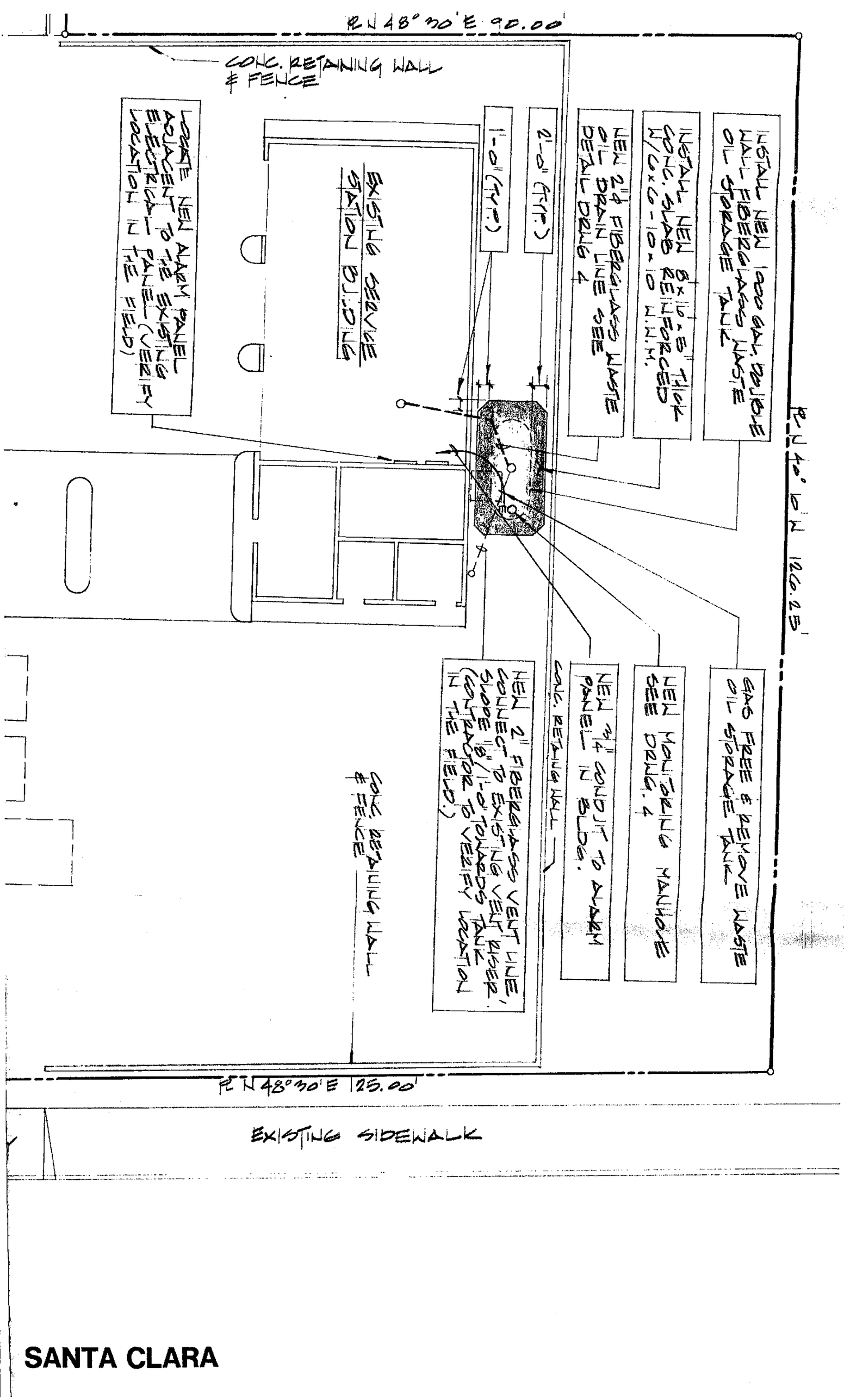
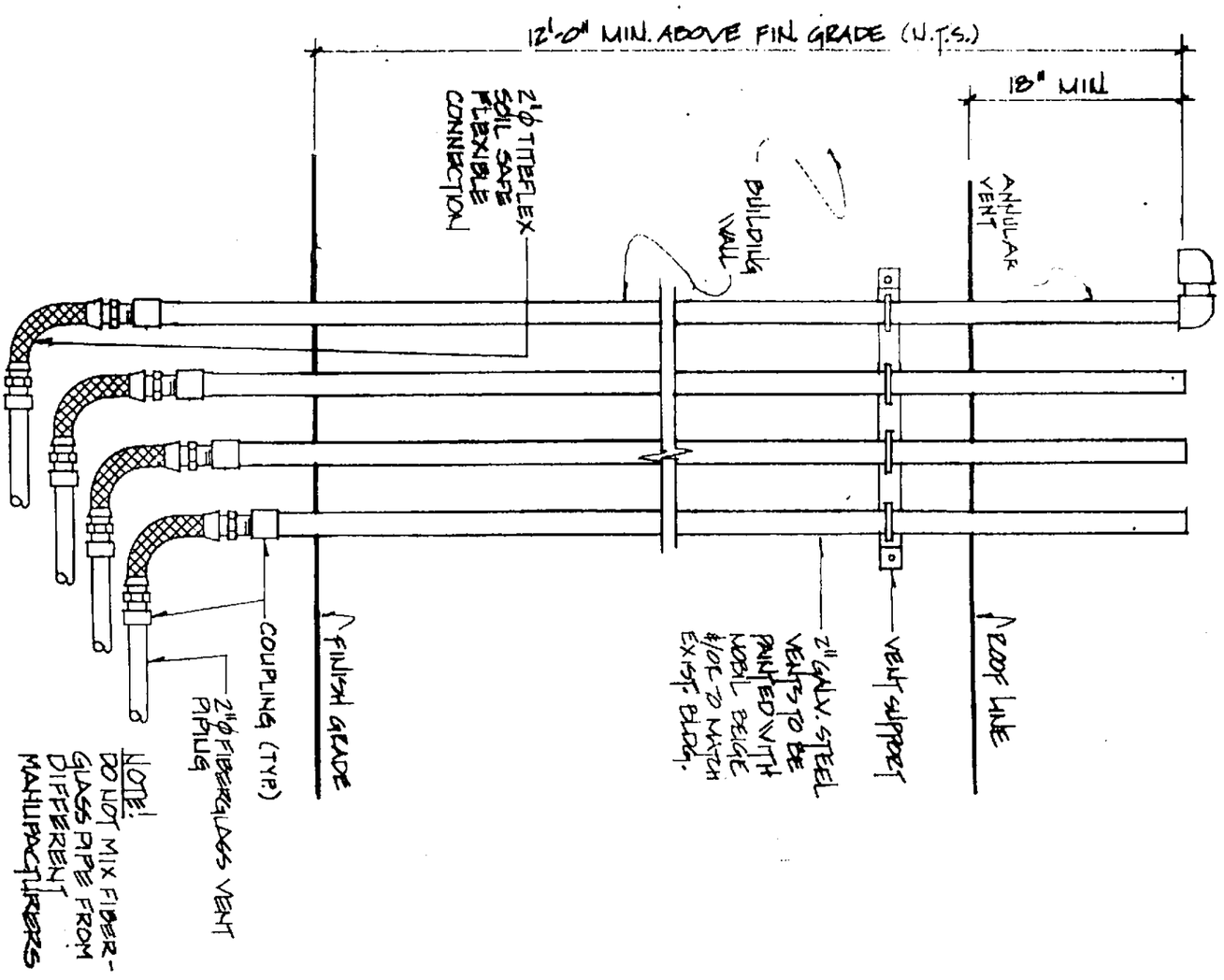

RN 48°30'E 90.00'
CONC. RETAINING WALL & FENCE
INSTALL NEW 1000 GAL. DOUBLE WALL FIBERGLASS WASTE OIL STORAGE TANK
INSTALL NEW 8'x16'-8" THK CONC. SLAB REINFORCED W/6x6-10x10 W.W.M.
NEW 2"ø FIBERGLASS WASTE OIL DRAIN LINE SEE DETAIL DRWG 4
2'-0" (TYP.)
1'-0" (TYP.)
EXISTG SERVICE STATION BLDG
LOCATE NEW ALARM PANEL ADJACENT TO THE EXISTG ELECTRICAL PANEL (VERIFY LOCATION IN THE FIELD)
RN 42°00'W 120.25'
GAS FREE & REMOVE WASTE OIL STORAGE TANK
NEW MONITORING MANHOLE SEE DRWG. 4
NEW 3/4" CONDIT TO ALARM PANEL IN BLDG.
CONC. RETAINING WALL
NEW 2" FIBERGLASS VENT LINE COLLECT TO EXISTG VENT RISER, SLOPE 1/8"/1'-0" TOWARDS TANK (CONTRACTOR TO VERIFY LOCATION IN THE FIELD.)
CONC. RETAINING WALL & FENCE
RN 48°30'E 125.00'
EXISTING SIDEWALK

SANTA CLARA

VENT PIPE RISER (AT BUILDING)

SCALE: 1" - 1'-0"



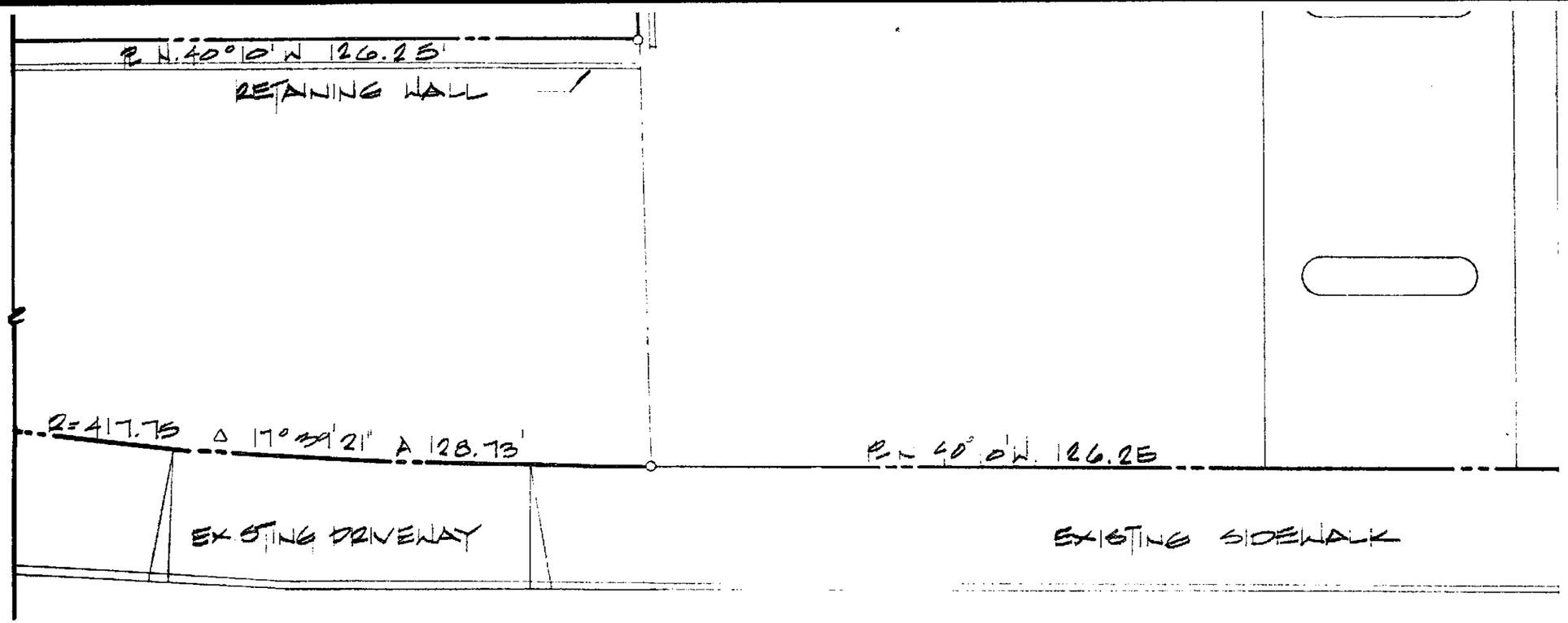
SED DESTROY ALL PRINTS BEARING EARLIER DATE

ROBERT H. LEE & ASSOCIATES, INC.

ARCHITECTURE PLANNING ENGINEERING

900 LARKSPUR LANDING CIRCLE, SUITE 125

LARKSPUR, CALIFORNIA 94939 [415] 461-8890



MAC ARTHUR BLVD.

SANTA

EXISTING DRIVEWAY

EXISTING DRIVEWAY

EXISTING SIDEWALK

S

W

E

NORTH

Project # U524579

Fee Paid $750.00

Date 6/28/88

NOTE!
BOXED-IN NOTES INDICATE NEW WORK.
ALL OTHER NOTES REFER TO EXISTING CONDITIONS.

NOTE!

CONTRACTOR TO PERFORM TANK TESTS AS REQUIRED BY LOCAL JURISDICTIONS PRIOR TO BACKFILLING EXCAVATION.

NO	BY	DATE	REVISE

MOBIL OIL CORP.

S.S# 10-E6A

100 MAC ARTHUR BLVD.
OAKLAND, CA

SITE PLAN

DATE

SCALE 1"=10'-0"

DRAWN BY C.C.

APPROVED

PROJECT NO.

DRAWING

1

1 OF 4

1.1 REMOVAL OF EXISTING TANKS AND PIPING SYSTEMS

A. Contractor, as part of the contract, will execute and comply with the Owner's, herein after referred to as Company, Tank Disposal procedures and with governmental authorities having jurisdiction over such work.

1. Company Rep. will be responsible for removal of all reusable product.

2. Drain all product lines.

- For pressure (STP) system gravity drain into tank by opening check valve at STP and the test port in shear valve. Disconnect line at STP union to drain/flush remaining product into an appropriate container.

- For suction pump system, disconnect from tank (low point) and gravity drain into appropriate container.

CAUTION: DO NOT INTRODUCE COMPRESSED AIR INTO LINES FOR PURPOSE OF EVACUATING PRODUCT FROM LINES.

3. Remove all flammable liquid from tank bottoms by using a hand pump to evacuate the remaining few inches. Dispose of tank bottom liquid remains per applicable regulations.

4. Dig down to top of tank and remove fill (drop tube), STP and all piping connections to the tank.

5. Temporarily plug all tank openings, complete excavation and remove the tank; placing it in a secure location. Block the tank to prevent movement. USE EXTREME CAUTION DURING REMOVAL OPERATION.

6. Remove flammable vapors.

Preferred method for conditioning tank.

Make vapors inert by adding 15 pounds of dry ice (carbon dioxide) per 1000 gallons of tank capacity.

The vapors in the tank may be made inert by adding solid carbon dioxide (dry ice) in the amount of 15 pounds per 1000 gallons of tank capacity. The dry ice should be crushed and distributed evenly over the greatest possible area to secure rapid evaporation. Avoid skin contact with dry ice because it may produce burns. As the dry ice vaporizes, flammable vapors will flow out of the tank and may surround the area. Hence, observe all normal safety precautions regarding flammable vapors. Make sure that all of the dry ice has vaporized.

7. After the tank has been freed of vapors and prior to moving from the site, plug or cap all holes. Use threaded (boiler) plugs to plug any corrosion leak holes. One tank fitting plug should have a 1/8-inch vent hole to prevent the tank from being subjected to an excessive pressure differential caused by extreme temperature changes.

8. No fiberglass or steel tank shall be reused. Render tank useless after removing from site.

9. As an added precaution, regardless of condition, the tank shall be labeled adjacent to the fill opening in legible letters as follows:

"TANK HAS CONTAINED FLAMMABLE LIQUIDS
NOT GAS-FREE
NOT SUITABLE FOR FOOD OR DRINKING WATER"

NOTE: Prior to junking gasoline tanks, the latest applicable waste disposal regulations should be checked to determine if special attention or preparation is required.

10. Remove tanks, product and vent piping in excavation from site at the earliest time possible. DO NOT DELAY DISPOSAL. Permanently abandon remaining product lines (from pump islands to tank area) by filling lines with a concrete slurry, or flush with water, and cap if permitted by local regulations.

11. For in ground waste oil tank, arrange for disposal of remaining liquid contents with authorized disposal service. (Effective November 1, 1985, waste oil under Federal Regulations will be classified as a hazardous waste).

- Uncover tank and disconnect attached piping.

- Plug tank openings and complete excavation.

- Remove tank and secure at grade.

- Mark tank as in Item 9 above and execute sale/disposal agreement with Contractor prior to construction.

- Assure tank disposal is in accordance with governing regulations.

12. Company Rep. and Contractor shall inspect open excavation for evidence of product leakage.

1.2 EXCAVATION AND BACKFILL OF UNDERGROUND TANKS (CONT'D)

c. Product lines shall be pitched 1/4" per ft. to pump blocks. Minimum pitch is 1/8" per ft.

d. Vent and vapor return lines shall be pitched 1/4" per ft.

e. 1/2" pipe diameter separation at cross-overs.

f. The Contractor is responsible for any design, materials, equipment, permits, etc., for shoring or side sloping a hole.

1.3 FILL AND BACKFILL

A. All fill material shall be of a granular nature, free from vegetation and extraneous material. Company Rep. shall inspect and approve the material before it is spread. Spread material in lifts not to exceed 12 inches and tamp thoroughly. When required by local code, General Contractor shall provide a compaction test for certification of fill.

B. APPROVED BACKFILL MATERIALS:

1. PEA GRAVEL. A clean, naturally rounded aggregate with a 1/8" minimum and a 3/4" maximum diameter. Up to 3% of the particles may pass through a #8 sieve.

2. STONE OR GRAVEL CRUSHINGS. Washed material, with particle size between 1/8" and 1/2". Up to 3% of the particles may pass through a #8 sieve.

3. Approved materials must be dry, free of ice and snow, and meet ASTM C-33, Para.9.1 for quality and soundness.

C. ALTERNATE BACKFILL MATERIALS (Defined as any material not meeting above requirements for approved materials):

1. Approval of Company Rep. is required prior to use of such material. In certain instances, the approval of the tank manufacturer may be required to preserve the tank warranty. Company shall obtain such approval.

2. Alternate materials, if used, must be dry and free of ice and snow. The tank hole sides must be shored or side sloped to permit entry for compaction and testing.

1.4 BEDDING OF TANKS

A. A 12" minimum bed of backfill material is to be placed in the hole, smoothed and sloped to allow a tank slope of 1" in 10' downward toward the fill end prior to setting the tank.

1.4 BEDDING OF TANKS (CONT'D)

1. When specified, the down "logs" shall be installed prior to be bed material. Caution - Do not place FRP tanks on concrete slabs, timbers, beams, cradles or grout the tanks in wet cement. The tank, whether tied down or not, must never be left on the bed without a backfill to the top of the tank if there is any chance of water, 12" or more above the tank bottom, in the hole.

1.5 OBSERVATION WELLS

A. If shown on drawings, two slotted observation wells in opposite corners of the tank hole, are to be installed: Sample wells are to be positioned in the hole prior to placing the bedding material and supported to remain vertical during backfill. Bottom of observation well is to be 12" minimum below the bottom of tanks. Top of pipe to terminate in 12" diameter fillbox. Slotted observation wells shall be provided by General Contractor, unless otherwise instructed by Company Rep.

1.6 TANK HOLE LINER

A. Contractor is to provide a Filter Fabric Tank Hole Liner when:

1. Tank hole is unstable soil, as defined above, or

2. Specified by Company Rep. The entire tank hole (sides and bottom) shall be covered. Lay the fabric with 2 foot minimum overlaps.

3. Bedding material, tie-down "logs" and sample wells are to be placed on the top of the filter fabric. Excess fabric at the top of the hole should be folded over the backfill material at subgrade level.

B. APPROVED FILTER FABRIC MATERIAL:

Dupont "Typar" Spunbound Polypropylene - Style 3401
Phillips Fibers Corp. - "Supac" Fabric
Monsanto - "Bidim" C22
or approved equals

1.7 BALLAST

A. Water is to be used as ballast under all conditions where ballast is required.

1. DRY HOLE CONDITION: Tanks, with backfill to top of tanks, must be ballasted if there is any chance that surface or subsurface water will enter the tank hole to a depth of 23" or greater above the bottom of the tanks. Caution - Do not ballast tanks until backfill is to top of tanks.

2.2 HANDLING OF FRP TANKS (CONT'D)

E. DAMAGE: If tank is damaged, do not attempt repairs. Company Rep. is to be notified and will determine the course of action that will be followed.

F. SETTING: Set tanks on prepared bed with a slope downward toward the fill end of the tank. A slope of 3" difference between the two extreme openings of the tank is desired. The acceptable range of slope is 4" maximum and 2" minimum with the fill end lower than remote pump end of the tank. Tanks that exceed the acceptable slope or that slope downward to the remote pump end are improperly set and must be reset.

G. INSTALLATION WITH APPROVED MATERIALS: Place a 12" lift of backfill evenly around the tanks. Push backfill completely underneath the tank between the ribs and under the end caps. This is the most important part of the backfill process. Procedure can be done from bank or adjacent tank top. If a man will be in the hole to "work" the backfill, hole must be shored or side sloped as prescribed by current OSHA regulations.

1. Place second 12" lift or backfill evenly around the tanks. Again, repeat the "working" or backfill between the ribs and under the end caps. Add backfill evenly around the tanks up to the tops of the tanks.

2. Backfill to subgrade after piping and testing is completed.

H. INSTALLATION WITH ALTERNATE MATERIALS: All alternate materials must be compacted to 90% relative density (ASTM D-1557-70). Contractor is to furnish with certification of compaction from a registered soil engineer.

1. Company Rep. is responsible for providing the exact installation specification for alternate materials.

2.3 TESTING OF TANKS
(Notify the Company Rep., who MUST observe all tests, at least 24 hours in advance of any tests.)

A. The Contractor is responsible for all labor, material and equipment necessary to conduct the following tests:

Pre-Installation Pressure Test, Air
After-Installation Pressure Test, Air or Hydrostatic
Internal Measurements

1. ACCEPTABLE "SOAPS": "Soaping" the tank and fittings during the test is to be done using a small garden-type hand-pressurized spray unit. The test soap shall be a high foaming "soap" that bubbles easily if in contact with an air leak in the tank but won't bubble due to dispensing from the pressure applicator. Acceptable soaps are:

2.3 TESTING OF TANKS (CONT'D)

"Seam Test Concentrate"
"Amway Loc High Soap"
"#7006 Southbend Leak Detector"
or approved equals

2. PRE-INSTALLATION PRESSURE TEST, AIR: Extreme care is to be used around and near the pressurized tank.

a. Tanks are to be tested to 4 psig minimum (5 psig maximum) before being installed in the tank hole. The entire tank and fittings are to be soap tested. Tank may be rolled up to 90 degrees on a smooth clean surface during this test. The Company Rep. is to witness and record the results of this test.

b. A pressure relief system set at 5 psig is to be installed in the vent opening.

c. The pressure application system is to have two pressure gauges (0 to 10 psig maximum) in the system, both in good condition and having been tested and calibrated within a three-month period prior to the tank test (copy of the test and calibration data to be furnished to the Company Rep.). Caution: Be sure to relieve the pressure prior to moving the tank or removing any of the fittings.

d. Do not install a tank which shows any evidence of leaking. The Company Rep. is to be notified and will determine the course of action that will be followed.

3. AFTER INSTALLATION PRESSURE TEST, AIR OR HYDROSTATIC: Extreme care is to be used around and near the pressurized tank.

a. Tanks are to be tested to 4 psig minimum (5 psig maximum) after being installed in the tank hole and the backfill material is to the top of the tanks. All risers, bushings, plugs, and pipe connections are to be installed and tight prior to the application of the test. The Company Rep. is to witness and record the results of this test.

b. A pressure relief system set at 5 psig is to be installed in the vent piping downstream of the swing joint at the tank.

c. The pressure application system is to be the same as specified in the pre-installation pressure test.

d. All tank fittings and pipe connections are to be thoroughly soaped and checked for leaks while the

regulations.

12. Company Rep. and Contractor shall inspect open excavation for evidence of product leakage.

1.1 REMOVAL OF EXISTING TANKS AND PIPING SYSTEMS (CONT'D)

13. TAKE SOIL SAMPLES FROM EACH CORNER AND FROM THE MIDDLE OF THE TANK EXCAVATION AFTER THE EXISTING TANKS HAVE BEEN REMOVED AND SUBMIT TO A QUALIFIED LABORATORY FOR ANALYSIS FOR AROMATIC HYDROCARBON (GASOLINE) CONTENT. A COPY OF THE SOIL ANALYSIS, INCLUDING LOCATION OF SAMPLES, SAMPLING METHODS, TEST PROCEDURES AND TEST RESULTS SHALL BE FURNISHED TO THE FIRE PREVENTION BUREAU AND TO THE REGIONAL WATER QUALITY CONTROL BOARD. SOIL SAMPLES SHALL BE TAKEN BY AN INDEPENDENT QUALIFIED TECHNICIAN.

1.2 EXCAVATION AND BACKFILL OF UNDERGROUND TANKS

A. EXCAVATIONS: Excavate only to the depths required by the plans, or as instructed by Company Rep. If unexpected water condition or rock is encountered, immediately contact the Company Rep. for instructions before proceeding with the excavation.

1. TANK HOLE SIZE IN STABLE SOIL: Size excavation perimeter to allow 24" minimum between tanks and 24" minimum between tank sides and end caps and the wall of the tank hole.

2. TANK HOLE SIZE IN UNSTABLE SOIL: Unstable soil is defined as having less than 750 lbs./sq.ft. cohesion, as calculated from an unconfined compression test, or soils with an ultimate bearing capacity of less than 3,500 lbs./sq.ft. Loose sand, muck, bog, peat, swamp or landfill where soil is soft are generally considered unstable soils.

a. Size excavation perimeter to allow 24" minimum between tanks and a minimum of half the tank diameter between the tank sides/end caps and the wall of the tank hole.

b. Filter fabric will be used to line tank hole in unstable soil.

c. Permanent shoring may be used to stabilize the walls of the tank hole, at the discretion of the Contractor and/or Company Rep. If permanent shoring is used, follow "Stable Soil" size criteria. Refer to "Alternate Backfill Materials" below.

3. DEPTH OF TANK HOLE: Contractor is responsible for establishing the tank hole depth, considering the length of piping runs, to the pump blocks and vent risers, pipe burial depth, yard slope and the following criteria: (Measure at the Remote Pump opening).

a. A minimum of 12" of backfill material is required under the tanks.

b. The minimum depth of cover for FRP tanks is 4'0" and the maximum is 7'0" (not to be exceeded).

ballast is required.

1. DRY HOLE CONDITION: Tanks, with backfill to top of tanks, must be ballasted if there is any chance that surface or subsurface water will enter the tank hole to a depth of 23" or greater above the bottom of the tanks. Caution - Do not ballast tanks until backfill is to top of tanks.

1.7 BALLAST (CONT'D)

2. WET HOLE CONDITION: Attempt to pump water from the tank hole to maintain a "Dry Hole Condition". If unable to obtain a "Dry Hole Condition", Company Rep. is to be notified and will determine the course of action to be followed. Install filter fabric, tie-down "logs" and bedding as specified elsewhere. Set tank in hole, partially fill with water until it sinks firmly on the bed. Use only enough water to ballast tank until backfill is to top of tank. After backfill to top of tank, fill tank with water until completion of installation. Caution - Ballast level must never exceed water or backfill level in the hole during installation. Do not remove ballast until tank slab has been poured. (DO NOT SET SUBMERSIBLE PUMP MOTOR UNTIL BALLAST WATER HAS BEEN REMOVED FROM TANK).

1.8 TANK HOLD-DOWNS (Tie Downs)

A. Install hold-down "logs" at all locations with known water conditions and at those locations where water is found during tank installations. Refer to "Tank Hold-Down" fabrication and installation requirements of these specifications.

2.1 UNDERGROUND TANKS

A. MATERIALS: Fiberglass reinforced plastic (FRP) storage tanks as supplied by the Owner are to be installed by Contractor in accordance with the plans and specifications and manufacturer's recommendations.

2.2 HANDLING OF FRP TANKS

A. LIFTING & MOVING: When lifting or moving an FRP tank, always use properly sized equipment and lift by lifting lug(s). On large tanks, greater than 8' diameter, use a spreader bar to ensure a lift angle of at least 45 degrees at each lifting lug.

B. 1. Never roll or use cables or chains around an FRP tank. Set on smooth ground, free of rocks and foreign objects. Exception: Tank can be rolled up to 90 degrees on a smooth clean surface when performing the "pre-installation" pressure test.

C. CHOCKING: Tanks are to be chocked in accordance with manufacturer's recommendation until ready for installation. If windy conditions exist or are expected, anchor tanks using minimum 1/2" nylon or hemp rope over each tank and secure to stakes of adequate size to prevent movement of the tanks.

D. OPENINGS: All tanks are shipped with dust covers in each opening. Dust covers are to remain in each opening until ready for the pre-installation pressure test. Replace dust covers after this test has been completed.

b. A pressure relief system set at 5 psig is to be installed in the vent piping downstream of the swing joint at the tank.

c. The pressure application system is to be the same as specified in the pre-installation pressure test.

d. All tank fittings and pipe connections are to be thoroughly soaped and checked for leaks. Hold the test for 30 minutes to check the tank for damage during installation. Caution: Be sure to relieve the pressure prior to removing any fittings.

2.3 TESTING OF TANKS (CONT'D)

e. If the tanks are ballasted, conduct a Petro Tite Hydrostatic Test (instead of an air test) on the tank and fittings.

f. No tank that shows any evidence of a leak is to be kept in the system. Any damage incurred to the tank during the installation will be the Contractor's responsibility. The Company Rep. is to be notified of any damage and will determine the course of action to be followed.

4. INTERNAL MEASUREMENTS: Internal Diameter measurements are to be taken at the fill and the remote pump openings, on every FRP tank. The Contractor, witnessed by the Company Rep., is responsible for making and recording on a form provided by the Company, the required measurements. The first set of measurements is to be taken prior to placing any backfill around the tank. The second set of measurements is to be taken when the backfill has reached subgrade (prior to pouring the concrete slab).

a. If the difference between any 2 sets of readings is greater than 1-1/4" stop the job. The Company Rep. is to be notified and will determine the course of action that will be followed.

2.4 DOUBLE WALL FRP TANK INSTALLATION

A. GENERAL REQUIREMENTS: For a double wall tank, all the specifications for a single wall tank installation shall be followed, in addition to the requirements listed below.

B. HANDLING: The Contractor is responsible for off-loading the tanks from the delivery vehicle. A crane or backhoe of sufficient lifting capacity must be used. The weight of the double wall FRP tank is approximately 5000-6000 lbs.

C. PRE-INSTALLATION PRESSURE TEST, AIR:

1. PRIMARY (INNER) TANK TEST: Tighten all tank fittings. Locate a pressure gauge in the vent/monitor fitting in the secondary (outer) tank. Locate a second pressure gauge at a fitting in the manway and connect the air pressure hose to this same fitting. Pressurize the primary (inner) tank to a minimum 4 psi, maximum 5 psi. Monitor the pressure gauges a minimum of 1/2 hour.

2. SECONDARY (OUTER) TANK TEST: Leave the pressure on the primary tank. Using a flexible air hose manifold, connect the air pressure hose from the primary tank to the secondary tank. This manifold hose should be connected to the vent/monitor fitting that does not contain the air pressure gauge. Close the valve to the primary tank and disconnect the air supply. Pressurize the secondary tank by opening the valve in the manifold system. Soap the entire tank and all fittings.

NO	REVISIONS	DATE	BY	CHKD

Mobil Oil Corporation
WESTERN REGION
LOS ANGELES ENGINEERING CENTER
612 SO. FLOWER ST., L.A., CA. 90017

PETROLEUM SPECIFICATIONS

DRAWN	DRAWING NUMBER 2	REV
CHECKED		
SCALE	SHEET NUMBER 2 OF 4	
DATE		

2.4 DOUBLE WALL FRP TANK INSTALLATION (CONT'D)

D. POST-INSTALLATION PRESSURE TEST, AIR: Procedures for the pre-installation pressure test shall be repeated. This test may be performed with or without piping and fittings attached. The secondary (outer) tank test must be performed a minimum of 1/2 hour and all fittings shall be soaped.

E. BALLASTING: Only the primary (inner) tank shall be used when ballasting the tank. Never fill the secondary (outer) tank with a fluid.

F. PRIMING: Manway lids shall be primed with Polyken 927.

G. BURIAL DEPTH: The burial depth from the top of the tank to ground level shall be a minimum of 4 feet and a maximum of 7 feet. The fittings in the manway are approximately 5-6 inches off the top of the tank. This shall be considered for the slope of the piping and thus may affect the tank burial depth.

H. VENTING: The annular space between the primary and secondary tank shall be vented. A 2 inch FRP pipe shall be manifolded between the tanks and connected to one vent riser.

I. MONITORING: Monitoring of the annular space is to be performed by a electronic monitoring system. A 3/4 inch conduit shall be run in series from each monitoring riser to the main electrical panel.

2.5 TANK HOLD-DOWN INSTALLATION

A. GENERAL REQUIREMENTS: Underground storage tanks must be anchored with concrete hold-downs ("logs" or "deadmen") when specified by Company Rep.

1. Tank bedding, ballasting and tank hole backfill procedure are described elsewhere in these specifications.

2. The tank anchorage system shown on the drawings is designed for a maximum level of ground water equal to the subgrade level.

B. MATERIALS:

1. CONCRETE HOLD-DOWNS: Precast, reinforced concrete "logs," 12" x 12" or 12" x 24" in cross-section, with chamfered edges. Length, as shown on the drawings. 1/2" diameter galvanized steel anchor loops are to be cast into "logs" at locations shown. Precast material shall achieved its ultimate compressive strength of 2500 psi (28 days) prior to installation. Precast concrete foundation piles which meet or exceed above specifications are acceptable.

2. [illegible] galvanized steel wire rope

3.1 PRODUCT, VENT AND VAPOR RECOVERY PIPING (CONT'D)

D. HANDLING OF PIPE AND FITTINGS:

1. FIBERGLASS PIPE: Careful handling is a must. Protect against abrasion from sharp or hard objects, impact damage from improper storage, transporting, laying or backfilling. Inspect all pipe for damage prior to using in the piping system.

2. STEEL PIPE AND FITTINGS: Protect against damage to the protective coating/wrapping.

4.1 INSTALLATION REQUIREMENTS

A. Interior surface of all pipe and fittings must be free from dirt, scale, metal, fiberglass particles, etc., before connecting.

1. Product piping must be pitched upward continuously from tanks to risers a minimum of 1/8" per foot. (1/4" per foot is preferred for product piping and mandatory for vent and vapor recovery piping.) Traps or sags will not be permitted. Group all piping and locate as shown on the plans. Lines are to be laid straight, using fittings for directional and elevation changes.

2. Do not support piping with foreign objects, such as scraps of wood, pipe, etc.

3. For bedding of piping runs and backfill of pipe trenches, refer to other portions of these specifications.

B. CUTTING OF PIPE:

1. FIBERGLASS PIPE: Cut with a fine-toothed hacksaw blade or an abrasive wheel on a circular power saw. Use a saw guide or "Wrap Around" to ensure a square cut end. Cut pipe end must be within 1/8" of square.

2. STEEL PIPE: Cut with a hand or power or power-operated pipe cutter, as in normal fitting practice.

3. TAPERING & REAMING: All cut fiberglass pipe ends must be tapered to 1-3/4" degrees using one of the tapering tools available from the pipe manufacturer. Protect pipe during tapering to prevent damage to pipe. The finish taper shall be smooth, clean and free from surface defects. The length of taper for 2" diameter is 1-5/8" and for 3" diameter pipe is 1-3/4." For other size pipe, consult pipe manufacturer's instructions.

a. Steel pipe ends are to be reamed.

5.1 TESTING OF PIPING (CONT'D)

C. FIRST TEST

a. Step One: Install pressure application system that includes two pressure gauges (15 psig maximum). Apply 10 psig pressure to each piping system. Soap all joints using approved soap solution. Carefully observe each joint for evidence of leaks.

b. Step Two: Protect area around piping systems to be tested to prevent workmen, passers-by, etc., from entry. Install pressure application system that includes two pressure gauges (150 psig maximum). Apply 100 psig pressure to each piping system, hold for one minute, release pressure. Repeat for five cycles.

c. Step Three: Repeat Step One.

2. Company Rep.'s approval is required. After obtaining such approval, the Contractor shall backfill trenches to subgrade, as specified.

D. SECOND TEST (After Backfilling and Patch Paving): Applies to product lines after backfill and patching of concrete islands, slabs, and yard paving has been completed.

1. Test lines using Petro-Tite Hydrostatic Line Testing equipment or approved equal. Company Rep. to designate test fluid. Test fluid shall be assigned product, diesel fuel or water. Contractor to comply fully with the Procedure Manual for the Operation of the Petro-Tite Line Tester.

2. Test pressure for a remote pump system will be a minimum of 50 psig with an acceptable tolerance of 0.010 gal/hr.

E. Vent lines (no phase II vapor recovery):

1. Unless required by local agency, no second test required.

F. Vent lines and vapor recovery piping (with phase II vapor recovery):

1. Contractor is responsible for vent and vapor recovery piping systems passing any locally imposed test requirements.

6.1 PATCH PAVING WORK

A. SCOPE OF WORK: Patch paving work applies to minor work in connection with covering of pipe trenches, areas adjacent to tank slab, etc.

2. WIRE ROPE CABLE: Hot-dip galvanized steel wire rope, minimum 1/2" diameter, breaking strength, 20.4K.

2.5 TANK HOLD-DOWN INSTALLATION (CONT'D)

3. HARDWARE: Cable clamps, cable guides, guards, etc., furnished by the FRP tank manufacturer, shall be hot-dip galvanized steel.

4. PROTECTIVE COATING: Prior to backfilling tanks, apply a generous quantity of asphalt coating by brush to all exposed steel cables, loops and hardware.

C. INSTALLATION PROCEDURE:

1. Prepare the tank hole to receive the hold-down "logs." Install shoring (or side sloping) in accordance with these specifications as noted elsewhere.

2. Pump the water out of the tank hole. Keep water out of the tank hole until tanks have been set, tied down, ballasted and backfilled.

3. Insert each cable through its own anchor loop in the "log" reserving sufficient cable so that both ends of the cable will be kept at the top of the tank hole after the "logs" are set. Lower and position the "logs" in the tank hole keeping both ends of the cables at the top of the hole. Install the 12" minimum thick bedding material in tank hole. Smooth and slope per the tank bedding instructions.

4. Proceed with setting the tanks by adding ballast as necessary to sink and keep down the tanks. Use only enough ballast to hold the tanks down until the backfill is even with the top of the tanks. (Refer to tank setting requirements.) Caution: Ballast level in tank must never exceed water (or backfill) level in tank hole during installation.

5. Install the cable guards, guides, etc., furnished by the tank manufacturer on the designated ribs of the tank. (Note: "Designated Ribs" are marked by arrows on the tank surface.) Caution: Do not place straps or cables between the ribs of the tank.

6. Pass each set of cables (a set of cables are those passing through the matching, or opposite, loops on the "logs") through the guides and loops as shown on the drawing.

a. One end of each cable is to be crossed over the top of the tank in the retainer portion of the hold-down strap. Using three cable clamps on each set of cables, clamp both cables together on top of the tank. Prior to tightening the clamps, tension the cables with "come-a-longs" secured outside the tank hole. Use enough tension to tighten the cables but not to lift the "logs" or crush the tank. Caution: All sets of cables on a tank must be tightened equally to avoid tank deformation.

2.5 TANK HOLD-DOWN INSTALLATION (CONT'D)

b. The cable must rest on the top of the hold-down strap between the guides provided. Repeat this process for each set of tie-down cables.

7. After all tie-downs are completed, commence the backfill procedures to the top of the tanks.

3.1 PRODUCT, VENT AND VAPOR RECOVERY PIPING

A. All piping, fittings, risers, wrapping materials, etc., shall be furnished and installed by the Contractor. Specific materials noted in this specification and/or on plans will be furnished by Owner, hereinafter referred to as Company.

1. All pipe runs are to be of "fiberglass" pipe and sized in accordance with plans.

2. Steel pipe and fittings are to be used only to fabricate swing joints for product piping at the tank connection. Steel pipe is to be used for riser to emergency shut-off valve or pump connection at pump block. Above ground vent riser is to be steel pipe.

3. Do not use galvanized pipe and fittings with diesel fuel. Use black iron pipe and fittings.

B. FIBERGLASS PIPE: Pipe and fittings to be UL approved, non-metallic, for underground piping of petroleum products. The pipe is to have bell and spigot joints.

Approved Fiberglass Pipe:

Ciba-Geigy
Dualoy-3000 Pipe System
A.O. Smith Inland Inc.
Red Thread II Pipe System
(or approved equals)

1. Non-metallic fittings are to be those manufactured by the supplier of the pipe being used.

2. Install pipe and fittings in accordance with manufacturer's instructions.

C. STEEL PIPE: (Galvanized or Black Iron)

Schedule 40 (ASTM A-120) Steel Pipe
250# Railroad Unions
150# Malleable Iron Fittings
(or approved equals)

1. Do not use standard couplings normally furnished with the pipe.

4.1 INSTALLATION REQUIREMENTS

C. BONDING & ADHESIVE SYSTEMS (Fiberglass Pipe):

1. All fiberglass pipe surfaces to be bonded shall be cleaned with solvent as supplied by pipe manufacturer. If tapered section is wet or moist, dry with propane torch - do not overheat or burn the pipe. If temperature is below 60°F (16°C) warm all tapered surfaces with propane torch - do not overheat or burn the pipe or fitting. Bell and spigot joints are to be made up with epoxy adhesive as recommended by the pipe manufacturer. Adhesive shall be mixed thoroughly in accordance with manufacturer's instructions and shall be applied to both surfaces. Insert the spigot end into the bell using a slight turning motion (one-half turn to a full turn is necessary) and push.

2. Apply pressure until mechanical lock is achieved. Back axial pressure should be maintained on all previously assembled joints to reduce the chance of separation.

3. Inspect all fittings for proper alignment and possible "back-out" at the joints.

4. Follow pipe manufacturer's recommendations on cure time before disturbing joints or testing. In areas of temperatures below 60°F (16°C), it will be necessary to apply heat for curing adhesive. Only chemical or electrical devices recommended by pipe manufacturer are acceptable for this purpose. No open flame or sparking devices are to be used.

D. THREADED JOINTS:

1. Threaded joints must be reamed and have clean cut, perfect threads and be made up with non-hardening joint compound insoluble in petroleum products approved by Company Rep.

2. Approved joint compound:

Rectorseal
Gilbarco Pipe Joint Compound
Permatex 57
(or approved equals)

E. FIBERGLASS TO STEEL PIPE CONNECTIONS: Fiberglass threaded-end adapters are to be threaded into the steel pipe or fitting before bonding onto the fiberglass pipe.

F. SWING JOINTS: Use steel pipe and fittings: two 90 degree elbows with nipple connections (do not use close nipple or street ell) for product piping at the tank connection. Do not use flexible connectors.

4.1 INSTALLATION REQUIREMENTS (CONT'D)

G. SPECIAL FITTINGS:

1. The shut-off valve ("Shear" or "Safety" valve) at the base of the product pump or dispenser is to be secured in position with a steel stabilizer as detailed on the drawings. A stabilizer is to be installed, in addition, when existing dispensers are replaced.

2. Position the valve so that the line test port plug is accessible.

H. PIPE WRAPPING: All underground steel pipe and fittings shall be field primed and wrapped. Wrapping material shall be 35 mil polyethylene tape "Polyken 930" manufactured by the Kendall Company (or equal approved by Company Rep.). Wrap overlap shall be one-half width of wrapping material. Wrap 1-1/2" and 2" fittings with Polyken 900 (12 mils) with a 60% overlap. In difficult areas Polyken 931 can be used before wrapping with Polyken 900. Primer shall be Polyken 927.

I. SETTING & BEDDING PIPE:

1. A 4" minimum bed of backfill material is to be placed in all piping trenches. Smooth, compact and slope bedding material to allow a slope of 1/4" per foot toward the tanks. In extreme conditions, 1/8" per foot may be used if approved by Company Rep., refer to other portions of these specifications.

2. Piping shall be placed on prepared bed in such a manner as to minimize points at which one pipe may cross over another pipe. At points where piping must crossover, a minimum of one-half pipe diameter must separate the pipes.

3. When piping is placed on the bed, proceed to "First Test" (below) prior to backfilling trenches.

5.1 TESTING OF PIPING

A. Notify the Company Rep., who MUST observe all tests, at least 24 hours in advance of any tests.

B. The Contractor is responsible for all labor, material, and equipment to conduct pressure tests (air or hydrostatic) of all product, vent and vapor recovery piping.

C. FIRST TEST (Prior To Back Filling Pipe Trenches): Do not connect piping to tanks, remote pumps or dispensers.

1. The entire piping system, i.e., product, vent and vapor recovery (where applicable), shall be tested in accordance with the following three step procedure.

tank slab, etc.

6.1 PATCH PAVING WORK (CONT'D)

B. REQUIREMENTS: All areas requiring paving shall be at least 18" wide, with sides having straight, clean faces. All areas are to be brought to finished grade minus 6" before paving.

C. PROCEDURE: Select any of the following paving methods:

1. Place concrete to fin. grade minus 1". Place 1" A.C. cap lift after concrete has cured (maximum aggregate size 3/8").

2. Six inches of full-depth A.C. hot mix (maximum aggregate size 1/4").

3. Four-inch gravel base plus 2" A.C. hot mix (maximum aggregate size 3/4").

NOTE: Roll all asphaltic concrete for proper compaction.

BILL OF MATERIALS

Furnished by Owner:

_____ Double wall fiberglass product tanks

_____ Double wall fiberglass waste oil tank

_____ Submerged turbine pumps with control boxes

_____ Red Jacket leak detectors

_____ Fil-Spil containment box for product

_____ Fil-Spil containment box for waste oil

_____ Turbine pump manhole

_____ Tank monitoring manhole

_____ Observation well manhole

_____ Leak alert detection system

_____ Fiberglass trench liner

BILL OF MATERIALS (CONT'D)

Furnished by General Contractor:

_____ Fill tube

_____ Product and vapor return riser, adaptors and caps

_____ Ball float valve

_____ Float valve extractor assemblies

_____ Emergency shut-off valves and brackets at dispensers

_____ All tank trim

_____ Fiberglass product and vapor recovery lines

_____ All other necessary equipment not furnished by Owner

TION (CONT'D)

ST, AIR: Procedures for t
all be repeated. This tes

NO.	REVISIONS	DATE	BY	CHKD

Mobil Oil Corporation
WESTERN REGION
LOS ANGELES ENGINEERING CENTER
612 SO. FLOWER ST., L.A., CA. 90017

PETROLEUM SPECIFICATIONS

DRAWN	DRAWING NUMBER 3	REV
CHECKED		
SCALE	SHEET NUMBER 3 OF 4	
DATE		

ALARM PANEL

ELECTRIC PANEL

PROBE VISUAL MONITOR WINDOW

LEAK ALERT

VISUAL MASTER

BUZZER W/ ON-OFF

TEST SW "ON"

CIRCUIT W/ LOCK SWITCH

NOTE:
LOCATE ALARM MODULE NEAR ELEC PANEL

115VAC POWER

FINISH GRADE

2

DOUBLE WALL TANK

JUNCTION BOX - EXPLOSION & WATER PROOF

3/4" U.G COND - SEE STE PLAN FOR CONTINUATION

MANHOLE

JUNCTION ELBOW - EXPLOSION & WATER PROOF

REINF CONC. SLAB

3/4" HOT DIPPED ADAPTER

THREADED REDUCER FOR 2" RISER W/ ADAPTOR FOR 90° J ELBOW (OPTIONAL)

2" GALV STEEL RISER

3" ANNULAR SPACE VENT PIPE W/ VENT CAP

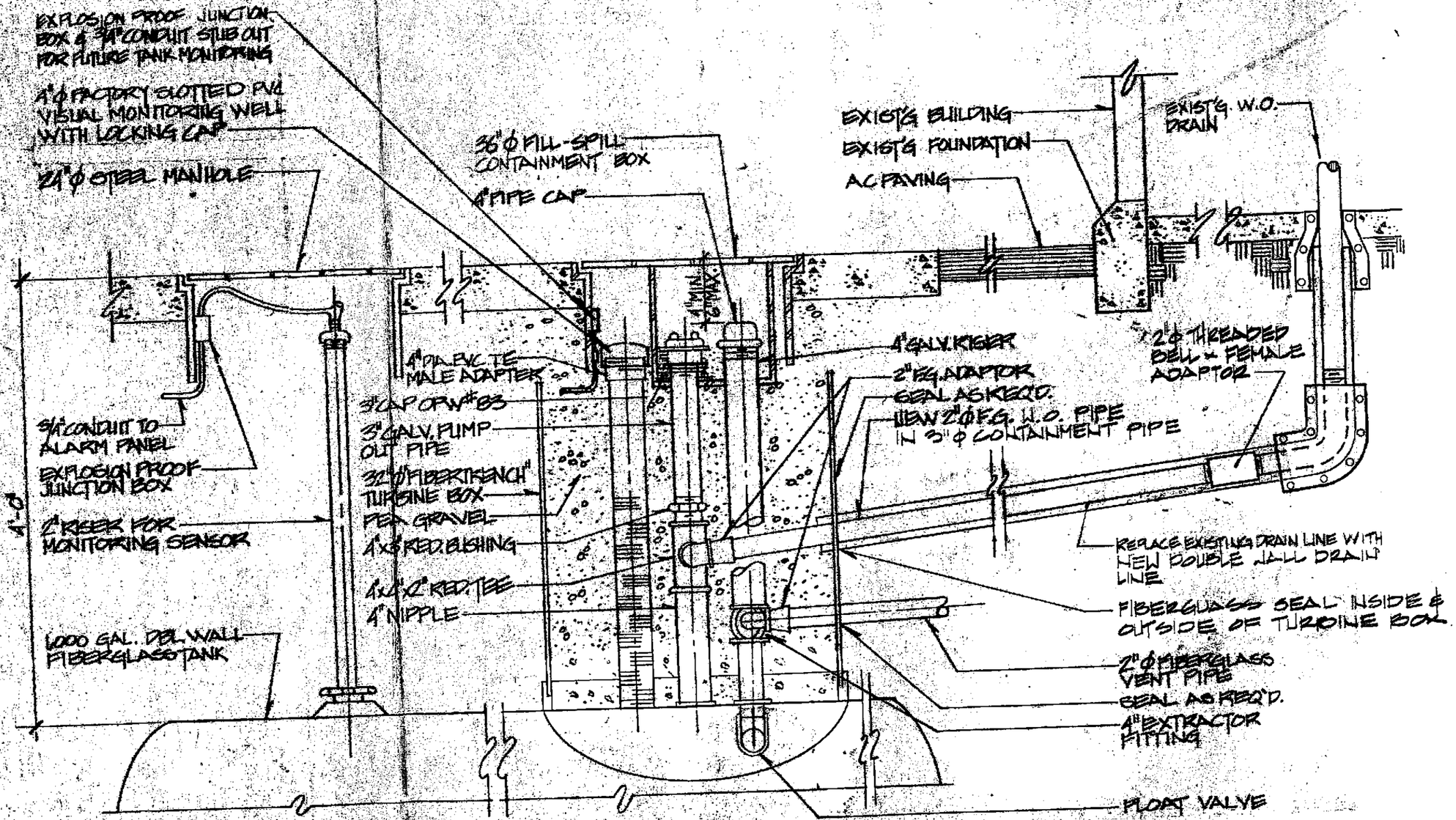
2 ANNULAR SPACE

NOTE:
TANK SLOPES 1/8" PER FOOT MIN. PROBE TO BE LOCATED @ LOW END.

FLEXIBLE CABLE (PVC) W/ LIQUID PROBE TO BE LOOPED AROUND TANK

ROBERT H. LEE & ASSOCIATES, INC.
ARCHITECTURE PLANNING ENGINEERING
900 LARKSPUR LANDING CIRCLE, SUITE
LARKSPUR, CALIFORNIA 94939 (415) 461-

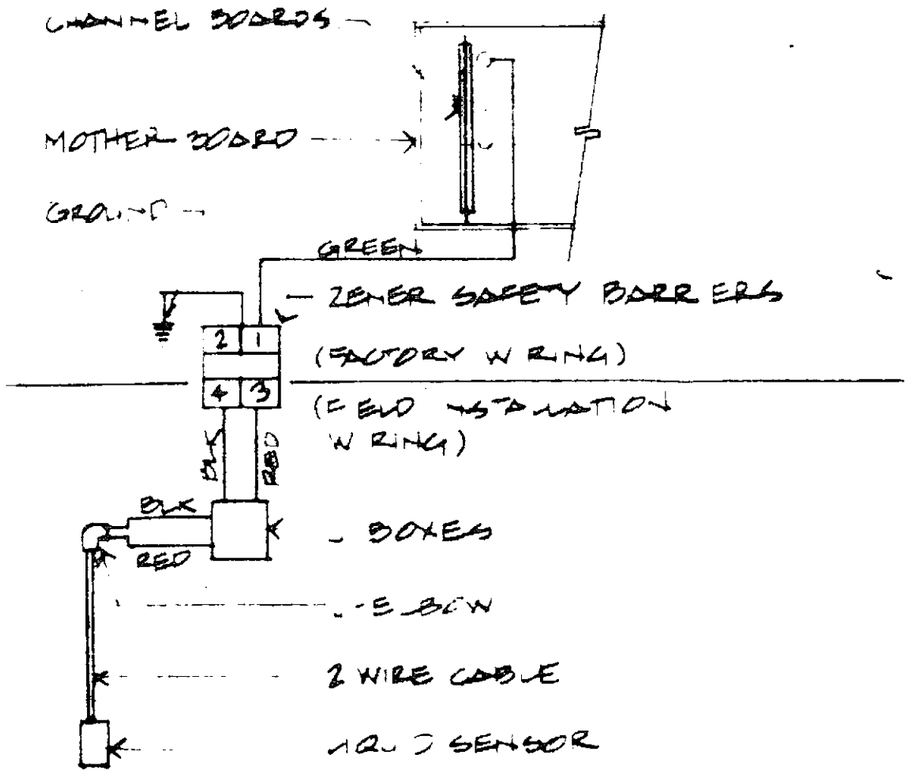
REVISED DESTROY ALL PRINTS BEARING EARLIER DATE



WASTE OIL TANK DETAIL

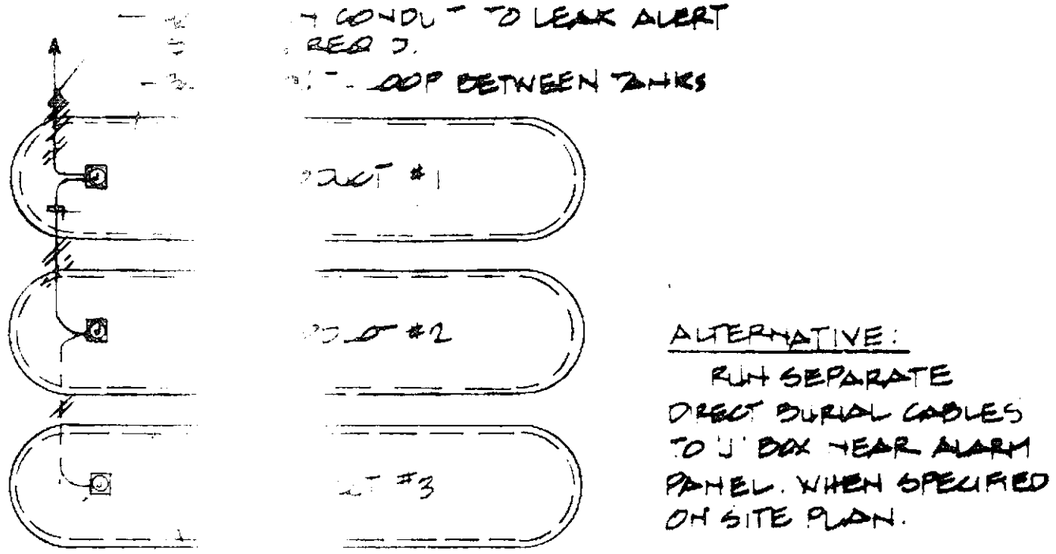
NO SCALE

HEMATIC (NO SCALE)



© LIQUID PROBE WIRING (NO SCALE)

(B) LIQUI[D] PROBE at TANK ANNULAR (NO SCALE)



ALTERNATIVE:
RUN SEPARATE DIRECT BURIAL CABLES TO 'J' BOX NEAR ALARM PANEL. WHEN SPECIFIED ON SITE PLAN.

(D) UNDERGROUND PIPING SCHEMATIC for LIQUID PROBE

SCALE: 1" - 10'-0"

NO	DATE

MOBIL OIL CORP.

LEAK DETECTION SYSTEM

DATE	3/31/06
SCALE	AS NOTED
DRAWN BY	ZG
APPROVED	RL
PROJECT NO.	
DRAWING	4

N 48° 30' E 90.00'

N 40° 15' W 120.25'

INSTALL NEW 1000 GAL. DOUBLE WALL FIBERGLASS WASTE OIL STORAGE TANK

INSTALL NEW 9'x10'x6" THICK CONC. SLAB REINFORCED W/6x6-10x10 W.W.M.

NEW 2"ϕ FIBERGLASS WASTE OIL DRAIN LINE SEE DETAIL DRWG 4

2'-0" (TYP.)

1'-0" (TYP.)

GAS FREE & REMOVE EXISTING 280 GALLON WASTE OIL STORAGE TANK.

NEW MONITORING MANHOLE SEE DRWG. 4

NEW 3/4 CONDUIT TO ALARM PANEL IN BLDG.

CONC. RETAING WALL

NEW 2" FIBERGLASS VENT LINE, CONNECT TO EXISTING VENT RISER. SLOPE 1/8"/1'-0" TOWARDS TANK (CONTRACTOR TO VERIFY LOCATION IN THE FIELD.)

EXISTING SERVICE STATION BUILDING

CONC. RETAINING WALL & FENCE

CONC. RETAINING WALL & FENCE

LOCATE NEW ALARM PANEL ADJACENT TO THE EXISTING ELECTRICAL PANEL (VERIFY LOCATION IN THE FIELD)

N 48° 30' E 125.00'

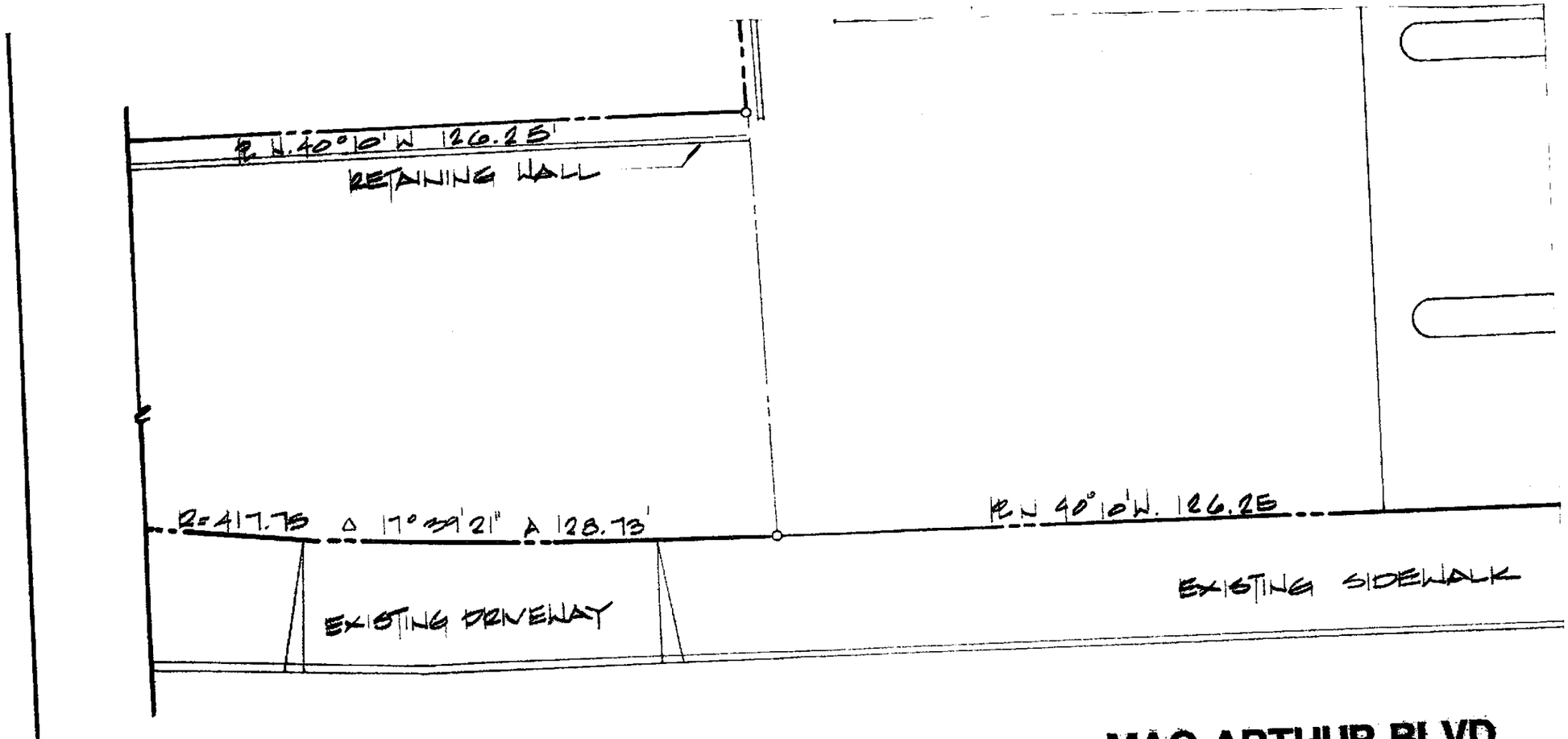
EXISTING SIDEWALK

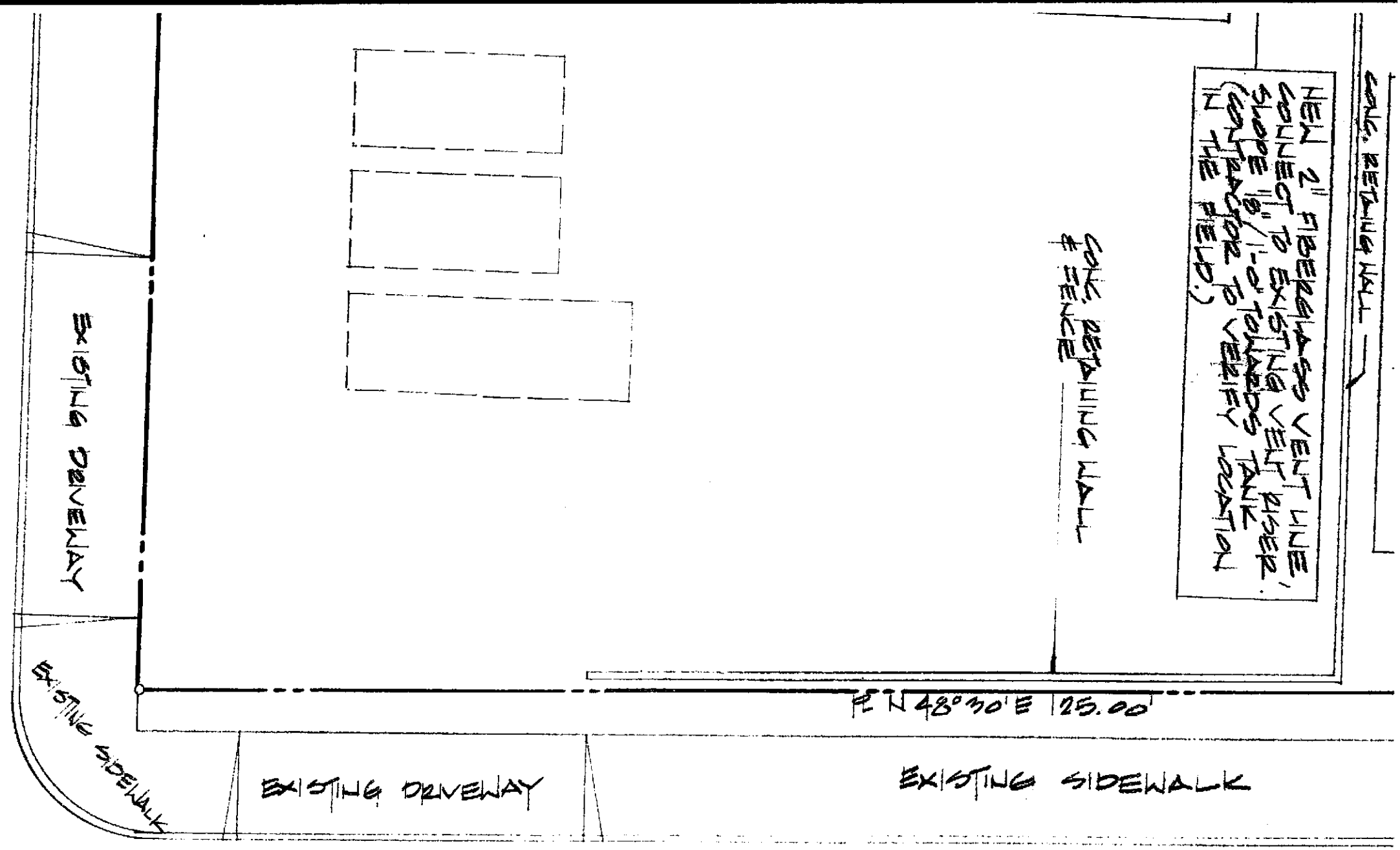
SANTA CLARA

VENT PIPE RISER SCALE: 1" - 1'-0"
(AT BUILDING)

ROBERT H. LEE & ASSOCIATES, INC
ARCHITECTURE PLANNING ENGINEERIN
900 LARKSPUR LANDING CIRCLE, SUITE 12
LARKSPUR, CALIFORNIA 94939 [415] 461-999

REVISED DESTROY ALL PRINTS BEARING EARLIER DATE


℄ N.40°10'W 126.25'
RETAINING WALL
R=417.75 Δ 17°39'21" A 128.73'
℄ N 40°10'W. 126.25
EXISTING DRIVEWAY
EXISTING SIDEWALK
MAC ARTHUR BLVD.


EXISTING RETAINING WALL
NEW 2" FIBERGLASS VENT LINE CONNECT TO EXISTING VENT RISER, SLOPE 1/8" / 1'-0" TOWARDS TANK (CONTRACTOR TO VERIFY LOCATION IN THE FIELD.)
EXIST. RETAINING WALL & FENCE
EXISTING DRIVEWAY
EXISTING SIDEWALK
E N 48°30'E 125.00'
EXISTING DRIVEWAY
EXISTING SIDEWALK


E
S
NORTH
W

SANTA CLARA

ALL ELECTRICAL RUNS ARE SHOWN SCHEMATICALLY.
THE BEST ROUTE SHOULD BE DETERMINED IN THE FIELD
AND INSTALLED ACCORDING TO NATIONAL, STATE, AND
LOCAL CODE REQUIREMENTS.

ALL PIPING RUNS ARE SHOWN SCHEMATICALLY.
THE BEST ROUTE SHOULD BE DETERMINED IN THE FIELD
AND INSTALLED ACCORDING TO NATIONAL, STATE, AND
LOCAL CODE REQUIREMENTS.

NOTE!
BOXED-IN NOTES INDICATE NEW WORK.
ALL OTHER NOTES REFER TO EXISTING
CONDITIONS.

NOTE!

CONTRACTOR TO PERFORM TANK TESTS AS REQUIRED BY LOCAL JURISDICTIONS PRIOR TO BACKFILLING EXCAVATION.

NO	BY	DATE	R

MOBIL OIL CORP.

S.S#10-E6A

100 MAC ARTHUR BLVD.
OAKLAND,CA

SITE PLAN

DATE 6-29-88

SCALE: 1" = 10'-0"

DRAWN BY: C.C.

APPROVED: DMS

PROJECT NO. 7364

DRAWING 1

1 OF 4

1. REMOVAL OF EXISTING TANKS AND PIPING SYSTEMS

A. Contractor, as part of the contract, will execute and comply with the Owner's, herein after referred to as Company, Tank Disposal procedures and with governmental authorities having jurisdiction over such work.

1. Company Rep. will be responsible for removal of all reusable product.

2. Drain all product lines.

- For pressure (STP) system gravity drain into tank by opening check valve at STP and the test port in shear valve. Disconnect line at STP union to drain/flush remaining product into an appropriate container.

- For suction pump system, disconnect from tank (low point) and gravity drain into appropriate container.

CAUTION: DO NOT INTRODUCE COMPRESSED AIR INTO LINES FOR PURPOSE OF EVACUATING PRODUCT FROM LINES.

3. Remove all flammable liquid from tank bottoms by using a hand pump to evacuate the remaining few inches. Dispose of tank bottom liquid remains per applicable regulations.

4. Dig down to top of tank and remove fill (drop tube), STP and all piping connections to the tank.

5. Temporarily plug all tank openings, complete excavation and remove the tank, placing it in a secure location. Block the tank to prevent movement. USE EXTREME CAUTION DURING REMOVAL OPERATION.

6. Remove flammable vapors.

Preferred method for conditioning tank.

Make vapors inert by adding 15 pounds of dry ice (carbon dioxide) per 1000 gallons of tank capacity.

The vapors in the tank may be made inert by adding solid carbon dioxide (dry ice) in the amount of 15 pounds per 1000 gallons of tank capacity. The dry ice should be crushed and distributed evenly over the greatest possible area to secure rapid evaporation. Avoid skin contact with dry ice because it may produce burns. As the dry ice vaporizes, flammable vapors will flow out of the tank and may surround the area. Hence, observe all normal safety precautions regarding flammable vapors. Make sure that all of the dry ice has vaporized.

1.2 EXCAVATION AND BACKFILL OF UNDERGROUND TANKS (CONT'D)

c. Product lines shall be pitched 1/4" per ft. to pump blocks. Minimum pitch is 1/8" per ft.

d. Vent and vapor return lines shall be pitched 1/4" per ft.

e. 1/2" pipe diameter separation at cross-overs.

f. The Contractor is responsible for any design, materials, equipment, permits, etc., for shoring or side sloping a hole.

1.3 FILL AND BACKFILL

A. All fill material shall be of a granular nature, free from vegetation and extraneous material. Company Rep. shall inspect and approve the material before it is spread. Spread material in lifts not to exceed 12 inches and tamp thoroughly. When required by local code, General Contractor shall provide a compaction test for certification of fill.

B. APPROVED BACKFILL MATERIALS:

1. PEA GRAVEL. A clean, naturally rounded aggregate with a 1/8" minimum and a 3/4" maximum diameter. Up to 3% of the particles may pass through a #8 sieve.

2. STONE OR GRAVEL CRUSHINGS. Washed material, with particle size between 1/8" and 1/2". Up to 3% of the particles may pass through a #8 sieve.

3. Approved materials must be dry, free of ice and snow, and meet ASTM C-33, Para.9.1 for quality and soundness.

C. ALTERNATE BACKFILL MATERIALS (Defined as any material not meeting above requirements for approved materials):

1. Approval of Company Rep. is required prior to use of such material. In certain instances, the approval of the tank manufacturer may be required to preserve the tank warranty. Company shall obtain such approval.

2. Alternate materials, if used, must be dry and free of ice and snow. The tank hole sides must be shored or side sloped to permit entry for compaction and testing.

1.4 BEDDING OF TANKS

A. A 12" minimum bed of backfill material is to be placed in the hole, smoothed and sloped to allow a tank slope of 1" in 10' downward toward the fill end prior to setting the tank.

2.2 HANDLING OF FRP TANKS (CONT'D)

E. DAMAGE: If tank is damaged, do not attempt repairs. Company Rep. is to be notified and will determine the course of action that will be followed.

F. SETTING: Set tanks on prepared bed with a slope downward toward the fill end of the tank. A slope of 3" difference between the two extreme openings of the tank is desired. The acceptable range of slope is 4" maximum and 2" minimum with the fill end lower than remote pump end of the tank. Tanks that exceed the acceptable slope or that slope downward to the remote pump end are improperly set and must be reset.

G. INSTALLATION WITH APPROVED MATERIALS: Place a 12" lift of backfill evenly around the tanks. Push backfill completely underneath the tank between the ribs and under the end caps. This is the most important part of the backfill process. Procedure can be done from bank or adjacent tank top. If a man will be in the hole to "work" the backfill, hole must be shored or side sloped as prescribed by current OSHA regulations.

1. Place second 12" lift or backfill evenly around the tanks. Again, repeat the "working" or backfill between the ribs and under the end caps. Add backfill evenly around the tanks up to the tops of the tanks.

2. Backfill to subgrade after piping and testing is completed.

H. INSTALLATION WITH ALTERNATE MATERIALS: All alternate materials must be compacted to 90% relative density (ASTM D-1557-70). Contractor is to furnish with certification of compaction from a registered soil engineer.

1. Company Rep. is responsible for providing the exact installation specification for alternate materials.

2.3 TESTING OF TANKS

(Notify the Company Rep., who MUST observe all tests, at least 24 hours in advance of any tests.)

A. The Contractor is responsible for all labor, material and equipment necessary to conduct the following tests:

Pre-Installation Pressure Test, Air
After-Installation Pressure Test, Air or Hydrostatic
Internal Measurements

1. ACCEPTABLE "SOAPS": "Soaping" the tank and fittings during the test is to be done using a small garden-type hand-pressurized spray unit. The test soap shall be a high foaming "soap" that bubbles easily if in contact with an air leak in the tank but won't bubble due to dispensing from the pressure applicator. Acceptable soaps are:

1.1 REMOVAL OF EXISTING TANKS AND PIPING SYSTEMS (CONT'D)

7. After the tank has been freed of vapors and prior to moving from the site, plug or cap all holes. Use threaded (boiler) plugs to plug any corrosion leak holes. One tank fitting plug should have a 1/8-inch vent hole to prevent the tank from being subjected to an excessive pressure differential caused by extreme temperature changes.

8. No fiberglass or steel tank shall be reused. Render tank useless after removing from site.

9. As an added precaution, regardless of condition, the tank shall be labeled adjacent to the fill opening in legible letters as follows:

"TANK HAS CONTAINED FLAMMABLE LIQUIDS
NOT GAS-FREE
NOT SUITABLE FOR FOOD OR DRINKING WATER"

NOTE: Prior to junking gasoline tanks, the latest applicable waste disposal regulations should be checked to determine if special attention or preparation is required.

10. Remove tanks, product and vent piping in excavation from site at the earliest time possible. DO NOT DELAY DISPOSAL. Permanently abandon remaining product lines (from pump islands to tank area) by filling lines with a concrete slurry, or flush with water, and cap if permitted by local regulations.

11. For in ground waste oil tank, arrange for disposal of remaining liquid contents with authorized disposal service. (Effective November 1, 1985, waste oil under Federal Regulations will be classified as a hazardous waste).

- Uncover tank and disconnect attached piping.

- Plug tank openings and complete excavation.

- Remove tank and secure at grade.

- Mark tank as in item 9 above and execute sale/disposal agreement with Contractor prior to construction.

- Assure tank disposal is in accordance with governing regulations.

12. Company Rep. and Contractor shall inspect open excavation for evidence of product leakage.

1.1 REMOVAL OF EXISTING TANKS AND PIPING SYSTEMS (CONT'D)

13. TAKE SOIL SAMPLES FROM EACH CORNER AND FROM THE MIDDLE OF THE TANK EXCAVATION AFTER THE EXISTING TANKS HAVE BEEN REMOVED AND SUBMIT TO A QUALIFIED LABORATORY FOR ANALYSIS FOR AROMATIC HYDROCARBON (GASOLINE) CONTENT. A COPY OF THE SOIL ANALYSIS, INCLUDING LOCATION OF SAMPLES, SAMPLING METHODS, TEST PROCEDURES AND TEST RESULTS SHALL BE FURNISHED TO THE FIRE PREVENTION BUREAU AND TO THE REGIONAL WATER QUALITY CONTROL BOARD. SOIL SAMPLES SHALL BE TAKEN BY AN INDEPENDENT QUALIFIED TECHNICIAN.

1.2 EXCAVATION AND BACKFILL OF UNDERGROUND TANKS

A. EXCAVATIONS: Excavate only to the depths required by the plans, or as instructed by Company Rep. If unexpected water condition or rock is encountered, immediately contact the Company Rep. for instructions before proceeding with the excavation.

1. TANK HOLE SIZE IN STABLE SOIL: Size excavation perimeter to allow 24" minimum between tanks and 24" minimum between tank sides and end caps and the wall of the tank hole.

2. TANK HOLE SIZE IN UNSTABLE SOIL: Unstable soil is defined as having less than 750 lbs./sq.ft. cohesion, as calculated from an unconfined compression test, or soils with an ultimate bearing capacity of less than 3,500 lbs./sq.ft. Loose sand, muck, bog, peat, swamp or landfill where soil is soft are generally considered unstable soils.

a. Size excavation perimeter to allow 24" minimum between tanks and a minimum of half the tank diameter between the tank sides/end caps and the wall of the tank hole.

b. Filter fabric will be used to line tank hole in unstable soil.

c. Permanent shoring may be used to stabilize the walls of the tank hole, at the discretion of the Contractor and/or Company Rep. If permanent shoring is used, follow "Stable Soil" size criteria. Refer to "Alternate Backfill Materials" below.

3. DEPTH OF TANK HOLE: Contractor is responsible for establishing the tank hole depth, considering the length of piping runs, to the pump blocks and vent risers, pipe burial depth, yard slope and the following criteria: (Measure at the Remote Pump opening).

a. A minimum of 12" of backfill material is required under the tanks.

b. The minimum depth of cover for FRP tanks is 4'0" and the maximum is 7'0" (not to be exceeded).

1.4 BEDDING OF TANKS (CONT'D)

1. When specified, the down "logs" shall be installed prior to be bed material. Caution - Do not place FRP tanks on concrete slabs, timbers, beams, cradles or grout the tanks in wet cement. The tank, whether tied down or not, must never be left on the bed without a backfill to the top of the tank if there is any chance of water, 12" or more above the tank bottom, in the hole.

1.5 OBSERVATION WELLS

A. If shown on drawings, two slotted observation wells in opposite corners of the tank hole, are to be installed. Sample wells are to be positioned in the hole prior to placing the bedding material and supported to remain vertical during backfill. Bottom of observation well is to be 12" minimum below the bottom of tanks. Top of pipe to terminate in 12" diameter fillbox. Slotted observation wells shall be provided by General Contractor, unless otherwise instructed by Company Rep.

1.6 TANK HOLE LINER

A. Contractor is to provide a Filter Fabric Tank Hole Liner when:

1. Tank hole is unstable soil, as defined above, or

2. Specified by Company Rep. The entire tank hole (sides and bottom) shall be covered. Lay the fabric with 2 foot minimum overlaps.

3. Bedding material, tie-down "logs" and sample wells are to be placed on the top of the filter fabric. Excess fabric at the top of the hole should be folded over the backfill material at subgrade level.

B. APPROVED FILTER FABRIC MATERIAL:

Dupont "Typar" Spunbound Polypropylene - Style 3401
Phillips Fibers Corp. - "Supac" Fabric
Monsanto - "Biaim" C22
or approved equals

1.7 BALLAST

A. Water is to be used as ballast under all conditions where ballast is required.

1. DRY HOLE CONDITION: Tanks, with backfill to top of tanks, must be ballasted if there is any chance that surface or subsurface water will enter the tank hole to a depth of 23" or greater above the bottom of the tanks. Caution - Do not ballast tanks until backfill is to top of tanks.

1.7 BALLAST (CONT'D)

2. WET HOLE CONDITION: Attempt to pump water from the tank hole to maintain a "Dry Hole Condition". If unable to obtain a "Dry Hole Condition", Company Rep. is to be notified and will determine the course of action to be followed. Install filter fabric, tie-down "logs" and bedding as specified elsewhere. Set tank in hole, partially fill with water until it sinks firmly on the bed. Use only enough water to ballast tank until backfill is to top of tank. After backfill to top of tank, fill tank with water until completion of installation. Caution - Ballast level must never exceed water or backfill level in the hole during installation. Do not remove ballast until tank slab has been poured. (DO NOT SET SUBMERSIBLE PUMP MOTOR UNTIL BALLAST WATER HAS BEEN REMOVED FROM TANK).

1.8 TANK HOLD-DOWNS (Tie Downs)

A. Install hold-down "logs" at all locations with known water conditions and at those locations where water is found during tank installations. Refer to "Tank Hold-Down" fabrication and installation requirements of these specifications.

2.1 UNDERGROUND TANKS

A. MATERIALS: Fiberglass reinforced plastic (FRP) storage tanks as supplied by the owner are to be installed by Contractor in accordance with the plans and specifications and manufacturer's recommendations.

2.2 HANDLING OF FRP TANKS

A. LIFTING & MOVING: When lifting or moving an FRP tank, always use properly sized equipment and lift by lifting lug(s). On large tanks, greater than 8' diameter, use a spreader bar to ensure a lift angle of at least 45 degrees at each lifting lug.

B. 1. Never roll or use cables or chains around an FRP tank. Set on smooth ground, free of rocks and foreign objects. Exception: Tank can be rolled up to 90 degrees on a smooth clean surface when performing the "pre-installation" pressure test.

C. CHOCKING: Tanks are to be chocked in accordance with manufacturer's recommendation until ready for installation. If windy conditions exist or are expected, anchor tanks using minimum 1/2" nylon or hemp rope over each tank and secure to stakes of adequate size to prevent movement of the tanks.

D. OPENINGS: All tanks are shipped with dust covers in each opening. Dust covers are to remain in each opening until ready for the pre-installation pressure test. Replace dust covers after this test has been completed.

NO	REVISIONS	DATE	BY	CHKD

Mobil Oil Corporation

WESTERN REGION
LOS ANGELES ENGINEERING CENTER
612 SO. FLOWER ST. L.A. CA. 90017

PETROLEUM SPECIFICATIONS

DRAWN	DRAWING NUMBER	REV
CHECKED		
SCALE	SHEET NUMBER	
DATE	2 OF 4	

2.4 DOUBLE WALL FRP TANK INSTALLATION (CONT'D)

D. POST-INSTALLATION PRESSURE TEST, AIR: Procedures for the pre-installation pressure test shall be repeated. This test may be performed with or without piping and fittings attached. The secondary (outer) tank test must be performed a minimum of 1/2 hour and all fittings shall be soaped.

E. BALLASTING: Only the primary (inner) tank shall be used when ballasting the tank. Never fill the secondary (outer) tank with a fluid.

F. PRIMING: Manway lids shall be primed with Polykan 927.

G. BURIAL DEPTH: The burial depth from the top of the tank to ground level shall be a minimum of 4 feet and a maximum of 7 feet. The fittings in the manway are approximately 5-6 inches off the top of the tank. This shall be considered for the slope of the piping and thus may affect the tank burial depth.

H. VENTING: The annular space between the primary and secondary tank shall be vented. A 2 inch FRP pipe shall be manifolded between the tanks and connected to one vent riser.

I. MONITORING: Monitoring of the annular space is to be performed by a electronic monitoring system. A 3/4 inch conduit shall be run in series from each monitoring riser to the main electrical panel.

2.5 TANK HOLD-DOWN INSTALLATION

A. GENERAL REQUIREMENTS: Underground storage tanks must be anchored with concrete hold-downs ("logs" or "deadmen") when specified by Company Rep.

1. Tank bedding, ballasting and tank hole backfill procedure are described elsewhere in these specifications.

2. The tank anchorage system shown on the drawings is designed for a maximum level of ground water equal to the subgrade level.

B. MATERIALS:

1. CONCRETE HOLD-DOWNS: Precast, reinforced concrete "logs," 12" x 12" or 12" x 24" in cross-section, with chamfered edges. Length, as shown on the drawings. 1/2" diameter galvanized steel anchor loops are to be cast into "logs" at locations shown. Precast material shall achieved its ultimate compressive strength of 2500 psi (28 days) prior to installation. Precast concrete foundation piles which meet or exceed above specifications are acceptable.

2. WIRE ROPE CABLE: Hot-dip galvanized steel wire rope, minimum 1/2" diameter, breaking strength, 20.4K.

2.5 TANK HOLD-DOWN INSTALLATION (CONT'D)

3. HARDWARE: Cable clamps, cable guides, guards, etc., furnished by the FRP tank manufacturer, shall be hot-dip galvanized steel.

4. PROTECTIVE COATING: Prior to backfilling tanks, apply a generous quantity of asphalt coating by brush to all exposed steel cables, loops and hardware.

C. INSTALLATION PROCEDURE:

1. Prepare the tank hole to receive the hold-down "logs." Install shoring (or side sloping) in accordance with these specifications as noted elsewhere.

2. Pump the water out of the tank hole. Keep water out of the tank hole until tanks have been set, tied down, ballasted and backfilled.

3. Insert each cable through its own anchor loop in the "log" reserving sufficient cable so that both ends of the cable will be kept at the top of the tank hole after the "logs" are set. Lower and position the "logs" in the tank hole keeping both ends of the cables at the top of the hole. Install the 12" minimum thick bedding material in tank hole. Smooth and slope per the tank bedding instructions.

4. Proceed with setting the tanks by adding ballast as necessary to sink and keep down the tanks. Use only enough ballast to hold the tanks down until the backfill is even with the top of the tanks. (Refer to tank setting requirements.) Caution: Ballast level in tank must never exceed water (or backfill) level in tank hole during installation.

5. Install the cable guards, guides, etc., furnished by the tank manufacturer on the designated ribs of the tank. (Note: "Designated Ribs" are marked by arrows on the tank surface.) Caution: Do not place straps or cables between the ribs of the tank.

6. Pass each set of cables (a set of cables are those passing through the matching, or opposite, loops on the "logs") through the guides and loops as shown on the drawing.

a. One end of each cable is to be crossed over the top of the tank in the retainer portion of the hold-down strap. Using three cable clamps on each set of cables, clamp both cables together on top of the tank. Prior to tightening the clamps, tension the cables with "come-a-longs" secured outside the tank hole. Use enough tension to tighten the cables but not to lift the "logs" or crush the tank. Caution: All sets of cables on a tank must be tightened equally to avoid tank deformation.

3.1 PRODUCT, VENT AND VAPOR RECOVERY PIPING (CONT'D)

D. HANDLING OF PIPE AND FITTINGS:

1. FIBERGLASS PIPE: Careful handling is a must. Protect against abrasion from sharp or hard objects, impact damage from improper storage, transporting, laying or backfilling. Inspect all pipe for damage prior to using in the piping system.

2. STEEL PIPE AND FITTINGS: Protect against damage to the protective coating/wrapping.

4.1 INSTALLATION REQUIREMENTS

A. Interior surface of all pipe and fittings must be free from dirt, scale, metal, fiberglass particles, etc., before connecting.

1. Product piping must be pitched upward continuously from tanks to risers a minimum of 1/8" per foot. (1/4" per foot is preferred for product piping and mandatory for vent and vapor recovery piping.) Traps or sags will not be permitted. Group all piping and locate as shown on the plans. Lines are to be laid straight, using fittings for directional and elevation changes.

2. Do not support piping with foreign objects, such as scraps of wood, pipe, etc.

3. For bedding of piping runs and backfill of pipe trenches, refer to other portions of these specifications.

B. CUTTING OF PIPE:

1. FIBERGLASS PIPE: Cut with a fine-toothed hacksaw blade or an abrasive wheel on a circular power saw. Use a saw guide or "Wrap Around" to ensure a square cut end. Cut pipe end must be within 1/8" of square.

2. STEEL PIPE: Cut with a hand or power or power-operated pipe cutter, as in normal fitting practice.

3. TAPERING & REAMING: All cut fiberglass pipe ends must be tapered to 1-3/4" degrees using one of the tapering tools available from the pipe manufacturer. Protect pipe during tapering to prevent damage to pipe. The finish taper shall be smooth, clean and free from surface defects. The length of taper for 2" diameter is 1-5/8" and for 3" diameter pipe is 1-3/4." For other size pipe, consult pipe manufacturer's instructions.

a. Steel pipe ends are to be reamed.

4.1 INSTALLATION REQUIREMENTS

C. BONDING & ADHESIVE SYSTEMS (Fiberglass Pipe):

1. All fiberglass pipe surfaces to be bonded shall be cleaned with solvent as supplied by pipe manufacturer. If tapered section is wet or moist, dry with propane torch - do not overheat or burn the pipe. If temperature is below 60°F (16°C) warm all tapered surfaces with propane torch - do not overheat or burn the pipe or fitting. Bell and spigot joints are to be made up with epoxy adhesive as recommended by the pipe manufacturer. Adhesive shall be mixed thoroughly in accordance with manufacturer's instructions and shall be applied to both surfaces. Insert the spigot end into the bell using a slight turning motion (one-half turn to a full turn is necessary) and push.

2. Apply pressure until mechanical lock is achieved. Back axial pressure should be maintained on all previously assembled joints to reduce the chance of separation.

3. Inspect all fittings for proper alignment and possible "back-out" at the joints.

4. Follow pipe manufacturer's recommendations on cure time before disturbing joints or testing. In areas of temperatures below 60°F (16°C), it will be necessary to apply heat for curing adhesive. Only chemical or electrical devices recommended by pipe manufacturer are acceptable for this purpose. No open flame or sparking devices are to be used.

D. THREADED JOINTS:

1. Threaded joints must be reamed and have clean cut, perfect threads and be made up with non-hardening joint compound insoluble in petroleum products approved by Company Rep.

2. Approved joint compound:

Rectorseal
Gilbarco Pipe Joint Compound
Permatex 57
(or approved equals)

E. FIBERGLASS TO STEEL PIPE CONNECTIONS: Fiberglass threaded-end adapters are to be threaded into the steel pipe or fitting before bonding onto the fiberglass pipe.

F. SWING JOINTS: Use steel pipe and fittings: two 90 degree elbows with nipple connections (do not use close nipple or street ell) for product piping at the tank connection. Do not use flexible connectors.

5.1 TESTING OF PIPING (CONT'D)

C. FIRST TEST

a. Step One: Install pressure application system that includes two pressure gauges (15 psig maximum). Apply 10 psig pressure to each piping system. Soap all joints using approved soap solution. Carefully observe each joint for evidence of leaks.

b. Step Two: Protect area around piping systems to be tested to prevent workmen, passers-by, etc., from entry. Install pressure application system that includes two pressure gauges (150 psig maximum). Apply 100 psig pressure to each piping system, hold for one minute, release pressure. Repeat for five cycles.

c. Step Three: Repeat Step One.

2. Company Rep.'s approval is required. After obtaining such approval, the Contractor shall backfill trenches to subgrade, as specified.

D. SECOND TEST (After Backfilling and Patch Paving): Applies to product lines after backfill and patching of concrete islands, slabs, and yard paving has been completed.

1. Test lines using Petro-Tite Hydrostatic Line Testing equipment or approved equal. Company Rep. to designate test fluid. Test fluid shall be assigned product, diesel fuel or water. Contractor to comply fully with the Procedure Manual for the Operation of the Petro-Tite Line Tester.

2. Test pressure for a remote pump system will be a minimum of 50 psig with an acceptable tolerance of 0.010 gal/hr.

E. Vent lines (no phase II vapor recovery):

1. Unless required by local agency, no second test required.

F. Vent lines and vapor recovery piping (with phase II vapor recovery):

1. Contractor is responsible for vent and vapor recovery piping systems passing any locally imposed test requirements.

6.1 PATCH PAVING WORK

A. SCOPE OF WORK: Patch paving work applies to minor work in connection with covering of pipe trenches, areas adjacent to tank slab, etc.

6.1 PATCH PAVING WORK (CONT'D)

B. REQUIREMENTS: All areas requiring paving shall be at least 18" wide, with sides having straight, clean faces. All areas are to be brought to finished grade minus 6" before paving.

C. PROCEDURE: Select any of the following paving methods:

1. Place concrete to fin. grade minus 1". Place 1" A.C. cap lift after concrete has cured (maximum aggregate size 3/8").

2. Six inches of full-depth A.C. hot mix (maximum aggregate size 1/4").

3. Four-inch gravel base plus 2" A.C. hot mix (maximum aggregate size 3/4").

NOTE: Roll all asphaltic concrete for proper compaction.

BILL OF MATERIALS

Furnished by Owner:

_____ Double wall fiberglass product tanks
_____ Double wall fiberglass waste oil tank
_____ Submerged turbine pumps with control boxes
_____ Red Jacket leak detectors
_____ Fil-Spil containment box for product
_____ Fil-Spil containment box for waste oil
_____ Turbine pump manhole
_____ Tank monitoring manhole
_____ Observation well manhole
_____ Leak alert detection system
_____ Fiberglass trench liner

BILL OF MATERIALS (CONT'D)

Furnished by General Contractor:

_____ Fill tube
_____ Product and vapor return riser, adaptors and caps
_____ Ball float valve
_____ Float valve extractor assemblies
_____ Emergency shut-off valves and brackets at dispensers
_____ All tank trim
_____ Fiberglass product and vapor recovery lines
_____ All other necessary equipment not furnished by Owner

tank. Prior to tightening the clamps, tension the cables with "come-a-longs" secured outside the tank hole. Use enough tension to tighten the cables but not to lift the "logs" or crush the tank. Caution: All sets of cables on a tank must be tightened equally to avoid tank deformation.

2.5 TANK HOLD-DOWN INSTALLATION (CONT'D)

b. The cable must rest on the top of the hold-down strap between the guides provided. Repeat this process for each set of tie-down cables.

7. After all tie-downs are completed, commence the backfill procedures to the top of the tank.

3.1 PRODUCT, VENT AND VAPOR RECOVERY PIPING

A. All piping, fittings, risers, wrapping materials, etc., shall be furnished and installed by the Contractor. Specific materials noted in this specification and/or on plans will be furnished by Owner, hereinafter referred to as Company.

1. All pipe runs are to be of "fiberglass" pipe and sized in accordance with plans.

2. Steel pipe and fittings are to be used only to fabricate swing joints for product piping at the tank connection. Steel pipe is to be used for riser to emergency shut-off valve or pump connection at pump block. Above ground vent riser is to be steel pipe.

3. Do not use galvanized pipe and fittings with diesel fuel. Use black iron pipe and fittings.

B. FIBERGLASS PIPE: Pipe and fittings to be UL approved, non-metallic, for underground piping of petroleum products. The pipe is to have bell and spigot joints.

Approved Fiberglass Pipe:

Ciba Geigy
Dualoy-3000 Pipe System
A.O. Smith Inland, Inc.
Red Thread II Pipe System
(or approved equals)

1. Non-metallic fittings are to be those manufactured by the supplier of the pipe being used.

2. Install pipe and fittings in accordance with manufacturer's instructions.

C. STEEL PIPE: (Galvanized or Black Iron)

Schedule 80 (ASTM A-120) Steel Pipe
2500# Railroad Unions
150# Malleable Iron Fittings
(or approved equals)

1. Do not use standard couplings normally furnished with the pipe.

4.1 INSTALLATION REQUIREMENTS (CONT'D)

G. SPECIAL FITTINGS:

1. The shut-off valve ("Shear" or "Safety" valve) at the base of the product pump or dispenser is to be secured in position with a steel stabilizer as detailed on the drawings. A stabilizer is to be installed, in addition, when existing dispensers are replaced.

2. Position the valve so that the line test port plug is accessible.

H. PIPE WRAPPING: All underground steel pipe and fittings shall be field primed and wrapped. Wrapping material shall be 35 mil polyethylene tape "Polyken 930" manufactured by the Kendall Company (or equal approved by Company Rep.). Wrap overlap shall be one-half width of wrapping material. Wrap 1-1/2" and 2" fittings with Polyken 900 (12 mils) with a 60% overlap. In difficult areas Polyken 931 can be used before wrapping with Polyken 900. Primer shall be Polyken 927.

I. SETTING & BEDDING PIPE:

1. A 4" minimum bed of backfill material is to be placed in all piping trenches. Smooth, compact and slope bedding material to allow a slope of 1/4" per foot toward the tanks. In extreme conditions, 1/8" per foot may be used if approved by Company Rep., refer to other portions of these specifications.

2. Piping shall be placed on prepared bed in such a manner as to minimize points at which one pipe may cross over another pipe. At points where piping must crossover, a minimum of one-half pipe diameter must separate the pipes.

3. When piping is placed on the bed, proceed to "First Test" (below) prior to backfilling trenches.

5.1 TESTING OF PIPING

A. Notify the Company Rep., who MUST observe all tests, at least 24 hours in advance of any tests.

B. The Contractor is responsible for all labor, material, and equipment to conduct pressure tests (air or hydrostatic) of all product, vent and vapor recovery piping.

C. FIRST TEST (Prior To Back Filling Pipe Trenches): Do not connect piping to tanks, remote pumps or dispensers.

1. The entire piping system, i.e., product, vent and vapor recovery (where applicable), shall be tested in accordance with the following three step procedure.

E. Vent lines (no Phase II vapor recovery):

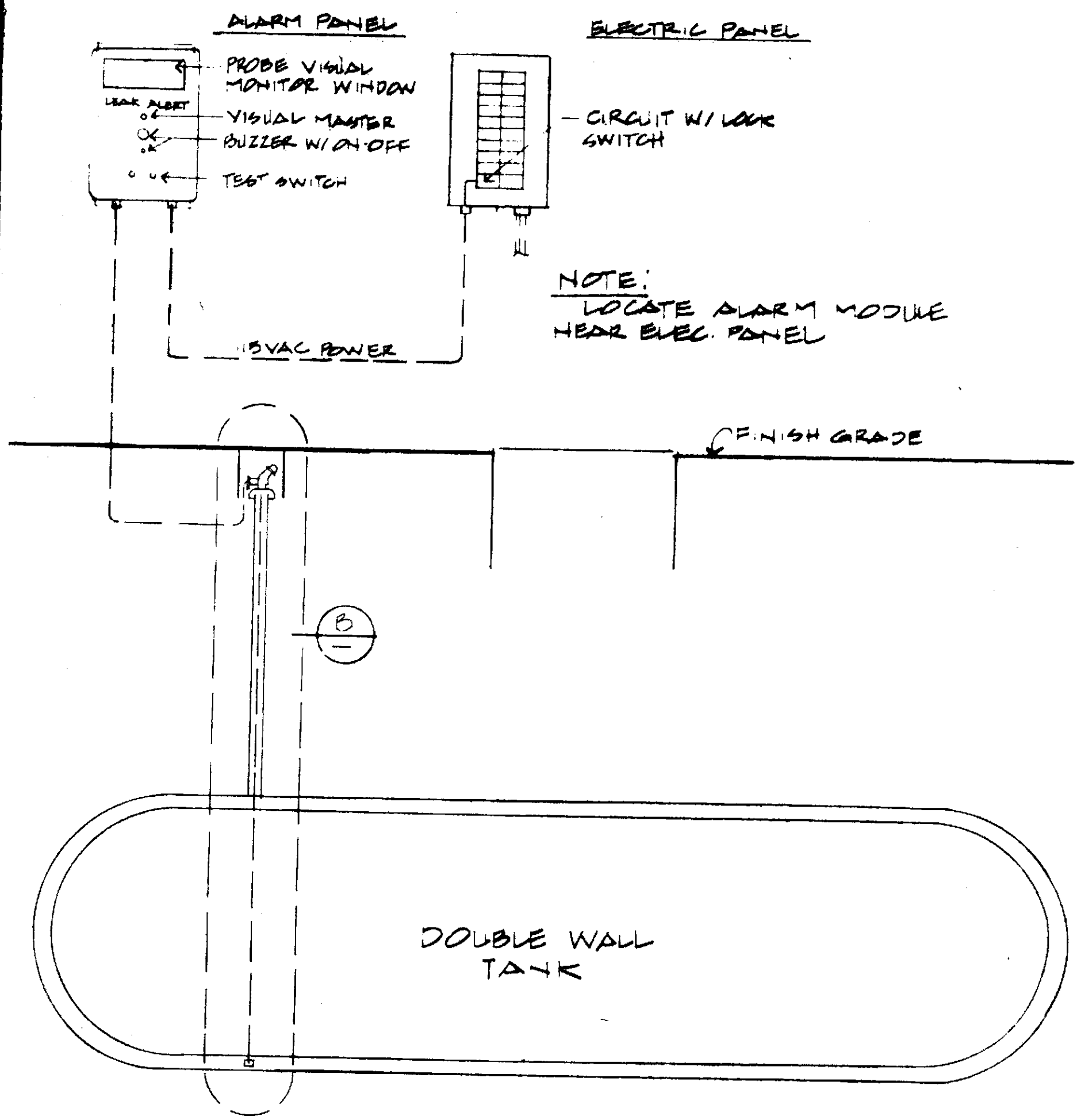
NO	REVISIONS	DATE	BY	CHKD

Mobil Oil Corporation

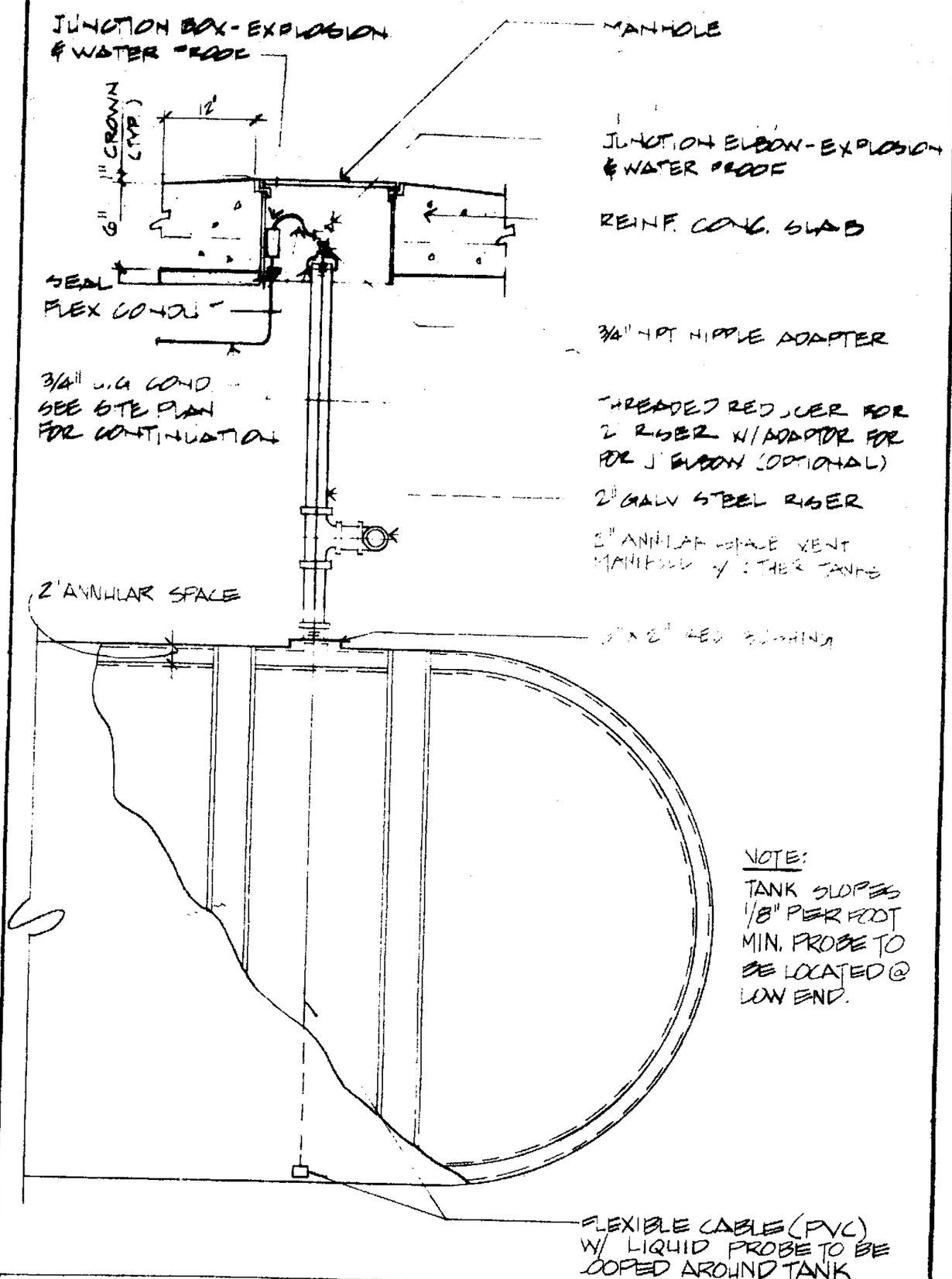
WESTERN REGION
LOS ANGELES ENGINEERING CENTER
612 SO. FLOWER ST., L.A., CA. 90017

PETROLEUM SPECIFICATIONS

DRAWN	DRAWING NUMBER: 3	REV
CHECKED		
SCALE	SHEET NUMBER: 3 OF 4	
DATE		



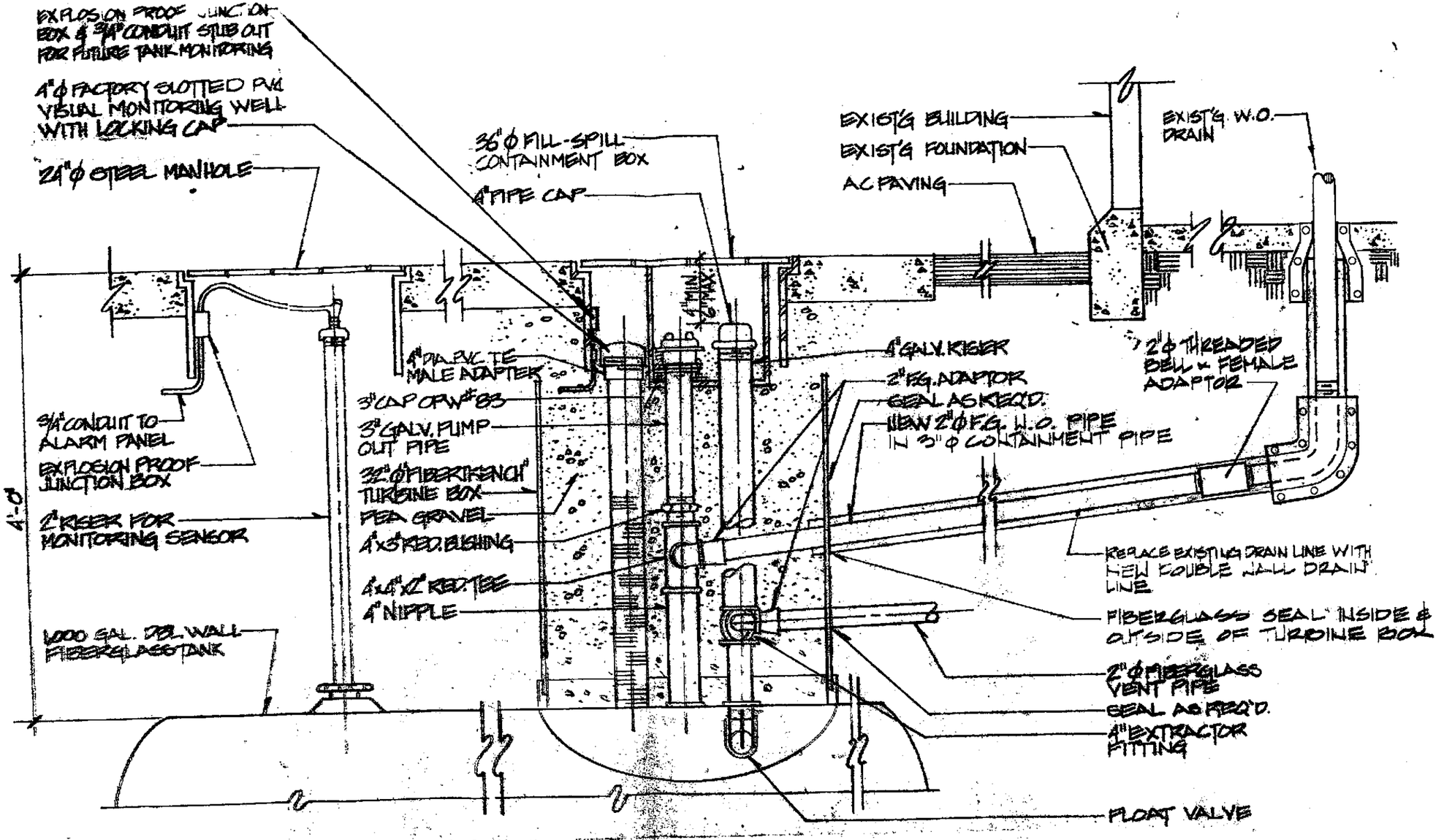
Ⓐ MONITOR SCHEMATIC (NO SCALE)



(B) LIQUID PROBE at TANK ANNULAR (NO SCALE)

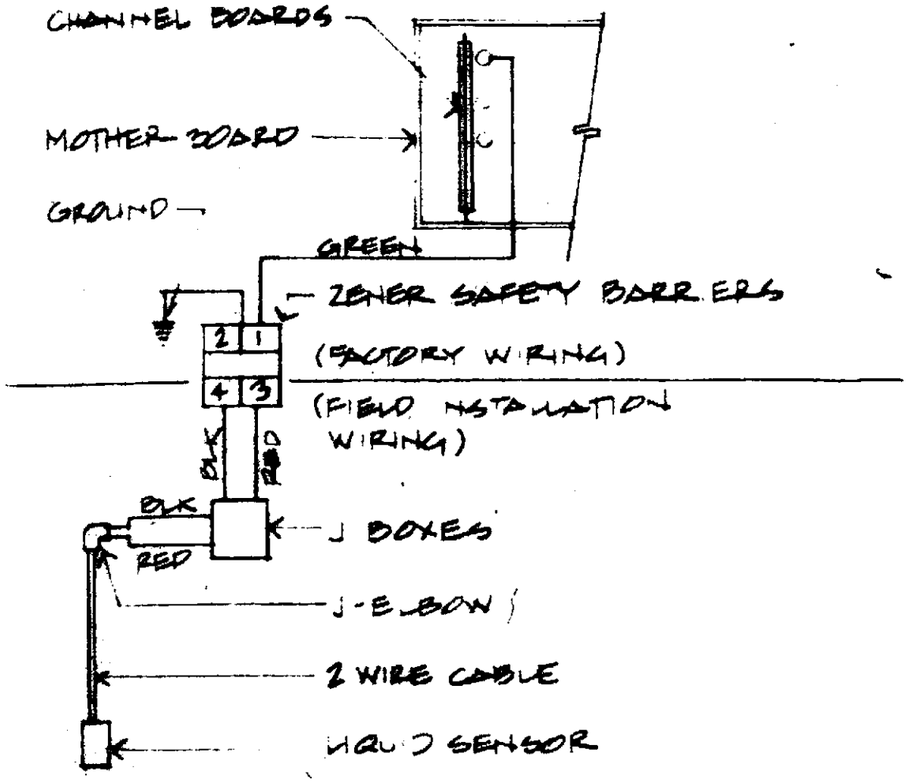
ROBERT H. LEE & ASSOCIATES, INC.
ARCHITECTURE PLANNING ENGINEERING
900 LARKSPUR LANDING CIRCLE, SUITE 125
LARKSPUR, CALIFORNIA 94939 [415] 461-8890

DATE	REVISED (DESTROY ALL PRINTS BEARING EARLIER DATE)

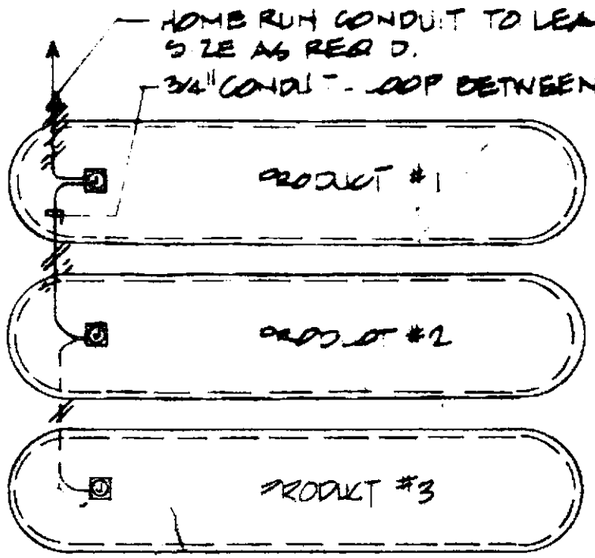


WASTE OIL TANK DETAIL

NO SCALE



© LIQUID PROBE WIRING (NO SCALE)



ALTERNATIVE:
RUN SEPARATE DIRECT BURIAL CABLES TO 'J' BOX NEAR ALARM PANEL. WHEN SPECIFIED ON SITE PLAN.

Ⓓ UNDERGROUND WIRING SCHEMATIC for LIQUID PROBE
SCALE: 1" - 10'-0"

NO | BY

MOBIL OIL CORP.

LEAK DETECTION SYSTEM

DATE 3/31/86
SCALE AS NOTED
DRAWN BY DG
APPROVED RL
PROJECT NO
DRAWING 4