



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

VIA WEBSITE POSTING

January 5, 2018

Contract No. T201753109.01
Federal Aid Project No. DE-2017-001
Lewes Park & Ride and Maintenance Facility-Phase 2
Sussex County

Ladies and Gentlemen:

Enclosed is Addendum No. 3 for the referenced contract consisting of the following:

1. The date for the receipt of bids has been moved to Tuesday, **January 23, 2018**, until 2:00 p.m.
2. The Bid Proposal Cover, revised, to be substituted for the same page in the Proposal.
3. Seven (7) pages, Appendix-A, Section 231126 - Facility Liquefied-Petroleum Gas Dispensing System, revised, to be substituted for the same pages in the Proposal.
4. One (1) page, Appendix-A, Section 084513 - Structured-Polycarbonate-Panel Assemblies, paragraph 2.2 Structured-Polycarbonate-Panel Assemblies (Wall Panels), revised, to be substituted for the same page in the Proposal. Two manufacturers have been added.

Please note the revisions listed above and submit your bid based upon this information.

Sincerely,

~signature on file~

Robert A. Kovacs
Competitively Bid Contracts Coordinator
Delaware Department of Transportation

STATE OF DELAWARE



DEPARTMENT OF TRANSPORTATION

BID PROPOSAL

for

CONTRACT T201753109.01

FEDERAL AID PROJECT NO. DE-2017-001

CFDA NO. 20.509 & 20.526

Lewes Park & Ride and Maintenance Facility-Phase 2

Sussex County

ADVERTISEMENT DATE: December 8, 2017

PROSPECTIVE BIDDERS ARE ADVISED THAT THERE WILL BE A MANDATORY PRE-BID MEETING THURSDAY DECEMBER 21, 2017 AT 2:00 P.M. IN THE DeIDOT ADMINISTRATION BUILDING, 800 BAY ROAD, DOVER, DELAWARE, 19903.

COMPLETION TIME: 383 Calendar Days

SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
DELAWARE DEPARTMENT OF TRANSPORTATION
AUGUST 2016

Bids will be received in the Bidder's Room at the Delaware Department of Transportation's Administration Building, 800 Bay Road, Dover, Delaware until 2:00 P.M. local time January 9 **23**, 2018

SECTION 231126 - FACILITY LIQUEFIED-PETROLEUM GAS DISPENSING SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. LPG auto-gas dispensing system.
 2. Pipes, tubes, and fittings.
 3. Piping specialties.
 4. Piping and tubing joining materials.
 5. Valves.
 6. Storage containers.

1.2 DEFINITIONS

- A. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.
- B. LPG: Liquefied-petroleum gas.

1.3 PERFORMANCE REQUIREMENTS

- A. Minimum Operating-Pressure Ratings:
1. For Piping Containing Only Vapor (Schedule 80 Carbon Steel):
 - a. Piping and Valves: ~~125~~ 250 psig unless otherwise indicated.
 2. For Piping Containing Liquid (Schedule 80 Carbon Steel):
 - a. Piping between Shutoff Valves: 350 psig unless otherwise indicated.
 - b. Piping Other Than Above: 250 psig unless otherwise indicated.
 - c. Valves and Fittings: 250 psig unless otherwise indicated.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of the following:
1. Piping specialties.
 2. Valves. Include pressure rating, capacity, settings, and electrical connection data of selected models.
 3. Pressure regulators. Indicate pressure ratings and capacities.
 4. Dielectric fittings.

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5. Storage containers.
 6. Dispenser with all associated components, nozzle, hose, valve.
 7. Pump and all associated components.
 8. Mass Flow meters.
 9. Skid package dispensing components for complete auto dispensing system.
- B. Shop Drawings: For LPG auto-gas dispensing system piping layout. Include plans with piping layout and details for fabrication of skid mounted factory installed components including storage tanks, piping, pump, pump controller, dispenser, and valves. Show interconnecting piping between tanks, pump and dispenser and interconnecting wiring.
1. Shop Drawing Scale: 1/8 inch per foot.
- C. Delegated-Design Submittal: For LPG piping and equipment indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation. Contractor shall provide (size and quantity as indicated on drawings) aboveground steel LPG propane tank constructed in compliance with ASME Boiler and Pressure Vessel Code and NFPA 58. Contractor to provide manufacturer's standard anchoring components, for LPG dispensing system that is to be mounted on factory installed skid package.
- 1.5 INFORMATIONAL SUBMITTALS
- A. Qualification Data: For qualified professional engineer.
 - B. Welding certificates.
 - C. Field quality-control reports.
- 1.6 CLOSEOUT SUBMITTALS
- A. Operation and Maintenance Data: For LPG equipment and accessories to include in emergency, operation, and maintenance manuals.
- 1.7 QUALITY ASSURANCE
- A. Steel Support Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

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- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Handling Flammable Liquids: Remove and dispose of liquids from existing LPG piping according to requirements of authorities having jurisdiction.
- B. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

1.9 COORDINATION

- A. Coordinate sizes and locations of concrete bases with actual equipment provided.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, black steel, Schedule 80, Type E or S, Grade B.
 - 1. Malleable-Iron Threaded Fittings: ASME B16.3, Class ~~150~~ 300, standard pattern.
 - 2. Wrought-Steel Welding Fittings: ASTM A 234/A 234M for butt welding and socket welding.
 - 3. Unions: ASME B16.39, Class ~~150~~ 300, malleable iron with brass-to-iron seat, ground joint, and threaded ends.
 - 4. Forged-Steel Flanges and Flanged Fittings: ASME B16.5, minimum Class ~~150~~ 300, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
 - a. Material Group: 1.1.
 - b. End Connections: Threaded or butt welding to match pipe.
 - c. Lapped Face: Not permitted underground.
 - d. Gasket Materials: ASME B16.20, metallic, flat, asbestos free, aluminum o-rings, and spiral-wound metal gaskets.
 - e. Bolts and Nuts: ASME B18.2.1, carbon steel aboveground, and stainless steel underground.
 - 5. Mechanical Couplings:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Dresser Piping Specialties; Division of Dresser, Inc.

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2) Smith-Blair, Inc.

- b. Steel flanges and tube with epoxy finish.
- c. Buna-nitrile seals.
- d. Steel bolts, washers, and nuts.
- e. Steel body couplings installed underground on plastic pipe shall be factory equipped with anode.

2.2 PIPING SPECIALTIES

A. Flexible Piping Joints:

- 1. Approved for LPG service.
- 2. Stainless-steel bellows with woven, flexible, bronze, wire-reinforcing protective jacket.
- 3. Minimum working pressure of 250 psig and 250 deg F operating temperature.
- 4. Flanged- or threaded-end connections to match equipment connected and shall be capable of minimum 3/4-inch misalignment.
- 5. Maximum 36-inch length for liquid LPG lines.

B. Y-Pattern Strainers:

- 1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.
- 2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
- 3. Strainer Screen: 40-mesh startup strainer and perforated stainless-steel basket with 50 percent free area.
- 4. CWP Rating: ~~125~~ 250 psig.

C. Weatherproof Vent Cap: Cast- or malleable-iron increaser fitting with corrosion-resistant wire screen, with free area at least equal to cross-sectional area of connecting pipe and threaded-end connection.

2.3 JOINING MATERIALS

A. Joint Compound and Tape: Suitable for LPG.

B. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.4 MANUAL GAS SHUTOFF VALVES

A. See "Aboveground Manual Gas Shutoff Valve Schedule" Articles for where each valve type is applied in various services.

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- B. General Requirements for Metallic Valves, NPS 2 and Smaller for Vapor Service: Comply with ASME B16.33.
1. CWP Rating: ~~125~~ 250 psig.
 2. Threaded Ends: Comply with ASME B1.20.1.
 3. Dryseal Threads on Flare Ends: Comply with ASME B1.20.3.
 4. Tamperproof Feature: Locking feature for valves indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
 5. Listing: Listed and labeled by an NRTL acceptable to authorities having jurisdiction for valves 1 inch and smaller.
 6. Service Mark: Valves 1-1/4 inch to NPS 2 shall have initials "WOG" permanently marked on valve body.
- C. General Requirements for Metallic Valves, NPS 2-1/2 and Larger: Comply with ASME B16.38.
1. CWP Rating: ~~125~~ 250 psig.
 2. Flanged Ends: Comply with ASME B16.5 for steel flanges.
 3. Tamperproof Feature: Locking feature for valves indicated in "Underground Manual Gas Shutoff Valve Schedule" and "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
 4. Service Mark: Initials "WOG" shall be permanently marked on valve body.
- D. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim: MSS SP-110.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BrassCraft Manufacturing Company; a Masco company.
 - b. Conbraco Industries, Inc.; Apollo Div.
 - c. Lyall, R. W. & Company, Inc.
 - d. McDonald, A. Y. Mfg. Co.
 - e. Perfection Corporation; a subsidiary of American Meter Company.
 2. Body: Bronze, complying with ASTM B 584.
 3. Ball: Chrome-plated bronze.
 4. Stem: Bronze; blowout proof.
 5. Seats: Reinforced TFE; blowout proof.
 6. Packing: Threaded-body packnut design with adjustable-stem packing.
 7. Ends: Threaded, flared, or socket as indicated in "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
 8. CWP Rating: 600 psig.
 9. Listing: Valves NPS 1 and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
 10. Service: Suitable for LPG service with "WOG" indicated on valve body.

2.5 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Capitol Manufacturing Company.
 - b. Matco-Norca, Inc.
 - c. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - d. Wilkins; a Zurn company.
 - 2. Description:
 - a. Standard: ASSE 1079.
 - b. Pressure Rating: ~~125~~ 250 psig minimum at 180 deg F.
 - c. End Connections: Solder-joint copper alloy and threaded ferrous.
- C. Dielectric Flanges:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Capitol Manufacturing Company.
 - b. Matco-Norca, Inc.
 - c. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
 - d. Wilkins; a Zurn company.
 - 2. Description:
 - a. Standard: ASSE 1079.
 - b. Factory-fabricated, bolted, companion-flange assembly.
 - c. Pressure Rating: ~~125~~ 250 psig minimum at 180 deg F.
 - d. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.
 - e.

2.6 LPG AUTO-GAS DISPENSING SYSTEM

- A. Description: Factory fabricated skid mounted turn-key package auto-gas dispensing system, with (2) 1,990 gallon horizontal storage tanks, high pressure supply pump, dispenser, shut-off valves, meter, relief valves, fuel management system and interconnecting piping between tank, pump and dispenser. Provide a

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complete LPG auto-gas dispensing system factory fabricated and installed in the field by the auto-gas manufacturer's service technician.

1. ~~Basis of Design~~ Available Manufacturers: Subject to compliance with requirements, provide ~~Industrial Propane Service, Inc. or comparable products~~ by one of the following:
 - a. Superior Energy Systems, Inc.
 - b. Industrial Propane Service, Inc.
2. Storage tank and skid to be factory fabricated, 1,990 gallon horizontal tank complying with requirements in NFPA 58 and ASME Boiler and Pressure Vessel Code and bearing the ASME label. Tanks shall be rated for 250-psig minimum working pressure.
 - a. Tank trim that includes variable liquid level gauge, fixed liquid level gauge, tank relief valves, internal safety valves, pressure gauge, fill valve, back check valves, excess flow valves and positive shut-off valves.
 - b. All liquid and vapor openings will be on the bottom of the tank. These bottom openings will include (1) 2" liquid, (1) 1 1/4" liquid, (1) 1 1/4" vapor, and (1) 3/4" vapor. The tank will include side fill capabilities and side mounted gauges.
3. Dispenser to be ~~IPS 9899KX Gasboy dispenser~~ Superior Pro 1500. The single hose dispenser will include a Liquid Controls MA4 2.5-40gpm meter, electronic display, electronic totalizer, lighted panels, stainless steel panels, hose retractor and support, dispenser shear valve, solenoid valve, pull-away valves with lead hose, ~~10' 15'~~ fill hose and ~~Gas Guard GG20~~ Staubli Fill Nozzle. The dispenser will be test pumped and calibrated prior to delivery. All components will be UL Approved for propane use.
4. Supply pump to be ~~Blackmer LGL156~~ Esbray RC25 high differential pressure pump with external ~~150~~ 200 psi bypass and 5 hp, 3 phase motor and connect to the piping system. This will include a Y-Strainer and stainless steel flex on the pump inlet.
5. Piping kit to include, 2" pump inlet piping that includes (1) 2" ~~electronic operated ball~~ valves installed after the internal valves. Piping kit with hydrostatic relief valves, shut off valves, fittings and piping to connect the (2) tanks together and connect to the pump. This will include pipe supports. Tees will be left for a future pump and future tank. All piping, tanks, and skids will be painted white
 - a. All required decals (to be installed on site), fire extinguisher, cover and bracket.
 - b. Provide owner's manual, operations guide, maintenance guide, and troubleshooting guide.

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1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
- H. Energy Performance: Provide panel assemblies with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below[**and certified and labeled according to NFRC**]:
1. Thermal Transmittance (U-Factor): Fixed glazing and framing areas shall have U-factor of not more than 0.28 Btu/sq. ft. x h x deg F (4.54 W/sq. m x K) as determined according to NFRC 100.
 2. Solar-Heat-Gain Coefficient (SHGC): Fixed glazing and framing areas shall have an SHGC of no greater than 0.35 as determined according to NFRC 200.
 3. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of 0.20 cfm/sq. ft. (1.020 L/s per sq. m) of fixed wall area as determined according to ASTM E 283 at a minimum static-air-pressure differential of 1.57 lbf/sq. ft. (75 Pa)

2.2 STRUCTURED-POLYCARBONATE-PANEL ASSEMBLIES (WALL PANELS)

- A. Structured-Polycarbonate-Panel Assemblies: Translucent assemblies that are supported by aluminum framing and glazed with structured-polycarbonate panels.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CPI Daylighting, Inc.
 - b. [Solutions in Polycarbonate, LLC](#)
 - c. [Architectural Daylighting](#)

2.3 STRUCTURED-POLYCARBONATE PANELS (CANOPIES)

- A. Structured-Polycarbonate Panels: Translucent, extruded-polycarbonate sheet with multiwall cellular cross section that provides isolated airspaces and that is coextruded with a UV-protective layer.
- B. Panel Thickness: Nominal 3/8 inch (10 mm).
- C. UV Resistance: On outer surface.
- D. Color: Clear matte both panels (wall).
- E. Panel Performance:
1. Plastic Self-Ignition Temperature: 650 deg F (343 deg C) or more according to ASTM D 1929.
 2. Smoke-Developed Index: 450 or less according to ASTM E 84, or 75 or less according to ASTM D 2843.
 3. Combustibility Classification: Class CC1 based on testing according to ASTM D 635.
 4. Roof-Covering Classification: Class A according to ASTM E 108 or UL 790.