



State of Alaska
Department of Community and Economic Development

AIDEA/AEA
Rural Energy Group
 813 West Northern Lights Blvd.
 Anchorage, Alaska 99503

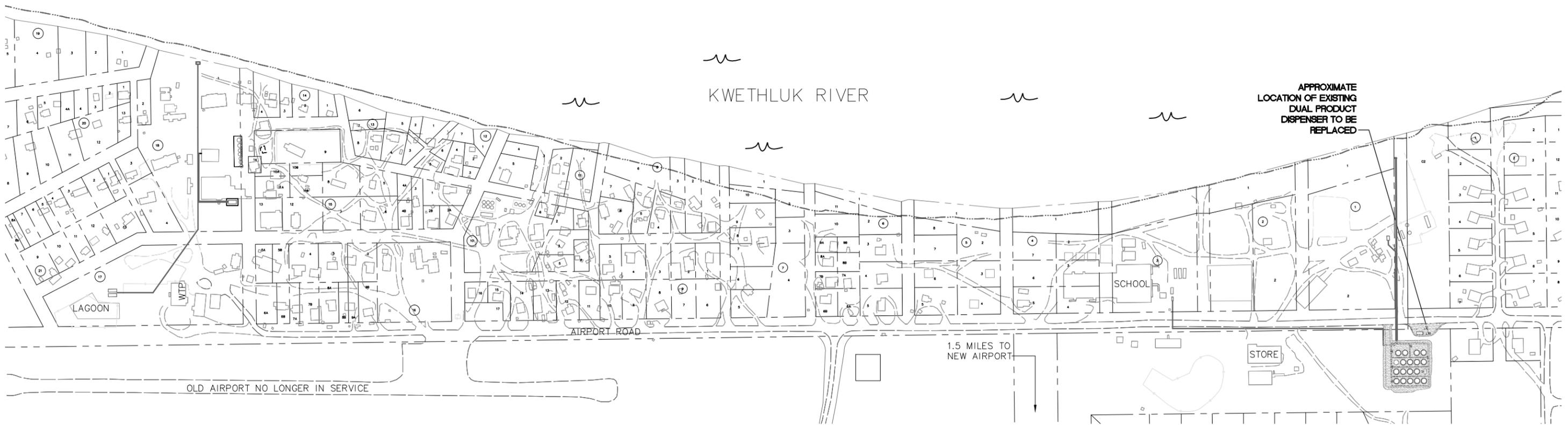


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PROJECT DRAWINGS		
1	COVER SHEET WITH PROJECT AREA MAP	
2	SCOPE OF WORK & SPECIFICATIONS	
3	DISPENSER DETAILS & ELECTRICAL PLAN	
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SYSTEM INTERFACE CONTROL PANEL DRAWINGS FOR PANEL CPK (17 SHEETS)		

KWETHLUK, ALASKA

DISPENSER REPLACEMENT

AUGUST 2011



PROJECT AREA MAP



SCOPE OF WORK

The Kwethluk Dispenser Replacement Project will provide the community with a new, fully functional mechanical dual product fuel dispenser in place of the existing electronic dispenser. The project will include the following tasks:

1. Remove existing dual product electronic dispenser and card reader systems located at the community's bulk fuel tank farm (see Cover Sheet for approximate location). Items to be removed include but are not limited to the dual product dispenser, card reader, hoses, swivels, breakaway couplings and nozzles associated with the existing dual product dispenser. All items to be left with the Owner.
2. Install a new, dual product, mechanical dispenser including all features, hardware, and ancillary equipment in accordance with the drawings and specifications and all applicable state and federal codes and regulations.
3. Permanently plug/ cap /cover existing conduits, concrete slab penetrations, etc. associated with the removed dispensing system which are not incorporated into the new system. Contractor shall submit proposed means and methods for covering existing openings to the AEA for approval prior to installation.
4. Provide copies of all Manufacturers literature and Operation/Maintenance manuals for equipment supplied.
5. Provide any speciality tools required, if any, for maintenance of the dispenser.
6. Provide spare/ replacement parts as noted in the Dispenser Specifications.
7. Provide training to the local fuel attendants on proper operation of the dispenser. Contact George Guy at Kwethluk Inc. (907) 757-6613 to assist in scheduling the training. Provide AEA with a list of the names of the people who attended the training

DISPENSER SPECIFICATIONS

MECHANICAL DUAL PRODUCT RETAIL DISPENSER: UL listed dual product dispenser for use with remote submersible pump. Mechanical registers displaying money per sale, gallons per sale (with gallons and tenths up to 999.9 gallons), and price per gallon. price per gallon register range shall be \$1.00/gallon to at least \$9.99/gallon. Non-resetable mechanical totalizer, fluorescent lighted display, 100:1 pulser, 115 VAC/60 HZ powered. Provide internal 30 micron spin-on filter and 10 spare elements. Provide 1 each complete replacement set of every light bulb/lamp in dispenser. Provide with ½" x 15' long hoses and dispensing nozzles as specified below. Provide complete wiring diagrams and installation instructions to the engineer. Dispenser shall be certifiable for retail sales. Prior to delivery, replace factory applied standard grease in mechanical register with a severe cold arctic-grade lubricant. Two hose dual-product dispenser, Gasboy FIL-CM-8753KXTW2, no substitutes.

HOSES: ¾" Hose – Arctic Grade, fuel rated hose with static wire and brass male Scoville fittings each end, Goodyear Arctic Softwall plus or equal. Length as indicated. Provide multi-plane swivels at each end, Husky 0350 or equal. Provide double valve safety break, 250# max separation pull force, Husky 3360 with 2274 Breakaway Hose or equal.

DISPENSING NOZZLES: Automatic shutoff nozzles with hold-open rack and blocker lever, and automatic shutoff on loss of pressure, OPW11B or equal. Provide with 13/16" O.D. Spout for Gasoline and 15/16" O.D. spout for Diesel fuel. Color code handles red for Gasoline and green for Diesel fuel.

ELECTRICAL SPECIFICATIONS

SCOPE OF WORK: Furnish and install all material and equipment as required for the installation as specified here and as shown on the drawings.

STANDARDS, CODES AND REGULATIONS: Contractor shall comply with the latest adopted edition of the National Electrical Code (NEC), International Building Code (IBC), and International Fire Code (IFC) including all state and local amendments to these codes.

DRAWINGS: The drawings are diagrammatic, not necessarily showing all offsets or exact locations of fixtures, equipment, etc., unless specifically dimensioned. Review the drawings and specifications for equipment furnished by other crafts but installed in accordance with this section. Bring questionable or obscure items, apparent conflicts between plans, specifications, governing codes and/or utilities regulations to the attention of the Engineer. Codes, ordinances, regulations, manufacturer's instructions or standards take precedence when they are more stringent or conflict with the drawings and specifications.

WORKMANSHIP: All material and equipment shall be installed in accordance with the manufacturer's recommendations, instructions and/or installation drawings and in accordance with NECA standards. Materials and equipment shall be new and shall conform to applicable industry standards, NEMA standards and Underwriters Laboratories (U/L) standards.

OPERATION AND MAINTENANCE MANUALS: Provide operation and maintenance manuals for training of the owner's personnel. Describe in the manuals the procedures necessary to operate the system including start-up, operation, emergency operation and shutdown. Provide instructions and a schedule of preventive maintenance in tabular form for all routine cleaning, inspection and lubrication with recommended lubricants. Provide instructions for minor repair or adjustments required for preventive maintenance routines. Provide manufacturer's descriptive literature including approved shop drawings covering devices used in any contractor-provided equipment or systems with illustration, exploded views, etc. Provide a non-password protected PDF file of each manual in its entirety on a CD in addition to the required hard copies.

CONDUITS: Mark all conduits entering or leaving panelboards/control panels with an indelible black marker with the circuit numbers of the circuits contained inside.

JUNCTION BOXES: Mark all circuit numbers of wiring on all junction boxes with sheet steel covers. Mark with indelible black marker. Mark all other special system junction boxes with sheet steel covers.

CONDUIT: In General, all wiring below 8' AFF shall be installed in galvanized rigid steel or intermediate metal raceway with cast boxes and gasketed covers. EMT and pressed steel shall be permitted at or above 8' unless otherwise noted (See WIRING METHODS at the end of the specifications). All metallic fittings, connectors, boxes, etc., shall be approved for use as a grounding means. Utilize short extensions (36 inches maximum) of flexible, low temperature, liquidtight flexible metallic conduit for connection of all motors and other equipment subject to vibration and where conduits transition between structures or on risers from below grade. Paint

all exposed raceways to match the surface to which it is attached or crosses. Otherwise point industrial gray. Completely and thoroughly swab raceway system before installing conductors. An equipment ground wire is required in all conduits whether shown or not.

CONDUCTORS: Conductors shall be copper, solid or stranded, with type XHHW-2, 90° insulation. Minimum branch circuit conductor size shall be #12 AWG. Minimum control circuit conductor size for field wiring shall be #14 AWG unless noted otherwise on drawings. Pull all conductors into the raceway at the same time. Use UL listed wire-pulling lubricant for pulling #4 AWG and larger wires. Color code conductors as follows: 480V systems: brown (AØ), orange (BØ), yellow (CØ). NOTE: The 480Y Neutral is not used and is terminated at the ATS. 208Y/120 volt systems: black (L1), red (L2), white (N), green or bare (G). 240/120 volt systems: black (L1), red (L2), white (N), green or bare (G). Use properly sized insulated spring wire connectors with plastic caps for all conductors #8 AWG and smaller. Terminate #6 AWG and larger conductors with crimp or compression type connectors installed with tool recommended by connection manufacturer and insulate with properly sized 600-volt rated heat shrink tubing.

CIRCUIT BREAKERS: Molded case circuit breakers shall be bolt-on with common trip handle for all poles. Thermal magnetic trip type unless specifically shown as magnetic only (MCP).

EQUIPMENT CONNECTIONS: Provide wiring and connection to equipment requiring electrical power but specified under other divisions of the specifications. Equipment shall include but is not limited to motors, pumps, dispensing equipment, etc. Review equipment submittal from the other trades prior to installation and electrical rough-in. Verify location, size, type of connections, and that equipment is ready for electrical connection. Make wiring connections in control panel or in wiring compartment of pre-wired equipment in accordance with the manufacturer's instructions. Provide interconnecting wiring and disconnects where required.

DISCONNECT SWITCHES: Provide 600V and 250V heavy duty non-fusible quick-make, quick break, load interrupter, enclosed knife switches with externally operable handle interlocked to prevent opening front cover with switch in on position, handle lockable in off position. For motors under 1HP, specification grade snap switches rated for HP duty may be used. Where locking is required, provide suitable cover plate with locking feature.

EQUIPMENT MOUNTING: Provide all bracing as required to securely mount enclosures, fixtures and devices. Unless otherwise noted use galvanized hardware and galvanized formed steel components such as Unistrut or equal. When bolting to structure, verify that the original structural and performance (i.e. water tight) characteristics are maintained.

WIRING METHODS: Unless noted otherwise, enclosures, junction boxes and other equipment shall be installed in accordance with the following schedule:

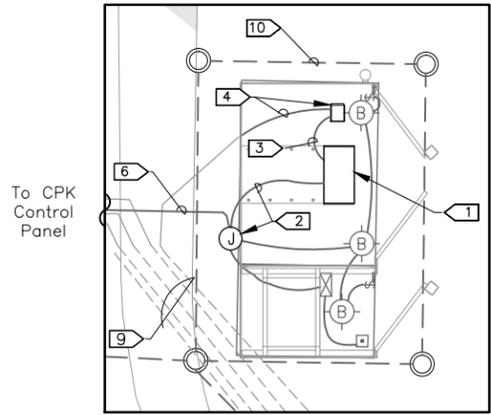
Exterior – Cast weatherproof device boxes with gasketed covers, RMC or LTFMC. NEMA 4X enclosure rating. NOTE: Receptacles shall retain their weatherproof rating while in use.



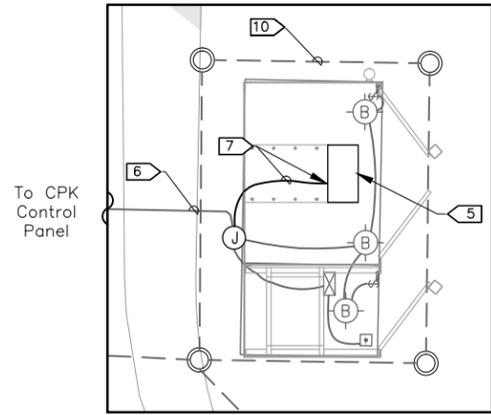
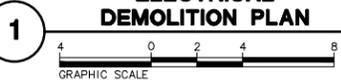
KWETHLUK, ALASKA
DISPENSER REPLACEMENT
SCOPE OF WORK &
ELECTRICAL SPECIFICATIONS

NO.	REVISION	BY	DATE
A	ISSUED FOR CONSTRUCTION	TRK	8/2011

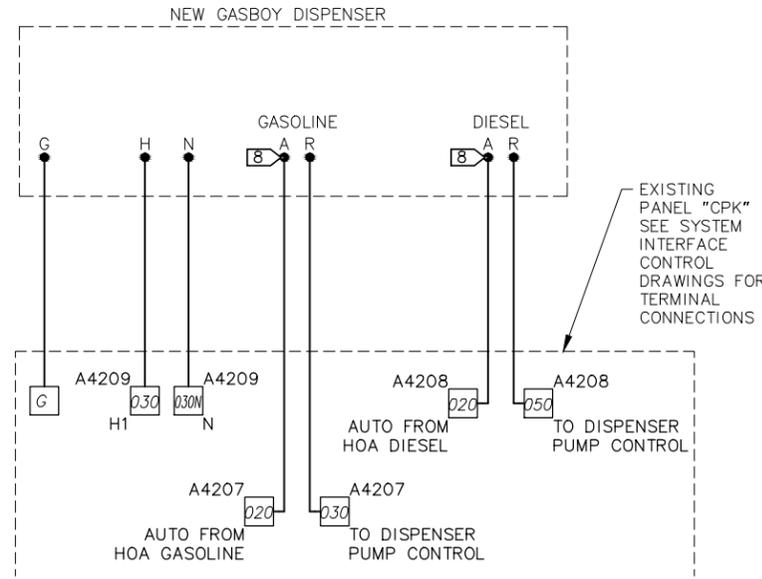
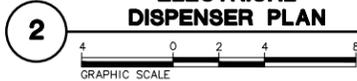
Plot Date	8/3/11
Designed	TRK
Drawn	TRK
Approved	JVS



1 ELECTRICAL DEMOLITION PLAN



2 ELECTRICAL DISPENSER PLAN



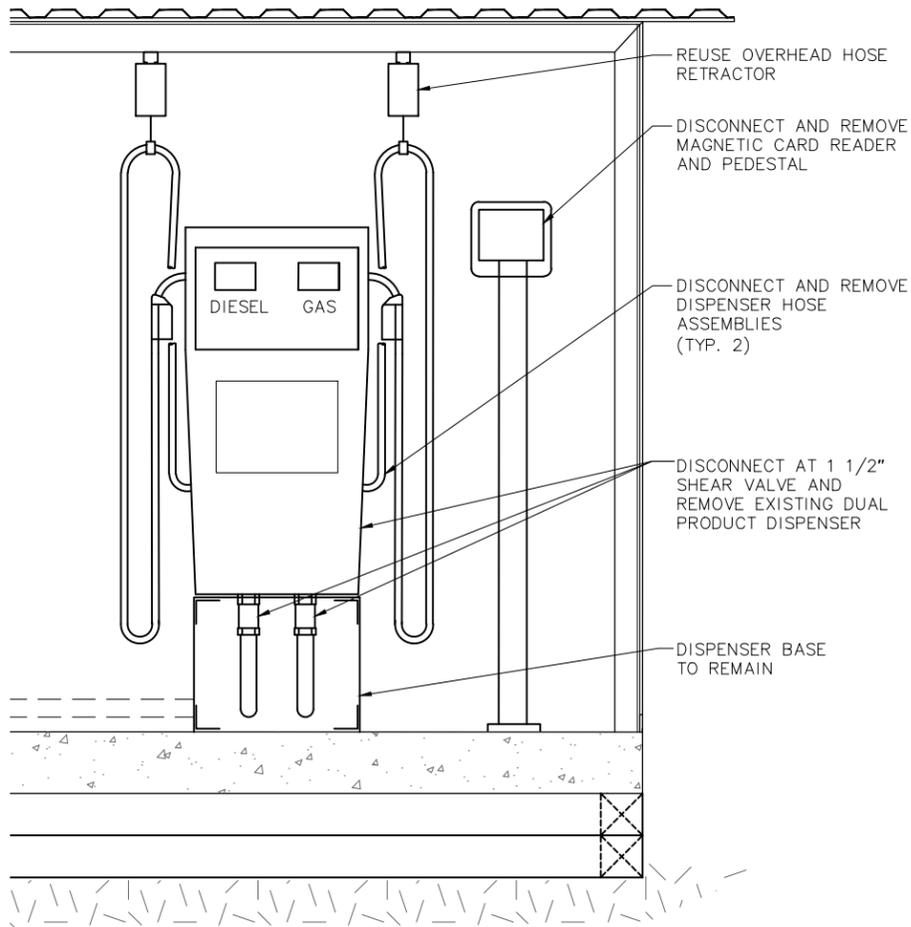
3 NEW DISPENSER CONTROL SCHEMATIC

NOTE: GASBOY WIRING SHOWN BASED ON GENERIC MANUFACTURER SCHEMATIC. FIELD VERIFY TERMINATIONS

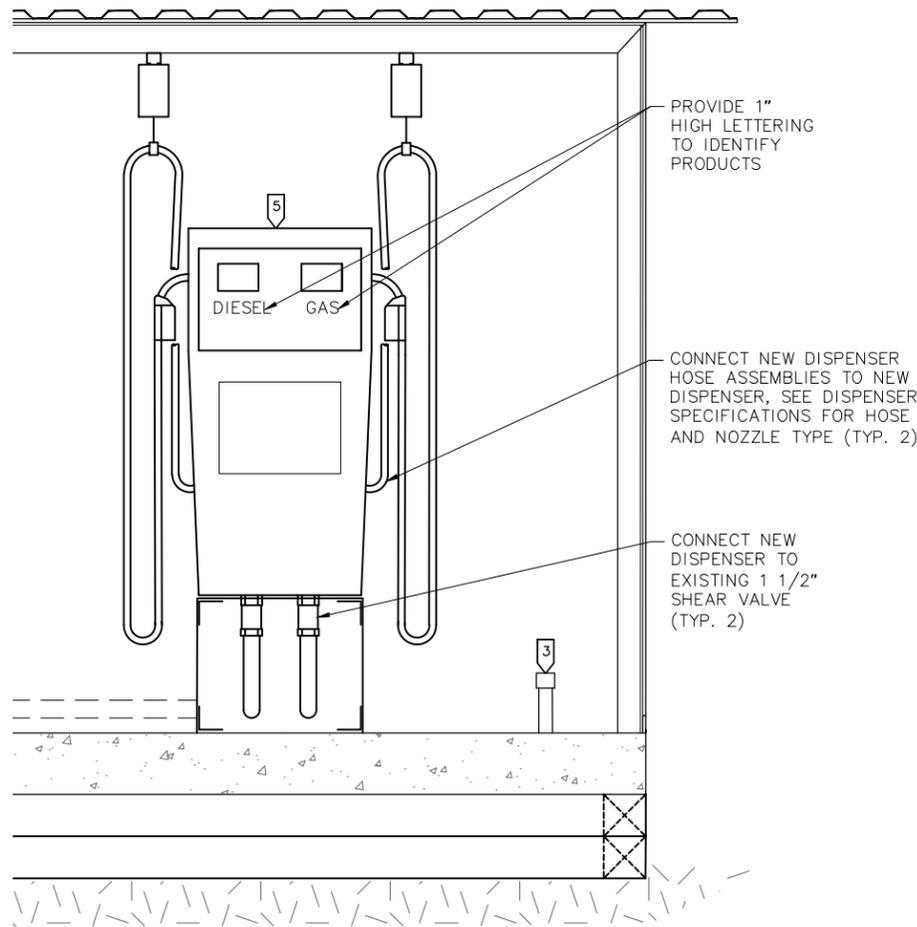
Notes:

- 1 As-Built wiring connections and then disconnect and remove Dual Product Dispenser.
- 2 Pull back conductors to junction box and pigtail.
- 3 Disconnect and remove conductors between Card Reader and the Dual Product Dispenser. Cap conduit at lowest point.
- 4 Disconnect and Remove Card Reader Pedestal. Remove telephone cable to DEMARK. Cap conduit at lowest point.
- 5 New UL listed Gasboy Dispenser.
- 6 Existing 1" C, 9#12 (H, N, G, 2 Hook Switch, 2 Remote, 2 Spare). Contractor to verify spares are available, if not pull 2 new #12.
- 7 Existing 3/4" C, 7#12 (H, N, G, 4 Hook Switch). Connect to new Dispenser. See Note 9.
- 8 Isolate each Pump Control Contacts in the dispenser by disconnecting #14-Black from the wire nut, splice with Hook Switch #12 to extend back to panel CPK (Typ. 2).
- 9 Existing buried conduits.
- 10 Existing ground system.

NOTE: MAINTENANCE DISCONNECT MEANS PROVIDED VIA ESD. RESET POWER AT CPK, ACKNOWLEDGE PUSHBUTTON IS BEHIND LOCKED DOOR ON FRONT PANEL



4 FRONT ELEVATION DISPENSER DEMOLITION PLAN



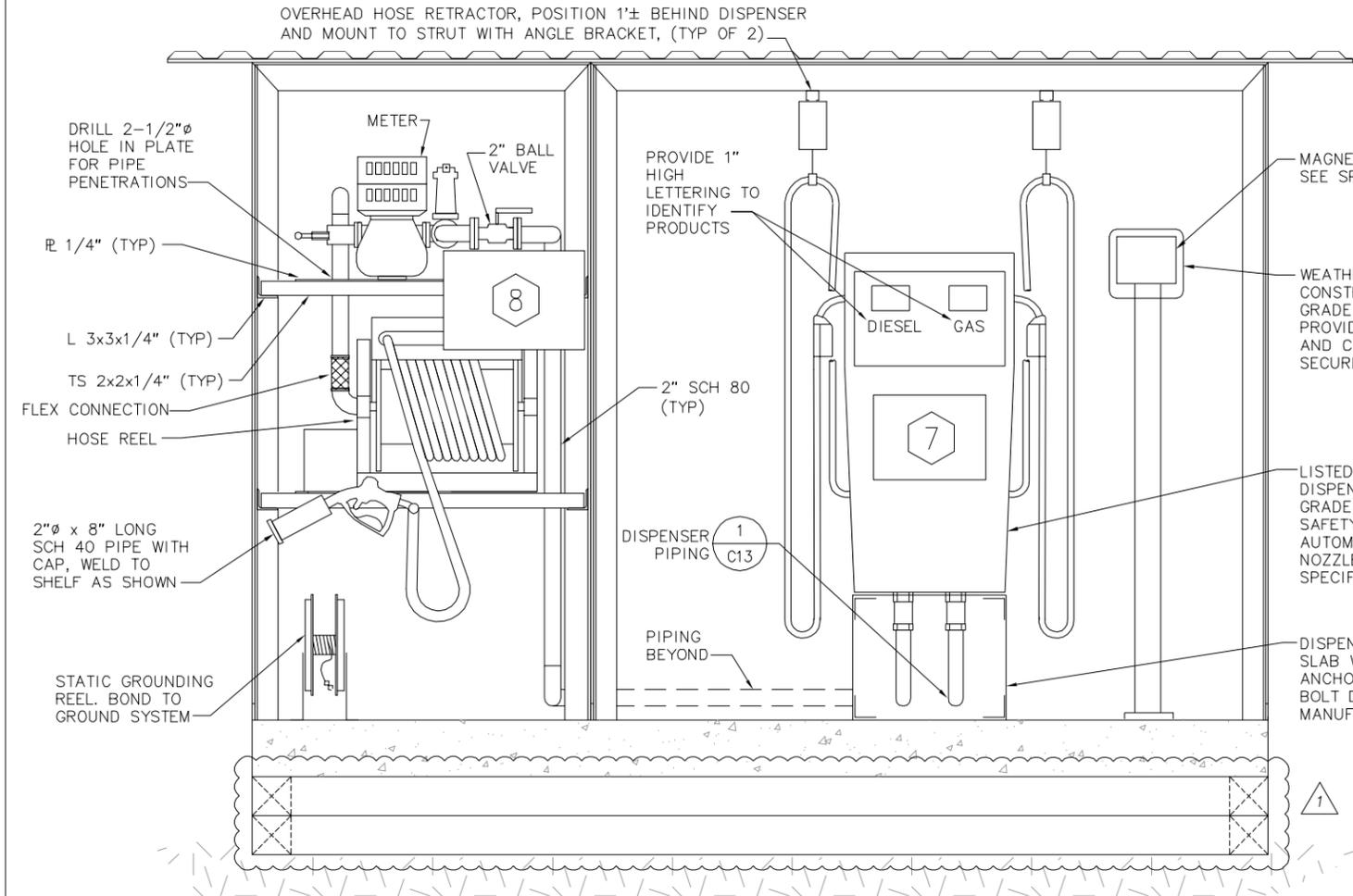
5 FRONT ELEVATION DISPENSER PLAN

NO.	REVISION	BY	DATE
A	ISSUED FOR CONSTRUCTION	TRK	8/2011

Plot Date	8/3/11
Designed	TRK
Drawn	TRK
Approved	JVS

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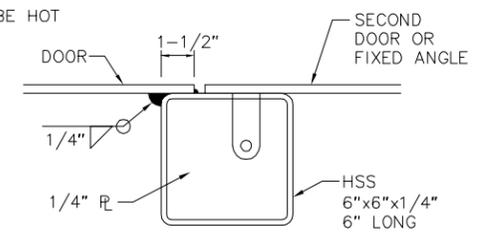


FRONT ELEVATION

DUAL PRODUCT DISPENSER INSTALLATION DETAILS

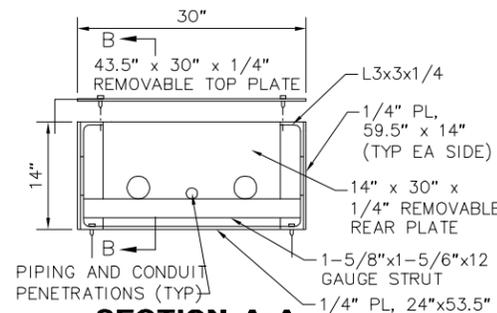
SCALE: GRAPHIC SCALE

NOTES:
 1. ALL STRUCTURAL STEEL FOR DISPENSER ENCLOSURE TO BE HOT DIPPED GALVANIZED UNLESS OTHERWISE NOTED. WELDED WIRE FABRIC TO BE STAINLESS STEEL.
 2. DISPENSER BASE TO BE HOT DIPPED GALVANIZED.

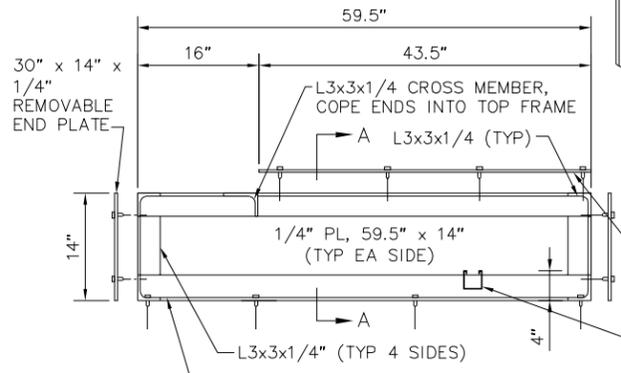


ENCLOSURE LOCK

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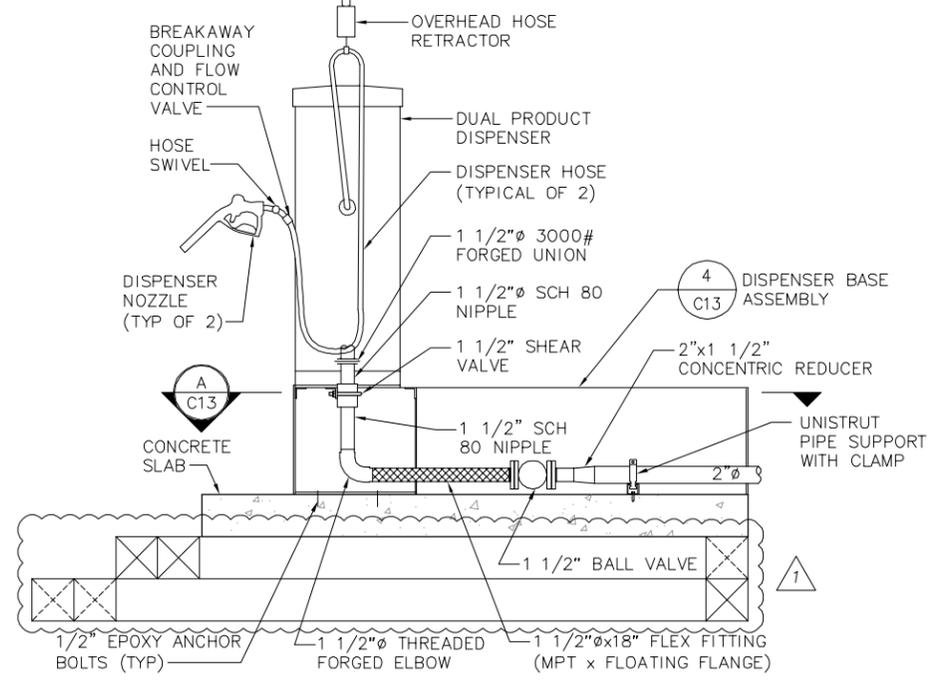


SECTION A-A



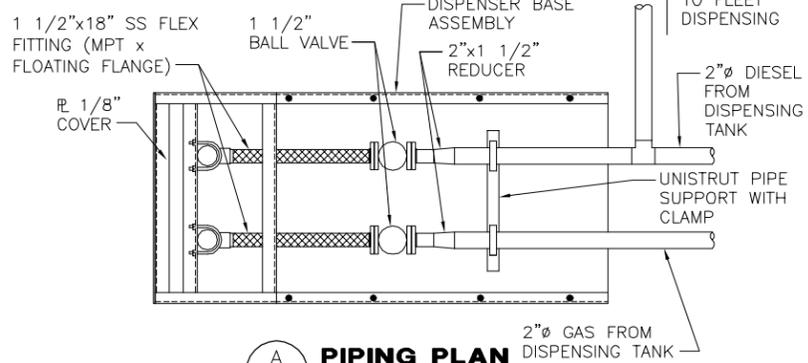
SECTION B-B

RECORD DRAWING CERTIFICATE
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 Karl R. Hulst 03/10/2007
 NAME DATE



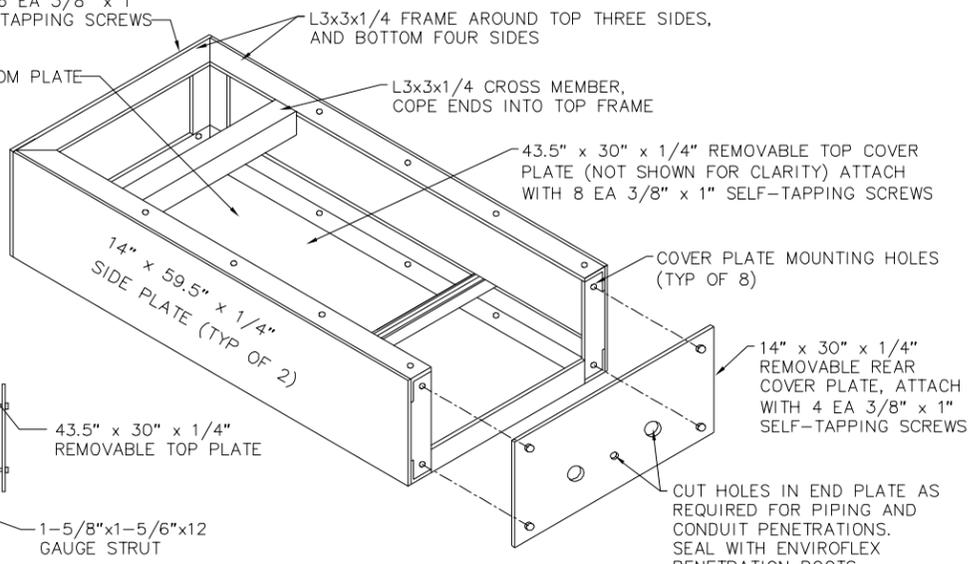
1 SIDE ELEVATION

SCALE: 1/8\"/>



A PIPING PLAN

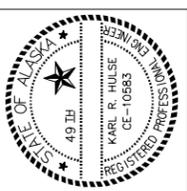
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ISOMETRIC VIEW

4 DISPENSER BASE FABRICATION

SCALE: 1/8\"/>



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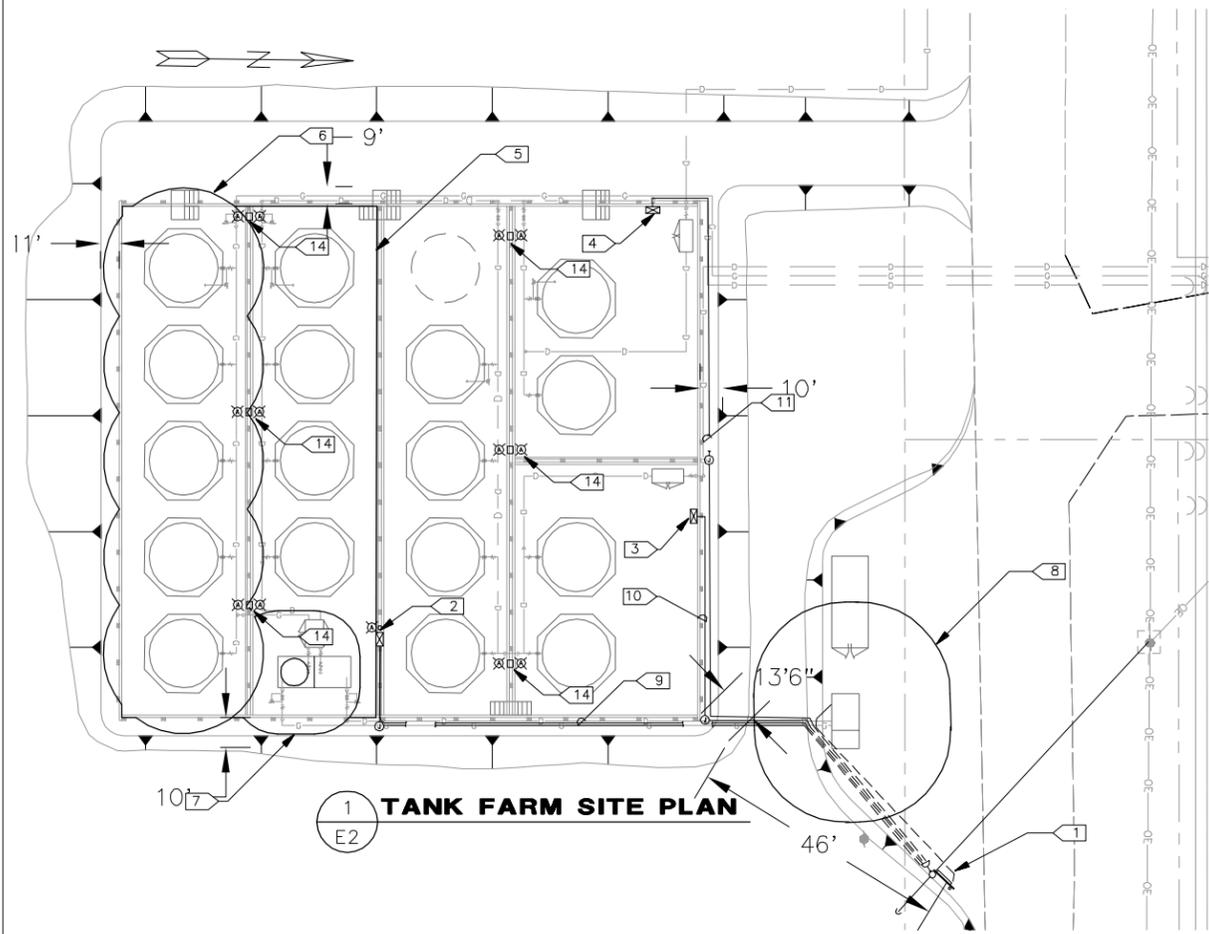


KWETHLUK, ALASKA
 BULK FUEL UPGRADES
 DISPENSER DETAILS

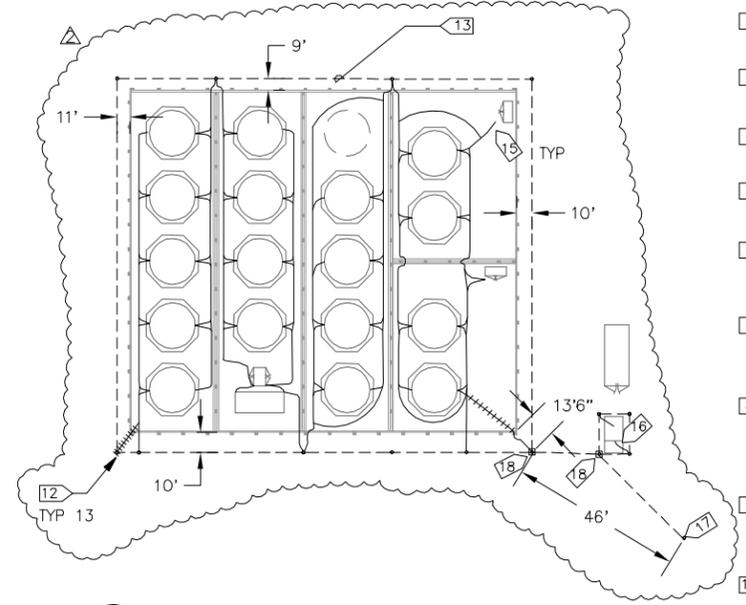
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0	ISSUE FOR CONSTRUCTION	2/05	KRH	2/05
1	RECORD DRAWING	10/06	EKH	10/06

Project No.	30401.18	Designed	KRH	Drawn	AJB	Approved	JVS
Date	2/05						

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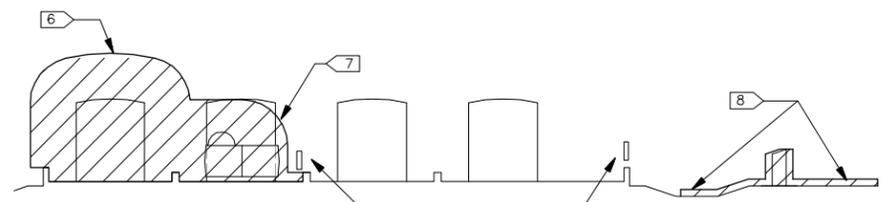


1 TANK FARM SITE PLAN
E2

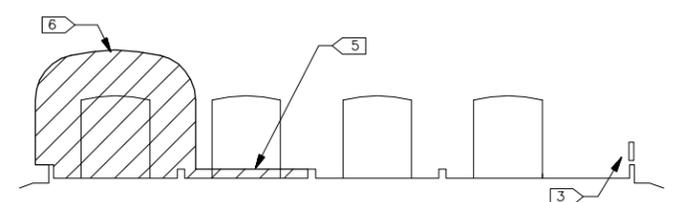


1 TANK FARM GROUNDING PLAN
E2

NOTE: Conduits run within dike area shall be run along with fuel piping, on special tank brackets or on top of dike. Do not penetrate interior vertical dike wall lining. See 5/E19 for top of dike mounting.



SECTION A

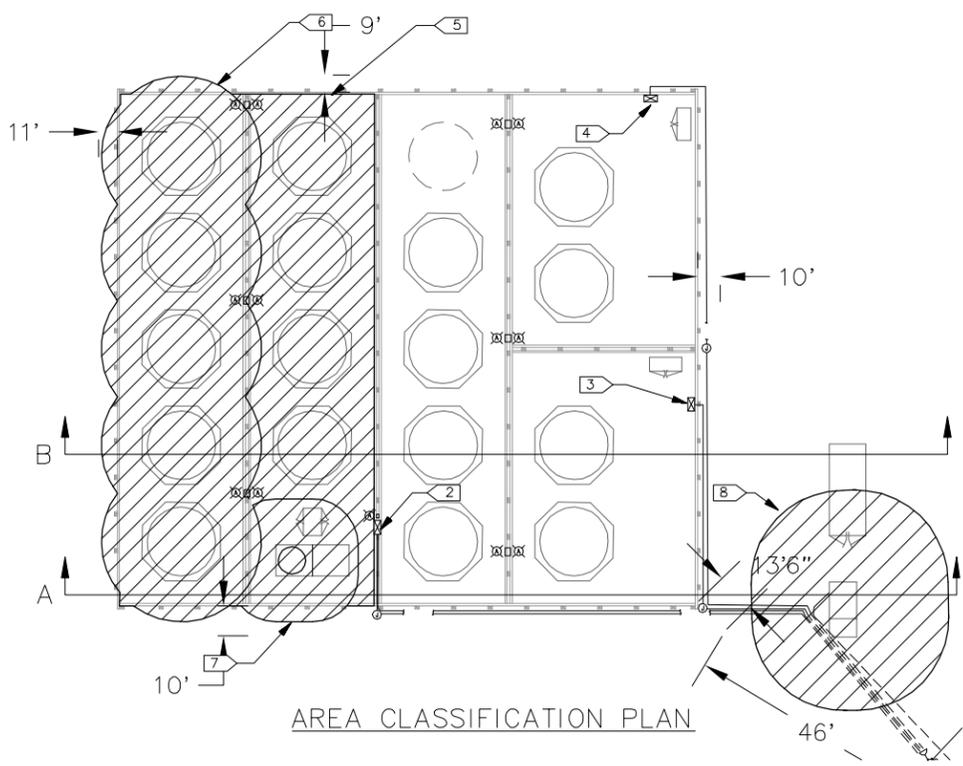


SECTION B

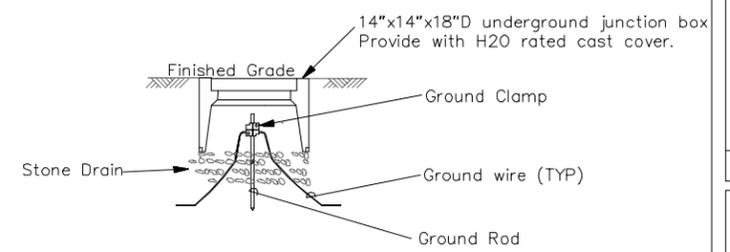
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William M. McLaughlin 3/07
NAME DATE

NOTES

- 01 Install 3 100A services at this location. Services for Kwethluk Inc., Electric Utility and Kwethluk School. See Detail 1/E19 and One-Line drawings on E4, E11 and E15. See also Note 2 on E2 for additional work in this area.
- 02 Kwethluk Inc. fuel transfer and dispenser pump control and alarm panel. See E5 for layout and narrative.
- 03 Electric Utility fuel transfer pump control and alarm panel. See E12 for layout and narrative.
- 04 Kwethluk School fuel transfer pump control and alarm panel. See E16 for layout and narrative.
- 05 The area from ground level to the height of the inner dike wall of all the Kwethluk Inc. storage tanks are Class 1, Division 2 location.
- 06 The area within 10' of the gasoline storage tanks is a Class 1, Division 2 location. NOTE: The area within 3' of the tank vents is a Class 1, Division 1 location, however, no wiring is anticipated within this area.
- 07 The area within 10' of the gasoline side of the dual product dispenser tank (Tank 18A) is a Class 1, Division 2 location and the area within 3' of the vents is a Class 1, Division 1 location.
- 08 The Area 18" above grade within 20' of the Dispenser is a Class 1, Division 2 location. The area below this is a Class 1, Division 1 location. The area within 18" of the Dispenser is a Class 1, Division 2 location and within the Dispenser unit itself there is a Class 1, Division 1 zone.
- 09 1 1/2"C, 11#10(2 Dispenser, Feeder 2 Transfer pump, Feeder 2 Control, 2 Lighting, 2 receptacle, G). Seal-Off fittings are required. See Kwethluk Inc BFU Plan Sheet E4 for specific routing and fittings.
- 10 1 1/2"C, 9#10(2 Transfer pump, 2 Control, 2 Lighting, 2 receptacle, G). Seal-Off fittings are required. See Electric Utility BFU Plan Sheet E11 for specific routing and fittings.
- 11 1 1/2"C, 9#10(2 Transfer pump, 2 Control, 2 Lighting, 2 receptacle, G). Seal-Off fittings are required at either end. See Kwethluk School BFU Plan Sheet E15 for specific routing and fittings.
- 12 5/8"x8' Cu Clad steel ground rod. Drive to a minimum of 12"below finished grade.
- 13 #2BCU ground. Bury NLT 30" below grade. Bond to ground rods at location shown using exothermic weldments except at inspection points.
- 14 Area lighting. See individual tank farm plans (E4, E11 and E15) and elevation detail 2/E19.
- 15 Bond all tanks and pump enclosures at a minimum of two locations using #4BCU. Where ground wire passes through fince, bond to nearest post. Extend #4 to exterior perimeter ground ring. Provide HDPE risers for protection when run outside of dike, bury at least 18" when outside of dike wall. Where run between tanks, route ground wire along piping and where piping runs are not available, bury above containment fabric but NLT 6" below finished grade.
- 16 Provide attachment point for ground reel at Fleet Dispenser. Coordinate location and connection means with ground reel supplier.
- 17 Service ground point. See 1/E19.
- 18 Ground inspection and testing point. See Detail this sheet.



2 TANK FARM AREA CLASSIFICATION PLAN AND SECTIONS
E2



3 GROUND TEST POINT ELEVATION
E3



State of Alaska
Department of Community and Economic Development
AIDEA/AEA
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813 West Northern Lights Blvd.
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CRW
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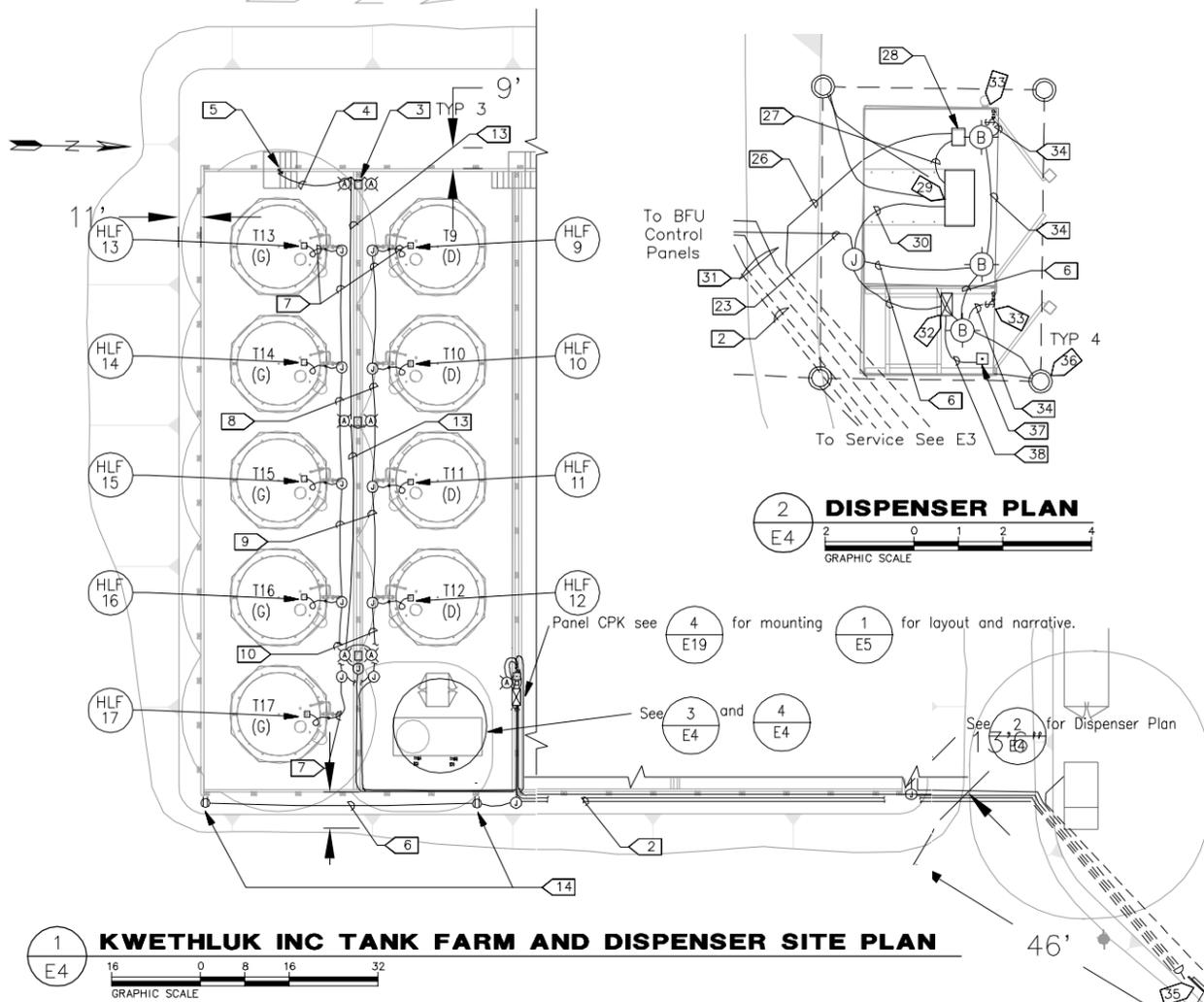
KWETHLUK, ALASKA
BULK FUEL UPGRADES
SITE PLAN AREA CLASSIFICATION

REV	DESCRIPTION	BY	DATE
0	Released for Construction	MM	2/05
1	RECORD DRAWING	EKH	10/06
2	ELECTRICAL AS-BUILTS	JRH	3/07

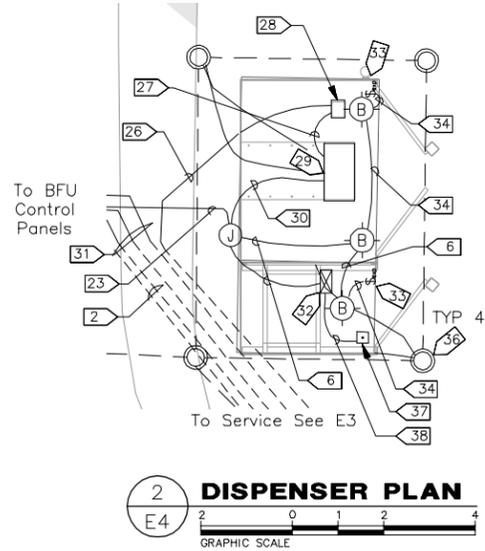
Project No.	30401.18
Date	2/05
Designed	B
Drawn	JAM
Approved	B

Sheet No. E3

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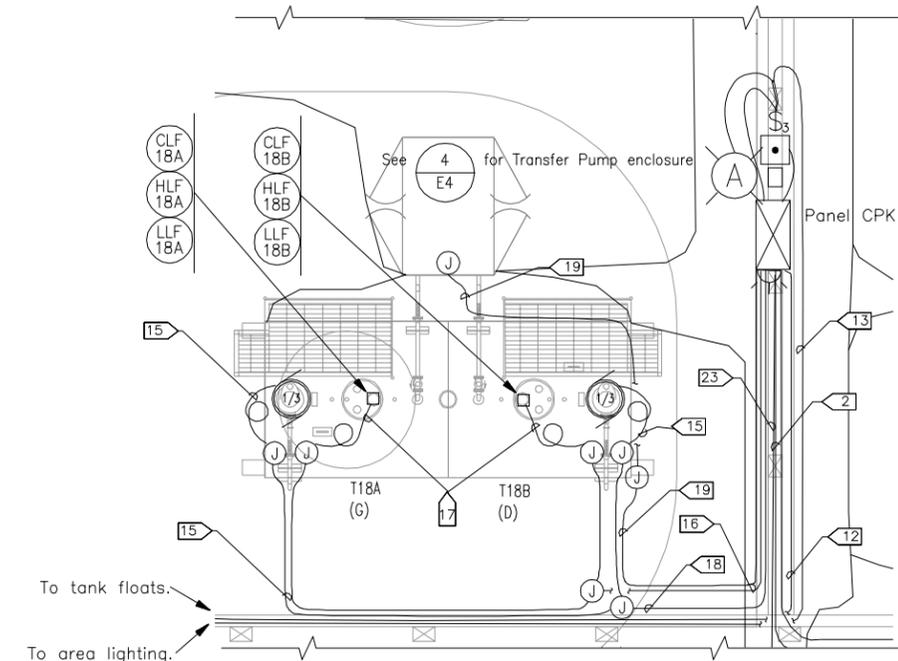
1 KWETHLUK INC TANK FARM AND DISPENSER SITE PLAN
E4
GRAPHIC SCALE



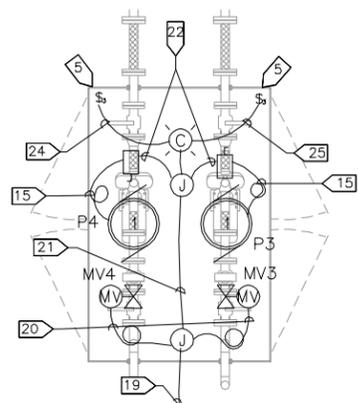
2 DISPENSER PLAN
E4
GRAPHIC SCALE

NOTES

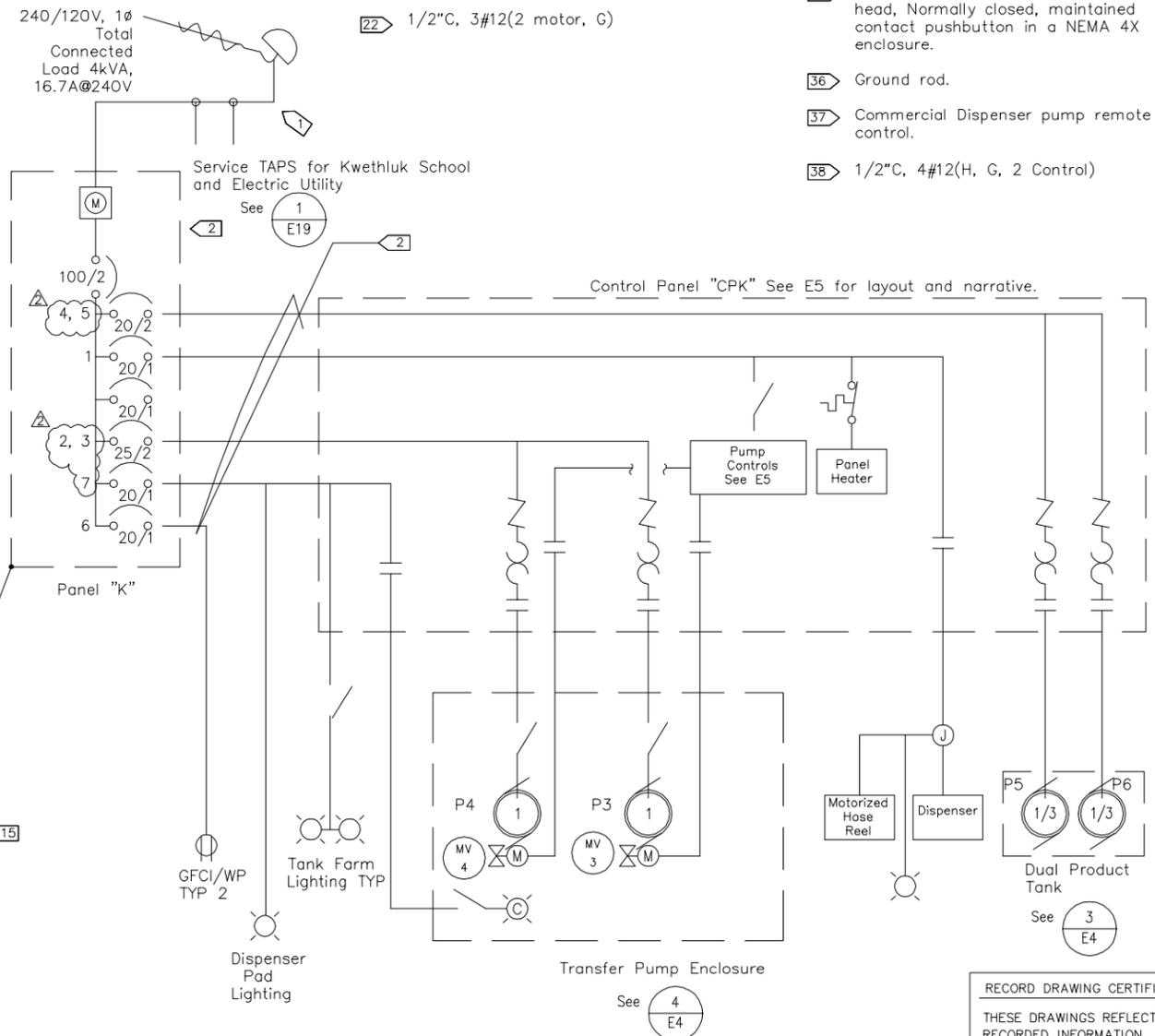
- 1 See 1/E19 for service riser details.
- 2 Panel CPK power circuits and ESD. See NOTE 9, sheet E3.
- 3 Area lighting.
- 4 1/2"C, 4#12(G, 2 Traveler, Switchleg)
- 5 20A, 3-way switch, C1D2, NEMA 4.
- 6 1/2"C, 3#12(H, N, G)
- 7 1/2"C, 3#14(2 signal, G) Run conduit on tank supports. See 3/C7. Intrinsically safe circuit. TYP all tanks.
- 8 1/2"C, 5#12(4 signal, G).
- 9 1/2"C, 7#14(6 Signal, G) Intrinsically Safe Circuit
- 10 1/2"C, 9#14(8 Signal, G) Intrinsically Safe circuit.
- 11 3/4"C, 11#14(10 Signal, G) Intrinsically Safe Circuit.
- 12 1"C, 19#14(18 Signal, G) Intrinsically Safe circuit.
- 13 1/2"C, 5#12(N, G, 2 Traveler, Switchleg)
- 14 GFI Type duplex receptacle mounted 1"below top of dike wall. Cast box with lockable metallic cover, able to be closed while in use.
- 15 1/2"C, 3#12(2 motor, G) Flex serving gasoline pump shall be explosion proof.
- 16 1"C, 13#14(12 Signal, G) Intrinsically Safe circuits.
- 17 1/2"C, 7#14(6 Signal, G) Intrinsically Safe circuit
- 18 3/4"C, 5#12(4 motor, G)
- 19 1 1/4"C, 7#12(4 motor, Ltg, N, G), 6#14(H, N, 2 control, 2 status)
- 20 1/2"C, 7#14(H, N, G, 2 control, 2 status)
- 21 3/4"C, 7#12(4 motor, Ltg, N, G)
- 22 1/2"C, 3#12(2 motor, G)
- 23 1"C, 9#12(H, N, G, 2 Hook Switch, 2 Remote, 2 Spare)
- 24 1/2"C, 4#12(H, G, 2 Traveler)
- 25 1/2"C, 4#12(G, 2 Traveler, Switchleg)
- 26 1"C, 6pr22AWG(Telephone Cable)
- 27 1"C, See Mfr requirements for interface
- 28 Card Reader Pedestal
- 29 Dual Product Dispenser
- 30 3/4"C, 5#12(H, N, G, 2 Hook Switch)
- 31 Tank Farm power and control conduits, see E3.
- 32 Hose Reel Retract Controls. Install per Mfr requirements.
- 33 20A Single-pole switch, Explosion proof rated, Cast box and cover.
- 34 1/2"C, 3#12(H, G, Switchleg)
- 35 ESD switch location. Provide mushroom head, Normally closed, maintained contact pushbutton in a NEMA 4X enclosure.
- 36 Ground rod.
- 37 Commercial Dispenser pump remote control.
- 38 1/2"C, 4#12(H, G, 2 Control)



3 DISPENSER TANK PLAN
E4
GRAPHIC SCALE



4 TRANSFER PUMPS
E4
GRAPHIC SCALE



5 KWETHLUK INC POWER ONE-LINE
E4

RECORD DRAWING CERTIFICATE
THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
NAME: *[Signature]* DATE: 3/07



State of Alaska
Department of Community and Economic Development
AIDEA/AEA
Rural Energy Group
813 West Northern Lights Blvd.
Anchorage, Alaska 99503
ANCHORAGE, ALASKA
PHONE: (907) 562-3252
FAX: (907) 561-2273



KWETHLUK, ALASKA
BULK FUEL UPGRADES
LIGHTING AND GROUNDING PLAN

REV	DESCRIPTION	BY	DATE
0	Released for Construction	MM	2/05
1	RECORD DRAWING	EKH	10/06
2	ELECTRICAL AS-BUILTS	JRH	3/07

Project No.	30401.18
Date	2/05
Designed	MM
Drawn	JAM
Approved	MM

Sheet No. **E4**

ALARM AND PUMP CONTROL NARRATIVE

The control panel provides critical high alarms for all 9 of the Kwethluk Inc. bulk fuel tanks, controls the transfer of fuel from the bulk tanks to the gas and diesel dispenser tanks, operates the gas and diesel product pumps and provides emergency shutdown for the Kwethluk Inc. system.

ALARMS

Each storage tank is equipped with a High Level Float switch that, when fuel reaches its level, opens a circuit and causes an alarm strobe to signal a high level has been reached. The high level condition is indicated on the front of the panel as well, identifying the tank(s) with high level(s).

The operator can acknowledge the alarm by pressing an ALARM ACKNOWLEDGE button on the control panel. This extinguishes the strobe and silences the horn, but the front panel light will remain illuminated until sufficient fuel is drained from the tank to drop its fuel level below the float's sensing point. At that time the front panel light will also extinguish.

The controls logic for alarms is set up so that each new alarm condition will cause the audible and visual alarms to annunciate, regardless of any existing (acknowledged) alarm conditions.

In addition to the storage tank alarms, the dispenser tanks are both equipped with high level alarms as well. These alarms function the same as the bulk fuel alarms.

Finally, the Emergency shutdown system, when engaged, will cause the alarm strobe to be energized as well. There are two emergency shutdown stations; one by the dispensers at the service pole, the other on the light pole located near the control panel. The alarm is extinguished by pulling the Emergency push button "out", clearing the signal. When an ESD button is pushed, all powered conductors to the dispenser are disconnected and the dispenser pumps as well as the transfer pumps are shut down. After a brief time delay to allow them to close, the motorized valves are also disconnected.

FUEL TRANSFER

The fuel transfer between the bulk and dispensing tanks can be either manual or automatic. The following applies to both the Gas and Diesel systems.

Manual operation

By placing (and holding) the HOA switch in the HAND position, the transfer pump will start and run. Its RUN light will turn on. The pump will continue running until either it experiences an overload condition where the motor starter control is opened internally the Critical High Level float is reached or the operator releases the HOA switch. If an overload causes the shutdown, a pilot light on the panel front will be energized (no other indication will be given, other than the pump stopping) The HOA switch is spring loaded so that upon release it will return to OFF from the HAND position. The HAND or manual mode is provided for maintenance and testing however it could be used to fill the dispensing tank should automatic controls fail.

When the pump is started, an "Open" signal is also sent to its associated motorized valve which opens. When the pump is shut down, the motorized valve receives a "Close" signal and it closes. OPEN and CLOSED status is displayed on the panel.

NOTE: See ALARMS section above for Emergency Shutdown

Automatic operation

AUTO mode is the intended continuous mode for these controls. In AUTO, the operation of the transfer pump is controlled by the HLF and LLF floats in the dispensing tank. When fuel level drops to below the LLF float's level a start signal is sent to the transfer pump. Panel mounted pilot lights (TRANSFER PUMP RUNNING and GAS/DIESEL DISPENSING TANK LOW) also are energized. If pumping is successful, the low level light will extinguish after a few minutes. Internal controls linked to the HLF float keep the pump running until the HLF float level is attained or pumping lasts for more than 15 minutes. (NOTE: If timeout is the cause of shutdown, the HOA switch must be turned OFF then back to AUTO for the transfer operation to resume.) In either case, the pump is then shut down. Should pumping be completed before timeout, a pilot light on the front panel will be energized once the HLF float level is reached (GAS/DIESEL DISPENSING TANK FULL). When no tank level pilot lights are on, the tank level lies somewhere between low level and full. Should the pump continue to run and fuel levels increase beyond the HLF and the the CLF float is reached it will also attempt to shut the pump down as well as sounding the alarm and enabling its pilot light on the front panel (GAS/DIESEL DISPENSING TANK HIGH).

Pump and Valve status lights operate the same as in the manual mode.

DISPENSER PUMPS

The dispenser pumps can be either manual or automatic. The following applies to both the Gas and Diesel systems. Normal operation is for the pumps to operate in AUTO mode. The dispensing tanks are equipped with Low Level Floats. If tank fuel level drops below the float, the associated pump will stop and the transfer pump will be started to fill the tank. The dispenser pump will restart after the tank has been filled or the Transfer pump shuts off

Manual operation

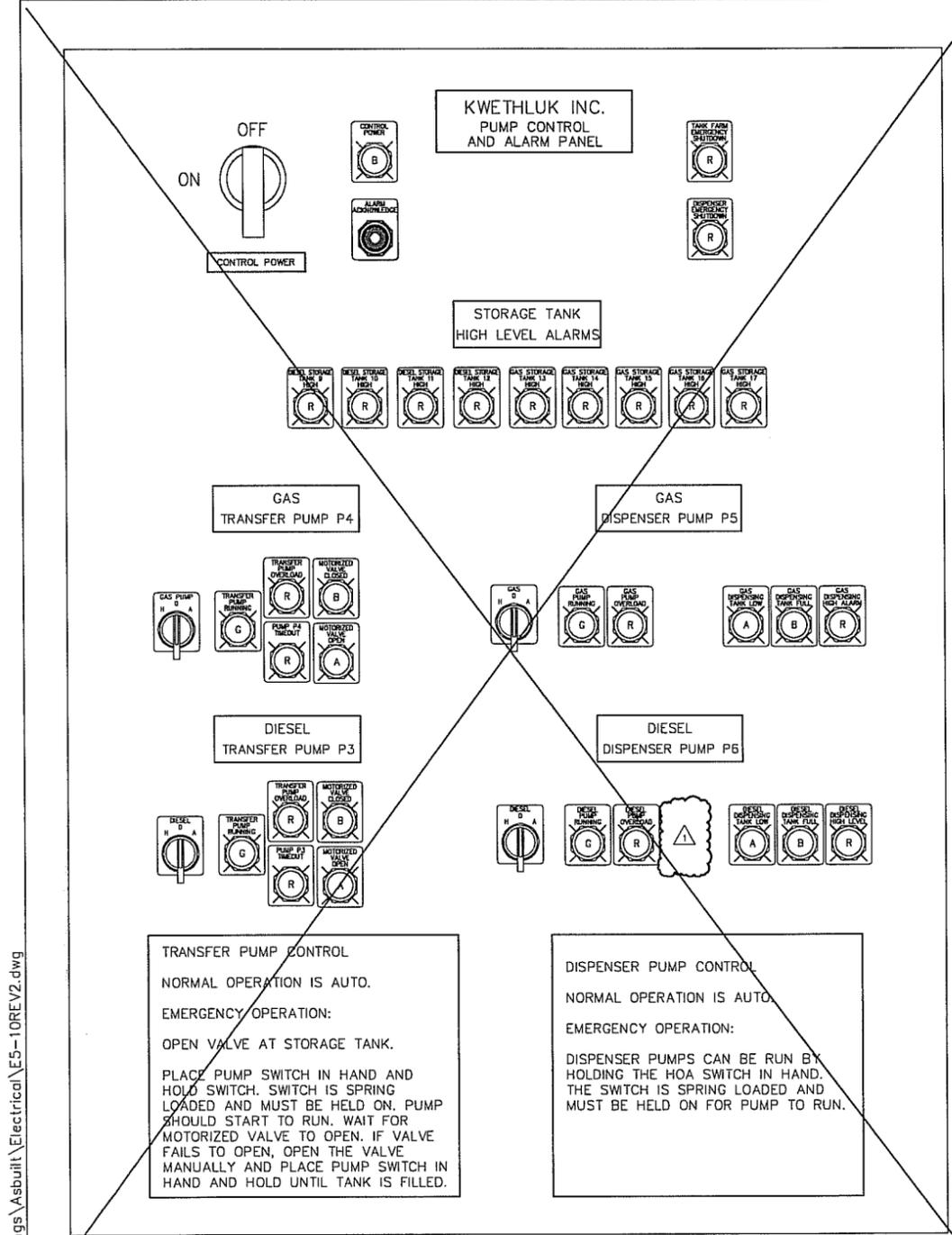
By placing (and holding) the HOA switch in the HAND position, the dispenser pump will start and run. Its RUN light will turn on and the pump will continue running until either it experiences an overload condition where either the panel mounted motor starter control is opened internally, or an internal temperature sensor in the motor detects an overheat condition or the operator releases the HOA switch. If a panel-based overload causes the shutdown, a pilot light on the panel front will be energized (no other indication will be given, other than the pump stopping). A RESET pushbutton must be pressed to clear the overload relay in order to allow the pump to restart. The HOA switch is spring loaded so that upon release it will return to OFF from the HAND position. The HAND or manual mode is provided for maintenance and testing however it could be used to operate the Fleet Dispensing system in the event of control failure.

NOTE: See ALARMS section above for Emergency Shutdown.

Automatic operation

AUTO mode is the intended continuous mode for these controls. In AUTO, the operation of the gas dispenser pump is controlled by the dispenser, and in the case of the diesel pump, the dispenser or the Fleet Dispensing START/STOP controls will operate the pump. Operation is identical to the manual mode with the retail dispenser or Fleet dispensing STOP START remote taking the place of the operator holding the HAND switch.

In the case of the Fleet Dispensing control, a timer is activated whenever the pump is started using the Fleet dispenser and when the preset time has elapsed the pump is shut down. Since a manual shutdown is required when the Fleet Dispenser is used, a user could inadvertently leave with the pump running. The timer resets the pump controls only - it does not affect the operation of the auto flow meter valve that allows a preset amount of fuel to flow before closing. Should the timer shut the pump down before the required amount of fuel is provided, pushing the START button would cause the timing to reset allowing the pump to resume operation.



1 KWETHLUK INC. TANK FARM PANEL CPK LAYOUT

E5 See SI Drawing

RECORD DRAWING CERTIFICATE
 THESE DRAWINGS REFLECT RECORDED INFORMATION OBTAINED DURING CONSTRUCTION. INFORMATION PROVIDED HEREIN IS ACCURATE TO THE BEST OF MY KNOWLEDGE.
 NAME: [Signature] DATE: 3/07



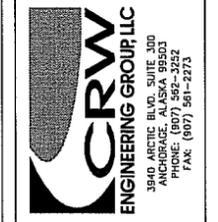
2 KWETHLUK INC. FLEET DISPENSING CONTROL LAYOUT

E5

File: J:\Jobsdata\30401.1B_Kwethluk_BFU_00_CADD\Drawings\Asbuilt\Electrical\E5-10REV2.dwg



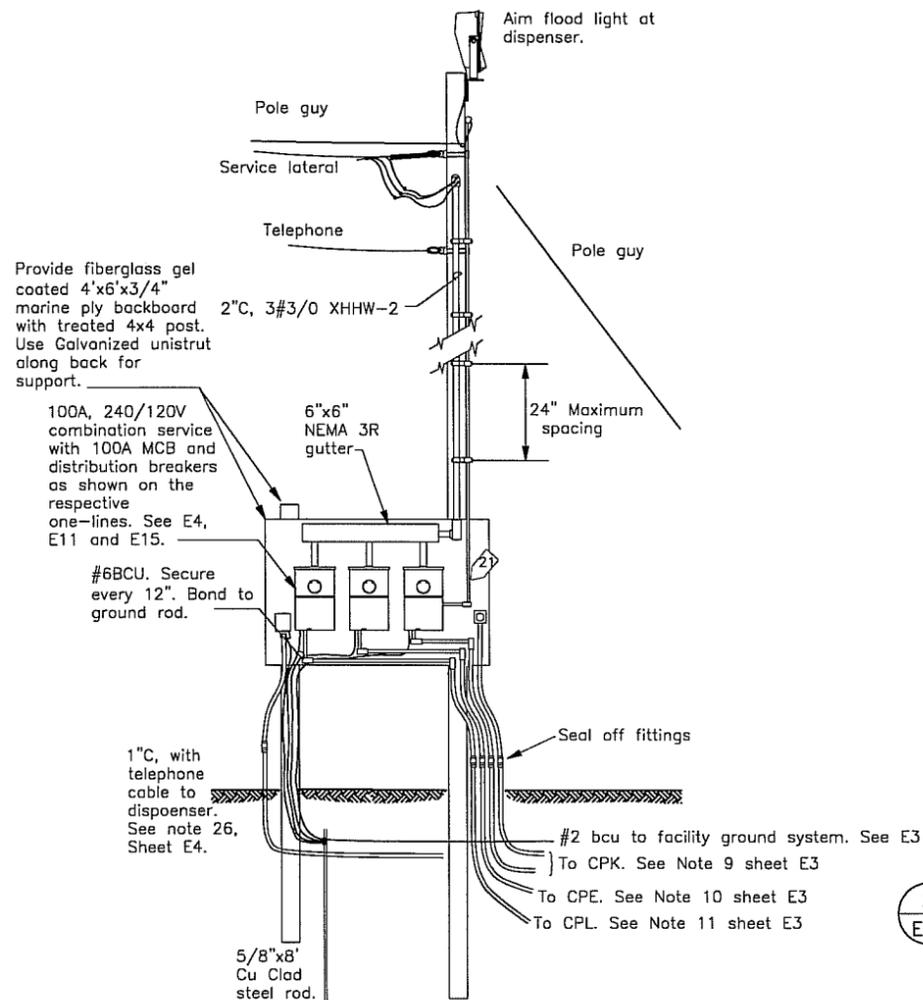
State of Alaska
 Department of Community and Economic Development
 AIDEA/AEA
 Rural Energy Group
 813 West Northern Lights Blvd.
 Anchorage, Alaska 99503
 REGISTERED PROFESSIONAL ENGINEER



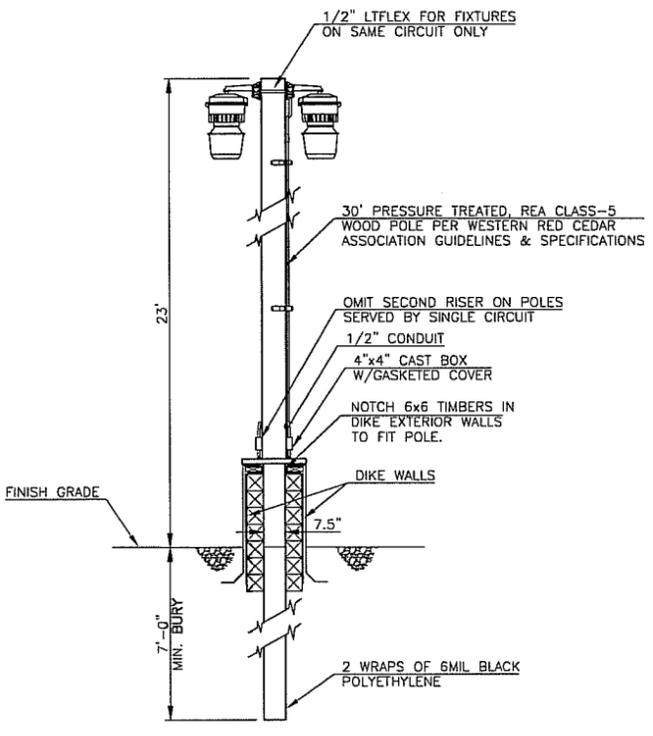
KWETHLUK, ALASKA
 BULK FUEL UPGRADES
 PANEL CPK LAYOUT AND NARRATIVE

Project No.	30401.1B	Date	2/05	Designed	WMM	Drawn	JAM	Approved	WMM
BY	DATE	DESCRIPTION	0	Released for Construction	WMM	2/05	Deleted Timeout light	EKH	10/06
		RECORD DRAWING							
Sheet No.		E5							

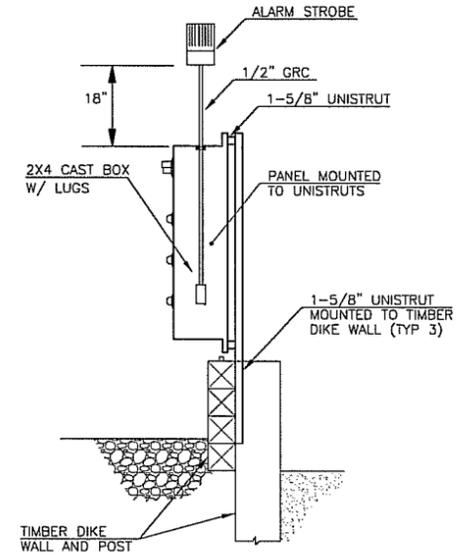
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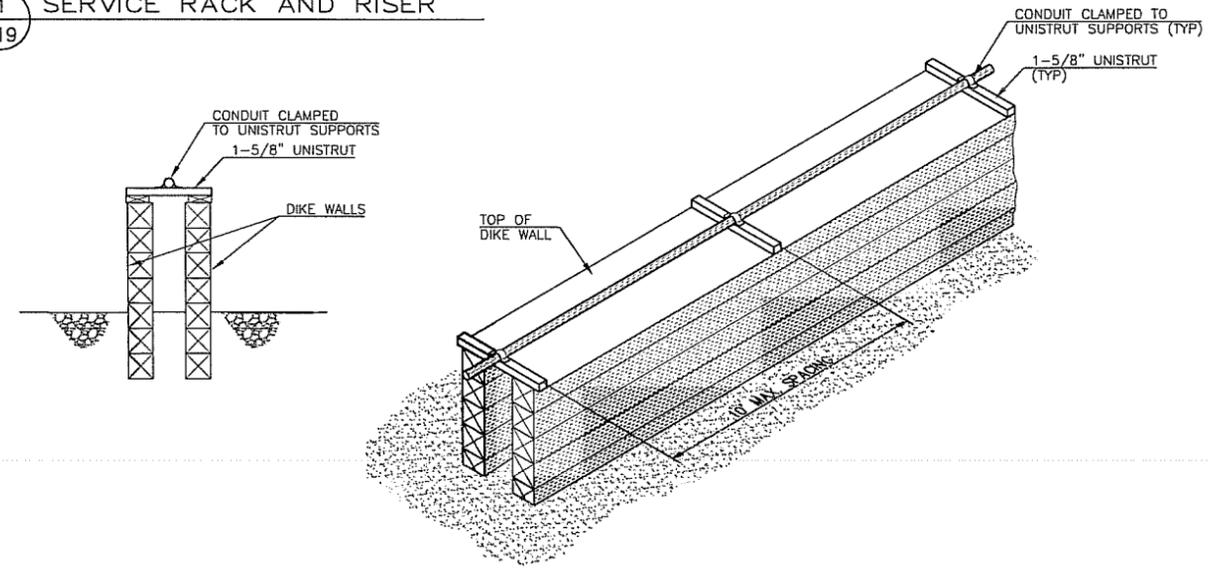
1 SERVICE RACK AND RISER
E19



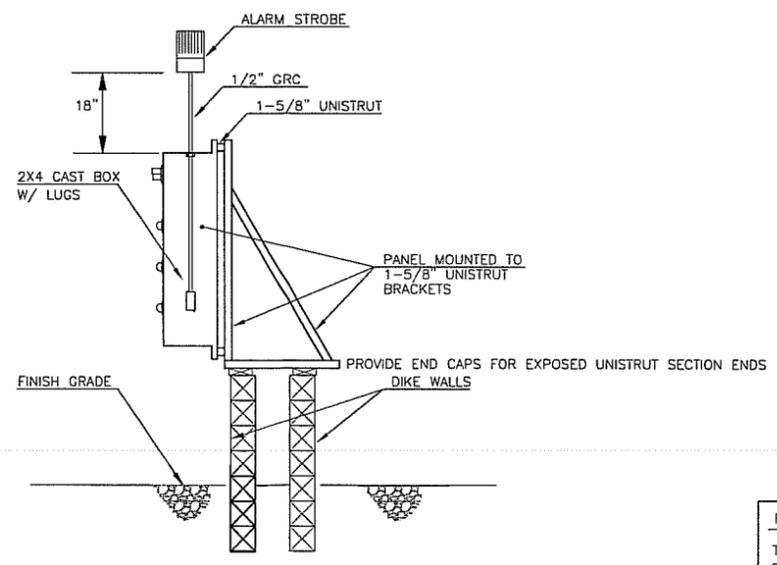
2 LIGHT POLE AT INTERIOR DIKE WALL
E19



3 PANEL CPE AND CPL MOUNTING
E19

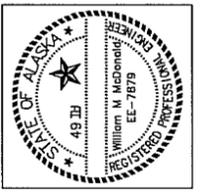


4 TOP OF DIKE CONDUIT RUN SUPPORTS
E19



5 PANEL CPK MOUNTING AT INTERIOR DIKE WALL
E19

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NAME: *William M. McDonald* DATE: 3/07



State of Alaska
Department of Community and Economic Development
AIDEA/AEA
Rural Energy Group
813 West Northern Lights Blvd.
Anchorage, Alaska 99503
ALASKA ENERGY AUTHORITY

CRW ENGINEERING GROUP, LLC
3840 ARBON BLVD, SUITE 300
ANCHORAGE, ALASKA 99503
PHONE: (907) 562-3252
FAX: (907) 561-2273

KWETHLUK, ALASKA
BULK FUEL UPGRADES
MISCELLANEOUS DETAILS

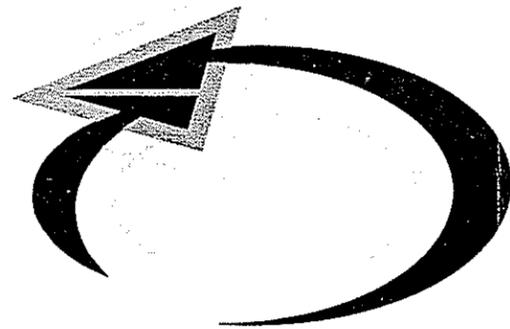
REV	DESCRIPTION	BY	DATE
0	Released for Construction	WM	2/05
1	RECORD DRAWING	WM	3/07

Project No.	30401.18	Date	2/05	Designed	WM	Drawn	JAM	Approved	WM
Sheet No.	E19								

KWETHLUK BULK FUEL STORAGE UPGRADE

FOR

LIBERTY ELECTRIC
HOMER, ALASKA



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PROJECT NO. S05E19

DRAWING NUMBER	DESCRIPTION	DESCRIPTION	REVISION SYMBOL
PANEL - SYSTEM			
Ø11Ø1	COVER SHEET		Ø
Ø12Ø1	DRAWING SCHEDULE		3
Ø12Ø2	WIRING & TERMINAL BLOCK	IDENTIFICATION	Ø
Ø12Ø3	INTRINSICALLY SAFE CIRCUIT	TYPICAL DESIGN	1
PANEL - PUMP CONTROL AND ALARM PANEL CPK			
A23Ø1	PANEL LAYOUT		3
A24Ø1	BILL OF MATERIAL	SHEET 1	1
A24Ø2	BILL OF MATERIAL	SHEET 2	2
A24Ø3	BILL OF MATERIAL	SHEET 3	3
A42Ø1	EMERGENCY SHUTDOWN & ALARM	SYSTEM SCHEMATIC	3
A42Ø2	STORAGE TANK LEVEL ALARM SCHEMATIC	TANKS 9-16	2
A42Ø3	STORAGE TANK LEVEL ALARM SCHEMATIC	TANK 17	1
A42Ø4	TANK 18A GASOLINE LEVEL SENSORS &	TANK 18B DIESEL LEVEL SENSORS	2
A42Ø5	GASOLINE TRANSFER CONTROL	DISPENSER TANK 18A	4
A42Ø6	DIESEL TRANSFER CONTROL	DISPENSER TANK 18A	4
A42Ø7	GASOLINE DISPENSER PUMP P5	CONTROL SCHEMATIC	3
A42Ø8	DIESEL DISPENSER PUMP P6	CONTROL SCHEMATIC	3
A42Ø9	ESD POWER CONTACTOR	SCHEMATIC	2
PANEL - PUMP CONTROL AND ALARM PANEL CPE			
B23Ø1	PANEL LAYOUT		4
B24Ø1	BILL OF MATERIAL	SHEET 1	Ø
B24Ø2	BILL OF MATERIAL	SHEET 2	2
B42Ø1	HARDWIRED CONTROL &	ALARM SCHEMATIC	1
B42Ø2	STORAGE TANK LEVEL ALARM SCHEMATIC	TANKS 3-8	2
B42Ø3	UTILITY INTERMEDIATE TANK	LEVEL SENSORS & REMOTE	2
B42Ø4	UTILITY INTERMEDIATE TANK	TRANSFER CONTROL SCHEMATIC	4
PANEL - PUMP CONTROL AND ALARM PANEL CPL			
C23Ø1	PANEL LAYOUT		3
C24Ø1	BILL OF MATERIAL	SHEET 1	1
C24Ø2	BILL OF MATERIAL	SHEET 2	2
C42Ø1	HARDWIRED CONTROL &	ALARM SCHEMATIC	1
C42Ø2	DIESEL STORAGE & INTERMEDIATE TANK	LEVEL SENSORS	2
C42Ø3	INTERMEDIATE TANK 2Ø	TRANSFER CONTROL SCHEMATIC	3
PANEL - PUMP CONTROL AND ALARM PANEL CPS			
D23Ø1	PANEL LAYOUT		3
D24Ø1	BILL OF MATERIAL	SHEET 1	2
D24Ø2	BILL OF MATERIAL	SHEET 2	3
D42Ø1	HARDWIRED CONTROL &	ALARM SCHEMATIC	2
D42Ø2	DIESEL TANK LEVEL SENSORS&	DAY TANK MODIFICATIONS	2
D42Ø3	HOSE REEL & QUARTERS	TRANSFER CONTROL SCHEMATIC	3
D42Ø4	SCHOOL DAY TANK	TRANSFER CONTROL SCHEMATIC	2
PANEL - REMOTE STATIONS			
E23Ø1	BILL OF MATERIAL		3
PANEL - SPARE PARTS			
F23Ø1	BILL OF MATERIAL		3
PANEL - STROBE ADDITION			
G23Ø1	BILL OF MATERIAL		3

SYM	ISSUE RECORD	BY	DATE
A	SUBMITTAL	GPS	Ø6-Ø7-Ø5
B	SUBMITTAL CHANGES	GPS	Ø7-14-Ø5
C	SHOP AS-BUILT	GPS	Ø9-26-Ø5
D	FIELD INSTALLATION NOTES	GPS	Ø7-1Ø-Ø6

DRAWING NUMBER KEY PFFFFP-CDDEE				
PROJECT NUMBER	PANEL	TYPE	DESCRIPTION	SHEET #
Ø	FOR SYSTEM WIDE DRAWINGS OR A THRU ZZ	1X	PICTORIAL	ØØ
		11	COVER SHEET	THRU
		12	SCHEDULES (LISTS)	99
		13	CONCEPTUAL	(WITHIN PANEL)
		14	P&ID	
		15	SYSTEM OVERVIEWS	
		2X	MECHANICAL	
		21	EQUIP LOCATION	
		22	INSTALL DETAILS	
		23	PANEL LAYOUT	
		24	BILL OF MATERIAL	
		3X	POWER SCHEMATICS	
		31	ONE LINE DIAGRAMS	
		32	THREE LINE DIAGRAMS	
		4X	CONTROL SCHEMATICS	
41	CONTROL PWER & RACKS			
42	HARD WIRED CTRL, COMM			
43	DISCRETE INPUTS			
44	DISCRETE OUTPUTS			
45	ANALOG INPUTS			
46	ANALOG OUTPUTS			
47	SPECIAL MODULES			
49	PANEL WIRING DIAGRAMS			
5X	FIELD WIRING			
51	INTERCONNECTS			
52	LOOP DRAWINGS			
9X	PROTOTYPES			

SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
Ø	ORIGINAL	GPS	Ø6-Ø7-Ø5				
1	SUBMITTAL CHANGES	GPS	Ø7-14-Ø5				
2	SHOP AS-BUILT	GPS	Ø9-26-Ø5				
3	UPDATED REVISION SYMBOLS	GPS	Ø7-1Ø-Ø6				



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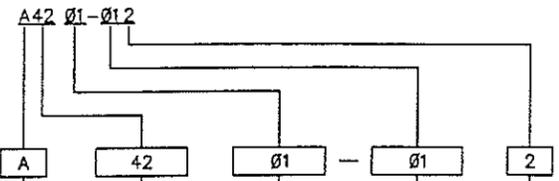
	DATE
DRAWN BY:	GPS Ø6-Ø7-Ø5
ENGINEER:	GPS Ø5-27-Ø5
CHECKED:	GPS 7-14-Ø6
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
HOMER ALASKA
KWETHLUK BULK FUEL STORAGE UPGRADE
SYSTEM
DRAWING SCHEDULE

DATE	SYMBOL
Ø7-1Ø-Ø6	3

LAST REVISION
DRAWING NUMBER:
SØ5E19-Ø12Ø1

WIRE NUMBER



DESCRIPTION

PANEL IDENTIFICATION
(A THRU W)

ASSEMBLY NUMBER
(SEE ASSEMBLY IDENTIFICATION TABLE THIS SHEET)

SUB-ASSEMBLY NUMBER
(01 THRU 99)

CIRCUIT NUMBER
WIRE CIRCUIT RELATIVE TO ASSEMBLY/SUB-ASSEMBLY
(00 THRU 99 - EXCEPT AS NOTED BELOW)

SYSTEM POWER (600VAC) L1, L2, L3

CONTROL POWER (AC): AC = CONTROL POWER HI
NT = CONTROL POWER LO
(GROUNDED CONDUCTOR OR NEUTRAL)

CONTROL POWER (DC): DC = POSITIVE (+)
RT = RETURN OR COMMON

MOTOR TERMINAL LEADS: T1, T2, T3

SEGMENT NUMBER
WIRE SEGMENT RELATIVE TO WIRE CIRCUIT NUMBER
(0 THRU 9)

DRAWING LOCATION REFERENCE

DRAWING PANEL IDENTIFICATION
REFERENCES DRAWING PANEL ID FOR ORIGIN OF WIRE NUMBER

DRAWING TYPE NUMBER
REFERENCES DRAWING TYPE NUMBER FOR ORIGIN OF WIRE NUMBER

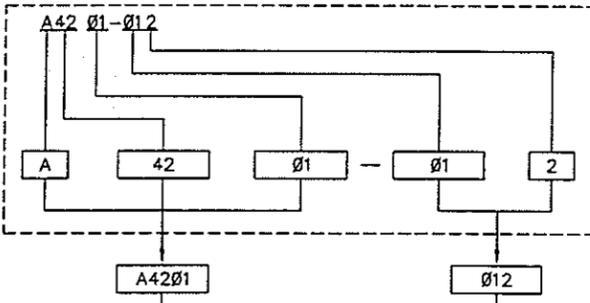
DRAWING TYPE SHEET NUMBER
REFERENCES DRAWING SHEET NUMBER FOR ORIGIN OF WIRE NUMBER

PLC I/O WIRE NUMBERS
THE COMBINED WIRE CIRCUIT NUMBER AND SEGMENT NUMBER FIELDS ARE UTILIZED FOR PLC I/O POINT NUMBERS. PLC I/O POINT NUMBERS BEGIN WITH A LETTER CHARACTER AND FOLLOW THE PLC MANUFACTURER'S CONVENTION FOR PLC I/O POINT IDENTIFICATION. PANEL ID, ASSEMBLY AND SUB-ASSEMBLY NUMBERS MAY BE OMITTED FROM WIRE NUMBER WHEN PLC POINT ID DEFINES A UNIQUE WIRE NUMBER.

ASSEMBLY IDENTIFICATION	
NO.	DESCRIPTION
32	POWER DISTRIBUTION
41	CONTROL POWER AND RACKS
42	HARD WIRED CONTROL/COMM
43	DISCRETE INPUTS
44	DISCRETE OUTPUTS
45	ANALOG INPUTS
46	ANALOG OUTPUTS
47	SPECIAL MODULES

ASSEMBLY IDENTIFICATION NUMBERS DIRECTLY REFERENCE DRAWING TYPE NUMBERS FOR COMPLETE DRAWING TYPE NUMBER LISTING SEE DRAWING NUMBER KEY. REFERENCE DWG: 01201

TERMINAL BLOCK NUMBER



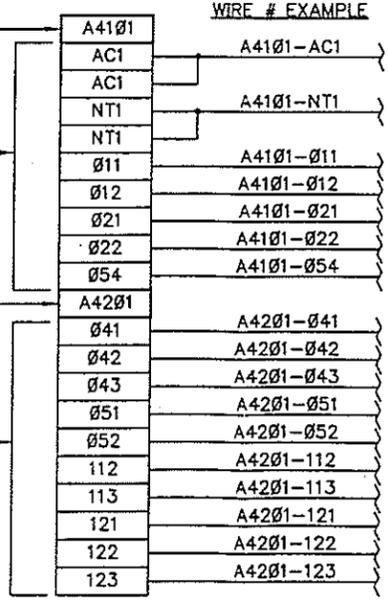
DESCRIPTION

THE COMPLETE TERMINAL BLOCK NUMBER IS THE SAME NUMBER AS THE WIRE NUMBER WHICH TERMINATES ON THAT TERMINAL BLOCK. TERMINAL BLOCK NUMBER DESCRIPTION, DRAWING LOCATION REFERENCE AND ASSEMBLY IDENTIFICATIONS ARE IDENTICAL TO THE WIRE NUMBERS. REFERENCE WIRE NUMBER IDENTIFICATION ABOVE

TERMINAL BLOCK ASSEMBLY NUMBER
THIS NUMBER IDENTIFIES THE ASSEMBLY NUMBER FOR AN ASSEMBLY OR GROUP OF INDIVIDUAL TERMINAL BLOCKS. THE NUMBER IS ATTACHED TO THE TERMINAL BLOCK IMMEDIATELY PRECEDING THE TERMINAL BLOCK ASSEMBLY. THIS TERMINAL BLOCK SERVES AS AN ASSEMBLY LABEL ONLY - NO WIRES ARE TERMINATED ON THIS BLOCK

TERMINAL BLOCK NUMBER
THIS NUMBER IDENTIFIES AN INDIVIDUAL TERMINAL BLOCK WITHIN AN ASSEMBLY OR GROUP OF TERMINAL BLOCKS

EXAMPLE TERMINAL BLOCK LAYOUT



SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				



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	DATE
DRAWN BY: GPS	05-27-05
ENGINEER: GPS	05-27-05
CHECKED: GPS	7-24-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
HOMER ALASKA
KWETHLUK BULK FUEL STORAGE UPGRADE

LAST REVISION	DATE
0	05-27-05

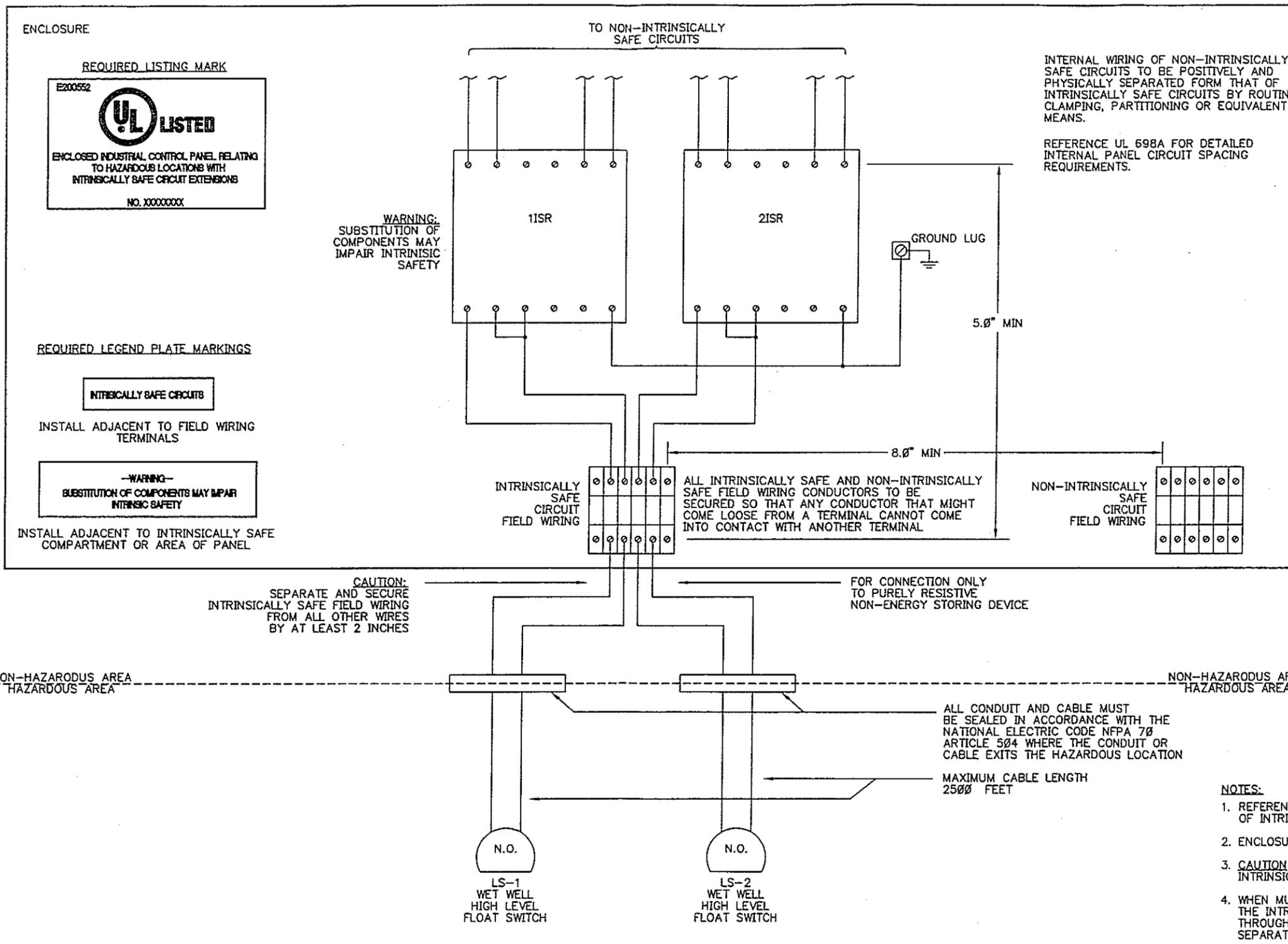
SYMBOL: 0

SYSTEM WIRING AND TERMINAL BLOCK IDENTIFICATION

DRAWING NUMBER: S05E19-01202

CAUTION

THIS CONTROL PANEL IS DESIGNED TO BE MOUNTED IN A NON-EXPLOSIVE ENVIRONMENT. INSTALL PROPER CONDUIT RUNS AND SEALING FITTINGS BETWEEN EXPLOSIVE AND NON-EXPLOSIVE ENVIRONMENTS PER NATIONAL ELECTRIC CODES

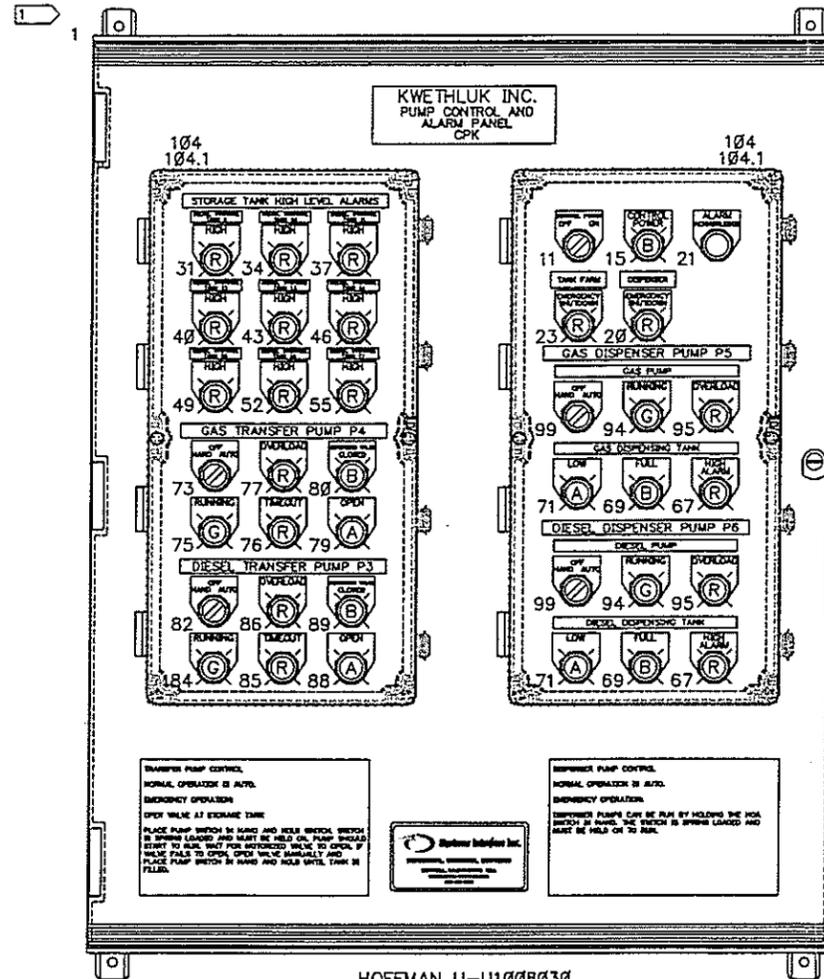


- NOTES:**
1. REFERENCE NEC ARTICLE 504 FOR FIELD WIRING OF INTRINSICALLY SAFE CIRCUITS.
 2. ENCLOSURE TO BE CONNECTED TO A GOOD GROUND
 3. **CAUTION** - MAINTAIN SEPARATION BETWEEN INTRINSICALLY SAFE WIRING AND OTHER WIRING.
 4. WHEN MULTIPLE BARRIER MODULES ARE USED THE INTRINSICALLY SAFE CIRCUITS MUST EXIT THROUGH SEPARATE CONDUITS AND BE SEPARATED FROM EACH OTHER.

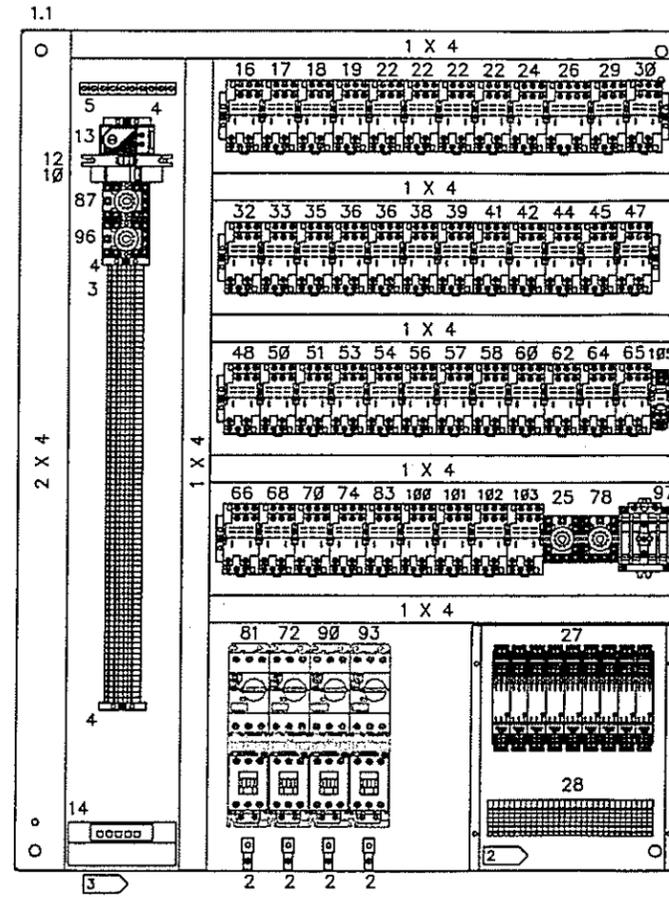
SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	REVISED PER FIELD INSTALLATION NOTES	GPS	07-10-06				

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DRAWN BY: GPS	DATE: 05-27-05	LIBERTY ELECTRIC HOMER ALASKA KWETHLUK BULK FUEL STORAGE UPGRADE	LAST REVISION	DATE: 07-10-06
ENGINEER: GPS	DATE: 05-27-05			SYMBOL: 1
CHECKED: GPS	DATE: 7-24-06	SYSTEM INTRINSICALLY SAFE CIRCUIT TYPICAL DESIGN	DRAWING NUMBER: S05E19-01203	
APPROVED:				



HOFFMAN U-U1008030
40.35" X 32.48" X 12.95"
FIBERGLASS NEMA 4X ENCLOSURE



HOFFMAN A-40P30
37" X 29"
BACKPANEL

- NOTES
- 1 INDICATES KEY ID NUMBER IN ACCORDANCE WITH BILL OF MATERIAL REF DWG: A2401
 - 2 CUSTOM VIVAC BARRIER
 - 3 MOUNTED ON STANDOFF

SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SUBMITTAL CHANGES	GPS	07-12-05				
2	ADDED DEEP HINGED WINDOW KITS	GPS	08-03-05				
3	SHOP AS-BUILT	GPS	08-31-05				



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	DATE
DRAWN BY:	GPS 05-27-05
ENGINEER:	GPS 05-27-05
CHECKED:	GPS 7-24-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
HOMER ALASKA
KWETHLUK BULK FUEL STORAGE UPGRADE
PUMP CONTROL PANEL CPK
PANEL LAYOUT

DATE	DATE
08-31-05	
SYMBOL	
3	
DRAWING NUMBER:	
S05E19-A2301	

KEY ID	MANUFACTURER	PART NUMBER	DESCRIPTION	QTY	ASSEMBLY	DEVICE ID	COMMENTS
1	HOFFMAN ENCLOSURES INC.	U-U1008030	ENCL. FIBERGLASS, NEMA 4X, 40 X 32 X 12	1	A2301		
1.1	HOFFMAN ENCLOSURES INC.	A-40P30	BACKPAN, 40 X 30	1	A2301		
1.2	H. A. GUDEN CO., INC.	NHSTS91160	HASP, PADLOCK, NO HOLES, STAINLESS STEEL	1	A2301		
1.3	H. A. GUDEN CO., INC.	NHSTS9133	STAPLE, FOR 3.5, 4.5 & 6.0, STAINLESS STEEL	1	A2301		
2	ILSCO	L0-4	GROUND LUG, COPPER #4 - #14 AWG	4	A2301		
3	ALLEN-BRADLEY COMPANY	1492-HM1	TERMINAL BLOCK, FINGERSAFE, WHITE, SINGLE CIRCUIT, DIN MOUNT, 30A, 600V	80	A2301		
3.1	ALLEN-BRADLEY COMPANY	1492-NM36	TERMINAL BLOCK END BARRIER	1	A2301		
4	ALLEN-BRADLEY COMPANY	1492-EA35	END ANCHOR	10	A2301		
5	SIEMENS ENERGY & AUTOMATION, INC.	GB10 (BAD P/N - USE ECGB10)	GROUNDING BAR, 10 TERMINALS, #4-14AWG CU	1	A2301	EG	
10	FERRAZ SHAWMUT	USCC11	FUSE BLOCK, 30A, 1-POLE, CLASS CC, 600V, FINGERSAFE W/IND.	1	A4201		
10.1	FERRAZ SHAWMUT	ATDR10	FUSE, CLASS CC, 10A, 600VAC, TIME-DELAY	1	A4201	1FU	
11	ALLEN-BRADLEY COMPANY	800H-HR2A	SELECTOR SWITCH, 2-POS, TYPE 4X, 1NO-1NC, MAINTAINED	1	A4201		CONTROL POWER ON/OFF
12	CUTLER-HAMMER	OCR1010	CIRCUIT BREAKER, 10A, 1-POLE	1	A4201	1CB	
13	STEGO INC.	01140.9-00	THERMOSTAT, NC, 30-140 DEGREES F, DIN RAIL MOUNT	1	A4201	ITS	
14	STEGO INC.	03115.9-00	HVL 031 FAN HEATER, 400 WATT, DIN RAIL MOUNT	1	A4201	1HTR	
15	ALLEN-BRADLEY COMPANY	800H-PRH16B	PILOT LIGHT, FULL VOLTAGE, 120VAC, NEMA 4X, BLUE LED	1	A4201	YL-100	CONTROL POWER
16	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4201		
16.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4201	ESD-T30	
17	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4201		
17.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4201	ESD-T31	
18	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4201		
18.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4201	ESD-T10	
19	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4201		
19.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4201	ESD-T11	
20	ALLEN-BRADLEY COMPANY	800H-PRH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4201	YAL-T30	DISPENSER EMERGENCY SHUTDOWN
21	ALLEN-BRADLEY COMPANY	800H-AR2A	PUSHBUTTON, BOOTLESS, FLUSH, BLACK, 4X, 1NO-1NC	1	A4201	HS-CPK	ACKNOWLEDGE
22	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	4	A4201		
22.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	4	A4201	CRS-CPK	
23	ALLEN-BRADLEY COMPANY	800H-PRH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4201	YAL-T10	TANK FARM EMERGENCY SHUTDOWN
24	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4201		
24.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4201	CRS-100	
25	IDEC CORPORATION	SR3P-05	RELAY AND TIMER SOCKET 11-PIN, COMPACT	1	A4201		
25.1	IDEC CORPORATION	GT3A-3EAF20	MULTIFUNCTION TIMER RELAY, DPDT, 120/240VAC, 11-PIN	1	A4201	KSD-100	
26	MAGNECRAFT & STRUTHERS-DUNN	70-784D-1	RELAY BASE FOR A 4PDT, DIN MOUNT, FINGERSAFE UL	1	A4201		
26.1	MAGNECRAFT & STRUTHERS-DUNN	784DXM4L-120A	4PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-784D-1 BASE	1	A4201	VSD-100	
27	PEPPERL+FUCHS	KFA5-SR2-EX2.W	INTRINSICALLY SAFE RELAY, 2 CH. 120VAC, UL913	9	A4202,A4203	1ISR-0ISR	
28	ALLEN-BRADLEY COMPANY	1492-HM1B	TERMINAL BLOCK, FINGERSAFE, BLUE, SINGLE CIRCUIT, DIN MOUNT, 30A, 600V	32	A4202,A4203		
29	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
29.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	LHH-T09	
30	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
30.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	CRS-T09	
31	ALLEN-BRADLEY COMPANY	800H-PRH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4202	YLHH-T09	DIESEL STORAGE TANK 9 HIGH
32	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
32.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	LHH-T10	
33	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
33.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	CRS-T10	
34	ALLEN-BRADLEY COMPANY	800H-PRH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4202	YLHH-T10	DIESEL STORAGE TANK 10 HIGH
35	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
35.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	LHH-T11	
36	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
36.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	CRS-T11	
37	ALLEN-BRADLEY COMPANY	800H-PRH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4202	YLHH-T11	DIESEL STORAGE TANK 11 HIGH
38	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
38.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	LHH-T12	
39	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
39.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	CRS-T12	
40	ALLEN-BRADLEY COMPANY	800H-PRH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4202	YLHH-T12	DIESEL STORAGE TANK 12 HIGH
41	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
41.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	LHH-T13	
42	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4202		
42.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4202	CRS-T13	
43	ALLEN-BRADLEY COMPANY	800H-PRH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4202	YLHH-T13	DIESEL STORAGE TANK 13 HIGH

SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SHOP AS-BUILT	GPS	09-26-05				



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DRAWN BY: GPS ENGINEER: GPS CHECKED: GPS APPROVED: GPS DATE: 05-27-05 DATE: 05-27-05 DATE: 7-24-06	LIBERTY ELECTRIC HOMER ALASKA KWETHLUK BULK FUEL STORAGE UPGRADE PUMP CONTROL PANEL CPK BILL OF MATERIAL SHEET 1	LAST REVISION 09-26-05 SYMBOL 1	DRAWING NUMBER: S05E19-A2401
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KEY ID	MANUFACTURER	PART NUMBER	DESCRIPTION	QTY	ASSEMBLY	DEVICE ID	COMMENTS
44	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø2		
44.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø2	LHH-T14	
45	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø2		
45.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø2	CRS-T14	
46	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16R	PILOT LIGHT, PTT, 12ØV XFMR , LED, RED	1	A42Ø2	YLHH-T14	DIESEL STORAGE TANK 14 HIGH
47	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø2		
47.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø2	LHH-T15	
48	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø2		
48.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø2	CRS-T15	
49	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16R	PILOT LIGHT, PTT, 12ØV XFMR , LED, RED	1	A42Ø2	YLHH-T15	DIESEL STORAGE TANK 15 HIGH
5Ø	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø2		
5Ø.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø2	LHH-T16	
51	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø2		
51.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø2	CRS-T16	
52	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16R	PILOT LIGHT, PTT, 12ØV XFMR , LED, RED	1	A42Ø2	YLHH-T16	DIESEL STORAGE TANK 16 HIGH
53	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø3		
53.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø3	LHH-T17	
54	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø3		
54.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø3	CRS-T17	
55	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16R	PILOT LIGHT, PTT, 12ØV XFMR , LED, RED	1	A42Ø3	YLHH-T17	DIESEL STORAGE TANK 17 HIGH
56	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
56.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LHHC-T18A	
57	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
57.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LHH-T18A	
58	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
58.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LHHS-T18A	
59	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16R	PILOT LIGHT, PTT, 12ØV XFMR , LED, RED	1	A42Ø4	YLHH-T18A	GASOLINE DISPENSING TANK HIGH
6Ø	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
6Ø.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LHC-T18A	
61	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16B	PILOT LIGHT, PTT, 12ØV XFMR , LED, BLUE	1	A42Ø4	YLH-T18A	GASOLINE DISPENSING TANK FULL
62	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
62.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LLS-T18A	
63	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16A	PILOT LIGHT, PTT, 12ØV XFMR , LED, AMBER	1	A42Ø4	YLL-T18A	GASOLINE DISPENSING TANK LOW
64	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
64.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LHHC-T18B	
65	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
65.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LHH-T18B	
66	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
66.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LHHS-T18B	
67	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16R	PILOT LIGHT, PTT, 12ØV XFMR , LED, RED	1	A42Ø4	YLHH-T18B	DIESEL DISPENSING TANK HIGH
68	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
68.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LHC-T18B	
69	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16B	PILOT LIGHT, PTT, 12ØV XFMR , LED, BLUE	1	A42Ø4	YLH-T18B	DIESEL DISPENSING TANK FULL
7Ø	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø4		
7Ø.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø4	LLS-T18B	
71	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16A	PILOT LIGHT, PTT, 12ØV XFMR , LED, AMBER	1	A42Ø4	YLL-T18B	DIESEL DISPENSING TANK LOW
72	AUTOMATION DIRECT	BM3RHB-Ø1Ø	MOTOR CIRCUIT PROTECTOR, 6.3-1Ø FLA	1	A42Ø5	MS-P4	
72.1	AUTOMATION DIRECT	SC-EØ2-11ØVAC	CONTACTOR, 9A, 12ØVAC COIL	1	A42Ø5	MS-P4	
72.2	AUTOMATION DIRECT	BZØØPRE22A	BASE PLATE FOR BM3RHB MCP AND SC-EØX CONTACTOR	1		MS-P4	
72.3	AUTOMATION DIRECT	BZØØRE22AA	LINK MODULE, BM3RHB MCP TO SC-EØX CONTACTOR VAC	1		MS-P4	
72.4	AUTOMATION DIRECT	SZ-A22T	FRONT MOUNTING AUX CONTACT FOR SC-EØ2 - E4 , 2 NC 2 NO	1	A42Ø5	P4-AUX	
72.5	AUTOMATION DIRECT	BZØØK1A	ALARM CONTACT INO , USED AS OVERLOAD CONTACT	1	A42Ø5	P4-OL	
73	ALLEN-BRADLEY COMPANY	8ØØH-JR4A	SELECTOR SWITCH, 3 POS, SPRING RETURN TO CENTER FROM LEFT POSITION	1	A42Ø5	SS-P4	TRANSFER PUMP 4 HAND-OFF-AUTO
74	MAGNECRAFT & STRUTHERS-DUNN	7Ø-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A42Ø5		
74.1	MAGNECRAFT & STRUTHERS-DUNN	783XCXM4L-12ØA	3PDT RELAY, 12ØVAC, UL AS LONG AS YOU ORDER 7Ø-783D-1 BASE	1	A42Ø5	TPS-P4	
75	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16G	PILOT LIGHT, PTT, 12ØV XFMR , LED, GREEN	1	A42Ø5	RL-P4	GASOLINE TRANSFER PUMP RUNNING
76	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16R	PILOT LIGHT, PTT, 12ØV XFMR , LED, RED	1	A42Ø5	YAL-P4T	GASOLINE TRANSFER PUMP TIMEOUT
77	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16R	PILOT LIGHT, PTT, 12ØV XFMR , LED, RED	1	A42Ø5	YAL-P4Ø	GASOLINE TRANSFER PUMP OVERLOAD
78	IDEC CORPORATION	SR3P-Ø5	RELAY AND TIMER SOCKET 11-PIN, COMPACT	1	A42Ø5		
78.1	IDEC CORPORATION	GT3A-4CAF2Ø	MULTIFUNCTION TIMER RELAY DPDT, 12Ø/24Ø 11-PIN	1	A42Ø5	KMS-P4	GASOLINE TRANSFER TIMEOUT
79	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16A	PILOT LIGHT, PTT, 12ØV XFMR , LED, AMBER	1	A42Ø5	ZL-MV4Ø	MOTORIZED VALVE MV-Ø4 OPEN
8Ø	ALLEN-BRADLEY COMPANY	8ØØH-PRTH16B	PILOT LIGHT, PTT, 12ØV XFMR , LED, BLUE	1	A42Ø5	ZL-MV4C	MOTORIZED VALVE MV-Ø4 CLOSED

SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
Ø	ORIGINAL	GPS	Ø5-27-Ø5				
1	SUBMITTAL CHANGES	GPS	Ø7-14-Ø5				
2	SHOP AS-BUILT	GPS	Ø9-26-Ø5				



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DRAWN BY: GPS ENGINEER: GPS CHECKED: GPS APPROVED: GPS APPROVED:	DATE: Ø5-27-Ø5 DATE: Ø5-27-Ø5 DATE: 7-24-ØØ	LIBERTY ELECTRIC HOMER ALASKA KWETHLUK BULK FUEL STORAGE UPGRADE PUMP CONTROL PANEL CPK BILL OF MATERIAL SHEET 2	LAST REVISION: Ø9-26-Ø5 SYMBOL: 2	DRAWING NUMBER: SØ5E19-A24Ø2
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KEY ID	MANUFACTURER	PART NUMBER	DESCRIPTION	QTY	ASSEMBLY	DEVICE ID	COMMENTS
81	AUTOMATION DIRECT	BM3RHB-010	MOTOR CIRCUIT PROTECTOR, 6.3-10 FLA	1	A4206	MS-P3	
81.1	AUTOMATION DIRECT	SC-E02-110VAC	CONTACTOR, 9A, 120VAC COIL	1	A4206	MS-P3	
81.2	AUTOMATION DIRECT	BZ0BPPE22A	BASE PLATE FOR BM3RHB MCP AND SC-E0X CONTACTOR	1		MS-P3	
81.3	AUTOMATION DIRECT	BZ0LRE22AA	LINK MODULE, BM3RHB MCP TO SC-E0X CONTACTOR VAC	1		MS-P3	
81.4	AUTOMATION DIRECT	SZ-A22T	FRONT MOUNTING AUX CONTACT FOR SC-E02 - E4, 2 NC 2 NO	1	A4206	P3-AUX	
81.5	AUTOMATION DIRECT	BZ0KIA	ALARM CONTACT 1NO, USED AS OVERLOAD CONTACT	1	A4206	P3-OL	
82	ALLEN-BRADLEY COMPANY	800H-JR4A	SELECTOR SWITCH, 3 POS, SPRING RETURN TO CENTER FROM LEFT POSITION	1	A4206	SS-P3	TRANSFER PUMP 3 HAND-OFF-AUTO
83	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4206		
83.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4206	TPS-P3	
84	ALLEN-BRADLEY COMPANY	800H-PRTH16G	PILOT LIGHT, PTT, 120V XFMR, LED, GREEN	1	A4206	RL-P3	GASOLINE TRANSFER PUMP RUNNING
85	ALLEN-BRADLEY COMPANY	800H-PRTH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4206	YAL-P3T	GASOLINE TRANSFER PUMP TIMEOUT
86	ALLEN-BRADLEY COMPANY	800H-PRTH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4206	YAL-P30	GASOLINE TRANSFER PUMP OVERLOAD
87	IDEC CORPORATION	SR3P-05	RELAY AND TIMER SOCKET 11-PIN, COMPACT	1	A4206		
87.1	IDEC CORPORATION	GT3A-4EAF20	MULTIFUNCTION TIMER RELAY DPDT, 120/240 11-PIN	1	A4206	KMS-P3	GASOLINE TRANSFER TIMEOUT
88	ALLEN-BRADLEY COMPANY	800H-PRTH16A	PILOT LIGHT, PTT, 120V XFMR, LED, AMBER	1	A4206	ZL-MV30	MOTORIZED VALVE MV-04 OPEN
89	ALLEN-BRADLEY COMPANY	800H-PRTH16B	PILOT LIGHT, PTT, 120V XFMR, LED, BLUE	1	A4206	ZL-MV3C	MOTORIZED VALVE MV-04 CLOSED
90	AUTOMATION DIRECT	BM3RHB-004	MOTOR CIRCUIT PROTECTOR, 2.5-4.0 FLA	1	A4207	MS-P5	
90.1	AUTOMATION DIRECT	SC-E02-110VAC	CONTACTOR, 9A, 120VAC COIL	1	A4207	MS-P5	
90.2	AUTOMATION DIRECT	BZ0BPPE22A	BASE PLATE FOR BM3RHB MCP AND SC-E0X CONTACTOR	1		MS-P5	
90.3	AUTOMATION DIRECT	BZ0LRE22AA	LINK MODULE, BM3RHB MCP TO SC-E0X CONTACTOR VAC	1		MS-P5	
90.4	AUTOMATION DIRECT	BZ0KIA	ALARM CONTACT 1NO, USED AS OVERLOAD CONTACT	1	A4207	P5-OL	
91	ALLEN-BRADLEY COMPANY	800H-PRTH16G	PILOT LIGHT, PTT, 120V XFMR, LED, GREEN	1	A4207	RL-P5	GASOLINE PUMP RUNNING
92	ALLEN-BRADLEY COMPANY	800H-PRTH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4207	RLF-P5	GASOLINE PUMP OVERLOAD
93	AUTOMATION DIRECT	BM3RHB-004	MOTOR CIRCUIT PROTECTOR, 2.5-4.0 FLA	1	A4208	MS-P6	
93.1	AUTOMATION DIRECT	SC-E02-110VAC	CONTACTOR, 9A, 120VAC COIL	1	A4208	MS-P6	
93.2	AUTOMATION DIRECT	BZ0BPPE22A	BASE PLATE FOR BM3RHB MCP AND SC-E0X CONTACTOR	1		MS-P6	
93.3	AUTOMATION DIRECT	BZ0LRE22AA	LINK MODULE, BM3RHB MCP TO SC-E0X CONTACTOR VAC	1		MS-P6	
93.4	AUTOMATION DIRECT	BZ0KIA	ALARM CONTACT 1NO, USED AS OVERLOAD CONTACT	1	A4208	P6-OL	
94	ALLEN-BRADLEY COMPANY	800H-PRTH16G	PILOT LIGHT, PTT, 120V XFMR, LED, GREEN	1	A4208	RL-P6	DIESEL PUMP RUNNING
95	ALLEN-BRADLEY COMPANY	800H-PRTH16R	PILOT LIGHT, PTT, 120V XFMR, LED, RED	1	A4208	RLF-P6	DIESEL PUMP OVERLOAD
96	IDEC CORPORATION	SR3P-05	RELAY AND TIMER SOCKET 11-PIN, COMPACT	1	A4208		
96.1	IDEC CORPORATION	GT3A-4EAF20	MULTIFUNCTION TIMER RELAY DPDT, 120/240 11-PIN	1	A4208	KDC-P6	HOSE REEL PUMP TIMER
97	ALLEN-BRADLEY COMPANY	700-P800A1	CONTROL RELAY, 8-POLE NO/NC	1	A4209	ESD-101	
98	ALLEN-BRADLEY COMPANY	800H-JR4A	SELECTOR SWITCH, 3 POS, SPRING RETURN TO CENTER FROM LEFT POSITION	1	A4208	SS-P5	GASOLINE DISPENSER PUMP 5 HAND-OFF-AUTO
99	ALLEN-BRADLEY COMPANY	800H-JR4A	SELECTOR SWITCH, 3 POS, SPRING RETURN TO CENTER FROM LEFT POSITION	1	A4208	SS-P6	DIESEL DISPENSER PUMP 6 HAND-OFF-AUTO
100	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4205		
100.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4205	CR-40L	
101	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4206		
101.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4206	CR-30L	
102	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4207		
102.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4207	CR-50L	
103	MAGNECRAFT & STRUTHERS-DUNN	70-783D-1	RELAY BASE FOR A 3PDT, DIN MOUNT, FINGERSAFE UL	1	A4208		
103.1	MAGNECRAFT & STRUTHERS-DUNN	783XCM4L-120A	3PDT RELAY, 120VAC, UL AS LONG AS YOU ORDER 70-783D-1 BASE	1	A4205	CR-60L	
104	HOFFMAN ENCLOSURES INC.	Q-603018PCIORCC	23.62" X 11.81" X 7.08" POLYCARBONATE ENCLOSURE WITH CLEAR WINDOW AND QUICK RELEASE LATCHES	2	A2301		
104.1	HOFFMAN ENCLOSURES INC.	Q-6030EXTI	EXTENSION RING FOR 23.62" X 11.81" QLINE POLYCARBONATE AND ABS TYPE 4X ENCLOSURES	2	A2301		
105	IDEC CORPORATION	SH1B-05	RELAY SOCKET, DIN RAIL MOUNT, 5-BLADE, FOR RH1B RELAYS	1	A4208		
105.1	IDEC CORPORATION	RH1B-U-AC120V	RELAY, 120VAC, SPDT, 5-BLADE, UL RECOGNIZED	1	A4208	CR-P6	

SYN	REVISION RECORD	BY	DATE	SYN	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SUBMITTAL CHANGES	GPS	07-14-05				
2	ADDED DEEP HINGED WINDOW KIT	GPS	08-03-05				
3	SHOP AS-BUILT	GPS	09-26-05				



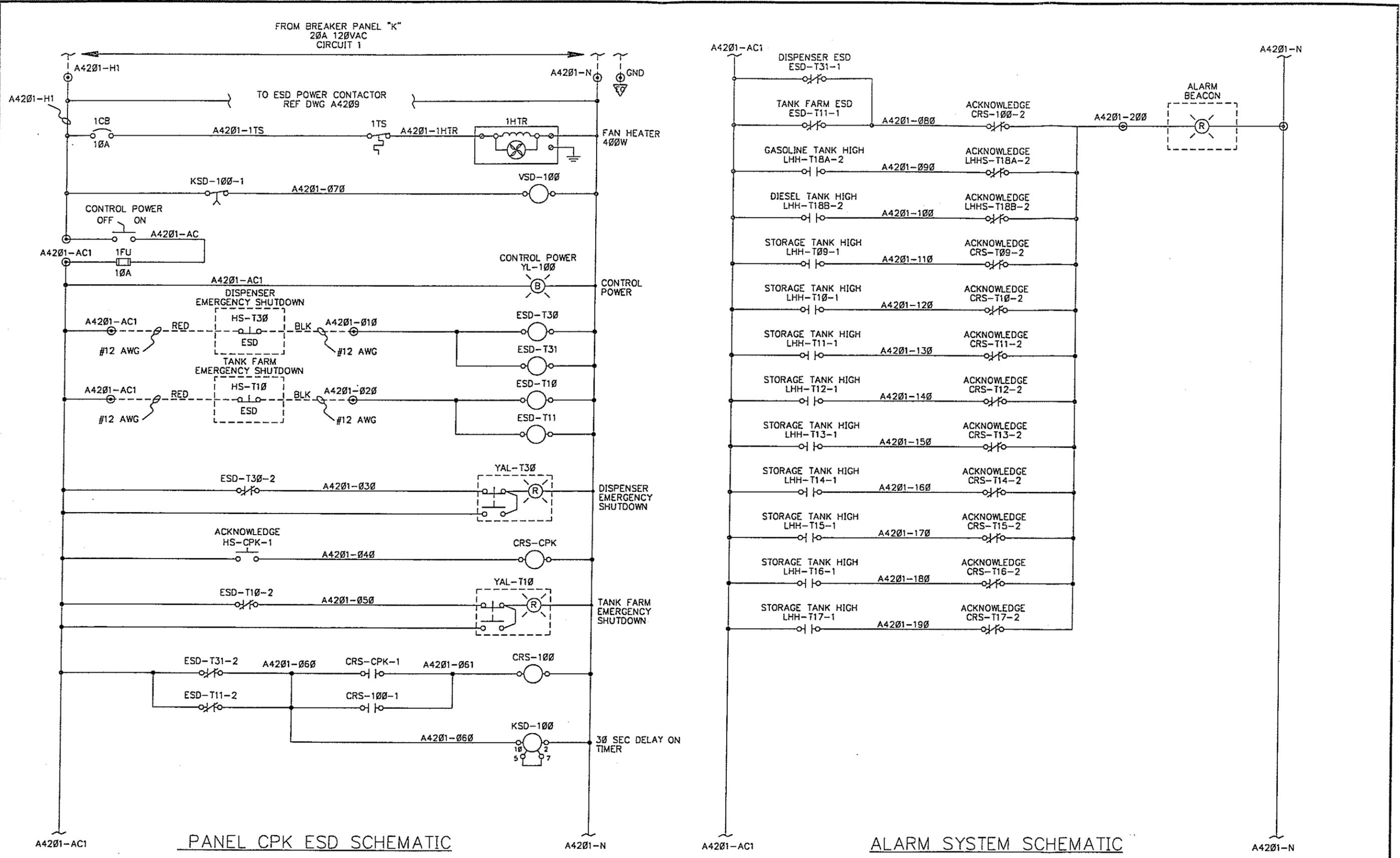
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 www.systems-interface.com

DATE
05-27-05
05-27-05
07-24-06

LIBERTY ELECTRIC
 HOMER ALASKA
 KWETHLUK BULK FUEL STORAGE UPGRADE
 PUMP CONTROL PANEL CPK
 BILL OF MATERIAL
 SHEET 3

DATE	SYMBOL
09-26-05	3

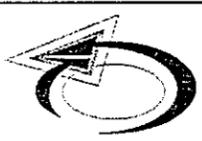
LAST REVISION
 DRAWING NUMBER:
 S05E19-A2403



PANEL CPK ESD SCHEMATIC

ALARM SYSTEM SCHEMATIC

SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	MOVED VSD-100	GPS	08-04-05				
2	SHOP AS-BUILT	GPS	09-22-05				
3	REVISED PER FIELD INSTALLATION NOTS	GPS	07-10-06				



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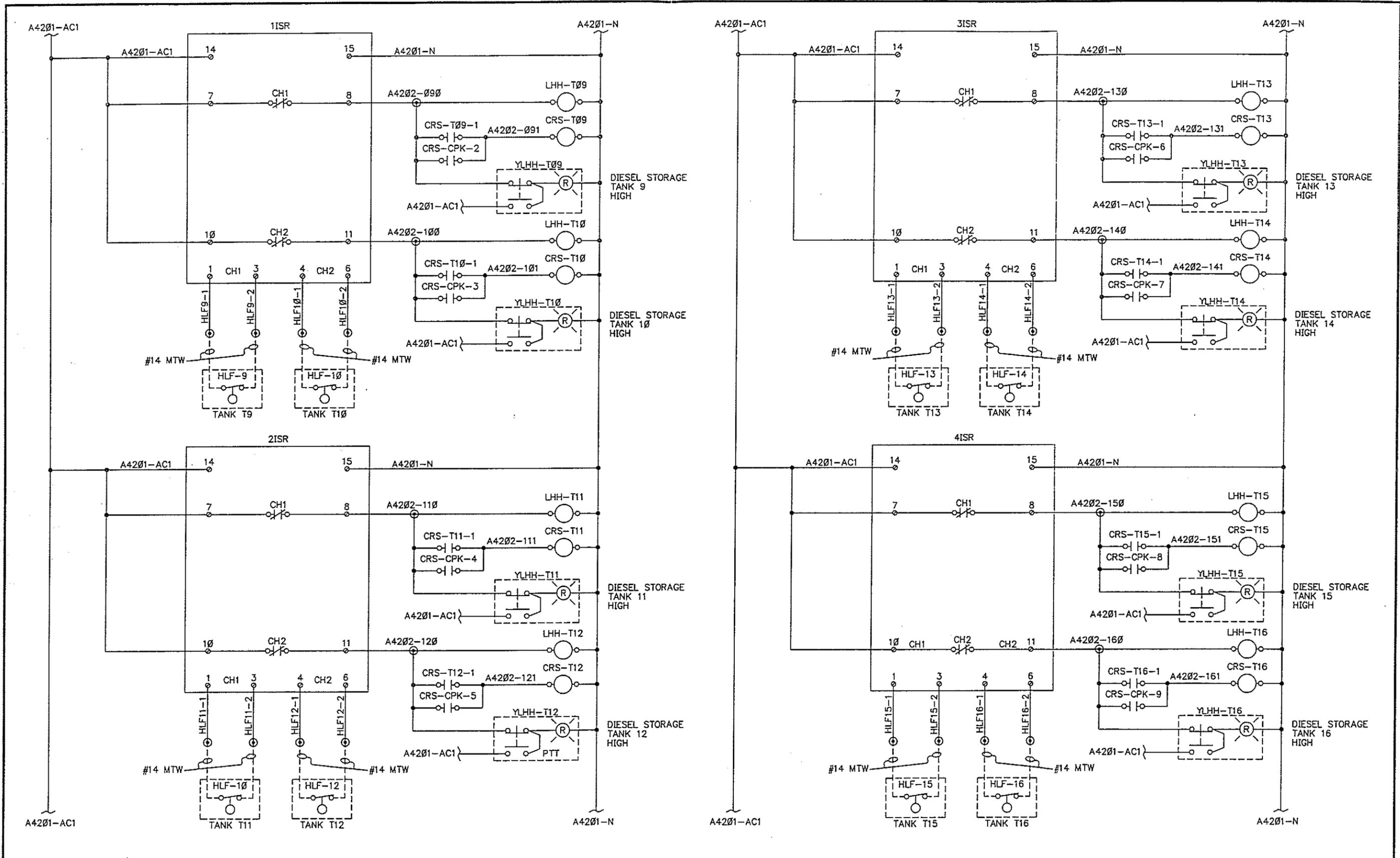
	DATE
DRAWN BY:	GPS 05-27-05
ENGINEER:	GPS 05-27-05
CHECKED:	GPS 7-24-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
 HOMER ALASKA
 KWETHLUK BULK FUEL STORAGE UPGRADE
 PUMP CONTROL PANEL CPK
 ESD & ALARM
 SYSTEM SCHEMATIC

DATE	SYMBOL
07-10-06	3

LAST REVISION

DRAWING NUMBER:
 S05E19-A4201



SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SHOP AS-BUILT	GPS	09-22-05				
2	REVISED PER FIELD INSTALLATION NOTES	GPS	07-10-06				

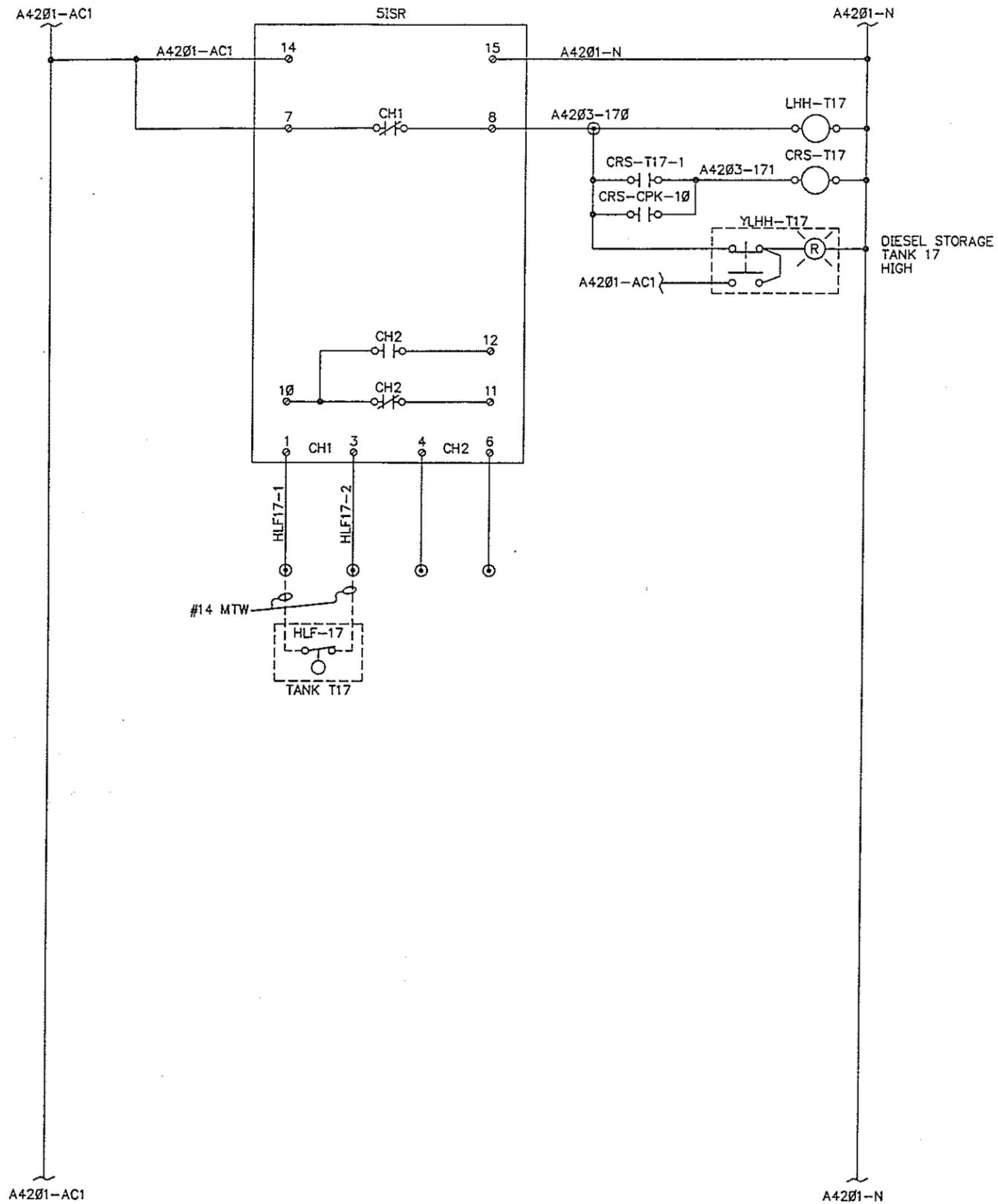


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DATE	
DRAWN BY:	GPS 05-27-05
ENGINEER:	GPS 05-27-05
CHECKED:	GPS 7-24-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
 HOMER ALASKA
 KWETHLUK BULK FUEL STORAGE UPGRADE
 PUMP CONTROL PANEL CPK
 STORAGE TANK LEVEL ALARM SCHEMATIC
 TANKS 9-16

DATE	DATE
LAST REVISION	07-10-06
SYMBOL	2
DRAWING NUMBER:	S05E19-A4202



SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	REVISED PER FIELD INSTALLATION NOTES	GPS	07-10-06				



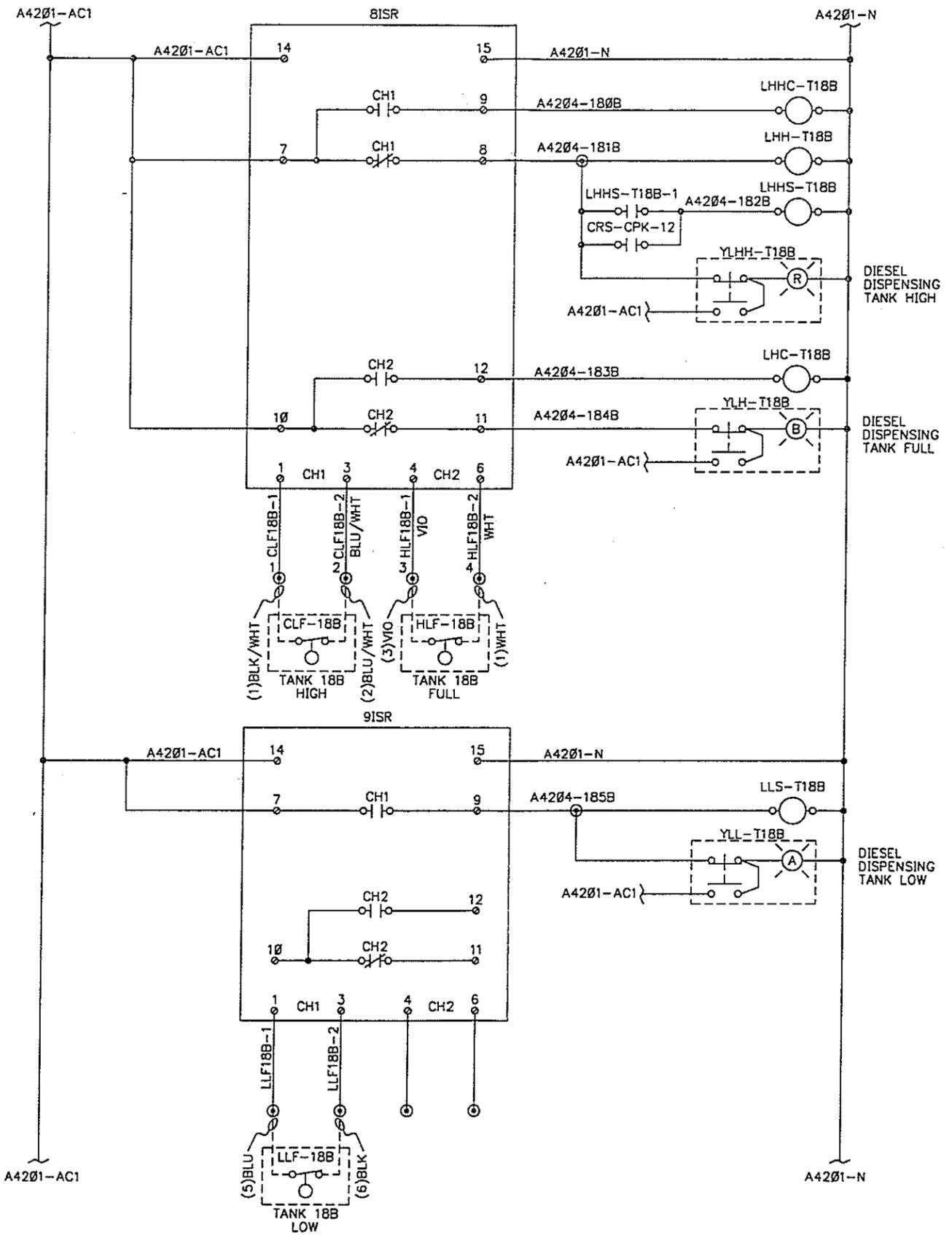
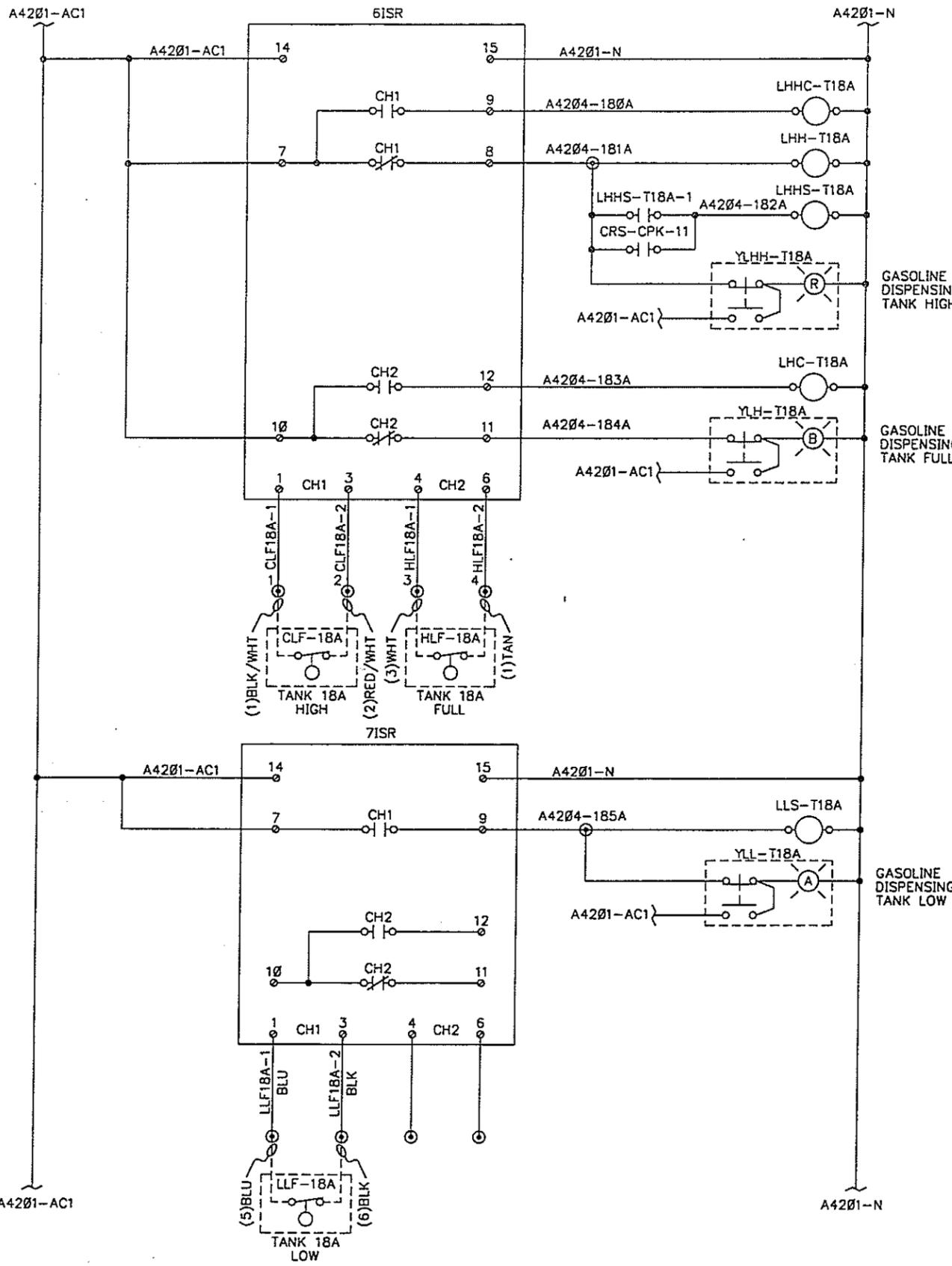
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	DATE
DRAWN BY:	GPS 05-27-05
ENGINEER:	GPS 05-27-05
CHECKED:	GPS 7-24-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
 HOMER ALASKA
 KWETHLUK BULK FUEL STORAGE UPGRADE
 PUMP CONTROL PANEL CPK
 STORAGE TANK LEVEL ALARM SCHEMATIC
 TANK 17

LAST REVISION	DATE	SYMBOL
	07-10-06	1

DRAWING NUMBER:
S05E19-A4203



SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SHOP AS-BUILT	GPS	09-22-05				
2	REVISED PER FIELD INSTALLATION NOTES	GPS	07-10-06				



Systems Interface Inc.

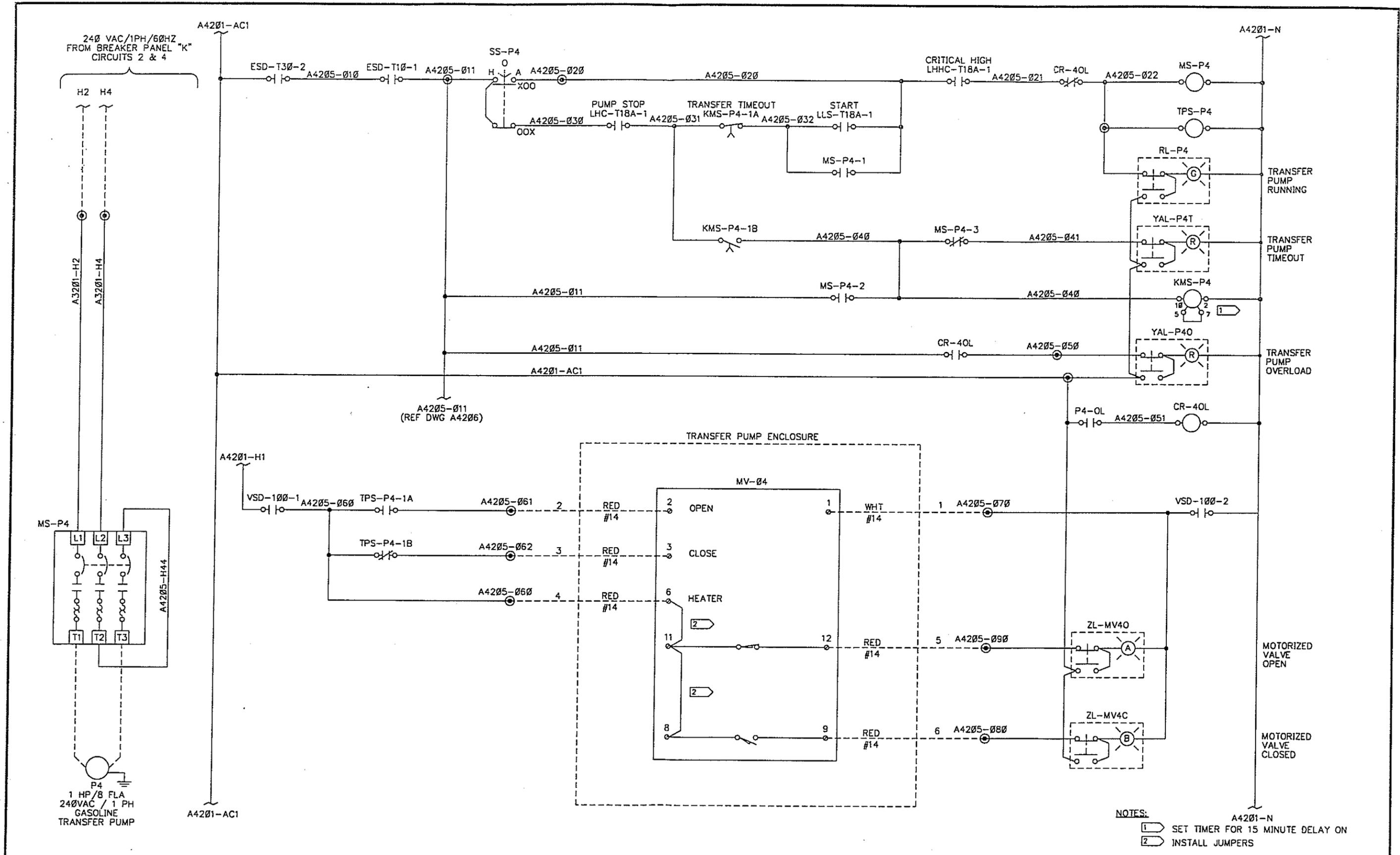
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DATE	BY
05-27-05	GPS
05-27-05	GPS
07-24-06	GPS

LIBERTY ELECTRIC
HOMER ALASKA
KWETHLUK BULK FUEL STORAGE UPGRADE
PUMP CONTROL PANEL CPK
TANK 18A GASOLINE LEVEL SENSORS
& TANK 18B DIESEL LEVEL SENSORS

DATE	REVISION	SYMBOL
07-10-06		

DRAWING NUMBER:
S05E19-A4204



NOTES:
 1 SET TIMER FOR 15 MINUTE DELAY ON
 2 INSTALL JUMPERS

SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SUBMITTAL CHANGES	GPS	07-14-05				
2	MOTORIZED VALVE ON A4201-H1	GPS	08-04-05				
3	SHOP AS-BUILT	GPS	09-22-05				
4	REVISED PER FIELD INSTALLATION NOTES	GPS	07-10-06				

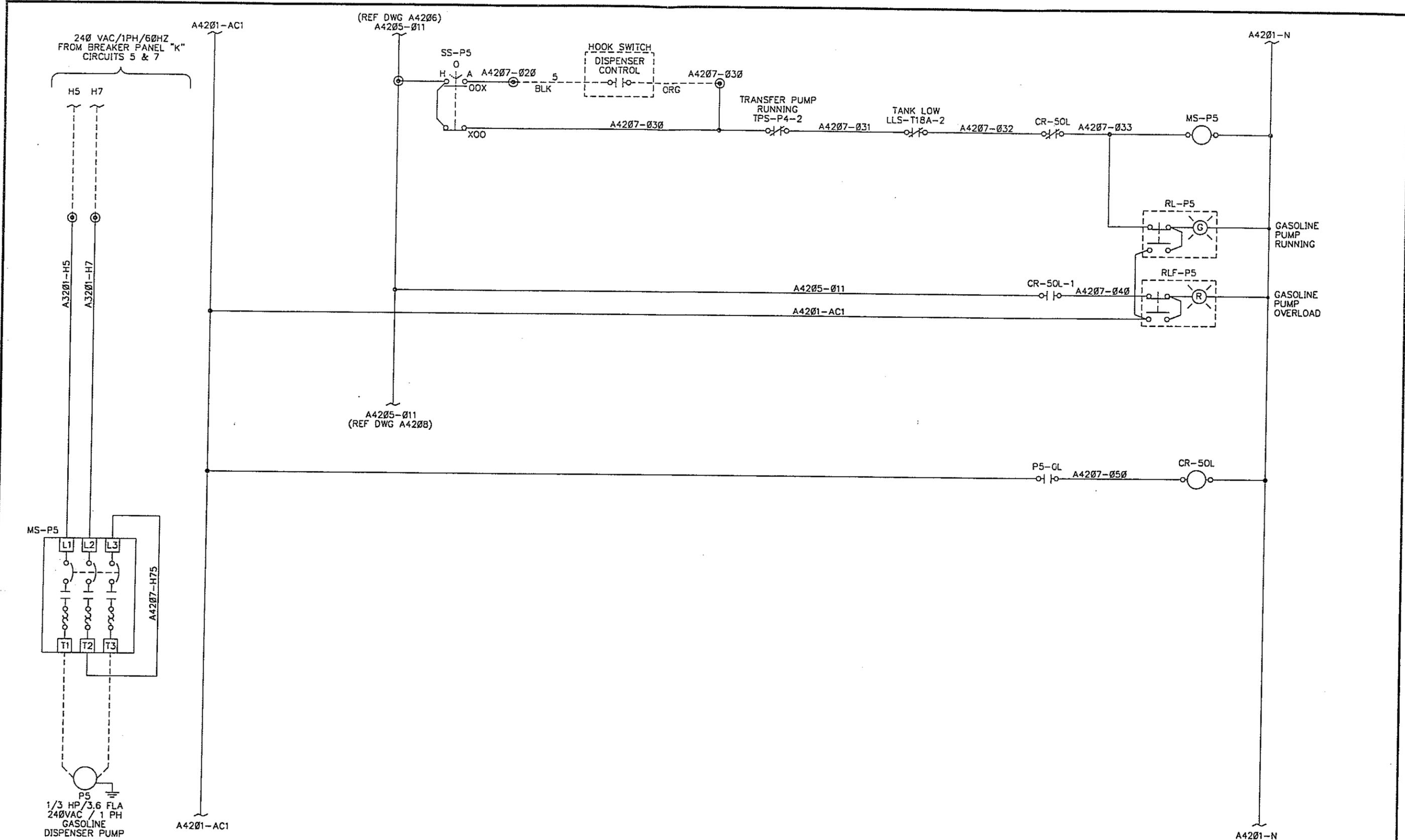


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	DATE
DRAWN BY: GPS	05-27-05
ENGINEER: GPS	05-27-05
CHECKED: GPS	7-14-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
 HOMER ALASKA
 KWETHLUK BULK FUEL STORAGE UPGRADE
 PUMP CONTROL PANEL CPK
 GASOLINE TRANSFER CONTROL
 DISPENSER TANK 18A

DATE	SYMBOL
07-10-06	4
LAST REVISION	
DRAWING NUMBER: S05E19-A4205	



NOTES:
 [Symbol] SET TIMER FOR 15 MINUTE DELAY ON

SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SUBMITTAL CHANGES	GPS	07-14-05				
2	SHOP AS-BUILT	GPS	09-22-05				
3	REVISED PER FIELD INSTALLATION NOTES	GPS	07-11-06				



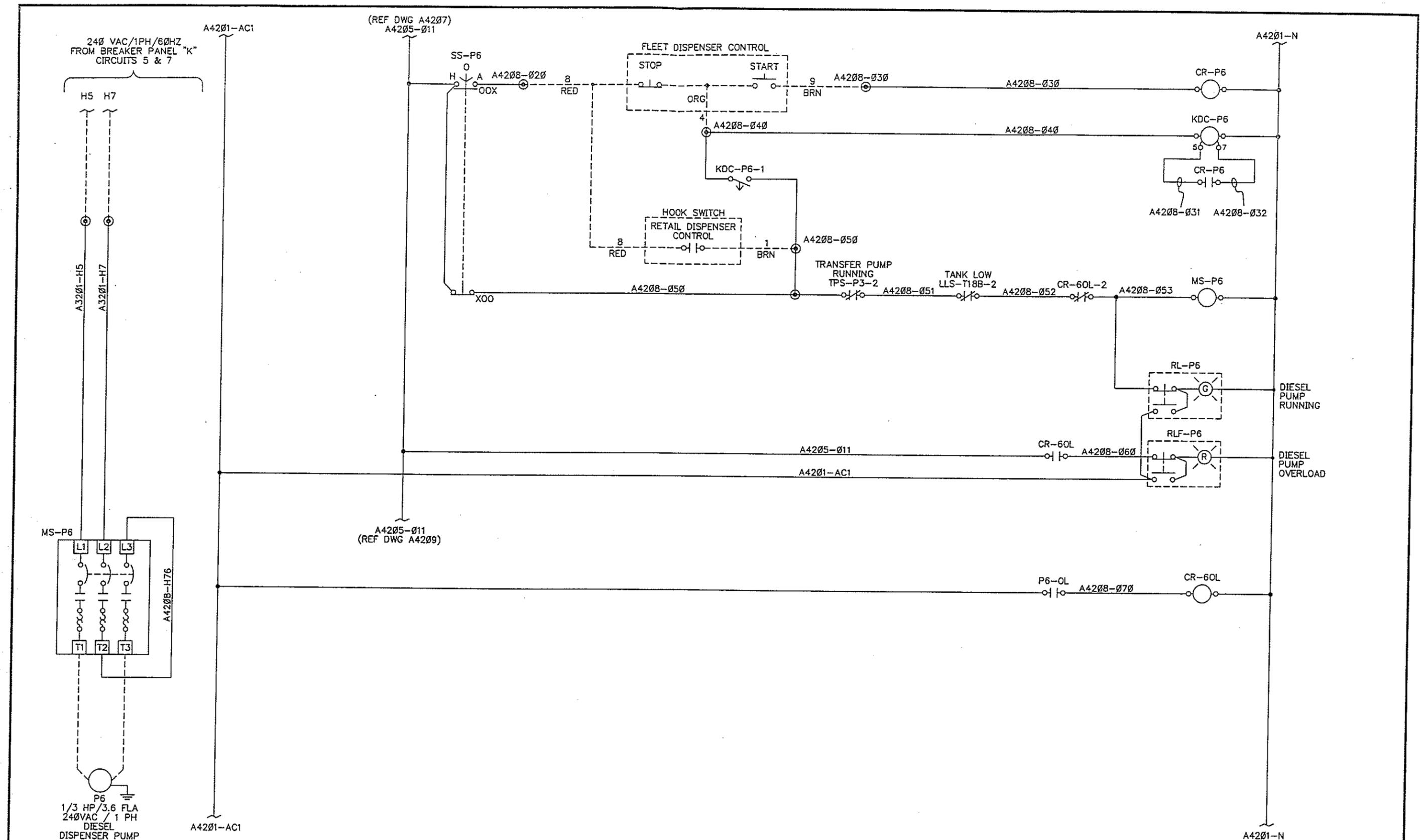
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	DATE
DRAWN BY: GPS	05-27-05
ENGINEER: GPS	05-27-05
CHECKED: GPS	7-24-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
 HOMER ALASKA
 KWETHLUK BULK FUEL STORAGE UPGRADE
 PUMP CONTROL PANEL CPK
 GASOLINE DISPENSER PUMP P5
 CONTROL SCHEMATIC

LAST REVISION	DATE
3	07-11-06

DRAWING NUMBER:
 S05E19-A4207



NOTES:
 [Symbol] SET TIMER FOR 15 MINUTE DELAY ON

SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SUBMITTAL CHANGES	GPS	07-14-05				
2	SHOP AS-BUILT	GPS	09-22-05				
3	REVISED PER FIELD INSTALLATION NOTES	GPS	07-11-06				



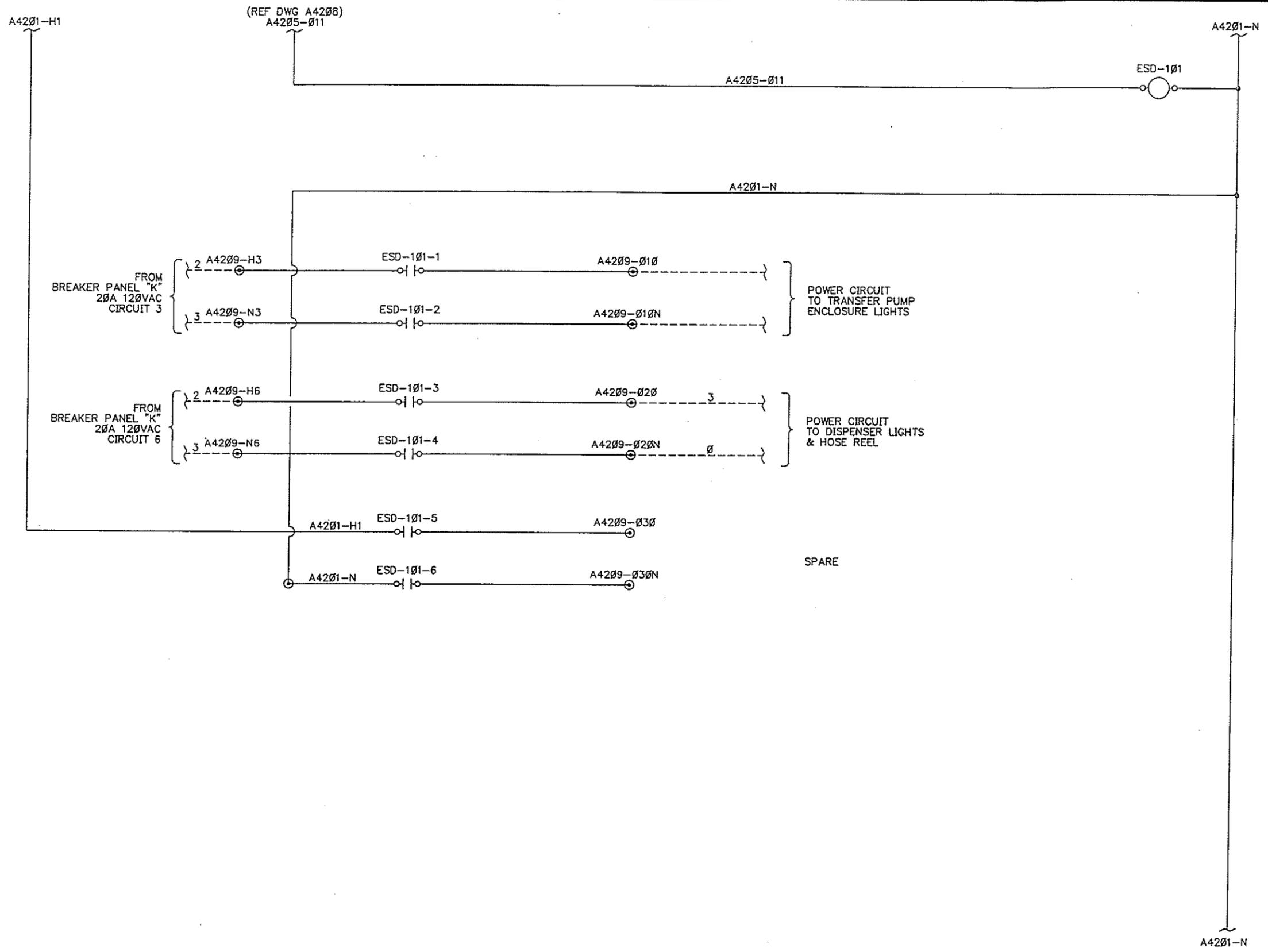
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 www.systems-interface.com

	DATE
DRAWN BY: GPS	05-27-05
ENGINEER: GPS	05-27-05
CHECKED: GPS	7-24-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
 HOMER ALASKA
 KWETHLUK BULK FUEL STORAGE UPGRADE

LAST REVISION	DATE
	07-11-06
	SYMBOL
	3

DRAWING NUMBER:
 S05E19-A4208



SYM	REVISION RECORD	BY	DATE	SYM	REVISION RECORD	BY	DATE
0	ORIGINAL	GPS	05-27-05				
1	SUBMITTAL REVIEW REVISIONS	GPS	07-12-05				
2	REVISED PER FIELD INSTALLATION NOTES	GPS	07-10-06				



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	DATE
DRAWN BY: GPS	05-27-05
ENGINEER: GPS	05-27-05
CHECKED: GPS	7-24-06
APPROVED:	
APPROVED:	

LIBERTY ELECTRIC
 HOMER ALASKA
 KWETHLUK BULK FUEL STORAGE UPGRADE
 PUMP CONTROL PANEL CPK
 ESD POWER CONTACTOR
 SCHEMATIC

LAST REVISION	DATE	SYMBOL
	07-10-06	2

DRAWING NUMBER:
 S05E19-A4209