
6 in.	100							
5 in.		90-100						
3 in.			90-100					100
1 1/2 in.		20-50	60-85					
1 1/4 in.				95-100				
1 in.					100			
3/4 in.			40-65	70-93	95-100			
3/8 in.				42-80	50-90			
No. 4			15-40	25-63	35-70	100 (2)	100 (2)	25-100
No. 10		0-10	10-30	16-48	15-55			
No. 40			5-20	8-28	10-35	75 (2)		
No. 100						15 (2)	30 (2)	
No. 200			2-12	2-12	5-15	8 (2)	15 (2)	15 (2)

**Notes:**

1. Reference: Wisconsin Department of Transportation *Standard Specifications for Highway and Structure Construction*.
2. Percentage applies to the material passing the No. 4 sieve, not the entire sample.
3. Per WisDOT specifications, both breaker run and select crushed material can include concrete that is 'substantially free of steel, building materials and other deleterious material'.

**Table 2**  
**Compaction Guidelines**

Area	Percent Compaction (1)	
	Clay/Silt	Sand/Gravel
<b><u>Within 10 ft of building lines</u></b>		
Footing bearing soils	93 - 95	95
Under floors, steps and walks		
- Lightly loaded floor slab	90	90
- Heavily loaded floor slab and thicker fill zones	92	95
<b><u>Beyond 10 ft of building lines</u></b>		
Under walks and pavements		
- Less than 2 ft below subgrade	92	95
- Greater than 2 ft below subgrade	90	90
Landscaping	85	90

**Notes:**

1. Based on Modified Proctor Dry Density (ASTM D 1557)

**APPENDIX E**

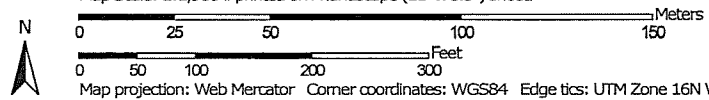
**UNITED STATES DEPARTMENT OF AGRICULTURE  
– NATURAL RESOURCES CONSERVATION SERVICE  
*WEB SOIL SURVEY* MAP AND LEGEND**

Soil Map—Dane County, Wisconsin  
(Yard Drive Extension, Madison)



Soil Map may not be valid at this scale.





































Map Scale: 1:1,980 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 16N WGS84

Soil Map—Dane County, Wisconsin  
(Yard Drive Extension, Madison)

**MAP LEGEND**

- |   |   |   |   |                 |
|---|---|---|---|-----------------|
| <b>Area of Interest (AOI)</b>   |  | Area of Interest (AOI)  |  | Spoil Area      |
| <b>Soils</b>  |  | Soil Map Unit Polygons  |  | Stony Spot      |
|   |  | Soil Map Unit Lines   |  | Very Stony Spot |
|   |  | Soil Map Unit Points  |  | Wet Spot        |
| <b>Special Point Features</b>   |   |   |  | Other           |
|    | Blowout   |  | Special Line Features   |                 |
|    | Borrow Pit  | <b>Water Features</b>   |   |                 |
|    | Clay Spot   |  | Streams and Canals  |                 |
|    | Closed Depression   | <b>Transportation</b>   |   |                 |
|    | Gravel Pit  |  | Rails   |                 |
|    | Gravelly Spot   |  | Interstate Highways   |                 |
|    | Landfill  |  | US Routes   |                 |
|    | Lava Flow   |  | Major Roads   |                 |
|    | Marsh or swamp  |  | Local Roads   |                 |
|    | Mine or Quarry  | <b>Background</b>   |   |                 |
|    | Miscellaneous Water   |  | Aerial Photography  |                 |
|    | Perennial Water   |   |   |                 |
|   | Rock Outcrop  |   |   |                 |
|  | Saline Spot   |   |   |                 |
|  | Sandy Spot  |   |   |                 |
|  | Severely Eroded Spot  |   |   |                 |
|  | Sinkhole  |   |   |                 |
|  | Slide or Slip   |   |   |                 |
|  | Sodic Spot  |   |   |                 |

**MAP INFORMATION**

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL:  
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Dane County, Wisconsin  
Survey Area Data: Version 19, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 29, 2011—Aug 29, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GwC	Griswold loam, 6 to 12 percent slopes	4.0	38.1%
PnC2	Plano silt loam, till substratum, 6 to 12 percent slopes, eroded	1.1	10.3%
PoA	Plano silt loam, gravelly substratum, 0 to 2 percent slopes	1.4	13.5%
PoB	Plano silt loam, gravelly substratum, 2 to 6 percent slopes	2.3	22.1%
TrB	Troxel silt loam, 0 to 3 percent slopes	1.7	16.0%
<b>Totals for Area of Interest</b>		<b>10.5</b>	<b>100.0%</b>

**APPENDIX F**

**WISCONSIN DEPARTMENT OF SAFETY & PROFESSIONAL SERVICES**  
***SOIL AND SITE EVALUATION – STORM FORM (2 BORINGS)***



Division of Industry Services  
P.O. Box 2658  
Madison, Wisconsin 53701

**Attachment 2:**

**SOIL AND SITE EVALUATION - STORM**

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Attach a complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent of slope, scale or dimensions, north arrow, and BM referenced to nearest road  Please print all information  Personal information you provide may be used for secondary purposes [Privacy Law, s. 15.04(1)(m)]	County	Dane
	Parcel I.D.	251/0708-282-0103-1
	Reviewed by:	Date:

Property Owner City of Madison Streets West Side Public Works	Property Location Govt. Lot SE 1/4 NW 1/4 S 28 T 7 N R 8 E
Property Owner's Mail Address 1501 West Badger Road	Lot # Block# Subd. Name or CSM #
City State Zip Code Phone Number Madison WI 53713-2307	<input checked="" type="checkbox"/> City <input type="checkbox"/> Village <input type="checkbox"/> Town Nearest Road 402 South Point Road
Drainage area _____ <input type="checkbox"/> sq ft <input type="checkbox"/> acres  Test site suitable for (check all that apply): <input type="checkbox"/> Site not suitable; <input type="checkbox"/> Bioretention; <input type="checkbox"/> Subsurface Dispersal System; <input type="checkbox"/> Reuse; <input type="checkbox"/> Irrigation; <input type="checkbox"/> Other _____	Hydraulic Application Test Method <input checked="" type="checkbox"/> Morphological Evaluation <input type="checkbox"/> Double Ring Infiltrometer <input type="checkbox"/> Other: (specify) _____  Soil Moisture Date of soil borings: _____ USDA-NRCS WETS Value: <input type="checkbox"/> Dry = 1; <input type="checkbox"/> Normal = 2; <input type="checkbox"/> Wet = 3.

B-8 #OBS.  Pit  Boring Ground surface elevation 1078± ft. Elevation of limiting factor 1077± ft. (Redox)

Horizon	Approx. Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines (P200)	Hydraulic App Rate Inches/Hr
1	0-12	Topsoil (not sampled)								
2	12-36	10YR 5/3	f1f 10YR 5/1	SiCL	0m	mfi		<5		0.04
3	36-66	10YR 5/3	c2d 10YR 5/1	SiCL	0m	mfi		<10		0.04
4	66-96	10YR 5/3	none	SCL	0m	mfi		<10		0.11
5	96-126	10YR 4/3	none	SL	0sg	ml		5-15		0.50
6	126-240	10YR 6/4	none	GRSL, CL Seams	0sg	ml		29	21	0.03-0.50 <sup>(1)</sup>

**Comments:** Groundwater was not encountered during or upon the completion of drilling. However, redox in Horizons 2 and 3 indicates the level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater.  
<sup>(1)</sup> Vertical infiltration potential will be limited by clay loam seams and can potentially improved by excavating and turning over (i.e., deep-tilling) this layer to break up scattered lower-permeability seams; gradations should be collected during construction to document that the texture of the blended soil is consistent with the design infiltration rate.

Name (Please Print)	Tim F. Gassenheimer	Signature		Credential Number	SP-011900004
Address	129 Milky Way, Madison, WI 53718	Date Evaluation Conducted	November 21, 2020	Telephone Number	(608) 288-4100

B-9		#OBS.	<input type="checkbox"/> Pit	<input checked="" type="checkbox"/> Boring	Ground surface elevation	1078± ft.	Elevation of limiting factor	1077± ft. (Redox)		
Horizon	Approx. Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines (P200)	Hydraulic App Rate Inches/Hr
1	0-18	Topsoil (not sampled)								
2	18-36	10YR 5/3	f1f 10YR 5/1	SiCL	0m	mfi		<5		0.04
3	36-66	10YR 5/3	c2d 10YR 5/1	SiCL	0m	mfi		<10		0.04
4	66-84	2.5Y 6/1	c3p 10YR 3/6	SiCL	0m	mfi		<5		0.04
5	84-126	10YR 7/4	none	LFS	0sg	ml		<10		0.50
6	126-168	10YR 7/3	none	S	0sg	ml		<10		3.60
7	168-192	10YR 6/3	none	SiL	2mabk	mfi		<5		0.13
8	192-240	10YR 6/4	none	GRSL, CL Seams	0sg	ml		15-25		0.03-0.50 <sup>(1)</sup>
<p>Comments: Groundwater was not encountered during or upon the completion of drilling. However, low-chroma/high-value matrix color and/or redox in Horizons 2, 3 and 4 indicate the level of past saturation from perched water, periodically infiltrating surface water or seasonally elevated groundwater.</p> <p><sup>(1)</sup> Vertical infiltration potential will be limited by clay loam seams and can potentially improved by excavating and turning over (i.e., deep-tilling) this layer to break up scattered lower-permeability seams; gradations should be collected during construction to document that the texture of the blended soil is consistent with the design infiltration rate.</p>										

Overall Site Comments: See Comments above and Preliminary Stormwater Infiltration Potential section in Geotechnical Exploration Report.





Department of Public Works  
**Engineering Division**  
Robert F. Phillips, P.E., City Engineer

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[www.cityofmadison.com/engineering](http://www.cityofmadison.com/engineering)

December 13, 2021

**NOTICE OF ADDENDUM  
ADDENDUM NO. 1**

**CONTRACT NO. 8606, PROJECT NO. 12444  
South Point Rd. Truck Scale and Fuel Point**

This addendum is issued to modify, explain or correct the original Drawings, Specifications, or Contract Documents marked as *South Point Rd. Truck Scale and Fuel Point, City of Madison Project 12444, Contract #8606, as issued on November 22, 2021* and is hereby made a part of the contract documents. This addendum consists of four (4) pages and the referenced exhibits. This addendum represents clarifications of the original documents and reduction in scope only, therefore no extension to the bid due date will be considered.

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

An electronic version of these documents can be found on the Bid Express web site at:  
<http://www.bidexpress.com>

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

**For questions regarding this bid, contact:**

Randy Wiesner  
City of Madison Engineering  
Phone: 608-267-8679  
Fax: 608-264-9275  
Email: [RWiesner@cityofmadison.com](mailto:RWiesner@cityofmadison.com)

Sincerely,

Robert F. Phillips, P.E.  
City Engineer

**Deputy City Engineer**  
Gregory T. Fries, P.E.  
**Deputy Division Manager**  
Kathleen M. Cryan  
**Principal Engineer 2**  
John S. Fahmey, P.E.  
Christopher J. Petykowski, P.E.  
Janet Schmidt, P.E.  
**Principal Engineer 1**  
Christina M. Bachmann, P.E.  
Mark D. Moder, P.E.  
James M. Wolfe, P.E.  
**Facilities & Sustainability**  
Bryan Cooper, Principal Architect  
**Land Information &  
Official Map Manager**  
Eric T. Pederson, P.S.  
**Financial Manager**  
Steven B. Danner-Rivers

Cc: Greg Fries



1. **GENERAL CONTRACT CONDITIONS**

There are no changes to the general contract conditions.

2. **GENERAL QUESTIONS/ANSWERS and CLARIFICATIONS**

- A. Q1. Does the total quantity for Bid Item 20219 include the breaker base under the fuel point slabs and scale?
- A1. Yes. The total quantity of breaker run base on the proposal form includes all disturbed areas of excavation that will be paved with either asphalt or concrete.
- B. Q2. Does the total quantity for Bid Item 40102 include the crushed aggregate base course under the fuel point slabs and scale?
- A2. Yes. The total quantity of crushed aggregate base on the proposal form includes all disturbed areas of excavation that will be paved with either asphalt or concrete.
- Footnote: Any additional crushed aggregate base required to support the scale ramps and approaches is incidental to Bid Item 90100. See bid item clarifications in sections 4 and 5 below.*
- C. Q3. Can utility lines (water, storm, and sanitary) being installed in areas not being paved be backfilled with the original excavated clay soils?
- A3. No. Future site expansion will have the majority of the site paved therefore the city prefers that all buried utilities be backfilled as if they were under pavement at the time of installation.
- D. Q4. Do you have a specification for the Bio-Diesel blending equipment?
- A4. No. After further review this system is more complicated than originally thought and we have amended the plans and specifications as needed to remove all references to blending diesel and bio-diesel fuels. Please refer to these changes as noted in the plans and specifications in sections 4 and 5 below.
- E. Q5. Do you have more information on the EJ Ward wall mounted and curb mounted fuel system controllers?
- A5. Yes. Please refer to Section 1 above regarding the exhibit added to the bid documents list for this piece of equipment.
- Footnote: EJ Ward does not make a wall mounted controller as noted on the plans. The unit shown in the exhibit will be mounted inside the gas hut in the location shown and conduits stubbed in for a second unit outside in the diesel fueling area where noted.*
- F. Q6. Excavation Material, what stays on site or what is to be removed from site?
- A6. Please refer to the Bid Item 20101 description in the Special Provisions. Only the top soil is to be stripped from the site and stockpiled on site for reuse either with this project or future projects. All other soils are to be removed from site.
- G. Q7. Topsoil, do you really want to bring in shredded topsoil can we Harley Rake or Pulverize the existing topsoil?
- A7. Please refer to the Bid Item 20221 Description in the Special Provisions. The intent is to reuse the existing topsoil that has been stockpiled, the means and methods used by the contractor to make it free of unwanted debris is up to the discretion of the contractor.
- Footnote: Please make this correction to the wording in the bid item description...The Contractor may shall reuse stripped topsoil from on site for restoration of disturbed areas as indicated on the plans or as directed by the Construction Engineer.*
- H. Q8. What is the expectation of the access cover on the fuel dispenser islands that are only being roughed in?
- A8. The access cover shall be 1/2" thick steel diamond plate, fastened to the raised curb/dispensing platform to keep dirt and debris out of the access hole where pipes, valves, and conduits have been stubbed in.
- I. Clarification: The two (2) fuel tanks will be provided by the Owner. The following changes are also reflected in the updated specification 23 10 00 published in Exhibit G of this Addendum:
- i. The owner shall provide the two fuel tanks. The City is not specifying a specific tank size as sizes may differ between manufacturers however the dimensions used for the Basis of Design are included in Exhibit G for contractors reference in estimating materials.
  - ii. Fuel Equipment Contractor shall be responsible for excavation, installing tanks and equipment, conduits, piping, etc.



- iii. Fuel Equipment Contractor to provide submersible pumps for 10,000 gallon gasoline tank and the 10,000 gallon side of the split tank for diesel dispensing. Do not provide a pump for the B-100 side of the tank.
- iv. Fuel Equipment Contractor to provide all piping and conduit from the 10,000 gallon side of the split tank for B-100 fuel. Piping shall be complete from the tank to the dispenser, capped at both ends ready for future use.

3. **ACCEPTABLE EQUIVALENTS**

No requests for alternates have been received.

4. **SPECIFICATIONS**

A. Please add the following attachments/exhibits to the list of contract documents identified on pages 1 and D-3 of the contract.

- i. Exhibit F: EJ Ward Fuel Control Terminal Installation Guide
- ii. Exhibit G: Tank Sizes
- iii. Exhibit H: Revised Plan Sheets and Specifications

Page 1

SECTION I: PAYMENT AND PERFORMANCE BOND

Attachments in Bid Express:

Attachment A: Plan Set  
 Attachment B: Specifications  
 Attachment C: Wetland Disturbance and NHI Protocol  
 Attachment D: Site Survey  
 Attachment E: Soil Borings

This Proposal, and Agreement have been prepared by:

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

Attachment F: EJ Ward Fuel Control Terminal Installation Guide  
 Attachment G: Tank Sizes  
 Attachment H: Revised Plan Sheets and Specifications

Robert F. Phillips, PE

Page D-3

o 32 31 13 Chain Link Fences and Gates

- Exhibit C: WDNR Wetland Disturbance Permit and NHI Protocol
- Exhibit D: Site Survey
- Exhibit E: Soils Boring Report
- Exhibit F: EJ Ward Fuel Control Terminal Installation Guide
- Exhibit G: Tank Sizes
- Exhibit H: Revised Plan Sheets and Specifications

SECTION 105.5 **INSPECTION OF WORK**

The Contractor shall be responsible for coordinating all required regulatory inspections.

- iv. Delete “may” insert “shall” in description for Bid Item 20221

**BID ITEM 20221 – TOPSOIL**

**DESCRIPTION**

Work under this item shall include all work, materials, labor and incidentals necessary to provide and place topsoil as necessary throughout the project site. Topsoil shall be installed at the locations indicated on the plans and details per the Standard Specifications, article 202.2 (f), except as described in this special provision.

D-12

The Contractor ~~may~~ **shall** reuse stripped topsoil from on site for restoration of disturbed areas as indicated on the plans or as directed by the Construction Engineer. All salvaged topsoil



**CONTRACT NO. 8606, PROJECT NO. 12444**  
**South Point Rd. Truck Scale and Fuel Point**

---

- B. Remove Specification 23 10 00 Facility Fuel Systems from Exhibit B of the originally released exhibit and use the revised specification included in Exhibit H. The specification has been reprinted in its entirety. Text with a double strike through has been removed from scope or moved within the scope for clarity. Text in red has been added as new text for clarity.

5. **DRAWINGS**

- A. The following sheets have been modified and are provided with “**Exhibit H Revised Plan Sheets and Specifications.pdf**” on Bid Express. Red clouds and notes identify the changes on each sheet,
- i. Sheet 3
  - ii. Sheet 5
  - iii. Sheet 6
  - iv. Sheet 15

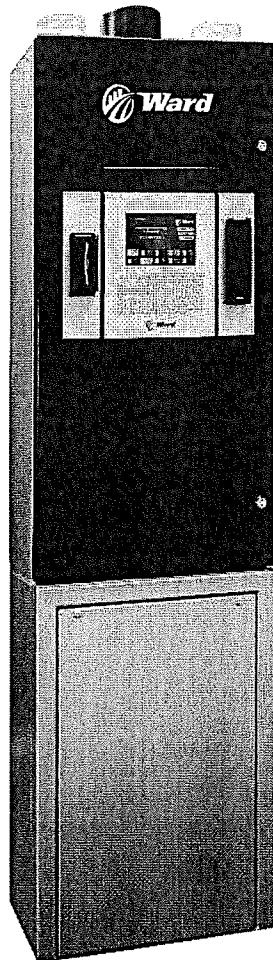
6. **PROPOSAL**

- A. The following bid items quantities have been increased on the proposal page.
- i. Bid Item 20217 Clear Stone
  - ii. Bid Item 20219 Breaker run
  - iii. Bid Item 20232 Medium Rip Rap
  - iv. Bid Item 40101 Crushed Aggregate #1
  - v. Bid Item 40102 Crushed Aggregate #2
  - vi. Bid Item 40203 HMA Pavement 3 MT
  - vii. Bid Item 40205 HMA Pavement 4 MT
- B. Refer to the proposal for updated quantities. See the published proposal at <http://www.bidexpress.com>

End of Contract 8606 Addendum 1.



# Fuel Control Terminal Installation Guide





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# Contents

List of Figures .....	iii
Notes, Cautions, Warnings, and Danger Definitions.....	1
Safety Considerations.....	2
Regulatory Compliance.....	3
<b>1. Overview.....</b>	<b>4</b>
<b>2. Installation Considerations and Requirements.....</b>	<b>5</b>
Dispenser Considerations .....	5
Field Wiring Requirements.....	6
Installation Location.....	6
FCT Enclosure .....	7
FCT Island Base.....	8
Conduits.....	8
Area Classifications for Dispensing Devices .....	9
Area Classification Definitions .....	10
Class I, Division 1.....	10
Class I, Division 2.....	10
Typical Conduit and Wiring Illustrations .....	11
Conduit Scheme and Wire Pulls .....	13
Conduit for Communication Line.....	13
Conduit for Primary FCT Power .....	14
Dispenser Conduit, Pulser, and Control Wiring.....	14
Conduit Seals .....	16
Power Recommendations .....	16
<b>3. FCT Island Installation.....</b>	<b>18</b>
Required Tools.....	18
Required Materials.....	18
Install the FCT Base.....	18
Install the FCT Cabinet.....	20
Connect Power .....	22
At the Breaker Panel .....	22
FCT Wiring and Pump Control Circuits .....	22
Connect FCT Pump Control Wires.....	23
FCT to Fuel Dispenser Wiring .....	23
FCT to Pulser Wiring.....	25
Electronic Pulsers.....	26
Installation Checklist.....	26

<b>4. Antenna Mounting .....</b>	<b>28</b>
Install the RF-FCTI Antenna .....	28
Install the Moxa Antenna.....	29
Install the Cradlepoint Antenna.....	30
<b>Appendix.....</b>	<b>32</b>
Typical Suction Lift Motor Wiring Diagram.....	32
Typical ESV Wiring Diagram.....	33
Typical Compressed Natural Gas Wiring Diagram.....	34
Gasboy 9800 Series Wiring Diagram .....	35
Gasboy Atlas Pump Settings .....	36
Jumper Settings.....	36
SW2 DIP Switch Settings.....	36
Pulser Board Installation .....	38
Pulse Wiring .....	38
DIP Switch Settings.....	39
Pulse Output Rate Switches for Jumpered JP2.....	39
<b>Ward Product Warranty .....</b>	<b>40</b>
<b>Contact Ward .....</b>	<b>42</b>



# List of Figures

Figure 1. Ward Fuel System Overview .....	4
Figure 2. FCT Dimensions.....	7
Figure 3. FCT Base - door and without door views.....	8
Figure 4. FCT Base - bottom view and dimensions.....	8
Figure 5. Class I Overhead Clearance Requirements.....	9
Figure 6. Class I Div 1 and Class I Div 2 Clearance Requirements.....	9
Figure 7. Typical Conduit and Wire Pull Layout - overhead view.....	11
Figure 8. Typical FCT to Dispenser Conduit and Wire Pull - street level view .....	12
Figure 9. Typical Site Installation Showing J-boxes and Conduit Seals .....	13
Figure 10. FCT Base - installation cross section .....	18
Figure 11. FCT Base and Labeled Mounting Holes - bottom view .....	19
Figure 12. FCT Positioned Over the Base .....	20
Figure 13. FCT Mounted on PEM Studs Over the Base.....	20
Figure 14. Fuse Handle in the Out Position.....	20
Figure 15. Ground PEM Stud .....	21
Figure 16. Ground Lug.....	21
Figure 17. AC Power Distribution Fuse and TB-1.....	22
Figure 18. TB-2 FCT to Pump Control Interface.....	23
Figure 19. Pump 1 Connections on TB-2 - close-up .....	25
Figure 20. TB-3 12VDC Power and Pulser.....	25
Figure 21. Internal FCT View of the Antenna Mounting Holes .....	28
Figure 22. RF-FCTI Antenna Connections Have Male Pins .....	28
Figure 23. Moxa Antenna Connections Have Female Pins .....	29
Figure 24. Cradlepoint Wi-Fi Side.....	30
Figure 24. Cradlepoint Antenna Connector Pins.....	30
Figure 25. Cradlepoint Cellular Side .....	31
Figure 26. FCT With All Three Antennas Installed .....	31
Figure 27. Typical Suction Lift Motor Wiring Control Configuration .....	32
Figure 28. Typical ESV Dispenser Control Wiring Configuration .....	33
Figure 32. Typical Compressed Natural Gas Dispenser Control Wiring .....	34
Figure 29. Typical Gasboy Atlas 9800 Series Electronic Dispenser Control Wiring Configuration.....	35
Figure 30. New Atlas 9800 CPU With 10-Position DIP Switch .....	37
Figure 31. Gasboy Atlas Pulser Board.....	38

# Notes, Cautions, Warnings, and Danger Definitions

It is important that you read and thoroughly understand this installation guide before attempting service on any Ward product.

The following terms and symbols are used throughout this guide to call attention to the presence of hazards of various risk levels, or to other important information concerning this product.



**NOTE:** Indicates important information that helps you better understand your Ward device.



**CAUTION:** Indicates potential damage to hardware, loss of data, and how to avoid possible issues.



**WARNING:** Indicates the presence of a hazard which **MAY** cause death, severe personal injury, or property damage if ignored.





**DANGER:** Indicates the presence of a hazard which **WILL** cause death, severe personal injury, or property damage if ignored.

**THIS SAFETY TERMINOLOGY IS IMPORTANT AND MUST BE TAKEN SERIOUSLY.  
FAILURE TO FOLLOW THESE GUIDELINES CAN RESULT IN DEATH,  
SEVERE PERSONAL INJURY, OR SUBSTANTIAL PROPERTY DAMAGE!**


# Safety Considerations


This manual presents the installation of a typical system. However, it is impractical to provide specific instructions for each installation due to the wide variation of dispensers, wiring schemes, and applications.


 **WARNING: Consult this manual before attempting any installation procedures on the FCT. ONLY individuals who are trained and qualified should install the FCT.**


 **CAUTION: All peripheral control equipment used with the FCT should:**

- Be UL listed.
- Have the appropriate communication protocol.
- Not be installed over or in a hazardous location.
- Be determined to be safe and acceptable by the authority having jurisdiction with regard to suitability, overall installation, and any alteration to other existing equipment required for the overall installation.

 **DANGER: THERE ARE HAZARDOUS VOLTAGES INSIDE THE FCT CABINET. Disconnect all power during installation or servicing of the FCT. Power may be supplied from more than one breaker source.**

 **WARNING: Take all necessary precautions when working around hazardous materials and in hazardous areas. Follow applicable electrical codes. Do not use electrically powered tools or equipment when in a hazardous location. If you are unsure of the safety of any action, consult local code authorities for code specifications.**

 **DANGER: Failure to comply with ALL safety requirements may result in death, severe personal injury, or substantial property damage.**

 **NOTE: Specifications and/or installation instructions are subject to change without prior notice.**

# Regulatory Compliance

## Declaration of Conformity



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and, (2) this device must accept any interference received, including interference that may cause undesired operation.



**NOTE: This equipment has been tested and found to comply with the requirements for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment.**



**CAUTION: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.**



**CAUTION: Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.**



**Intertek**

**INFORMATION TECHNOLOGY EQUIPMENT SAFETY PART 1: GENERAL REQUIREMENTS >VALID WITHOUT TECHNICAL REVISION: 01JAN2022< [UL 60950-1:2007 ED.2 +R:14OCT2014]**

**INFORMATION TECHNOLOGY EQUIPMENT SAFETY PART 1: GENERAL REQUIREMENTS (R2016) >VALID WITHOUT TECHNICAL REVISION: 01JAN2022< [CSA C22.2#60950-1:2007 ED.2+A1;A2]**

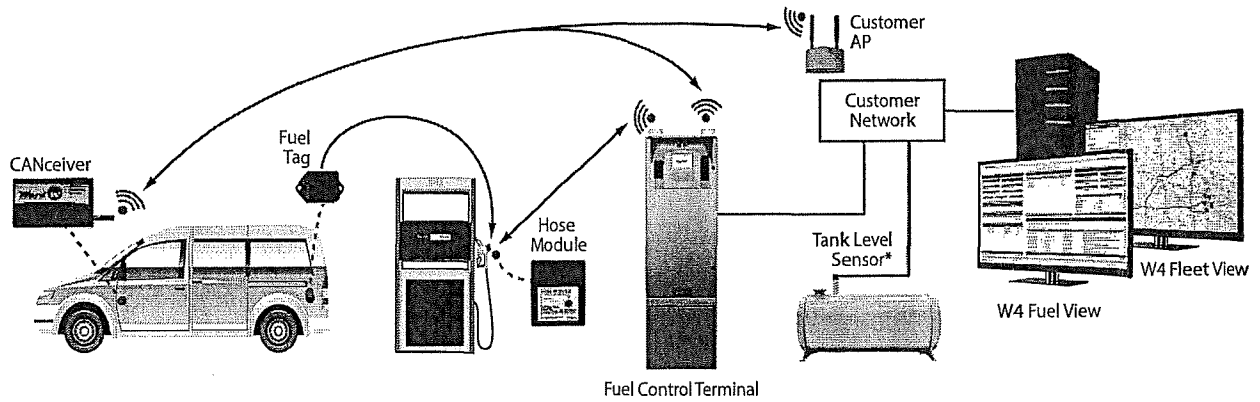
**CONTROL EQUIPMENT FOR USE WITH FLAMMABLE LIQUID DISPENSING DEVICES [UL 1238:2015 ED.6+R:07SEP2016]**

**CSA C22.2#22 ISSUED: 1986/02/28 (R2013) ELECTRICAL EQUIPMENT FOR FLAMMABLE AND COMBUSTIBLE FUEL DISPENSERS - GEN. INST. NO. 1 1986**

**INFORMATION TECHNOLOGY EQUIPMENT - SAFETY - PART 22: EQUIPMENT TO BE INSTALLED OUTDOORS [UL 60950-22:2017 ED.2]**

**INFORMATION TECHNOLOGY EQUIPMENT - SAFETY - PART 22: EQUIPMENT TO BE INSTALLED OUTDOORS [CSA C22.2#60950-22:2017 ED.2]**

# 1. Overview



Fuel System Overview

**Figure 1. Ward Fuel System Overview**

A typical fueling system consists of the following components:

Ward Fuel Control Terminal (FCT)

Ward CANceiver™

Ward Fuel Tag

Ward Hose Module

Ward Fuel View™ Software with Authentication Scripts

Ward Fleet View software (for GPS and Geo-fenceing)

Fleet Vehicles

Fuel Dispensers


Fuel Storage Tanks

Automatic Tank Guage (ATG)


Database, Web/Communication Server

Data Communications Network


## 2. Installation Considerations and Requirements


 **NOTE:** Ward typically ships all small items associated with the FCT with the base. Check carefully inside the base and its shipping container for any loose items such as Hose Modules, wire ties, RF antennas, fiber optic media converters, and other loose items before discarding the box.


 **WARNING:** A readily accessible disconnect device shall be incorporated external to the equipment.


 **WARNING:** Equipment must be installed per local electrical code requirements.

 **WARNING:** Intended for installation on non-combustible surface.

 **WARNING:** Seals to be installed on cord or conduit connections between equipment and dispensing unit per Canadian electrical code (Canada only).


 **WARNING:** The ground should originate from the service ground at the breaker panel. A separate ground rod shall be installed near the FCT to enhance grounding characteristics. The AC wiring should be routed to the FCT through a separate explosion proof conduit not shared with low voltage or communication wiring.

 **WARNING:** If the reset complete/in use signal of the dispenser is 220VAC, different dispenser interface boards are needed. Using a standard dispenser interface board to control a dispenser with a 220VAC hook signal will result in equipment damage.

 **NOTE:** Be certain all necessary wiring is in place, correct, and operational before potting conduit seals.


### Dispenser Considerations

1. Test all dispensers for proper operation before installing any hardware or rewiring any circuits!
2. Document and report any existing malfunction with fuel dispensing equipment to customer before installation begins!

 **TIP:** Verifying dispenser functionality prior to the FCT startup should eliminate the dispenser as the cause of any discrepancies during testing.


- Dispensers should be equipped with a reset handle so the FCT can detect the 'in use' signal, commonly referred to as reset complete or after reset (ARS).
- Dispensers should be equipped with a pulser to detect, monitor, and record product flow.
- Most commercial dispensers have dry contact pulsers that will satisfy the above requirements and Ward supports a variety of electronic pulsers.
- Most commercial electronic pumps have an open collector type pulser.
- A solenoid valve is also desirable for controlling fuel flow. Alternatively, the FCT may control the pump motor directly in suction lift models.

Ward carries many pulser styles to upgrade almost any fuel dispenser that is not currently equipped with a pulser. Contact Ward for assistance with special applications.

 **WARNING:** All electrical wiring, and conduit, etc., must comply with all governing local, state, National Electrical Codes (NEC), and NFPA Fire codes.


## Field Wiring Requirements

- All wiring must have an NEC and UL approved gas and oil resistant insulation. Ward recommends using Teflon coated TFFN or equivalent wire.
- All low voltage wire must be stranded 18 AWG minimum.
- All AC control wiring must be adequately sized according to length of wire and amount of current it must carry (14 AWG minimum). Consult the NEC for correct wire gauge.
- Conductor size in relation to the size of the dispenser junction box (j-box) is also a consideration. Refer to the NEC for correct j-box sizes.
- While no special wiring techniques are required, all field wiring should be labeled, color-coded or numbered to facilitate proper termination.
- Low voltage wiring such as pulser and communication wiring should be in a separate conduit from high voltage pump control wiring. Pulser wiring should be shielded cable, and communication wire should be twisted pairs with a minimum rating of CAT-5.
- All conduit and wiring installation must be wired to local, state and federal codes. All conduit exiting grade must have threaded seal-offs installed per applicable codes.

 **NOTE: All conduit on the fuel island must have a seal off within the first 18 inches above grade and be the first fitting out of the ground.**

 **NOTE: Seal-offs must not be poured until after final inspection approving the installation.**

## Installation Location

 **WARNING: To avoid personal injury, equipment damage, and property loss, this equipment must be installed in compliance with the National Electric Code and the Flammable and Combustible Liquids Code (NFPA 70 and NFPA 30). All applicable local safety codes must be followed.**

- The FCT should be installed in a location near the equipment that it will control, such as on the fuel island with the dispensers, or at either end of the island protected by bollard guard posts.
- Whenever possible, the FCT should be installed so the front is facing in-line with the island, not toward the drive lanes. This orientation will allow the user safe access from either side of the island and minimize traffic hazards to pedestrians.
- If the FCT must be installed facing a drive lane, it should be installed as far back from the middle of the island (next to the edge) as safely possible. There should be a minimum of 30 inches in front of the FCT to the opposite edge of the fuel island for safe use.
- If safety considerations allow, position the FCT so that it will be facing away from morning and evening sun for best display legibility.
- In colder climates where you may experience snow or ice storms, face the FCT away from the direction winter storms typically approach.

## FCT Enclosure

The FCT enclosure consists of two parts:

- FCT Cabinet
- Island Conduit Receptacle (base)

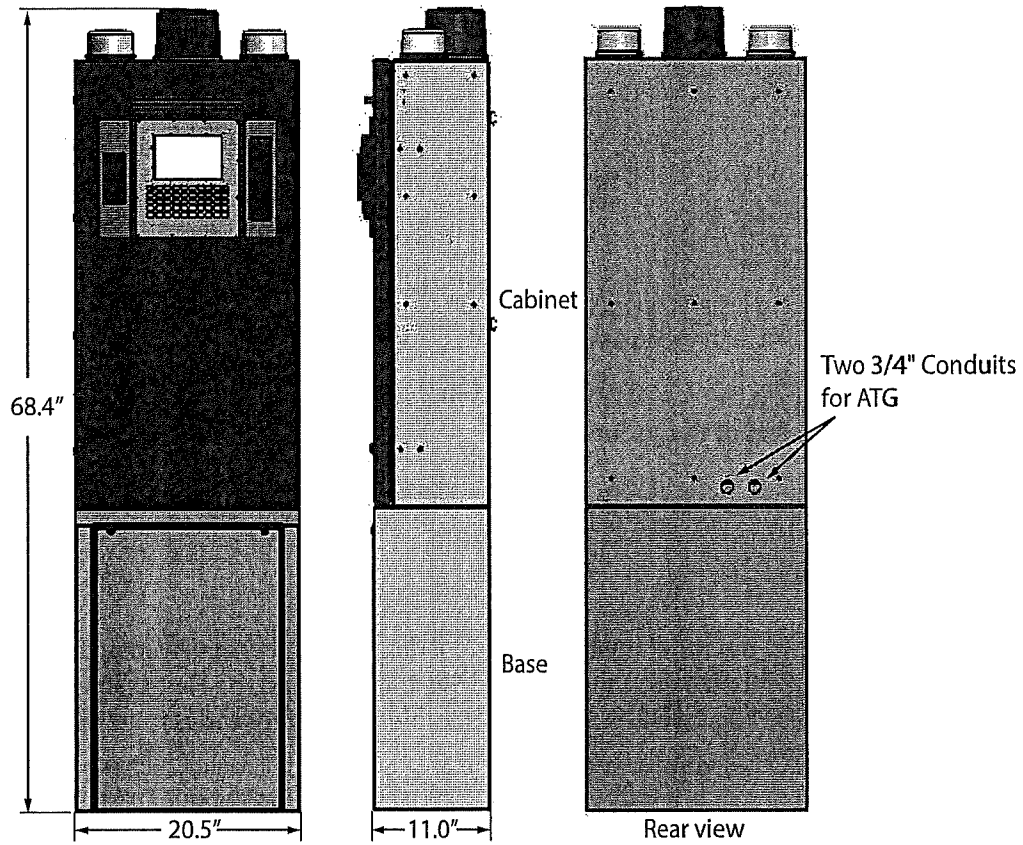


Figure 2. FCT Dimensions



## FCT Island Base

The Island Conduit Receptacle serves as conduit termination point and the base for the FCT. Conduits are terminated on the base conduit termination plate, which is also the floor for the FCT cabinet. The base conduit termination plate contains 17 pre-stamped,  $\frac{3}{4}$  inch knock-outs to facilitate conduit termination.

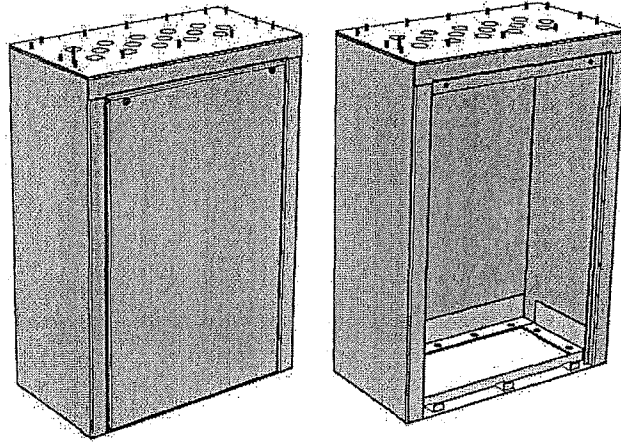


Figure 3. FCT Base - door and without door views

**CAUTION:** Per all applicable NEC installation codes, all conduit on the fuel island must have a seal-off within the first 18 inches above grade and be the first fitting out of the ground. The seal-off must also be installed below the conduit termination plate on the FCT base.

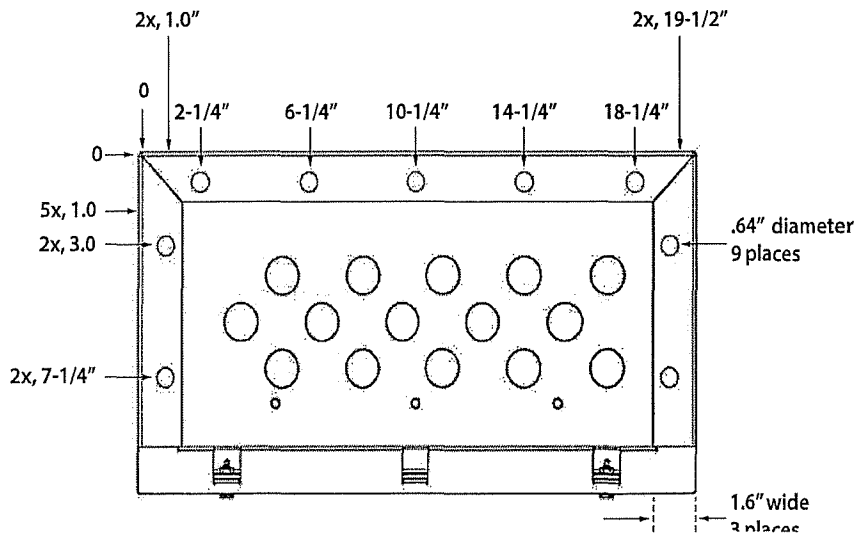


Figure 4. FCT Base - bottom view and dimensions

## Conduits

- All wire should be installed in rigid  $\frac{3}{4}$  inch (minimum) conduit buried in a trench.
- Install all wiring and conduit complying with all applicable wiring codes and using reliable installation practices.
- All conduits on the fuel island must have a seal off within the first 18 inches and be the first fitting out of the ground.
- Consult the NEC to determine conduit size based on wire count.
- Above ground conduit is allowed in retrofit applications IF installed in a manner which:
  - » Minimizes tripping hazards
  - » Is approved by the customer
  - » Is approved by applicable codes

## Area Classifications for Dispensing Devices

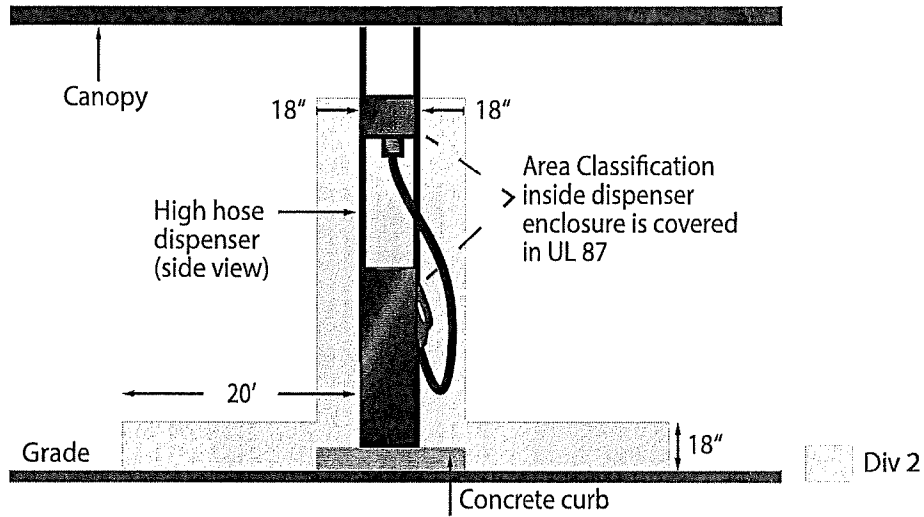


Figure 5. Class I Overhead Clearance Requirements

**NOTE:** Class I location around overhead motor fuel dispensing units is in accordance with NEC Table 514.3(B)(1).

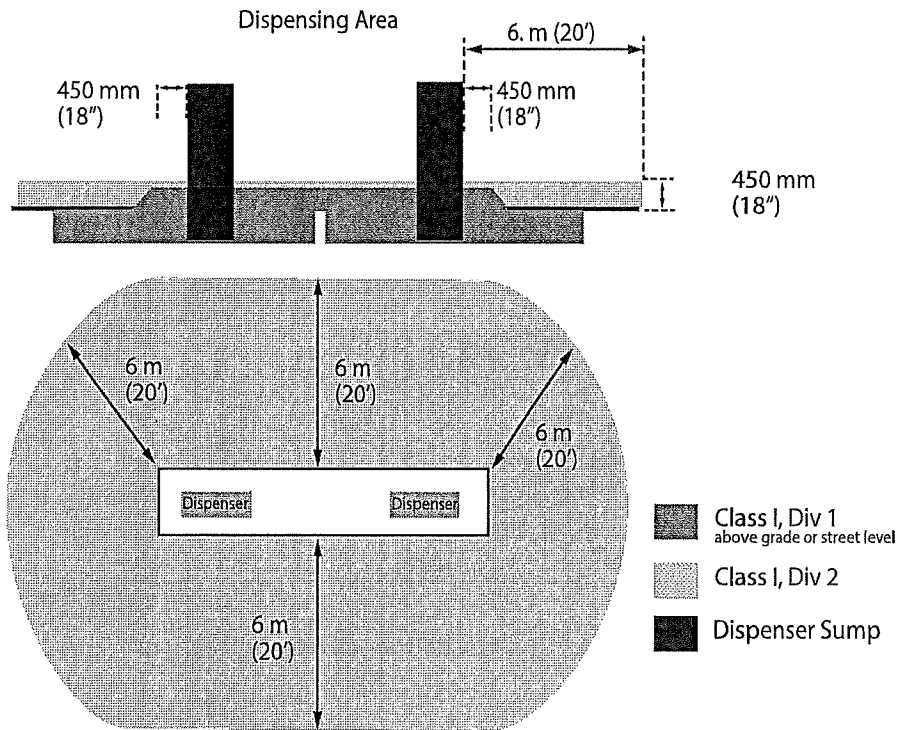


Figure 6. Class I Div 1 and Class I Div 2 Clearance Requirements

**CAUTION:** Area Classification information is provided for reference only. Ward recommends the installer reviews current National, State, and Local codes before proceeding with the FCT installation.

## Area Classification Definitions

### Class I, Division 1

A location in which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors can exist under normal operating conditions.

### Class I, Division 2

A location in which ignitable concentrations of such flammable gases, flammable liquid-produced vapors, or combustible liquids above their flash points may exist frequently because of repair or maintenance operations or because of leakage.

Location	Division (Group D)	Zone (Group IIA)	Extent of Classified Location
<b>Dispensing Device</b> (except) Overhead Type Under dispenser containment	1	1	Entire space within and under dispenser pit or containment.
<b>Dispenser</b>	2	2	Within 450 mm (18 in) of dispenser enclosure or that position of dispenser enclosure containing liquid handling components, extending horizontally in all directions and down to grade level.
<b>Outdoor</b>	2	2	Up to 450 mm (18 in) above grade level, extending 6 m (20 ft) Horizontally in all directions from dispenser enclosure.
<b>Indoor</b>			
Mechanical ventilation	2	2	Up to 450 mm (18 in) above floor level, extending 6 m (20 ft) horizontally in all directions from dispenser enclosure.
Gravity ventilation	2	2	Up to 450 mm (18 in) above floor level, extending 7.5 m (25 ft) horizontally in all directions from dispenser enclosure.
<b>Dispensing Device</b>	<b>Class I, Division 1</b>	<b>Class I, Division 2</b>	
<b>Compressed Natural Gas</b>	Entire space within the dispenser enclosure.	15 m (50 ft) in all directions from dispenser enclosure.	
<b>Liquefied Natural Gas</b>	Entire space within the dispenser enclosure and 1.5 m (5 ft) in all directions from the dispenser enclosure.	From 1.5 - 3.0 m (6 - 10 ft) in all directions from the dispenser enclosure.	
<b>Liquefied Petroleum Gas</b>	Entire space within the dispenser enclosure; 450 mm (18 in) from the exterior surface of the dispenser enclosure to an elevation of 1.5 m (5 ft) above the base of the dispenser and within 6.0 m (20 ft) horizontally from any edge of the dispenser when the pit or trench is not mechanically ventilated.	Up to 450 mm (18 in) above ground and within 6.0 m (20 ft) horizontally from any edge of the dispenser enclosure, including pits or trenches within this area when provided with adequate mechanical ventilation.	

## Typical Conduit and Wiring Illustrations

Typical Island Overhead View Wiring Illustration

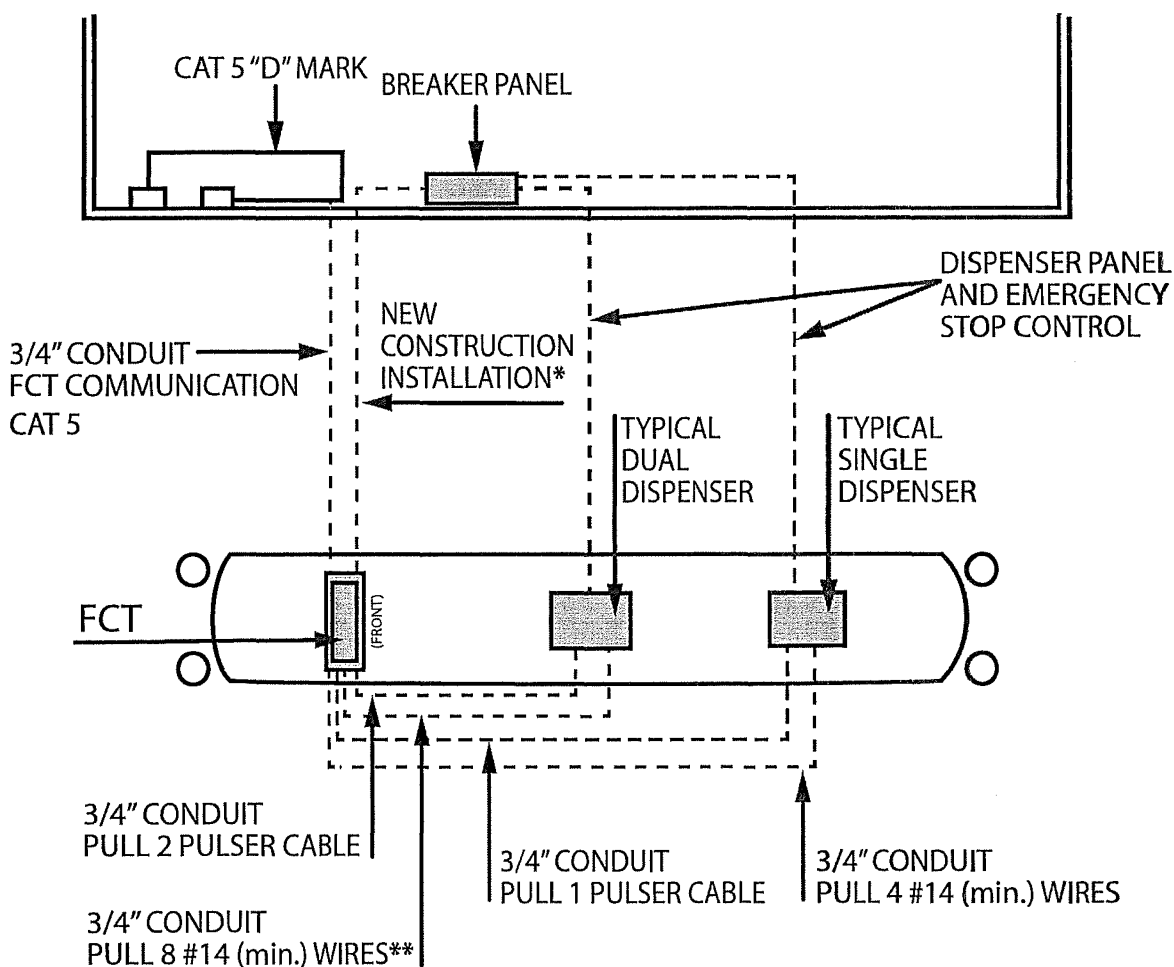


Figure 7. Typical Conduit and Wire Pull Layout - overhead view

\* Recommended FCT Power for new construction installation, install a new 3/4 inch conduit from the breaker panel to the FCT base conduit termination plate (as noted with red line in Figure 7).

\*\* Optional FCT Power: Pull three additional 14 AWG wires for Hot, Neutral & Ground only if FCT is sharing primary 120VAC power with nearby dispenser.

**NOTE:** The ground should originate from the service ground at the breaker panel. A separate ground rod shall be installed near the FCT to enhance grounding characteristics. The AC wiring should be routed to the FCT through a separate explosion proof conduit not shared with the pulser wire.

Typical FCT Single Dispenser Illustration

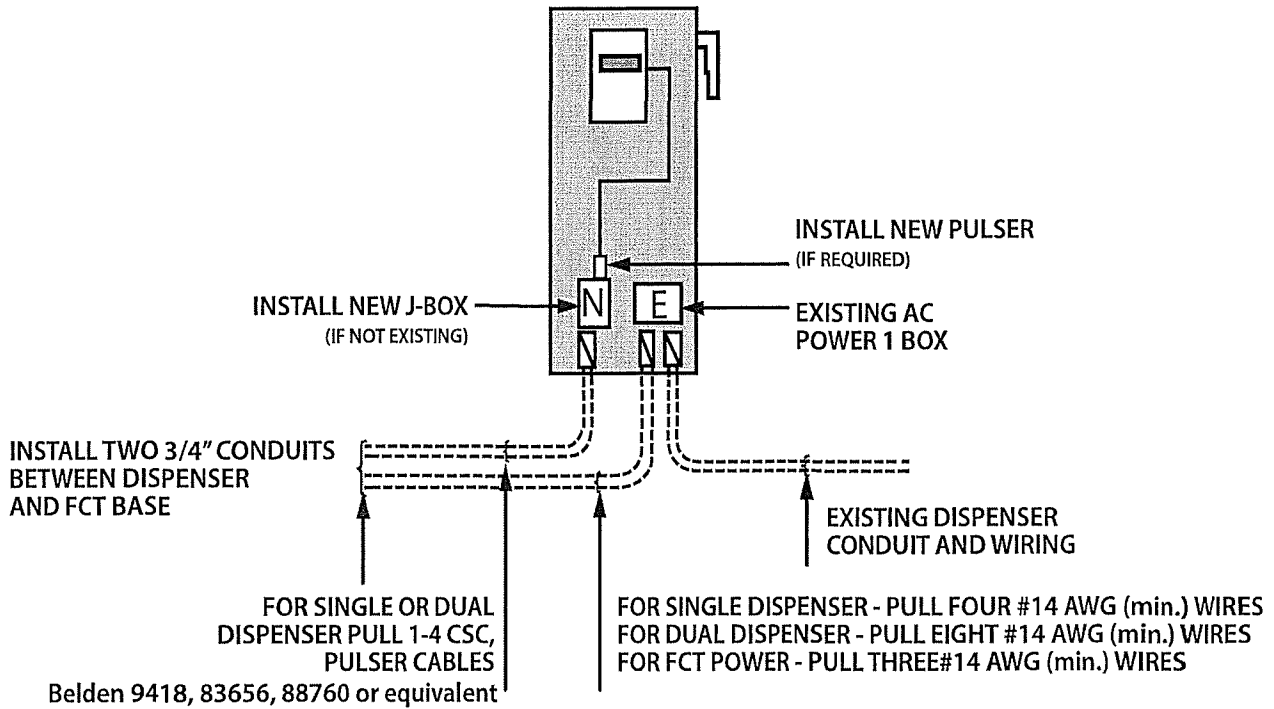


Figure 8. Typical FCT to Dispenser Conduit and Wire Pull - street level view

**⚠ WARNING:** Proper conduit access into the enclosure must be observed in order to maintain a safe operating environment. Failure to maintain proper conduit access could result in serious personal injury, death, property loss, and equipment damage through explosions, fire, or electrical shock.

**⚠ WARNING:** Low voltage cables and high voltage AC wires must not be run through the same conduit. Failure to follow proper wiring procedures may result in faulty operation in addition to possible explosion, fire, and electrical shock hazards.

**➡ CAUTION:** All conduits must enter the FCT cabinet through the base conduit termination plate. Conduit entry into any of the FCT cabinet walls above the base conduit termination plate may induce rain or water intrusion into the FCT and cause damage to electronic hardware and electrical connections. It is the installers responsibility to ensure that all conduit entry points into the FCT cabinet are properly sealed and water/vapor tight.

**📎 NOTE:** If there is not enough conduit capacity at the site, please contact Ward for assistance.

## Ward IoT FCT Installation Guide

### Typical Site Installation Illustration

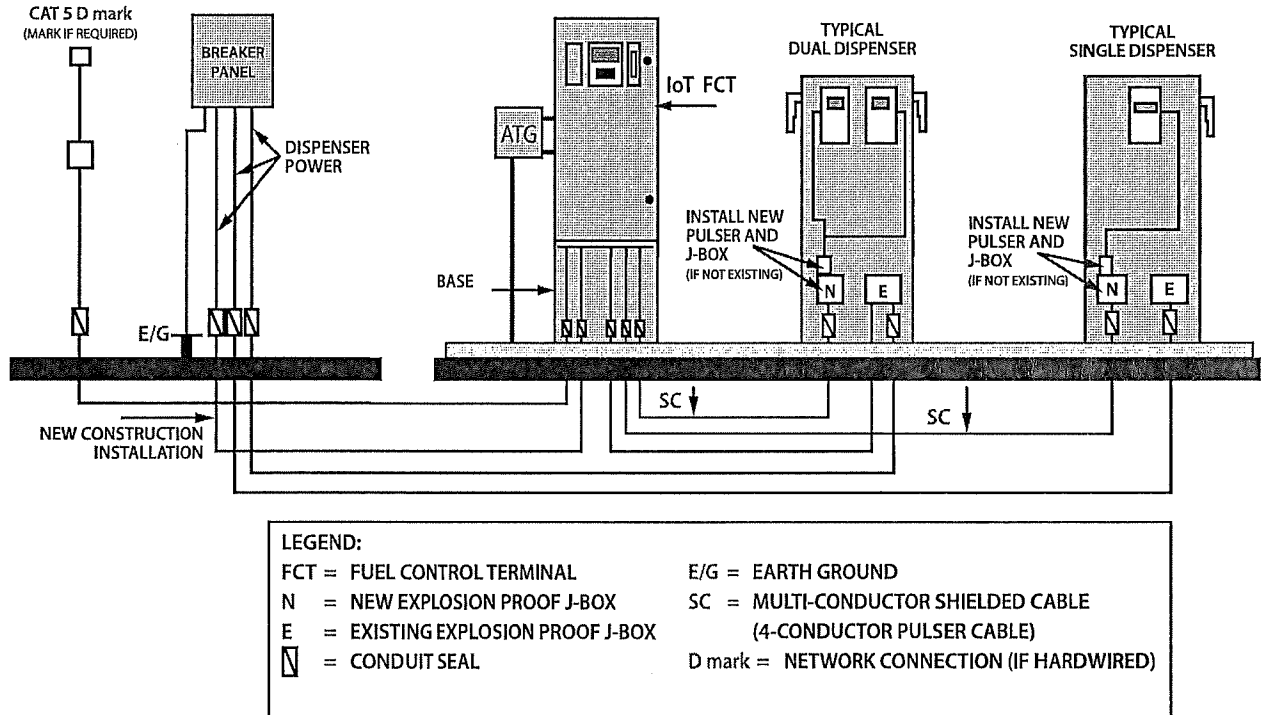


Figure 9. Typical Site Installation Showing J-boxes and Conduit Seals

## Conduit Scheme and Wire Pulls

### Conduit for Communication Line

1. Install a separate 3/4 inch rigid conduit between the D-MARK and the FCT base conduit termination plate.
2. In this conduit, pull a communication cable that is specific for the application: an approved CAT 5, CAT 5E, or CAT 6 cable appropriate for 10/100 or 10/100/1000 data communications.

**NOTE:** Cellular and Wi-Fi applications provide wireless communication between the FCT and the customers network. FCTs using cellular or Wi-Fi communications will not need a conduit installed between the D-Mark and the FCT for communication cable.

**NOTE:** The maximum distance for CAT 5 network cable is 100 meters (300 feet) between the FCT and the network switch.

**CAUTION:** Do not run any high voltage wires in the communication or low voltage conduits.

**CAUTION:** In areas prone to lightning strikes, Ward recommends using fiber optic cables and media converters for networked applications. This method is less susceptible to damage from voltage surges and will help protect the network and equipment connected to it.

**CAUTION:** Media converters used in the FCT should have a temperature rating from -40°C to 80°C.

### Conduit for Primary FCT Power

#### Recommended FCT Power

1. Install one ¾ inch conduit between the breaker panel and the FCT base conduit termination plate.

Ward requires the FCT's power source to be supplied from a dedicated 120VAC circuit controlled by a separate 15 Amp circuit breaker. The wires for this circuit shall consist of gas and oil resistant insulation, three conductor, 14 AWG stranded, denoted as HOT, NEUTRAL and GROUND wires. This installation needs to comply with NEC as it pertains to conduit size, type and wire gauge based on the length of circuit from the electrical panel.

2. Pull three UL/NEC approved gas and oil resistant (14 AWG minimum) stranded wires through ¾ inch conduit between breaker panel and FCT base conduit termination plate.

Black	14 AWG 120VAC	from breaker switch at breaker panel
White	14 AWG Neutral	from breaker panel
Green	14 AWG Ground	from breaker panel

#### Optional FCT Power

1. Install one ¾ inch conduit between the FCT base conduit termination plate and the explosion proof j-box located inside the base of the fuel dispenser.

If a dedicated circuit is not available, the FCT may share AC power from a dispenser located near the FCT. The AC power may be fed from the line side feed inside the fuel dispenser. This will ease the installation and may not have an impact to the FCT operation. If the fuel dispenser is electronic and/or has a dedicated light control circuit breaker, use this power feed source before resorting to using the feed to the dispensers pump motor.



**WARNING: Fuel dispensers that control low current devices such as electric solenoid valves (ESV) and remote STP starter relays may produce minimal electrical interference on the ac power supply, however dispensers that control high current devices such as heavy duty suction lift motors (SLM) can produce significant electrical interference such as spikes, dips, transients, etc. Sharing the same AC power source between a pump motor and the FCT could have an impact to FCT operation and is not recommended.**

### Dispenser Conduit, Pulsar, and Control Wiring

#### Single Nozzle Fuel Dispenser Conduit

1. Install two ¾ inch conduits between the explosion proof j-box located inside the base of each single nozzle dispenser and the FCT base conduit termination plate.
  - One ¾ inch conduit for pump control wiring
  - One ¾ inch conduit for pulser cable
2. Install explosion proof j-box to pulser conduit for pulser inside dispenser housing if a low voltage j-box is not already installed.

#### Single Nozzle Fuel Dispenser Pulsar Wiring

3. Pull one UL/NEC approved gas and oil resistant, shielded pulser cable through ¾ inch pulser conduit between FCT base and single nozzle fuel dispenser.



**NOTE: The pulser cable must be oil and gas resistant, Teflon coated outer jacket material: FEP (fluorinated ethylene propylene).**

## Ward IoT FCT Installation Guide

### Mechanical/Dry-Contact Pulsers

Recommended pulser cable for a single nozzle dispenser (mechanical/dry-contact) pulser that requires two conductors: Belden 88760: single-pair, (1 pr) 18 AWG (19x30) TC, FEP/FEP, Foil Shld, CMP

Red	18 AWG stranded	Pulse
Black	18 AWG stranded	DC COM

### Electronic Pulsers

Recommended pulser cable for a single nozzle dispenser (electronic) pulser that requires four conductors: Belden 9418: audio/control/instrumentation, 18 AWG (19x30) TC, SRPVC/PVC, Foil Shld, CMG.

Red	18 AWG stranded	+12VDC
Black	18 AWG stranded	DC COM
White	18 AWG stranded	DC COM
Green	18 AWG stranded	Pulse

### Single Nozzle Fuel Dispenser Control Wiring

4. Pull four UL/NEC approved gas and oil resistant (14 AWG minimum) stranded wires through dedicated  $\frac{3}{4}$  inch conduit for pump control wiring between FCT and each single nozzle fuel dispenser.

Brown	14 AWG stranded	PPO
Black	14 AWG stranded	PPI
Yellow	14 AWG stranded	ARS
White	14 AWG stranded	P/N

- *OPTIONAL FCT Power:* Pull three additional UL/NEC approved gas and oil resistant (14 AWG minimum) stranded wires through same  $\frac{3}{4}$  inch pump control conduit for primary FCT power only if FCT will share the same power source from nearby dispenser.

Black	14 AWG	120VAC from dispenser breaker switch at breaker panel
White	14 AWG	Dispenser neutral from breaker panel
Green	14 AWG	Dispenser ground from breaker panel

### Dual Nozzle Fuel Dispenser Conduit

1. Install two  $\frac{3}{4}$  inch conduits between each dual dispenser and the FCT base conduit termination plate.
  - One  $\frac{3}{4}$  inch conduit for pump control wiring
  - Once  $\frac{3}{4}$  inch conduit for pulser cable
2. Install an explosion proof j-box to the pulser conduit for pulser inside dispenser housing.

### Dual Nozzle Fuel Dispenser Pulser Wiring

3. Pull one UL/NEC approved gas and oil resistant, shielded pulser cable through  $\frac{3}{4}$  inch pulser conduit between FCT base and dual nozzle fuel dispenser.
4. Ward recommends pulser cable for a dual nozzle fuel dispenser equipped with a dual electronic pulser that requires six conductors: Belden 83656: Audio/Control/Instrumentation, 18 AWG (19x30) TC, FEP/FEP, Foil+TC Braid Shld, CMP

White	DC COM (Pulse A)
Green	Pulse A
Orange	DC COM (Pulse B)
Blue	Pulse B



## Ward IoT FCT Installation Guide

### Dual Nozzle Dispenser Control Wiring

5. Ward recommends to pull eight UL/NEC approved gas and oil resistant (14 AWG minimum) stranded wires through ¾ inch pump control conduit.

Brown	14 AWG stranded	PPO	Hose A
Black	14 AWG stranded	PPI	Hose A
Yellow	14 AWG stranded	ARS	Hose A
White	14 AWG stranded	P/N	Hose A
Brown	14 AWG stranded	PPO	Hose B
Black	14 AWG stranded	PPI	Hose B
Yellow	14 AWG stranded	ARS	Hose B
White	14 AWG stranded	P/N	Hose B

- *OPTIONAL FCT Power:* Pull three additional UL/NEC approved gas and oil resistant (14 AWG minimum) stranded wires through same ¾ inch pump control conduit for primary FCT power only if FCT will share the same power source from nearby dispenser. .

Black	14 AWG	120VAC hot from dispenser breaker switch at breaker panel
White	14 AWG	Dispenser neutral from breaker panel
Green	14 AWG	Dispenser ground from breaker panel

## Conduit Seals

The sealing of conduits must follow the procedures of an authorized City Inspector. Typically, a rough-in inspection by an authorized City Inspector is performed prior to the sealing of the conduits. Ward recommends contacting a locally authorized City Inspector for the required procedures.

1. Seal each conduit using conduit seal-offs and approved sealing compound.



**NOTE: The conduit seal should always be the first fitting on the conduit as it exits the surface.**



**NOTE: Ward recommends using an approved sealing compound, according to NEC.**

## Power Recommendations

Ward highly recommends the FCT's power source to be supplied from a dedicated 120VAC circuit controlled by a separate 15 Amp circuit breaker. The wires for this circuit shall consist of gas and oil resistant insulation, three conductor, 14 AWG stranded, denoted as HOT, NEUTRAL and GROUND wires. This installation needs to comply with NEC as it pertains to conduit size, type and wire gauge based on the length of circuit from the electrical panel.

If a dedicated circuit is not available, the FCT may share AC power from a dispenser located near the FCT. The AC power may be fed from the line side feed inside the fuel dispenser. This will ease the installation and may not have an impact to the FCT operation. If the fuel dispenser is electronic and/or has a dedicated light control circuit breaker, use this power feed source before resorting to using the feed to the dispensers pump motor.



**WARNING: Fuel dispensers that control low current devices such as ESVs and remote STP starter relays may produce minimal electrical interference on the AC power supply, however, dispensers that control high current devices such as heavy duty SLM can produce significant electrical interference such as spikes, dips, transients, etc. Sharing the same AC power source between a pump motor and the FCT could have an impact to FCT operation and is not recommended.**

### Recommended Wiring Colors for 120VAC

## Ward IoT FCT Installation Guide

Black	Hot (L1)
White	Neutral
Green	Ground

### Standard Interface

The standard FCT interface to a fuel dispenser uses mechanical relays with normally open contacts rated at 30 Amps to control dispenser operation.

This configuration is designed primarily to control three main functions of a fuel dispenser:

1. Control power to a dispensers ESV, STP starter relay, or SLM.
2. Detect if the dispenser is on hook or off hook.
3. Read pulses from a dispensers pulser to determine the amount of fuel that has been dispensed.



**WARNING: If the hook signal of the dispenser is 220VAC, different dispenser interface boards are needed. Using a standard hose dispenser interface board to control a dispenser with a 220VAC hook signal will result in equipment damage.**

### 3. FCT Island Installation


#### Required Tools


The following tools are required for installation and should be on hand:

- |                       |                      |                |
|-----------------------|----------------------|----------------|
| 3/8 Masonry drill bit | 7/64 Drill bit       | Wire stripper  |
| Screw driver          | 1 1/8 inch hole saw  | Zip ties       |
| Key to dispenser      | 1 1/2 inch knock out | Sharpie marker |
| Socket set            | Stepper drill bit    |                |
| Hammer drill          | Wire cutters         |                |

#### Required Materials

- 3/4 inch rigid conduit
- Four 3/8 inch concrete anchors (minimum per FCT base)

 **NOTE:** Before installing the FCT, verify that all wiring is available and space requirements are met.

 **DANGER:** Ensure all circuit breakers which provide power to the FCT and pumps are OFF before proceeding.

#### Install the FCT Base

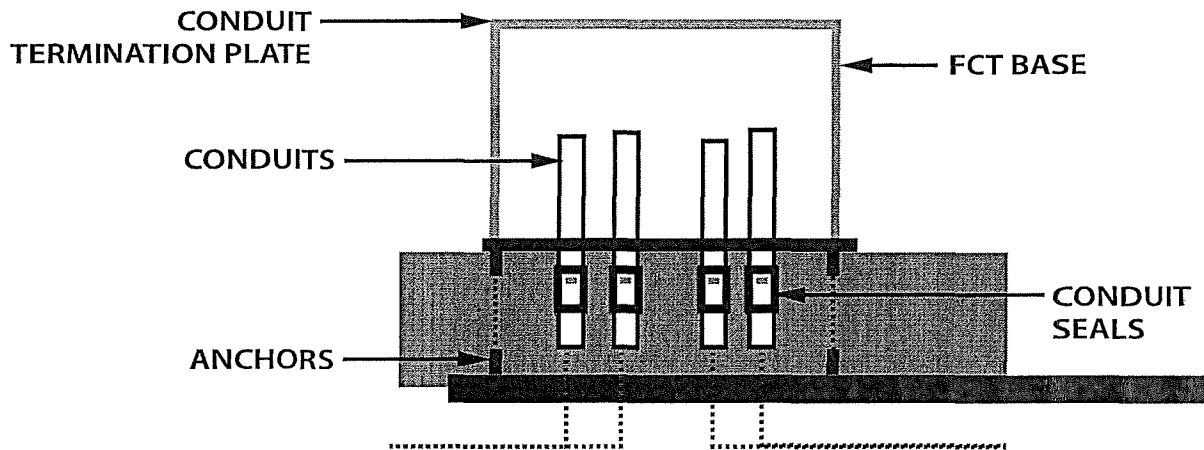
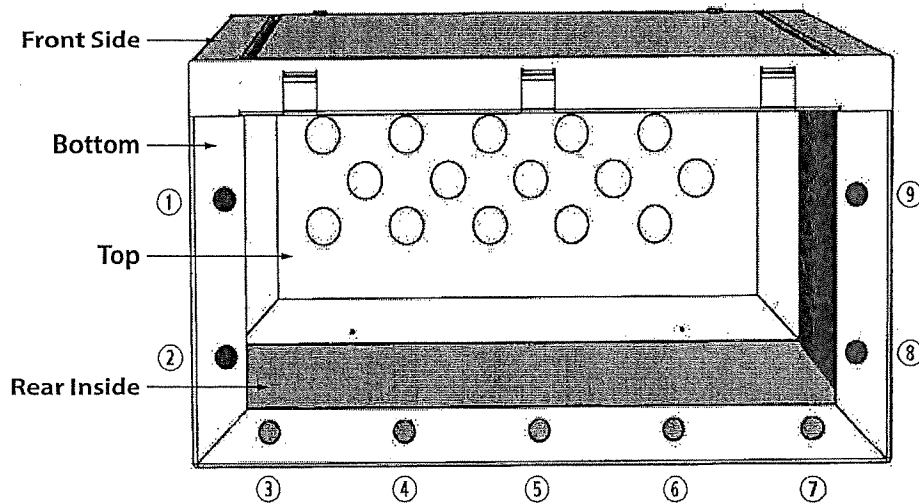


Figure 10. FCT Base - installation cross section

1. Select the location where the FCT base is to be installed on the fuel island, normally over the stubbed-up conduit.
2. Remove the two screws holding the FCT base door in place and remove the base door.
  - Ensure the two screws are saved.

## Ward IoT FCT Installation Guide

- Place the base over the stubbed-up conduit and mark four mounting holes on the concrete through the base plate holes labeled, 1, 2, 8, and 9.



**Figure 11. FCT Base and Labeled Mounting Holes - bottom view**

- Remove the base, and drill at least four holes in the concrete through the marked locations.
- Install at least four  $\frac{3}{8}$  x 3 inch concrete anchors in the concrete.
- Install at least four conduit seals and extend the conduit to allow for termination on the conduit termination plate (on top of the base).
- Install the conduit termination hardware.
- Position the base over the stubbed up conduit, align the base over the mounting bolts and lower in place.
- Apply washers and nuts to each mounting bolt and tighten securely.
- Install conduit fittings to secure the end of each conduit to the base termination plate.

This completes the installation of the FCT Base.

## Install the FCT Cabinet

1. Position the cabinet on top of the base.

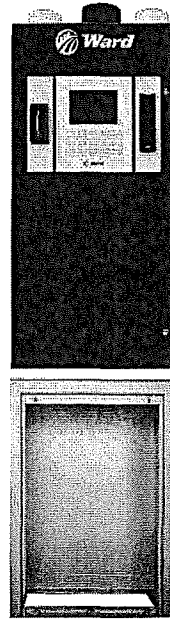


Figure 12. FCT Positioned Over the Base

2. Secure the FCT cabinet to the base using ten ¼ x 20 Keps nuts to each PEM stud on the base.

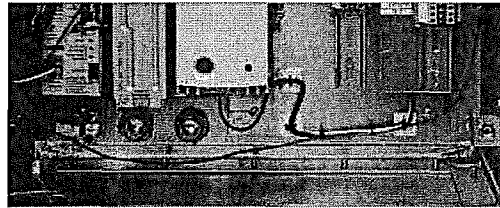


Figure 13. FCT Mounted on PEM Studs Over the Base

3. Ensure the primary power to the FCT power supply is off by pulling the handle of the fuse switch out and to the right.
  - Pull the handle towards you until the fuse holder is out.



Figure 14. Fuse Handle in the Out Position

## Ward IoT FCT Installation Guide

4. Attach the ring terminal from the green ground wire to the ground PEM stud located at left inside corner of base and secure with a 1/4 x 20 Kep nut.

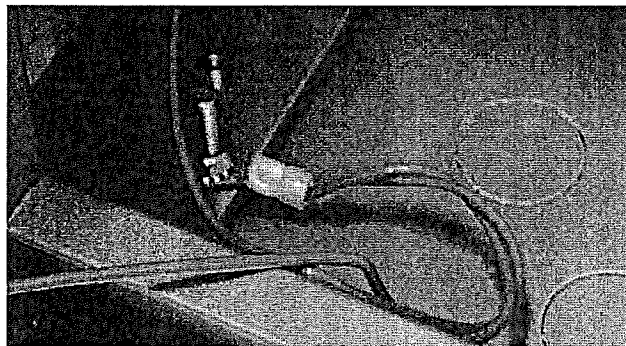


Figure 15. Ground PEM Stud

5. Strip the incoming safety ground wire(s) and insert them into the grounding lug located in the lower left corner of the FCT back panel.



Figure 16. Ground Lug

6. Screw the lug clockwise, ensuring the ground wire is secure.

The safety ground from the breaker panel serves to prevent the cabinet from becoming an electrical shock hazard. If the power and ground originate from a sub-panel, a ground rod must be connected directly to sub-panel ground.



**WARNING: Proper safety ground is essential to proper operation and safety.**

7. Ensure that all the wires in the conduits coming from the pumps are properly identified and labeled.



**DANGER: There may be hazardous voltage inside the FCT cabinet. Ensure the breaker switch at the breaker panel is off and all fuse switches located on TB-1 are in the open or off position before proceeding.**

## Connect Power

The FCT typically requires 120VAC supplied by Hot (L1), neutral and ground.

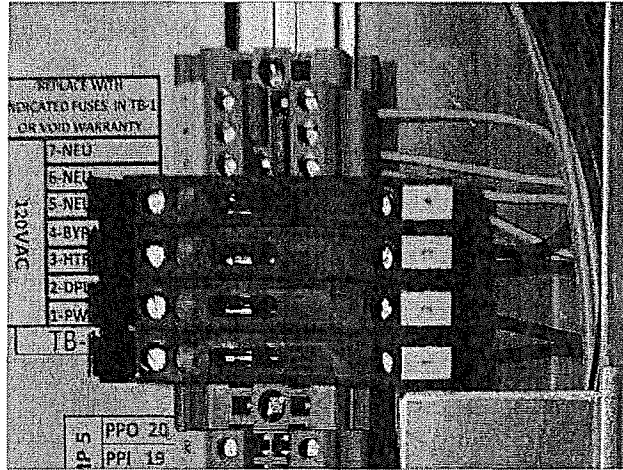


Figure 17. AC Power Distribution Fuse and TB-1


Connect the following wires to TB-1:

1. Locate the black (hot), white (neutral) and green (ground) wires from the conduit that is intended to supply 120VAC power to the FCT.
2. Connect the black 120VAC wire on the left side of the fuse switch labeled: 1-PWR-2A at TB-1.
3. Install three black 14 AWG jumper wires between the primary hot from position 1 at TB-1 to the left side of all additional fuse switches:
  - Install jumper from (1 to 2), (2 to 3), (3 to 4).
  - The left side of all fuse switches share the same 120VAC source.
4. Connect the white neutral wire to the left side of TB-1 labeled 5-NEU.

### At the Breaker Panel

5. Locate the black, white and green wires that are intended for the FCT's power.
6. Connect the black wire to the 15 Amp breaker located inside breaker panel.
7. Connect the white wire to the neutral buss bar located inside breaker panel.
8. Connect the green wire preferably to a ground rod installed at the breaker panel; otherwise connect directly to the ground lug or neutral bus bar.
9. Ensure the breaker switch for the FCT's power remains in the off position.
10. Ensure all breaker switches for each dispenser are in the off position.

## FCT Wiring and Pump Control Circuits

 **NOTE:** The applications described in this section are examples of the many wiring configurations in which an FCT may be wired to control different dispenser models as listed in the Appendix. Contact Ward with questions concerning different applications and wiring configurations.

## Connect FCT Pump Control Wires

The right side of TB-2 and TB-3 are pre-wired to each FCT 5-hose board. TB-2 is organized by pump number with four circuits or wires per pump. Every circuit for each pump on TB-2 is clearly labeled, starting with Pump 1 at the bottom of TB-2 up to PUMP 10 at the top of TB-2. All field wiring that is pulled through conduit from each pump to the FCT is connected to the left side of TB-2 for pump control wiring and on the left side of TB-3 for pulser wiring.

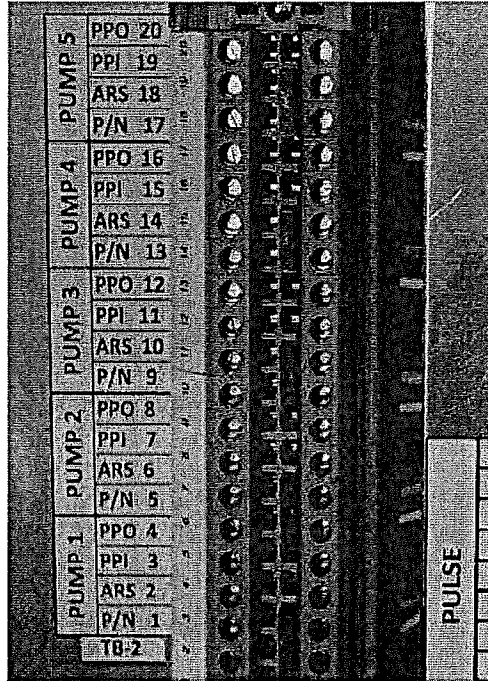


Figure 18. TB-2 FCT to Pump Control Interface

### TB-2 Pump Connections

Label	Function	Wire Color
PPO	PUMP POWER OUT	Brown
PPI	PUMP POWER IN	Black
ARS	AFTER RESET	Yellow
P/N	PUMP NEUTRAL	White

**NOTE:** In reference to Figure 18 above, the red jumper is inserted into the terminal block which connects a 120VAC ARS to PPI. A red jumper is installed across ARS and PPI for each individual pump. However, in certain FCT to pump interface applications, the red jumper must be removed in order to support electronic dispensers that provide a 120VAC for ARS but require a 12VDC PPI and PPO for an ESV that operates at 12VDC.

## FCT to Fuel Dispenser Wiring

The following example applies to a typical interface between a fuel dispenser and the FCT in which the dispensers hook switch provides 120VAC to ARS at the FCT when the hook lever is Off Hook or ARS Cycle completes. Refer to *Typical ESV Wiring Diagram* (Figure 28 on page 33).



## Ward IoT FCT Installation Guide

### Example for Pump 1:

1. Connect the white wire P/N from Pump 1 to TB-2 P/N position 1 at the FCT (as shown in Figure 18).
2. Connect the black wire PPI from Pump 1 to TB-2 PPI position 3 at the FCT.
  - Optional: Connect the yellow wire ARS from Pump 1 to TB-2 ARS position 2 at the FCT.
  - The remaining wire will be a spare.



**NOTE: The red jumper installed between PPI and ARS on TB-2 at the FCT supports either the PPI or ARS wire from the pump.**

3. Connect the brown pump power out wire from Pump 1 to TB-2 PPO position 4 at the FCT.

### ARS Circuit at the Dispenser

The ARS circuit is a 120VAC signal from the pump that performs two functions at the FCT, such as ARS and PPI through the red jumper installed on TB-2.

Most of the common electro-mechanical pumps/dispensers contain a hook lever that activates an electric reset motor which turns a shaft that clears the last total gallons pumped on the pumps register head. This is known as a Reset Cycle.

Once the reset cycle completes, a CAM disengages power to the electric reset motor but engages a DPDT (double-pole-double-throw) switch that closes two separate sets of contacts.

One set of contacts that close usually supplies 120VAC to a SLM or starter relay for submersible turbine pump motors.

The other set of contacts that close usually supplies 120VAC to an ESV.

### If FCT Controls Power to an ESV with ARS Wiring

1. Locate the junction or wire nut in the dispenser's J-box for the hot side of the ESV and disconnect this circuit.
  - There will now be one disconnected wire that leads to the electric reset and one disconnected wire that leads to the ESV.
2. Connect the PPO brown wire from the FCT to the wire that leads to the ESV.
  - Use a wire nut to secure the junction.
3. Connect the ARS yellow wire from the FCT to the wire (leads to the electric reset) that was originally connected to the ESV.
  - Use a wire nut to secure the junction.

### If FCT Controls Power to a SLM with ARS Wiring

1. Locate the junction or wire nut in the dispensers J-box for the hot side of the SLM and disconnect this circuit.
  - There will now be one disconnected wire that leads to the electric reset and one disconnected wire that leads to the SLM.
2. Connect the PPO brown wire from the FCT to the wire that leads to the SLM.

## Ward IoT FCT Installation Guide

3. Connect the ARS yellow wire from the FCT to the wire (leads to the electric reset) that was originally connected to the SLM
  - Use a wire nut to secure the junction .

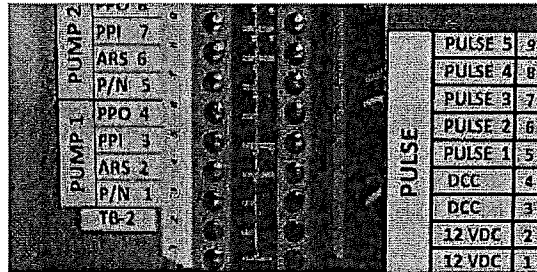


Figure 19. Pump 1 Connections on TB-2 - close-up

4. Connect the white neutral wire from P/N on TB-1 at the FCT to the pumps neutral wire or junction in the dispensers j-box.
5. Repeat the same wiring for all remaining pumps as illustrated in this wiring example for Pump 1.
6. Sort out all pump control wires from remaining conduits and separate according to each pump number in order to connect to each corresponding pump number labeled on TB-2.

## FCT to Pulsers Wiring.

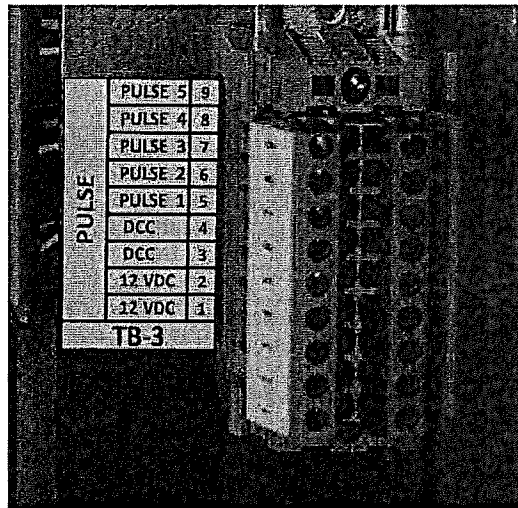


Figure 20. TB-3 12VDC Power and Pulsers

### Mechanical/Dry-Contact Pulsers

Recommended pulser cable for a single nozzle dispenser (mechanical/dry-contact) pulser that requires two conductors:


Beldon 88760: Single-Pair, (1 pr) 18 AWG (19x30) TC, FEP/FEP, Foil Shld, CMP

Red	18 AWG stranded	Pulse
Black	18 AWG stranded	DC COM

### At the FCT

1. Connect the black wire from the shielded pulser cable coming from Pump 1 to position 4 on TB-3, labeled DCC (Figure 20).
2. Connect the red wire from the shielded pulser cable coming from Pump 1 to position 5 on TB-3, labeled PULSE 1.
3. Connect the uninsulated drain wire from the shielded pulser cable to position 3 on TB-3, labeled DCC.

## Ward IoT FCT Installation Guide

 **CAUTION: The shield or drain wire at the end of the pulser cable must be grounded to the FCT end of the cable and floated at the dispenser end of the cable. Do not ground both ends of the cable.**

### At the Dispenser

The dry contact pulser will have two wires routed to the same J-box where one end of the shielded pulser cable is routed from the FCT.

4. Connect the black wire from the shielded pulser cable to one wire on the pulser.
5. Connect the red wire from the shielded pulser cable to the other wire from the pulser.
6. Cut off the uninsulated drain wire and any foil or braided shield at the end of the shielded pulser cable.
7. Float the shielded end of the cable at the dispenser by using electrical tape to wrap and insulate the end of the cable.
  - Ensure that all conductive material from the end of the cable such as foil, tip of drain wire, and braided shield, etc. are insulated.

The shielded pulser cable wiring between Pump 1 pulser and the FCT is now complete.

8. Repeat from Step 1 for each additional pump, pulser, and shielded pulser cable.

### Electronic Pulsers

Ward recommends Beldon Cable 9418 for electronic pulsers that require 12VDC and have three polarized conductors.

1. Select three wire colors from the shielded cable and assign each color a specific function.

---

<i>Example: Red</i>	<i>18 AWG stranded +12VDC</i>
<i>Black</i>	<i>18 AWG stranded DC COM</i>
<i>Green</i>	<i>18 AWG stranded Pulse</i>
<i>Drain/Shield</i>	<i>18 AWG stranded DC COM</i>

---

2. Connect the black wire and the shield/drain wire together from the shielded cable to DCC, position 3 on TB-3 at the FCT.
3. Connect the red wire from the shielded cable to 12 VDC, position 1 on TB-3.
4. Connect the green wire from the shielded cable to Pulse 1, position 5 on TB-3 for Pump 1 .

### At the Dispenser

5. Connect the opposite end of each wire from the shielded cable at the dispenser to each wire from the electronic pulser.
  - Refer to manufacturers pulser documentation for correct wire polarity.
6. Float the shielded end of the cable at the dispenser by using electrical tape to wrap the end of the cable in order to insulate all conductive material from the end of the cable such as foil, tip of drain wire, and braided shield, etc.
7. Repeat from Step 1 for each additional dispenser and electronic pulser.
8. Use zip ties to bundle the wires for a neat appearance.

### Installation Checklist

Perform the following checks after installation of the FCT is completed and before the FCT's power is turned on.

1. All breaker switches to fuel island, fuel dispensers, FCT, and ATG are turned off.
2. Check each pulser cable connection to ensure the polarity for each wire between the FCT and each pulser is wired correctly.
3. Each pulser cable with a shield/drain wire must be connected to DCC on TB-3 at the FCT and floated at the pulser end.
4. Check each electronic pulser sensor is properly installed on the dispenser register head so that it will transmit a pulse.

## Ward IoT FCT Installation Guide

5. Check each wire connection between the FCT and the power source at breaker panel or dispenser to ensure 120VAC power source is wired correctly.
6. Check each wire connection between the FCT and each dispenser to ensure each component such as ESV or SLM is wired correctly.
7. Check that all new electrical connections and junctions are properly secured with the proper size wire nut.
8. Add electrical tape to wire nut to insulate any exposed copper from wires that are not completely covered by wire nut.

This concludes the installation for the FCT.

Refer to the *IoT FCT Startup and Testing Guide* before turning on power to the FCT.

- 1 G. Install and connect overfill protection system.  
2  
3 **3.2. UNDERGROUND FUEL PIPING**  
4 A. Install all underground fuel piping a minimum of 2'-0" below the bottom of all pavements  
5 B. Provide continuous detectable caution tape for "BURIED FUEL LINE" along trench 1'-0" above all fuel piping.  
6 C. Provide all pipes and fittings required for a complete installation according to approved design.  
7  
8 **3.3. UNDERGROUND ELECTRICAL AND DATA WIRING**  
9 A. Install all underground electrical and data wiring in appropriate sized conduit. All conduit shall be a minimum of  
10 2'-0" below bottom of all pavements.  
11 1. Install data cabling from fuel dispensing system to the TLS system in the gas hut.  
12 2. Install data cabling for the automation equipment pedestal.  
13 B. Provide continuous detectable caution tape for "ELECTRICAL" and "DATA" along trench 1'-0" above all conduit.  
14 C. Use large radius bends at all changes in direction horizontally and vertically.  
15 D. Data cable shall not be run in the same conduit as line voltage wiring.  
16  
17 **3.4. INSTALL FUEL DISPENSING SYSTEM**  
18 A. Install and connect all fuel dispensing system equipment and hardware in the electrical room of the gas hut.  
19 B. Connect all monitoring equipment.  
20 C. Update all software platforms to latest software release.  
21  
22 **3.5. CONNECT EMERGENCY SHUT-OFF DEVICE**  
23 A. Locate emergency shut-off device as indicated on the southwest corner of the gas hut.  
24 B. Shut-off device shall be set at an ADA compatible height located at the bottom of the ADA ramp.  
25 C. Post all required signage at dispensing islands and at emergency shut-off device.  
26  
27 **3.6. COMMISSIONING THE FUEL DISPENSING SYSTEM**  
28 A. Coordinate with owner to provide sufficient fuel for testing and commissioning the fuel dispensing system.  
29 B. Test system dispensing from all dispenser nozzles to ensure accurate dispensing.  
30 1. Test all installed dispensers for accurate volume dispensing of products.  
31 ~~2. Test all diesel dispenser equipment for accurate mixing of diesel and bio-diesel products.~~  
32 C. Test all system software for dispensing authorization, dispensing reporting, tank level sensors, and other related  
33 functions.  
34 D. When all installation testing is complete schedule all required final inspections and dispenser certifications.  
35 E. Provide required Owner training after all inspections and certifications are complete.  
36  
37  
38  
39

END OF SECTION

- 1 D. The Fuel Dispensing System shall be compatible with "Inform" and "EJ Ward Fuel View" software platforms for  
2 Tank Level Sensor (TLS) monitoring and EJ Ward for fuel dispensing authorization.  
3

4 **2.2. BURIED UNDERGROUND FUEL TANKS**

- 5 A. Owner shall provide buried underground fuel tanks shall be equal to ZCL/XERXES tanks comprised of the  
6 following specifications:  
7 1. Two, 10 foot diameter ~~Single or dual compartment~~ fiberglass tanks as follows:  
8 a. One (1) - 10,000 gallon tank for gasoline fuel storage, see sheet 5 for location. To be compatible  
9 with various grades of un-leaded fuels and ethanol-blended fuels.  
10 b. One (1) - 20,000 gallon tank for combined diesel and bio-diesel fuel storage, see sheet 5 for  
11 location.  
12 i. Split tank, 10,000 gallon diesel and 10,000 gallon bio-diesel  
13 ii. ~~With onsite blending capabilities for 0% to 50% blends of diesel/bio-diesel fuel~~  
14 2. Ribbed double wall tank construction.  
15 3. Continuous leak detection system.  
16 4. Thirty (30) year manufacturer's warranty.  
17 5. Manufacturers complete tank anchoring system including all reinforced precast concrete deadman  
18 anchors, anchoring straps, and other required hardware.  
19

20 **2.3. FUEL DISPENSERS**

- 21 A. Gasboy Atlas 9853KXTW1 side load, electronic fuel dispensers for diesel and gasoline with the following  
22 specification and options. No alternates of this will be permitted.  
23 1. Dual hose, single product, 22 GPM  
24 2. All Panels to be Stainless Steel (SS)  
25 3. Pulse Output Interface, Dual Channel Dual Pulse  
26 4. R18189-30 Internal filter, Standard 30 Micron  
27 5. Slowdown Valve (PP)  
28 6. All hoses and piping to be 3/4"  
29 7. High hose retractor, external post mounted  
30 8. Standard 12-month warranty  
31 9. Hose, nozzle, swivel, breakaway  
32 B. Dispensers shall be complete with all hoses, dispensing nozzles for unleaded gasoline or diesel, and pulsers.  
33

34 **2.4. SUBMERSIBLE FUEL DISPENSER PUMPS**

- 35 A. Provide/install one submersible pump per fuel type.  
36 B. Pumps shall be capable of dispensing fuel at a rate of 15-20 gpm and be a minimum of 1.5hp high psi.  
37

38 **2.5. TANK LEVEL SENSOR**

- 39 A. Provide and install Veeder-Root TLS4c Tank Level Sensor unit (no alternates) capable of doing all of the following:  
40 1. Inventory level monitoring  
41 2. Interstitial space monitoring  
42 3. Overfill alarm monitoring  
43 4. Overfill alarm notification  
44 5. Communicates with fuel control software (EJ Ward Fuel View) for TLS information to be displayed in Fuel  
45 View.  
46

47 **PART 3 - EXECUTION**

48  
49 **3.1. BURIED UNDERGROUND FUEL TANKS**

- 50 A. Provide excavation for the buried fuel tanks, minimum depth below finished grade to be 4'-0" to top of tank.  
51 1. Fuel Equipment Contractor shall ensure in his/her design that depth of bury and/or additional insulation  
52 for the bio-diesel storage is kept at appropriate industry storage temperatures for this product.  
53 B. Coordinate installation of geo-grid in tank pit with GC.  
54 C. Install Owner provided tanks, dead-man anchors, and tie down straps, ~~observation wells and leak detection per~~  
55 ~~approved plans.~~  
56 D. Install tank access structures, observation wells and leak detection per approved plans.  
57 E. Backfill tank with appropriate backfill and compact.  
58 F. Install and connect submersible pumps.

- 1 C. The FEC shall be responsible for making all applications associated with plan/permit review and approvals,  
2 paying for all fees associated with said applications, scheduling all inspections, and commissioning the completed  
3 fuel dispensing system.
- 4 D. The FEC shall coordinate with the GC all Work, deliveries, and inspections.
- 5 E. The FEC shall prepare and submit, through the GC, all shop drawings including: plans, elevations, equipment cut  
6 sheets, piping diagrams, and electrical schematics associated with the fuel dispensing system.
- 7 F. The following Work in the Fuel Point Area is the responsibility of the FEC.
- 8 1. Any extra excavation required for the burial and securing of buried storage tanks and equipment.
- 9 2. Back fill and compaction of buried storage tanks and equipment up to the level of the geo-grid.
- 10 3. The installation of all storage tanks, equipment, piping, conduit, wiring, dispensing equipment and  
11 control equipment required for a complete fuel dispensing system.
- 12 4. The FEC shall be responsible for the final testing, inspections, and commissioning of the fuel dispensing  
13 system.
- 14 G. The FEC shall be familiar with all systems and components specified within including hardware and software  
15 specified by the Owner with no Alternates.
- 16 H. The FEC shall be local, within 250 miles of the project site and available within 48 hours for trouble shooting and  
17 repairs of warrantied equipment.
- 18

19 **1.7. OPERATION AND MAINTENANCE DATA**

- 20 A. The FEC shall provide O&M data for all equipment associated with the fuel dispensing system, see specification  
21 01 78 23 for more information.
- 22

23 **1.8. WARRANTY**

- 24 A. The FEC shall warrant for one year the complete installation of all fuel dispensing equipment associated with this  
25 contract and installation. Contractors warranty shall be in the form of a written letter on company letterhead  
26 referring to the contract information, dates of installation and acceptance, signed by an authorized  
27 representative of the Contractors Company.
- 28 1. The FEC warranty shall include but not be limited to the following:
- 29 a. Transportation to and from the location as often as needed during the warranty period.
- 30 b. All labor and materials necessary to properly and thoroughly trouble shoot the system.
- 31 c. All fees associated with the shipping of any component that needs to be returned or supplied by  
32 the manufacturer for repair or replacement.
- 33 d. All labor and materials required to remove, repair, replace, or re-install any component.
- 34 B. The FEC shall also provide, separately from his/her installation warranty, all manufacturers warranties associated  
35 with installed components of the completed installation. See specification 01 78 36 for more information.
- 36 1. Warranties shall be individually submitted for each piece of equipment by type. A combined warranty of  
37 all equipment will not be accepted.
- 38 2. Multiple pieces of equipment of the same type and specification do not need to have individual  
39 warranties provided.
- 40

41 **1.9. AS-BUILT DRAWINGS**

- 42 A. The FEC shall coordinate with the GC the scheduling of the Surveyor for digitally surveying all equipment and  
43 piping locations associated with the fuel dispensing system. This shall include all buried equipment, piping, and  
44 conduits. See specification 01 78 39 for more information.
- 45

46 **1.10. DEMONSTRATION AND TRAINING**

- 47 A. The FEC shall provide Demonstration and Training of all fuel dispensing equipment for designated city staff. See  
48 specification 01 79 00 for more information. Coordinate training sessions with the City Project Manager a  
49 minimum of 2 weeks prior to training.
- 50

51 **PART 2 - PRODUCTS**

52  
53 **2.1. GENERAL**

- 54 A. All equipment and materials provided and installed for the fuel dispensing system shall be new and undamaged.
- 55 B. All equipment installed shall be as per approved submittals and approved plan reviews.
- 56 C. Some equipment below is noted as "no alternates" to match existing equipment at other fueling sites that  
57 require routine maintenance or replacement. No alternates for this equipment will be considered.

- 1 4. Rough-in one fully functional raised concrete fuel island with curb, ready for future expansion of a 2 hose  
2 dispenser, as indicated in the plans for dispensing diesel. This is the center dispenser shown on the  
3 enlarged fuel site plan, sheet 5.  
4 a. One (1) hose on this dispenser shall be capable of dispensing the diesel/bio-diesel blends noted in  
5 item 1 above.  
6 b. One (1) hose on this dispenser shall be capable of dispensing B-100 bio-diesel.  
7 a. Rough-in shall include all pipes, empty conduits, valves, and other equipment that will be buried  
8 below any paved surface or the gas hut building.  
9 b. Rough-in shall include any access hole and cover over buried equipment in the fuel island to  
10 protect stubbed in equipment and materials noted above.  
11 c. Rough-in shall not include product dispensers, power and data wiring, pumps or motors, or other  
12 equipment located within the fuel island access hole that can be added during the future  
13 expansion.  
14 D. Fuel Terminal Control Unit (FTCU)  
15 1. One (1) FTCU pedestal shall be installed, and fully operational inside the gas hut as indicated in the plans.  
16 2. Rough-in one (1) pedestal FTCU on a raised concrete island with curb, ready for future expansion.  
17 a. Rough-in shall include all pipes, empty conduits, and other equipment that will be buried below  
18 any paved surface or the gas hut building.  
19 b. Rough-in shall include any access hole and cover over buried equipment in the island to protect  
20 stubbed in equipment and materials noted above.  
21 c. Rough-in shall not include FTCU, power and data wiring, pumps or motors, or other equipment  
22 located within the concrete island access hole that can be added during the future expansion.  
23 3. All automation operations shall be done with data/control cables in appropriately sized conduit run  
24 between dispenser locations and FTCU locations. No dispensing operation shall be conducted using WIFI.  
25 4. See Exhibit F issued with Addendum 1 for more information.  
26

27 **1.5. GENERAL CONTRACTOR (GC) REQUIREMENTS**

- 28 A. Any corporation, partnership, sole proprietor, independent contractor, or person that provides or offers to  
29 provide installation, removal, testing, lining, cleaning, assessments, cathodic testing or cathodic protection  
30 system design or installation for a tank system regulated under Wisconsin Administrative Code ATCP 93 must  
31 have a certification issued by the Wisconsin Department of Agriculture, Trade and Consumer Protection.  
32 1. The GC shall be responsible for contracting with a State Of Wisconsin Certified Contractor that meets the  
33 above requirements.  
34 2. The GC shall ensure the FEC is certified for the duration of this contract, and shall provide copies of all  
35 FEC Company and Individual Certifications as Administrative Submittals, to the Project Management  
36 Website – Submittals Library, prior to submitting any fuel equipment submittals for review.  
37 B. The GC shall be responsible for scheduling and coordinating the FEC Work into the overall project schedule. This  
38 shall include but not be limited to coordination between other subcontractors having work in/through the Fuel  
39 Point Area.  
40 C. The following Work in the Fuel Point Area is the responsibility of the GC. See Section 1.5 below for Work by the  
41 FEC.  
42 1. General site excavation.  
43 2. General fill and compaction of the sub-base and base materials including the geo grid liner.  
44 3. Geo-grid liner in the deeper excavation for the buried tanks (excavation and tanks by FEC).  
45 4. All concrete flat work including all curbing as located and designed by the FEC.  
46 5. All construction related to the Gas Hut including the exterior sidewalk, and ADA ramp.  
47 6. The installation of all area light bases, poles and fixtures in the plans and specifications.  
48

49 **1.6. FUEL EQUIPMENT CONTRACTOR (FEC) REQUIREMENTS**

- 50 A. The FEC shall be responsible for meeting all requirements and providing the GC with all documentation outlined  
51 in section 1.4.A above.  
52 B. The FEC shall be responsible for the design and installation of all equipment necessary to complete the fuel  
53 dispensing system installation as shown in the plans and specifications.  
54 1. The fuel dispensing system shall meet all applicable codes and regulations including Wisconsin  
55 Administrative Code ATCP 93.  
56 2. Meet with designated city staff for plan and equipment review prior to submitting State of Wisconsin  
57 Applications for Plan Review.



1 **1.3. REFERENCES**

- 2 A. The FEC shall design and install the entire Fuel Dispensing System to meet all applicable Codes and Industry  
3 Standards to include but not be limited to the following:  
4 1. Wisconsin Department of Agriculture, Trade, and Consumer Protection (ATCP) Code, Chapter ATCP 93;  
5 Flammable, Combustible, and Hazardous Liquids,  
6 [https://docs.legis.wisconsin.gov/code/admin\\_code/atcp/090/93/1/100](https://docs.legis.wisconsin.gov/code/admin_code/atcp/090/93/1/100)  
7 2. All local codes pertaining to applications, design, installation, and inspections.  
8 3. All codes that pertain to the installation of buried tanks, electrical wiring, and other related Work of the  
9 fuel dispensing system.

10  
11 **1.4. FUEL POINT INSTALLATION AND EXPANSION CONCEPT**

- 12 A. There are 2 primary goals for this project:  
13 1. Provide above surface and below surface fueling equipment and controls to support minimal dispensing  
14 of fuel to the City of Madison fleet until such time as the entire Public Works site at South Point Road is  
15 completely built out.  
16 2. Provide all buried conduit, piping, and other related fuel dispensing equipment necessary for the future  
17 build out so no below ground work needs to be done in the future.  
18 B. The concept of operation for gasoline dispensing is as follows:  
19 1. Install one single buried 10,000 gallon tank for a single unleaded gasoline product.  
20 2. Install one fully functional 2 hose dispenser on a raised concrete fuel island with curb as indicated in the  
21 plans for dispensing gasoline.  
22 3. Rough-in one fully functional raised concrete fuel island with curb, ready for future expansion, as  
23 indicated in the plans for dispensing gasoline.  
24 a. Rough-in shall include all pipes, empty conduits, valves, and other equipment that will be buried  
25 below any paved surface or the gas hut building.  
26 b. Rough-in shall include any access hole and cover over buried equipment in the gas island to  
27 protect stubbed in equipment and materials noted above.  
28 c. Rough-in shall not include product dispensers, power and data wiring, pumps or motors, or other  
29 equipment located within the gas island access hole that can be added during the future  
30 expansion.  
31 C. The concept of operation for diesel dispensing is as follows:  
32 1. Install one single buried 20,000 gallon tank.  
33 a. Tank shall have a 10,000/10,000 gallon split for holding diesel and bio-diesel fuels. Owner to  
34 supply diesel or pre-blended diesel product from one side of tank and B-100 bio-diesel from other  
35 side of the tank. See Exhibit G from Addendum 1 for tank dimensions, these are approximate for  
36 excavation calculations only and may not be the exact dimensions of the tanks purchased. See  
37 dispenser descriptions below.  
38 ~~b. Provide all equipment and controls necessary for onsite blending and dispensing of diesel and bio-~~  
39 ~~diesel fuels. Blending equipment shall be capable of all of the following:~~  
40 ~~i. Dispensing 100% diesel with no bio-diesel blend.~~  
41 ~~ii. Dispensing proportional blends of diesel and bio-diesel for all blends from B-5 through B-~~  
42 ~~50.~~  
43 2. Install one fully functional 2 hose dispenser on a raised concrete fuel island with curb as indicated in the  
44 plans for dispensing diesel and or pre-blended diesel fuels. Both hoses on this dispenser shall be capable  
45 of dispensing the diesel/bio-diesel blends noted in item 1 above. This is the south dispenser shown on  
46 the enlarged fuel site plan, sheet 5.  
47 3. Rough-in one fully functional raised concrete fuel island with curb, ready for future expansion of a 2 hose  
48 dispenser, as indicated in the plans for dispensing diesel.  
49 a. Both hoses on this dispenser shall be capable of dispensing the diesel/bio-diesel blends noted in  
50 item 1 above. This is the north dispenser shown on the enlarged fuel site plan, sheet 5.  
51 b. Rough-in shall include all pipes, empty conduits, valves, and other equipment that will be buried  
52 below any paved surface or the gas hut building.  
53 c. Rough-in shall include any access hole and cover over buried equipment in the gas island to  
54 protect stubbed in equipment and materials noted above.  
55 d. Rough-in shall not include product dispensers, power and data wiring, pumps or motors, or other  
56 equipment located within the gas island access hole that can be added during the future  
57 expansion.

1  
 2  
 3  
 4 SECTION 23 10 00  
 FACILITY FUEL SYSTEMS  
 5  
 6 PART 1 – GENERAL..... 1  
 7 1.1. SUMMARY..... 1  
 8 1.2. RELATED SPECIFICATIONS..... 1  
 9 1.3. REFERENCES..... 2  
 10 1.4. FUEL POINT INSTALLATION AND EXPANSION CONCEPT..... 2  
 11 1.5. GENERAL CONTRACTOR (GC) REQUIREMENTS..... 3  
 12 1.6. FUEL EQUIPMENT CONTRACTOR (FEC) REQUIREMENTS..... 3  
 13 1.7. OPERATION AND MAINTENANCE DATA..... 4  
 14 1.8. WARRANTY ..... 4  
 15 1.9. AS-BUILT DRAWINGS ..... 4  
 16 1.10. DEMONSTRATION AND TRAINING..... 4  
 17 PART 2 - PRODUCTS..... 4  
 18 2.1. GENERAL..... 4  
 19 2.2. BURIED UNDERGROUND FUEL TANKS..... 5  
 20 2.3. FUEL DISPENSERS ..... 5  
 21 2.4. SUBMERSIBLE FUEL DISPENSER PUMPS..... 5  
 22 2.5. TANK LEVEL SENSOR ..... 5  
 23 PART 3 - EXECUTION..... 5  
 24 3.1. BURIED UNDERGROUND FUEL TANKS..... 5  
 25 3.2. UNDERGROUND FUEL PIPING ..... 6  
 26 3.3. UNDERGROUND ELECTRICAL AND DATA WIRING..... 6  
 27 3.4. INSTALL FUEL DISPENSING SYSTEM..... 6  
 28 3.5. CONNECT EMERGENCY SHUT-OFF DEVICE..... 6  
 29 3.6. COMMISSIONING THE FUEL DISPENSING SYSTEM..... 6

29 **PART 1 – GENERAL**

31 **1.1. SUMMARY**

- 32 A. This section is intended to provide general documentation and contract expectations for all Work related to the  
 33 installation of equipment needed for the fuel dispensing operations.  
 34 B. Work under this section includes all labor, materials, equipment and services; necessary to complete new to  
 35 complete the design, permitting, installation, and successful commissioning of the fuel dispensing system  
 36 outlined in the plans and specifications.  
 37 C. Refer to the following plan sheets for more information:  
 38 1. GS-1 General Site Plan  
 39 2. 5 thru 8 Fuel Point Enlarged Plans and Details  
 40 3. 14 & 15 Gas Hut Electrical Plans and Details  
 41 D. Throughout this section, the Fuel Equipment Sub-Contractor shall be referred to as "FEC" and the General  
 42 Contractor shall be referred to as "GC".  
 43

44 **1.2. RELATED SPECIFICATIONS**

- 45 A. The following specifications are pertinent to the planning, acquisition, installation, and commissioning of the  
 46 completed fuel dispensing system. Other specifications may apply, but should be coordinated through the GC:  
 47 1. 00 62 76.13 Sales Tax Form  
 48 2. 01 33 23 Submittals  
 49 3. 01 45 16 Field Quality Control Procedures  
 50 4. 01 45 29 Testing Laboratory Services  
 51 5. 01 60 00 Product Requirements  
 52 6. 01 74 19 Construction Waste Management  
 53 7. 01 78 23 Operation and Maintenance Data  
 54 8. 01 78 36 Warranties  
 55 9. 01 78 39 As-Built Drawings  
 56 10. 01 79 00 Demonstration and Training  
 57

# ZCL | Xerxes

## Underground Double-Wall Tank Data

	Nominal Capacity (gallons)	Tank Length (feet/inches)	Nominal Shipping Weights (lbs) (dry interstitial)	Nominal Shipping Weights (lbs) (wet interstitial)	Number of Anchor Straps Required	Nominal Capacity (liters)	Tank Length (mm)	Nominal Shipping Weights (Kg) (dry interstitial)	Nominal Shipping Weights (Kg) (wet interstitial)	Number of Anchor Straps Required
4'	600	7'-3 1/2"	900	1,100	2	2,500	2,303	400	500	2
	1,000	11'-7 1/2"	1,100	1,300	2	3,900	3,395	500	600	2
	2,000	22'-3 5/8"	2,800	3,400	2	5,000	4,380	600	700	2
6'	2,500	13'-5 3/4"	2,200	2,800	2	10,000	4,520	900	1,100	2
	3,000	16'-4 1/4"	2,600	3,300	2	15,000	6,604	1,300	1,600	4
	4,000	20'-8"	3,600	4,400	2	20,000	8,465	1,700	2,000	4
	5,000	26'-5"	4,300	5,200	4	25,000	10,420	2,200	2,500	4
	6,000	30'-8 3/4"	5,000	6,100	4					
8'	4,000	15'- 1/2"	2,700	3,600	2	15,000	3,994	900	1,100	2
	5,000	17'-8 1/2"	3,200	4,200	2	20,000	5,137	1,200	1,500	2
	6,000	20'-6 1/2"	3,700	4,900	2	25,000	6,090	1,400	1,700	2
	8,000	26'- 1/2"	4,800	6,200	4	30,000	7,264	1,700	2,100	4
	10,000	31'-6 1/2"	5,900	7,500	4	35,000	8,185	2,000	2,300	4
	12,000	37'- 1/2"	7,000	8,800	4	40,000	9,392	2,300	2,700	4
	15,000	46'- 9"	9,100	11,200	6	45,000	10,363	2,500	3,000	4
						50,000	11,328	2,700	3,200	4
10'						60,000	13,500	3,400	3,900	6
						65,000	14,522	3,700	4,300	6
	10,000	21'-5 1/4"	4,900	6,400	4	50,000	7,449	2,900	3,300	4
	12,000	24'- 1/4"	5,600	7,200	4	55,000	8,280	3,200	3,600	4
	15,000	29'-5 3/4"	7,000	8,900	4	60,000	8,827	3,300	3,800	5
	20,000	37'-8 3/4"	9,000	11,300	6	65,000	9,576	3,600	4,200	5
	25,000	47'-6 3/4"	11,800	14,600	8	70,000	10,395	3,900	4,500	6
	30,000	55'-9 3/4"	14,000	17,200	10	75,000	10,903	4,100	4,700	6
	35,000	64'- 3/4"	16,500	20,100	12	80,000	11,582	4,400	4,900	6
	40,000	73'-8 1/4"	19,000	23,100	14	85,000	12,268	4,700	5,300	7
12'						90,000	13,068	5,000	5,600	7
						100,000	14,345	5,400	6,100	8
						110,000	15,723	5,900	6,700	9
	20,000	29'- 4"	14,000	16,700	6					
	25,000	35'- 7"	16,600	19,700	8					
	30,000	43'- 1"	19,900	23,500	10					
	35,000	49'- 4"	22,500	26,500	12					
	40,000	54'- 4"	24,600	28,900	12					
45,000	60'- 7"	27,400	32,100	16						
48,000	65'- 7"	29,500	34,500	18						
50,000	68'- 1"	30,500	35,700	18						

**Notes:**

1. Tank data for multicompartment tank models is available at [www.zcl.com](http://www.zcl.com).
2. Actual height of the tank may be greater than the actual diameter due to fittings and accessories. Load height during shipping may vary due to tank placement on the shipping trailer.
3. If an overflow-protection device is installed in the tank, the actual capacity will be reduced.



## Contact Ward

Ward's mission is to provide industry leading technical support by ensuring all issues are promptly and wholly resolved. You can speak with a highly skilled Technical Support Specialist between 8am-5pm Central Time, Monday through Friday. If you contact Ward during non business hours, a Specialist will return your call the following business day.

Contact Ward for questions related to:

- Installation of new hardware or software
- Troubleshooting malfunctions
- Ordering new or replacement hardware

Phone..... 210.824.7383  
800.580.WARD (9273)

Fax.....210.824.2031

Email..... [support@ejward.com](mailto:support@ejward.com)  
[orders@ejward.com](mailto:orders@ejward.com)  
[returns@ejward.com](mailto:returns@ejward.com)

Web ..... [www.ejward.com](http://www.ejward.com)

must be clearly indicated on the shipping box and paperwork; failure to do so will result in delays. A repaired or replacement unit will be shipped at Ward's expense within five (5) business days after receipt of the failed unit.

## **Warranty Limitations**

Ward's warranties as set forth herein ("Warranty") are contingent on proper use of the Ward hardware and software ("Products") and do not apply if the Products have been modified without Ward's written approval, or if the Products' serial number label is removed, or if the Product has been damaged. The terms of the Warranty are limited to the remedies as set forth in this Warranty. THIS WARRANTY IS PROVIDED IN LIEU OF ALL OTHER RIGHTS, CONDITIONS AND WARRANTIES. WARD MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE SOFTWARE, HARDWARE, PRODUCTS, DOCUMENTATION OR WARD SUPPORT, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OF THIRD PARTY RIGHTS. WARD DOES NOT WARRANT THAT ANY PRODUCTS WILL BE ERROR-FREE, OR THAT ANY DEFECTS THAT MAY EXIST IN ITS PRODUCTS CAN BE CORRECTED. IN NO EVENT SHALL WARD BE LIABLE FOR COST OF PROCUREMENT OF SUBSTITUTE GOODS, LOST PROFITS OR ANY OTHER SPECIAL, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES (INCLUDING BUT NOT LIMITED TO LOST DATA), HOWEVER CAUSED WHETHER OR NOT WARD HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

## **Limitation of Liability**

Once products are sold or provided under this agreement and are delivered to the "Buyer", the "Buyer" shall be solely responsible for the use of such products, including any and all results caused by the use or misuse of the products, and including using such products in compliance with all applicable local, state, federal, and international laws. In no event shall Ward, or its directors, officers, employees, agents, or affiliates, be liable to the "Buyer" or to any third party for (i) any lost profits, any data loss, any loss of business, or any indirect, consequential, exemplary, incidental or special losses or damages of any kind or nature whatsoever in connection with or arising out of the use or sale of products to the "Buyer" by Ward; or (ii) any losses or damages of any kind whatsoever, including personal injury or death, arising out of the "Buyer's" or a third party's installation, misuse, use, whether such use is proper or improper, or modifications of the products sold to the "Buyer" by Ward, not even in the case where Ward has been advised of the possibility of such loss or damage. The sole and exclusive remedy of the "Buyer" or any third party for any claim, loss, or damage not excluded under clauses (i) or (ii) of the preceding sentence and that in any way relates to, or arises out of, the products sold to the "Buyer" by Ward, shall be limited to repair or replacement of such products sold or provided under the terms of this agreement to the "Buyer" by Ward during the initial first calendar year placed into service.

## **Indemnification**

The "Buyer" hereby agrees to indemnify and hold harmless Ward, its directors, officers, employees, agents, and affiliates, from any and all claims, demands, suits, actions, proceedings, losses, costs, and damages of any kind or nature whatsoever, including personal injury or death ("Actions"), including any action brought by a third party against Ward, and including attorneys' fees and litigation costs of Ward related to the "Actions", caused by, alleged to be caused by, related to, arising out of, or contributed to, in whole or in part, by any of the acts, omissions, errors, faults, mistakes, or negligence of the "Buyer", or the "Buyer's" directors, officers, employees, agents, or affiliates, in connection with the installation, misuse, use, whether such use is proper or improper, or modifications of the products sold to the "Buyer" by Ward. The foregoing indemnity will not be impaired or rendered inapplicable by the negligence of Ward, its directors, officers, employees, agents, or affiliates.



# Ward Product Warranty

Warranty coverage for E.J. Ward Inc. (Ward) products are described herein. Additional support coverage, on-site preventative maintenance and repair after the expiration of the initial one year warranty is available. Please consult your local Ward sales professional for annual support and services fees. The terms and conditions governing your warranty on Ward products are located below. Such terms and conditions supersede all other terms, unless otherwise agreed by Ward in writing.

## Warranty Start Date

Start Date as used in this policy means the date this product is shipped from Ward manufacturing plus 30 days, or activation date, whichever comes first unless mutually agreed in writing.

## Limited Hardware Warranty

Ward provides a one year limited product hardware warranty to purchasers of its products. Ward warrants that the products will be free from defects in materials and workmanship that result in a material deviation from the applicable published Ward technical specifications ("Hardware System Failure"). Upon a Hardware System Failure, Ward will repair or replace such products within three working days of its receipt of the failed hardware if, in advance of its receipt, such hardware has been:

1. Evaluated by a Ward Technician in person or Technical Support person via telephone.
2. Received a Technical Support RMA number from Ward.

Further, the product hardware must be shipped, shipment pre-paid, to Ward, and the RMA number must be clearly indicated on the shipping box and paperwork.

## Limited Software Warranty

Ward provides a one year limited software warranty to licensees of Ward software accompanying Ward hardware. Ward warrants that the software delivered will be free of defects in material and workmanship for a period of one year following delivery to licensee. Ward warrants that the software, when used in accordance with the terms of the Ward "Software License" will operate substantially as set forth in the applicable Ward software documentation for a period of one year following delivery of the software to licensee.

## Technical Support Access

During the warranty period, a toll free phone support number, 800.580.9273, is offered seven days per week, 24 hours per day. Access to Technical Support after warranty period is on a commercially reasonable basis with rates available upon request (unless an extended Support Contract is purchased for products sold by Ward and owned by the customer).

## Software Updates


During the warranty period, software updates for the system and software products released by Ward are available by contacting Ward Project Manager or Technical Support team. System software updates include applicable minor releases (e.g. Release 2.0 to 2.1) to the customer's specific family of products as well as major feature releases (e.g. Release 2.x to 3.0). Customer must have access to the Internet for FTP downloads as directed by Ward Technical Support team member. Major Software updates released after the initial one year warranty period are available as an upgrade product (contact your local sales agent or Ward customer support team for pricing).

## Hardware Repair Service

In the event of a hardware system failure past the first 30 days, but within the first year of ownership from the Warranty Start Date, the unit will be either repaired, or at Ward's option, replaced with a new or reconditioned unit of equal or greater value. This service requires an evaluation by a Ward Technician in person or a phone support evaluation of the failed system from Ward Technical Support team member, and the issuance of a RMA number. The returning product hardware must be shipped, shipment pre-paid, to Ward, and the RMA number

## DIP Switch Settings

The M06333KXXXX CPU board can also be configured for various operating conditions using the switch positions SW2-1 through SW2-10. Check these switches and change if necessary. Switch settings must be changed with the power to the pump/dispenser Off. The CPU board only reads new switch settings during power-up.


 **NOTE: A switch in the closed position indicates that the switch is on (towards the center of the CPU board).**


## Pulse Output Rate Switches for Jumpered JP2

When the pump/dispenser is connected to an external controlling equipment that requires pulse output signals (for example, Gasboy Series 1000), the pulse signals are sent via the Pulse-out interface board. Setting switches SW2-1 through SW2-3 configures the Pulse-out rate required by the monitoring equipment. The Pulse-out rate represents the pulses per unit (gallon, liter, or imperial gallon).

Pulse Rate	SW2-1	SW2-2	SW2-3
1:1	Closed	Closed	Closed
10:1	Open	Closed	Closed
100:1	Closed	Open	Closed
250:1	Open	Open	Closed
500:1	Closed	Closed	Open
None	Open	Closed	Open
None	Closed	Open	Open
None	Open	Open	Open

The maximum pulse output rate that can be achieved depends on the model of the dispenser/ pump and the unit of measure. Pulse output rate of 1000: 1 is not supported when using M06333KXXXX CPU board.

 **NOTE: 9800 refers to models 9852, 9853, 9822, and 9823.**

 **NOTE: If a valid pulse-out rate is not selected, the CPU will not output pulses.**

Leading zeros are always suppressed in the tens and hundreds place to the left of the decimal point. In Standalone mode, positions to the right of the decimal point are displayed based on the pulse output rate and unit of measure selected.

Pulse Rate	Gallons (US or Imperial)	Liters and/or 9850
1:1	XXX	XXXX.
10:1	XXX.X	XXXX.X
100:1	XXX.XX	XXXX.XX
250:1	XXX.XXX	XXXX.XX
500:1	XXX.XXX	XXXX.XX

## Pulser Board Installation

The dispenser must have a pulser board installed to supply pulses to the FCT. The pulser board is a piggy back board plugged in to connector P8. Gasboy also has an RS-485 communication board that plugs into the same port. The RS-485 board will not provide pulses.

**i** **TIP:** Ward recommends verifying the board type during the installation.

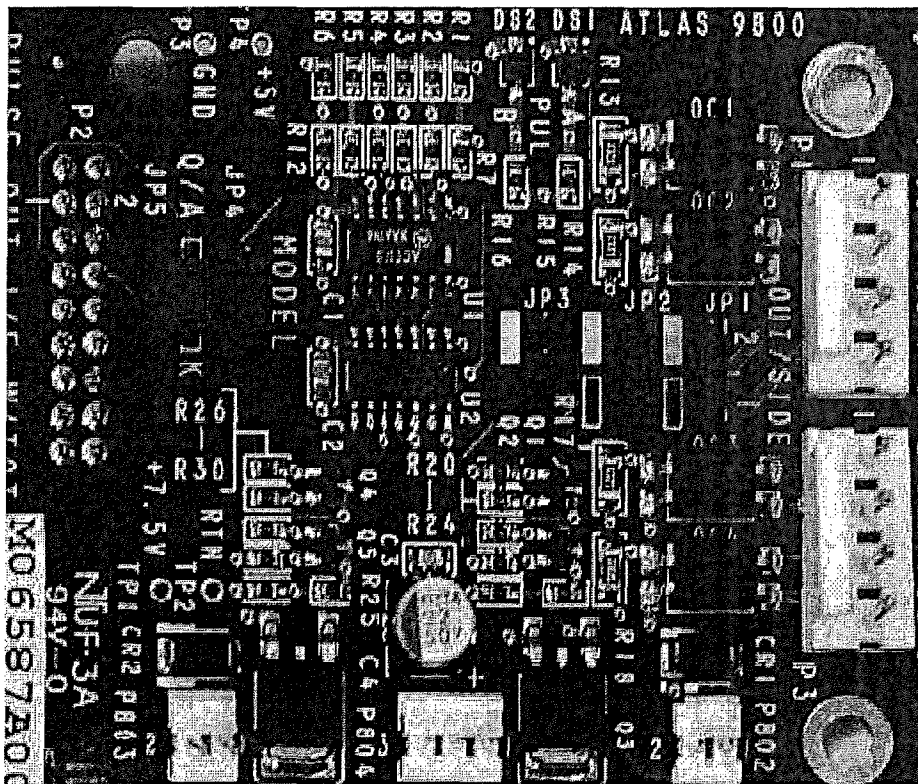


Figure 31. Gasboy Atlas Pulser Board

### Pulse Wiring

Red	Pulse A
White	Pulse A GND
Green	Pulse B
Black	Pulse B GND



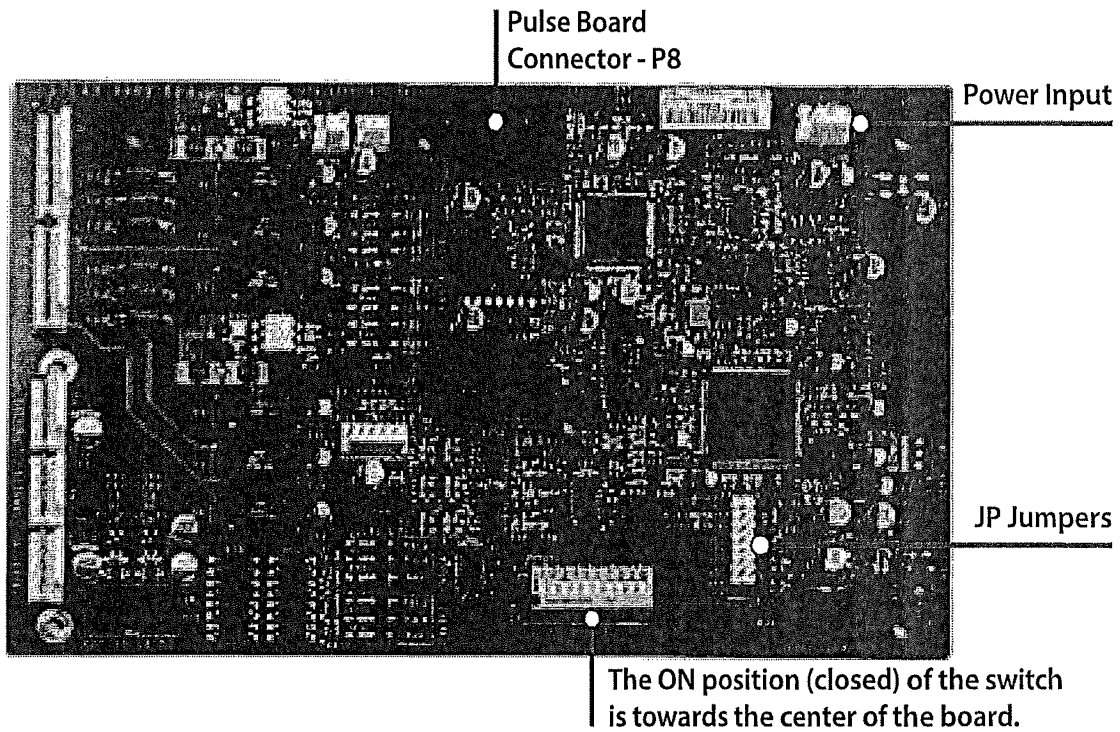



Figure 30. New Atlas 9800 CPU With 10-Position DIP Switch

 **NOTE:** Older Atlas CPU boards have two DIP switches instead of the 10 position DIP switch as shown in Figure 30:

- **SW1 - eight-position DIP switch**
- **SW2 - four-position DIP switch**

If needed, contact Ward for the proper switch settings for an older board.

## Gasboy Atlas Pump Settings

The Gasboy Atlas CPU board has two items that must be set properly to be compatible with the FCT.

- Jumpers
- DIP switches


The jumpers have small black jumper blocks all in a row and are labeled JP(X). When setting a jumper, the block is slid over both jumper pins to short them, and a jumper set to Open has the block slid over just one pin so they are not shorted.

### Jumper Settings

Jumper ID	Setting	Function
JP1	Jumped	RS-485 Baud Rate (not applicable)
JP2	Jumped	Standalone Mode
JP3 and JP4	Jumped	On Delay set to zero seconds (use for leak detection)
JP5	Jumped	Hose Pressurization set to ON
JP6	Jumped	Authorization Signal Enabled
JP7	Open	Totalizer set to Non-Resettable
JP8	Jumped	Disable RS-485 Pump Disable Detect
JP9	Unused	Spare Jumper

### SW2 DIP Switch Settings

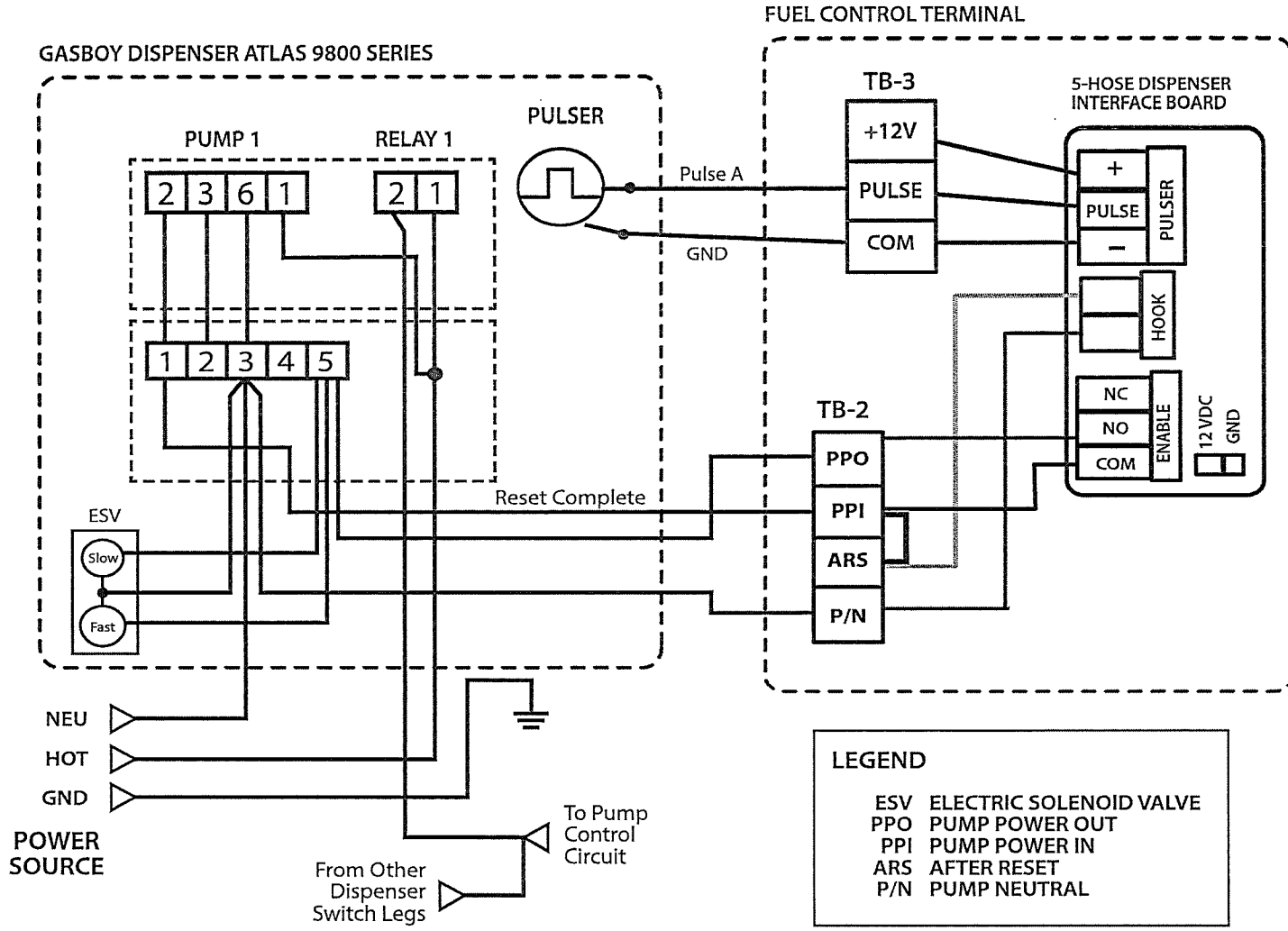
Switch	On	Off	Setting
1		✓	Pulses = 10:1
2	✓		
3	✓		
4	✓		Pulse Time Out set to 4 minutes 15 seconds
5	✓		Units set to US Gallons
6	✓		
7	✓		Totalizer set to ON
8		✓	BDM Enable
9		✓	Flash Enable set to OFF
10	✓		Unused

 **NOTE: Cycle power on the CPU board by unplugging the micro power plug after setting jumpers and DIP switches for the settings to take effect (PWR Input P10).**

For 10:1 pulse operation with the FCT, setting should be:

- Off** Switches 1, 8, 9
- On** All others

### Gasboy 9800 Series Wiring Diagram



Electronic Dispenser Provides Reset Complete When Off Hook

PPI & ARS jumpered on TB-1 at the FCT switch to 120VAC from Reset Complete when Pump 1 is off hook

PPO from TB-1 at FCT controls the HOT side of two ESVs connected in parallel: Fast Flow ESV & Slow Flow ESV

Figure 29. Typical Gasboy Atlas 9800 Series Electronic Dispenser Control Wiring Configuration

## Typical Compressed Natural Gas Wiring Diagram

The following is a typical CNG dispenser interface wiring scheme wired in the ARS configuration.

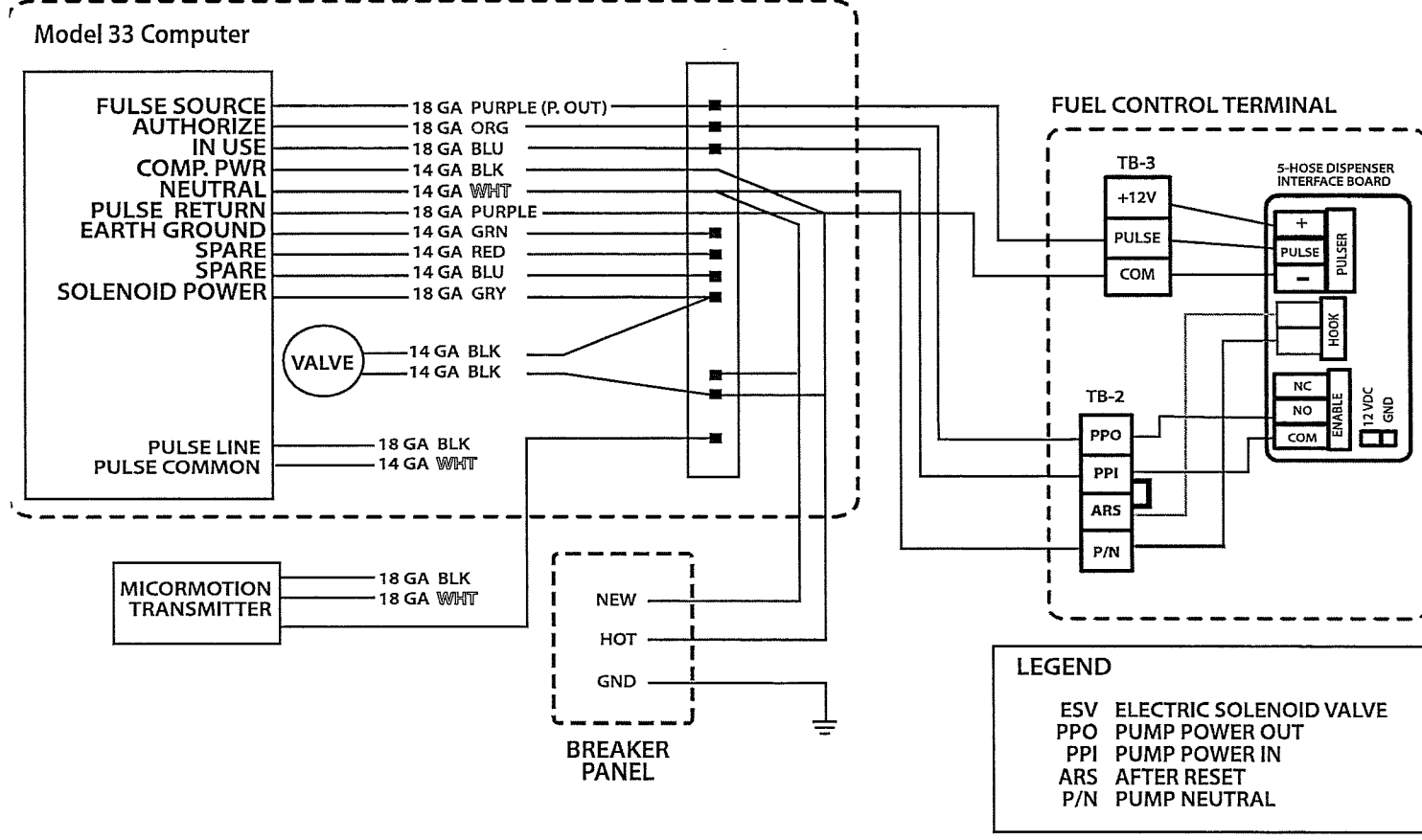
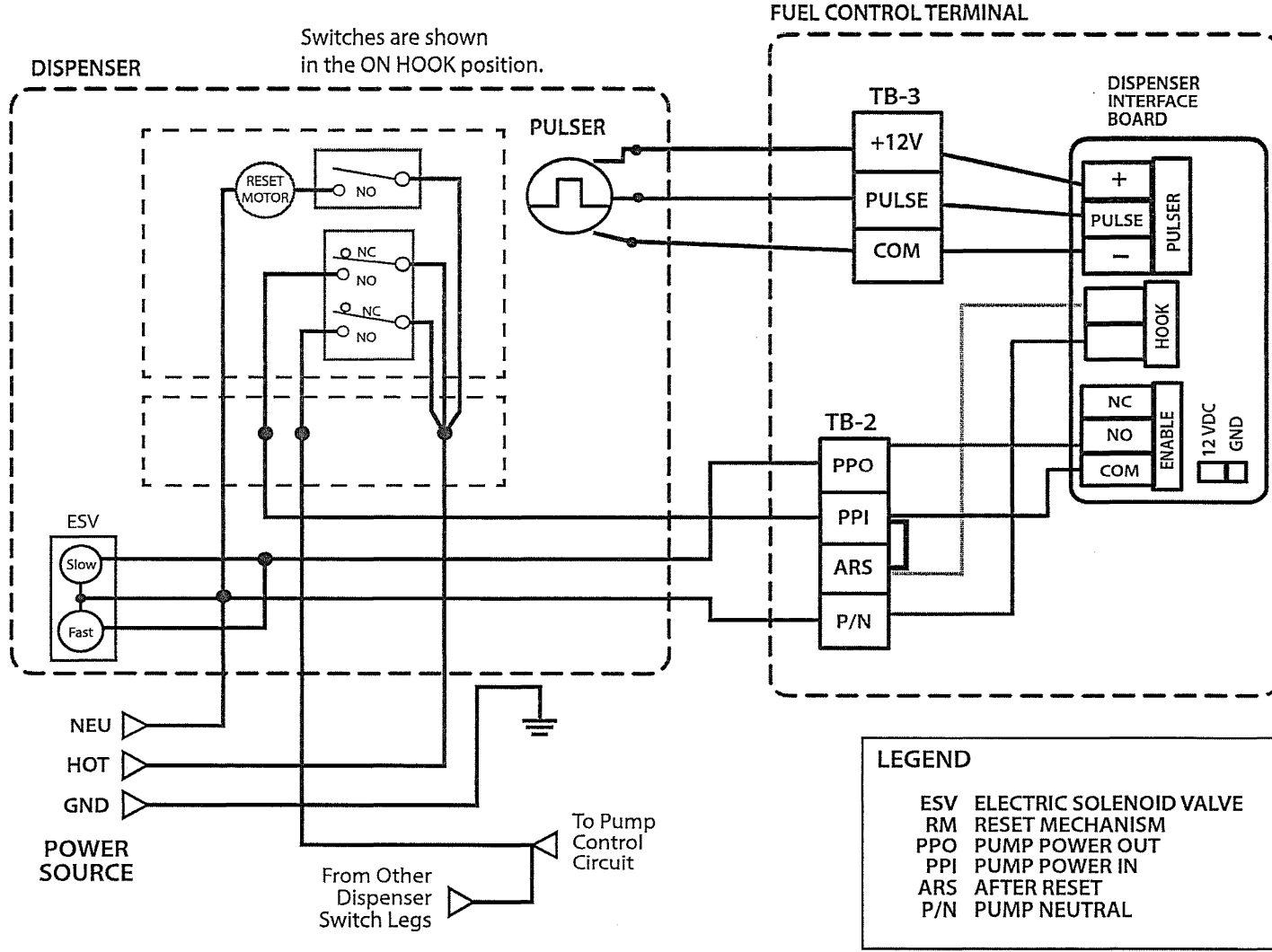


Figure 32. Typical Compressed Natural Gas Dispenser Control Wiring



**NOTE:** Dispenser must be set up to send an *In Use* signal before authorization is received. This is commonly referred to as Stand-Alone mode.

### Typical ESV Wiring Diagram



#### Dispenser with Electric Reset

PPI and ARS jumpered on TB-1 at FCT switch to 120VAC by a set of contacts that close after the dispenser's reset cycle completes. PPO from TB-1 at FCT controls the HOT side of two ESVs connected in parallel: Fast Flow ESVF and Slow Flow ESV.

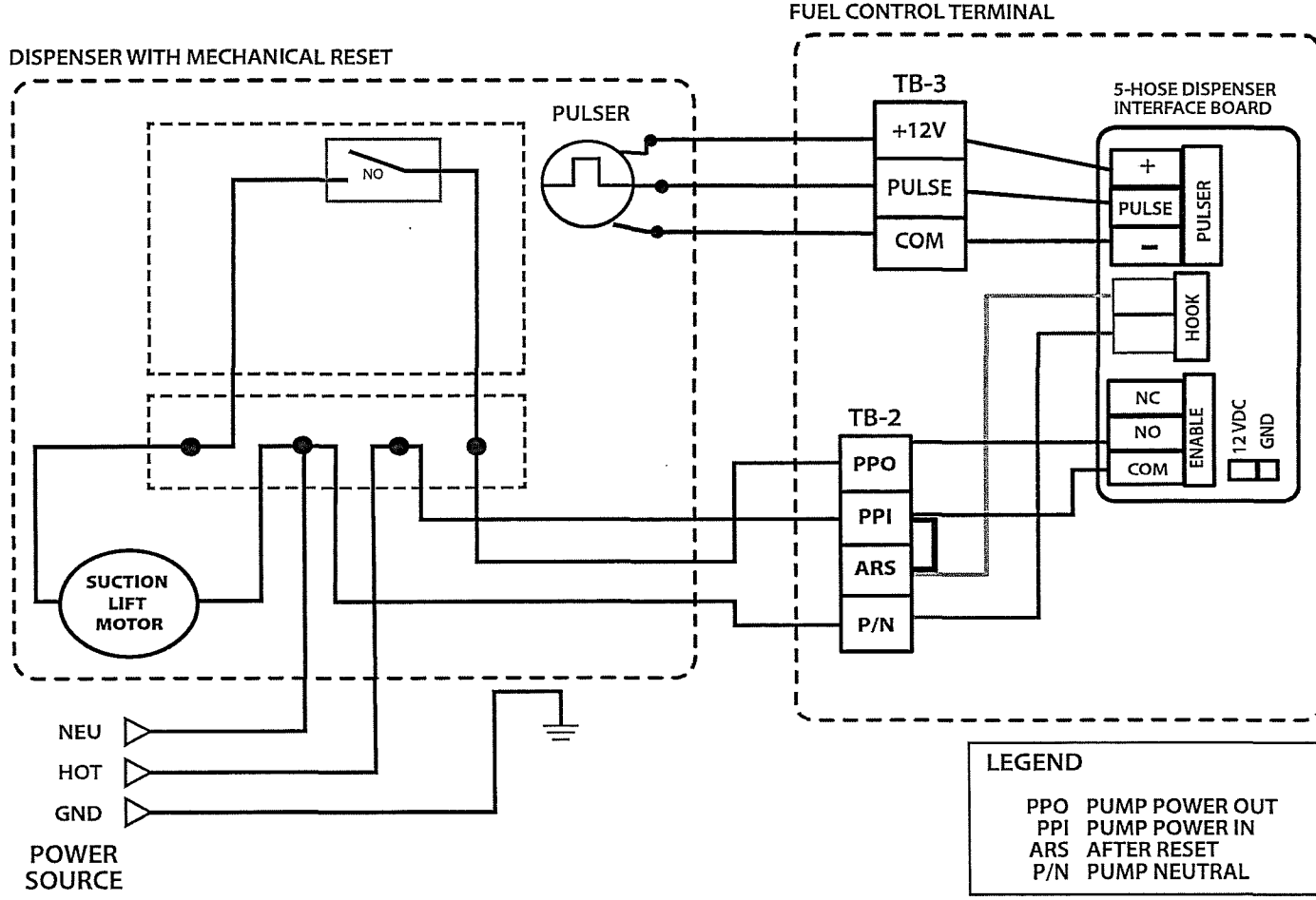
Figure 28. Typical ESV Dispenser Control Wiring Configuration

**NOTE:** Refer to section titled: Gasboy Atlas Pump Settings for more information.



# Appendix

## Typical Suction Lift Motor Wiring Diagram



### Dispenser with Mechanical Reset

PPI and ARS jumpered on TB-1 at FCT wired HOT (OFF HOOK) from 120VAC Dispenser Power.  
 PPO from TB-1 at FCT controls the power to Suction Lift Motor through the Dispenser's Hook Switch.  
 The FCT supports this OFF HOOK wiring configuration with a feature known as Recycle Hook.

Figure 27. Typical Suction Lift Motor Wiring Control Configuration

**NOTE:** The Recycle Hook in Fuel View software must be checked for the FCT.



## Ward IoT FCT Installation Guide

8. Hand tighten the antenna connectors on the 3G/4G (cellular) side of the Cradlepoint device.
  - The same side as the SIM card port.

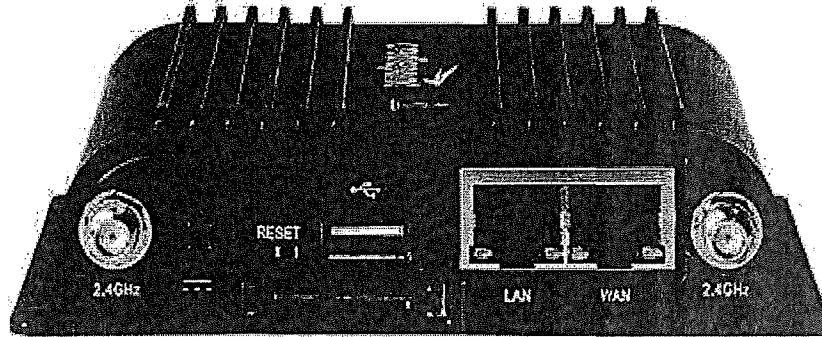


Figure 25. Cradlepoint Cellular Side

The antenna installation completed.

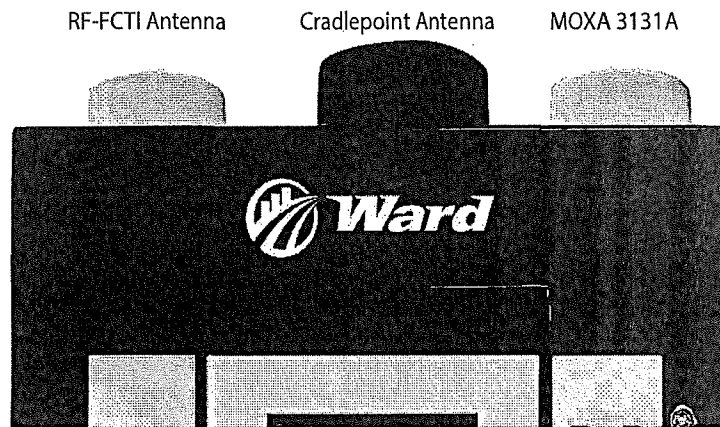


Figure 26. FCT With All Three Antennas Installed

## Ward IoT FCT Installation Guide

8. Hand tighten the antenna connectors on the Moxa 3131A or the Wi-Fi side of the Cradlepoint device.
  - The same side as the power and network ports.

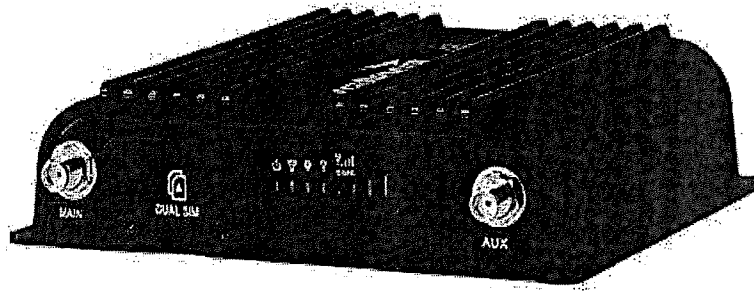


Figure 24. Cradlepoint Wi-Fi Side

## Install the Cradlepoint Antenna

1. Remove the Cradlepoint Antenna from the box, ensuring you remove all necessary hardware (split washer and split nut) prior to disposing of the box.

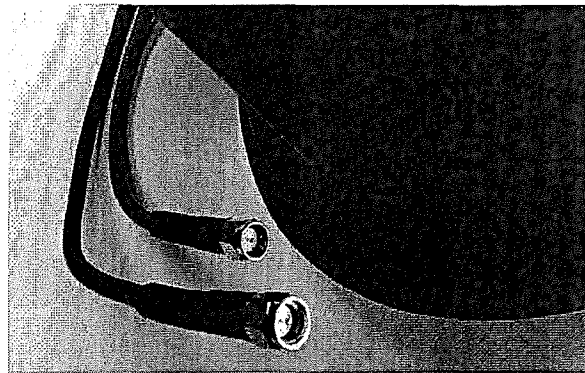


Figure 24. Cradlepoint Antenna Connector Pins

2. Visually verify the antenna, cabling, and connector ends were not damaged during shipment.
3. With the nut and washer removed, insert the cable into the antenna mounting hole in the center of the FCT cabinet (as you are facing the door).
  - Ensure the antenna sits flush with the top of the cabinet and the gasket is not obstructed by any debris.


**➔ CAUTION: Do not use silicone or any other liquid gasket material.**

4. Install the split washer over the cabling, and slide the washer over the threaded mounting stud till the washer is flat against the underside of the FCT cabinet.
5. Install the split nut over the cabling and slide the nut up to the threaded mounting stud.
6. Tighten the split nut.
  - Apply a small amount of down-force on the antenna itself, compressing the gasket material slightly, while tightening the nut.
7. Route the antenna cable to the Cradlepoint mounting location without any tight bends or kinks in the line.



## Ward IoT FCT Installation Guide

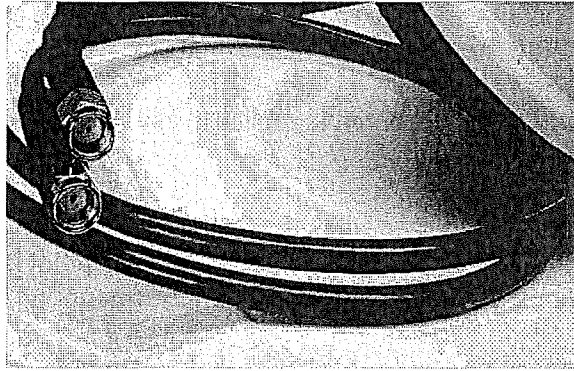
2. Visually verify the antenna, cabling, and connector ends were not damaged during shipment.
3. With the nut and washer removed, insert the cable into the antenna mounting hole on the *left* side of the FCT cabinet (as you are facing the cabinet interior).
  - Ensure the antenna sits flush with the top of the FCT cabinet and the gasket is not obstructed by any debris.

 **CAUTION: Do not use silicone or any other liquid gasket material.**

4. Install the split washer over the cabling, and slide the washer over the threaded mounting stud till the washer is flat against the underside of the FCT cabinet.
5. Install the split nut over the cabling and slide the nut up to the threaded mounting stud.
6. Tighten the nut.
  - Apply a small amount of down-force on the antenna itself, compressing the gasket material slightly, while tightening the nut.
7. Route the antenna cable to the RF-FCTI board location, without any tight bends or kinks in the line.
8. Hand-tighten the antenna connectors on the RF-FCTI board.


## Install the Moxa Antenna

1. Remove the Moxa Antenna from the box, ensuring you remove all necessary hardware (split washer and split nut) prior to disposing of the box.



**Figure 23. Moxa Antenna Connections Have Female Pins**

2. Visually verify the antenna, cabling, and connector ends were not damaged during shipment.
3. With the nut and washer removed, insert the cable into the antenna mounting hole on the *right* side of the FCT cabinet (as you are facing the cabinet interior).
  - Ensure the antenna sits flush with the top of the cabinet and the gasket is not obstructed by any debris.

 **CAUTION: Do not use silicone or any other liquid gasket material.**

4. Install the split washer over the cabling, and slide the washer over the threaded mounting stud till the washer is flat against the underside of the FCT cabinet.
5. Install the split nut over the cabling and slide the nut up to the threaded mounting stud.
6. Tighten the split nut.
  - Apply a small amount of down-force on the antenna itself, compressing the gasket material slightly, while tightening the nut.
7. Route the antenna cable to the Cradlepoint/Moxa 3131A mounting location without any tight bends or kinks in the line.

## 4. Antenna Mounting

The Fuel Control Terminal's antennas are commonly packed and shipped within the box containing the FCT base. The antennas are in individual boxes with all their mounting hardware included.

<b>RF-FCTI Antenna</b>	ANT-0940-2X-A2	(male connectors)
<b>Moxa Antenna</b>	ANT-0940-WH-2X	(female connectors)
<b>Cradlepoint Antenna</b>	ANT-0940-2x-B-S	

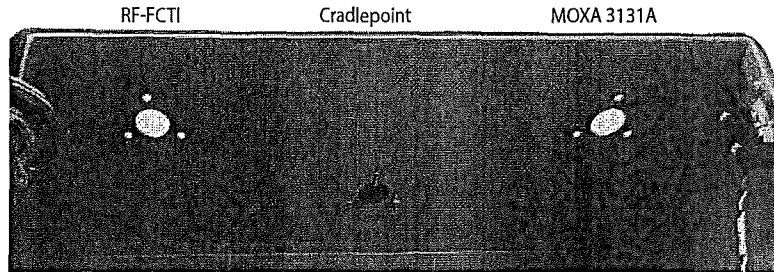






Figure 21. Internal FCT View of the Antenna Mounting Holes

-  **WARNING: DO NOT** install or replace any antennas while power is applied to the FCT. Antennas should be installed **PRIOR** to the FCT being powered on.
-  **WARNING: Do not** fold or bundle antenna cabling in any way during installation. Antenna cabling must have gentle bends.
-  **NOTE:** The Moxa antenna is utilized when the Cradlepoint IBR-600C is configured for both cellular and a Wi-Fi Access Point for Ward 4 CANceivers. If the Cradlepoint is not being used in this capacity, a blank off plate will need to be installed for the unused mounting location.
-  **CAUTION:** Antenna mounting and connections are hand tighten only. No tools are required. The use of hand tools may cause damage to the connectors or gasket material

### Install the RF-FCTI Antenna

1. Remove the RF-FCTI Antenna from the box, ensuring you remove all necessary hardware (split washer and split nut) prior to disposing of the box.

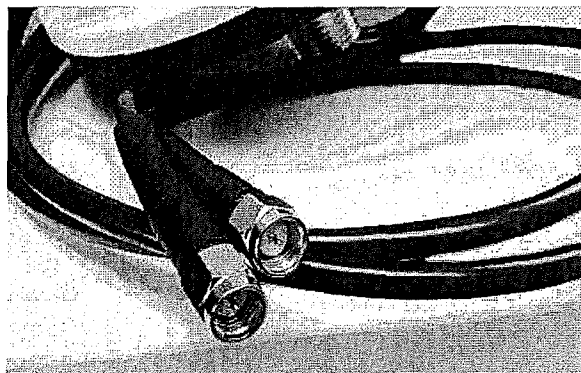


Figure 22. RF-FCTI Antenna Connections Have Male Pins

**SECTION E: BIDDERS ACKNOWLEDGEMENT**

**SOUTH POINT RD TRUCK SCALE AND FUEL POINT  
CONTRACT NO. 8606**

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 - 2021 Edition thereto, Form of Agreement, Form of Bond, and Addenda issued and attached to the plans and specifications on file in the office of the City Engineer, hereby proposes to provide and furnish all the labor, materials, tools, and expendable equipment necessary to perform and complete in a workmanlike manner the specified construction on this project for the City of Madison; all in accordance with the plans and specifications as prepared by the City Engineer, including Addenda Nos. 1 through 12-13-21 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 Raymond P. Cahill, Inc. (name of corporation, partnership, or person submitting bid) a corporation organized and existing under the laws of the State of WISCONSIN a partnership consisting of \_\_\_\_\_; an individual trading as \_\_\_\_\_; of the City of MADISON State of WISCONSIN; 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.

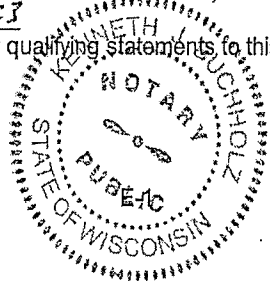
[Signature]  
 \_\_\_\_\_  
 SIGNATURE

Secretary  
 \_\_\_\_\_  
 TITLE, IF ANY

Sworn and subscribed to before me this  
16<sup>th</sup> day of December, 20 21.

[Signature]  
 \_\_\_\_\_

(Notary Public or other officer authorized to administer oaths)  
 My Commission Expires 3/27/2023  
 Bidders shall not add any conditions or qualifying statements to this Proposal.



Contract 8606 – Raymond P. Cattell, Inc.

Section F: Best Value Contracting (BVC)

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

**Method of Submittal for BVC (click in box below to choose) \***

I will submit Bid Express fillable online form (BVC).

Best Value Contracting

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

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

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

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

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

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

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

SOUTH POINT RD TRUCK SCALE AND FUEL POINT  
CONTRACT NO. 8606

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: Raymond P. Cattell Inc.  
Address: 2401 Kondrasi Road, Madison, WI 53718  
Telephone Number: 608-222-3180 Fax Number: 608-222-2753  
Contact Person/Title: Arthur Mackesey

Prime Bidder Certification

I, Arthur Mackesey, Secretary of  
Name Title  
Raymond P. Cattell Inc. certify that the information  
Company

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

[Signature]  
Witness Signature  
12/16/2021  
Date

[Signature]  
Bidder's Signature

**SOUTH POINT RD TRUCK SCALE AND FUEL POINT  
CONTRACT NO. 8606**

**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
Schlobahn Trucking	Trucking	2.15 %
Asti Spaving Inc.		.06 %
S&L Underground	- See Attachment	.17 %
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
<b>Subtotal SBE who are NOT suppliers:</b>		<b>2.98 %</b>

SBE Subcontractors Who Are Suppliers

Name(s) of SBEs Utilized	Type of Work	% of Total Bid Amount
		%
		%
		%
		%
		%
		%
		%
		%
<b>Subtotal Contractors who are suppliers:</b>		<b>_____ % x 0.6 = _____ % (discounted to 60%)</b>
<b>Total Percentage of SBE Utilization:</b>	<b>2.98</b>	<b>%</b>

**SOUTH POINT RD TRUCK SCALE AND FUEL POINT**

CONTRACT NO. 8606

DATE: 12/16/21

**Raymond P. Cattell, Inc.**

Item	Quantity	Price	Extension
<b>Section B: Proposal Page</b>			
10701 - TRAFFIC CONTROL - L.S.	1.00	\$10,000.00	\$10,000.00
10912 - MOBILIZATION - L.S.	1.00	\$150,000.00	\$150,000.00
20101 - EXCAVATION CUT - C.Y.	7600.00	\$17.50	\$133,000.00
20217 - CLEAR STONE - TON	215.00	\$25.00	\$5,375.00
20219 - BREAKER RUN - TON	6400.00	\$15.00	\$96,000.00
20221 - TOPSOIL - S.Y.	17000.00	\$2.25	\$38,250.00
20232 - MEDIUM RIPRAP - GLACIAL FIELD STONE - TON	9.00	\$165.00	\$1,485.00
20241 - RIPRAP FILTER FABRIC, TYPE HR - SY	12.00	\$10.00	\$120.00
20303 - SAWCUT BITUMINOUS PAVEMENT, FULL DEPTH - L.F.	541.00	\$2.50	\$1,352.50
20313 - REMOVE INLET - EACH	2.00	\$500.00	\$1,000.00
20314 - REMOVE PIPE (STORM) - LF	237.00	\$15.00	\$3,555.00
20322 - REMOVE CONCRETE CURB & GUTTER - L.F.	175.00	\$4.00	\$700.00
20323 - REMOVE CONCRETE SIDEWALK & DRIVE - S.F.	610.00	\$3.00	\$1,830.00
20336 - PIPE PLUG (STORM) - EACH	2.00	\$500.00	\$1,000.00
20404 - CLEARING - L.S.	1.00	\$2,500.00	\$2,500.00
20409 - GRUBBING - L.S.	1.00	\$2,500.00	\$2,500.00
20506 - ADJUST SEWER ACCESS STRUCTURE CASTING - EACH	2.00	\$500.00	\$1,000.00
20701 - TERRACE SEEDING - S.Y.	1100.00	\$2.10	\$2,310.00
20704 - INFILTRATION SEEDING - S.Y.	12000.00	\$1.65	\$19,800.00
21002 - EROSION CONTROL INSPECTION - EACH	4.00	\$750.00	\$3,000.00
21011 - CONSTRUCTION ENTRANCE - EACH	2.00	\$2,500.00	\$5,000.00
21013 - STREET SWEEPING - LUMP SUM	1.00	\$3,500.00	\$3,500.00
21021 - SILT FENCE - COMPLETE - LF	210.00	\$2.50	\$525.00
21024 - SILT SOCK (12 INCH) - COMPLETE - LF	1650.00	\$3.50	\$5,775.00
21049 - INLET PROTECTION, RIGID FRAME - PROVIDE AND INSTALL - EACH	7.00	\$180.00	\$1,260.00
21050 - INLET PROTECTION, RIGID FRAME - MAINTAIN - EACH	7.00	\$50.00	\$350.00
21051 - INLET PROTECTION, RIGID FRAME - REMOVE - EACH	7.00	\$50.00	\$350.00
21061 - EROSION MATTING, CLASS I, URBAN TYPE A - S.Y.	18000.00	\$1.85	\$33,300.00
21073 - EROSION MATTING, CLASS II, TYPE C-ORGANIC - S.Y.	515.00	\$4.15	\$2,137.25
30201 - TYPE 'A' CONCRETE CURB & GUTTER - L.F.	320.00	\$45.00	\$14,400.00
30301 - 5" CONCRETE SIDEWALK - S.F.	790.00	\$6.00	\$4,740.00
40101 - CRUSHED AGGREGATE BASE COURSE GRADATION NO. 1 - TON	350.00	\$25.00	\$8,750.00
40102 - CRUSHED AGGREGATE BASE COURSE GRADATION NO. 2 - TON	6000.00	\$17.50	\$105,000.00
40203 - HMA PAVEMENT 3 MT 58-28 S - TON	2100.00	\$66.10	\$138,810.00
40205 - HMA PAVEMENT 4 MT 58-28 H - TON	1300.00	\$78.65	\$102,245.00
40218 - TACK COAT - GAL	600.00	\$3.00	\$1,800.00
50211 - SELECT BACKFILL FOR STORM SEWER - TF	1775.00	\$0.01	\$17.75
50212 - SELECT BACKFILL SANITARY SEWER - T.F.	667.00	\$0.01	\$6.67
50301 - 8 INCH PVC SEWER PIPE - L.F.	637.00	\$82.20	\$52,361.40
50323 - 12 INCH PVC PRESSURE SEWER PIPE - L.F.	6.00	\$225.00	\$1,350.00
50351 - 4 INCH SANITARY SEWER LATERAL - L.F.	30.00	\$55.40	\$1,662.00



**SOUTH POINT RD TRUCK SCALE AND FUEL POINT**

CONTRACT NO. 8606

DATE: 12/16/21

**Raymond P. Cattell, Inc.**

Item	Quantity	Price	Extension
50361 - WASTEWATER CONTROL - L.S.	1.00	\$5,000.00	\$5,000.00
50371 - LATERAL BACKFLOW PREVENTOR - EACH	1.00	\$902.00	\$902.00
50402 - 15 INCH TYPE I RCP STORM SEWER PIPE - L.F.	45.00	\$60.00	\$2,700.00
50403 - 18 INCH TYPE I RCP STORM SEWER PIPE - L.F.	54.00	\$67.00	\$3,618.00
50405 - 24 INCH TYPE I RCP STORM SEWER PIPE - L.F.	150.00	\$75.00	\$11,250.00
50419 - 19 INCH X 30 INCH TYPE I HERCP STORM SEWER PIPE - L.F.	337.00	\$100.00	\$33,700.00
50421 - 29 INCH X 45 INCH TYPE I HERCP STORM SEWER PIPE - L.F.	522.00	\$175.00	\$91,350.00
50433 - 15 INCH TYPE II PAVEMENT STORM SEWER PIPE - L.F.	68.00	\$60.00	\$4,080.00
50435 - 24 INCH TYPE II PAVEMENT STORM SEWER PIPE - L.F.	599.00	\$75.00	\$44,925.00
50465 - 24 INCH RCP AE - EACH	1.00	\$600.00	\$600.00
50482 - 19 INCH X 30 INCH HERCP AE - EACH	4.00	\$650.00	\$2,600.00
50484 - 29 INCH X 45 INCH HERCP AE - EACH	1.00	\$1,000.00	\$1,000.00
50601 - 12 INCH RCP AE GATE - EACH	1.00	\$350.00	\$350.00
50602 - 15 INCH RCP AE GATE - EACH	1.00	\$400.00	\$400.00
50603 - 18 INCH RCP AE GATE - EACH	2.00	\$500.00	\$1,000.00
50605 - 24 INCH RCP AE GATE - EACH	1.00	\$650.00	\$650.00
50622 - 19 INCH X 30 INCH HERCP AE GATE - EACH	4.00	\$700.00	\$2,800.00
50624 - 29 INCH X 45 INCH HERCP AE GATE - EACH	1.00	\$1,350.00	\$1,350.00
50701 - 4' DIA SANITARY SAS - EACH	4.00	\$4,024.00	\$16,096.00
50723 - 3'X3' STORM SAS - EACH	3.00	\$4,000.00	\$12,000.00
50724 - 4'X4' STORM SAS - EACH	7.00	\$4,500.00	\$31,500.00
50725 - 5'X5' STORM SAS - EACH	1.00	\$6,500.00	\$6,500.00
50741 - TYPE "H" INLET - EACH	1.00	\$2,500.00	\$2,500.00
50762 - SADDLED INLET TYPE I - EACH	2.00	\$2,500.00	\$5,000.00
50771 - INTERNAL CHIMNEY SEAL - EACH	2.00	\$455.00	\$910.00
50780 - CLEANOUT - EACH	6.00	\$400.00	\$2,400.00
50791 - SANITARY SEWER TAP - EACH	1.00	\$4,008.00	\$4,008.00
50797 - EXTERNAL SEWER ACCESS STRUCTURE JOINT SEAL - EACH	1.00	\$304.00	\$304.00
50801 - UTILITY LINE OPENING (UNDISTRIBUTED) - EACH	5.00	\$650.00	\$3,250.00
70002 - FURNISH AND INSTALL 6 INCH PIPE AND FITTINGS - L.F.	100.00	\$60.60	\$6,060.00
70004 - FURNISH AND INSTALL 10 INCH PIPE AND FITTINGS - L.F.	600.00	\$104.00	\$62,400.00
70031 - FURNISH AND INSTALL 6 INCH WATER VALVE - EACH	5.00	\$2,451.00	\$12,255.00
70033 - FURNISH AND INSTALL 10 INCH WATER VALVE - EACH	2.00	\$4,190.00	\$8,380.00
70040 - FURNISH AND INSTALL HYDRANT - EACH	2.00	\$5,026.00	\$10,052.00
70041 - REMOVE AND RELOCATE HYDRANT - EACH	1.00	\$1,077.00	\$1,077.00
70051 - FURNISH AND INSTALL 1-1/2 INCH SERVICE LATERAL - EACH	1.00	\$9,617.00	\$9,617.00
70080 - CUT-IN OR CONNECT TO EXISTING WATER SYSTEM - EACH	3.00	\$3,410.00	\$10,230.00
90001 - 9" CONCRETE DRIVE - S.F.	430.00	\$8.00	\$3,440.00
90002 - REINFORCED TYPE 'A' CONCRETE CURB & GUTTER - L.F.	55.00	\$65.00	\$3,575.00

**SOUTH POINT RD TRUCK SCALE AND FUEL POINT**

CONTRACT NO. 8606

DATE: 12/16/21

**Raymond P. Cattell, Inc.**

Item	Quantity	Price	Extension
90003 - REMOVING DEBRIS - L.S.	1.00	\$5,000.00	\$5,000.00
90004 - REMOVE PERMANENT TYPE III BARRICADE - EACH	3.00	\$150.00	\$450.00
90005 - SEEDING - AGGRESSIVE MIX - S.Y.	4000.00	\$0.70	\$2,800.00
90006 - CONCRETE FLUME - EACH	1.00	\$800.00	\$800.00
90007 - GEOSYNTHETIC REINFORCEMENT FABRIC - S.Y.	8100.00	\$8.00	\$64,800.00
90008 - EXCAVATION TOPSOIL CUT - C.Y.	5500.00	\$6.50	\$35,750.00
90030 - BIORETENTION SOUTH OUTLET - EACH	1.00	\$11,000.00	\$11,000.00
90031 - BIORETENTION NORTH OUTLET - EACH	1.00	\$11,000.00	\$11,000.00
90032 - CONSTRUCTION FENCE (PLASTIC) - L.S.	1.00	\$7,500.00	\$7,500.00
90033 - 8" DRILLED PVC UNDERDRAIN - L.F.	442.00	\$30.00	\$13,260.00
90034 - ENGINEERED SOIL - C.Y.	700.00	\$45.00	\$31,500.00
90035 - 8" SCH 35 SWEEP AND CLEAN OUT - EACH	3.00	\$700.00	\$2,100.00
90036 - PLANTING MIX TOPSOIL - SY	1000.00	\$10.00	\$10,000.00
90099 - CONSTRUCTION SURVEYING - LUMP SUM	1.00	\$15,000.00	\$15,000.00
90100 - TRUCK SCALE CONCRETE WORK (RAMPS AND FOUNDATION SLAB) - SF	2000.00	\$18.30	\$36,600.00
90101 - TRUCK SCALE CONCRETE WORK (SHOULDERS AND POLE SUPPORT PADS) - SF	1200.00	\$10.90	\$13,080.00
90102 - TRUCK SCALE CONCRETE WORK (SCALE PAN) - SF	575.00	\$9.20	\$5,290.00
90103 - ELECTRICAL AND DATA WORK FOR TRUCK SCALE - LUMP SUM	1.00	\$10,500.00	\$10,500.00
90104 - TRUCK SCALE MIDWEST GUARDRAIL SYSTEM (MGS) - LUMP SUM	1.00	\$12,000.00	\$12,000.00
90110 - CONCRETE WORK (FUEL POINT) - SF	8000.00	\$12.10	\$96,800.00
90115 - FUEL DISPENSING EQUIPMENT DESIGN AND INSTALLATION - LUMP SUM	1.00	\$295,000.00	\$295,000.00
90120 - GAS HUT CONSTRUCTION - LUMP SUM	1.00	\$236,000.00	\$236,000.00
90130 - POLE MOUNTED AREA LIGHTS - EA	9.00	\$5,200.00	\$46,800.00
90131 - 6" STEEL PIPE BOLLARD "B-1" - EA	24.00	\$700.00	\$16,800.00
90132 - 4" STEEL PIPE BOLLARD "B-2" - EA	2.00	\$700.00	\$1,400.00
90133 - ELECTRICAL VEHICLE CHARGING STATION (ROUGH-IN) - EA	2.00	\$2,500.00	\$5,000.00
90134 - PHOTOVOLTAIC (PV) SOLAR SYSTEM - LUMP SUM	1.00	\$20,000.00	\$20,000.00
90135 - CHAIN LINK FENCING AND GATES - LUMP SUM	1.00	\$130,500.00	\$130,500.00
90136 - TIME LAPSE PHOTOGRAPHY - LUMP SUM	1.00	\$15,000.00	\$15,000.00
<b>109 Items</b>	<b>Totals</b>		<b>\$2,529,676.57</b>



Department of Public Works  
**Engineering Division**  
Robert F. Phillips, P.E., City Engineer  
City-County Building, Room 115  
210 Martin Luther King, Jr. Boulevard  
Madison, Wisconsin 53703  
Phone: (608) 266-4751  
Fax: (608) 264-9275  
[engineering@cityofmadison.com](mailto:engineering@cityofmadison.com)  
[www.cityofmadison.com/engineering](http://www.cityofmadison.com/engineering)

**Deputy City Engineer**  
Gregory T. Fries, P.E.  
**Deputy Division Manager**  
Kathleen M. Cryan  
**Principal Engineer 2**  
Christopher J. Petykowski, P.E.  
John S. Fahmey, P.E.  
**Principal Engineer 1**  
Christina M. Bachmann, P.E.  
Mark D. Moder, P.E.  
Janet Schmidt, P.E.  
James M. Wolfe, P.E.  
**Facilities & Sustainability**  
Bryan Cooper, Principal Architect  
**Mapping Section Manager**  
Eric T. Pederson, P.S.  
**Financial Manager**  
Steven B. Danner-Rivers

## BIENNIAL BID BOND

Raymond P. Cattell, Inc.

(a corporation of the State of Wisconsin)  
(individual), (partnership), (hereinafter referred to as the "Principal") and  
The Ohio Casualty Insurance Company

a corporation of the State of New Hampshire (hereinafter referred to as the "Surety") and licensed to do business in the State of Wisconsin, are held and firmly bound unto the City of Madison, Wisconsin (hereinafter referred to as the "City"), in the sum equal to the individual proposal guaranty amounts of the total bid or bids of the Principal herein accepted by the City, for the payment of which the Principal and the Surety hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns.

The condition of this obligation is that the Principal has submitted to the City certain bids for projects from the time period of February 1, 2020 through February 1, 2022.

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

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

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

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

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

**PRINCIPAL**

Raymond P. Cattell, Inc.  
COMPANY NAME AFFIX SEAL

11/21/19  
DATE

By: [Signature] TREASURER  
SIGNATURE AND TITLE

**SURETY**

The Ohio Casualty Insurance Company  
COMPANY NAME AFFIX SEAL

November 19, 2019  
DATE

By: [Signature] Attorney-in-Fact  
SIGNATURE AND TITLE

This certifies that I have been duly licensed as an agent for the Surety in Wisconsin under National Provider No. 17134535 for the year 2020 and appointed as attorney in fact with authority to execute this bid bond, which power of attorney has not been revoked.

November 19, 2019  
DATE

[Signature]  
AGENT SIGNATURE

828 John Nolen Drive  
ADDRESS

Madison, WI 53713  
CITY, STATE AND ZIP CODE

608-273-0655  
TELEPHONE NUMBER

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



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

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

Certificate No: 8202117-969037

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Richard F. Kekula; Michael J. Moore; Travis Schreiber; Lacey Endres; Tracy Krause; Michelle McLane; Dani Noble; Kim E. Schwenn; Trisha Stark; Julie Zimmerman

all of the city of Madison state of WI each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 12th day of September, 2019.



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

By: David M. Carey, Assistant Secretary

State of PENNSYLVANIA ss
County of MONTGOMERY

On this 12th day of September, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV - OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII - Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation - The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization - By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 19th day of November, 2019.



By: Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

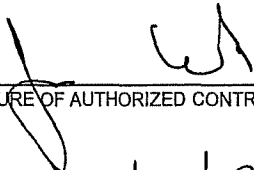
## **CERTIFICATE OF BIENNIAL BID BOND**

TIME PERIOD-VALID (FROM/TO) February 1, 2020 - February 1, 2022
NAME OF SURETY The Ohio Casualty Insurance Company
NAME OF CONTRACTOR Raymond P. Cattell, Inc.
CERTIFICATE HOLDER City of Madison, Wisconsin

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

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

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

  
\_\_\_\_\_  
SIGNATURE OF AUTHORIZED CONTRACTOR REPRESENTATIVE

11/21/19  
\_\_\_\_\_  
DATE

## SECTION H: AGREEMENT

THIS AGREEMENT made this 19th day of January in the year Two Thousand and Twenty-two between RAYMOND P. CATTELL, INC. hereinafter called the Contractor, and the City of Madison, Wisconsin, hereinafter called the City.

WHEREAS, the Common Council of the said City of Madison under the provisions of a resolution adopted JANUARY 18, 2022, 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:

### SOUTH POINT RD TRUCK SCALE AND FUEL POINT CONTRACT NO. 8606

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 TWO MILLION FIVE HUNDRED TWENTY-NINE THOUSAND SIX HUNDRED SEVENTY-SIX AND 57/100 (\$2,529,676.57) 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 Contractor 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 ten thousand dollars (\$10,000), 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)(I), MGO as of the first time they seek or renew pre-qualification status on or after January 1, 2016. The City will monitor compliance of subcontractors through the pre-qualification process.

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

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

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

- b. **Requirements.** For the duration of this Contract, the Contractor shall:
  1. Remove from all job application forms any questions, check boxes, or other inquiries regarding an applicant's arrest and conviction record, as defined herein.

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

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

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

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

**SOUTH POINT RD TRUCK SCALE AND FUEL POINT  
CONTRACT NO. 8606**

IN WITNESS WHEREOF, the Contractor has hereunto set his/her hand and seal and the City has caused this contract to be sealed with its corporate seal and to be executed by its Mayor and City Clerk on the dates written below.

Countersigned:

RAYMOND P. CATTELL, INC.

Company Name

<u>Jason Price</u>	<u>1-19-2022</u>	<u>[Signature]</u>	<u>1-19-2022</u>
Witness	Date	President	Date
<u>[Signature]</u>	<u>1-19-2022</u>	<u>[Signature]</u>	<u>1-19-2022</u>
Witness	Date	Secretary	Date

CITY OF MADISON, WISCONSIN

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

Approved as to form:

<u>[Signature]</u>	<u>1/31/2022</u>	<u>Michael Hoar</u>	<u>2-3-22</u>
Finance Director	Date	City Attorney	Date
<u>[Signature]</u>	<u>2/3/2022</u>	<u>[Signature]</u>	<u>2/3/22</u>
Witness	Date	Mayor	Date
<u>[Signature]</u>	<u>1-28-2022</u>	<u>Maribeth Witzel Behl</u>	<u>1-28-2022</u>
Witness	Date	City Clerk	Date

**SECTION I: PAYMENT AND PERFORMANCE BOND**

LET ALL KNOW BY THESE DOCUMENTS PRESENTED, that we RAYMOND P. CATTELL, INC.  
as principal, and The Ohio Casualty Insurance Company  
Company of New Hampshire as surety, are held and firmly bound unto the City of  
Madison, Wisconsin, in the sum of TWO MILLION FIVE HUNDRED TWENTY-NINE THOUSAND SIX  
HUNDRED SEVENTY-SIX AND 57/100 (\$2,529,676.57) 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:

**SOUTH POINT RD TRUCK SCALE AND FUEL POINT  
CONTRACT NO. 8606**

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 19th day of January, 2022

Countersigned:

[Signature]  
Witness  
[Signature]  
Secretary

RAYMOND P. CATTELL, INC.  
Company Name (Principal)  
[Signature] [Signature]  
President TREASURER Seal

Approved as to form:

[Signature]  
City Attorney

The Ohio Casualty Insurance Company  
Surety Seal  
 Salary Employee  Commission  
By [Signature]  
Attorney-in-Fact Tracy Krause

This certifies that I have been duly licensed as an agent for the above company in Wisconsin under  
National Producer Number 8996012 for the year 2022, and appointed as attorney-in-fact  
with authority to execute this payment and performance bond which power of attorney has not been  
revoked.

January 19, 2022  
Date

[Signature]  
Agent Signature Tracy Krause



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

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

Certificate No: 8205561-969037

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Ashleigh Asleson, Cathleen C. Christensen, Chelsea A. Bremer, Dani Noble, David J. Rudnik, Julie Zimmerman, Kim E. Schwenn, Lacey Endres, Michael J. Moore, Pamela Ronski, Pennie L. Hildebrandt, Richard F. Kekula, Tracy Krause, Travis Schreiber, Trisha Stark

all of the city of Madison state of WI each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 7th day of May, 2021.



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

By: [Signature]
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 7th day of May, 2021 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



Commonwealth of Pennsylvania - Notary Seal
Teresa Pastella, Notary Public
Montgomery County
My commission expires March 28, 2025
Commission number 1126044
Member, Pennsylvania Association of Notaries

By: [Signature]
Teresa Pastella, Notary Public

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I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 19th day of January, 2022.



By: [Signature]
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

For bond and/or Power of Attorney (POA) verification inquiries, please call 610-832-8240 or email HOSUR@libertymutual.com.