

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE PAGE OF PAGES

2. AMENDMENT/MODIFICATION NO.		3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
6. ISSUED BY CODE		7. ADMINISTERED BY (If other than Item 6) CODE		

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(X)	9A. AMENDMENT OF SOLICIATION NO.
		9B. DATED (SEE ITEM 11)
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 11)
CODE	FACILITY CODE	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended, is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not, is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
<i>(Signature of person authorized to sign)</i>		<i>(Signature of Contracting Officer)</i>	

Item 14. Continued.

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CHANGES TO THE SPECIFICATIONS

2. Replacement Sections - Replace the following sections with the accompanying new sections of the same number and title, bearing the notation "ACCOMPANYING AMENDMENT NO. 0005 TO SOLICITATION NO. W9126G-04-B-0018:"

11143 ABOVEGROUND FUEL STORAGE TANK SYSTEM
13120 CARPORT, FUEL ISLAND CANOPY SYSTEMS

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SECTION 11143

ABOVEGROUND FUEL STORAGE TANK SYSTEM
AM #0005

PART 1 - GENERAL

1.1 REFERENCES

The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN PETROLEUM INSTITUTE (API)

API STD 5L	(1990) Line Pipe
API Spec 6D	(1991) Pipeline Valves (Gate, Plug, Ball, and Check Valves)
API Spec 6FA	(1985;R 1990) Fire Tests for Valves
API Spec 15LR	(1990) Low Pressure Fiberglass Line Pipe

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ASME B16.3	(1985) Malleable Iron Threaded Fittings, Classes 150 and 300
ASME B16.5	(1988; Errata 1988) Pipe Flanges and Flanged Fittings
ASME B16.21	(1978) Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.39	(1986) Malleable Iron Threaded Pipe Unions Classes 150, 250 and 300
ASME B31.1	(1989; Addenda 1989) Power Piping

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 53	(1990; Rev. B) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
ASTM A 105	(1987a) Forgings, Carbon Steel, for Piping Components
ASTM A 167	(1989a) Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

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ASTM A 181	(1987) Forgings, Carbon Steel, for General-Purpose Piping
ASTM A 234	(1989a) Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures
ASTM A 307	(1990) Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
ASTM A 733	(1989) Welded and Seamless Carbon Steel and Austenitic Stainless Steel Pipe Nipples
ASTM D 2996	(1995) Standard Specification for Filament-Wound "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe

CALIFORNIA AIR RESOURCES BOARD

CARB	California Air Resources Board Certification
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NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 30	(1993) Flammable and Combustible Liquids Code
NFPA 30A	(1993) Automobile and Marine Service Station Code
NFPA 70	(1990) National Electrical Code
NFPA 780	(1989) Lightning Protection Code

STEEL STRUCTURES PAINTING COUNCIL (SSPC)

SSPC SP 10	(1989) Near-White Blast Cleaning
TAC, Title 30	Texas Administrative Code, Title 30, Chapter 334

UNDERWRITERS LABORATORIES INC. (UL)

UL 142 1987	(R 1987) Steel Aboveground Tanks for Flammable and Combustible Liquids
UL 567 1989	(Mar 31, 1989; 6th Ed) Pipe Connectors for Flammable and Combustible Liquid and LP-Gas

1.2 SCOPE

The aboveground storage tank system shall consist of the following equipment:

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- a. One 12,000 gallon above ground unleaded gasoline storage tank with two [AM #0005] dispensers.
- b. **Option 3:** One 4000 gallon above ground diesel storage tank with one [AM #0005] dispenser and remote fill location.
- c. **Option 3:** One additional 12,000 gallon above ground unleaded gasoline storage tank with two [AM #0005] dispensers.
- d. One Ground level Fuel Port.
- e. **Option 3:** Two additional ground level fuel ports.
- f. Two single hose side mounted consumer pump package unleaded gasoline dispensers.
- g. **Option 3:** Two additional single hose side mounted consumer pump package unleaded gasoline dispensers and one single hose side mounted consumer pump package diesel dispenser.
- h. Two High flow fill limiter/shutoff valve. **Option 3:** Two additional High flow fill limiter/shutoff valve.
- i. Stage I and Stage II Vapor Recovery System for the unleaded gasoline tank. **Option 3:** Two additional Stage I and Stage II Vapor Recovery System for the unleaded gasoline tank.
- j. Side mounted commercial dispensing package required to connect the tanks to the fueling dispensers. **Option 3:** Two additional side mounted commercial dispensing package required to connect the tanks to the fueling dispensers.
- k. All aboveground steel fuel piping required to connect the tanks to the fueling dispensers, vent the tanks, and connect to tank filling ports. **Option 3:** All aboveground steel fuel piping required to connect the tanks to the fueling dispensers, vent the tanks, and connect to tank filling ports.
- l. **Option 3:** All equipment and options necessary to interface with the Inventory Control System will be supplied by the Owner in a Future Bid Package.
- m. **Option 3:** All equipment and options necessary to interface with the Fuel Management System will be supplied by the Owner in a Future Bid Package.

1.3 NAMEPLATES

Each major item of equipment shall have the manufacturer's name, address, type or style, model or catalog number, and serial number on a plate secured to the item of equipment.

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1.4 VERIFICATION OF DIMENSIONS

The Contractor shall become familiar with all details of the work, verify all dimensions in the field, and shall advise the Contracting Officer of any discrepancy before performing any work. Materials and equipment shall fit into the space allocated without interference to building features or other equipment and with adequate and acceptable clearances allowed for entry, maintenance and operation.

1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals having an "F" designation are for information only. The following shall be submitted in accordance with Section 01330 - SUBMITTAL PROCEDURES:

SD-01 Data

Fuel Storage Tanks; G.
Gasoline Dispenser; G.
Diesel Dispenser; G.
Avgas Dispenser; -G.
Fuel Management System Satellite Pedestal; G.
Stage II Vapor Recovery System; G.
Remote Fuel Port; G.

This submittal shall include catalog cuts of the products, test data, manufacturer's written instructions, calibration items, and operating and maintenance instructions.

Tank and Accessories catalog cuts; G.
Audible Alarm catalog cuts; G.

SD-04 Drawings

Piping Layout drawings including pipe support details; G, AE.

Tank Plan including dispenser location, stair location, and all electrical and signal connections; G.

SD-06 Instructions

Posted Instructions; G.

The condensed operation instructions shall include preventative maintenance procedures, methods of checking the system for normal and safe operation, and procedures for safely starting and stopping the system. The posted instructions shall be framed under glass or laminated plastic and be posted where indicated by the Contracting Officer.

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SD-09 Reports

Test Reports; G.

SD-19 Operation and Maintenance Manuals

Operation Manual; G.

Six complete copies of an operation manual in bound 8 1/2" by 11" booklets listing step-by-step procedures required for system startup, operation, and shutdown. The booklets shall include the manufacturer's name, model number, and parts list. The manuals shall include the manufacturer's name, model number, service manual, and a brief description of all equipment and their basic operating features.

Maintenance Manual; G.

Six complete copies of maintenance manual in bound 8 1/2" by 11" booklets listing routine maintenance procedures, possible breakdowns and repairs, and a troubleshooting guide. The manuals shall include piping and equipment layouts and simplified wiring and control diagrams of the system as installed.

1.6 CONTRACTOR REQUIREMENTS

The Contractor shall obtain/maintain all state and local permits and licenses required to complete the work as specified in this section and as required by Texas Administrative Code (TAC) Title 30, Chapter 334. The Contractor shall complete the work in accordance with this section as well as all applicable federal, state and local regulations. This contractor shall be responsible for all fees required.

The Contractor shall register the new storage tank as required by local and State regulations and comply with requirements for preconstruction notification.

PART 2 - PRODUCTS

2.1 STANDARD PRODUCTS

Material and equipment, foundations, etc. shall be the standard products of a manufacturer regularly engaged in the manufacture of the products. Items of equipment shall essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening. Separately specified equipment items may be purchased as an integrated system provided that all parts of the system meet the individual specifications herein. All materials shall be resistant to the effects of diesel fuel and gasoline. The Above Ground Fuel Storage Tanks shall be ConVault Model GCVT12000-3 with exposed aggregate finish or approved equal for the unleaded fuel tank. The completed installation including foundations, etc. shall conform to the applicable requirements of NFPA 30.

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2.2 PIPE AND FITTINGS

2.2.1 Above Ground Supply and Return Product Pipe

Supply product piping shall be black carbon steel, ASTM A 53, Type E or S, Grade A or B, or API 5L, seamless or electric-weld, Grade A or B, Schedule 40.

2.2.2 Steel Pipe Fittings

Steel pipe fittings shall conform to the following:

2.2.2.1 Welding Fittings

ASTM A 234, WPB.

2.2.2.2 Threaded Fittings

ASME B16.3, 150 pound class.

2.2.2.3 Flanged Fittings

ASME B16.5, ASTM A 181, or A 105, 150 pound class.

2.2.2.4 Couplings

API 5L, seamless, extra heavy, wrought steel with recessed ends.

2.2.2.5 Nipples

ASTM A 733 and of the same material as the pipe supplied.

2.2.2.6 Unions

ASME B16.39.

2.2.2.7 Flexible Connectors

Flexible connectors shall be rated for a working pressure equal to or greater than that of the pipe test pressure. Flexible connectors shall be capable of sustaining, at minimum, an axial compression of 7/8 inch, an axial elongation of 1/2 inch, a lateral deflection of 1 inch and allow up to a 30 degree angular movement. Flexible connectors shall conform to the requirements of UL 567.

2.2.3 Joint Compound

All joint compounds for any type of piping system shall be resistant to water and shall be suitable for use with fuel containing 40 percent aromatics.

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2.2.4 Flange Gaskets

Flange gaskets shall conform to ASME B16.21 - classification for compressed sheet with nitrile binder and acrylic fibers for maximum 700 degrees F. service.

2.2.5 Fasteners

The Contractor shall supply two - 1/2 inch diameter, 3 inches long stainless steel wing nut and bolt assemblies suitable for outdoor use to fasten the blind flange to the flanged tee at the shut-off valve access location.

2.3 PIPE SLEEVES

Pipe sleeves shall be of sufficient length to pass through the entire thickness of the associated structural member and shall be large enough to provide a minimum clear distance of 1/2 inch between the pipe and sleeve, except where otherwise indicated. Sleeves through concrete may be 20-gauge metal, fiber, or other approved material.

2.4 VALVES

Ball valve shall have one piece body and shall have a minimum bore not less than 55 percent of the internal cross sectional area of a pipe of the same nominal diameter. Valve shall be fire tested and qualified in accordance with API Spec 6FA. Valve shall be non-lubricated and operate from fully open to fully closed with 90 degree rotation of the ball.

2.5 FUEL STORAGE TANKS

The above ground fuel storage tank shall be a completely above ground, UL 2085 listed concrete vault structure containing a steel tank inside, with sealed annular space between the vault and tank. The AST shall meet the requirements of UL 2085. The Contractor shall submit manufacturer's test data for testing of the concrete used to construct the vault. The tank shall be placed on a concrete foundation.

The steel tank shall be horizontal, welded steel type conforming to NFPA 30 standards and be UL 142 and 2085 listed and labeled. The steel tank shall have a minimum wall thickness of 0.18 inch and be enclosed within the vault. Tank exterior shall be factory-primed with corrosion-resistant primer.

The concrete vault shall serve as secondary containment for the interior steel fuel storage tank. The vault shall be of reinforced concrete having uniform wall thickness of 6 inches on all sides. Concrete placement methods shall ensure the absence of voids in the concrete on all sides and beneath the steel tank. The concrete vault be coated with petroleum

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resistant material on inside and exposed aggregate concrete finish with final glossy clear polyurethane sealer on outside.

All pipe connections to the interior steel tank shall be through the top of the vault and extend outward a minimum of 3 inches from the concrete vault outer surface. Pipe penetrations shall be sealed at the outer surface of the vault so that weather elements will not enter into the interstitial space between the vault and the interior steel tank. All pipe connections to the interior tank shall be dielectrically isolating. Provide standard NTP male threaded ends on pipe connects for fill, normal vent, fuel supply line, and fuel level gauge as shown on the contract drawings.

Provide exterior OSHA approved stairs with hand rails. Stairs shall be firmly attached onto the pad and the vault. Stair fastening to vault shall be done following vaulted tank manufacturer's instructions.

Provide a complete system including reinforced foundations, tie downs, miscellaneous equipment, etc . to provide a complete functioning above ground fuel tank installation.

2.5.1 Tank Accessories

Accessories shall comply with standards which apply to the tanks. Provide dielectric bushings on pipe connections to all steel tanks.

2.5.1.1 Fill Connection

The fill line shall enter at the top of the tank. The diameter of the fill line shall be 4 inches and the line shall extend to within 6 inches of the tank bottom with anti-splash deflector provided at the end of the fill line in the tank. Tight fit fill adapter shall be bronze, fitted with a fluoroelastomer gasket suitable for diesel fuel and gasoline and shall match the fill elbow on the delivery hose to provide a tight fit to prevent vapor emissions at the fill connection.

2.5.1.2 Remote Fill Assembly

The Contractor shall provide a remote fill/spill container for each tank. The fill/spill container shall be a POMECO Model No. 211 RMOT or approved equal. The remote fill/spill container shall provide spill containment protection for remote horizontal fill pipe installations. The contractor shall also provide a hand pump to allow product drainage. The contractor shall provide fittings, ball valves, check valves, dry quick disconnect coupler and 2" adaptors with poppet valves. The dry quick disconnect coupler shall be bronze, fitted with a fluoroelastomer gasket suitable for diesel fuel and gasoline and shall match the fill elbow on the delivery hose to provide a tight fit to prevent vapor emissions at the fill connection. The remote fill/spill system shall provide fuel to the top of the tanks and extend to the filling location via an OPW Model No. 61 f-stop 1000 or approved equal.

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2.5.1.3 Atmospheric Vent

Each tank shall be provided with a separate open atmospheric vent conforming to the applicable requirements of NFPA 30. Ball float valves which close at 95 percent capacity shall be provided inside each tank vent line to prevent the overflow of fuel through the vent when the tank is being filled.

2.5.1.4 Interstitial Sensor Ports

The tank shall have a riser pipe of 1.5 inches I.D. or greater. The riser pipe shall be equipped with a junction box suitable for the interstitial sensors [AM #0005].

2.5.1.5 AST Tank Level Gauge

The gasoline and [AM #0005] diesel fuel ASTs shall be provided with a remote reading electrical sensor for high and low fuel level sensing in the AST. This sensor shall be wired into the pump control and alarm panel such that a low fuel level condition (8 inches of fuel) will cause the fuel pump to stop. Both the high and low fuel level sensors shall activate an audible alarm located on the exterior wall of the generator building as shown on the contract drawings. In addition to the high and low fuel level sensors for the AST, the tank shall be provided with a float-operated direct reading fuel level gauge mounted on the AST where it can be viewed during filling operations. The gauge shall be mechanically operated and have wave protection to ensure accurate measurement during filling.

2.5.1.6 Fill Limiter

The gasoline AST shall be equipped with a fill limiter which is compatible with diesel fuel and gasoline, and is entirely mechanical in operation. The fill limiter shall be installed in the fill pipe connection. The fill limiter shall be capable of restricting flow of liquid into the tank to a maximum flow rate of 9.45 lpm (2.5 gpm) when the liquid level in the tank reaches 90 percent capacity. The fill limiter shall automatically stop the flow of liquid into the tank when the liquid level in the tank reaches 95 percent of capacity.

2.5.1.7 Emergency Vent

An emergency vent for the AST shall be provided on both the containment tank and the product tank and sized in accordance with UL 142.

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2.5.1.8 Anchoring

The Contractor shall provide concrete foundation including but not limited to anchors, reinforcing, etc. to secure the AST to the concrete foundation. The AST shall be secured so as to be capable of withstanding the horizontal equivalent static force of 0.30 times the operating weight of the equipment, at vertical center of gravity of the equipment without causing permanent deformation, dislocations, separation of components, or other damage, which would render the equipment inoperative for significant periods of time. The anchoring configuration shall match that needed for earthquake restraints and meet manufacturer's requirements.

2.5.2 VAPOR ASSIST SYSTEM

The Vapor Assist System shall be CARB certified for Stage II Vapor Recovery. The Vapor Assist System shall be Healy or approved equal.

2.5.3 DISPENSING SYSTEM

Computer controlled dispensing system shall consist of product dispensing units, management control systems, printers, necessary computers, microprocessors, wiring, cabling, and accessory equipment.

2.5.4 Product Dispensing Units

Product dispensing units shall be [AM #0005] Gasboy 9152QXTW or approved equal. Contractor shall provide and install computer controlled, lighted, double sided, remote type, with single hose outlets suitable for single product delivery flow rate of 15 gpm for both hoses combined or from a single nozzle. Steel frame shall be capable of resisting normal vertical and lateral loads and secured [AM #0005] with at least two 5/8 inch anchor bolts. Exterior panels shall be either stainless steel or steel with baked enamel finish, or combination of the two. Provide manufacturer's standard microprocessor which has the following functions:

a. Displays: Analog displays, [AM #0005] and four-digit volume display to 999.9 gallons.

b. [AM #0005] DELETED.

c. Filters: Replaceable filter element on each product line with a nominal filtration efficiency of 25 microns with a flow rating equal to the rate of the dispensing unit.

d. Backup: Battery backup with automatic charging circuits to hold data for a minimum of three months without recharging. Sales display shall remain visible for 15 minutes after power failure.

e. Accessories: Equip each assembly with accessories such as built-in air eliminators, line check valves, and emergency shut-off valve. Install centering ring or stabilizer bar to ensure proper shearing action for

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emergency shut-off valve if the dispensing unit is knocked from it's supports.

f. Interlocks: Units shall include nozzle supports interlocked to pump motor control switch to start and stop the pump by nozzle removal and replacement. Provide each unit with interlock switch and valve arrangement that prevents flow of product until meter is reset after dispensing nozzle is returned to holder.

g. Hose: Provide dispensing hose conforming to UL 330, gasoline and oil resistant, statically grounded, flexible in sub-zero temperatures. Provide a minimum of 12 feet of hose for each product line on the dispenser. Provide each hose with spring loaded cable to return device attached near mid-length of hose. Hose shall be of the coaxial vapor recovery type certified by CARB.

h. Nozzles: Dispensing nozzles shall be automatic shutoff type, without latch-open device, aluminum body, full hand insulator to prevent splash-back. Nozzles shall be CARB certified for Stage II vapor recovery, contain an integral vapor valve and evacuator, and be of the bellowless design. Vapor recovery nozzles are not required for diesel dispensing systems.

i. Breakaway device: Provide each product hose with UL listed emergency breakaway device designed to retain liquid on both sides of breakaway point. Breakaway device shall have pressure balancing chamber to override line pressure to prevent nuisance breaks caused by a restriction in delivery hose diameter.

j. Pumps: Provide submersible pumps to be located in product storage tanks. Pump and motor combination shall operate efficiently totally submerged in product of storage tank. Pump shall be driven by explosion-proof motor for Class I, Division 1, Group D hazardous locations as defined in NFPA 70. Each pump shall have delivery capacity of 15 gpm at a total discharge head of 9 psi maximum delivery rate at each dispensing unit shall be 15 gpm with one nozzle flowing. Minimum delivery rate at each dispensing unit shall be 15 gpm with two nozzles flowing. Pump inlet shall be horizontal. Provide clearance of not less than 5 inches nor more than 7 inches between bottom of tank and end of pump.

k. Motors: Each motor shall be sized to start and drive equipment at specified capacity and duty cycle without exceeding nameplate rating of motor when operating at proper electrical system voltage. Installation of electrical equipment at dispensers, motors, and pump starter controllers shall be in compliance with Class 1, Group D hazardous location.

2.6 LEAK DETECTION AND FILL ALARM SYSTEM

A leak detection and fill alarm shall be provided in accordance with the manufacturer's instructions. [AM #0005]

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2.7 ELECTRICAL COMPONENTS

Electrical components to be installed shall be as required in Division 16 - ELECTRICAL WORK.

PART 3 - EXECUTION

3.1 STORAGE TANK INSTALLATION

Install storage tank, vents and other connections in accordance with NFPA 30, recommendations and published instructions of the manufacturer, and as indicated on the contract drawings. Provide grounding of tanks directly through ground rods or through bonding to grounded network in accordance with NFPA 780. Fasten aboveground fuel storage tanks on a firm reinforced concrete foundation that is part of this scope of work as outlined in this specification section.

3.1.1 Stage II Vapor Recovery System

The Vapor Recovery System shall be installed in accordance with manufacturer's instructions.

3.2 PIPING

3.2.1 Aboveground Fuel Piping

Above ground fuel piping in the system shall be carbon steel. Piping connections to equipment shall be as indicated or as required by the equipment manufacturer. The interior of the pipe shall be thoroughly cleaned of all foreign matter before being installed and shall be kept clean during installation. When work is not in progress, open ends of pipe and fittings shall be securely closed so that water, earth, or other substances cannot enter the pipe or fittings. Any pipe, fittings, or appurtenances found defective after installation shall be replaced. Threaded joints shall be made with tapered threads and shall be made perfectly tight with joint compound applied to the male threads only.

3.2.2 Cutting Pipe

Unless otherwise authorized, steel pipe shall be cut with a mechanical wheel cutter. Pipe shall be deburred and reamed to true internal diameter.

3.2.3 Installing Piping

Pipe and accessories shall be handled carefully to assure a sound, undamaged condition. All fuel piping shall be above ground. Piping passing through concrete or masonry construction shall be fitted with sleeves. Sleeves shall be accurately located on center with the piping and shall be securely fastened in place. The space between the sleeves and the pipe shall be caulked and filled with bituminous plastic cement, silicone caulk or mechanical caulking units designed for such use.

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3.2.4 Welding

3.2.4.1 Welding of Piping

Welding of joints in piping, butt welds, fillet welds, bends, loops, offsets, and cleaning of pipe shall be in accordance with ASME B31.1. Welds shall be visually examined and meet acceptance standards specified in Chapter VI of ASME B31.1.

3.2.4.2 Quality of Welds

Quality of welds, correction of defects, stress relieving, and preheating shall be in accordance with ASME B31.1.

3.2.5 Unions and Flanges

Place unions and flanges where necessary to permit easy disconnection of piping and apparatus. Each connection having a threaded end valve shall have a union. Each flanged connection shall be gasketed.

3.2.6 Valves

Install valves in positions accessible for operation and repair and as shown on the contract drawings.

3.3 ELECTRICAL

Motors, manual or automatic motor control equipment and protective or signal devices required for the operation specified herein shall be provided under this section in accordance with Division 16 - ELECTRICAL WORK. Any wiring required for the operation specified herein, but not shown on the electrical section of the contract drawings, shall be provided under this section in accordance with Division 16 - ELECTRICAL WORK.

Provide switches and devices required for controlling electrical equipment. Pumps shall be wired and ready for connection to power circuit. Wiring, equipment, and fittings shall be explosion-proof in conformance with applicable requirements of UL 674, UL 698, and UL 886 for Class I, Division 2 hazardous locations. Submit proof of such conformance. Electrical installations shall conform to requirements of NFPA 70.

3.3.1 Electrical Work

The gasoline and diesel fuel dispensing system has three components which will need electrical connections. They are three pump/motors for the fuel tank/dispensers. The electrical connections required for power to each of these units are given below.

3.3.1.1 Power

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Provide a dedicated 120/208 Volt, 1 phase circuit for each fuel dispenser. Provide 3/4 inches RGS, PVC coated conduit, w/4 # 12 THWN Cu., from the new power panel to each fuel station dispenser pump/motor. The power circuit for each dispenser pump/motor shall be run through a new Emergency Cutoff Switch. The Emergency Cutoff Switches shall be provided with red mushroom head operators, shall be push-off/pull-on type, NEMA 13 oil tight, clearly labeled, located as indicated, and as required in NEC Art. 514.

Within 6.09 m (20 ft.) of the tank/dispenser assembly, the RGS conduit shall be a Class I, Division 2 installation per NEC Art. 501. More than 6.09 m (20 ft.) away from the tank/dispensers the conduit does not need to be Haz. Area. Below ground it shall be Sch. 40 PVC. Above ground and exterior it shall be RGS with PVC coating and above ground interior it shall be EMT.

3.4 FLUSHING

The interior of fuel storage tanks shall be made clean before fuel is placed inside. Temporary piping or hose equipped with a strainer having not less than a 40-mesh screen shall be installed between the supply pipe and the tank fill connection on the tank from which the fuel is being pumped. A temporary pump will be provided and installed for flushing. The system shall be flushed with the same type of fuel intended for use in the system until the out flowing fuel is "clean" and "bright": clean means the absence of any sediment or emulsion; bright refers to the fluorescent appearance of fuel that has no cloud or haze.

3.5 TESTING

After components of the system have been properly adjusted, the system shall be tested to demonstrate that the system meets the performance requirements for which it was designed. If any portion of the system and or piece of equipment fails to pass the tests specified in this specification section, the Contractor shall make the necessary repairs or adjustments and the test shall be repeated until satisfactory performance is achieved. All tests shall be witnessed by the Contracting Officer, and the Contractor shall notify the Contracting Officer 2 days before testing. All personnel, calibrated instruments and equipment, as well as the fuel required to properly clean and flush the system and to conduct the tests shall be furnished by the Contractor.

3.5.1 Aboveground Storage Tank Tests

3.5.1.1 Tightness Tests

Aboveground tank shall be tightness tested at operating pressure in accordance with manufacturer's instructions and NFPA 30, 2-8.3 prior to placing the tank in service. During testing, tank shall be provided with a suitable pressure relief device. Prior to application of test pressure, remove or valve off piping components which may be damaged by test and install a calibrated test gauge in the system. Maintain test pressure

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within five percent of initial pressure for at least 2 hours. The Contractor may abort and restart the tightness test when failure occurs. Materials and equipment shall be subject to inspection at the installation site by the Contracting Officer.

3.5.1.2 Manufacturer's Tests

Following the tank tightness test, storage tank shall be leak tested in accordance with the manufacturer's written test procedure if the manufacturer's test procedure is different from the tightness tests already performed. Any test failure shall require corrective action and retest.

3.5.2 Piping Tests

Care shall be taken not to exceed pressure rating of the various fittings. To facilitate these tests, various sections of the piping system may be isolated to test each separately. Fittings that can be attached to the end of the section of pipe being tested and that will permit direct connection to the piping from the air compressor shall be furnished by the Contractor. No taps in the pipe will be permitted. Gauges shall be subject to approval of the Contracting Officer. In the event leaks are detected, the pipe shall be repaired and the test repeated at no cost to the Owner. On satisfactory completion of tests, the pressure shall be relieved and the pipe immediately sealed. Provision shall be made to prevent displacement of the piping during testing. Personnel shall be kept clear of the piping during pneumatic testing. Equipment such as pumps, tanks, dispensers, and meters shall be isolated from the piping system during this test. Gauges used in the pneumatic tests for primary piping shall have a scale with a maximum limit of 100 psi).

3.5.2.1 Fuel Piping

Fuel piping, including both liquid carrying and vent/vapor piping, shall be tested under a pneumatic pressure of at least 1-1/4 times the designed working pressure of the particular piping system, but not less than 50 psi. Pressure in primary piping shall be maintained for at least 2 hours during which there shall be no drop in pressure in the pipe greater than that allowed for thermal expansion and contraction. Leaks discovered shall be repaired in accordance with manufacturer's instructions. The entire pneumatic test shall be performed again in the event a leak is discovered.

3.5.2.2 Manufacturer's Tests

Following the required pneumatic piping tests, piping shall be leak tested in accordance with the manufacturer's written test procedure if the manufacturer's test procedure is different from the tightness tests already performed. Any test failure shall require corrective action and retest.

3.5.3 System Performance Tests

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After all components of the system have been properly adjusted, the system shall be tested to demonstrate that the system meets the performance requirements for which it was designed. If any portion of the system or any piece of equipment fails to pass the tests, the Contractor shall make the necessary repairs or adjustments and the test shall be repeated, at no cost to the Owner, until satisfactory performance is achieved. In order to conduct tests that require the tanks to be filled or partially filled with product, the Contractor shall coordinate with the Contracting Officer for the scheduling of product delivery. The tests shall demonstrate the following:

- a. The tank unloading system performs as designed.
- b. The tank fill assembly performs as designed.
- c. The dispensers are operational and perform as designed.
- d. Each meter/gauge is operational.

3.5.4 Low Liquid Level Pump Shut off Test

The storage tank shall be initially filled to approximately 25% of its capacity with the appropriate product. The storage tank shall then be pumped out to verify that at 10% (field adjustable) of the tank capacity that the pump shuts-off.

3.5.5 Overfill Flow Limiter Test

The Contractor shall monitor the filling of each new storage tank with the appropriate fuel in order to verify that the storage tank fill limiter functions as designed. Tank overfill shall stop immediately once the overfill devices operates. Under no circumstances shall the Contractor overfill any storage tank more than 95% full even if the overfill limiter does not function as designed.

3.5.6 System Leak Test

The fuel system shall be visually inspected during system performance testing for leaks.

3.6 PERFORMANCE TEST REPORTS

Upon completion of testing of the installed system, test reports shall be submitted in booklet form showing all field tests performed to adjust each component and all field tests performed to provide compliance with the specified performance criteria. Each test report shall indicate the final position of controls.

3.7 VISUAL INSPECTIONS

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The exterior surface of the tank shall be inspected for obvious visual damage prior to the placement of the tank. Surface damage to a storage tank shall be corrected according to manufacturer's requirements before proceeding with the system installation.

3.8 DEMONSTRATIONS

Contractor shall conduct a training course for the operating staff as designated by the Contracting Officer. The training period shall consist of a total of 2 hours of normal working time, and shall start after the system is functionally completed but prior to final system acceptance. The field instructions shall cover all of the items contained in the operation and maintenance manuals as well as demonstrations of routine maintenance and record keeping operations as required by TAC 334, Title 30, Chapter 334.

- - End of Section - -

SECTION 13120

CARPORT, FUEL ISLAND CANOPY SYSTEMS

PART 1 - GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ALUMINUM ASSOCIATION (AA)

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| AA-01 | (1997) Aluminum Standards and Data |
| AA-02 | (1994) Aluminum Design Manual; Specification & Guidelines for Aluminum Structures |

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

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|----------------------|--|
| AISC LRFD Vol I & II | (1995) Manual of Steel Construction - Load and Resistance Factor Design |
| AISC Pub No. S303 | (1992) Code of Standard Practice for Steel Buildings and Bridges |
| AISC S345L | (1994) Load and Resistance Factor Design Specification for Structural Joints Using ASTM A 325 or A 490 Bolts |
| AISC S342 L | (1993) Load and Resistance Factor Design Specification for Structural Steel Buildings |

AMERICAN IRON AND STEEL INSTITUTE (AISI)

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| AISI-01 | (1996) Cold-Formed Steel Design Manual |
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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

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|------------|--|
| ASTM A 36 | (1997a) Carbon Structural Steel |
| ASTM A 53 | (1997) Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless |
| ASTM A 252 | (1996) Welded and Seamless Steel Pipe Piles |
| ASTM A 463 | (1996a) Steel Sheet, Aluminum-Coated by the Hot-Dip Process |
| ASTM A 500 | (1996) Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes |
| ASTM A 501 | (1996) Hot-Formed Welded and Seamless Carbon Steel Structural Tubing |
| ASTM A 529 | (1996) High-Strength Carbon-Manganese Steel of Structural Quality |
| ASTM A 570 | (1996) Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality |

ASTM A 588	(1997) High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 in. (100 mm) Thick
ASTM A 606	(1997) Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance
ASTM A 607	(1996) Steel, Sheet and Strip, High-Strength, Low-Alloy, Columbium or Vanadium, or Both, Hot-Rolled and Cold-Rolled
ASTM A 618	(1996) Hot-Formed Welded and Seamless High-Strength Low-Alloy Structural Tubing
ASTM A 653	(1997) Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM A 992	(1998) Steel for Structural Shapes for Use in Building Framing.
ASTM A 792	(1997) Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
ASTM B 117	(1997) Operating Salt Spray (Fog) Apparatus
ASTM B 209	(1996) Aluminum and Aluminum-Alloy Sheet and Plate
ASTM B 221	(1996) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
ASTM B 241	(1996) Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube
ASTM B 308	(1996) Aluminum-Alloy 6061-T6 Standard Structural Profiles
ASTM B 429	(1995) Aluminum-Alloy Extruded Structural Pipe and Tube
ASTM D 522	(1993a) Mandrel Bend Test of Attached Organic Coatings
ASTM D 714	(1987; R 1994) Evaluating Degree of Blistering of Paints
ASTM D 1308	(1987; R 1993) Effect of Household Chemicals on Clear and Pigmented Organic Finishes
ASTM D 1654	(1992) Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments
ASTM D 2244	(1993) Calculation of Color Differences from Instrumentally Measured Color Coordinates
ASTM D 2247	(1994) Testing Water Resistance of Coatings in 100 % Relative Humidity
ASTM D 3359	(1995a) Measuring Adhesion by Tape Test

- ASTM D 4214 (1997) Evaluating the Degree of Chalking of Exterior Paint Films
- ASTM D 4587 (1991) Conducting Tests on Paint and Related Coatings and Materials Using a Fluorescent UV-Condensation Light - and Water-Exposure Apparatus
- AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE)
- ASCE 7-98 (1998) Minimum Design Loads for Buildings and Other Structures
- AMERICAN WELDING SOCIETY (AWS)
- AWS D1.1 (1996) Structural Welding Code - Steel
- FEDERAL EMERGENCY MANAGEMENT AGENCY
- FEMA 302 (1997) N.E.H.R.P. Recommended Provisions for Seismic Regulations for New Buildings and Other Structures
- MATERIAL HANDLING INSTITUTE (MHI)
- MHI CMAA 70 (1994) Electric Overhead Traveling Cranes
- METAL BUILDING MANUFACTURERS ASSOCIATION (MBMA)
- MBMA-01 (1996) Low Rise Building Systems Manual
- SHEET METAL & AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
- SMACNA-02 (1993; Errata) Architectural Sheet Metal Manual
- UNDERWRITERS LABORATORIES (UL)
- UL 580 (1994; Rev thru Sep 1997) Tests for Uplift Resistance of Roof Assemblies

1.2 GENERAL REQUIREMENTS

The carport and fuel island canopy system covered under this specification shall be provided by a single manufacturer and shall include all components and assemblies that form a carport or canopy. Structural Standing Seam Metal Roofing System, when specified, shall be furnished as part of a single manufacturer's system.

1.2.1 Building Configuration

Carports and canopy shall have structural steel main frames, and secondary framing including purlins and girts, engineered and fabricated by the canopy systems supplier. Roof slope shall be as shown on the drawings. Carports or canopy shall be single-span or multiple-span structures with one of the following framing systems: column with rigid frame. Carports and canopy dimensions shall be not less than those indicated. The minimum inside clear dimensions shall be as shown on the drawings.

1.2.2 Qualifications

1.2.2.1 Manufacturer

Carport and fuel island canopy shall be the product of a recognized carport and canopy systems manufacturer who has been in the practice of manufacturing carport and canopy systems for a period of no less than 5 years. The manufacturer shall be chiefly engaged in the practice of designing and fabricating carport and canopy systems. Structural framing and covering shall be designed by a licensed Professional Engineer experienced in design of this work.

1.2.2.2 Installer

Erector shall have specialized experience in the erection of carport and canopy systems for a period of at least 3 years. Framing shall be erected in accordance with AISC LRFD Vol I & II, common industry practices and erection instructions describing the basic sequence of assembly, temporary bracing, shoring, and related information necessary for erection of the carport or fuel island canopy including its structural framework and components. The erector shall furnish temporary guys and bracing where needed for squaring, plumbing, and securing the structural framing against loads acting on the exposed framing, such as wind loads and seismic forces, as well as loads due to erection equipment and erection operation. Bracing furnished by the manufacturer for the carport or fuel island canopy system shall not be assumed to be adequate during erection. Structural members shall not be field cut or altered without approval of the carport or fuel island canopy manufacturer. Welds, abrasions, and surfaces not shop primed shall be primed after erection.

1.2.2.3 Manufacturer's Representative

A representative designated by the building manufacturer, who is familiar with the design of the building supplied and experienced in the erection of carport or fuel island canopies similar in size to the one required under this contract, shall be present at the job site during construction, from the start of the structural framing erection until completion of the installation of the exterior covering, to assure that the carports and canopy are erected properly.

1.3 DESIGN REQUIREMENTS

Criteria, loading combinations, and definitions shall be in accordance with ASCE 7-98.

1.3.1 Dead Loads

The dead load shall consist of the weight of all permanent construction such as roof, framing, covering members and all other materials of the carport/canopy system.

1.3.2 Collateral Loads

Collateral load of 3 pounds per square foot shall be applied to the entire structure to account for the weight of additional permanent materials other than the building system, such as electrical systems. This allowance does not include the weight of hung equipment weighing (50 pounds) or more. Equipment loads of (50 pounds) or more shall be shown on the shop (detail) drawings and the structure (frame, purlins, girts) shall be strengthened as required. The Contractor is responsible for providing the carports/canopy manufacturer the magnitude and approximate location of all concentrated loads greater than (50 pounds) before building design begins.

1.3.3 Roof Live Loads

1.3.3.1 Uniform Loads

Uniform roof live loads, including maintenance traffic and construction loads, shall be determined and applied in accordance with ASCE 7-98. Roof live loads shall not be reduced.

1.3.3.2 Concentrated Loads

In addition to ASCE 7-98 roof live loads, a minimum design concentrated load of 300 pounds (1335 N) shall be used to simulate a construction load on roof panels. The concentrated load shall be applied at the panel midspan and shall be resisted by a single standing seam metal roof panel, or a (24 inches) wide corrugated metal panel, assumed to be acting as a beam. The undeformed shape of the panel shall be used to determine the section properties.

1.3.4 Wind Loads

Wind pressures shall be computed and applied in accordance with ASCE 7-98 unless otherwise shown on the contract drawings. $V = 90$ mph Exposure C:

1.3.5 Seismic Loads

Seismic loads shall be computed in accordance with ASCE 7-98. $S_s = 0.055g$, $S_1 = 0.2g$

1.3.6 Foundations

Foundations shall be under reamed drilled piers designed for an allowable soil bearing pressure of 12000 pounds per square foot, a minimum bottom of footing depth of 10 feet below finish grade elevation. Drilled pier under ream diameter shall be at least 18 inches larger than the pier shaft. A factor of safety of 1.5 for overturning, sliding and uplift, and a concrete compressive strength as specified in Section 03300 - CAST-IN-PLACE STRUCTURAL CONCRETE. A 6 inch void shall be provided under all grade beams and shall be protected with concrete retainer blocks.

1.3.7 Framing and Structural Members

Structural steel members and their connections shall be designed in accordance with AISC Pub No. S342 L. Structural cold-formed steel framing members and their connections shall be designed in accordance with AISI-01. Aluminum structural members and their connections shall be designed in accordance with AA-02. Maximum deflection under applied live load, or wind load shall not exceed 1/180th of the span length. Members with openings in their webs shall be designed with consideration of the additional stresses which will result due to the openings. Vertical deflection shall be 1/180 of the span length for standard roof structures. The subpurlin and/or purlin spacing shall not exceed 30 inches on centers at the corner, edge and ridge zones, and 5 foot maximum on centers for the remainder of the roof.

1.3.8 Roofing and Siding

Except as otherwise specified, steel roofing and siding shall be designed in accordance with AISI-01. Aluminum roofing and siding shall be designed in accordance with the AA-01. Section modulus and moment of inertia of aluminum sheet shall be determined for actual cross section dimensions by the conventional methods for actual design stresses and by effective width concept for deflection in accordance with AA-02. Maximum deflection for wall and roof panels under applied live load, snow or wind loads shall not exceed 1/180th of the span length. The design analysis shall establish that the roof, when deflected under loading combinations, shall not result in ponding. Maximum deflections shall be based on sheets continuous across two or more supports with sheets unfastened and fully free to deflect. In addition to the loads indicated above, the roof decking shall be designed for a 200 pound concentrated load at midspan on a 1-inch wide section of deck. The calculated

deflection from the concentrated load shall not exceed 1/180th of the span length. The methods for resisting lateral loads shall be rigid frames, or wind columns.

1.3.9 Provisions for Gutters And Downspouts

Gutters, downspouts, roof drainage system shall be designed according to the requirements of SMACNA-02 for storms which should be exceeded only once in 5 years and with adequate provisions for thermal expansion and contraction. Supports for gutters and downspouts shall be designed for the anticipated loads.

1.3.10 Drift Provision

Lateral deflections, or drift, at the roof level of a structure in relation to the floor or slab on grade, caused by deflection of horizontal force resisting elements, shall meet the requirements of IBC 2003.

1.4 DESIGN ANALYSIS

The design analysis shall be the design of a licensed Professional Engineer experienced in design of this work and shall include complete calculations for the building, its components, and the foundations. Foundations shown on the drawings are based on loads derived from a representative set of similar building types. The Contractor shall obtain the services of a licensed Professional Engineer to verify that the foundations shown are adequate for the building supplied using the criteria in paragraph Foundations. Formulas and references shall be identified. Assumptions and conclusions shall be explained, and cross-referencing shall be clear. Wind forces on various parts of the structure, both positive and negative pressure, shall be calculated with the controlling pressure summarized. Lateral forces due to seismic loading shall be calculated and tabulated for the various parts and portions of the building. Computer programmed designs shall be accompanied by stress values and a letter of certification, signed by a licensed Professional Engineer, stating the design criteria and procedures used and attesting to the adequacy and accuracy of the design. A narrative of the computer program delineating the basic methodology shall be included. Computer program output shall be annotated and supplemented with sketches to verify the input and output. Critical load conditions used in the final sizing of the members shall be emphasized. The design analysis shall include the name and office phone number of the designer, who shall function as a point of contact to answer questions during the detail drawing review.

1.5 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 - SUBMITTAL PROCEDURES:

SD-01 Data

Design Analysis; GA.

Design analysis (building and foundations including anchor bolt plans) as one package with the drawings.

Instruction Manuals; GA.

Manufacturer's literature for individual building component systems.

Erection Procedures; GA.

Manufacturer's erection instruction and erection drawings describing the preparation requirements, assembly sequence, temporary bracing, shoring, and related information necessary for erection of the carport or fuel island canopy including its structural framework and components.

SD-04 Drawings

Carport and fuel island canopy Systems; GA.

Detail drawings consisting of catalog cuts, design and erection drawings, and an isometric view of the roof showing the design wind uplift pressure and dimensions of edge and corner zones. Shop painting and finishing specifications. Anchor bolt placement plan and column reactions.

SD-08 Statements

Qualifications; GA.

Qualifications of the manufacturer, the manufacturer's Representative when one is used, and qualifications and experience of the carport/canopy erector. A brief list of locations where carports or canopy of similar design have been used shall be included with the detail drawings and shall also include information regarding date of completion, name and address of owner, and how the structure is used.

SD-13 Certificates

Carport and fuel island canopy Systems; GA.

a. A Certificate from the carport or fuel island canopy manufacturer stating that the carport or fuel island canopy was designed from a complete set of the contract drawings and specifications and that the building furnished complies with the specified requirements.

b. Mill certification for structural bolts, framing steel, roofing and siding, and steel wall liner panels. Mill certification shall be current to within the past 5 years.

c. Warranty certificates. At the completion of the project the Contractor shall furnish signed copies of the 5-year Warranty for Carport or fuel island canopy System, a sample copy of which is attached to this section, the 20-year Manufacturer's Material Warranties.

1.6 DELIVERY AND STORAGE

Materials shall be delivered to the site in a dry and undamaged condition and stored out of contact with the ground. Materials other than framing and structural members shall be covered with weathertight coverings and kept dry. Storage accommodations for roof and siding shall provide good air circulation and protection from surface staining.

1.7 WARRANTIES

The Carport and fuel island canopy System, composed of framing and structural members, roofing and siding, gutters and downspouts, accessories, fasteners, trim, and miscellaneous building closure items shall be warranted as described below against material and workmanship deficiencies, system deterioration caused by exposure to the elements and service design loads, leaks and wind uplift damage. Any emergency temporary repairs conducted by the owner shall not negate the warranties.

1.7.1 Prime Contractor's Weathertightness Warranty

The Carport and fuel island canopy System shall be warranted by the Contractor on a no penal sum basis for a period of five years against materials and workmanship deficiencies; system deterioration caused by exposure to the elements and/or inadequate resistance to specified service design loads, water leaks, and wind uplift damage. The Carport and fuel island canopy System covered under this warranty shall include but is not limited to the following: framing and structural members, roofing and siding panels and seams, interior or exterior gutters and downspouts, accessories, fasteners, trim, flashings, connectors, components, and fasteners, and other system components; and items specified in other sections of these specifications that become part of the carport or fuel island canopy system. All material and workmanship deficiencies, system deterioration caused by exposure to the elements and/or inadequate resistance to specified service design loads, water leaks and wind uplift damage shall be repaired as approved by the Contracting Officer. See the attached Contractor's written warranty for issue resolution of warrantable defects. This warranty shall warrant and cover the entire cost of repair or replacement, including all material, labor, and related markups. The Contractor shall supplement this warranty with written warranties from the installer and/or system manufacturer, which shall be submitted along with Contractor's warranty. However, the Contractor is ultimately responsible for this warranty. The Contractor's written warranty shall be as outlined in attached **WARRANTY FOR CARPORT and/or FUEL ISLAND CANOPY SYSTEMS**, and start upon final acceptance of the facility. The Contractor shall provide a separate bond in an amount equal to the installed total carport or fuel island canopy system cost in favor of the owner (Government) covering the Contractor's warranty responsibilities effective throughout the five year Contractor's warranty period for the entire carport or fuel island canopy system as outlined above.

1.7.2 Manufacturer's Material and/or System Weathertightness Warranties

The Contractor shall furnish, in writing, the following manufacturer's material warranties to the Contracting Officer which cover all Carport or fuel island canopy System components:

a. A manufacturer's 20 year material warranty warranting that the specified aluminum, zinc-coated steel, aluminum-zinc alloy coated steel or aluminum-coated steel will not rupture, structurally fail, fracture, deteriorate, or become perforated under normal design atmospheric conditions and service design loads. Liability under this warranty shall be limited exclusively to the cost of either repairing or replacing nonconforming, ruptured, perforated, or structurally failed securement system including fasteners and coil material.

b. A manufacturer's 20 year exterior material finish warranty on the factory colored finish warranting that the finish, under normal atmospheric conditions at the site, will not crack, peel, or delaminate; chalk in excess of a numerical rating of eight, as determined by ASTM D 4214 test procedures; or change colors in excess of five CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. Liability under this warranty is exclusively limited to replacing the defective coated material.

PART 2 - PRODUCTS

2.1 CARPORTS AND FUEL ISLAND CANOPY COMPONENTS

The size and weight of prefabricated components shall permit easy handling in the field and the maximum size and weight of any component shall be suitable for transportation by commercial carrier. Each piece or part of the assembly shall be clearly and legibly marked to correspond with the detail drawings.

2.2 FRAMING AND STRUCTURAL MEMBERS

Steel 1/8 inch or more in thickness shall conform to ASTM A 36, ASTM A 529, ASTM A 992, or ASTM A 588. Uncoated steel less than 1/8 inch in thickness shall conform to ASTM A 570, ASTM A 606, or ASTM A 607. Galvanized steel shall conform to ASTM A 653, G 90 coating designation, 0.045 inch minimum thickness. Aluminum-zinc coated steel shall conform to ASTM A 792, AZ 55 coating designation, 0.045 inch minimum thickness. Aluminum sheet shall conform to ASTM B 209, 0.032 inch minimum thickness. Aluminum structural shapes and tubes shall conform to ASTM B 221, or ASTM B 308. Structural pipe shall conform to ASTM A 53, ASTM A 252, ASTM A 500, ASTM A 501, ASTM A 618, ASTM B 221, ASTM B 241 or ASTM B 429. Holes for structural connections shall be made in the shop.

2.3 ROOF AND SIDING

Roofing and siding shall be either steel or aluminum and shall have a factory color finish.

2.3.1 Roofing

Or Length of sheets shall be sufficient to cover the entire length of any unbroken roof slope unless otherwise approved. Width of sheets with overlapping configurations shall provide not less than (24 inches) of coverage in place or interlocking ribs shall provide not less than (12 inches) of coverage in place. Provisions shall be made for thermal expansion and contraction consistent with the type of system to be used. Panel shall have configurations for overlapping sheets. Roof deck assemblies shall be Class 90 as defined in UL 580. Exposed, penetrating fastener may be used. Height of corrugation at overlap of adjacent roof sheets shall be the carport/canopy manufacturer's standard for the indicated roof slope.

2.3.2 Steel Panels

Roofing and Siding shall be zinc-coated steel conforming to ASTM A 653G 90 coating designation; aluminum-zinc alloy coated steel conforming to ASTM A 792, AZ 55 coating; or aluminum-coated steel conforming to ASTM A 463, Type 2, coating designation T2 E5. Panels shall be 0.024 inch thick minimum, except that when the mid field of the roof is subject to design wind uplift pressures of 60 psf or greater or the steel covering is used as a diaphragm, the entire roof system shall have a minimum thickness of 0.030 inch. Prior to shipment, mill finish panels shall be treated to inhibit the formation of oxide corrosion. Panels that have become wet during shipment but have not started to oxidize shall be dried, and retreated in accordance with manufacturer's standard practice.

2.3.3 Factory Color Finish

Panels shall have a factory applied polyvinylidene fluoride finish on the exposed side. The exterior finish shall consist of a baked-on topcoat with an appropriate prime coat. Color shall be white. The exterior coating shall be a nominal 2 mil thickness consisting of a topcoat of not less than 0.7 mil dry film thickness and the paint manufacturer's recommended primer of not less than 1.0 mil mil thickness. The exterior color finish shall meet the test requirements specified below.

2.3.3.1 Salt Spray Test

A sample of the sheets shall withstand a salt spray test for a minimum of 1000 hours in accordance with ASTM B 117, including the scribe requirement in the test. Immediately upon removal of the panel from the test, the coating shall receive a rating of 10, no blistering, as determined by ASTM D 714; and a rating of 8, 1/32 inch failure at scribe, as determined by ASTM D 1654.

2.3.3.2 Formability Test

When subjected to testing in accordance with ASTM D 522 Method B, 1/8-inch diameter mandrel, the coating film shall show no evidence of cracking to the naked eye.

2.3.3.3 Accelerated Weathering, Chalking Resistance and Color Change

A sample of the sheets shall be tested in accordance with ASTM D 4587, test condition B for 24 total hours. The coating shall withstand the weathering test without cracking, peeling, blistering, loss of adhesion of the protective coating, or corrosion of the base metal. Protective coating that can be readily removed from the base metal with tape in accordance with ASTM D 3359, Test Method B, shall be considered as an area indicating loss of adhesion. Following the accelerated weathering test, the coating shall have a chalk rating not less than No. 8 in accordance with ASTM D 4214 test procedures, and the color change shall not exceed 5 CIE or Hunter Lab color difference (delta E) units in accordance with ASTM D 2244. For sheets required to have a low gloss finish, the chalk rating shall be not less than No. 6 and the color difference shall be not greater than 7 units.

2.3.3.4 Humidity Test

When subjected to a humidity cabinet test in accordance with ASTM D 2247 for 1000 hours, a scored panel shall show no signs of blistering, cracking, creepage or corrosion.

2.3.3.5 Pollution Resistance

Coating shall show no visual effects when covered spot tested in a 10 percent hydrochloric acid solution for 24 hours in accordance with ASTM D 1308.

2.3.4 Accessories

Flashing, trim, metal closure strips and curbs, fascia, caps, diverters, and similar metal accessories shall be the manufacturer's standard products. Exposed metal accessories shall be finished to match the building finish. Molded closure strips shall be bituminous-saturated fiber, closed-cell or solid-cell synthetic rubber or neoprene, or polyvinyl chloride premolded to match configuration of the roofing and siding and shall not absorb or retain water.

2.4 FASTENERS

Steel roof panels shall be zinc-coated steel, corrosion resisting steel, or nylon capped steel, type and size specified below or as otherwise approved for the applicable requirements. Fasteners for accessories shall be the manufacturer's standard. Exposed wall fasteners shall be color finished or provided with plastic color caps to match the covering. Nonpenetrating fastener system for wall panels using concealed clips shall be manufacturer's standard for the system provided.

2.4.1 Screws

Screws shall be as recommended by the manufacturer to meet the design strength requirements.

2.4.2 End-Welded Studs

Automatic end-welded studs shall be shouldered type with a shank diameter of not less than 3/16 inch and cap or nut for holding covering against the shoulder.

2.4.3 Explosive Actuated Fasteners

Fasteners for use with explosive actuated tools shall have a shank diameter of not less than 0.145 inch with a shank length of not less than 1/2 inch for fastening panels to steel and not less than 1 inch for fastening panels to concrete.

2.4.4 Blind Rivets

Blind rivets shall be aluminum with 3/16-inch nominal diameter shank or stainless steel with 1/8-inch nominal diameter shank. Rivets shall be threaded stem type if used for other than the fastening of trim. Rivets with hollow stems shall have closed ends.

2.4.5 Bolts

Bolts shall be not less than 1/4-inch diameter, shouldered or plain shank as required, with proper nuts.

2.5 GUTTERS AND DOWNSPOUTS

Gutters and downspouts shall be fabricated of aluminum, zinc-coated steel or aluminum-zinc alloy coated steel and shall have manufacturer's factory color finish. Minimum uncoated thickness of materials shall be 0.018 inch for steel and 0.032 inch for aluminum. All accessories necessary for the complete installation of the gutters and downspouts shall be furnished. Accessories shall include gutter straps, downspout elbows, downspout straps and fasteners fabricated from metal compatible with the gutters and downspouts.

2.6 SEALANT

Sealant shall be an elastomeric type containing no oil or asphalt. Exposed sealant shall be colored to match the applicable building color and shall cure to a rubber like consistency.

2.7 GASKETS AND INSULATING COMPOUNDS

Gaskets and insulating compounds shall be nonabsorptive and suitable for insulating contact points of incompatible materials. Insulating compounds shall be nonrunning after drying.

2.8 SHOP PRIMING

Ferrous surfaces shall be cleaned of oil, grease, loose rust, loose mill scale, and other foreign substances and shop primed. Primer coating shall be in accordance with the manufacturer's standard system.

PART 3 - EXECUTION

3.1 ERECTION

Dissimilar materials which are not compatible when contacting each other shall be insulated from each other by means of gaskets or insulating compounds. Improper or mislocated drill holes shall be plugged with an oversize screw fastener and gasketed washer; however, panels with an excess of such holes or with such holes in critical locations shall not be used. Exposed surfaces shall be kept clean and free from sealant, metal cuttings, excess material from thermal cutting, and other foreign materials. Exposed surfaces which have been thermally cut shall be finished smooth within a tolerance of (1/8 inch). Stained, discolored or damaged sheets shall be removed from the site. Welding of steel shall conform to AWS D1.1; welding of aluminum shall conform to AA-02.

3.1.1 Framing Members and Anchor Bolts

Erection shall be in accordance with the approved erection instructions and drawings and with applicable provisions of AISC-S342L. Framing members fabricated or modified on site shall be saw or abrasive cut; bolt holes shall be drilled. Onsite flame cutting of framing members, with the exception of small access holes in structural beam or column webs, will not be permitted. High-strength bolting shall conform to AISC Pub No. S345L using ASTM A 325 bolts. Improper or mislocated bolt holes in structural members or other misfits caused by improper fabrication or erection, shall be repaired in accordance with AISC Pub No. S303. Concrete work is specified in Section 03300 - CAST-IN-PLACE STRUCTURAL CONCRETE. Anchor bolts shall be accurately set by template while the concrete is in a plastic state. Uniform bearing under base plates and sill members shall be provided using a nonshrinking grout. Separate leveling plates under column base plates shall not be used. Members shall be accurately spaced to assure proper fitting of panels. As erection progresses, the work shall be securely fastened to resist the dead load and wind and erection stresses. Supports for electric overhead traveling cranes shall be positioned and aligned in accordance with MHI CMAA 70.

3.1.2 Roofing Installation

Roofing shall be applied with the longitudinal configurations in the direction of the roof slope. Accessories shall be fastened into framing members, except as otherwise approved. Closure strips shall be provided as indicated and where necessary to provide weathertight construction. Fastener and fastener spacing shall be in accordance with manufacture design.

3.1.3 Installation of Gutters and Downspouts

Gutters and downspouts shall be rigidly attached to the carport or canopy. Spacing of cleats for gutters shall be 16 inches maximum. Spacing of brackets and spacers for gutters shall be 36 inches maximum. Supports for downspouts shall be spaced according to manufacturer's recommendations.

3.2 FIELD PAINTING

Immediately upon detection, abraded or corroded spots on shop-painted surfaces shall be wire brushed and touched up with the same material used for the shop coat. Shop-primed ferrous surfaces exposed on the outside of the building and all shop-primed surfaces of doors and windows shall be painted with two coats of an approved exterior enamel. Factory color finished surfaces shall be touched up as necessary with the manufacturer's recommended touch-up paint.

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY
FOR
CARPORT OR FUEL ISLAND CANOPY SYSTEM

FACILITY
DESCRIPTION: _____

BUILDING
NUMBER: _____

CORPS OF ENGINEERS CONTRACT
NUMBER: _____

CONTRACTOR

CONTRACTOR: _____
ADDRESS: _____

POINT OF
CONTACT: _____

TELEPHONE
NUMBER: _____

OWNER

OWNER: _____
ADDRESS: _____

POINT OF
CONTACT: _____

TELEPHONE
NUMBER: _____

CONSTRUCTION AGENT

CONSTRUCTION
AGENT: _____
ADDRESS: _____

POINT OF CONTACT: _____

TELEPHONE
NUMBER: _____

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY
FOR
CARPORT OR FUEL ISLAND CANOPY SYSTEM
(continued)

THE CARPORT OR FUEL ISLAND CANOPY SYSTEM INSTALLED ON THE ABOVE NAMED BUILDING IS WARRANTED BY _____ FOR A PERIOD OF FIVE (5) YEARS AGAINST WORKMANSHIP AND MATERIAL DEFICIENCIES, WIND DAMAGE AND STRUCTURAL FAILURE WITHIN PROJECT SPECIFIED DESIGN LOADS, AND LEAKAGE. THE CARPORT OR FUEL ISLAND CANOPY SYSTEM COVERED UNDER THIS WARRANTY SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, THE FOLLOWING: FRAMING AND STRUCTURAL MEMBERS, ROOFING AND SIDING PANELS AND SEAMS, INTERIOR OR EXTERIOR GUTTERS AND DOWNSPOUTS, ACCESSORIES, TRIM, FLASHINGS AND MISCELLANEOUS BUILDING CLOSURE ITEMS SUCH AS DOORS AND WINDOWS (WHEN FURNISHED BY THE MANUFACTURER), CONNECTORS, COMPONENTS, AND FASTENERS, AND OTHER SYSTEM COMPONENTS AND ASSEMBLIES INSTALLED TO PROVIDE A WEATHERTIGHT SYSTEM; AND ITEMS SPECIFIED IN OTHER SECTIONS OF THESE SPECIFICATIONS THAT BECOME PART OF THE CARPORT OR FUEL ISLAND CANOPY SYSTEM. ALL MATERIAL AND WORKMANSHIP DEFICIENCIES, SYSTEM DETERIORATION CAUSED BY EXPOSURE TO THE ELEMENTS AND/OR INADEQUATE RESISTANCE TO SPECIFIED SERVICE DESIGN LOADS, WATER LEAKS AND WIND UPLIFT DAMAGE SHALL BE REPAIRED AS APPROVED BY THE CONTRACTING OFFICER.

ALL MATERIAL DEFICIENCIES, WIND DAMAGE, STRUCTURAL FAILURE AND LEAKAGE ASSOCIATED WITH THE CARPORT OR FUEL ISLAND CANOPY SYSTEM COVERED UNDER THIS WARRANTY SHALL BE REPAIRED AS APPROVED BY THE CONTRACTING OFFICER. THIS WARRANTY SHALL COVER THE ENTIRE COST OF REPAIR OR REPLACEMENT, INCLUDING ALL MATERIAL, LABOR, AND RELATED MARKUPS. THE ABOVE REFERENCED WARRANTY COMMENCED ON THE DATE OF FINAL ACCEPTANCE ON _____ AND WILL REMAIN IN EFFECT FOR STATED DURATION FROM THIS DATE.

SIGNED, DATED, AND NOTARIZED (BY COMPANY PRESIDENT)

(Company President) (Date)

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY
FOR
CARPORT OR FUEL ISLAND CANOPY SYSTEM
(continued)

THE CONTRACTOR SHALL SUPPLEMENT THIS WARRANTY WITH WRITTEN WARRANTIES FROM THE MANUFACTURER AND/OR INSTALLER OF THE CARPORT OR FUEL ISLAND CANOPY SYSTEM, WHICH SHALL BE SUBMITTED ALONG WITH THE CONTRACTOR'S WARRANTY. HOWEVER, THE CONTRACTOR WILL BE ULTIMATELY RESPONSIBLE FOR THIS WARRANTY AS OUTLINED IN THE SPECIFICATIONS AND AS INDICATED IN THIS WARRANTY.

EXCLUSIONS FROM COVERAGE

1. NATURAL DISASTERS, ACTS OF GOD (LIGHTNING, FIRE, EXPLOSIONS, SUSTAINED WIND FORCES IN EXCESS OF THE DESIGN CRITERIA, EARTHQUAKES, AND HAIL).

2. ACTS OF NEGLIGENCE OR ABUSE OR MISUSE BY GOVERNMENT OR OTHER PERSONNEL, INCLUDING ACCIDENTS, VANDALISM, CIVIL DISOBEDIENCE, WAR, OR DAMAGE CAUSED BY FALLING OBJECTS.

3. DAMAGE BY STRUCTURAL FAILURE, SETTLEMENT, MOVEMENT, DISTORTION, WARPAGE, OR DISPLACEMENT OF THE BUILDING STRUCTURE OR ALTERATIONS MADE TO THE BUILDING.

4. CORROSION CAUSED BY EXPOSURE TO CORROSIVE CHEMICALS, ASH OR FUMES GENERATED OR RELEASED INSIDE OR OUTSIDE THE BUILDING FROM CHEMICAL PLANTS, FOUNDRIES, PLATING WORKS, KILNS, FERTILIZER FACTORIES, PAPER PLANTS, AND THE LIKE.

5. FAILURE OF ANY PART OF THE BUILDING SYSTEM DUE TO ACTIONS BY THE OWNER WHICH INHIBIT FREE DRAINAGE FROM THE ROOF, AND GUTTERS AND DOWNSPOUTS; OR CONDITIONS WHICH CREATE PONDING WATER ON THE ROOF OR AGAINST THE BUILDING SIDING.

6. THIS WARRANTY APPLIES TO THE CARPORT OR FUEL ISLAND CANOPY SYSTEM. IT DOES NOT INCLUDE ANY CONSEQUENTIAL DAMAGE TO THE BUILDING INTERIOR OR CONTENTS WHICH IS COVERED BY THE WARRANTY OF CONSTRUCTION CLAUSE INCLUDED IN THIS CONTRACT.

7. THIS WARRANTY CANNOT BE TRANSFERRED TO ANOTHER OWNER WITHOUT WRITTEN CONSENT OF THE CONTRACTOR AND THIS WARRANTY AND THE CONTRACT PROVISIONS WILL TAKE PRECEDENCE OVER ANY CONFLICTS WITH STATE STATUTES. REPORTS OF LEAKS AND BUILDING SYSTEM DEFICIENCIES SHALL BE RESPONDED TO WITHIN 48 HOURS OF RECEIPT OF NOTICE BY TELEPHONE OR IN WRITING FROM EITHER THE OWNER, OR CONTRACTING OFFICER. EMERGENCY REPAIRS, TO PREVENT FURTHER ROOF LEAKS, SHALL BE INITIATED IMMEDIATELY; A WRITTEN PLAN SHALL BE SUBMITTED FOR APPROVAL TO REPAIR OR REPLACE THIS SSSMR SYSTEM WITHIN SEVEN CALENDAR DAYS. ACTUAL WORK FOR PERMANENT REPAIRS OR REPLACEMENT SHALL BE STARTED WITHIN 30 DAYS AFTER RECEIPT OF NOTICE, AND COMPLETED WITHIN A REASONABLE TIME FRAME. IF THE CONTRACTOR FAILS TO ADEQUATELY RESPOND TO THE WARRANTY PROVISIONS, AS STATED IN THE CONTRACT AND AS CONTAINED HEREIN, THE CONTRACTING OFFICER MAY HAVE THE CARPORT OR FUEL ISLAND CANOPY SYSTEM REPLACE OR REPAIRED BY OTHERS AND CHARGE THE COST TO THE CONTRACTOR. IN THE EVENT THE

CONTRACTOR'S FIVE (5) YEAR NO PENAL SUM WARRANTY
FOR
CARPORT OR FUEL ISLAND CANOPY SYSTEM
(Exclusions from Coverage Continued)

CONTRACTOR DISPUTES THE EXISTENCE OF A WARRANTABLE DEFECT, THE CONTRACTOR MAY CHALLENGE THE OWNER'S DEMAND FOR REPAIRS AND/OR REPLACEMENT DIRECTED BY THE OWNER OR CONTRACTING OFFICER EITHER BY REQUESTING A CONTRACTING OFFICER'S DECISION, UNDER THE CONTRACT DISPUTES ACT, OR BY REQUESTING THAT AN ARBITRATOR RESOLVE THE ISSUE. THE REQUEST FOR AN ARBITRATOR MUST BE MADE WITHIN 48 HOURS OF BEING NOTIFIED OF THE DISPUTED DEFECTS. UPON BEING INVOKED THE PARTIES SHALL, WITHIN 10 DAYS JOINTLY REQUEST A LIST OF FIVE (5) ARBITRATORS FROM THE FEDERAL MEDIATION AND CONCILIATION SERVICE. THE PARTIES SHALL CONFER WITHIN 10 DAYS AFTER RECEIPT OF THE LIST TO SEEK AGREEMENT ON AN ARBITRATOR. IF THE PARTIES CANNOT AGREE ON AN ARBITRATOR, THE CONTRACTING OFFICER AND THE PRESIDENT OF THE CONTRACTOR'S COMPANY WILL STRIKE ONE (1) NAME FROM THE LIST ALTERNATIVELY UNTIL ONE NAME REMAINS. THE REMAINING PERSON SHALL BE THE DULY SELECTED ARBITRATOR. THE COSTS OF THE ARBITRATION, INCLUDING THE ARBITRATOR'S FEE AND EXPENSES, COURT REPORTER, COURTROOM OR SITE SELECTED ETC., SHALL BE BORNE EQUALLY BETWEEN THE PARTIES. EITHER PARTY DESIRING A COPY OF THE TRANSCRIPT SHALL PAY FOR THE TRANSCRIPT. A HEARING WILL BE HELD AS SOON AS THE PARTIES CAN MUTUALLY AGREE. A WRITTEN ARBITRATOR'S DECISION WILL BE REQUESTED NOT LATER THAN 30 DAYS FOLLOWING THE HEARING. THE DECISION OF THE ARBITRATOR WILL NOT BE BINDING; HOWEVER, IT WILL BE ADMISSIBLE IN ANY SUBSEQUENT APPEAL UNDER THE CONTRACT DISPUTES ACT. A FRAMED COPY OF THIS WARRANTY SHALL BE POSTED IN THE MECHANICAL ROOM OR OTHER APPROVED LOCATION DURING THE ENTIRE WARRANTY PERIOD.

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