REMEDIAL DESIGN PACKAGE

CHAMPION PRODUCTS, INC.
SARA-LEE CORPORATION
PERRY, NEW YORK

DELTA PROJECT NO. S098-009

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1.0 INTRODUCTION

This document outlines the scope of work required for the installation of a dual phase extraction remediation system. The purpose of the remedial design package is to provide potential contractors a basis for submitting a proposal for the required work associated with the system installation. A site map that illustrates the location of the extraction points is presented in Figure 1. The Contractor's scope of work includes connection from the seven existing extraction points to the contractor-supplied remediation equipment. Piping runs will be both above grade and below grade, single-walled PVC. Piping runs will be from the extraction points located inside the facility to the treatment system enclosure located outside the facility. The remediation equipment will be housed in the treatment system enclosure, which shall be constructed by the Contractor. The complete scope of services includes all of the work required to provide a complete and operating system as specified. In addition, the Contractor will provide a minimum of 2 days of on-site technical start-up support and training following completion of the work.

The following terms used frequently in this package have been defined as:

Owner	Sara-Lee Corporation
Construction Manager	On-site representative of Delta Environmental Consultants, Inc. (Delta)
Contractor	Individual, firm, or corporation to which Owner sublets part of the work in the Plans and Specifications.
Supplier	Individual, firm, or corporation from which the Owner will purchase equipment.
Work	All material and labor required to complete the remediation system installation.
Engineer	Delta Environmental Consultants, Inc.

All bids must be submitted on the enclosed Bid Form (Appendix A). Bids must be on all items; incomplete bids will not be accepted. Bids received later than **March 3, 2000** will not be accepted.

2.0 GENERAL INFORMATION

The Contractor must provide complete technical submittals with the bid.

The successful bidder (Contractor) must submit the following with delivery of the Work:

- Two copies of an operation and maintenance manual for the supplied equipment. The manual shall contain all information to allow for successful operation, removal, installation adjustment, calibration, and maintenance of all supplied equipment.

- Electrical line drawings as well as panel layout drawings showing switches and indicator lights as specified in this document. All required field electrical connections must be clearly labeled in the drawings and on the panel terminal block(s).
- Hard copies and electrical versions of all control system ladder diagrams and programs used in the remediation system. Contractor to supply to Delta all software required to operate, maintain, and revise control program.

All work shall be fully warranted by the **CONTRACTOR** for a minimum of 1 year of operation.

3.0 GENERAL CONDITIONS

3.1 Building Codes/Permits

Contractors shall provide all necessary construction permits and licenses. Construction manager will assist Contractor, when necessary, in obtaining such permits and licenses. Contractors shall pay all government charges and inspection fees necessary for execution of work that are applicable at time of opening of bids. Bids shall include all applicable taxes and shipping of equipment and materials F.O.B. the job site.

Contractor shall give notices and comply with laws, ordinances, building and construction codes, rules, and regulations applicable to work. If Contractor observes that specifications or drawings do not comply, Contractor shall give Construction Manager prompt written notice, and any necessary changes shall be made. If Contractor performs any work knowing, or having reason to know, that it is contrary to such laws, ordinances, rules, and regulations without such notice to the Construction Manager, Contractor shall bear full responsibility for the resulting costs. It shall be the Contractors responsibility to ensure the specifications and drawings are in accordance with such laws, ordinances, rules, and regulations.

Building, plumbing, ventilation, electrical, and excavating work permits or bonds from other appropriate municipal, regional, or state authority may be required and shall be obtained by Contractor.

3.2 Job Site Administration

Contractor shall provide competent, suitable qualified personnel to survey, layout, and perform work as required by the contract documents. Contractor shall maintain good discipline and order at all times. Work shall be performed during working hours agreed upon by Construction Manager and Owner.

Contractor shall dismiss incompetent and incorrigible employees from the work when requested by Construction Manager, and such person shall not be permitted to return to work without written consent of Construction Manager.

No person with a physical condition such that it would make his/her employment dangerous to his/her health and safety, or to the health and safety of others, shall be employed in work.

3.3 Project Record Documents

A. Maintain on site, one set of the following record documents; record all revisions to the Work:

1. Contract drawings
2. Specifications
3. Addenda
4. Change Orders and other modifications to the contract
5. Reviewed shop drawings, product data, and samples

B. Store Record Documents separate from documents used for construction.

C. Record all as-built information as construction progresses.

D. Specifications: Legibly mark and record at each product section a description of actual products installed, including the following:

1. Manufacturer's name and product model and number
2. Product substitutions or alternates utilized
3. Changes made by Addenda and Modifications

3.4 Site Cleaning

Contractor shall conduct cleaning and disposal activities to comply with codes, ordinances, regulations, and anti-pollution laws. Execute periodic cleaning to keep work site and adjacent properties free from accumulation of waste materials, rubbish, and windblown debris resulting from construction operations. Provide on-site containers for collection of waste materials, debris, and rubbish.

Contractor shall remove waste debris and rubbish from site at least weekly and dispose of at legal disposal areas away from site. Remove grease, mastic, adhesive, dust, dirt stains, fingerprints, labels, and all other foreign materials from exposed interior and exterior surfaces.

Upon completion of the work, Contractor shall conduct inspection of sight-exposed interior and exterior surfaces, and all work areas to verify that entire work area is clean.

3.5 Site Health and Safety

All excavation Contractor personnel must have certification of Occupational Health and Safety Administration (OSHA) 40-hour Health and Safety training that satisfies OSHA requirements under Code of Federal Regulations (CFR) 1910.120. **Copies of these certifications must be provided upon bid acceptance.**

All excavation activities will be conducted in accordance with OSHA excavation standards (29 CFR 1926) and any other federal, state, or local requirements.

Each selected Contractor will be provided access to the Engineer's Site Health and Safety Plan (SHSP). All Contractor site personnel must review the SHSP, sign, and date the front page to acknowledge they are familiar with the site contaminants and health and safety procedures, prior to commencement of work. At the Contractor's request, Engineer will supply a copy of the SHSP prior to submittal of bid.

3.6 Schedule

Contractor shall coordinate with the Construction Manager to schedule commencement of construction activities to begin April 2000. The Contractor will complete the scope of work no later than 4 weeks following commencement of work. If Contractor expects the scope of work to take any longer, it shall be noted on the bid form. If Contractor expects to be unavailable to begin work April 2000, Contractor should note the earliest available date.

3.7 Bid Format

The basis of the bid submittal will be in accordance with the Bid Form included in Appendix A. The scope of work has been grouped by task. Any deviations or exceptions in the bid preparation should be noted on the Bid Form.

If subcontractors are used, Contractor will indicate the intended subcontractor for each task and that subcontractor's cost to complete the task.

3.8 Alternatives and Substitutions

Bidders are required to bid on the specifications in this document. For materials and construction plans not specified by method, type, or procedure, bidder may use any material, method, or procedure that meets the requirement of the specifications. Where materials or construction methods are specified by brand name or type, and bidder feels another manufacturer's product is equal in design, construction, and performance, bidder shall list the material or method in the alternate and substitutions section of the bid form and show the amount the bid can be reduced if the alternative or substitute is accepted by Owner or Engineer.

If the bidder selected has included an alternative or substitute on the Bid Form, at the request of Owner or Engineer, bidder shall provide literature, performance data, and drawings to Engineer to substantiate that the proposed alternate or substitute is equivalent to the specified material or construction method. Owner and/or Engineer are under no obligation to accept any alternate or substitution.

3.9 Notice of Award

Engineer will issue a Notice of Award to the selected bidder. The selected bidder shall submit the following required items to Engineer:

1) Insurance Certificate

2) A tentative schedule of construction activities

Upon completion of these items by Engineer, a Standard Subcontractor Agreement will be issued. Work shall commence once the agreement has been executed in accordance with the stipulations of these contract documents.

3.10 Contract

Included, as Appendix B, is Delta's Standard Subcontractor Agreement. Contractor shall review this document carefully and note any exceptions to the agreement on the bid.

3.11 Certificate of Insurance

Contractor's original Certificate of Insurance listing Delta Environmental Consultants, Inc., as "additional insured" must be provided to Engineer upon Notice of Award of the work. The Contractor must have adequate coverage in all areas listed in Attachment 1 to the Standard Subcontractor Agreement found in Appendix B. Note the pollution liability requirements. Delta requires that all subcontractors performing intrusive work such as trenching, drilling or excavating must posses pollution liability insurance at the coverage limits specified in Appendix B.

3.12 Basis of Award

Bidders are required to bid based on the plans and specifications and the supplied bid form in Appendix B. The contract will be awarded on the basis of quality and price. Owner reserves the right to be the sole judge of all bids and can accept or reject any or all bids. Any and all bids become the property of the Owner.

3.13 Conflicts

The written specifications and drawings constitute the entire bid package. Bidder shall notify Engineer of any conflicts between the written specifications and the drawings. Engineer will clarify any conflicts with an addendum to all bidders. If bidder fails to notify Engineer of conflicts, Engineer will have the sole determination of which bid item will be chosen.

3.14 Change Orders

Contractor shall issue Engineer a request for change order for any revision to the scope of work encountered during the project. The request shall describe the additional work required accompanied by an estimated cost to complete. The Construction Manager or Engineer representative, prior to initiation of any additional work, must sign all change orders. All additional work shall be completed on a time and materials basis.

3.15 Invoice Format

Invoices from all Contractors must be submitted on a form similar to the supplied Bid Form indicating work items, quantities, unit prices, and total costs.

3.16 Hours Available for Work

Due to the facility operation schedule, work shall not commence prior to 3:00 PM or continue past 6:00 AM, Monday through Friday. All other hours, including weekends, are available for work.

4.0 EXCAVATION, BACKFILLING, SITE RESTORATION, AND SOIL HANDLING

4.1 Preparation

Contractor shall locate and identify the lines, levels, and contours and evaluate relationships to the specified trench location. Contractor shall stake, flag, or paint-mark the specified trench locations prior to excavation.

Contractor shall be responsible to locate all underground utilities prior to any excavation activities. Contractor shall protect existing structures, including monitoring wells, utilities, trees, and other features that are to remain. Contractor must hire a private utility locator to identify and locate private utilities.

4.2 Excavation

4.2.1 General

Trenching work shall include the removal, handling, and disposal of all excess materials stripping of the trench and other areas, including an approximate (25' x 20') area in the location of the proposed treatment building, of asphalt, concrete, and debris.

Contractor shall provide protection or repair/replacement (if required) of existing pipeline, electric lines, drain tiles, conduits, poles, and overhead utilities, etc.

Contractor shall provide preparation of sub-grades, pipe bedding, backfill, and disposal of any excess uncontaminated soils.

Contractor shall place and compact proper base for placement of building slab.

Note: Removal and disposal of unexpected large debris or stationary structures or portions of such, are not intended to be a part of the bid and will be addressed through a change order.

Contractor shall keep banks as nearly vertical as practical while complying with all safety requirements (OSHA Standards). Excavation activities must be conducted in accordance with OSHA construction standards for excavation

and trenching found in 29 CFR 1926, and all other applicable federal, state, and local requirements. Under no circumstances shall Contractor personnel enter an excavation deeper than 5-feet below surface. The backhoe operator must have 40-hour OSHA Health and Safety training that satisfies OSHA requirements under 29 CFR 1910.120. Copies of this certification must be provided with the bid submittal.

Trenches shall be of sufficient width to provide ample room for the handling of plumbing and pipe runs. The trenches will provide access to the recovery wells. The base of the trench shall be level or sloped towards the recovery wells.

Two inches of clean sand shall be placed in the trench to provide uniform bearing and support for the piping. Contractor shall accurately grade the trench bottom to avoid low points.

No more of the trench than necessary shall be left open at any time. Open trenches shall be properly marked and/or attended, and barricaded. Trenches shall be closed or barricaded at the end of each working day.

Only competent and experienced individuals at laying pipe shall be employed on this phase of work. Contractor shall perform dewatering operations as required to maintain a dry work area. Contractor shall handle all material including pipe, fittings, valves, etc., with care. Pipe and fittings at connections shall be thoroughly cleaned of all foreign materials prior to lowering them into the trench and shall be kept clean and dry during all laying operations.

Pressure testing will not be required; however, contractor is responsible for the integrity of the pipe connections and repair of any broken or separated pipes.

4.2.2 Interior Excavation and Piping

Contractor shall saw cut existing concrete at each extraction point location (DVE-103 through DVE-107) located inside the facility. A square saw cut shall be made in the concrete to allow accessibility for the connection of the extraction well to the extraction piping network, as shown in the figures. In addition an approximately 1-foot wide trench shall be saw cut into the concrete to the nearest existing 6 inch steel roof support beam. Contractor will excavate trenches for DVE 103-DVE 107 as specified in the drawing. Following saw cutting the concrete shall be removed and disposed of by the contractor. The contractor is to excavate (by hand) the trench to a depth of 2 feet below concrete grade. Upon completion of the hand trenching, the Contractor shall make connection and install piping in the trench from the respective extraction point to the point where the aboveground piping continues (see 5.2 facility interior mechanical). A copy of the interior piping and trench excavation plan is included in the drawings.

4.2.3 Exterior Excavation and Piping

Contractor will excavate exterior trenches for DVE-101 and DVE-102 and the main trench from the facility to the recovery system, as specified in the drawings. Contractor will also need to trench from the remediation building to the discharge location. The trenches will be excavated to a minimum depth of 4-feet below grade as indicated in the drawings. Open trenching shall be done in a manner to avoid unusually wide excavations. Upon completion of exterior trenching, the Contractor shall install piping from the point where the aboveground interior mechanical piping

continues to the remediation equipment area. At that point, the Contractor shall stub the piping above grade as shown in the drawings. In addition, the Contractor shall install ground water discharge piping from the remediation equipment area to the point of final discharge.

4.3 Backfilling

After installation of the underground piping, the Contractor will backfill with sand to 2-inches above the piping. Four-inches of polystyrene foam insulation will be installed above the sand bedding and all lines. The remainder of the trench will be backfilled with native or imported soil, free of organic material or debris, placed in 6-inch lifts compacted to a minimum of 95 percent of Standard Proctor Value (ASTM: D-698). Contractor shall employ a placement method that does not disturb nor damage installed piping.

The Contractor is responsible for obtaining and delivering all necessary fill material and for prompt removal of any debris or excess clean soil.

4.4 Soil Handling

It is anticipated that some impacted soil may be encountered in the trench excavation. It is the intention of this project to install a system to remediate impacted soils. Therefore, removal or hauling of impacted soils is not anticipated to be within the scope of this project. The Contractor is responsible for maintaining clean work areas within the interior of the facility. All work areas are to be cleaned prior to the beginning of the facility operating each day.

The Contractor is responsible for maintaining clean city streets during trucking activity. The Contractor must provide the people or equipment necessary to remove mud or soil deposited on the city streets by the truck tires. Street cleaning will be performed as needed, and will be determined by the Construction Manager, the City of Perry, or other appropriate city officials.

4.5 Site Restoration

Following completion of the trench backfilling and the proposed treatment building, the Contractor will restore all affected surface covering to its original condition.

Replacement pavement will include a minimum of 4-inches of course aggregate base rock compacted to a minimum of 100 percent of Standard Proctor Value overlain by pavement to match adjacent paved areas without change in grade or slope. Replacement concrete shall match existing concrete.

5.0 MECHANICAL

5.1 Treatment Building

The scope of the mechanical work includes all materials and labor required for the installation, piping, and ducting of all Contractor-supplied equipment and components. Materials required include, but are not limited to, pipe, fittings,

valves, duct, hangers, and supports. All equipment will be installed as shown in the drawings. All piping material and sizes shall be in accordance with the supplied drawings.

The scope of interior mechanical work includes connecting the stubbed-up recovery lines and discharge piping within the treatment system enclosure to the system manifold and equipment. Additional interior lines to be installed include the exhaust stack from the vacuum blower and the air stripper to the exterior of the building. The vacuum blower and air stripper discharge lines shall extend through the roof of the building to a minimum of 4-feet above the roofline. The air stripper intake piping shall enter through the outside wall of the building. The Contractor is also responsible for supplying all penetrations and appropriate flashing for piping that penetrates the wall and/or roof of the treatment building. Process piping between individual pieces of equipment shall be in accordance with supplied drawings.

5.2 Facility Interior Mechanical

Facility interior piping shall include all above grade piping required to connect the extraction well piping to the subgrade piping from the extraction and the treatment system enclosure area as shown in the drawings. Extraction well piping shall be 2-inch Schedule 40 PVC. Extraction well piping shall run underground from the extraction well to the nearest vertical support beam. The piping shall run vertically up the outside of the support beam to the ceiling where the piping will run to the location where the piping exits the building as shown in the drawing. At that point, the piping will run down the wall to approximately 2 feet from the floor. The piping will penetrate the cinder block wall and extend out from the wall 2 feet before it enters the trench to the treatment system enclosure. A doghouse style enclosure will enclose the piping outside of the building. The enclosure shall be built in such a way that allows easy access to the piping. All piping located outside of the building and above grade shall be heat traced to prevent freezing. All facility interior aboveground piping shall be anchored and supported as necessary to provide adequate stability and integrity of piping.

6.0 ELECTRICAL

The scope of electrical work includes all materials and labor required for the installation and connection of all electrically related, contractor supplied, equipment and components required, including, but not limited to, conduit, wire, junction boxes, hangers, and supports. Refer to drawings for details.

All equipment and wiring within the treatment system enclosure shall be rated for a Class 1, Group D, Division 1 location. The scope of electrical work shall include:

- Supply and install a 230-volt, 100-amp, 4-wire, 3-phase electrical service at the remediation building exterior.
- Supply and install a 100-amp, 3-phase power distribution panel on the exterior wall of the remediation building.
- Install and provide power to control panel.
- Provide wiring and connections from all equipment, sensors, switches, and controls to their respective destinations at the control panel.

- Provide electrical connection and wiring from distribution panel to exhaust fan and thermostat.
- Supply, install, and wire a thermostatically controlled, explosion proof heater. The heater should be rated for approximately 3.6-kilowatt electrical heating. Power to heater shall be provided by a circuit breaker in the distribution panel.
- Supply, install, and wire an explosion proof ventilation fan and accessories to remove hazardous vapors that could potentially build up within the building and to control the ambient temperature. The fan shall evacuate air at a rate of approximately 2,300 cubic feet per minute (cfm) at 0.125 inches H_2O static pressure and be controlled by a thermostat within the building. Power to the ventilation fan shall be provided by a circuit breaker in the distribution panel.
- Provide, install, and wire specified explosion proof light fixtures. Lights will be controlled by a circuit breaker in the distribution panel.

ELECTRICAL EQUIPMENT

Equipment	Part # (Grainger)	Quantity
Heater	Model # 3UG35	1 each
Thermostat	Model # 2E449	1 each
Exhaust Fan	Model # 3XK52	1 each
Intake Guard	Model # 6D582	1 each
Shutters (intake/exhaust)	Model # 4C557	2 each
Thermostat with remote sensing bulb (for exhaust fan)		1 each
Light Mounting Hood	Model # 2V740	4 each
Lights	Model # 2V738 (200-watt bulbs)	4 each

7.0 REMEDIATION EQUIPMENT SPECIFICATIONS

The process and instrumentation (P & I) diagram for the dual phase extraction system is presented in the drawings.

All equipment must be fully warranted for a minimum of 1 year of operation. All shipping, unloading, and installation shall be included in the contractor's bid.

The contractor will supply operation and maintenance manuals for all components of the system.

A table summarizing the necessary remediation equipment and specifications is included (Table 1). The primary equipment identified on the P & I diagrams is discussed briefly in the following sections. All of the supplied equipment must be compatible with the complete system and sized appropriately for the operating flow, pressure, and temperature.

8.0 DUAL PHASE EXTRACTION EQUIPMENT

8.1 General

The purpose of this section is to provide bidders with a detailed specification for the dual phase equipment.

The dual phase system must be designed to remove any condensable liquids. All liquids recovered from the process shall be pumped through an air stripper located in the treatment building.

The dual phase equipment, including all pumps, valves, and gauges shall be prewired and prepiped as a skid mounted unit, as shown in the drawings. All equipment to be mounted on the skid is shown in the attached drawings. All equipment on the skid unit shall be installed according to the manufacturer specification. All equipment must be in accordance with the specifications in the equipment table. All gauges, valves, and any other controls must be accessible from the side as shown in the drawings. The skid shall be constructed such that a forklift can lift it from the bottom.

8.2 Dual Phase Manifold

The dual phase manifold will be constructed with 3-inch schedule 40 PVC, as shown in the drawings.

8.3 Vacuum Pump

The vacuum pump shall be an oil cooled aluminum rotary vane vacuum pump capable of continuous operation at vacuums of 0 to 29.53 inches of mercury (Hg). The flow rate shall be up to 95 actual cfm at 26 inches of Hg measured at the pump inlet. The motor on the pump shall be totally enclosed explosion proof (TEXP) and rated for use on 230-volt three-phase power. An appropriate vacuum relief valve, particulate filter, and any other necessary safeguards shall be included in the flow stream to prevent damage to the vacuum pump.

8.4 Vapor Liquid Separator (VLS)

The VLS must be compatible with the vacuum pump. The VLS shall have a minimum capacity of 120 gallons prior to activation of the pump out cycle. The VLS shall contain coalescing demister media to filter solid particles to 5 microns and to agglomerate and remove liquid droplets to 10 microns. The VLS shall be equipped with a site glass to allow visual confirmation of liquid level within the VLS. The VLS shall be equipped with a gasket and bolted access port to allow cleaning of internal components with a minimum diameter of 8 inches.

The VLS shall be equipped with intrinsically safe level switches as shown in the drawings to control pump operation and to shut down the system in the event of a high level. All wetted parts of the VLS and attached appurtenances must be rated for the vacuum of the system, and contact with chlorinated hydrocarbons.

8.5 VLS Transfer Pump

The VLS shall be equipped with an electric pump to allow removal of accumulated liquids. The pump shall be rated to pump against the vacuum in the separator or provision must be made to lower the vacuum in the separator to allow the pump to remove the accumulated liquid. The pumping system must be designed such that the pump will not lose prime between pump out cycles. The minimum pump capacity shall be 6 gallons per minute (gpm). The pumps wetted parts must be rated for contact with chlorinated hydrocarbons. The pump specifications and electrical requirements shall be in accordance with the equipment table and attached drawings.

8.6 Temperature Indicators

Two temperature indicators are required on the skid and shall be located on the process piping as shown in the drawings. The temperature indicators shall have a scale of 0 to 300° Fahrenheit, and have a full-scale accuracy of +/-1 percent. All temperature gauges shall be installed in an appropriate thermo well. Temperature indicator specifications are listed in the attached equipment table.

8.7 Vacuum Pressure Indicators

Vacuum pressure gauges are required and shall be located on the process piping as shown in the drawings. The vacuum gauges shall be glycerin filled and have a full-scale accuracy of +/- 2 percent.

8.8 Temperature Switches

To protect the vacuum pump, one temperature switch shall be installed in the process piping as shown in the drawings. This switch shall send a digital signal to the panel programmable logic controller (PLC) to shut down the system in the event of the process stream temperature exceeding system limits. The temperature switch shall have a span appropriate to the required limit of the vacuum pump and shall reset upon decreasing temperature.

8.9 Valves

All valves shall be located as indicated in the drawings and in accordance with the equipment table. Ball valves shall be full port, sized to match process piping diameter, and wetted parts shall be rated for contact with chlorinated hydrocarbons.

9.0 DUAL PHASE CONTROL PANEL

The panel to control the operation of all equipment located in the dual phase equipment building shall be located outside of the equipment building. The control panel will control operation of the dual phase extraction vacuum pump, solenoid valves, air stripper blower, exhaust fan, and the pumps. A single line electrical drawing showing all major electrical equipment and controls to be interfaced with the panel is included with the drawings.

The control panel shall be equipped with a Maple Systems interface to allow alphanumeric display of system faults and to control the sequence of operation of the 7 dual phase solenoid valves, and hand, off, auto (HOA) operation of motors.

The control system interface must be set up to allow programming of each individual solenoid's cycle and cycle duration by direct input to the supplied interface. The programming should be prompted with on screen directions such that minimal training is required to allow programming the solenoid sequences. The interface shall also have the ability to display the currently operating solenoids and hours and cycles each solenoid has operated.

A UL #508 panel shop must assemble the control panel with all components installed according to manufacturer specifications. All field electrical connections will be to an appropriately sized and labeled terminal block. The control panel shall be housed in a NEMA type 4X enclosure and will include:

- Circuit breaker and motor starter for the following:
  - Vacuum pump motor
  - VLS discharge pump motor
  - Air stripper blower motor
  - Air stripper discharge pump motor
- HOA switches for the following:
  - Vacuum pump
  - VLS discharge pump
  - Air stripper blower
  - Air stripper discharge pump
- Individual labeled green running lights which illuminate for each of the following:
  - Vacuum pump operating
  - VLS discharge pump operating
  - Air stripper blower operating
  - Air stripper discharge pump operating

- The control panel shall be equipped with a Maple Systems alphanumeric Interface with the following capabilities:
  - Readout of the following fault conditions with the ability to reset the system:
    - VLS high level
    - Air stripper blower low pressure
    - Vacuum pump high temperature
    - Air stripper high level
    - Air stripper vapor discharge high pressure
    - VLS discharge pump high pressure
  - Control of the 7 dual phase point and the VLS air bleed solenoid valves including:
    - HOA switching of each solenoid
    - ability to program solenoid operation sequences
    - display currently open solenoids
    - track and display operation hours and cycles of each solenoid
  - Display hours and cycles of operation of the following:
    - Vacuum pump
    - VLS discharge pump
    - Air stripper discharge pump
    - Air stripper blower
- PLC Direct #205 with the following inputs:
  - Auto switch for dual phase vacuum pump motor
  - Auto switch for VLS discharge pump
  - Auto switch for air stripper discharge pump
  - Auto switch for the air stripper blower
  - Level switch low, (LSL), level switch high (LSH), level switch high high (LSHH) level switches in the VLS (3)
  - LSL, LSH, LSHH level switches in the air stripper (3)
  - Temperature switches on the dual phase skid (1)
  - High pressure switch for VLS discharge
  - High pressure switch for air stripper air discharge

- Low pressure switch for air stripper blower
- Building floor sump float (1)

- PLC Direct #205 with the following outputs:
  - Motor starter for dual phase vacuum pump motor
  - Motor starter for VLS discharge pump motor
  - Motor starter for air stripper discharge pump
  - Motor starter for air stripper blower
  - Solenoid to each individual dual phase extraction point (7)
  - Treatment building exhaust fan

9.1 Control Panel Programming

The Contractor shall program the control panel PLC and the PLC interface. A telemetry program number (DRC-Chester 98 MMI Software) will be provided to the Engineer for remote system monitoring. In addition, an auto dialer (sensaphone model 1104) shall be provided. The auto dialer will notify Engineer in the event that any fault condition exists. The Contractor shall provide required control panel programming and telemetry training to the Engineer. The purpose of the training is to give the Engineer the ability to trouble shoot and/or make operational changes to the control system. The following is the control scenario for each major piece of equipment.

9.1.1 Dual Phase Blower

The dual phase vacuum pump will operate if the following conditions are true:

- The vacuum pump HOA switch is in the Auto position
- At least one dual phase point solenoid valve is in the open position
- None of the following system faults are activated:
  - HH level in the VLS
  - HH level in the air stripper
  - H pressure at PS-2
  - L pressure at PS-1
  - H temperature in the vacuum pump
  - H pressure at PS-3
  - H level in the floor sump

9.1.2 Vapor Liquid Separator Pump

The vapor liquid separator pump will operate if the following conditions are true:

- The VLS Pump HOA switch is in the Auto position
- Liquid level is at the H level control; pump will shut down when the liquid level falls to the L level control.
- None of the following system faults are activated
  - H pressure at PS-3
  - H pressure at PS-2
  - HH level in the air stripper
  - H level in the floor sump

9.1.3 Air Stripper Discharge Pump

The air stripper discharge pump will operate if the following conditions are true:

- The air stripper discharge pump HOA switch is in the auto position
- Liquid level is at the high level control; pump will shut down when the liquid level falls to the L level control.
- None of the following system faults are activated:
  - H pressure at PS-2
  - L pressure at PS-1
  - H Level in the floor sump

9.1.4 Air Stripper Blower

The air stripper blower will operate if the following condition is true:

- The VLS discharge pump is operating and continues 5 minutes after the pump cycles off.

9.1.5 Solenoid Valves

The dual phase extraction system consists of 7 individual extraction points. Solenoid valves on each line control the flow to each of the 7 points. Initial operation will consist of operating 2 points concurrently and cycle through the points. The control system must be flexible enough to allow alteration of the sequence of operation and the duration of each cycle. For example, at start up, all points will be cycled through for approximately 1 hour each. As more of the subsurface begins to establish a flow pattern, the cycles may become altered to increase the rate of fluid recovery.

The extraction point solenoid valves shall open if the following conditions are true:

- The vacuum pump is operating.

10.0 BUILDING

The treatment system enclosure shall be a single-story slab on-grade, wood frame building with exterior dimensions of 14 feet by 18 feet. The contractor should refer to the drawings for building specifications.

11.0 REMARKS

The information contained in these plans and specifications represent our professional opinions. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This plan was prepared by:

DELTA ENVIRONMENTAL CONSULTANTS, INC.

FOR

Dean Krebs, P.E.
Project Engineer

Date: 2-9-00

Reviewed by:

FOR

Stephen A. Zbur, P.G.
Project Manager

Date: 2-9-00

TABLES

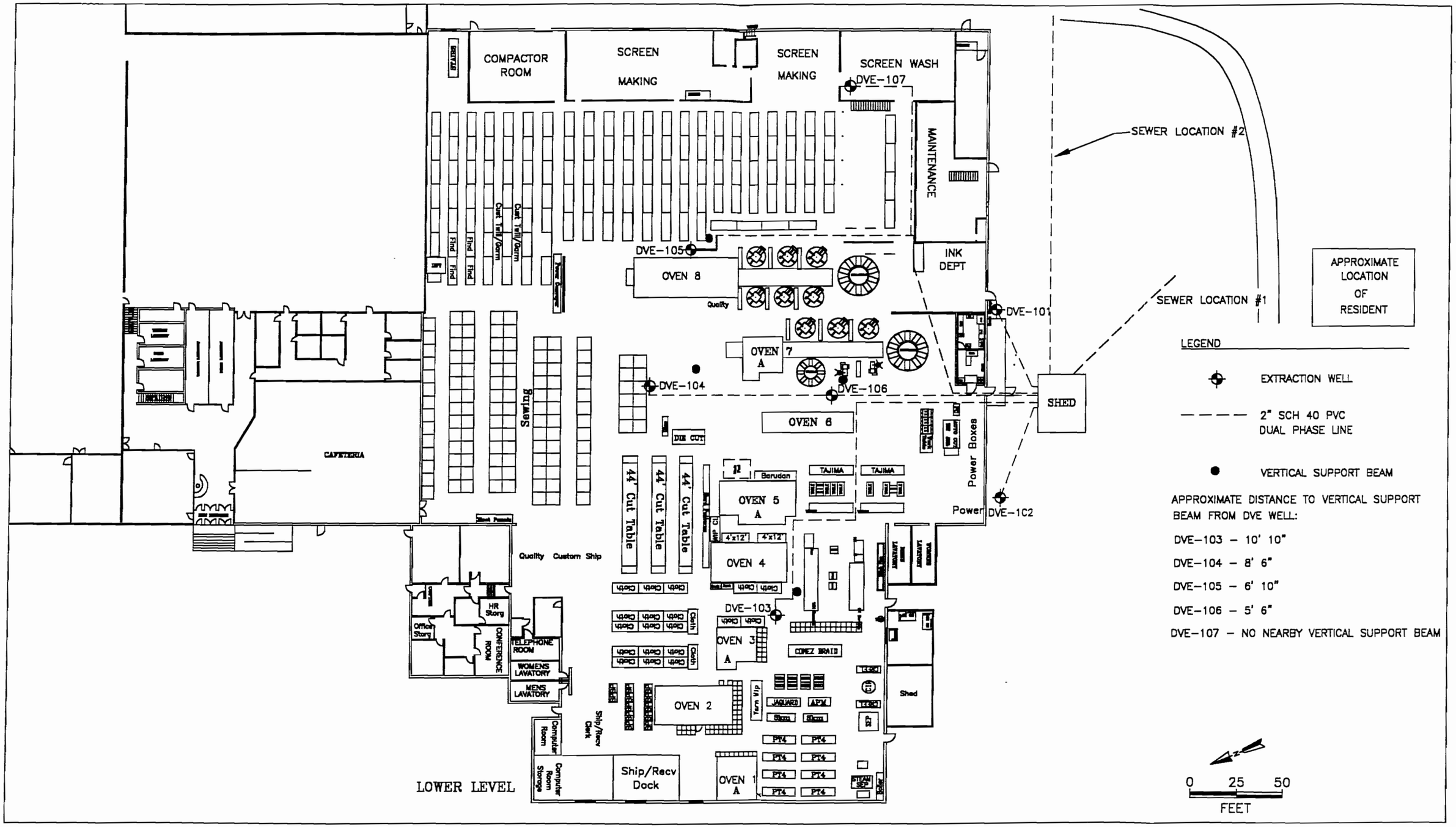
TABLE 1

EQUIPMENT LIST

Item	Description	Mfg/Supplier	Specifications	Qty.
VLS	Vapor Liquid Separator	Diversified Remediation Controls	DRC # QV-AWS-300 (120-gallon capacity)	1
VP	Oil Cooled Rotary Vane Vacuum Pump	Diversified Remediation Controls	DRC QV Series # 2-160, 230v/3ph/7.5HP	11
AS	Air Stripper	Shallow Tray	Model # 1331-P	11
B-1	Air Stripper Blower	Cincinnati Fan	#PB15A/150 cfm at 20" H_20, 230v/3ph/3HP	11
P-1	Progressive Cavity Transfer Pump	Moyno	#33301 (w/ viton conversation kit) 1750 rpm, 230v/3ph/1/2HP	11
P-2	Centrifugal Transfer Pump	Meyer	#CT05 0-6 gpm at 30psi, 230v/3ph/3/4HP	11
PF	Particulate Filter	Diversified Remediation Controls	DRC #QVF-16050 micron w/poly element	11
C1 / C2	Carbon Filters	Tetra Solv	HVVF-1000, 1,000-lb activated carbon	2
C3 / C4	Carbon Filters	Tetra Solv	HVVF-500, 500-lb activated carbon	2
SP-1 through SP-11	Sample Port	Specialty Mfg. Co.	1/4" mnpt, #0274B4M-B	11
BF-1 & BF-2	Bag Housings/Filters	FSI	Housings X-100B Bags – Bpong 50-XolwE	2
PS-1	Pressure Switch	Dwyer	#1950-2 (0.5-2 psi)	1
PS-2	Pressure Switch	Dwyer	#1950-5 (1.4-2 psi)	1
PS-3	Pressure Switch	Ashcroft	#B424V (0-60 psi)	1
PS-4	Vacuum Switch	Dwyer	#1910-20	1
FQ-1 & FQ-2	Flow Meter	Blancette	#W11.500 (0.75-7.5 gpm)	1
FI-1	Flow Meter	Erdco	#3213-8T1 (10-150 scfm)	1
FI-2	Flow Indicator	Dwyer	#2002 AV Magnehelic	1
FE-1	Flow Element	Dwyer	#DS-300-3	1
PI 1-5 PI 15-21	Vacuum Gauges	Wika	0-30" Hg, glycerin filled	12
PI 6-9, 14	Pressure Gauges	Wika	0-100" H_20, glycerin filled	5
PI 10-13	Pressure Gauges	Wika	0-60 psi, glycerin filled	4
TI-1 / TI-2	Dial Thermometer	Tell Tru	0-300F/bimetal/3" dial	2
BV-1 through BV-9	Control Ball Valve	Watts Regulator	Appropriately sized full port brass ball valve	9

Table 1
Equipment List
Page 2

Item	Description	Mfg/Supplier	Specifications	Qty.
BV-10 through BV-16	Control Ball Valve	Cresline	2" PVC full port ball valve	4
CV-1 through CV-4	Check Valve	Watts Regulator	Appropriately sized brass swing check valve	4
SV-1 through SV-7	Solenoid Valves	ASCO Red Hat	#EF8215-B-80, 2" (2-way/x-proof/120v)	7
SV-8	Solenoid Valve	ASCO Red Hat	#EF8215-B-50, 1" (2-way/x-proof/120v)	1
SW –1 through SW-7	Sight Glass	Dwyer	1.5" sight window #550	7
TS-1	Temperature Switch	Barksdale	100^0-350^0 F Range w/ stainless steel thermo well	1



Delta Environmental Consultants, Inc.

TITLE:
PIPING LAYOUT FOR SYSTEM INSTALL
CHAMPION PRODUCTS FACILITY
PERRY, NEW YORK

DWN: HLW	DES.:	PROJECT NO.: S098-009	
CHKD:	APPD:		
DATE: 10/13/99	REV.:	FIGURE NO.: 1	

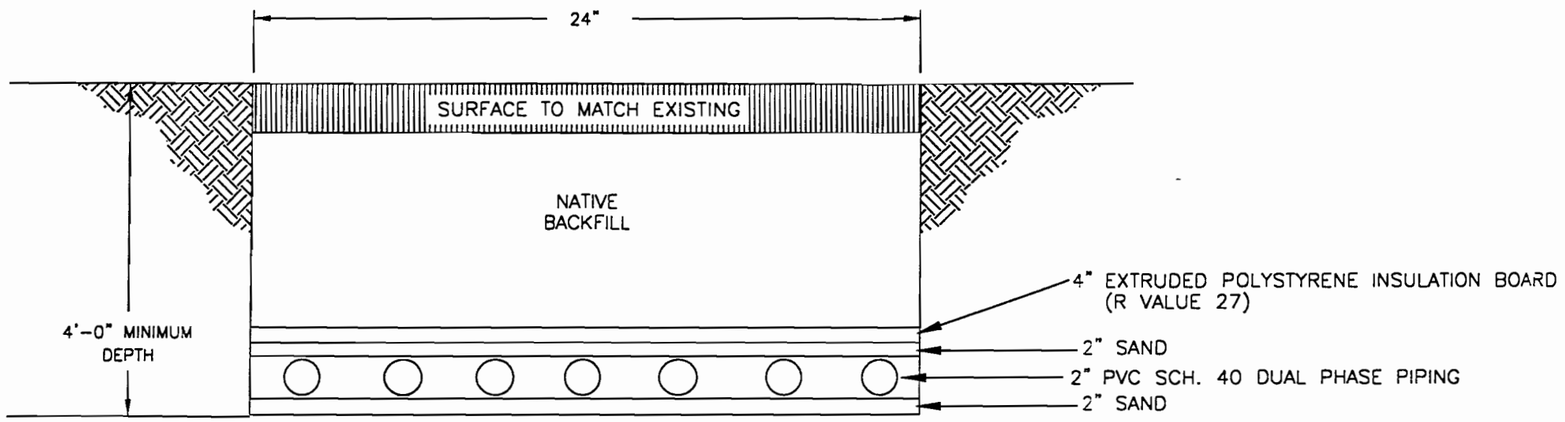
NOTES:

1.) SITE CONTRACTOR RESPONSIBLE FOR CONNECTIONS TO DUAL PHASE POINTS.

2.) BACKFILLING: PLACE AND COMPACT MATERIALS IN CONTINUOUS LAYERS NOT EXCEEDING 8 INCHES UNCOMPACTED DEPTH AND COMPACTED TO 95%. OF MAXIMUM DENSITY.

3.) 2" MINIMUM SAND BEDDING OVER AND UNDER LATERAL PIPING.

4.) REPLACE ALL SURFACE COVER TO ITS ORIGINAL CONDITION.

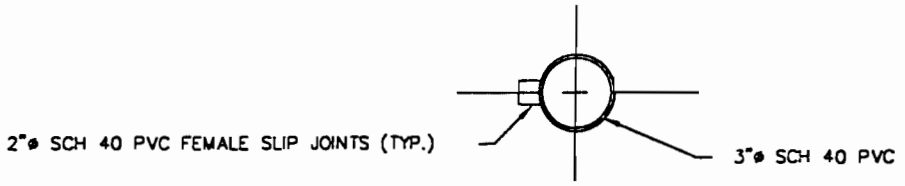


TYPICAL OUTDOOR TRENCH DIAGRAM–CROSS SECTION
NOT TO SCALE

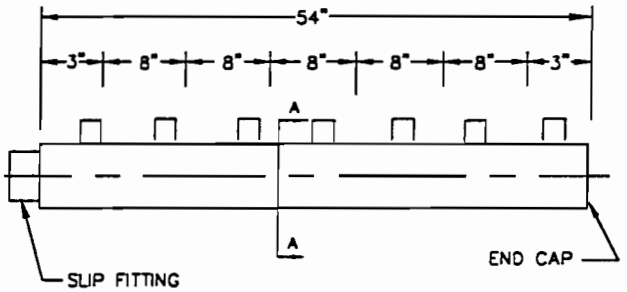
Delta Environmental Consultants, Inc.

TITLE:
UNDERGROUND CROSS SECTION
CHAMPION PRODUCTS COMPANY
PERRY, NEW YORK

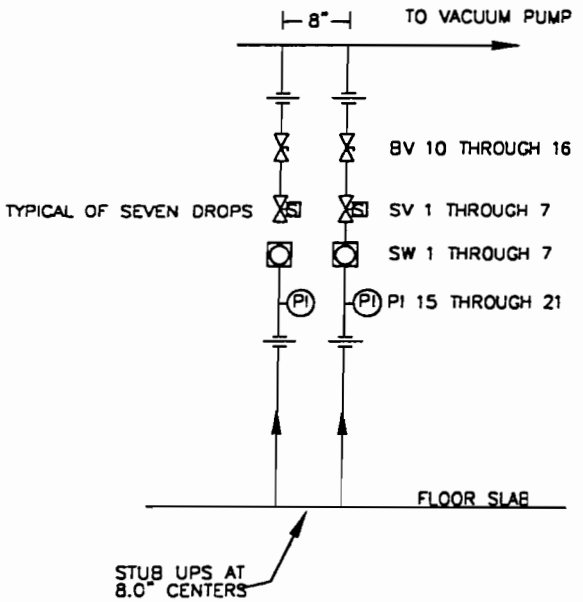
DWN: HLW	DES.:	PROJECT NO.: S098-009
CHKD:	APPD:	FIGURE NO.: 2
DATE: 12/06/99	REV.:	



SECTION A–A

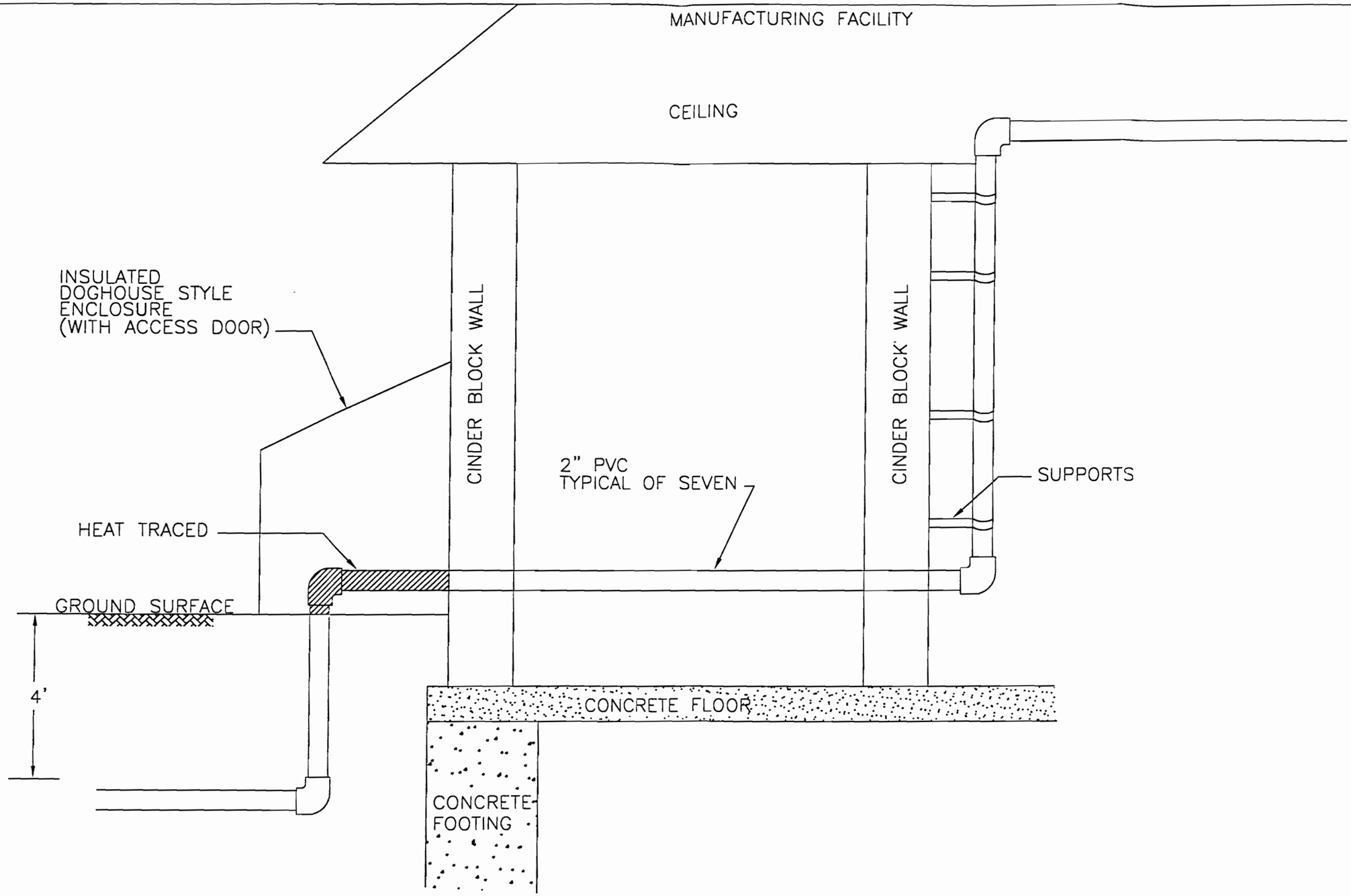


DVE MANIFOLD DETAIL
NOT TO SCALE



THIS DRAWING IS INTENDED TO SUPPLEMENT PROJECT DRAWINGS AND SPECIFICATIONS, WHICH TOGETHER SHALL BE USED FOR PERFORMING THE WORK. ALL BUILDING LAWS, RULES, AND REGULATIONS, HAVING JURISDICTION OVER THIS PROJECT, SHALL BE PART OF THE DRAWINGS AND SPECIFICATIONS PREPARED BY THE OWNER AND THE CONTRACTOR PERFORMING THE WORK AND SHALL BE COMPLIED WITH BY THE OWNER AND THE CONTRACTOR.

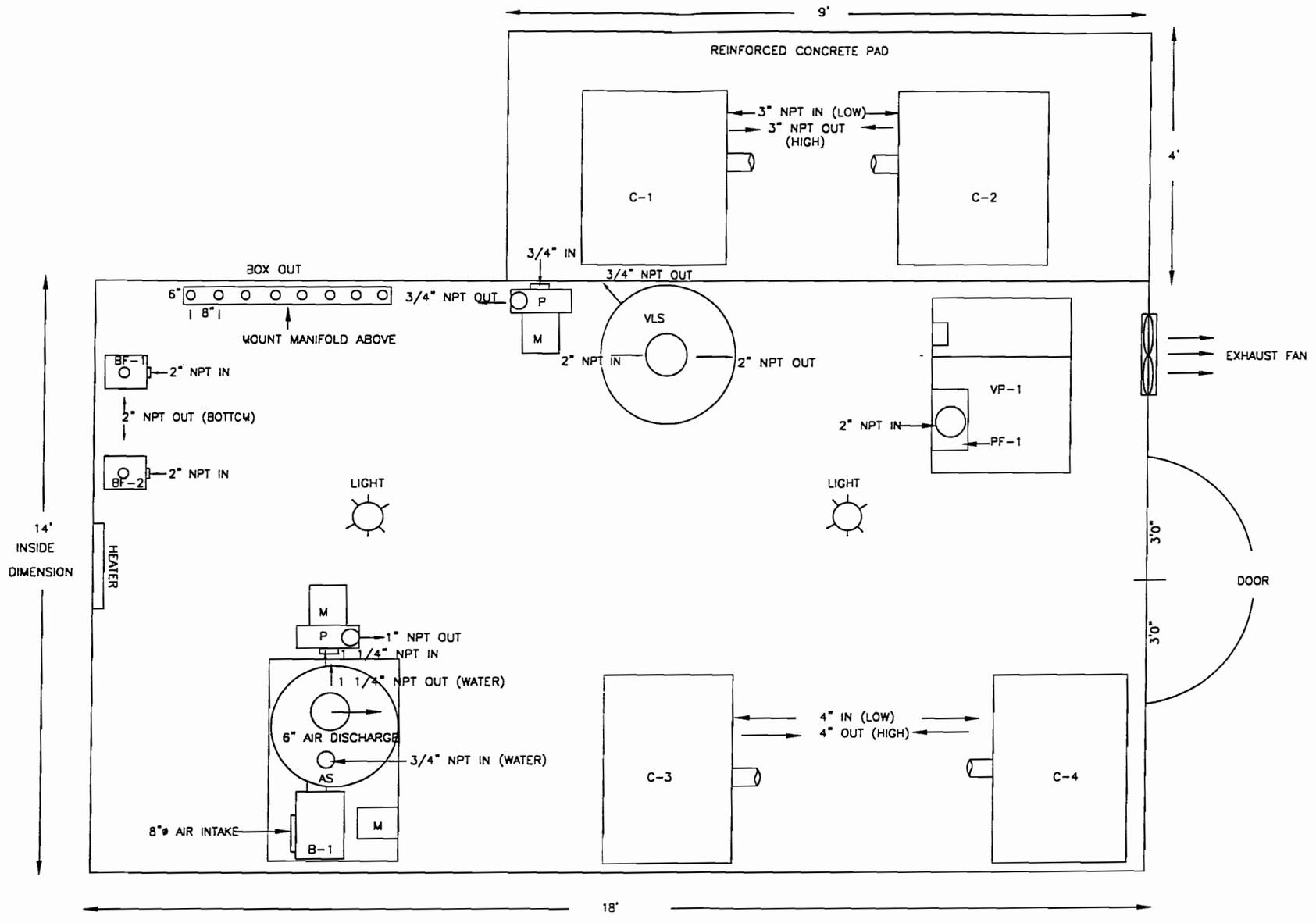
Delta Environmental Consultants, Inc.	TITLE: DROP AND MANIFOLD DETAIL CHAMPION PRODUCTS COMPANY PERRY, NEW YORK	DWN: HLW	DES.:	PROJECT NO.: S098-009
		CHKD:	APPD:	
		DATE: 12/28/99	REV.:	FIGURE NO.: 3



Delta Environmental Consultants, Inc.

TITLE:
FACILITY PIPING LAYOUT
CHAMPION PRODUCTS COMPANY
PERRY, NEW YORK

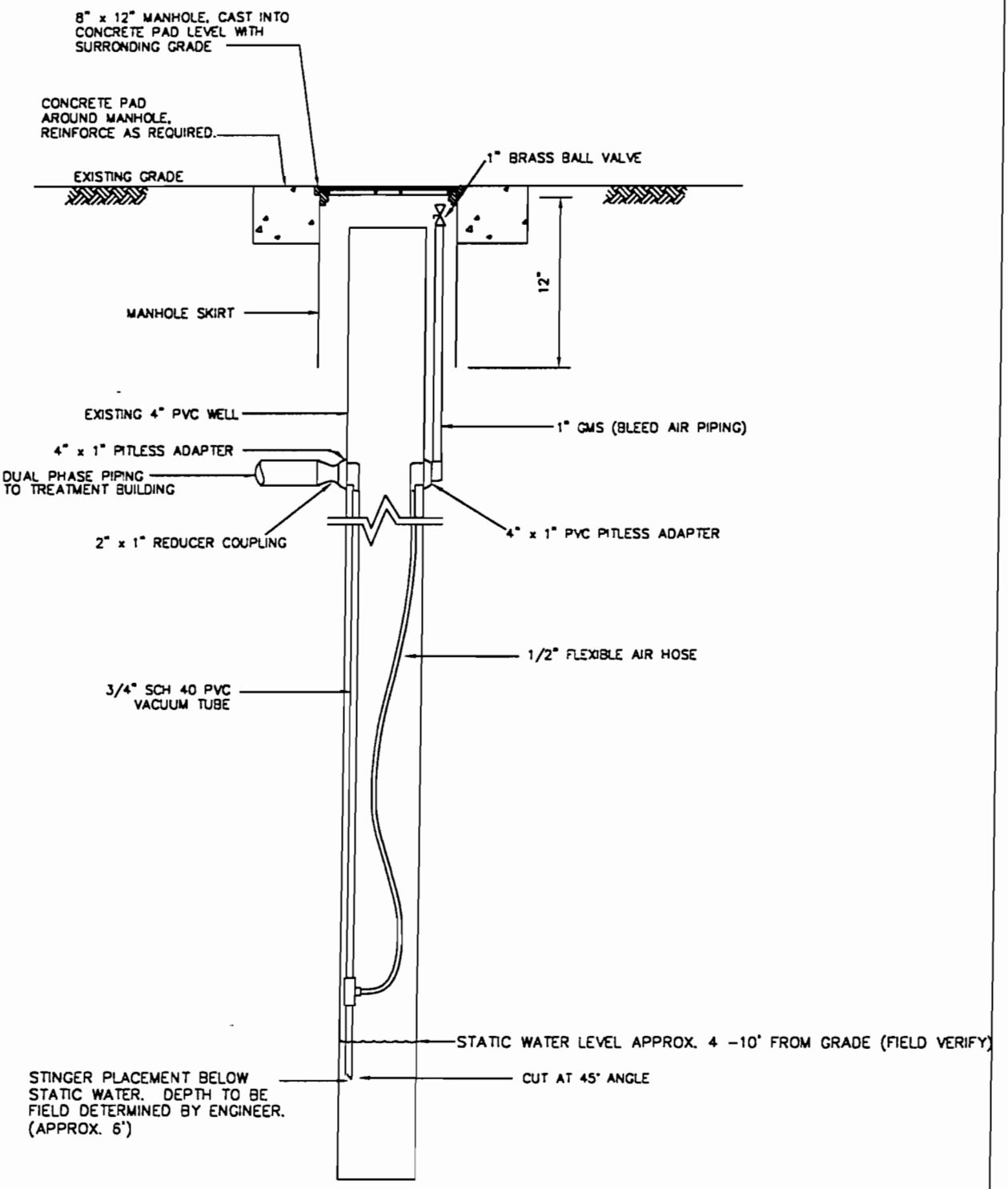
DWN: HLW	DES.:	PROJECT NO.: S098-009	
CHKD:	APPD:	FIGURE NO.: 4	
DATE: 12/28/99	REV.:		



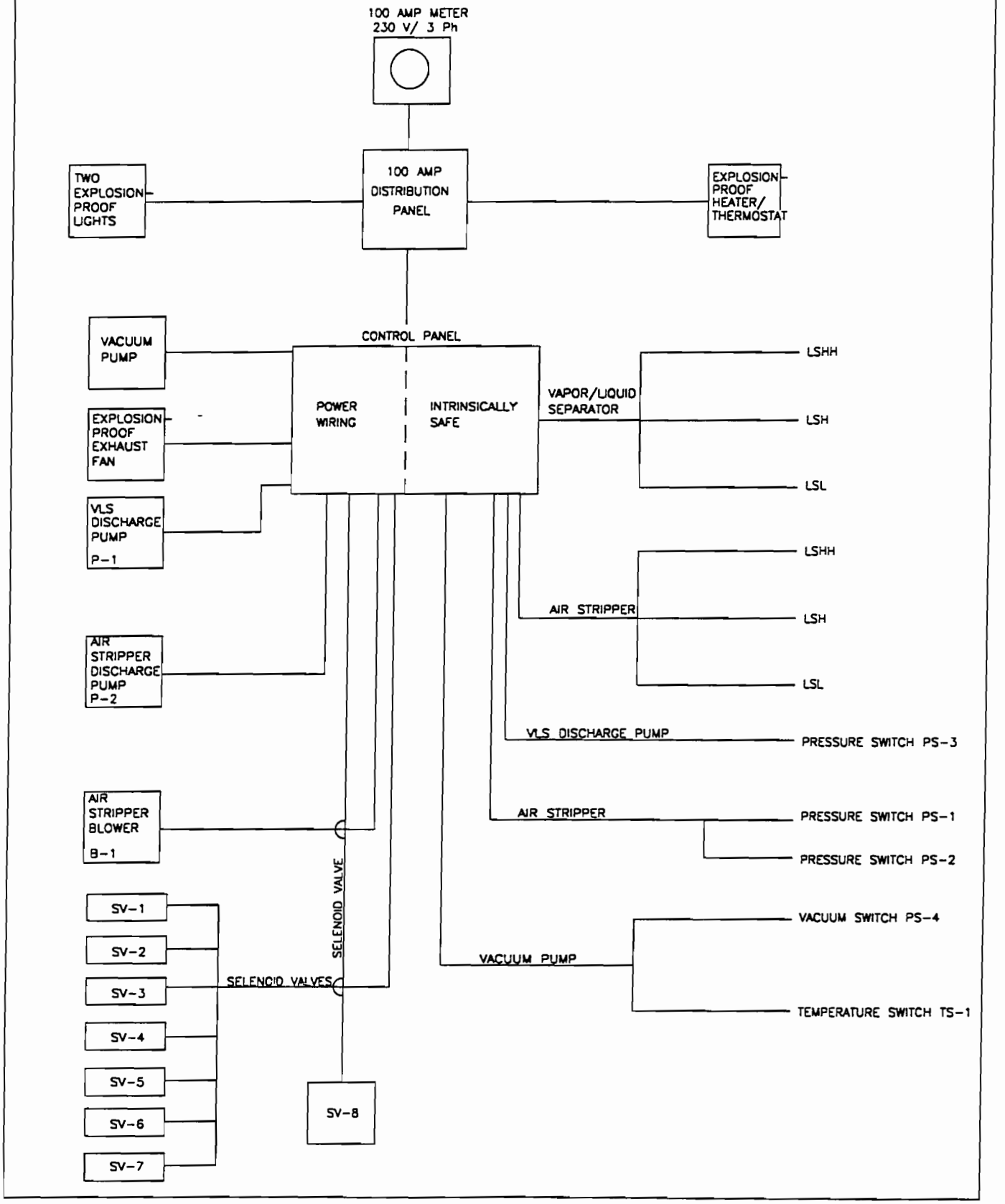
Delta Environmental Consultants, Inc.

TITLE:
EQUIPMENT LAYOUT
CHAMPION PRODUCTS COMPANY
PERRY, NEW YORK

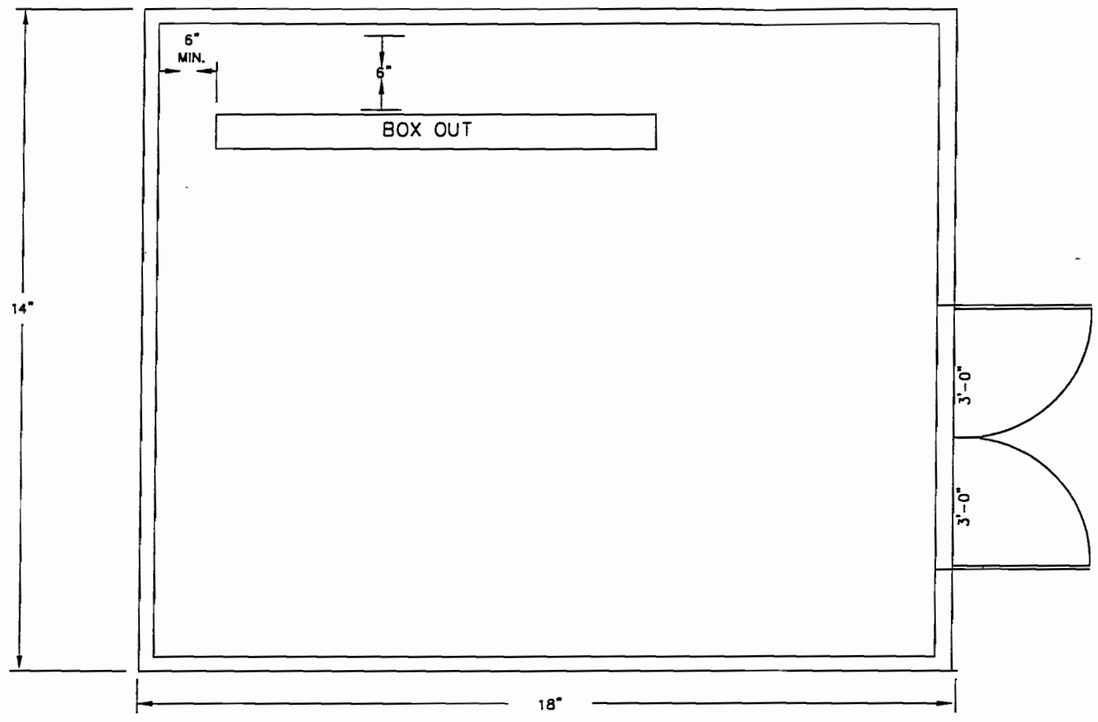
DWN: HLW	DES.:	PROJECT NO.: S098-009	
CHKD:	APPD:		
DATE: 12/28/99	REV.:	FIGURE NO.: 5	



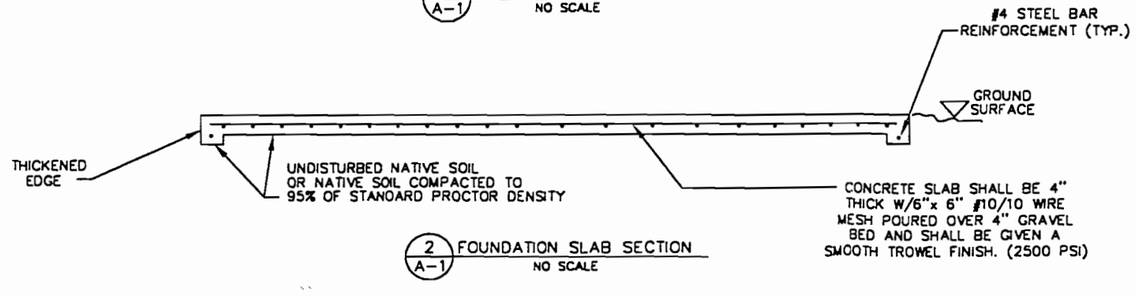
Delta Environmental Consultants, Inc.	TITLE: DVE WELL CONSTRUCTION CHARACTERISTICS CHAMPION PRODUCTS COMPANY PERRY, NEW YORK	DWN: HLW	DES.:	PROJECT NO.: S098-009
		CHKD:	APPD:	FIGURE NO.: 6
		DATE: 12/22/99	REV.:	



Delta Environmental Consultants, Inc.	TITLE: ELECTRICAL FLOW DIAGRAM CHAMPION PRODUCTS COMPANY PERRY, NEW YORK	DWN: HLW	DES.:	PROJECT NO.: S098-009
		CHKD:	APPD:	FIGURE NO.: 7
		DATE: 12/28/99	REV.:	



1 / A-1 FLOOR PLAN
NO SCALE



2 / A-1 FOUNDATION SLAB SECTION
NO SCALE

NOTES:

A. GENERAL

1. All debris, trash, and extra construction material to be removed from site by contractor.

B. CONCRETE

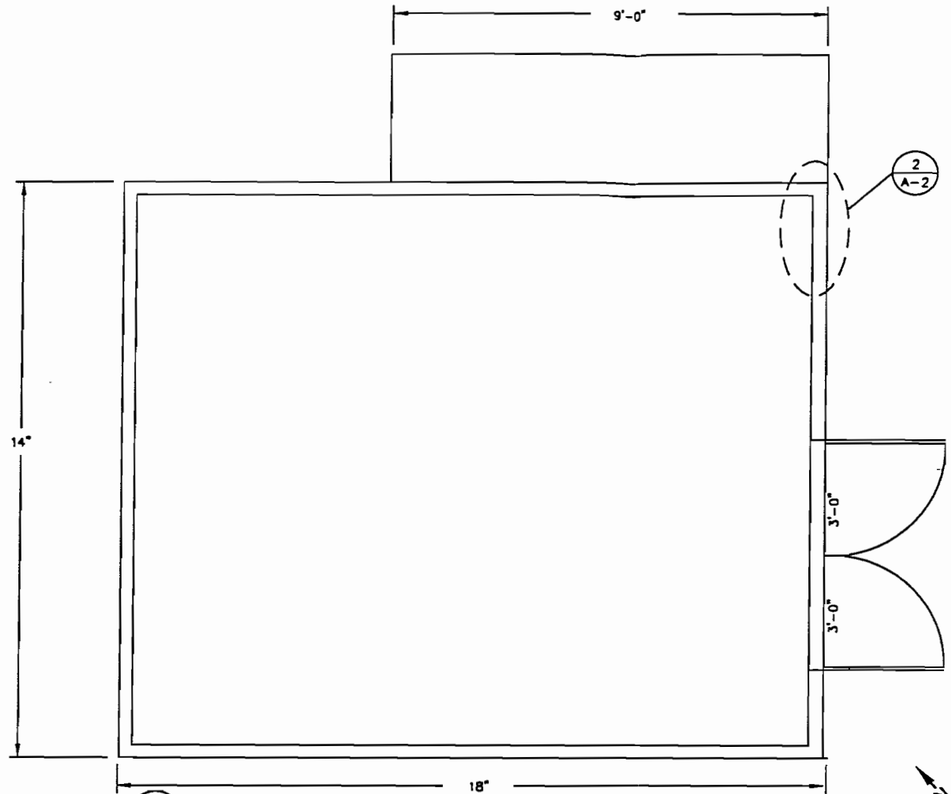
1. Base material to building slab must be compacted to 95% of standard proctor density.
2. Concrete shall be of such consistency and composition that it can be worked readily into all corners without voids and troweled to a smooth finish. Concrete mixture shall be rated at 2500 psi.
3. Top of slab elevation shall be 2 inches above top of existing grade.
4. When the atmospheric temperture may be expected to drop below 40 F. at the time concrete is delivered to the work sites during placement, or at any time during the curing period, the Contractor is to comply with all applicable provisions ofstate and local codes.

N

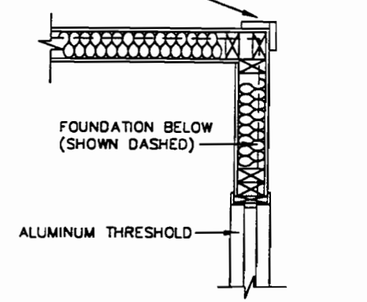
Delta Environmental Consultants, Inc.

TITLE:
BUILDING FOUNDATION AND FLOOR PLAN
CHAMPION PRODUCTS COMPANY
PERRY, NEW YORK

DWN: HLW	DES.:	PROJECT NO.: S098-009
CHKD:	APPD:	FIGURE NO.: 8
DATE: 12/22/99	REV.:	

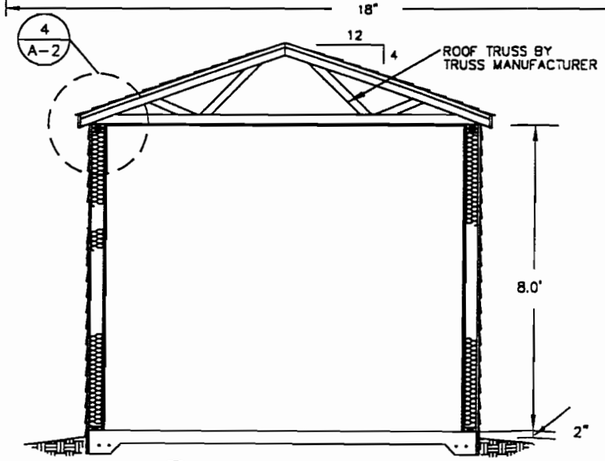


1 A-2 FLOOR PLAN
NO SCALE



INSULATED HM DOOR AND FRAME
FIELD INSULATE FRAMES AND
SURFACE MOUNT TO WOOD FRAMING
TO PERMIT REMOVAL OF DOOR
ASSEMBLY FOR EQUIPMENT EXCHANGE
FINISH DOOR GREY TO MATCH SIDING COLOR

2 A-2 CORNER DETAIL



3 A-2 BUILDING ELEVATION
NO SCALE

NOTES:

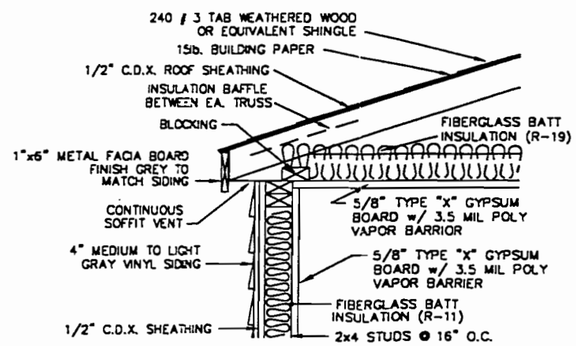
A. WALLS
1. Eight feet high.
2. Use two by four studs, sixteen inch on center.
3. Cover exterior of wall with 1/2 CDX sheathing.
4. Cover CDX sheathing with 5 inch medium to light gray vinyl lap siding.
5. Insulate inside with kraft faced 3 1/2" R11 fiberglass insulation.
6. Cover insulation with 3.5 mil poly ethylene vapor barrier.
7. Cover insulation on inside wall with 5/8 inch type X drywall.
8. Tape seams and nails on drywall.
9. Seal interior with white enamel sealer paint.

B. DOOR(S)
1. Install (2)-6 feet 8 inches high by 3 feet wide metal insulated doors as shown.
2. Doors to have hollow metal frame.
3. Install non-lockable door handle on door.
3. Install hasp type locking device on door.
5. Doors to open outward.

C. CEILING
1. Eight feet high.
2. Insulate with kraft faced 6 1/4 inch R19 fiberglass insuiction.
3. Cover insulation with 3.5 mil poly vapor barrier.
4. Cover insulation on inside with 5/8 inch type X drywall.
5. Tape seams and nails on drywall.
6. Seal interior with white enamel sealer paint.

D. ROOF
1. Four to twelve pitch with trusses 24 inch on center.
2. Cover with 1/2 inch CDX roof sheathing.
3. Cover plywood with tar paper (30 lb.)
4. Finish roof with black asphalt shingles. Nail shingles-do not staple.
5. Vent attic on gable ends or with aluminum continuous ridge vent.
6. Install aluminum continuous eve vent into soffit.
7. Gable ends to extend one foot over.

PROVIDE ATTIC VENTILATION
AS REQUIRED (PER 3205C) ON
RIDGE OR GABLE END.

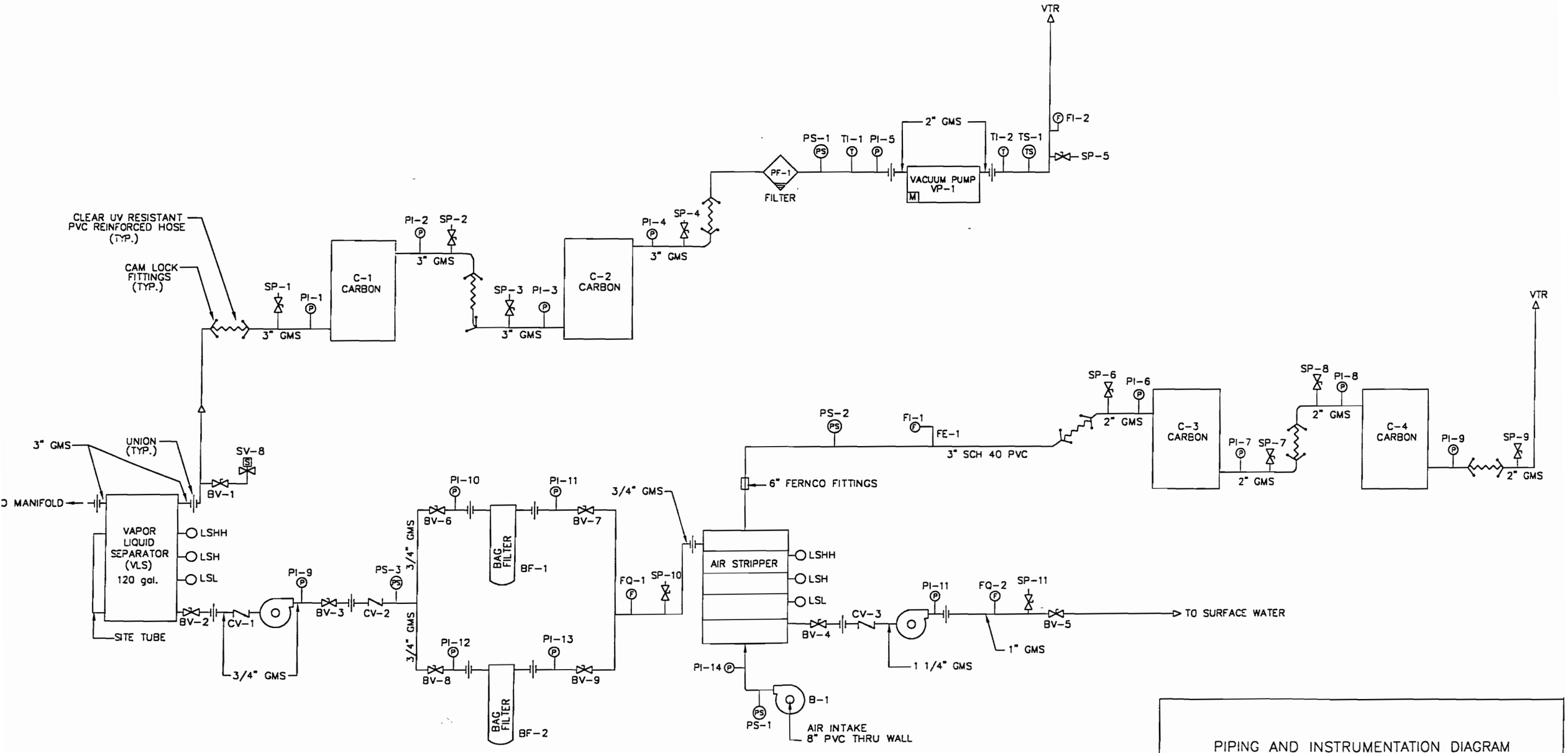


4 A-2 BUILDING ELEVATION
NO SCALE

Delta Environmental Consultants, Inc.

TITLE:
BUILDING DETAILS
CHAMPION PRODUCTS COMPANY
PERRY, NEW YORK

DWN: HLW	DES.:	PROJECT NO.: S098-009
CHKD:	APPD:	FIGURE NO.: 9
DATE: 12/22/99	REV.:	



PIPING AND INSTRUMENTATION DIAGRAM
CHAMPION PRODUCTS COMPANY
PERRY, NEW YORK

PROJECT NO.	PREPARED BY	DRAWN BY
S098-009	DK	DD
DATE	REVIEWED BY	FILE NAME
12/27/99		009-PIDB

Delta Environmental Consultants, Inc.

APPENDIX A

APPENDIX A

BID FORM

Champion Products, Inc.
Perry, New York
Delta Project No. S098-009

Item 1 – Site Work

No.	Description	Unit	Qty	Unit Costs	Total
1	General conditions (mobilization, traffic control, job site cleanup, preparation, OH, locate underground utilities, etc.)	LS	1		
2	Saw cut concrete (inside facility)	LF			
3	Hand trenching, backfill, compaction (inside facility)	LF			
4	Furnish and install 2", Schedule 40 PVC subgrade dual-phase piping including well connections (inside facility)	LF			
5	Concrete restoration (inside facility)	SF			
6	Trench excavation backfill, compaction, restoration for extraction well piping (outside facility)	LF			
7	Furnish and install 2" Schedule 40 PVC dual-phase piping in trench (outside facility)	LF			
8	Install existing dual-phase well access manholes (7 total)	EA	7		
9	Trench excavation, backfill, compaction, restoration for discharge piping	LF			
10	Furnish and install a 6' chain link fence with gate access around the vapor carbons.	LF			
11	Furnish and install 3" Schedule 40 PVC discharge piping to surface water	LF			

Item 2 – Equipment

No.	Description	Unit	Qty	Unit Costs	Total
1	Furnish and install all process equipment, controls, sensors, control panel, etc.	LS	1		
2	Furnish and install control panel	LS	1		

Item 3 – Mechanical

No.	Description	Unit	Qty	Unit Costs	Total
1	Furnish and install all mechanical process piping within the treatment system enclosure.	LS	1		
2	Furnish and install all above ground mechanical process piping within manufacturing facility.	LS	1		

Item 4 – Electrical

No.	Description	Unit	Qty	Unit Costs	Total
1	Furnish and install electrical power service complete from local utility	LS	1		
2	Supply, install and wire exhaust fan, heater, lighting and accessories	LS	1		
3	Install and wire control panel, all motors, sensors, solenoid valves, etc., as specified	LS	1		

Item 5 – Building

No.	Description	Unit	Qty	Unit Costs	Total
1	Furnish and install treatment enclosure	SF			

Alternatives or Substitutions

Equipment Item	Manufacturer	Addition or (Deduct) From Base Bid
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The Base bid price offered for all equipment, labor, and materials for the equipment as described in the specifications is:

_____ Dollars and _____ Cents $_____

Having received and examined the bidding documents, I, the undersigned bidder, submit this bid. The bidding documents I have examined include the project specifications and drawings for the subject project and addenda listed as follows:

1. Specifications dated _____
2. Addenda as acknowledged

No.	Date	No.	Date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Bidding Firm: _____

Address: _____

City, State, ZIP: _____

Date: _____

Telephone: _____

Owner Signature: _____

Owner Name: _____
(Printed)

DELTA ENVIRONMENTAL CONSULTANTS, INC.
STANDARD SUBCONTRACT FOR SERVICES

THIS AGREEMENT is effective on the _____ day of _____, 19___ by and between **DELTA ENVIRONMENTAL CONSULTANTS, INC.** ("Delta").

and

Contractor Name _____ ("Contractor")

Street Address _____

_____

City, State, Zip _____

Telephone No. _____

Contractor Contact Person: _____

Contractor License No. _____

with reference to the following: _____

Delta Project No. _____ Client _____ ("Client")

Delta and Contractor, in consideration of the mutual promises contained herein, agree:

Delta has requested and Contractor has agreed to provide the following work, including all labor, materials, equipment, and services required to complete the work (the "Work"):

_____
_____
_____
_____

Completion of the Work will be in strict accordance with Delta's work plan, attached (the "Work Plan").

This Agreement is subject to the following General Conditions:

1.0 COMPENSATION

1.1 Delta will pay Contractor based on the method checked below, under the terms and conditions herein set forth:

__ Billed in accordance with Contractor's current rate schedule, attached. The maximum charge that may be incurred without prior written authorization of Delta is $_____.

__ Billed in accordance with the bid set forth in Contractor's proposal, attached.

__ Lump Sum of $_____.

__ Other. Specify: _____.

1.2 Invoices or statements must be mailed to:

DELTA ENVIRONMENTAL CONSULTANTS, INC.

_____

_____

_____

Attention: (Project Manager)

Delta Project Number: _____

INVOICES WILL BE RETURNED TO CONTRACTOR IF THEY DO NOT SHOW CORRECT ADDRESS AND PROJECT NUMBER.

1.3 Contractor will be paid on or before the date that is forty-five (45) days after Delta receives Contractor's invoice in an agreed upon form and amount. Contractor will be paid for work that Delta determines Contractor has successfully completed. Contractor will not correspond with or contact the Client directly.

2.0 PERIOD OF SERVICE

2.1 Work will be initiated by Contractor within ____ days after the date of this Agreement with Delta and completed by Contractor within ____ days thereafter. Contractor acknowledges that time is of the essence in this Agreement.

2.2 Contractor solely will be responsible for the manner of performing the Work subject only to the reasonable direction of Delta as to the time, place, and order of performance, and Contractor will coordinate the Work with other contractors so that all scheduled operations on the project may proceed in an orderly and efficient manner and be completed within the time requirements of the project.

3.0 INSURANCE

3.1 Before beginning Work Contractor will provide Delta with certificates evidencing the existence of insurance policies, issued by carriers and in amounts and on forms acceptable to Delta, providing coverage as specified in Attachment I. All liability coverage carried by Contractor shall be primary to any insurance carried by Delta, Owner, Tenant or Client.

4.0 REQUIREMENT OF CONFIDENTIALITY

4.1 Contractor understands and acknowledges that, as part of its Work responsibilities, Contractor may have access to information and materials that Delta, the owner (the "Owner") or the current tenant (the "Tenant") of the property on which the Work is being done, or the Client may consider to be confidential or proprietary in the conduct of their respective businesses. Contractor agrees not to reveal or disclose to any outside party any confidential or proprietary information including, without limitation, the identity of Delta, Owner, Tenant, or Client or that Contractor is doing Work for any of them.

4.2 Contractor agrees to make all of its employees engaged in the Work aware of this requirement for confidentiality or take such other actions with respect thereto as Delta may require.

4.3 As used herein, confidential and proprietary information includes, but is not limited to, business information, the nature of the work being performed, and environmental clean-up methods, systems, plans, and designs. In the event that Contractor is required to disclose information to successfully prosecute the Work, Contractor will obtain Delta's written consent prior to release of that information.

5.0 RESPONSIBILITY FOR WORK / INDEMNIFICATION

5.1 Contractor assumes full responsibility for the Work. Until final acceptance of the Work by Client, Contractor will be responsible for damage to or destruction of the Work. Contractor will make no claims against Delta, Owner, Tenant, or Client for damages to the Work from any cause except, as to each respectively, the negligent or willful acts of Delta, Owner, Tenant, or Client.

5.2 Contractor will protect the Work site with lights, barriers, supports, signs, guards, or other means necessary to avoid injury or damage to persons or property.

5.3 Contractor will to the fullest extent permitted by law defend, indemnify, and hold harmless Delta, Owner, Tenant, and Client and any and all of their officers, employees, agents, or consultants (the "Indemnitees") from any claims, demands, losses, damages, costs, charges, and expenses of every nature and description, whether direct or indirect, active or passive, arising out of the performance of the Work under this Agreement, including injuries to any person (including Contractor's employees) or damages to any property. The indemnification obligation under this Section will not be limited in any way by limitations on the amount or type of damages, compensation, or benefits payable by or for Contractor under workers compensation acts, disability benefit acts, or other employee benefit acts.

5.4 It is expressly understood and agreed that the indemnification provided by Section 5.3 does not obligate Contractor to indemnify Delta with respect to Delta's negligence or that of Delta's officers, employees, agents, or consultants.

6.0 PERSONNEL DISCIPLINE AND SAFETY

6.1 Contractor will enforce strict discipline and good order among its employees and will not employ on the Work any unfit person, persons not skilled in the Work, or persons not trained as required by 29 CFR 1910.120, as amended. Prior to commencing Work, Contractor will provide Delta with a list in writing of the qualified individuals.

6.2 Safe practices are to be considered a priority for the performance of this Agreement. The Contractor will comply with all applicable federal, state, and local health and safety requirements including, but not limited to, the Occupational Safety and Health Act of 1970, as amended, the Construction Safety Act of 1969, as amended, and any other applicable statutes, ordinances, or regulations issued thereunder or otherwise related to the Work. The Contractor will also comply with the requirements of Delta's site safety plan or Contractor's own approved site safety plan ("Site Safety Plan") for the project.

6.3 Contractor will ensure that its workers use equipment suitable for personal protection level D, C, B, or A, as defined in the Environmental Protection Agency Standard Operations Safety Guide, 1992, and the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, 1985, or each as thereafter amended, when and as required under the Site Safety Plan.

6.4 Contractor is solely responsible for the safety of its workers but has an affirmative obligation to give notice to Delta of hazardous situations or practices. Notwithstanding Contractor's responsibility with respect thereto, Delta will have the authority to stop the Work, without notice, in the event of any situations or practices of Contractor or others as Delta will, in its sole discretion, deem to be unsafe or hazardous.

7.0 UTILITIES / PROTECTION OF PROPERTY

Contractor will contact the Owner or Tenant, as appropriate, and all utility companies for information regarding buried utilities and structures or overhead utilities; and will take reasonable precautions to prevent damage to visible or concealed property. To the extent reasonably possible, Contractor will restore the site to the condition existing prior to the Contractor's entry.

8.0 EXTRAS / DELAY

8.1 Delta will have authority to order in writing the omission or addition of, or change in, Work or material ("Extras"). Fair deductions or increases will be made in sums payable under this Agreement for Extras. No claim for extra compensation on account of Extras may be made by the Contractor unless the Extras are authorized in writing by Delta prior to the commencement of the Extras.

8.2 Contractor will give written notice to Delta of all claims for Extras, for extensions of time, and for damage for delays, or otherwise, within three days of incurring the Extras, requiring an extension, or experiencing a delay.

9.0 GUARANTY

Contractor guarantees all materials and workmanship and agrees to replace, at its sole cost and expense and to the satisfaction of Delta and Client, any and all materials adjudged defective, improperly installed, or otherwise unsatisfactory. Contractor will also indemnify, defend, and hold harmless Delta, Owner, Tenant, and Client from and against any and all liability, loss, or damage arising from materials and workmanship during the one (1) year immediately following completion and final acceptance of the Work, or, where applicable, for such longer period provided in any applicable manufacturer's warranty.

10.0 LAWS / LICENSES / LIENS

10.1 Contractor is an independent Contractor and will comply with all applicable federal, state, and local laws, regulations, or ordinances effective where the Work is to be performed under this Agreement; pay all costs and expenses connected with compliance; pay all taxes, assessments, and premiums under the Federal Social Security Act or any applicable federal or state unemployment insurance, disability benefit, old age benefit, or retirement act, all sales and use taxes, all personal property taxes, all transportation taxes, and all other taxes payable by reason of the Contractor's work; and furnish all necessary reports and information to the appropriate federal, state, and local agencies with respect to all of the foregoing.

10.2 Contractor will furnish at the unit prices or fees stated, all labor, materials, supplies, tools, equipment, and services, including field measurements, necessary to complete the Work specified, pay all costs in connection with the Work as bills become due, indemnify and save harmless Delta, Owner, Tenant, and Client from claims and mechanics liens on account of the Work, including, without limiting the generality of the foregoing, legal fees and disbursements paid or incurred by Delta to enforce provisions of this Section, and furnish Delta with satisfactory evidence that Contractor has complied with the preceding Section 10.1. Unless prohibited by law, Contractor agrees not to file any liens against any property on which Work is being done. In the event Contractor files any liens, Contractor will provide lien waivers to the extent of and upon payment of fees.

11.0 SUSPENSION OF WORK

Delta may at any time suspend the Work or any part of the work by giving notice to Contractor. The Work will be resumed by Contractor within three days after written notice to resume work. Contractor will be reimbursed for reasonable mobilization / demobilization expense incurred by the Contractor in connection with the Work under this Agreement as a result of the suspension.

12.0 DELTA'S REPRESENTATIVES

Delta may, at its option, place one or more representatives at the Work site ("Representatives"). Representatives will not give instructions or orders to Contractor's employees or workmen, but will communicate directly with persons designated as authorized representatives of Contractor. Representatives will observe Contractor's and other parties' progress, and facilitate communication between Delta and Contractor's authorized contact person. Representatives will not direct Contractor's operations. The presence on the work site of Representatives will in no manner diminish Contractor's responsibility for proper performance and supervision of the Work in accordance with the terms of this Agreement, including, without limitation, Contractor's obligations under Sections 5.0, 6.0, 7.0, and 9.0 hereof.

13.0 AUDIT

13.1 Contractor will maintain adequate books, payrolls, and other records satisfactory to Delta in connection with any and all work performed hereunder, and retain all books, payrolls, and records for a period of not less than three (3) years after completion of the Work. Contractor's records supporting all labor, material, equipment, travel, and subcontractor charges, and any other charges invoiced, will be in sufficient form to clearly document, support, and permit verification by the Representative's charges rendered to Delta by the Contractor. Failure to maintain adequate records as described above will be grounds for termination of this Agreement.

13.2 Contractor will permit Delta and its duly authorized agents or employees to have access at all reasonable times to review or audit the books and records maintained by the Contractor relating to any of the Work performed hereunder.

14.0 TERMINATION

This Agreement may be terminated at any time by Delta upon giving one (1) day written notice.

15.0 ASSIGNMENT

Contractor may not delegate duties or assign interest in this Agreement without the written consent of Delta.

16.0 EQUAL EMPLOYMENT OPPORTUNITY

Contractor will not refuse to hire, accept, register, classify, refer for employment, discharge any employee, or otherwise discriminate in employment against any employee or applicant because of age, race, creed, color, sex, sexual preference, national origin, religion, physical or mental handicap, disability, or veteran status of the applicant or employee unless based on good faith occupational qualification, and will comply with all applicable federal, state, and local laws including, without limitation, the Civil Rights Act of 1964, 42 United States Code Section 1983, Executive Orders 11246, 11375, and 11478, all as amended, and any other applicable statutes and ordinances, plans or programs, standards or regulations that relate to the Work.

17: DELTA SUBSIDIARIES / EFFECTIVE CONTRACT

"Delta", shall mean Delta Environmental Consultants, Inc., Delta Environmental Consultants of Michigan, Inc., Delta Environmental Consultants of North Carolina, Inc., Delta Environmental Consultants of Ohio, Inc., Delta Environmental Consultants of Illinois, Inc., or any other Delta Environmental Consultants, Inc., wholly-owned subsidiary. All rights and obligations under this Agreement shall run to Delta Environmental Consultants, Inc., its wholly-owned subsidiary or whichever engages the Contractor for the Work.

18.0 MISCELLANEOUS

18.1 The parties acknowledge that this Agreement supersedes all written and oral agreements, if any, between the parties, and that this Agreement constitutes the entire and only agreement pertaining to the Work to be performed hereunder.

18.2 Any provision or part of this Agreement adjudicated to be void or unenforceable under any law will be deemed deleted, such deletion to apply only with respect to the jurisdiction in which such adjudication is made, and all remaining provisions will continue to be valid and binding upon the parties. The parties agree that this Agreement will be reformed to replace the deleted provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the deleted provision.

18.3 If any legal action is necessary to enforce or interpret the terms of this Agreement, the prevailing party will be entitled to reasonable attorney's fees and costs in addition to any other relief to which the prevailing party may be entitled.

18.4 This Agreement will be binding upon and will inure to the benefit of the successors and assigns of the respective parties hereto.

18.5 This Agreement will be construed, the rights and obligations created hereby will be governed, and the remedies available will be provided in accordance with, the laws of the state in which the Work is being performed, regardless of the conflict of law principles applied by the courts of any jurisdiction. Venue and adjudication will be in that state.

18.6 Any of the terms or conditions of this Agreement may be waived at any time by the party who is entitled to benefit therefrom, but no waiver will affect or impair that right of the waiving party to require observance, performance, or satisfaction of any other term or condition hereof. Any of the terms or provisions of this Agreement may be amended or modified at any time by agreement in writing executed by each party hereto.

18.7 All provisions of this Agreement allocating responsibility between Delta and Contractor will survive the completion of the Work or termination of this Agreement

18.8 Contractor has authority to enter into this Agreement and any person signing on Contractor's behalf has been duly authorized to sign.

18.9 Addenda. The following addenda are incorporated by reference in this Agreement:

_____

_____

_____

SIGNATURES

Delta Environmental Consultants, Inc.	Contractor
_____	_____
Signature	Typed Name of Contractor
_____	_____
Typed Name	Signature
_____	_____
Title	Typed Name
	_____
	Title

ATTACHMENT I

INSURANCE REQUIREMENTS FOR
DRILLERS, TANK INSTALLERS, HAULERS, ETC.

GENERAL LIABILITY

General Aggregate Limit (other than Products-Completed Operations)	$2,000,000
Products - Completed Operations Aggregate Limit	$1,000,000
Personal and Advertising Injury Limit	$1,000,000
Each Occurrence Limit	$1,000,000
Fire Damage Limit	$50,000 (any one fire)
Medical Damage Limit	$5,000 (any one person)

CONTRACTORS POLLUTION LIABILITY — $1,000,000 per occurrence

AUTOMOBILE LIABILITY — $1,000,000 (combined single limit)

Required Endorsement for Haulers

- MCS90
- ISO CA 99 48 Endorsement (Pollution Coverage for Upset & Overturn)
- Naming Delta Environmental Consultants, Inc. as an Additional Insured

WORKERS COMPENSATION — Statutory

EMPLOYERS LIABILITY

Bodily Injury Accident:	$500,000
Bodily Injury/Disease Aggregate	$500,000
Bodily Injury/Disease Each Employee	$500,000

ALL RISK CARGO

Additional Requirement for Transporters of Delta or Client Property	$100,000

CONTRACTOR WILL ASSURE THAT ITS SUBCONTRACTORS (TO BE USED ONLY WHEN APPROVED BY DELTA) MEET THE INSURANCE REQUIREMENTS STATED ON THIS ATTACHMENT INCLUDING BUT NOT LIMITED TO THAT SUBCONTRACTORS WILL PROVIDE CERTIFICATES OF INSURANCE TO DELTA THAT NAME DELTA AS AN ADDITIONAL INSURED.

DELTA MUST BE NAMED AS AN ADDITIONAL INSURED (AND SO IDENTIFIED SPECIFICALLY ON THE INSURANCE CERTIFICATE) ON THE GENERAL LIABILITY COVERAGE.

ALL INSURANCE CERTIFICATES WILL PROVIDE THAT THE INSURANCE WILL NOT BE CANCELED OR COVERAGE CHANGED WITHOUT THIRTY (30) DAYS NOTICE TO DELTA.