A. GENERAL

1.0 Reference to General Contractor and/or Subcontractor is denoted by Contractor.

2.0 Contractor shall be responsible to completely familiarize itself with existing site conditions and all applicable federal, state and local laws, codes and regulations. All work and materials shall be in accordance with these regulations. If there is a conflict within these documents or between these documents and site conditions and/or applicable laws, codes or regulations, the Contractor is responsible to inform the Construction Manager prior to bid. No allowance will be made for his failure to do so.

3.0 Contractor shall handle and install all items per manufacturers instructions, these drawings, and all laws, codes and regulations.

4.0 Contractor shall not deviate from materials or products specified unless through mutual agreement with Construction Manager. Approval must be IN WRITING, signed by Construction Manager, and submitted in the project close out folder as outlined in Sec. K. Substitute materials shall be described, specifying any difference in cost and performance. Only new materials shall be used. Contractor shall be certified for the installation of all equipment and materials contained in this project.

5.0 Contractor shall secure all required permits prior to commencing work. See bid documents for list of permits that Company will pay directly. Contractor to pay fees for all remaining permits and inspections not included on the list. Contractor shall coordinate all inspections required to complete this project.

6.0 All existing items, except those that are to be removed and junked, shall be protected by the Contractor. Contractor shall replace any and all items that are removed or damaged during the course of his work, to the same or better condition, at Contractor expense. Consult bid documents for list of equipment that will be salvaged.

7.0 Contractor is responsible for blue staking the excavation areas and locating all underground utilities.

8.0 These plans are schematic only. General scope is defined, however the company reserves the right to alter or expand the scope of work. Company will direct and pay for any additional work under separate contract or change order.

9.0 Contractor to warranty all workmanship and Contractor supplied material for 1 year, with the exception of the underground storage tank installation. Company shall perform a 10 month warranty inspection to evaluate Contractor performance and quality of workmanship. Contractor must complete all punch list items identified during this 10 month inspection. The underground storage tank installation shall be warranteed as outlined in section D–7.9.

10.0 Contractor shall keep the site free of waste and rubbish at all times. Contractor SHALL HAVE THE WORK AREA PROFESSIONALLY CLEANED THE DAY BEFORE COMPANY'S's FINAL PROJECT INSPECTION.

11.0 Contractor to provide 6' chain link security fencing and barricades during all construction phases, or as directed by Construction Manager.

12.0 When an installation is made at an existing store, the Contractor is to schedule and perform his work so as not to interfere with the normal C–store operations. All debris, excess excavation materials, machinery and equipment to be removed and maintained clear of the driveways that are in use each day and lighted barricades shall be provided for the publics protection. When it becomes necessary to close a driveway for more than 24 hours, the Contractor will provide temporary travel service for traffic. Contractor TO PROVIDE A COMPANY "OPEN" SIGN AT THE START OF GASOLINE WORK, per Construction Manager's instructions.

13.0 Contractor to keep on site Material Safety Data sheets (MSDS) for chemical compounds regulated through USEPA that will be used on–site or has the potential for human contact. (i.e., Gasoline, Dry Ice, Solvents, Glues, etc.)

14.0 Contractor shall place the highest priority on safety and health during the progress of work performed at Company store locations. It shall be the responsibility of the Contractor to provide and maintain a safe working environment for its employees during the progress of work and to protect the health and safety of Contractor's agents, subcontractors, the public and any third parties. All tools, materials, equipment, facilities and other items used by the Contractor and practices employed by the Contractor in accomplishing the work are considered to be part of the working environment.

15.0 While on site and during working hours, Contractor's personnel must wear shirts, long pants, hard hats when required, and acceptable foot wear per OSHA, regulations.

16.0 Contractor must provide adequate provisions to mitigate rain damage and delays (i.e. pumps, tarps, etc.).

17.0 Contractor is responsible for coordinating, receiving and unloading all Company supplied equipment delivered to Contractor's warehouse, or job site. The securing of equipment remains the Contractor's responsibility until the final project retainage is paid. Contractor to distribute all receiving documents to the Construction Manager. If Construction Manager is not notified one week prior to the start of construction, the replacement of any missing equipment will be the responsibility of the Contractor.

18.0 Contractor to provide all materials not listed on the equipment list on page 4 of these drawings, but required for a complete job.

19.0 Contractor is to schedule all subcontractors, including those contracted directly with the company. The company will provide list of subcontractors, contacts and phone numbers, that have contracts directly with the company.

20.0 A copy of the specifications and drawings, along with approved site plan, (w/as–built notations) shall be on site at all times.

21.0 Contractor is responsible for all product in tanks and in lines until location opens or reopens for gasoline business. Any product loss during construction shall be the responsibility of the Contractor. Prior to project acceptance, the company shall reconcile inventory by comparing product in tanks and lines to amount delivered. Shortages shall be billed to Contractor at full retail price.

22.0 The Contractor shall indemnify, defend and hold harmless the company from any and all claims for damages, loss, or injury of any nature received from or sustained by the general contractor, subcontractor, their employees or agents resulting from the performance of his work under this contract.

B. REMOVAL + DISPOSAL OF EXISTING TANKS (when required)

The company will coordinate the removal of gasoline product in each existing tank prior to the start of this project to within 3"–7" from the bottom of each tank.

Only tank manufacturer's trained and certified personnel using equipment and procedures specified by the tank manufacturer and following all governing rules and regulations shall be permitted to enter a tank.

1.0 Disconnect all power to dispensers and tank top equipment.

2.0 Evacuate product from tanks and lines:

2.1 For Submersible Turbine Pump (STP) system, drain the product lines into tank by removing STP check valve and opening safety valve test ports. Disconnect the flex piping at the STP and drain the remaining product into an approved container.

2.2 For suction system, disconnect the product lines from tank or low point and drain into an approved container.

Product removed from lines becomes property of Contractor and may be used as motor fuel.

2.3 Contractor is responsible for the removal of the liquid residue at the tank bottoms and/or "Cleaning/Rinsing" of the tanks, where required. This must be accomplished on–site prior to tank removal. Contractor shall use an approved Company to perform this work. The recovered material and rinsate shall be managed according to Local, State and Federal codes and regulations. The material must be taken to a facility that is approved by the company. The Construction Manager MUST sign all waste manifests. See bid documents for a list of these approved sites and companies.

2.4 Contractor is responsible for the proper transportation and disposal of all old tanks that are removed as part of this project. Contractor must provide proof of proper transportation and disposal at an approved facility in the form of a signed certificate or affidavit of proper disposal from the tank disposal facility ("Death Certificate"). This certificate must be included in the project close out folder as outlined in section K–1.0 Consult bid documents or Construction Manager for specific local information regarding this issue.

3.0 When determined safe by the Construction Manager and local inspector, if present, degas tank to less than 10% of the Lower Explosion Limit (LEL) by inserting vapors by adding a minimum of 1.5 lbs of dry ice per 100 gallons of tank capacity or other approved method allowed by local code with written approval from the Construction Manager.

4.0 Excavate to tank top, remove all tank appurtenances, plug all openings, remove tanks and place in a secure location.

5.0 Remove remaining product and vent piping from site at earliest time possible, if required.

6.0 For in–ground heating and used oil tanks, follow B–2.3 through B–5.0. as applicable. Some jurisdictions may have classified used oil as hazardous waste and must be managed as such (See B–2.3)

7.0 A separate contract will be executed with an environmental consultant to perform an environmental site assessment. Construction Manager and/or Consultant shall inspect open excavation for evidence of a hydrocarbon release. Any soil disposal required will be handled on a separate contract or change order.

C. EXCAVATION

1.0 Contractor shall follow all OSHA specifications and regulations, all Federal, State and Local codes and regulations and the tank manufacturer's installation manual regarding excavation.

2.0 Excavation shall be sized per tank manufacturer's guidelines. Pipeline trenching shall be per pipeline manufacturer's guidelines

3.0 The company reserves the right to design and/or construct shoring under an amended agreement with Contractor or separately with another company. If the company engages Contractor, Contractor shall submit shoring design to Construction Manager for approval. Supplemental job scope and cost shall be agreed to in terms of a contract change order prior to commencing work. Shoring shall be removed prior to installing product piping unless approved by the Construction Manager to abandon in place.

4.0 Unstable soils may be required to have a filter fabric excavation liner. Consult bid documents or Construction Manager for specific information regarding this issue.

5.0 Minimize surface water entering excavations by constructing diversion dams around tankfield excavation and piping trenches.

6.0 A contingency plan shall be developed with Construction Manager outlining emergency procedures for obtaining the necessary equipment and/or personnel to handle unexpected water entry into the tank field excavation or piping trenches. When water may contain hydrocarbons, consult Construction Manager prior to removing it from site.

D. TANK INSTALLATION

1.0 Contractor shall coordinate delivery date of tanks with the manufacturer, Construction Manager, and the project schedule.

2.0 Tank manufacturer's installation procedure shall be followed, and the installation checklist shall be initialed/signed by Contractor and Construction Manager, as appropriate, as each step is completed.

3.0 An underground equipment installation affidavit shall be filled out by Contractor and submitted to the Construction Manager in bound project close out folder (see section K).

4.0 Lifting equipment shall be adequate to handle tank without dragging. Use all lifting lugs and guidelines when lifting tanks. Rest tanks on smooth and debris free ground. Chock tanks to prevent rolling and tie them down if high winds are expected. Use minimum 1/2" diameter nylon or hemp rope over tank and tie to wooden stakes of adequate size to prevent tanks from being moved by high winds. DO NOT DRAG, ROLL, OR IMPACT TANKS.

5.0 Tank shall be placed according to the tank manufacturer's installation manual and the company tank drawings. Please note that if the soil is unstable, the standards may be increased. Distance between tanks shall be governed by Manufacturer's or State and Local requirements whichever is greater. Tank shall be continuously vented by contractor at all times throughout construction.

6.0 PRE–INSTALLATION TANK TESTING.

6.1 Construction Manager shall witness pre–installation tank testing.

6.2 Contractor shall notify Construction Manager two working days prior to testing and tank installation.

6.3 Tanks are to be set level and backfilled to top of tank the same day as testing.

6.4 Contractor to provide tank test manifold per manufacturer's instructions and specifications.
- a) Contractor to furnish air pressure gauge with a maximum full scale reading of 15 psig with 1/4 or 1/10 psig increments. Pressure gauge to be in good repair and have a calibration date within 30 days of use. Pressure gauges damaged or out of calibration will not be permitted.
- b) The pressure relief valve on the test manifold must be rated at 6 psig to reduce the risk of over pressurizing the tank.

6.5 Testing the Primary (Internal) Tank
- a) Connect the test manifold to an available service fitting. Check each remaining service fitting to ensure tank service fittings are properly seated, adequately doped, plugged, and tightened.
- b) Pressurize the primary tank to 5 psig, add or remove air as necessary and allow the pressure to stabilize. Close the valve on the test manifold air supply line.
- c) Monitor the pressure for 1 hour. Soap test (using high foaming test solution – seam test solution manufactured by Wintin Products, Charlotte, NC, Amway Loc Soap, or approved equal) all service fitting, manways and plugs. Watch for active air bubbles which indicate a leak.
- a) Connect the test manifold to an available service fitting. Check each remaining service fitting to ensure tank service fittings are properly seated, adequately doped, plugged, and tightened.

6.6 Testing the Secondary (External) Tank
- a) Maintain pressure on the primary tank. Plug all open fittings on the secondary tank.
- b) Free the hose from the service fitting by cutting the nylon safety tie.
- c) Insert the hose into the quick disconnect check valve. This will allow air to transfer from the primary to the secondary tank.
- d) Pressurize the 5 psig. Add or remove air via the supply valve as needed and allow pressure to stabilize. Close the valve on the test manifold to the air supply line. Do not use an air compressor to pressurize the secondary tank.
- e) Monitor the pressure for 1 hour, soap the entire exterior of the tank and watch for active air bubbles which indicate a leak.
- f) When the test is complete, slowly release air pressure from the tank by disconnecting the supply line and opening the supply valve on the test manifold. When air flow from the supply valve stops, remove the test manifold.

FOR BID ONLY

7.0 INSTALLATION

7.1 Installing contractor shall be certified by tank manufacturer on proper tank installation procedures.

7.2 Bedding and backfill material shall be well washed and free of ice and snow and meet ASTM D–448. ASTM C–33 and AASHTO M–43 for quality and soundness. Contractor shall provide sieve analysis acceptable to Construction Manager. The tank warranty is automatically voided if material other than the following approved bed and backfill materials are employed without prior written approval from the tank manufacturer. Construction Manager shall review and approve tank backfill material.

7.2.1 Pea gravel with particle size not less than 1/8" or more than 3/4" diameter with no more than 5% passing a No. 8 sieve.

7.2.2 Crushed stone with particle size not less than 1/8" or more than 1/2" diameter with no more than 5% passing a No. 8 sieve.

7.3 STANDARD INSTALLATION: PROCEDURE – DRY HOLE:

7.3.1 Place minimum 12" bedding material smooth and level over excavation floor. TANK TO BE SET LEVEL.

7.3.2 Set tanks level on bedding material. Use all lifting lugs provided and guide ropes at each tank end. Do not set tanks directly on deadmen or concrete slab if used. Measure tank diameter.

7.3.3 Place 12" backfill material evenly around tanks. Use WOODEN dowel probe to work backfill completely under tank between ribs and under endcaps. Use extreme care in backfilling beneath tank bottom, between ribs and under end caps to provide a solid support free of voids. It is extremely important that care be exercised in the backfilling of the tanks up to two feet in depth from the tank bottom as tank failures have resulted where voids were evident under the tanks. Good compaction and support for the tank can be obtained by shaping the gravel with a shovel all around the perimeter of each tank.

7.3.4 Repeat D–7.3.3 for next 12", probing to fill all voids at the critical 5 to 7 o'clock support areas of the tank (see drawing 5.)

7.3.5 Freely add additional backfill to tank tops. (Additional probing not required.) Measure tank diameter.

7.4 INSTALLATION PROCEDURE – WET HOLE

7.4.1 The following procedure shall apply where high water table is evident or where a future water condition is anticipated.

7.4.2 Water level should be maintained at the lowest practical level during installation. A sump and pump or a system of well points and pumps is the recommended method to minimize water level in the hole. It is recommended that an experienced dewatering Contractor be employed to dewater the excavation. The type of system required will depend on the water flow rate into the hole. The hole bottom should be level and free of rocks and debris.

7.4.3 Provide a minimum 12" thick pea gravel bed at bottom of hole. Pea gravel must be graded smooth, compacted and level to receive tanks. Carefully place tanks on pea gravel bed. TANK IS TO BE SET LEVEL.

7.4.4 BALLASTING:

7.4.4.1 If water is required to sink tanks in high water table condition, the manufacturer's tank installation instructions must be adhered to exactly.

7.4.4.2 Water within the tank cannot be at a higher level than the outside ground water. If water is required to make tank installation, the contractor will be responsible to make arrangements for and pay for all water used.

7.4.4.3 Ballast tanks using potable water. Remove water ONLY after tank slab is cured. Consult Construction Manager for proper disposal of water removed from tank.

7.4.5 While leveling tanks, insure that minimum distance of 2'–0" between tanks is maintained. When anchoring, place straps over tanks and follow procedure as outlined hereinafter.

7.4.6 Tanks must be anchored with deadman on all wet hole installations. Anchoring shall be done in accordance with the tank manufacturer's installation instructions.

7.4.7 Use performed fiberglass hold down straps furnished by tank fabricator on top of designated ribs. Do not use straps or cables against the tank shell between ribs. Attach hold down strap to anchor points with 1/2" dia. 6x19 plow steel wire rope loops using at least three cable clamps. All straps should be tightened with turnbuckles to give snug fit of straps to tank rib. Turnbuckle dia. to be 1 1/2" hook type or 3/4" type. One tank at a time shall be set on pea gravel and securely anchored and tightened with the anchoring straps.

7.4.8 MOTOR FUEL BALLASTING: (ALTERNATE)

7.4.8.1 Motor fuel shall only be used when approved by Construction Manager.

7.4.8.2 Contractor shall maintain product accountability by performing daily stick readings as a precaution against leaks. Contractor shall immediately notify Construction Manager in the event of a loss and shall be responsible for all consequential damages, including, but not limited to, environmental damages.

7.4.8.3 Prior to project acceptance, Construction Manager shall reconcile inventory by comparing product in tanks and lines to amount delivered. Shortages shall be billed to Contractor at full retail market price.

7.5 Riser Coating and Wrapping: Prior to completion of backfill and after pressure testing tank coat all corrodible components exposed to backfill with coal tar epoxy, "kloppers" bitumastic, and wrap with felt or 3m tape. All components shall be clean and corrosion free before applying coating. Extend coating 3" onto adjacent FRP components.

7.6 The Contractor accepts full responsibility for proper handling and installation of the fiberglass underground storage tanks and shall ensure that good workmanship practices and construction procedures are followed regardless of the inclusion or omissions of any applicable suggestions in these instructions.

7.7 Unknown situations or conditions not covered in these and the manufacturer's instructions are the responsibility of the Contractor, Manufacturer's Specialists are available for consultation. The presence of the Manufacturer's Observer at any installation site does not relieve the Contractor of his responsibility for the proper installation of the tanks.

7.8 Fiberglass underground tanks and lines must be installed according to these instructions, the manufacturer's instructions, N.F.P.A. 30, NEC and all state and local applicable codes. Failure to follow these installation instructions will void the warranty and will result in tank and/or line failure. Proper installation of fiberglass underground storage tanks and lines will prevent tank and line damage and will ensure long–term corrosion – proof service.

7.9 Tank settlement, tank distortion, or movement in concrete cover slab cannot be tolerated and if specified materials are used and specified procedures are followed, no installation failure should occur. Therefore, if any movement, settlement or distortion occurs, it will be presumed the Contractor has not followed the specified instructions and procedures. Contractor shall immediately undertake at his sole expense, any necessary corrective measures as may be approved by the company up to and including complete removal and resetting of all underground tankage at the site. If it is determined that movement, settlement or distortion have been caused by factors beyond the Contractor's control, the cost of remedial measures will be borne by others. Through acceptance of the General Contract, the Contractor does hereby agree to guarantee the underground storage tank installation against failure, as outlined herein above for a period of five (5) years from the date of final acceptance.

7.10 Construction Manager shall verify drop tube height.

E. PIPING

1.0 Pipe manufacturer's installation checklist shall be initialed and signed by Contractor and Construction Manager, as appropriate.

2.0 All material, workmanship and installation practices shall be in accordance with NFPA 30 & 30A, and all other applicable codes.

3.0 MATERIALS:

3.1 All vent and vapor return primary product and secondary containment lines shall be FRP Smith Fiberglass "Red Thread II–A" (with DS8000 series adhesives) or FRP Ameron "Dualoy 3000LCX" with alcohol fittings and A20LT adhesives. DO NOT MIX MANUFACTURER'S MATERIALS.

3.2 Tank risers shall be Schedule 40 (ASTM–5–120) galvanized iron pipe. Fittings shall be 300 psi galvanized malleable iron. All galvanized pipe and fittings exposed to backfill material (including extractor base) shall be treated by coating with "Kloppers" bitumastic or coal tar epoxy and wrapping with felt or 3M tape. All treated parts shall be clean and corrosion free prior to applying coating.

3.3 All NPT threaded connections shall be treated with "Seals Pipe" as manufactured by Permatex, "PST 567" as manufactured by Locktite, or "The Heavyweight" as manufactured by Jomar.

3.4 Contractor shall demonstrate to Construction Manager that all installed materials are new and conform to above specifications.

4.0 INSTALLATIONS:

4.1 Installing contractor shall be certified by piping manufacturer.

4.2 Bedding and backfill material shall be same as the tankfield, Product line trench sub–grade shall be compacted to 90% proctor density prior to installing bedding and backfill material.

4.3 Product lines shall slope continuously upward from STP sump a minimum of 1/8" per ft. Stage II vapor recovery lines shall slope continuously upward from vapor manifold a minimum of 1/8" per ft. Stage II lines will be stubbed up through the dispenser pan and capped if location is not scheduled for Stage II.

5.0 CONNECTIONS:

5.1 NPT THREADED CONNECTIONS:

5.1.1 Threads shall be clean of all sand and thread cutting oil prior to joining.

5.1.2 Apply thread sealant per E–3.3. Start all threaded connections by hand. Secure FRP components using only a strap wrench. Do not force threads. If connections binds, remove and reclean.

5.1.3 Do not overtighten. Torque FRP to steel connections to 75 ft. lbs. when using power tongs.

5.2 FRP BONDED CONNECTIONS:

5.2.1 Taper/scarf pipe ends per pipe manufacturer's instructions. Clean bonding surfaces using ONLY pipe manufacturer's approved cleaner. DO NOT ALLOW CLEANER TO COME INTO CONTACT WITH TANK SURFACE OR SUMP SEALING DEVICES.

5.2.2 Mix and apply adhesives per manufacturer's instructions.

5.2.3 Join components per manufacturer's instructions. Cure connection per pipe manufacturer's specifications using FRP pipe manufacturer approved electric heating collar or chemical heat pack when temperature is below or will fall below 60°F prior to curing.

6.0 LINE TESTING (prior to backfill)

6.1 Construction Manager shall witness line testing. Contractor shall notify Construction Manager two days prior to testing.

6.2 Caution: Nitrogen from a grounded source shall be used in lieu of air for testing the piping system if a motor fuel has been used to ballast a tank.

6.3 Product lines shall be tested from STP to shear valve.

6.4 Vent/vapor system shall be tested from top of vent, through manifold, extractor base and riser, stage I adapters, caps, and containment manholes, stage II vapor lines to islands & stage II flex connectors at dispenser(s). Replace ball float cages with plugs and replace stage I vapor recovery spill container drain valves with G.I. plugs. CAUTION: ENGINEER AND CONTRACTOR SHALL VERIFY EXTRACTOR PLUG IS INSTALLED AND CAP IS REMOVED FROM FILL RISER PRIOR TO PRESSURE TESTING VENT/VAPOR SYSTEM.

6.5 Slowly pressurize product lines and vent/vapor lines to 50 psi. Soap test pipe surfaces including joints and fittings. Correct any leaks and retest.

6.6 Immediately relieve pressure from stage II vr/vent system and remove extractor plugs. Reduce primary line pressure to 30 psi. Monitor daily until all yard paving is complete.

6.7 Assemble secondary system and pressurize to 5 psi. Soap test entire pipe surfaces including joints and fittings. Correct any leaks and retest. Reduce pressure to 3 psi and monitor daily until all yard paving is complete. The Construction Manager must confirm the 3 PSI pipe pressure prior to backfilling.

PIPING NOTES CONTINUED ON NEXT PAGE

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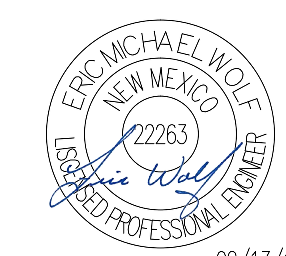

02/13/15

PROFESSIONAL IN CHARGE
ERIC WOLF

PROJECT MANAGER
ERIC WOLF

QUALITY CONTROL
ERIC WOLF

DRAWN BY
ERIC WOLF

PROJECT NAME

CIRCLE K STORES, INC.

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CIRCLE K STORES INC.

PROJECT NUMBER
20130791

SHEET TITLE

FUEL SYSTEM SPECIFICATIONS

SHEET NUMBER

F0.1