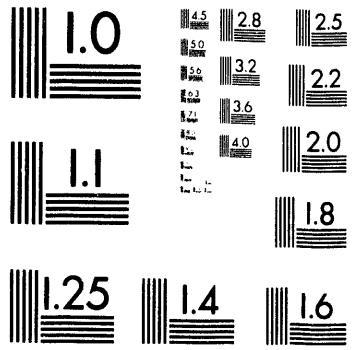

1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
5.6
6.3
7.1

1 of 1

QUARTERLY TECHNICAL PROGRESS REPORT 4
OCTOBER - DECEMBER, 1993

BENCH SCALE TESTING OF MICRONIZED MAGNETITE BENEFICIATION

Prepared for
U. S. Department of Energy
Pittsburgh Energy Technology Center
Pittsburgh, Pennsylvania 15236

By
Kurt Anast
AMAX Research & Development Center
Golden, Colorado 80403-7499

DOE Contract No. DE-AC22-93PC92206
Amax R&D Project No. 91461

JANUARY 25, 1994

LEGAL NOTICE

THIS REPORT WAS PREPARED BY AMAX RESEARCH AND DEVELOPMENT CENTER AS AN ACCOUNT OF WORK SPONSORED BY THE PITTSBURGH ENERGY TECHNOLOGY CENTER. NEITHER AMAX RESEARCH AND DEVELOPMENT OR ANY PERSON ACTING ON ITS BEHALF:

(A) MAKES ANY WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE USE OF ANY INFORMATION, APPARATUS, METHOD, OR PROCESS DISCLOSED IN THIS REPORT OR THAT SUCH USE MAY NOT INFRINGE PRIVATELY OWNED RIGHTS; OR

(B) ASSUMES ANY LIABILITIES WITH RESPECT TO THE USE OF, OR FOR THE DAMAGES RESULTING FROM THE USE OF, ANY INFORMATION, APPARATUS, METHOD, OR PROCESS DISCLOSED IN THIS REPORT.

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	1
SPECIFIC OBJECTIVES OF PROJECT	1
APPROACH	1
ACCOMPLISHMENTS DURING QUARTER	2
Cyprus- Amax Merger	2
Task 1. Project and Test Planning	2
Task 2. Engineering and Design	3
Task 4. Sample Analyses and Characterization	3
INTRODUCTION/BACKGROUND	4
PROGRAM OBJECTIVES	5
APPROACH	5
ACCOMPLISHMENTS DURING QUARTER	7
TASK 1. PROJECT AND TEST PLANNING	7
Subtask 1.1 Preliminary Project Work Plan	7
Subtask 1.2 Work Plan Review and Revisions	9
TASK 2. ENGINEERING AND DESIGN	9
Subtask 2.1 Definition of Objectives	9
Subtask 2.2 Preliminary Design	10
Subtask 2.3 Final Design	10
TASK 4 INSTALLATION & SHAKEDOWN	11
Subtask 4.3 Environmental, Safety, 7 Health Plan	11
ACTIVITIES FOR NEXT QUARTER	14
APPENDIX	15

LIST OF TABLES

		Page
Table 1.	Outline of Work Breakdown Structure	9
Table 2.	Environmental, Safety, & Health Checklist	13

EXECUTIVE SUMMARY

This project is aimed at development of a process that, by using ultra fine magnetite suspension, would expand the application of heavy media separation technology to processing fine, -28 mesh coals. These coal fines, produced during coal mining and crushing, are separated in the conventional coal preparation plant and generally impounded in a tailings pond. Development of an economic process for processing these fines into marketable product will expand the utilization of coal for power production in an environmentally acceptable and economically viable way.

This process has been successfully researched at PETC but has not been studied on a continuous bench-scale unit, which is a necessary step towards commercial development of this promising technology. The goal of the program is to investigate the technology in a continuous circuit at a reasonable scale to provide a design basis for larger plants and a commercial feasibility data.

SPECIFIC OBJECTIVES OF PROJECT

The project has the following objectives:

1. The primary objective is to design, build, and operate a 500 pound-per-hour bench-scale heavy media separation unit using micronized magnetite as the media.

2. Characterize the plants operating performance and the process economics through well conceived test plan , data collection, sample evaluation, and data evaluation while processing three different coals.

APPROACH

Amax Research & Development Center (Amax R&D) manages the project and will operate the Emerging Technology (ET) unit, perform sample analyses, technical evaluation, and economic evaluation. Amax is using the services of CLI Inc. to design and prepare construction drawings for the bench-scale plant. The plant will be constructed at the Pittsburgh's Energy Technology Center's (PETC) Coal Preparation Process Research Facility (CPPRF) by a local contractor to be determined through bid evaluation. Amax Coal Company and Mike Tsutsumi from Sizetech are consultants to the project.

The project is divided into eight tasks which include design, construction, operation and testing, sample analysis, evaluation, and decommissioning. Coal will be received from three different mines and processed through the bench scale\e plant. Testing has been split into three phases: (1) Component Testing which will examine each of the major components independently, optimize, and compare performance to lab scale tests, (2) Integrated Testing will provide evaluation of the components operating as an integrated system, and (3) Extended Tests will utilize coal from each of the three mines to determine ash and sulfur removal on each candidate feedstock.

ACTIVITIES DURING QUARTER

Cyprus - AMAX Merger

The merger of Cyprus Mineral Company and AMAX Inc. to form Cyprus Amax Minerals Company was of profound importance. The merger which was approved by both companies on November 14th, 1993 significantly affected Amax R&D, Inc.. Cyprus Amax Minerals Company decided to close Amax R&D Center as of December 29, 1993. All activities will cease at the Center except those associated with DOE contracts. Cyprus Amax will determine their interest in the contracts and take appropriate action to ensure the contract obligations are met as well as the companies interests. Since it was known the Center would be closing upon shareholder approval of the merger, project activities were minimized in order to save funding and a decision was made to complete work on Tasks 1 and 2 only. This would allow the new prime contract designee to utilize the final design and handle the remaining contract issues at their discretion.

Task 1. Project and Test Planning

The Preliminary Project Work Plan was prepared and submitted to the COR for his review and comments during the first quarter. The preliminary draft was returned and a final draft was submitted to the COR. A meeting was held in September to review the project status. The COR indicated the project objectives are being reconsidered with an emphasis on magnetite recovery and a reduced focus on cyclone performance. An initial review of the impact on the project was discussed and modifications to the work plan were indicated. The Work Plan was modified and final approval has not been received.

The Project Work Plan includes all the details relating to responsibilities, timing, scheduling, costs, objectives, as well as preliminary drafts of Task plans. Initial environmental, safety, and health planning has also been included.

Task 2. Engineering and Design

CLI Inc. prepared the final design of the bench scale test circuit. The final design was reviewed at the Final Design Meeting held in December. Two complete sets of drawing were left with the DOE for comments. CLI and Amax R&D representatives were in attendance and presented the design package to PETC representatives. The circuit design was reviewed and a proposed May 1 start date was identified. A Final Design Report was initiated after the meeting.

Task 4. Installation & Shakedown

As part of this task an Environmental, Safety, and Health (ESH) Plan was prepared for review by the COR and interested parties. The ESH plan was provided to the DOE because it is a function of the circuit design and intended operating philosophy. It can be used in conjunction with the final design for necessary permitting.

INTRODUCTION / BACKGROUND

The goal of the bench scale testing program is to offer the industry an excellent facility for development of promising processes/equipment which have been tested on laboratory scale. Continuous bench-scale testing is a prerequisite for design of larger scale process development or commercial demonstration units. The primary focus of the technology is on processing -28 mesh coal fines, usually a waste product of coal preparation plants.

This project is aimed at development of a process that can expand the application of heavy media by using ultra fine magnetite suspension. The technology to be evaluated is capable of making separations on coal finer than 28 mesh. These coal fines, produced during coal mining and crushing, are separated in conventional coal preparation plants and generally impounded in a tailings pond. Development of an economic process for processing these fines into marketable product will expand the utilization of coal for power production in an environmentally acceptable and economically viabie way.

Micronized magnetite beneficiation has been effectively researched at PETC but it has not been studied in a continuous bench-scale unit, which is a necessary step towards commercial development of this promising technology. Thus the primary goal of the proposed program is to investigate the technology in a continuous circuit, at a reasonable scale to provide a design basis for larger plants and a commercial feasibility study.

To successfully accomplish the project goals within the schedule constraint and in a cost effective way, AMAX R&D has teamed up with CLI Corporation, Pittsburgh. CLI, an engineering and construction company specializing in design and construction of coal preparation plants. Amax R&D will be the prime contractor and manage the project, operate the ET unit, perform sample analyses, technical evaluation, and economic evaluation. Amax R&D Coal will assist in selection and procurement of feed coal samples and evaluation of results to determine commercialization potential. CLI will prepare the detailed engineering design of the plant. At that point, Amax R&D will select a local Pittsburgh company to do the construction and dismantling. CLI will also assist in start up of the plant and in technical and economic evaluation of the process (cost estimation).

The scope of the work includes design, fabrication, installation, and operation of a 500 lb/hour fine coal cleaning circuit in the Emerging Technologies (ET) of the PETC CPPRF. The feed will consists of four different types of fine, -28 mesh coal. Emphasis will be on coal types that have been tested successfully in the laboratory and coal types that have potential commercial application at an Amax coal mine site.

PROGRAM OBJECTIVES

The proposed project will provide valuable operating information regarding the use of micronized magnetite media for fine coal cleaning. The overall objective of the proposed project is to determine if this technology should be considered for commercial installation at an operating coal mine. This project will allow high-quality bench scale data to be collected in a timely and cost-effective manner. Three primary objectives have been identified to achieve the overall project objective:

1. **Verify the effectiveness of the Micro Mag process at rejecting ash and sulfur from the fine fraction of various coals on a continuous bench scale basis.**

2. **Collect operating data which will determine the economic viability of the Micro Mag process in order to determine its commercial potential.**

3. **Collect engineering data for scale-up of the process for commercial operations.**

The proposed concept as tested in the CPPRF will provide operating and economic information relevant to commercial operations. The three feed stocks prepared from each coal are similar to the potential feed sources available commercially. The most prevalent slip stream that could be tested in the near term is fines screened from the run-of-mine coal.

APPROACH

The team of Amax R&D, CLI, and Amax Coal Industries was formed to accomplish the objectives of the project. Amax R&D will be the prime contractor and manage the project, operate the ET unit, perform sample analyses, technical evaluation, and economic evaluation. To enhance the possibility of successfully accomplishing the project goals within the schedule constraint and in a cost effective way, Amax R&D has teamed up with CLI Corporation, Pittsburgh. CLI, an engineering and construction company specializing in design and construction of coal preparation plants. CLI will perform the engineering design and assist in technical and economic evaluation. A company experienced with process fabrication will be selected for constructing and dismantling the plant. Amax Coal will also assist in selection and procurement of feed coal samples and evaluation of results to determine commercialization potential.

The primary goal of the proposed program is to investigate the technology in a continuous circuit at a reasonable scale to provide a design basis for larger plants and a commercial feasibility study. To accomplish this goal, the project is divided into the following eight tasks which will be completed over a 24 month period:

Task 1. Project and Test Planning
Task 2. Engineering and Design
Task 3. Procurement and Fabrication
Task 4. Installation and Shakedown
Task 5. Sample Analysis and Characterization
Task 6. Operation/Testing
Task 7. Technical and Economic Evaluation
Task 8. Decommissioning and Removal

ACCOMPLISHMENTS DURING QUARTER

The project work will follow the Work Breakdown Structure which is shown in Table 1. Each task is further broken into subtasks that also has specific objectives as defined by the title. Work was carried out on Tasks 1, 2, and 4 during the October 1 to December 31, 1993, quarterly reporting period.

TASK 1. PROJECT AND TEST PLANNING

The objectives of this task are:

1. Prepare a project work plan which will meet the project objectives and clearly outline the work to be completed.

2. Prepare management, cost, and other required plans which will define the means of managing and controlling the project efficiently.

3. Present the work plan for comment and make the revisions.

A Project Work Plan was submitted in June which was also presented at the kick-off meeting and submitted for approval by the COR. The Work Plan has been followed for work completed to date. Minor changes were agreed to during the September 21 project review meeting and were incorporated into the plan. These changes were reviewed in the 3rd quarter technical report.

Subtask 1.1 Project Work Plan

This document is the Project Work Plan and was presented at the kick-off meeting. Amax R&D prepared the plan working closely with CLI, COR, and other interested parties. Details relating to responsibilities, timing, scheduling, objectives, and the various plans required as part of the project were provided and were finalized upon review of the Work Plan. The elements of the plan were detailed in the 3rd quarter technical report.

TABLE 1 OUTLINE OF WORK BREAKDOWN STRUCTURE

TASK NUMBER	WBS ITEM DESCRIPTION
1	PROJECT AND TEST PLANNING
1.1	PROJECT WORK PLAN
1.2	WORK PLAN REVIEW AND REVISIONS
2	**ENGINEERING AND DESIGN**
2.1	DEFINITION OF OBJECTIVES
2.2	PRELIMINARY DESIGN
2.3	PREPARE FINAL DESIGN
3	**PROCUREMENT AND FABRICATION**
3.1	PROCURE EQUIPMENT
3.2	FABRICATION
3.3	COAL PROCUREMENT
4	**INSTALLATION AND SHAKEDOWN**
4.1	EQUIPMENT INSTALLATION
4.2	CONTROL SYSTEM INSTALLATION
4.3	SAFETY INSPECTION
4.4	PROCESS SHAKEDOWN
5	**SAMPLE ANALYSIS AND CHARACTERIZATION**
5.1	FINALIZE TEST, SAMPLING, AND ANALYTICAL PLAN
5.2	LOCATE CONTRACT LABORATORY
5.3	EQUIPMENT SET-UP AT CPPRF
5.4	SAMPLE ANALYSES EVALUATION
6	**OPERATION/TESTING**
6.1	FINALIZE TEST PLAN
6.2	VERIFICATION TESTS
6.3	COMPONENT TESTING
6.4	PROCESS VARIABLE TESTS
6.5	EXTENDED OPERATION RUNS
7	**DECOMMISSIONING AND REMOVAL**
7.1	EQUIPMENT AND MATERIALS REMOVAL
7.2	SITE REVIEW
8	**TECHNICAL AND ECONOMIC EVALUATION**
8.1	PREPARE FINAL REPORT
8.2	ECONOMIC EVALUATION

Subtask 1.2 Work Plan Review and Revisions

The Project Work Plan was open for comment and modification. After the COR reviewed the plan and provided comments, it was finalized and resubmitted for final approval.

Amax R&D will submit appropriate revisions to the Project Work Plan as directed by the DOE COR pursuant to the "Technical Direction" clause of the contract or whenever the Statement of Work is changed by contract modification. Revisions will be implemented when written approval is received from the DOE COR.

TASK 2. ENGINEERING AND DESIGN

Amax R&D and CLI will prepare an engineered design for the bench-scale circuit which will be used to build and install the unit at the CPPRF. The objectives of this task are:

1. Prepare a set of design performance standards for the circuit to meet.

2. Prepare a design report which will include the necessary drawings and engineering detail that can be used to construct the bench-scale test unit.

3. Review the modify the design as is necessary based upon DOE review and recommendations.

Subtask 2.1 Definition of Objectives

Design objectives were defined during the second quarter after verbal approval of the Project Work Plan by the COR. These objectives are based upon input from the DOE COR and other interested parties and are aimed at complementing the work already performed by the DOE with laboratory-scale equipment. The project's primary objective is to evaluate performance. To achieve this end, the circuit will be designed with a clear understanding of the evaluation process. Evaluation will include performance of individual equipment, process performance, capital and operating costs, and scale-up potential. Specific information of interest for design and operation of the circuit was detailed in the 3rd quarter technical report.

Subtask 2.2 Preliminary Design

A preliminary design review meting was held at PETC on September 21, 1993. Amax R&D and CLI presented the design package as it has developed. A number of changes which were discussed at the meeting were incorporated into the final design. These changes were detailed in the 3rd quarter technical report. All of these changes were finalized and were incorporated into the final circuit design.

Subtask 2.3 Final Design

The final Design was presented at a meeting at PETC on December 21, 1993. DOE will be reviewing the design and provide comments for any changes. A total of 32 drawings were prepared and reviewed at the meeting. Two sets were left with the COR for review and comment. All of these drawings are included in reduced form in Appendix I. Included in the design presentation was:

Process Flowsheet with Material Balance
Process & Instrumentation Diagram
General Arrangement Drawings
Plan Views of all floors
Section Views of Six Sections
Process Piping Plan & Section Drawings
Piping Run Locations
Equipment Details
Electrical Single Line
Equipment Schematic
Instrument Loops Drawing
MCC Cabinet Drawing
Control Cabinet
Structural Drawings
Structural Details

After comments and suggested changes are received from the COR and the changes are made, a design report will be prepared and submitted along with the drawings.

TASK 4. INSTALLATION & SHAKEDOWN

Subtask 4.3 Safety Inspection

The Environmental, Safety, and Health Plan was presented at the Final Design Meeting on December 21, 1994. After the COR provides comments or modifications, the Final ESH Plan will be submitted.

This document presents the system environmental, safety, and health analysis for Amax R&D Center's Micronized Magnetite Separation Test Circuit to be located at Pittsburgh Energy Technology Center's Emerging Technology (ET) area in the Coal Preparation Process Research Facility (CPPRF). Circuit installation is scheduled to begin May 1, 1994. During the design phase of the project, considerable effort was given to the safety and environmental aspects of the system. Any potential hazards associated with the circuit and its operation have been identified and means for elimination or avoidance have been proposed. All necessary information relating to the safety, health,and environmental aspects of the proposed circuit and its operation are described. This report will be used by the operating personnel as a tool to ensure the project proceeds in a safe manner and in compliance with all applicable laws or codes.

Upon approval of this plan the Project Manager will ensure the safety features, environmental systems, and health procedures are followed during construction and operation. All of the personnel associated with the project during construction and operation will be informed of the safety, health, and environmental related requirements. All procedures and constraints will be enforced by the Project Manager or his designee.

The content of this document covers only the equipment and process to be installed in the Emerging Technology section of the CPPRF. Operations associated with the remaining portion of the CPPRF are covered in the CPPRF Environmental, Health, and Safety Analysis report, including the high bay area of the building.

Safety Evaluation

The proposed circuit utilizes fine ground magnetite in a water medium as a heavy medium to impart a density separation on finely ground coal. The non-chemical nature of the process, fundamental equipment choice, and the benign operating conditions reduce the level of risk associated with the project. Hazards which could be defined are minimal and potential hazards can be further minimized by implementing simple design features and operating procedures. Electrical shock and rotating equipment are the most significant risks associated with the project.

Appropriate measures such as proper grounding of all electrical equipment, protective guards on rotating equipment, and warning signs will be used. The most critical aspect of the safety program for this project is maintaining a high degree of employee involvement and concern. Safety training and regular safety evaluations and inspections will be used to maintain worker safety awareness and attention.

Environmental Evaluation

Environmental hazards associated with the project are very minimal. No chemicals are expected to be used in the process. Magnetite, iron oxide, a nonhazardous mineral commonly found in the environment is the only material to be used in the process. Magnetite will be used in a finely ground state with water to make a dense medium. Impacts to the air will be minimal since the process is carried out in water. Both coal and magnetite dust will also be contained through filters and proper handling procedures. Spills from the process (containing coal, iron oxide, and water) will be directed to the floor sump which in turn reports to an on-site solids and liquids handling process. Products and waste from the process will be collected in the on-site thickener and sent to a centrifuge for final dewatering before disposal at a coal mine. Oil, used for equipment lubrication, will be contained on a spill prevention pallet and only transported in 5 gallon buckets or smaller. This initial review will be complemented by regular inspections and walk-throughs during the operating period of the Micro-Mag Test Circuit.

Health Evaluation

Health hazards have been identified and the means to eliminate those hazards to an acceptable degree of exposure are discussed. Coal dust, equipment noise, process slurry, and compressed fluids represent the primary health related hazards associated with this project. A special consideration is the nuclear density meter which will be installed and maintained by a certified specialist from the Texas Nuclear Corporation under a general license for Texas Nuclear. The specialist will also provide safety training to those involved with operation of the plant. For other identified risks, specific procedures and protective equipment will minimize the potential for exposure to operators. This review will be complemented by regular inspections and walk-throughs during the operating period of the circuit.

Project Safety Checklist

A project health, safety and environmental checklist was generated as a tool to monitor such concerns as the project progresses. Analysis of the system is an ongoing process which can best be managed through the use of regular checks during the project life. Planned system safety and environmental checks are identified in Table 1. Environmental, Safety, and Health Checklist.

Table 2. Environmental, Safety, and Health Checklist

1. System Operating Procedures will be identified and approved by the COR.
2. Specific operating procedures for the Nuclear Density Gauge will be prepared and approved by the COR.
3. P&ID, section, plan, and structural drawings will be updated and approved before installation begins.
4. A training schedule will be prepared and approved by the COR which will include process operation and Nuclear Density Gauge use.
5. Safety training will be completed before personnel are permitted to work on the circuit.
6. A safety check list will be generated for system start-up, shut-down, and emergency situations. This list will separately address the Nuclear Density Gauge.
7. Electrical protocols will be generated for operation, maintenance, and shut-down of the circuit.
8. Equipment and process safety checklist will be prepared, identifying all equipment safety features (such as guards and signage) and process safety features (such as kick plates, railings, and painted warning areas).
9. Emergency procedures will be developed, posted, and reviewed with personnel.
10. A file will be maintained at the site with manuals, plans, procedures, emergency contacts, and meeting minutes relating to all environmental, safety, and health issues.

PLANS FOR NEXT QUARTER

Final disposition of the contract should be completed during the first quarter of 1994. Since Amax R&D Center and the resources associated with the facility will no longer exist, it is likely the project will require novation to another prime contractor. Cyprus Amax will endeavor to expedite this process and will make the project manager available to facilitate the process during the transition period.

Subtask 2.3 may require various comment and modifications to the Final Design. A Final Design Report will be prepared and submitted along with a set of drawings for the proposed circuit.

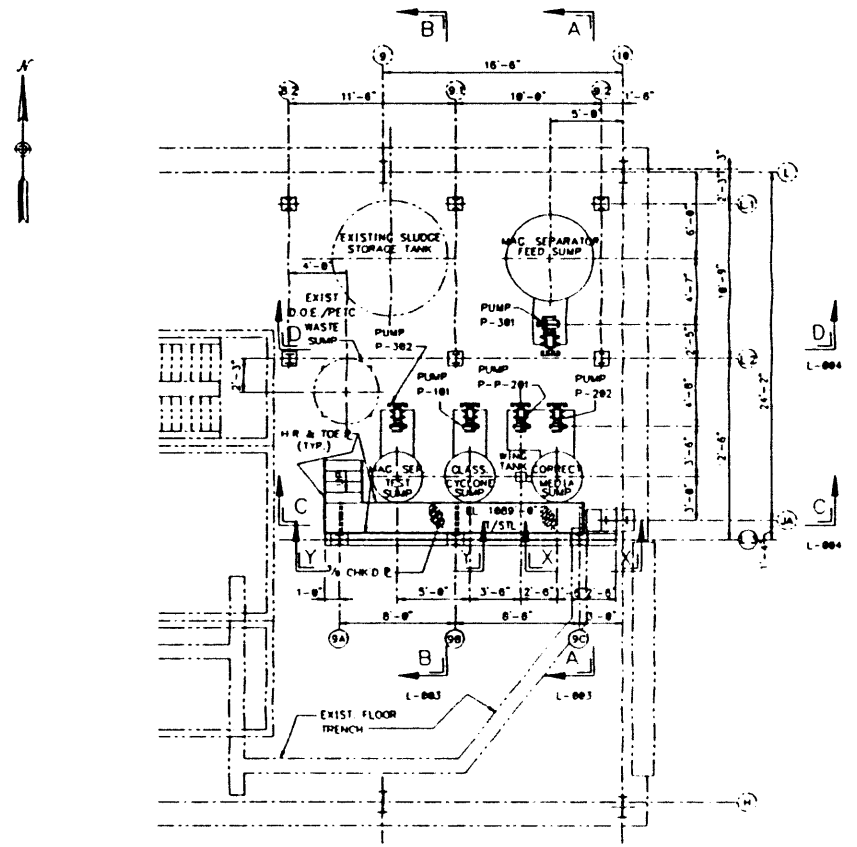
Subtask 4.3 will include receipt of comments from DOE and other interested parties concerning the ESH plan. After these comments are received a final ESH plan will be submitted and any required design modifications will be made to the drawings.

For subtask 5.1 and at the request of the COR a Test, Sampling, and Analytical Plan will be prepared and submitted. Since the final contract status is unclear, the plan may be preliminary and require significant modification should other parties decide to refocus the project work. However, the plan is essential to defining the operating plan and to maintain the project schedule.

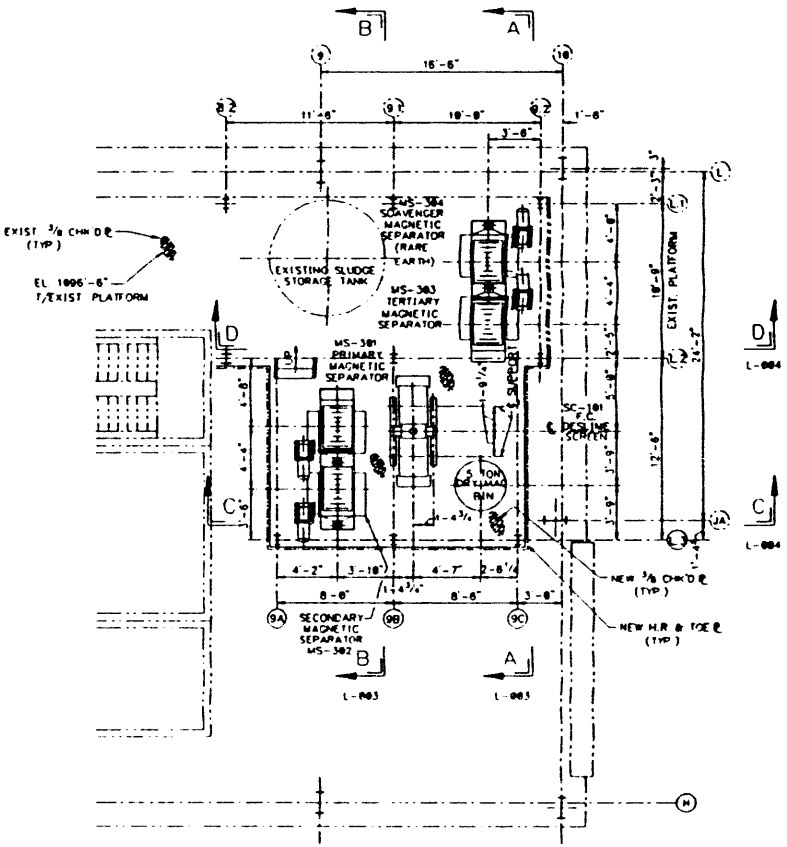
Task 3 will be initiated upon approval of the COR. In order to maintain the project schedule, equipment procurement must be initiated. Procurement of equipment will require the release of funds. This may be difficult until the final project status is known.

APPENDIX I

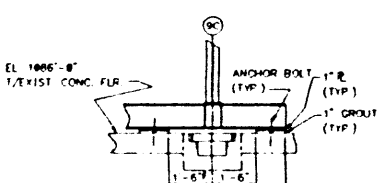
FINAL DESIGN DRAWINGS



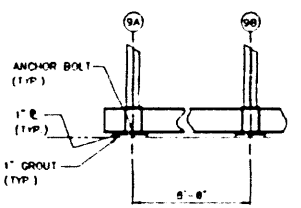
PLAN @ T/EXISTING CONCRETE FLOOR EL. 1086'-0



PLAN @ T/STEEL EL. 1095'-0
AND @ EXIST. T/STEEL EL. 1096'-5 5/8



SECTION X - X



SECTION Y - Y

D O E CONTRACT No DE-AC22-93PC92206

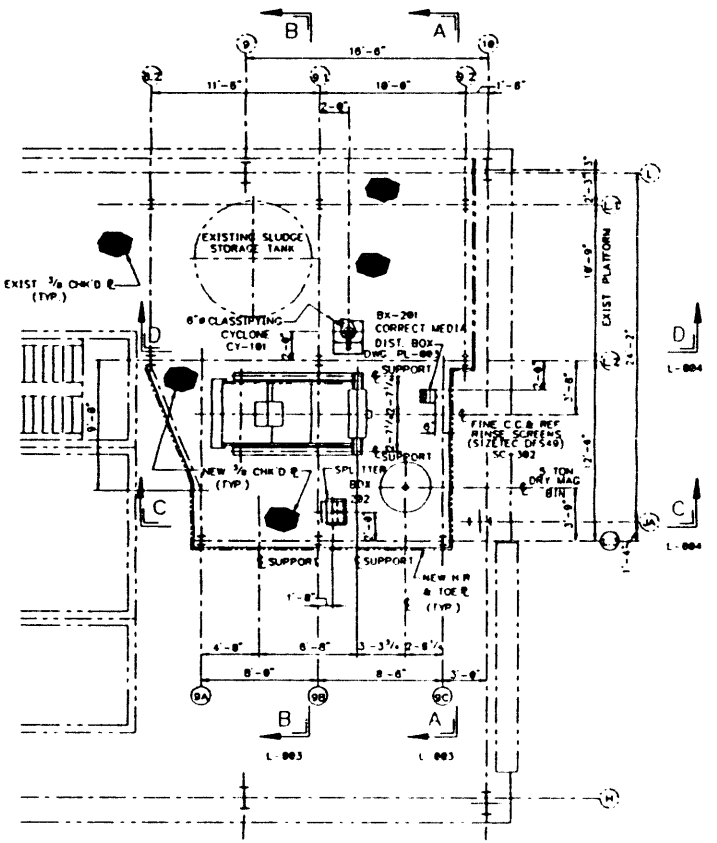
No	DATE	REVISION	BY	APP
E	12/15/93	ISSUED FOR APPROVAL	JAD	
D	9/8/93	GENERAL REVISION	JAD	
C				
B				
A				

SCALE 1/4"=1'-0" DATE
DESIGNED BY J. DeMARINO 05-21-93
DRAWN BY J. DeMARINO 05-21-93
CHECKED BY
APPR
APPR

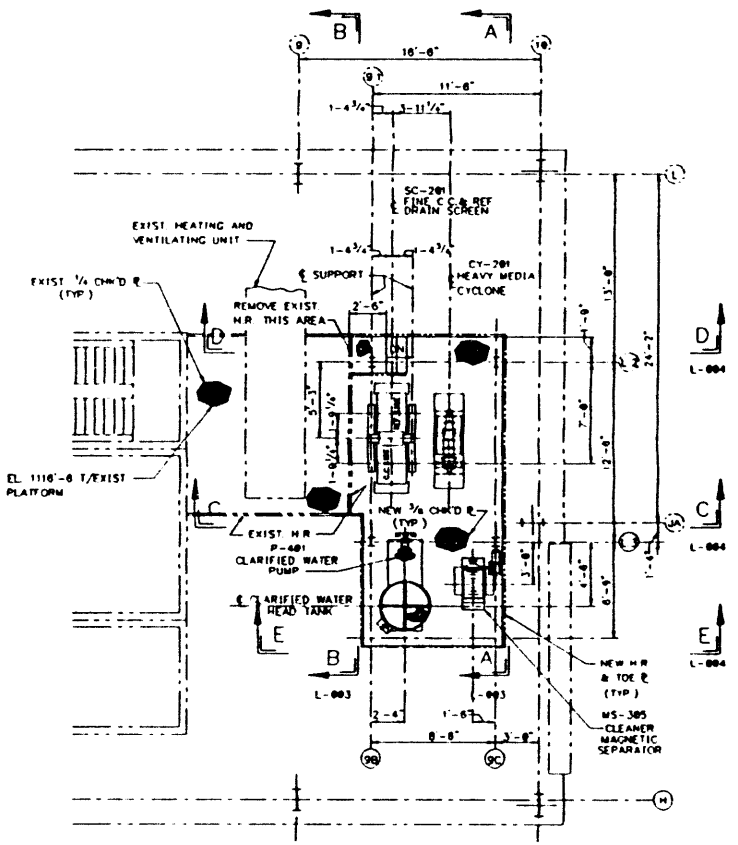
CLI CORPORATION (412)788-0668
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
GENERAL ARRANGEMENT - PLANS

JOB No J93113 | DWG No L-001 | REV E

PLOT DATE: Dec 15, 1993 - 09:47:30
FILE: \DOE\L-001.DGN



PLAN @ T/STEEL EL. 1106'-5 5/8



PLAN @ T/STEEL EL. 1115'-0
AND @ EXIST. T/STEEL EL. 1116'-5 3/4

DOE CONTRACT No. DE-AC22-93PC92206

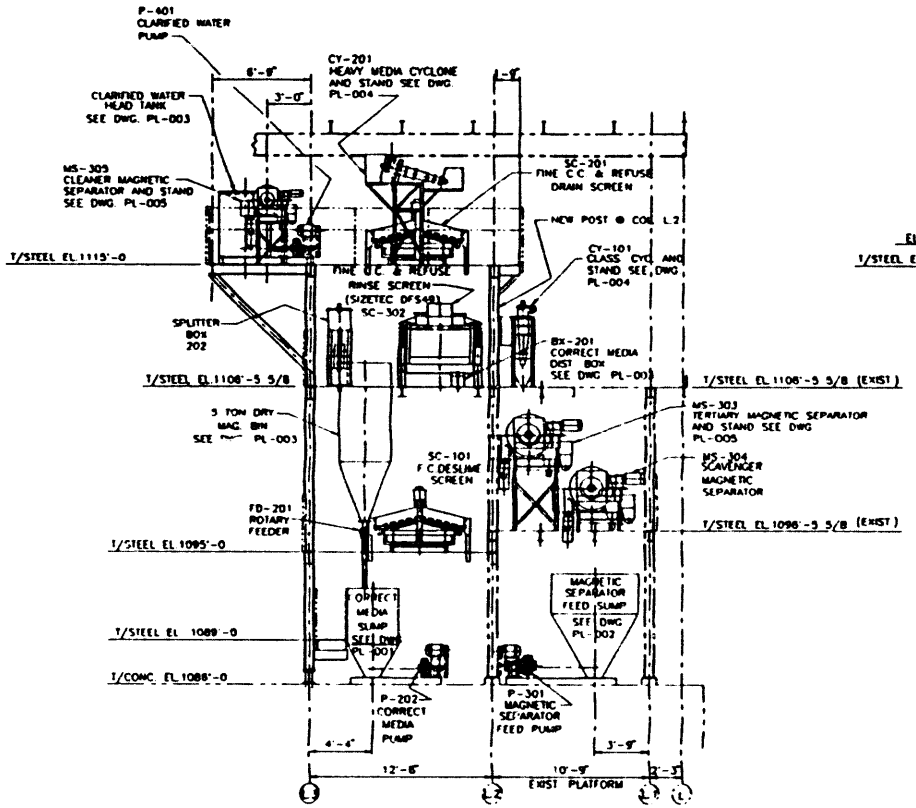
No	DATE	REVISION	BY	APP
E	12/15/93	ISSUED FOR APPROVAL	JAD	
D	12/11/93	ADD STAIRS @ EL. 1115'-0"	JAD	
C	10/07/93	GENERAL REVISION	JAD	
B				
A				

SCALE 1/4"=1'-0"
DESIGNED BY J. DeMARINO 05-25-93
DRAWN BY J. DeMARINO 05-25-93
CHECKED BY -
APPR -
APPR -

CLI CORPORATION (412)788-6666
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
GENERAL ARRANGEMENT - PLANS

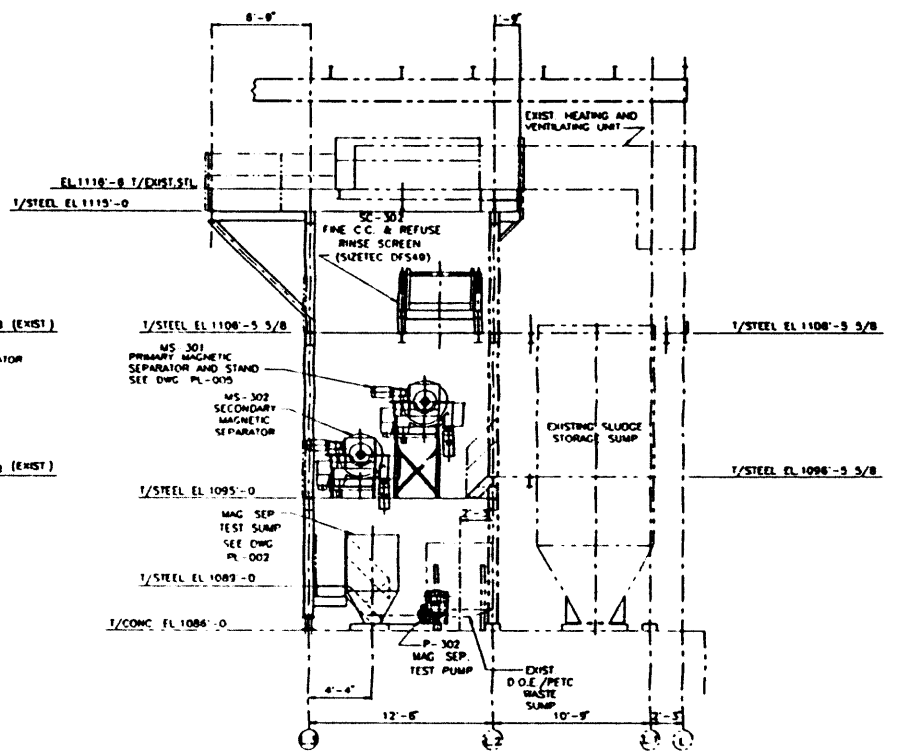
JOB No. J93113 DWG No. L-002 REV E

PLOT DATE: Dec 15, 1993 - 1042:40
FILE W:\DOC\93113\L-002



SECTION A-A

L-001 & L-002



SECTION B-B

L-001 & L-002

PLOT DATE: Dec 15, 1993 - 100426

DOE CONTRACT No. DE-AC22-93PC92206

No	DATE	REVISION	BY	CK	APP
E	12/15/93	ISSUED FOR APPROVAL	JAD		
D	12/11/93	ADD STAIRS @ EL 1115'-0	JAD		
C	10/01/93	GENERAL REVISION	JAD		
B					
A					

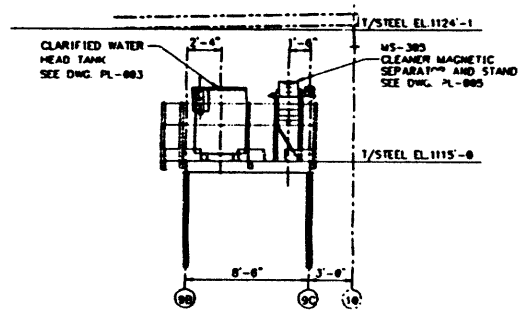
SCALE 1/4"=1'-0 | DATE
DESIGNED BY J. DeMARINO | 08-01-93
DRAWN BY J. DeMARINO | 08-01-93
CHECKED BY
APPR -
APPR -

CLI CORPORATION (412)788-8488
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S. DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

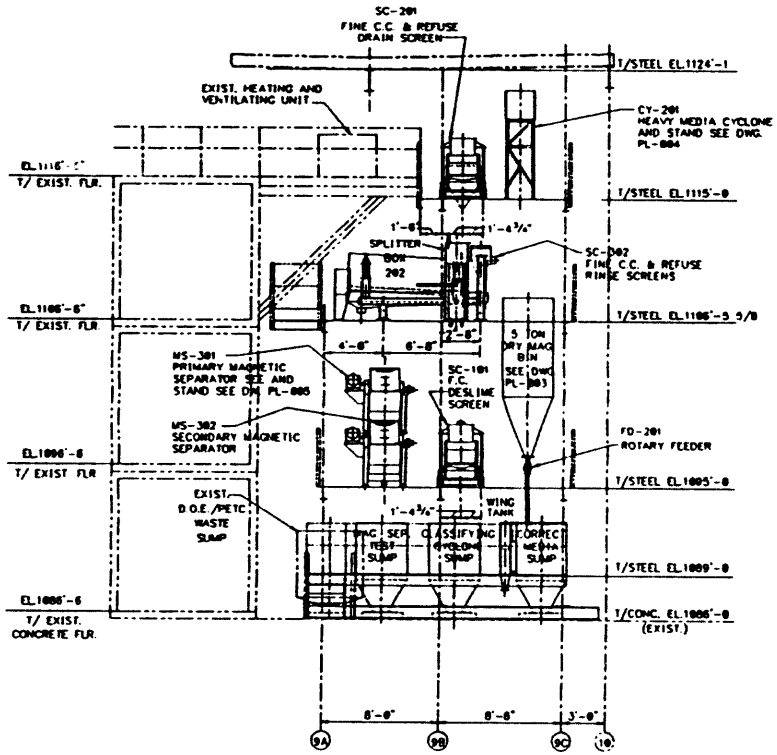
MICRONIZED MAGNETITE PROCESS BENCH SCALE

GENERAL ARRANGEMENT - SECTIONS

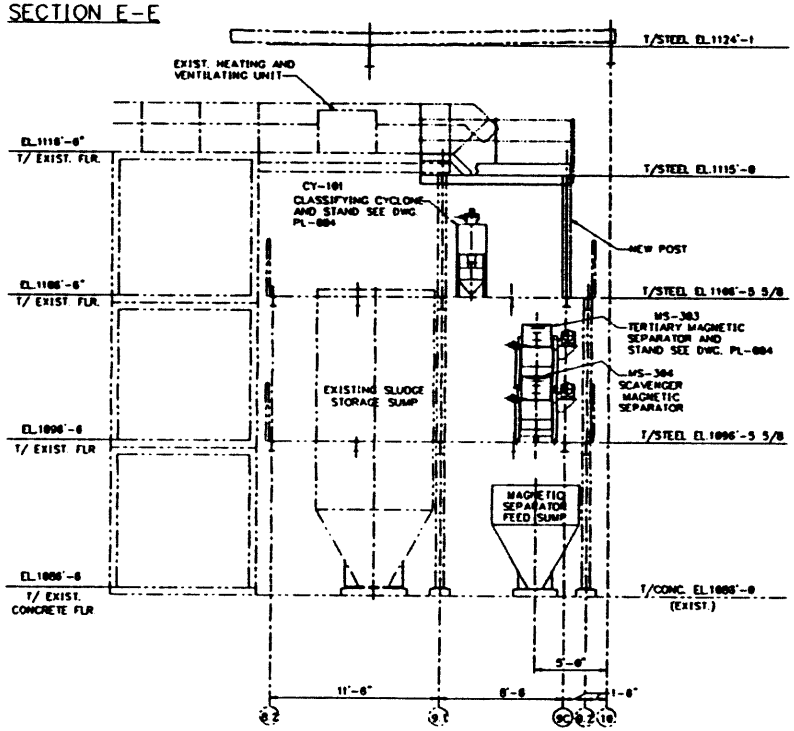
JOB No. J93113 | DWG No. L-003 | REV E



SECTION E-E



SECTION C-C



SECTION D-D

D.O.E. CONTRACT No. DE-AC22-93PC92206

No	DATE	REVISION	BY	CK	APP
E	12/15/93	ISSUED FOR APPROVAL	JAD		
D	12/1/93	ADD STAIRS @ EL. 1115'-0	JAD		
C	10/04/93	GENERAL REVISION	JAD		
B					
A					

		DATE
SCALE:	1/4"=1'-0	
DESIGNED BY	J. DeMARINO	05-28-93
DRAWN BY	J. DeMARINO	05-28-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-8668
430 PARK WEST ONE, PITTSBURGH PA 15275

U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

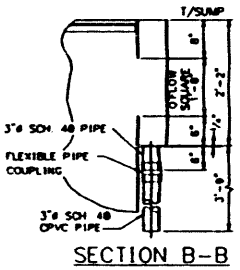
MICRONIZED MAGNETITE PROCESS BENCH SCALE

GENERAL ARRANGEMENT - SECTIONS

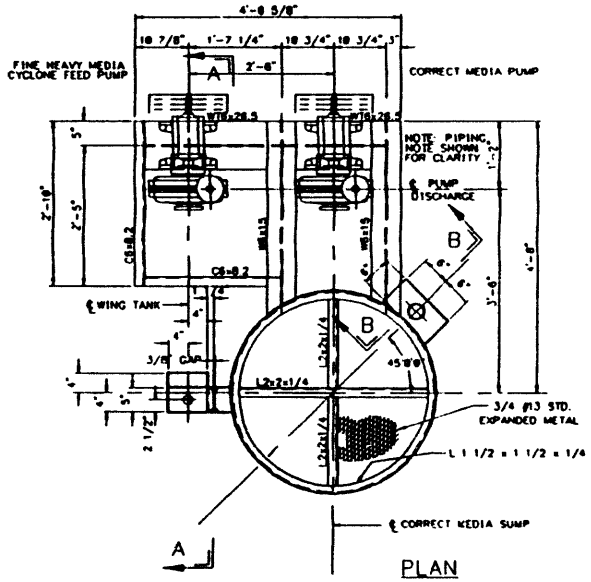
JOB No. J93113 | DWG No. L-804 | REV E

PLOT DATE: Dec 15, 1993 - 10:06:01

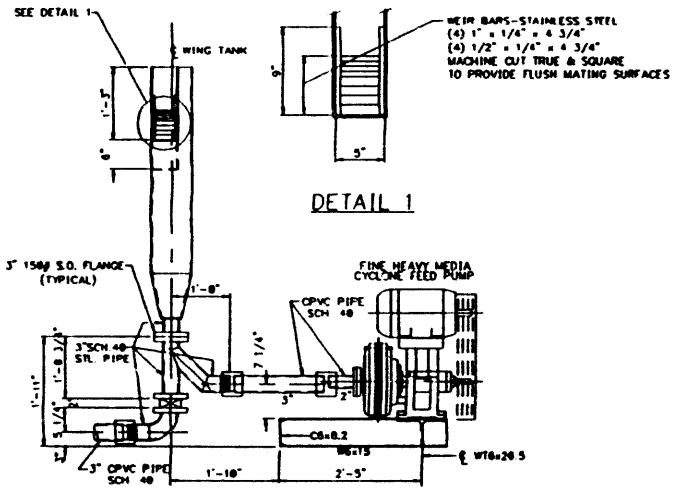
FILE: \DOC\J93113\L-804



SECTION B-B

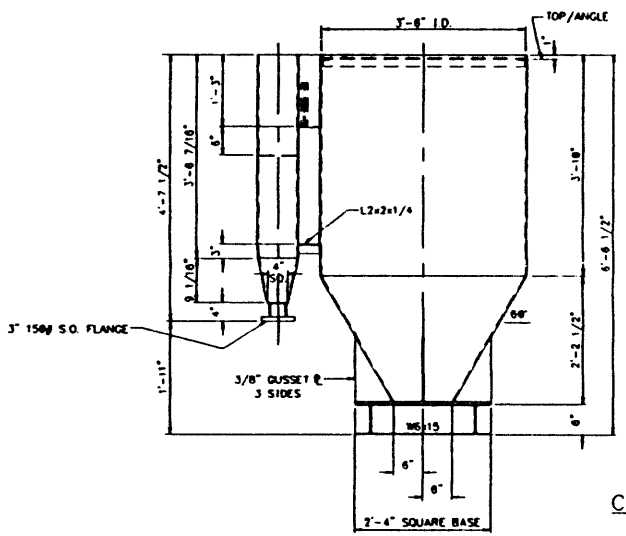


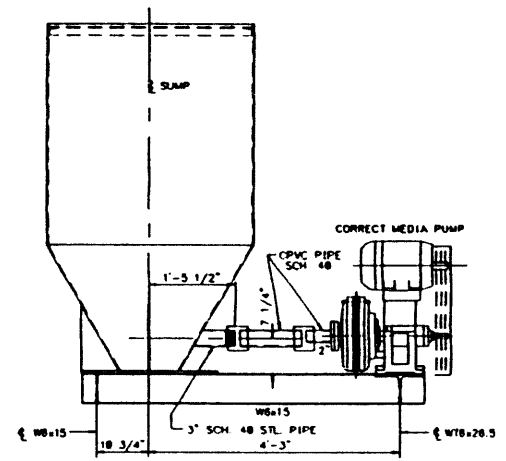
PLAN



DETAIL 1

SECTION A-A





CORRECT MEDIA SUMP, WING TANK & PUMPS SKID

ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION

D.O.E CONTRACT No. DE-AC22-93PC92206

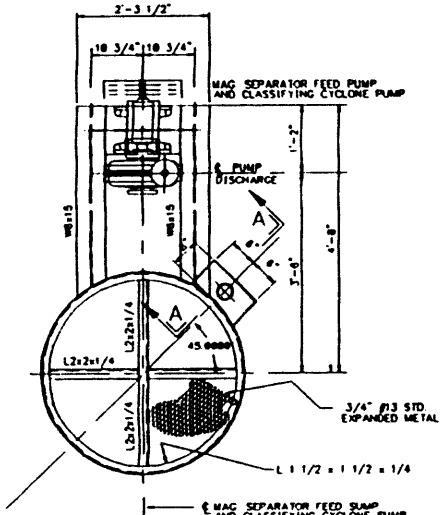
No	DATE	REVISION	BY	CH	APP
A	12/15/93	ISSUED FOR APPROVAL	JAD		

SCALE:	1"=1-0
DESIGNED BY	JRL — DATE 07-16-93
DRAWN BY	JRLUNN — DATE 07-16-93
CHECKED BY	-
APPR	-
APPR	-

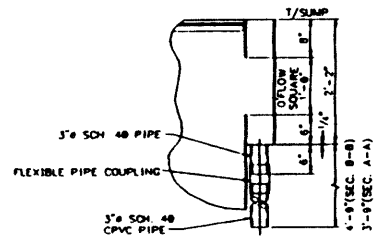
CLI CORPORATION (412)788-6666
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
WING TANK AND SUMP - DETAILS

JOB No. J93113 | DWG No. PL-001 | REV A

PLOT DATE: Dec 15, 1993 - 10:07:39

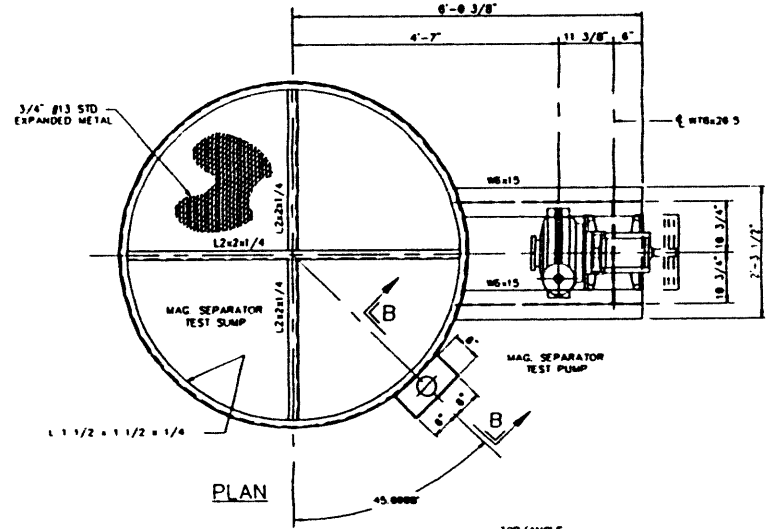


PLAN

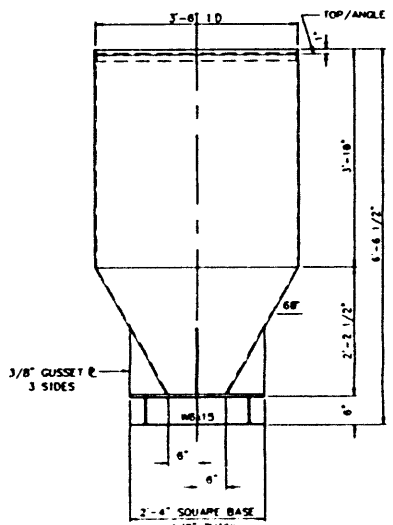


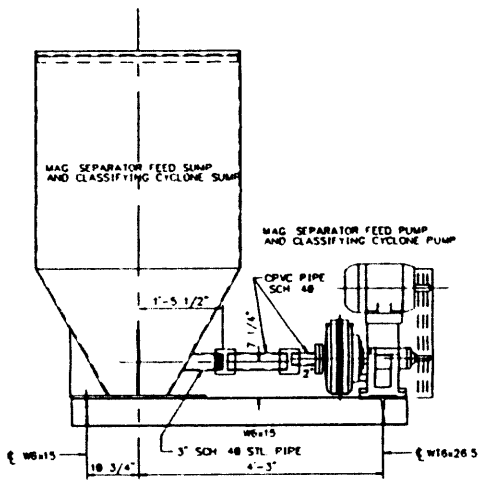
SECTION A-A
AS SHOWN AND NOTED

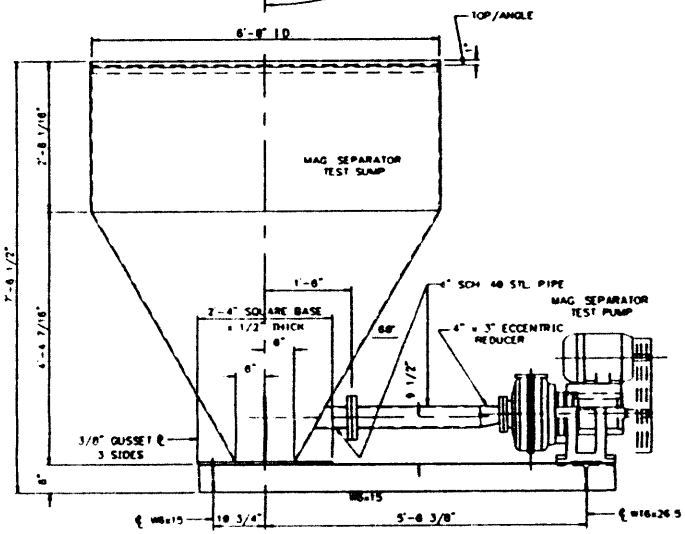
SECTION B-B
AS SHOWN AND NOTED



PLAN







MAGNETIC SEPARATOR TEST SUMP & PUMP SKID
ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION

CLASSIFYING CYCLONE SUMP & PUMP SKID
ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION

MAGNETIC SEPARATOR FEED SUMP & PUMP SKID
ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION

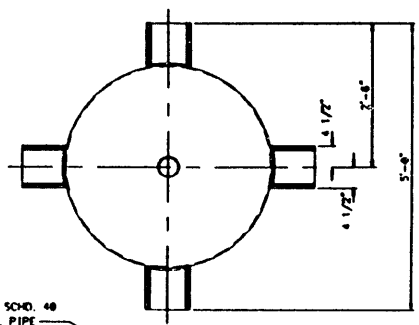
DOE CONTRACT No DE-AC22-93PC92266

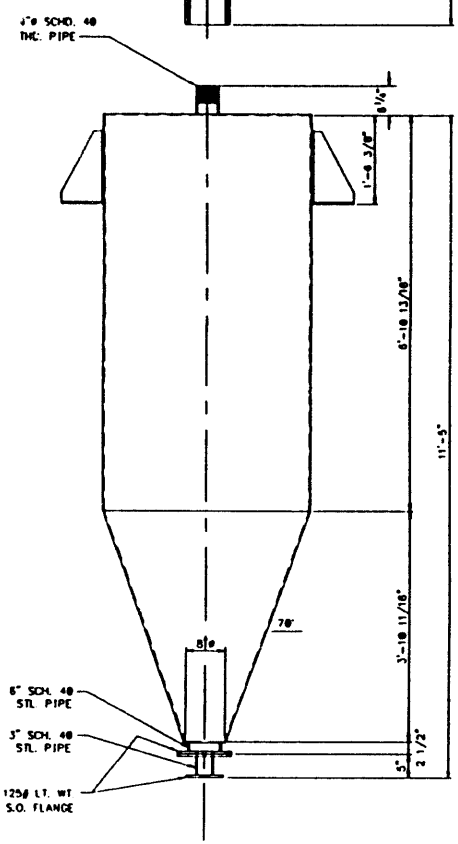
No	DATE	REVISION		APP
A	12/15/93	ISSUED FOR APPROVAL	JAD	

SCALE	1-=1-0
DESIGNED BY	JPL
DRAWN BY	JPLUMB
CHECKED BY	-
APPR	-
APPR	-
DATE	07-16-93
DATE	07-16-93

CLI CORPORATION (412)788-8088
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
SUMP AND PUMP SKID - DETAILS
JOB No J93113 | DWG No PL-882 | REV A

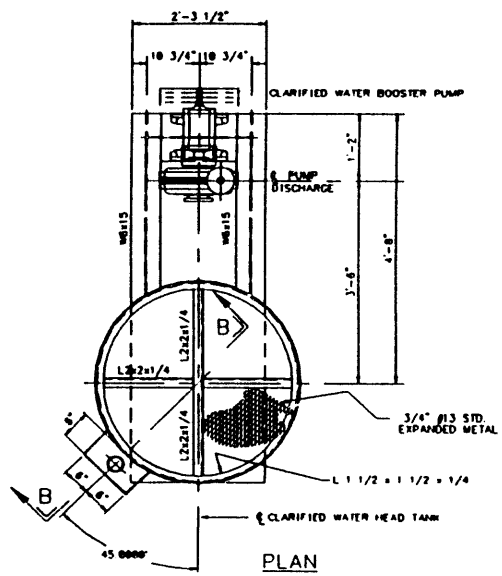
PLOT DATE: Dec 15, 1993 - 10:49:16
FILE W:\DOE\J93113\PL-882



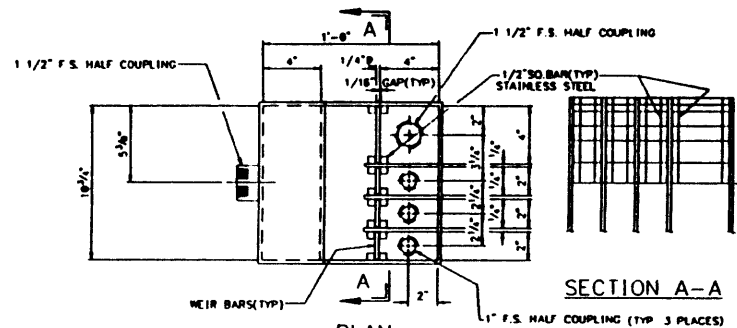


5 TON DRY MAGNETITE BIN

ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION

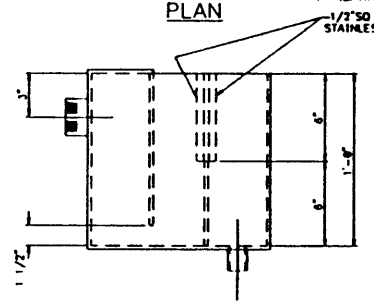


PLAN



SECTION A-A

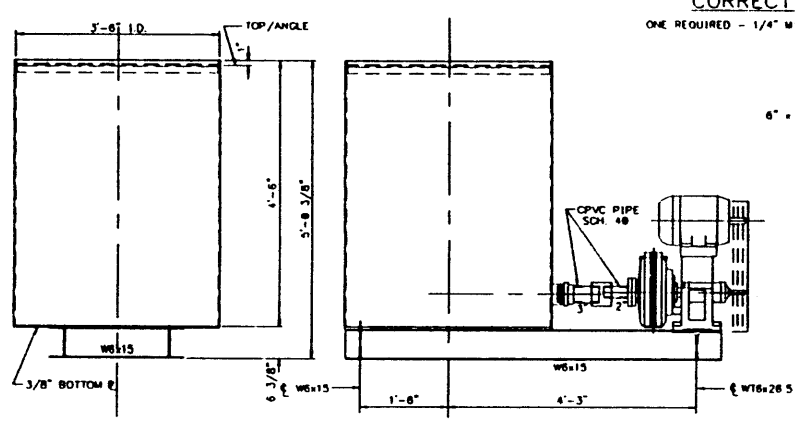
PLAN



CORRECT MEDIA DISTRIBUTION BOX

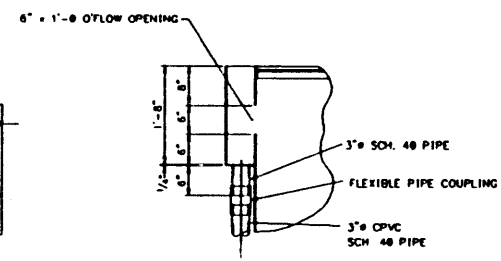
ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION

SCALE: 3"=1'-0



CLARIFIED WATER HEAD TANK & PUMP SKID

ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION



SECTION B-B

D.O.E. CONTRACT No DE-AC22-93PC92206

REV	DATE	REVISION	BY	CK	APP
A	12/15/93	ISSUED FOR APPROVAL	JAD		

SCALE:	1"=1'-0
DESIGNED BY	JRL — 07-22-93
DRAWN BY	JRLUNN — 07-22-93
CHECKED BY	-
APPR	-
APPR	-

CLI CORPORATION (412)788-8068
430 PARK WEST ONE, PITTSBURGH PA 15275

U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

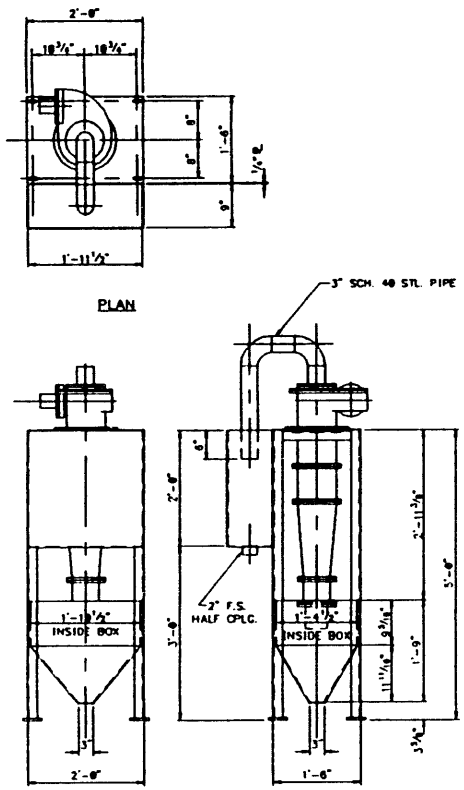
MICRONIZED MAGNETITE PROCESS BENCH SCALE

DRY MAG BIN, C.W.HEADTANK & C.M.DIST. BOX

JOB No. J93113 | DWG No. PL-003 | REV A

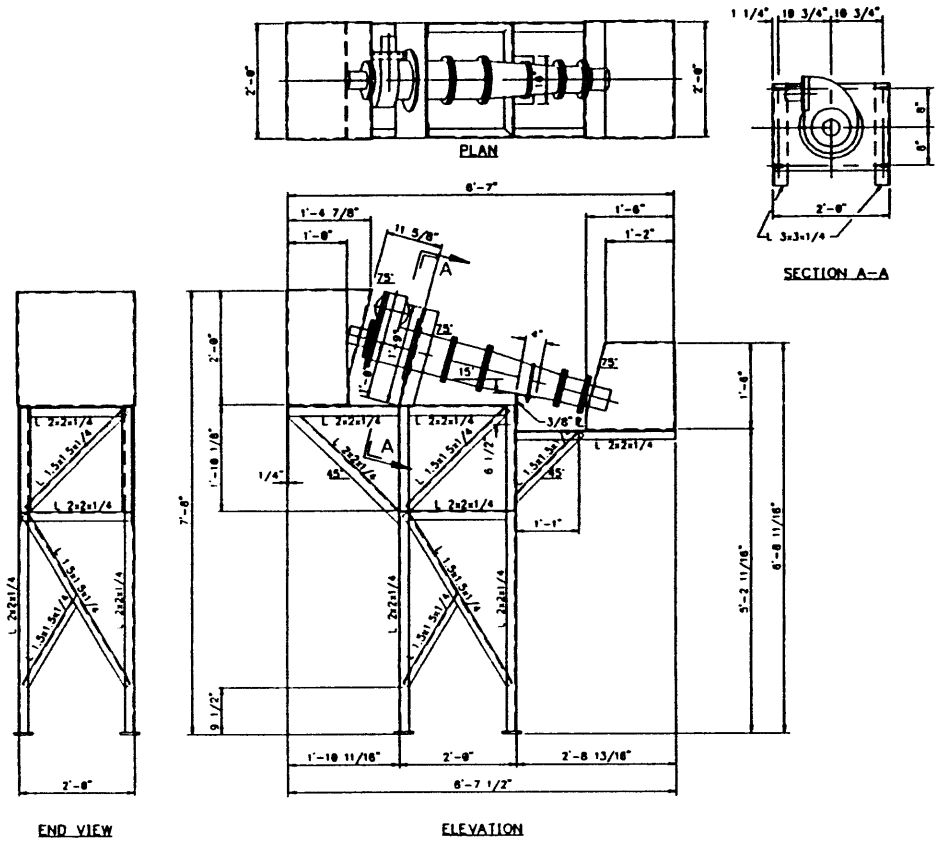
PLOT DATE: Dec 15, 1993 - 10:08:54

FILE='DOC\J93113\PL-003



CLASSIFYING CYCLONE STAND, O'FLOW AND U'FLOW BOXES

ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION



HEAVY MEDIA CYCLONE STAND, O'FLOW AND U'FLOW BOXES

ONE REQUIRED - 1/4" MILD STEEL PLATE UNLESS NOTED - WATERTIGHT CONSTRUCTION

D.O.E CONTRACT No. DE-AC22-93PC92268

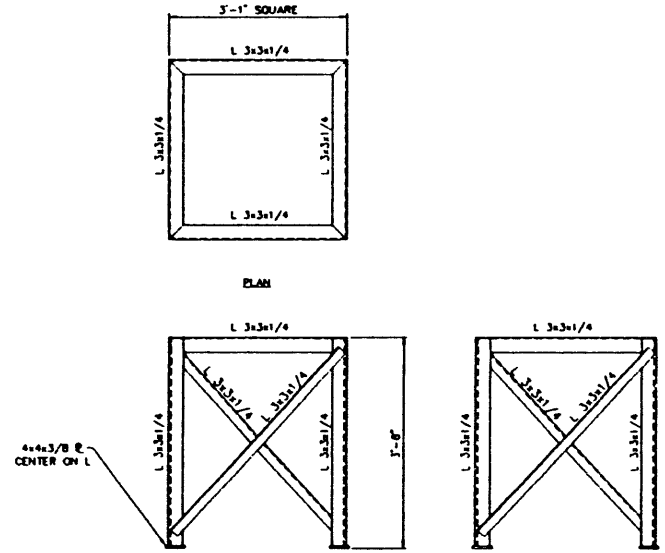
No	DATE	REVISION	BY	CK	APP
A	07/15/93	ISSUED FOR APPROVAL	JAD		

		DATE
SCALE	1-1-0	
DESIGNED BY	J.R.L.	07-26-93
DRAWN BY	J.R.LUPH	07-26-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-8488
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
H.M. & CLASS. CYCLONE BOXES & STANDS

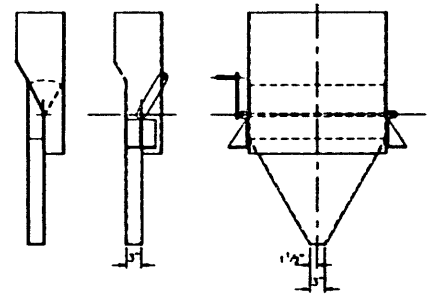
JOB No.	J93113	DWG No.	PL-804	REV A

PLOT DATE: Dec 15, 1993 - 10:29:19
FILE#:\DOE\93113\PL-804



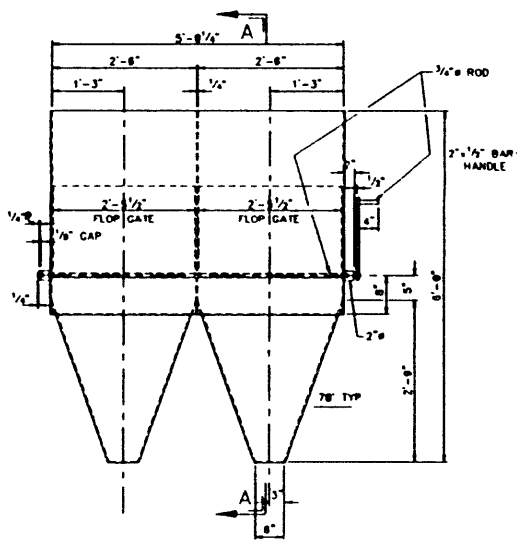
MAGNETIC SEPARATOR STAND

TWO REQUIRED

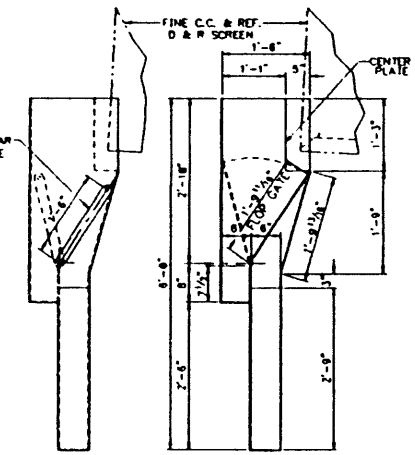


DESLIME SCREEN DISCHARGE CHUTE

TWO REQUIRED – 1/4" MILD STEEL PLATE – WATERTIGHT CONSTRUCTION



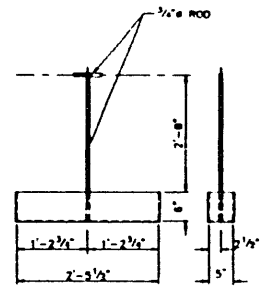
FRONT FACE



END VIEW SECTION A–A

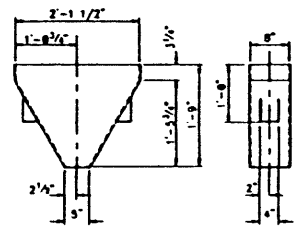
FINE C.C. & REFUSE RINSE SCREEN DISCHARGE CHUTE

ONE REQUIRED – 1/4" MILD STEEL PLATE – WATERTIGHT CONSTRUCTION



SOLIDS SAMPLE BOX

TWO REQUIRED – 10 GA. MILD STEEL U.N.



MAGNETIC SEPARATOR CONCENTRATE CHUTE

FOUR REQUIRED – 1/4" MILD STEEL PLATE – WATERTIGHT CONSTRUCTION

D.O.E CONTRACT No. DE-AC22-93PC92288

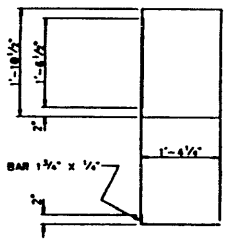
No	DATE	REVISION	BY	APP
A	12/15/93	ISSUED FOR APPROVAL	JAD	

SCALE	1"=1'-0
DESIGNED BY	JRL — 08-10-93
DRAWN BY	JRLUNN — 08-10-93
CHECKED BY	-
APPR	-
APPR	-

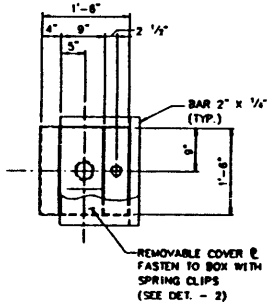
CLI CORPORATION (412)788-8888
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
SCREEN DISCH. & MAG.SEP. CONC. CHUTES

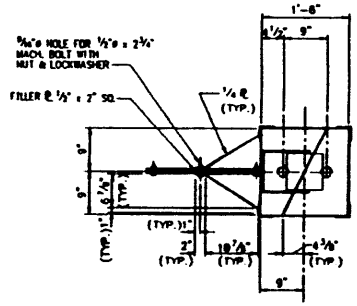
JOB No. 93113 | DWG No. PL-885 | REV A

PLOT DATE: Dec 15, 1993 - 10:13:43
FILE='DGN\93113VPL-885

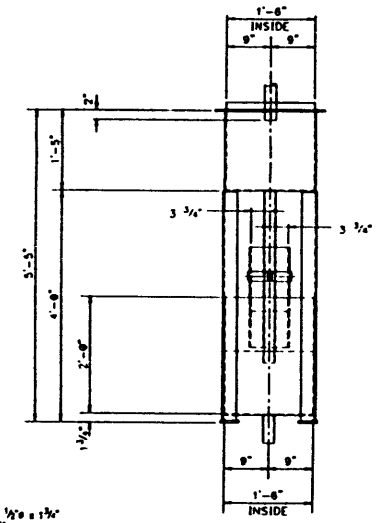


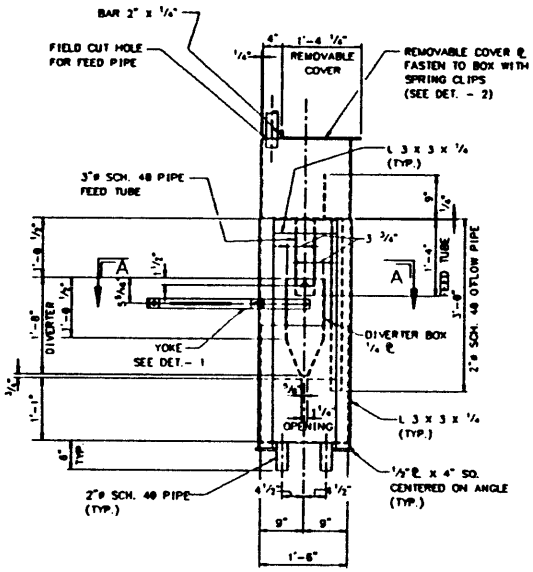
DETAIL-2

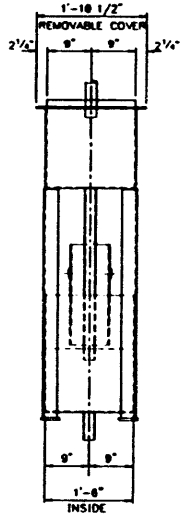


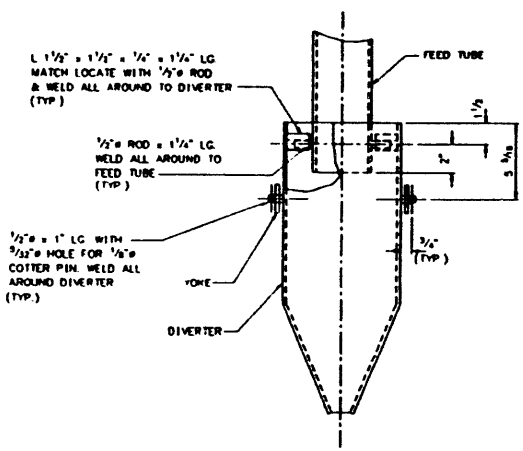


SECTION A - A



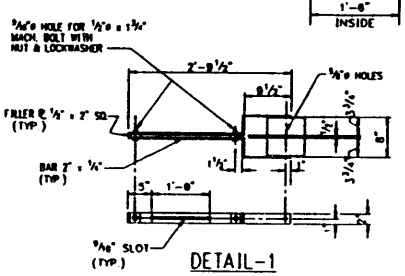






DIVERTER ASSEMBLE

SCALE: 3" = 1'- 0



DETAIL-1

YOKE

NOTE:

1 ALL MATERIAL TO BE 1/4" MILD STL. UNLESS NOTED OTHERWISE
2 ALL WELDS TO BE WATERTIGHT CONSTRUCTION
3 ALL DIMENSIONS ARE TO INSIDE OF PLATE

D.O.E. CONTRACT No. DE-AC22-93PC92286

No	DATE	REVISION	BY	CK	APP
A	12/13/93	ISSUED FOR APPROVAL	JAD		

		DATE
SCALE:	1" = 1'-0"	
DESIGNED BY	J. DeMARINO	11-08-93
DRAWN BY	J. DeMARINO	11-10-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-8668
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
-MICRONIZED MAGNETITE PROCESS BENCH SCALE
CORRECT MEDIA SPLITTER BOX

JOB No. J93113 | DWG No. PL-986 | REV A

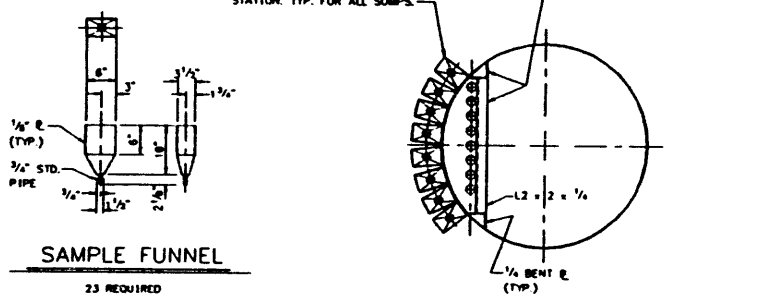
PLOT DATE: Dec 13, 1993 - 101549
FILE: \DOC\J93113\PL-986

FIELD NOTE:

FIELD POSITION AND WELD IN PLACE EACH SAMPLE FUNNEL AS NEAR AS POSSIBLE IN FRONT OF EACH SAMPLE STATION. TYP. FOR ALL SUMPS.

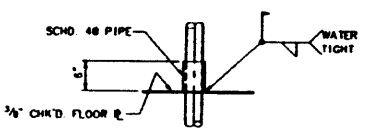
FIELD NOTE:

FIELD POSITION AND INSTALL PIPE SUPPORT BRACKET (TYP)

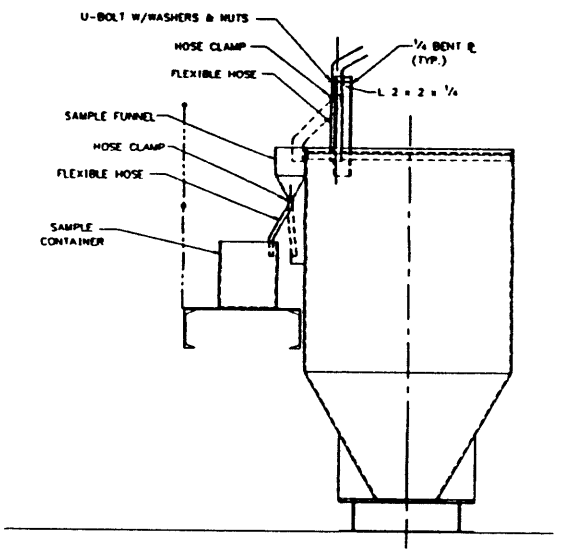


SAMPLE FUNNEL

23 REQUIRED



TYPICAL FLOOR PENETRATION DETAIL



TYPICAL SAMPLE STATION INSTALATION AT SUMP

D.O.E. CONTRACT No. DE-AC22-93PC92206

No	DATE	REVISION	BY	CK	APP
A	12/15/93	ISSUED FOR APPROVAL	JAD		

		DATE
SCALE:	1" = 1'-0"	
DESIGNED BY	J. DeMARINO	12-08-92
DRAWN BY	J. DeMARINO	12-10-92
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-0668
430 PARK WEST ONE, PITTSBURGH PA 15275

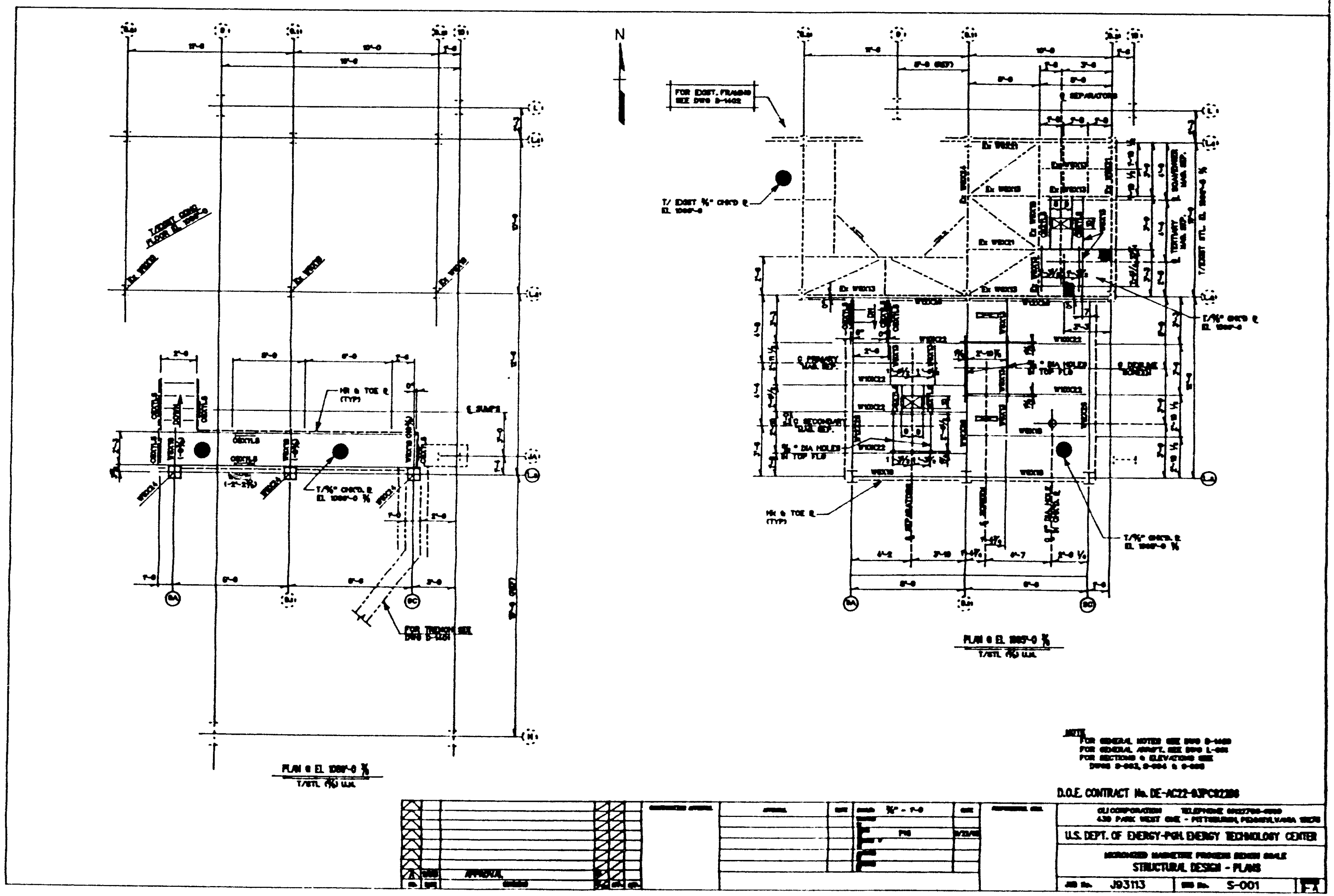
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

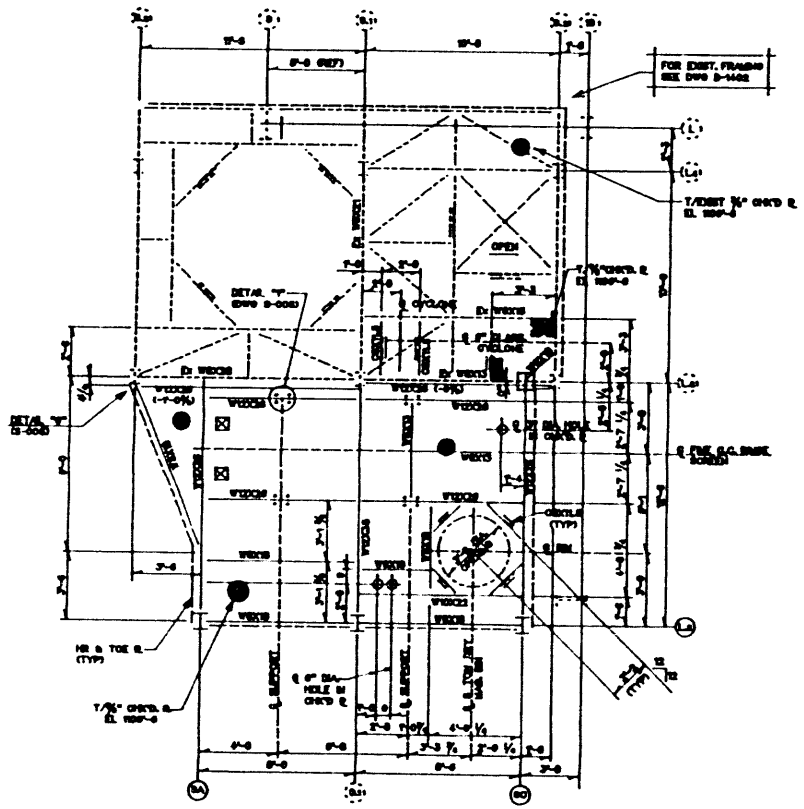
MICRONIZED MAGNETITE PROCESS BENCH SCALE

SAMPLE STATION & MISCELLANEOUS DETAILS

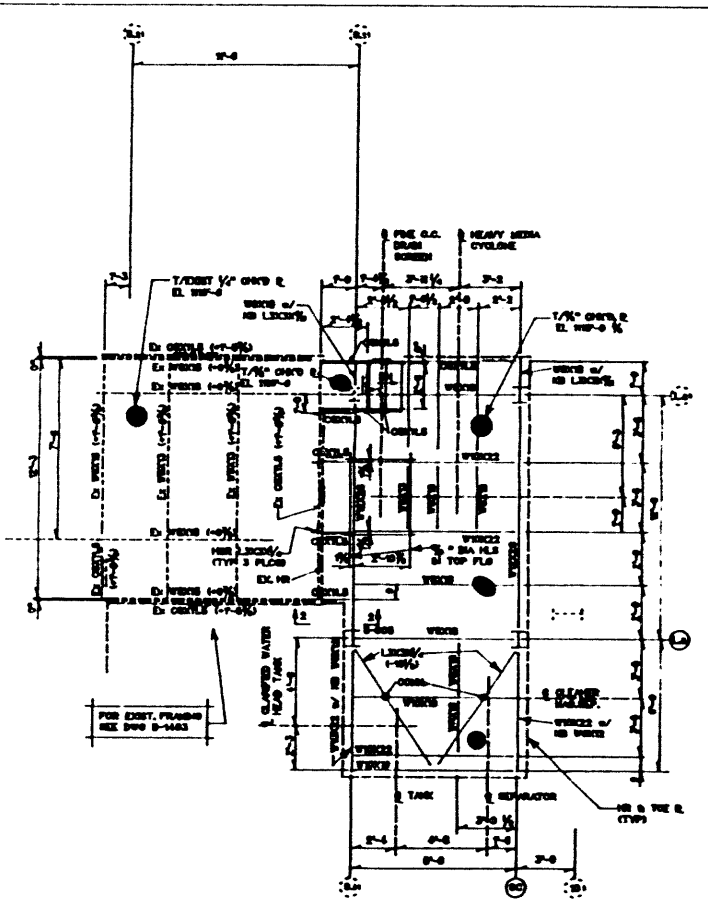
JOB No. J93113 | DWG No. PL-007 | REV A

FILE#:\DOCS\93115\PL-007 PLOT DATE: Dec 15, 1993 - 10:06:09


N
FOR EXIST. FRAMING SEE DWG D-1402
T/ EXIST ¾" CHK'D PL EL 1069'-0
T/ EXIST CONC FLOOR EL 1069'-0
HR & TOE PL (TYP)
FOR TRENCH SEE DWG D-1401
PLAN @ EL 1069'-0 ¾
T/STL PL U.N.
PLAN @ EL 1085'-0 ¾
T/STL PL U.N.
NOTE
FOR GENERAL NOTES SEE DWG D-1400
FOR GENERAL ARRGT. SEE DWG L-001
FOR SECTIONS & ELEVATIONS SEE DWGS S-003, S-004 & S-005
D.O.E. CONTRACT No. DE-AC22-93PC92206
U.S. DEPT. OF ENERGY-PGH. ENERGY TECHNOLOGY CENTER
STRUCTURAL DESIGN - PLANS
J93113
S-001



PLAN @ EL. 1926'-9"
T/STL @ U.N.



PLAN @ EL. 1927'-0 3/8"
T/GTL @ U.N.

NOTE
FOR GENERAL NOTES SEE DWG S-0000
FOR GENERAL ARCH'L SEE DWG S-000
FOR SECTIONS & ELEVATIONS SEE
DWGS S-003, S-004 & S-005

D.O.E. CONTRACT No. DE-AC22-93PC93288

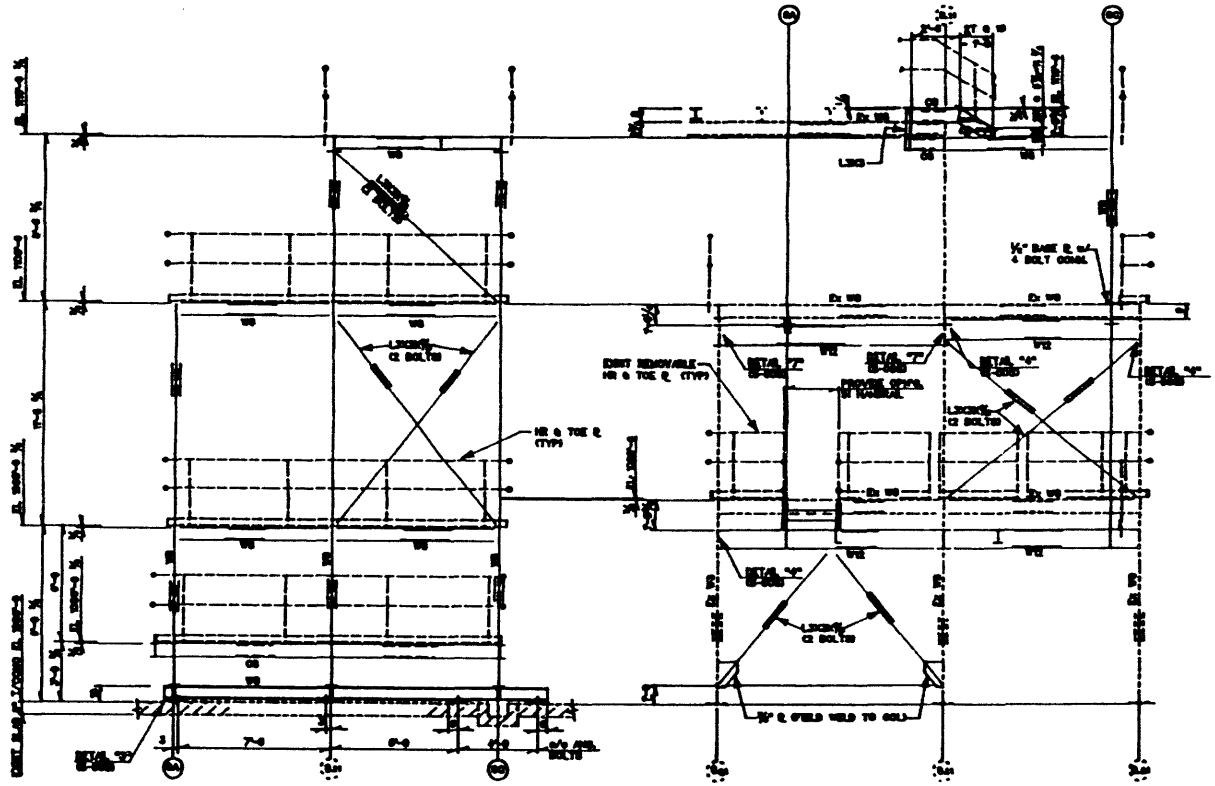
GLI CORPORATION TELEPHONE (412)782-0400
420 PARK WEST ONE - PITTSBURGH, PENNSYLVANIA 15275

U.S. DEPT. OF ENERGY-PGH. ENERGY TECHNOLOGY CENTER

MICRONIZED MAGNETITE PROCESS DEMOS BUILDING

STRUCTURAL DESIGN - PLANS

JOB No. J93113 DWG No. S-002 REV



SECTION @ L3

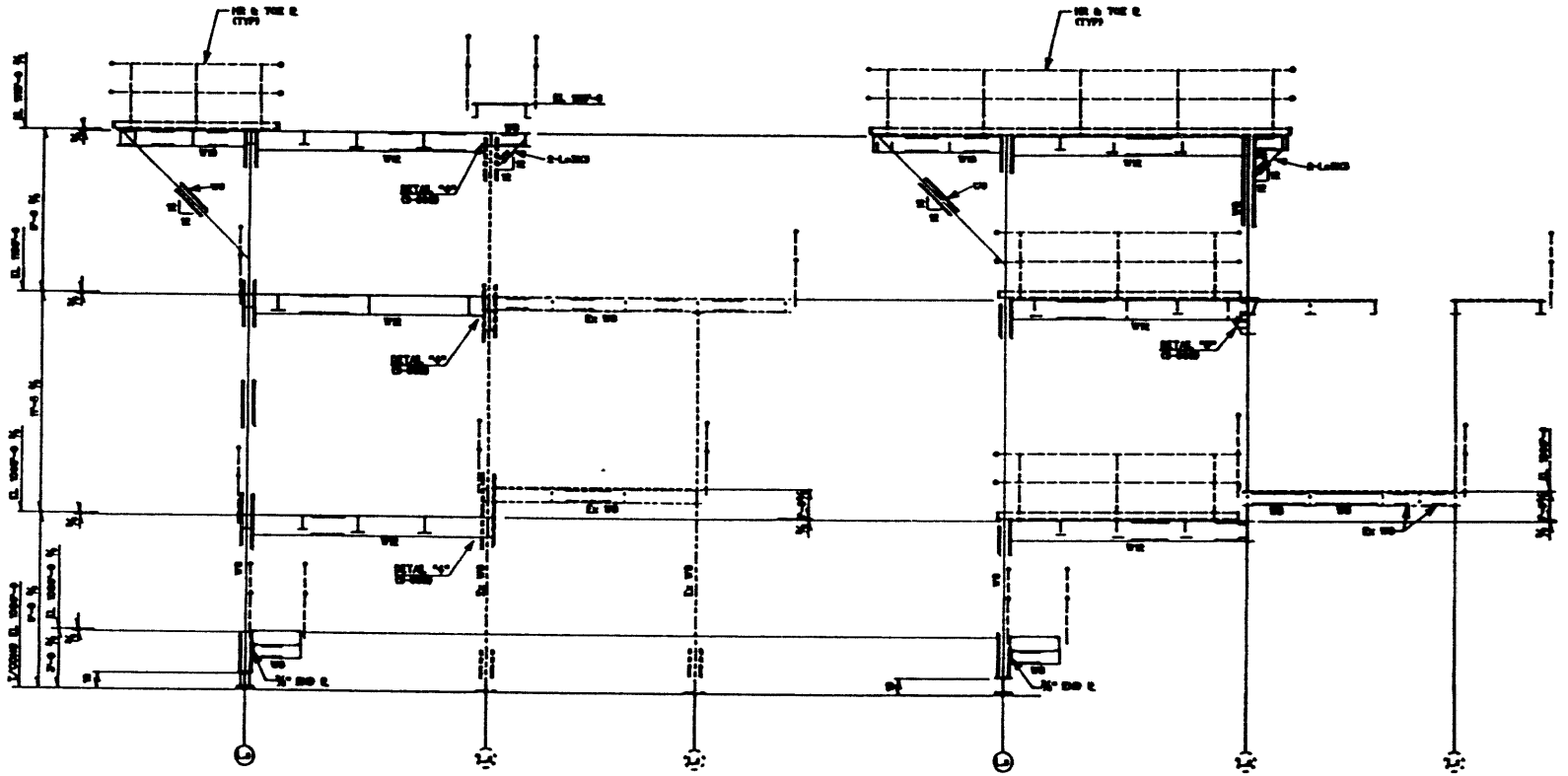
SECTION @ L2

D.O.E CONTRACT No. DE-AC22-93PC93288

U.S. DEPT. OF ENERGY-PON ENERGY TECHNOLOGY CENTER

STRUCTURAL DESIGN - SECTIONS

J03113 | S-003



SECTION @ B.1
LOOKING WEST

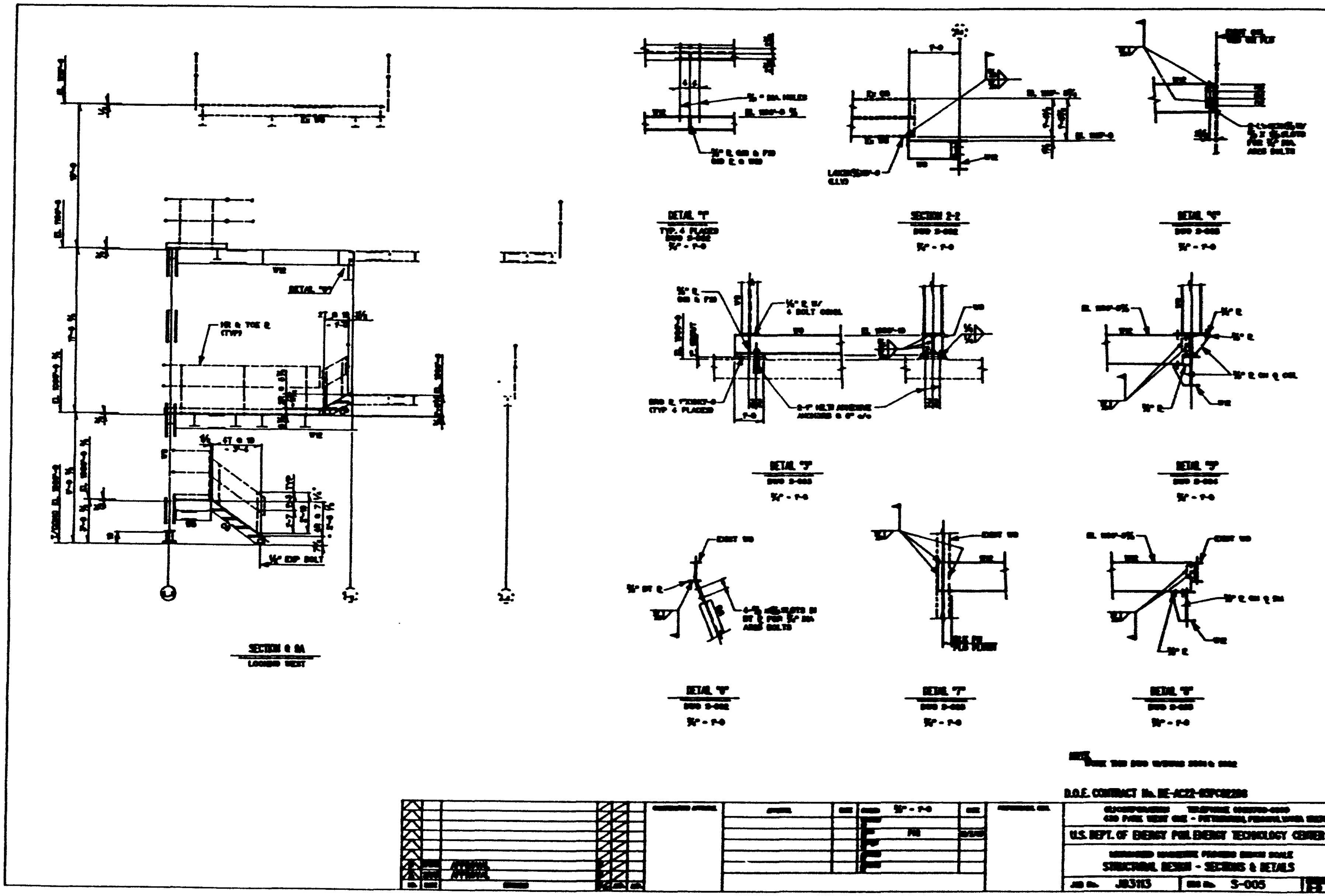
SECTION @ BC
LOOKING WEST

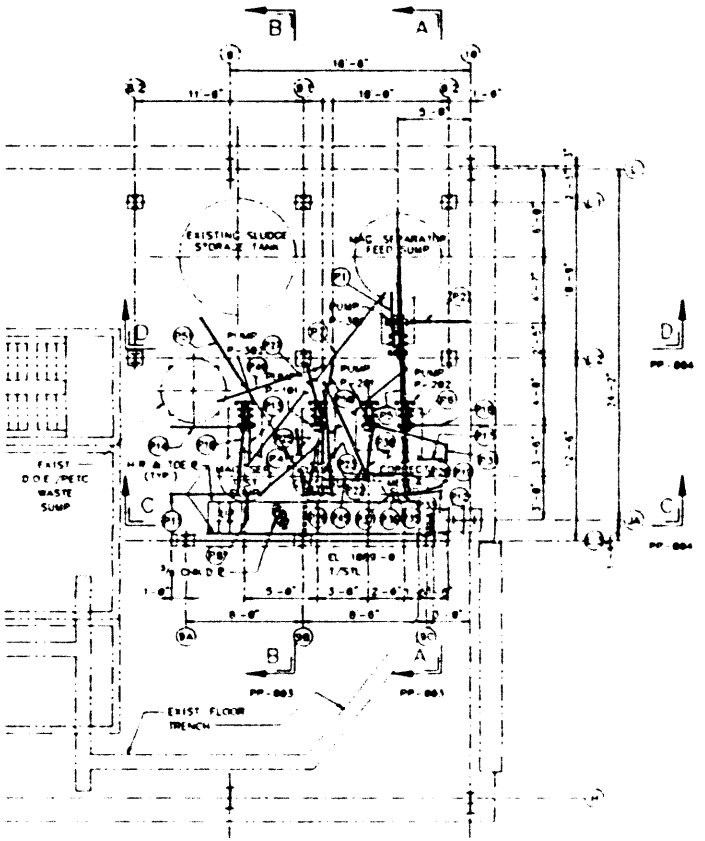
D.O.E. CONTRACT No. DE-AC22-93PC92295

U.S. DEPT. OF ENERGY-PGH ENERGY TECHNOLOGY CENTER

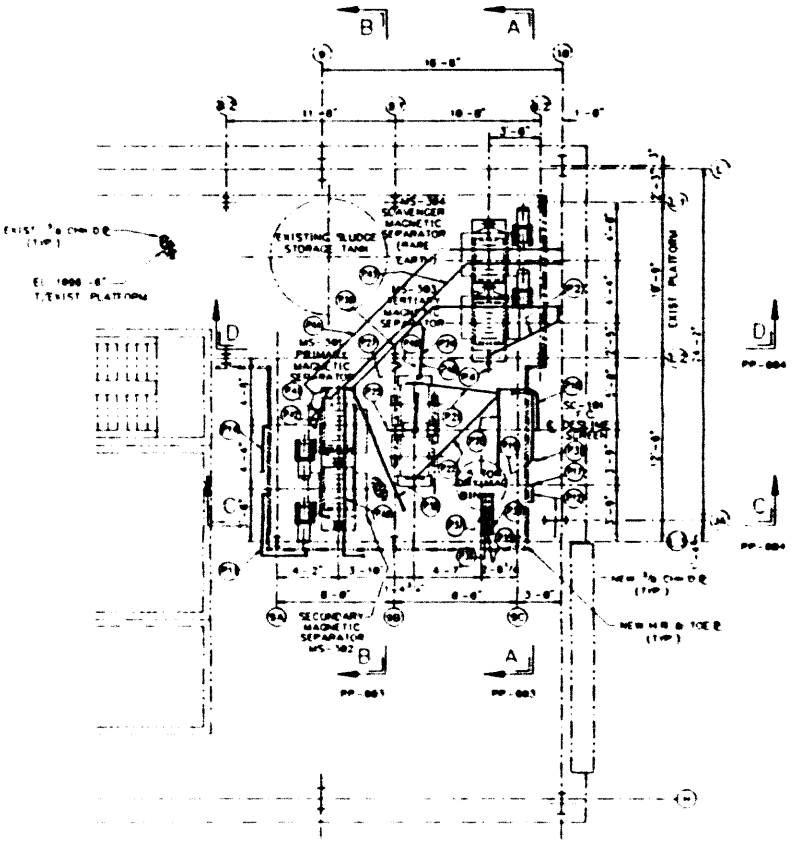
STRUCTURAL DESIGN - SECTIONS

JOB No. J8313 DWG No. S-004


SECTION 2-2
LOOKING WEST
D.O.E. CONTRACT No.
U.S. DEPT. OF ENERGY
STRUCTURAL DESIGN - SECTIONS & DETAILS
J83113
S-005



PLAN @ T/EXISTING CONCRETE FLOOR EL. 1086'-0"



PLAN @ T/STEEL EL. 1095'-0"
AND @ EXIST. T/STEEL EL. 1096'-5⅝"

D.O.E. CONTRACT No. DE-AC22-93PC92286

A	12/15/93	ISSUED FOR APPROVAL	AD			
No	DATE	REVISION	BY	CHK'D	APP'D	

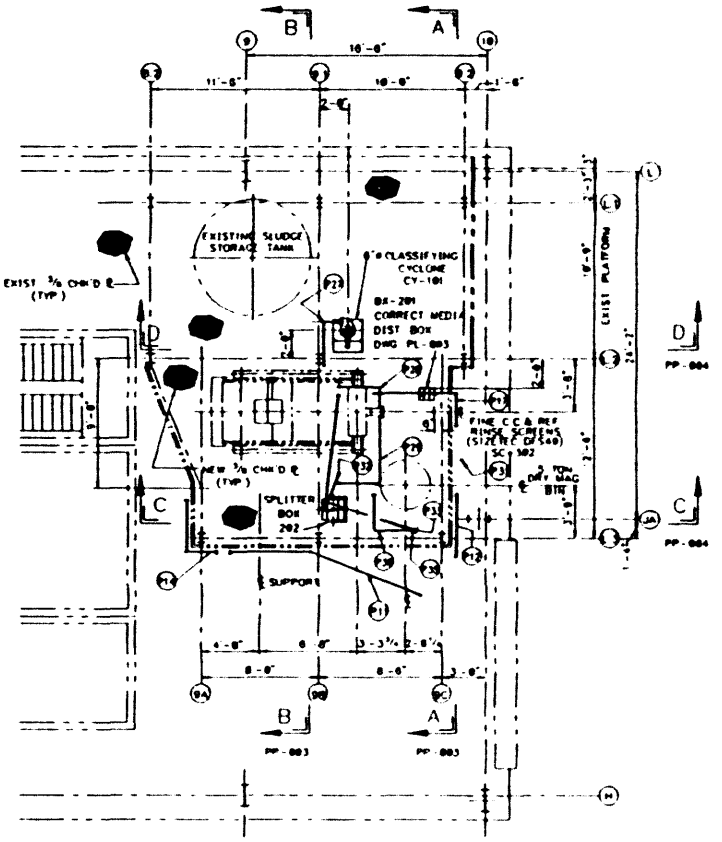
DESIGNED — DATE 12-21-93
DRAWN — DATE 12-21-93
CHECKED
APPD
APPD

CLI CORPORATION (412)788-0488
410 PARK WEST ONE, PITTSBURGH PA 15275
U.S. DEPT OF ENERGY PGH ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE

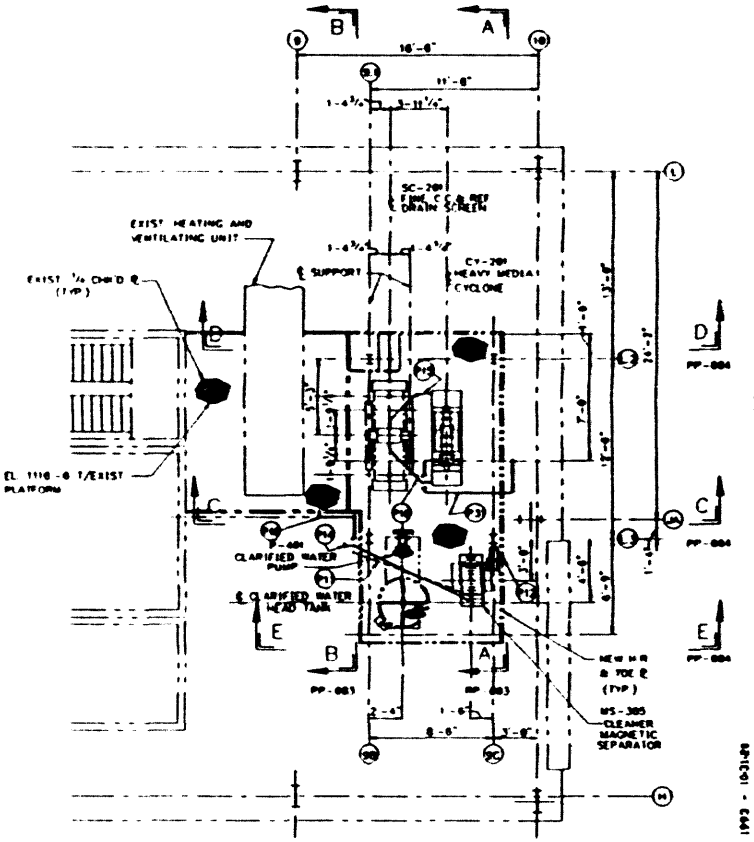
PIPING GENERAL ARRANGEMENT - PLANS

JOB No. 93113 | DWG No. PP-001 | REV A

PLOT DATE: Dec 15, 1993 - 10:08:44



PLAN @ T/STEEL EL 1106'-5 5/8



PLAN @ T/STEEL EL. 1115'-0
AND @ EXIST. T/STEEL EL. 1116'-5 3/4

DOE CONTRACT No DE-AC22-93PC92206

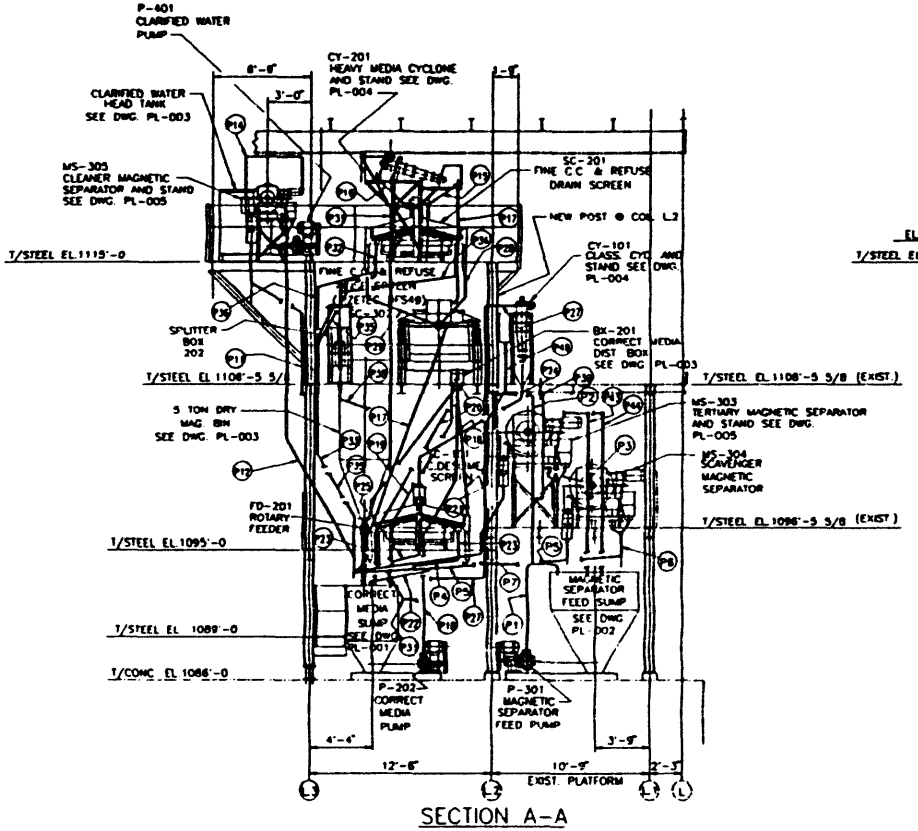
No	DATE	REVISION	BY	CH	APP
A	12/15/93	ISSUED FOR APPROVAL	JAD		

SCALE 1/4"=1'-0"
DESIGNED BY J. Dalmond 05-25-93
DRAWN BY J. Dalmond 05-25-93
CHECKED BY
APPR
APPR

CLI CORPORATION (412)788-6666
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PCH ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
PIPING GENERAL ARRANGEMENT - PLANS

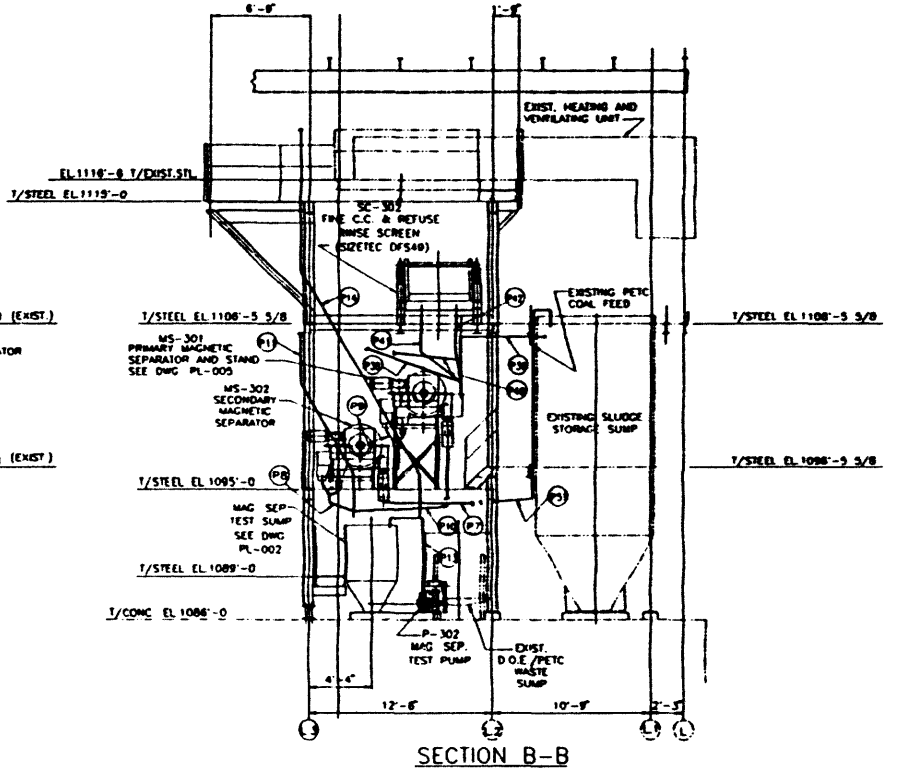
JOB No J93113 | DWG No PP-002 | REV A

PLOT DATE: Dec 15, 1993 - 10:31:09
FILE: \DOCUMENTS\PP-002



SECTION A-A

L-001 & L-002



SECTION B-B

L-001 & L-002

PLOT DATE: Dec 15, 1993 - 10:34:36

D.O.E. CONTRACT No. DE-AC22-93PC92206

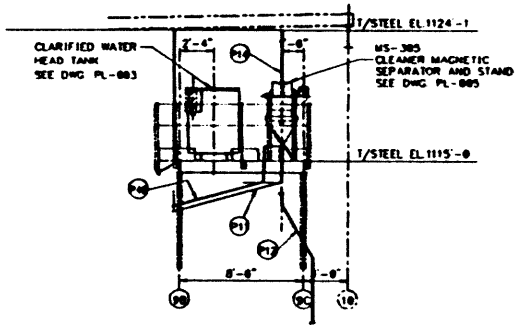
No	DATE	REVISION	BY	CK	APP
A	12/15/93	ISSUED FOR APPROVAL	JAD		

		DATE
SCALE	1/4"=1'-0	
DESIGNED BY	J. DeMARINO	08-01-93
DRAWN BY	J. DeMARINO	08-01-93
CHECKED BY	-	
APPR	-	
APPR	-	

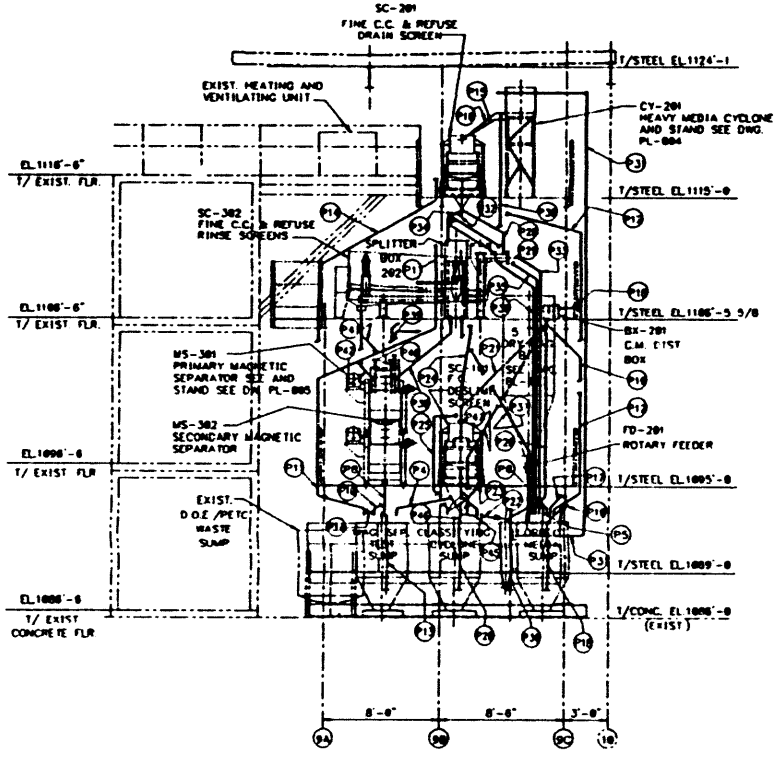
CLI CORPORATION (412)788-0688
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE

PIPING GENERAL ARRANGEMENT - SECTIONS

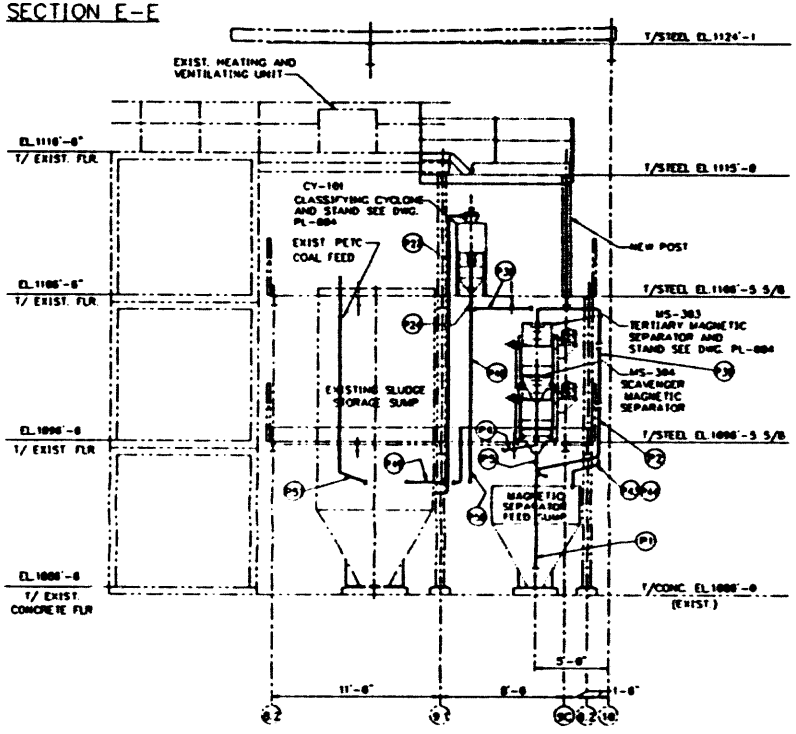
JOB No.	DWG No	REV
J93113	PP-003	A



SECTION E-E



SECTION C-C



SECTION D-D

D.O.E. CONTRACT No DE-AC22-93PC92286

						SCALE	1/4"=1'-0"	DATE	
						DESIGNED BY	J. Dunsford	05-28-93	
						DRAWN BY	J. Dunsford	05-28-93	
						CHECKED BY	-		
						APPR	-		
A	12/13/93	ISSUED FOR APPROVAL	JAD			APPR	-		
No	DATE	REVISION	BY	CH	APP				

CLI CORPORATION (412)788-0888
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT OF ENERGY PCH ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
PIPING GENERAL ARRANGEMENT - SECTIONS

JOB No. J93113 | DWG No. PP-884 | REV A

PLOT DATE: Dec 15 1993 - 10:36:48
FILE: W:\DOCUMENT\...884

LINE NO.	COLOR CODE	LOCATION	PIPE DIA.	MATERIAL
P1		RECYCLE FROM MAGNETIC SEPARATOR FEED PUMP P-301 TO MAGNETIC SEPARATOR FEED SUMP TK-301	2"ø	CPVC SCH 40
P2		FROM MAGNETIC SEPARATOR FEED PUMP P-301 TO TERTIARY MAGNETIC SEPARATOR MS-303	2"ø	CPVC SCH 40
P3		FROM TERTIARY MAGNETIC SEPARATOR MS-303 TAILINGS O'FLOW TO SCAVENGER MAGNETIC SEPARATOR MS-304	3"ø	CPVC SCH 40
P4		FROM TERTIARY MAGNETIC SEPARATOR MS-303 CONCNETRATE DISCH. TO MAG. SEP. TEST SUMP TK-302	1 1/2"ø	CPVC SCH 40
P5		FROM SCAVENGER MAGNETIC SEPARATOR MS-304 CONCNETRATE TO CORRECT MEDIA SUMP TK-201	1 1/2"ø	CPVC SCH 40
P6		FROM SCAVENGER MAGNETIC SEPARATOR MS-304 TAILINGS O'FLOW TO TV-303 TO CORRECT MEDIA SUMP TK-201	1"ø	CPVC SCH 40
P7		FROM SECONDARY MAGNETIC SEPARATOR MS-302 CONCENTRATE DISCH. TO MAG. SEP. FEED SUMP TK-301	4"ø	CPVC SCH 40
P8		FROM SECONDARY MAGNETIC SEPARATOR MS-302 TAILINGS O'FLOW TO MAGNETIC SEPARATOR TEST SUMP TK-302	2"ø	CPVC SCH 40
P9		FROM PRIMARY MAGNETIC SEPARATOR MS-301 CONCENTRATE DISCH. TO SECONDARY MAG. SEP. MS-302	4"ø	CPVC SCH 40
P10		FROM PRIMARY MAGNETIC SEPARATOR MS-301 TAILINGS O'FLOW TO MAG. SEP. TEST SUMP TK-302	2"ø	CPVC SCH 40
P11		FORM CLEANER MAGNETIC SEPARATOR MS-305 CONCENTRATE DISCH. TO MAG. SEP. TEST SUMP TK-302	1"ø	CPVC SCH 40
P12		FROM CLEANER MAGNETIC SEPARATOR MS-305 CONCENTRATE DISCH. TO CORRECT MEDIA SUMP TK-201	1 1/2"ø	CPVC SCH 40
P13		RECYCLE FROM MAGNETIC SEPARATOR TEST PUMP P-302 TO MAGNETIC SEPARATOR TEST SUMP TK-302	1"ø	CPVC SCH 40
P14		FROM MAGENTIC SEPARATOR TEST SUMP PUMP P-302 TO CLEANER MAGENTIC SEPARATOR MS-305	1 1/2"ø	CPVC SCH 40
P15		FROM HEAVY MEDIA CYCLONE CY-201 UNDER FLOW TO DRAIN SCREEN SC-201	2"ø	CPVC SCH 40
P16		FROM HEAVY MEDIA CYCLONE CY-201 OVER FLOW TO DRAIN SCREEN SC-201	3"ø	CPVC SCH 40
P17		FROM TV-201 VALVE TO CORRECT MEDIA SUMP TK-201	1"ø	CPVC SCH 40
P18		FROM CORRECT MEDIA SUMP PUMP P-202 TO CORRECT MEDIA DISTIRBUTION BOX BX-201	2"ø	CPVC SCH 40
P19		FROM CORRECT MEDIA DISTRIBUTION BOX BX-201 TO CORRECT MEDIA SUMP TK-201	1"ø	CPVC SCH 40
P20		FROM CORRECT MEDIA DISTRIBUTION BOX BX-201 TO CORRECT HEAVY MEDIA CYCLONE FEED SUMP WT-201	1 1/2"ø	CPVC SCH 40
P21		FROM CORRECT MEDIA DISTRIBUTION BOX BX-201 TO DESLIME SCREEN SC-101 DISCHARGE CHUTE	1"ø	CPVC SCH 40
P22		FROM DESLIME SCREEN SC-101 DICHARGE TO HEAVY MEDIA CYCLONE FEED SUMP WT-201	2"ø	CPVC SCH 40
P23		FROM DESLIME SCREEN SC-101 UNDER FLOW DISCHARGE TO CLASSIFYING CYCLONE SUMP TK-101	2"ø	CPVC SCH 40
P24		FROM CLASSIFYING CYCLONE CY-101 TO DESLIME SCREEN SC-101	2"ø	CPVC SCH 40
P25		FROM TV-102 TO CLASSIFING CYCLONE SUMP TK-101	1"ø	CPVC SCH 40
P26		RECYCLE FROM CLASSIFYING CYCLONE SUMP PUMP P-101 TO CLASSIFYING CYCLONE SUMP TK-101	1 1/2"ø	CPVC SCH 40
P27		FROM CLASSIFYING CYCLONE SUMP PUMP P-101 TO CLASSIFYING CYCLONE CY-101	2"ø	CPVC SCH 40
P28		FROM FINE CLEAN COAL SCREEN SC-201 TO FINE CLEAN COAL RINSE SCREEN SC-302	2"ø	CPVC SCH 40
P29		FROM FINE REFUSE SCREEN SC-201 TO FINE REFUSE RINSE SCREEN SC-302	2"ø	CPVC SCH 40

LINE NO.	COLOR CODE	LOCATION	PIPE DIA.	MATERIAL
P30		RECYCLE FROM HEAVY MEDIA CYCLONE PUMP P-201 TO HEAVY MEDIA CYCLONE SUMP WT-201	1"ø	CPVC SCH 40
P31		FROM HEAVY MEDIA CYCLONE PUMP P-201 TO HEAVY MEDIA CYCLONE CY-201	1 1/2"ø	CPVC SCH 40
P32		FROM CLEAN COAL DRAIN SCREEN SC-201 TO DIVERTER BOX BX-202	2"ø	CPVC SCH 40
P33		FROM TV-203 VALVE TO CORRECT MEDIA SUMP TK-201	1"ø	CPVC SCH 40
P34		FROM REFUSE SCREEN SC-201 TO DIVERTER BOX BX-202	2"ø	CPVC SCH 40
P35		FROM TV-204 VALVE TO CORRECT MEDIA SUMP TK-201	1"ø	CPVC SCH 40
P36		FROM TV-202 VALVE TO CORRECT MEDIA SUMP TK-201		CPVC SCH 40
P37		FROM DIVERTER BX-202 TO CORRECT MEDIA SUMP TK-201	2"ø	CPVC SCH 40
P38		FROM SPLITER BOX BX-202 TO PRIMARY MAGNETIC SEPARATOR MS-301	2"ø	CPVC SCH 40
P39		FROM TV-305 TO PRIMARY MAGNETIC SEPARATOR MS-301	1"ø	CPVC SCH 40
P40		FROM TV-304 TO PRIMARY MAGNETIC SEPARATOR MS-301	2"ø	CPVC SCH 40
P41		FROM FINE CLEAN COAL SCREEN SC-302 UFLOW PAN TO PRIMARY MAGNETIC SEPARATOR MS-301	2"ø	CPVC SCH 40
P42		FROM FINE REFUSE RINSE SCREEN UFLOW TO PRIMARY MAGNETIC SEPARATOR MS-301	2"ø	CPVC SCH 40
P43		FROM TV-301 TO MAGNETIC SEPARATOR FEED SUMP TK-301	1"ø	CPVC SCH 40
P44		FROM TV-302 TO MAGNETIC SEPARATOR FEED SUMP TK-301	1"ø	CPVC SCH 40
P45		FROM DESLIME SCREEN SC-101 DISCHARGE TO FINE HEAVY MEDIA CYCLONE FEED SUMP WT-201	2"ø	CPVC SCH 40
P46		FROM DESLIME SCREEN SC-101 DISCHARGE TO CLASSIFYING CYCLONE SUMP TK-101	2"ø	CPVC SCH 40
P47		FROM CORRECT MEDIA DISTRIBUTION BOX BX-201 TO PIPE P-45	1"ø	CPVC SCH 40
P48		FROM CLASSIFYING CYCLONE CY-101 OVERFLOW TO TV-101	3"ø	CPVC SCH 40
P49		FROM TV-101 TO EXISTING WASTE SUMP	3"ø	CPVC SCH 40
P50		FROM TV-101 TO CLASSIFYING CYCLONE SUMP TK-101	1"ø	CPVC SCH 40
P51		FROM DOE/PETC EXISTING COAL FEED LINE TO CLASSIFYING CYCLONE SUMP TK-101	2"ø	CPVC SCH 40
P52		FROM TV-303 TO EXISTING DOE/PETC WASTE SUMP		CPVC SCH 40
P53		FROM SUMP OVER FLOW TO EXISTING FLOOR TRENCH	3"ø	CPVC SCH 40

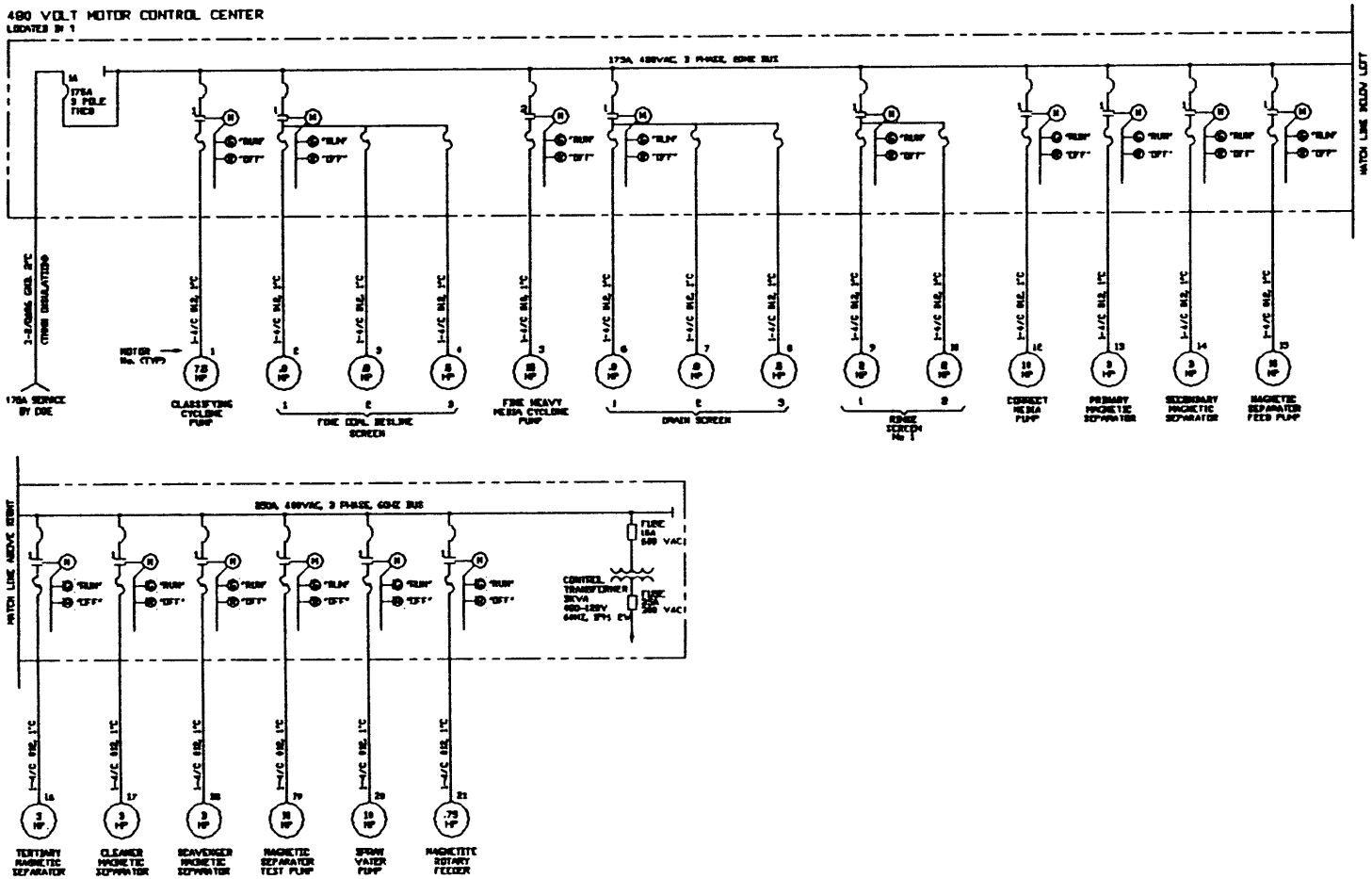
D.O.E. CONTRACT No. DE-AC22-93PC92206

No	DATE	REVISION	BY	CK	APP
A	12/15/93	ISSUED FOR APPROVAL	JAD		

		DATE
SCALE:	NONE	
DESIGNED BY	J. DeMARINO	12-08-93
DRAWN BY	M. VARUOLO	12-10-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-6688
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
PIPING RUN LOCATIONS
JOB No. J93113 DWG No. PP-005 REV A

PLOT DATE: Dec 15, 1993 - 10:41:01
FILE:\DOE\J93113\-005



NOTE-ALL BRANCH CIRCUIT GROUNDING AND BONDING CONDUCTORS SHALL HAVE THHN INSULATION TO BE COLOR CODED AS FOLLOWS PHASE A BROWN PHASE B ORANGE PHASE C YELLOW GROUND GREEN

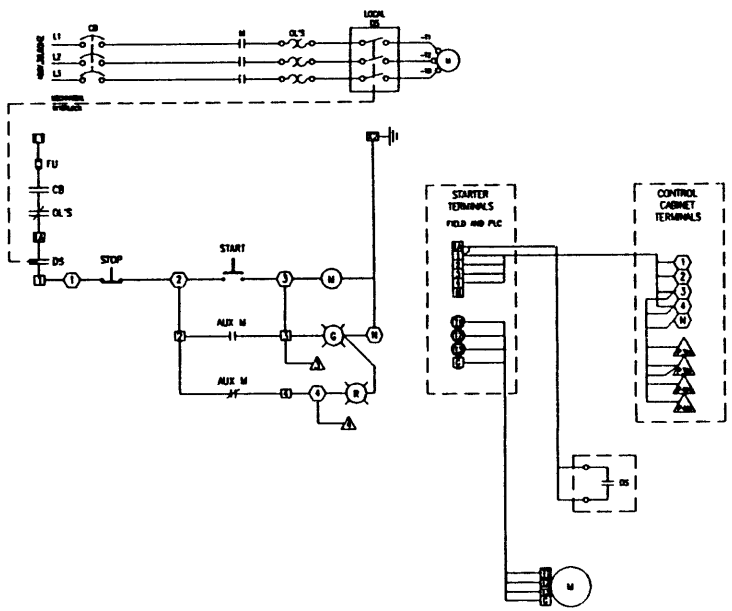
D.O.E. CONTRACT No. DE-AC22-93PC91206

No	DATE	REVISION	BY	CK	APP
B	2/3/94	GENERAL REVISION	JV		
A	12/15/93	ISSUE FOR APPROVAL	J A D		

		DATE
SCALE:	NONE	
DESIGNED BY	BESSLER	9-16-93
DRAWN BY	BESSLER	9-16-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-0188
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S. DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
ELECTRICAL – 480V SINGLE LINE DIAGRAM
JOB No. J93113 DWG No. E-001 REV B

PLOT DATE: Feb 03, 1994 - 12:57:49



UNIT	EQUIP. NO	DESCRIPTION	HP	MCC	PLC DROP	RUNNING RACK	RUNNING SLOT	NOT RUNNING RACK	NOT RUNNING SLOT	INPUT TERM PT
1	P-101	CLASSIFYING CYCLONE PUMP	75	-	-	-	-	-	-	-
7	P-201	FINE MAL CYCLONE PUMP	15	-	-	-	-	-	-	-
15	P-202	CORRECT MEDIA PUMP	10	-	-	-	-	-	-	-
21	P-301	MAGNETIC SEPARATOR FEED PUMP	10	-	-	-	-	-	-	-
27	P-302	MAGNETIC SEPARATOR RECYCLE PUMP	10	-	-	-	-	-	-	-
33	P-401	SPRAY WATER PUMP	10	-	-	-	-	-	-	-
11	MS-301	PRIMARY MAGNETIC SEPARATOR	3	-	-	-	-	-	-	-
28	MS-302	SECONDARY MAGNETIC SEPARATOR	3	-	-	-	-	-	-	-
24	MS-303	INTERMEDIATE SEPARATOR	3	-	-	-	-	-	-	-
25	MS-305	CLEANER MAGNETIC SEPARATOR	3	-	-	-	-	-	-	-
26	MS-304	SCAVENGER MAGNETIC SEPARATOR	3	-	-	-	-	-	-	-

NOTES:

1. WIRE NUMBERS CONSIST OF UNIT NUMBER FOLLOWED BY TERMINAL NUMBER.
2. CONTROL POWER IS SUPPLIED FROM THE CONTROL TRANSFORMER AND IS 120VAC.
3. CONTROL WIRING IS #16AWG.

- □ DENOTES TERMINAL LOCATED IN MCC
- △ DENOTES PLC INPUT TERMINAL
- ◇ DENOTES PLC OUTPUT TERMINAL
- ○ DENOTES PLC ANALOG INPUT TERMINAL
- ⊖ DENOTES PLC ANALOG OUTPUT TERMINAL
- ◯ DENOTES TERMINAL LOCATED IN CONTROL CABINET
- ○ DENOTES TERMINAL LOCATED ON OVERLOAD BLOCK
- ▯ DENOTES TERMINAL LOCATED ON MCC GROUND BUS

D.O.E. CONTRACT No. DE-AC22-93PC92206

No	DATE	REVISION	BY	CK	APP
B	2/3/94	GENERAL REVISION	C.S.		
A	12/6/93	ISSUE FOR APPROVAL	J.A.D.		

SCALE:	NONE	DATE
DESIGNED BY	TA	11-30-93
DRAWN BY	RVK	11-30-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-0088
430 PARK WEST ONE, PITTSBURGH PA 15275

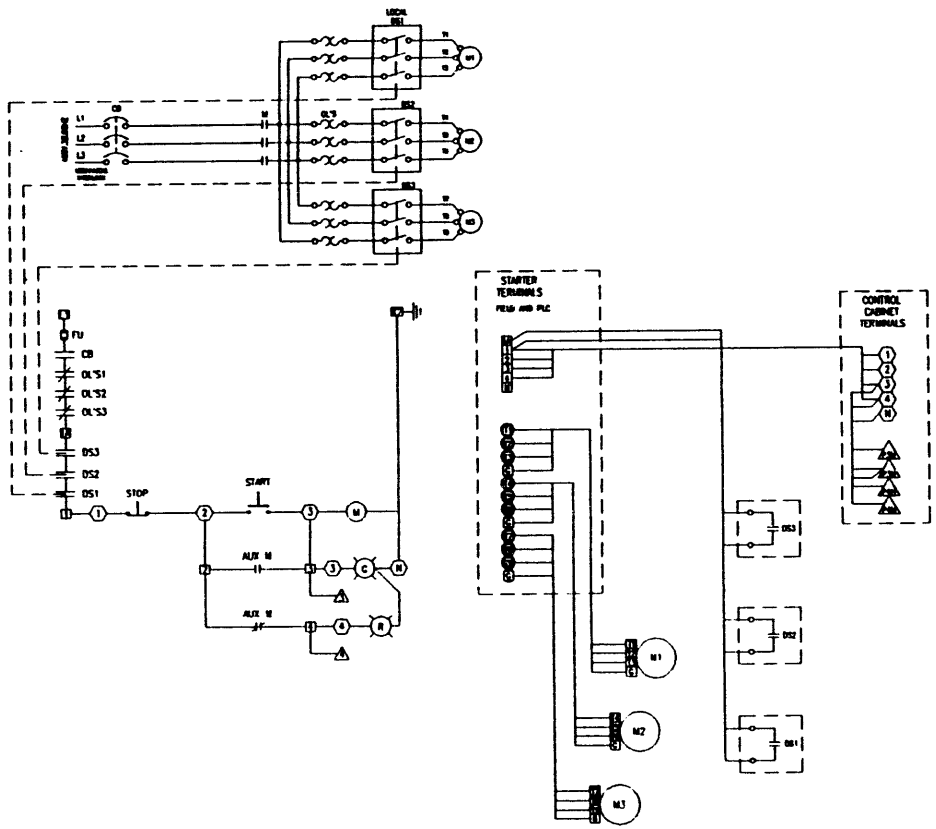
U.S. DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

MICRONIZED MAGNETITE PROCESS BENCH SCALE

SCHEMATIC - PUMPS & MAGNETIC SEPARATORS

JOB No. J93113 | DWG No. E-002 | REV B

FILE: M:\ACAD\DOCS\J93113\E-002 PLOT DATE: Feb 03, 1994 - 13:43:55



UNIT	EQUIP NO.	DESCRIPTION	HP	MCC	PLC DROP	RUNNING RACK	RUNNING SLOT	NOT RUNNING RACK	NOT RUNNING SLOT	INPUT TERM PT.
11	SC-191	FINE COAL RECLAIM SCREEN	200 & 100 S	-	-	-	-	-	-	-
12	SC-201	MAIN SCREEN	200 & 100 S	-	-	-	-	-	-	-

NOTES:
1. CONTROL POWER IS SUPPLIED FROM THE CONTROL TRANSFORMER AND IS 120VAC.
2. WIRE NUMBER CONSIST OF UNIT NUMBER FOLLOWED BY TERMINAL NUMBER
3. CONTROL WIRE IS #16AWG

- □ DENOTES TERMINAL LOCATED IN MCC
- △ DENOTES PLC INPUT TERMINAL
- ◇ DENOTES PLC OUTPUT TERMINAL
- ○ DENOTES PLC ANALOG INPUT TERMINAL
- ⊖ DENOTES PLC ANALOG OUTPUT TERMINAL
- ◯ DENOTES TERMINAL LOCATED IN CONTROL CABINET
- ⬭ DENOTES TERMINAL LOCATED ON OVERLOAD BLOCK
- ▢ DENOTES TERMINAL LOCATED ON MCC GROUND BUS

D.O.E. CONTRACT No. DE-AC22-93PC92206

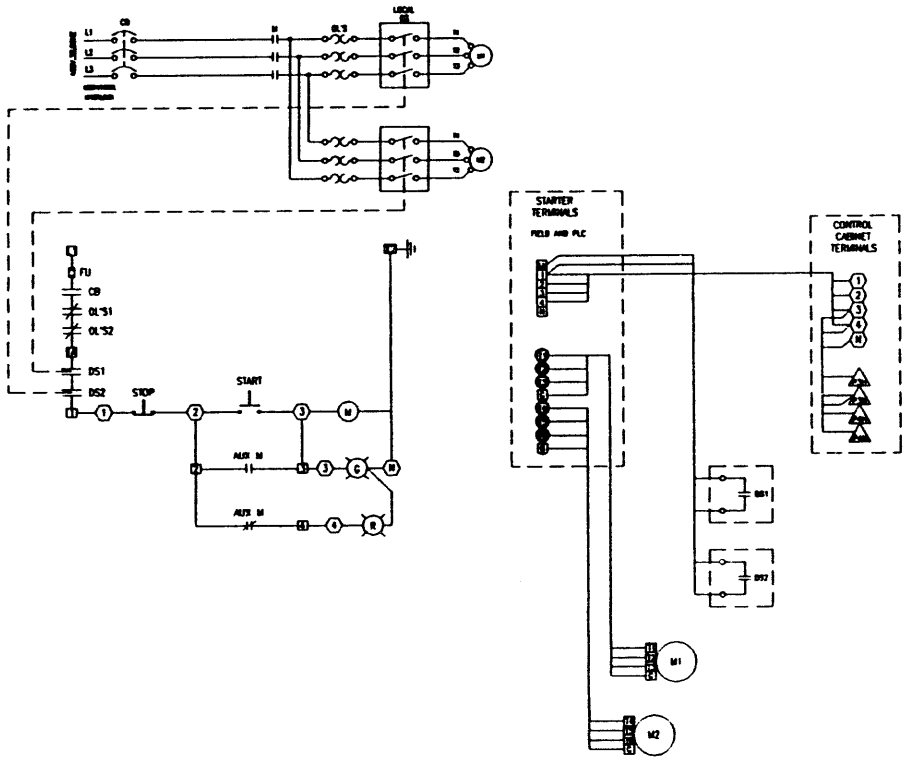
No	DATE	REVISION	BY	CK	APP
B	2/3/94	GENERAL REVISION	C.S		
A	12/15/93	ISSUE FOR APPROVAL	J.A.D		

		DATE
SCALE	NONE	
DESIGNED BY	TA	11-30-93
DRAWN BY	RAK	11-30-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-6688
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S. DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
SCHEMATIC - SCREENS 1 OF 2

JOB No. J93113 | DWG No. E-003 | REV B

PLOT DATE: Feb 03, 1994 - 13:49:28
FILE: M:\ACAD\DOC\J93113\E-003



UNIT	EQUIP. NO.	DESCRIPTION	HP	MCC	PLC DROP	RUNNING RACK	RUNNING SLOT	NOT RUNNING RACK	NOT RUNNING SLOT	INPUT TERM PT.
13	SC-302	WASTE SCREEN #1	2HP	-	-	-	-	-	-	-

NOTES:
1. WIRE NUMBERS CONSIST OF UNIT NUMBER FOLLOWED BY TERMINAL NUMBER.
2. CONTROL POWER IS APPLIED FROM THE CONTROL TRANSFORMER AND IS 120VAC.
3. CONTROL WIRING IS #16AWG.

- □ DENOTES TERMINAL LOCATED IN MCC
- △ DENOTES PLC INPUT TERMINAL
- ◇ DENOTES PLC OUTPUT TERMINAL
- ○ DENOTES PLC ANALOG INPUT TERMINAL
- ⊖ DENOTES PLC ANALOG OUTPUT TERMINAL
- ⬡ DENOTES TERMINAL LOCATED IN CONTROL CABINET
- ⭘ DENOTES TERMINAL LOCATED ON OVERLOAD BLOCK
- ▯ DENOTES TERMINAL LOCATED ON MCC GROUND BUS

D.O.E. CONTRACT No. DE-AC22-93PC92206

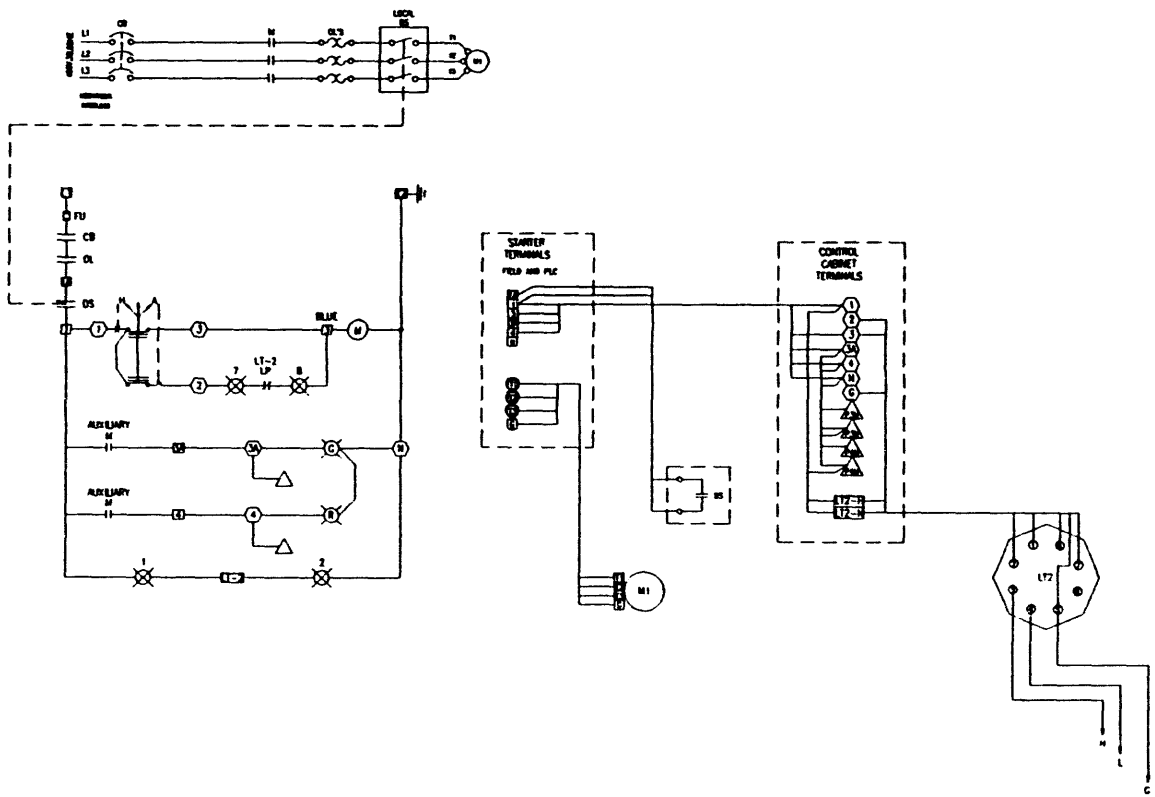
No	DATE	REVISION	BY	CK	APP
B	2/3/94	GENERAL REVISION	C.S.		
A	12/15/93	ISSUE FOR APPROVAL	J. A. D.		

		DATE
SCALE	NONE	
DESIGNED BY	TA	11-30-93
DRAWN BY	RAK	11-30-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-0688
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S. DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
SCHEMATIC - SCREENS 2 OF 2

JOB No.	J93113	DWG No.	E-004	REV	B

FILE: M:\CAD\DGN\J9311\E-004 PLOT DATE: Feb 03, 1994 - 14:11:28



UNIT	EQUIP. NO	DESCRIPTION	HP	MCC	PLC DROP	RUNNING RACK	RUNNING SLOT	HOT RUNNING RACK	HOT RUNNING SLOT	SPARE TERM PT.
31	FR-301	MAGNETIC GRAVITY FEEDER	0.75	-	-	-	-	-	-	-

NOTES

1. WIRE NUMBERS CONSIST OF UNIT NUMBER FOLLOWED BY TERMINAL NUMBER.
2. CONTROL POWER IS SUPPLIED FROM THE CONTROL TRANSFORMER AND IS 120VAC.
3. CONTROL WIRING IS #16AWG.

- □ DENOTES TERMINAL LOCATED IN MCC
- △ DENOTES PLC INPUT TERMINAL
- ◇ DENOTES PLC OUTPUT TERMINAL
- ○ DENOTES PLC ANALOG INPUT TERMINAL
- ⊖ DENOTES PLC ANALOG OUTPUT TERMINAL
- ◯ DENOTES TERMINAL LOCATED IN CONTROL CABINET
- ○ DENOTES TERMINAL LOCATED ON OVERLOAD BLOCK
- ▯ DENOTES TERMINAL LOCATED ON MCC GROUND BUS
- ⊗ DENOTES TERMINAL LOCATED ON FIELD DEVICE.

D.O.E. CONTRACT No. DE-AC22-93PC92206

No	DATE	REVISION	BY	APP
B	2/3/94	GENERAL REVISION	C.S.	
A	12/15/93	ISSUE FOR APPROVAL	J. A. B.	

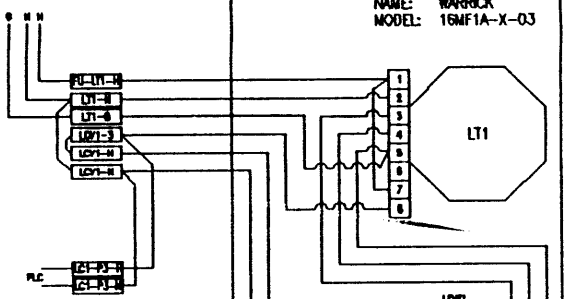
SCALE	NONE	
DESIGNED BY	TA	11-30-93
DRAWN BY	RAR	11-30-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-0686
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S. DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
SCHEMATIC - ROTARY FEEDER

JOB No. J93113 | DWG No. E-005 | REV B

FILE: H:\ACAD\DWG\J3113\E-005 PLOT DATE: Feb 03, 1994 - 14:19:17

CONTROL CABINET



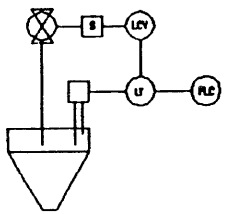
FIELD

NAME: WARRICK
MODEL: 16MF1A-X-03

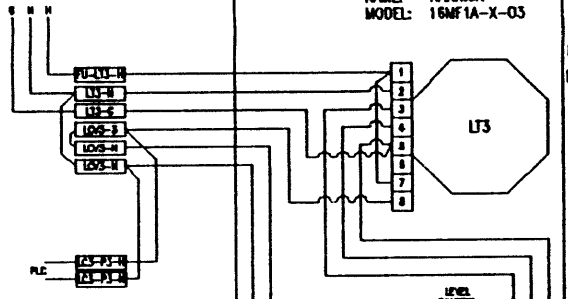
INSTRUMENT CONFIGURATION

LOOP NO.

LOOP I.D. CLASSIFYING CYCLONE SUMP LEVEL



CONTROL CABINET



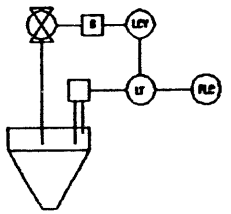
FIELD

NAME: WARRICK
MODEL: 16MF1A-X-03

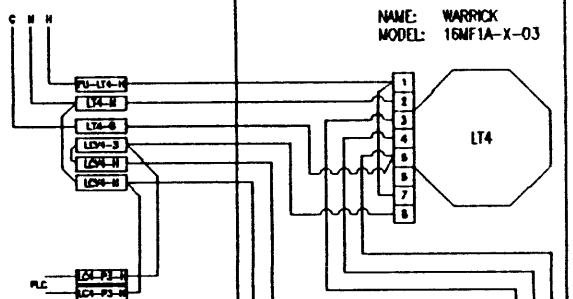
INSTRUMENT CONFIGURATION

LOOP NO.

LOOP I.D. MAGNETIC SEPARATOR FEED SUMP LEVEL



CONTROL CABINET



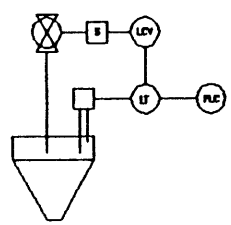
FIELD

NAME: WARRICK
MODEL: 16MF1A-X-03

INSTRUMENT CONFIGURATION

LOOP NO.

LOOP I.D. MAGNETIC SEPARATOR TEST SUMP LEVEL



CONTROL CABINET

FIELD

INSTRUMENT CONFIGURATION

NOTES:

1. POWER WIRING IS 3-1/C #14, 3/4" C.
2. INSTRUMENT WIRING IS 1-3/C #18 SHLD. 3/4" C.
3. INSTRUMENT WIRING SHALL NOT RUN IN POWER CONDUIT.

No	DATE	REVISION	BY	CK	APP
B	2/3/94	GENERAL REVISION	JV		
A	12/94	ISSUE FOR APPROVAL	A.A.B.		

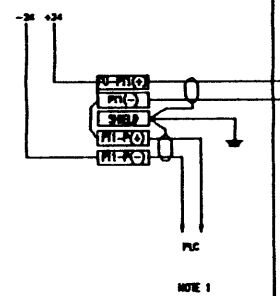
SCALE: NONE		DATE
DESIGNED BY	TA	11-30-93
DRAWN BY	RWK	11-30-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-4488
430 PARK WEST ONE, PITTSBURGH PA 15275
U.S. DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER
MICRONIZED MAGNETITE PROCESS BENCH SCALE
INSTRUMENT LOOPS-LEVELS

JOB No. J93113 | DWG No. E-008 | REV B

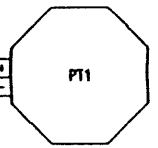
Feb 03, 1994 - 1447pm

CONTROL CABINET



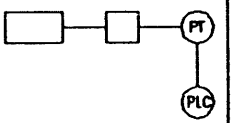
FIELD

MAKE: TAYLOR
MODEL: UFT 6000

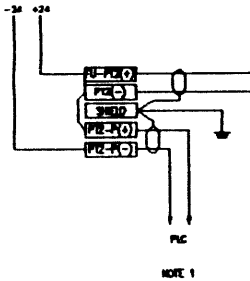


INSTRUMENT CONFIGURATION

LOOP NO. AD00-1000
LOOP I.D. CLASSIFYING CYCLONE PRESSURE

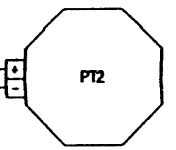


CONTROL CABINET



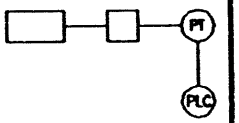
FIELD

MAKE: TAYLOR
MODEL: UFT 6000

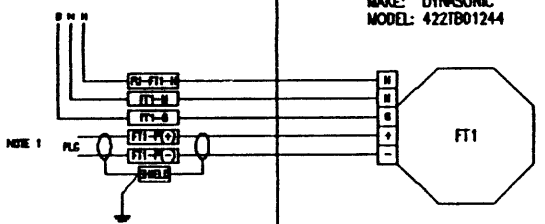


INSTRUMENT CONFIGURATION

LOOP NO. AD00-1000
LOOP I.D. FINE H M CYCLONE PRESSURE



CONTROL CABINET

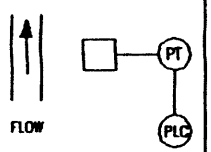


FIELD

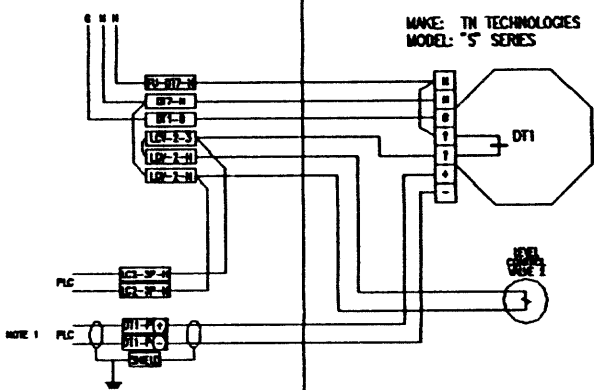
MAKE: DYNASONIC
MODEL: 422TB01244

INSTRUMENT CONFIGURATION

LOOP NO.
LOOP I.D. FINE H M CYCLONE FLOW



CONTROL CABINET

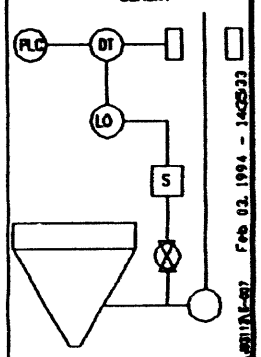


FIELD

MAKE: TN TECHNOLOGIES
MODEL: "S" SERIES

INSTRUMENT CONFIGURATION

LOOP NO.
LOOP I.D. CORRECT MEDIA SUMP DENSITY



Feb 03, 1994 - 14:09:33

NOTES:

1. TERMINALS TO BE SHORTED WHEN NO PLC CONNECTION
2. POWER WIRING IS 3-1/C #14, 3/4"C
3. INSTRUMENT WIRING IS 1-3/C #16 SHLD, 3/4"C
4. INSTRUMENT WIRING SHALL NOT RUN IN POWER CONDUIT

No	DATE	REVISION	BY	APP
B	2/3/94	GENERAL REVISION		
A	12/15/93	ISSUE FOR APPROVAL	AAB	

		DATE
SCALE:	NONE	
DESIGNED BY	TA	11-30-93
DRAWN BY	RBK	11-30-93
CHECKED BY	-	
APPR	-	
APPR	-	

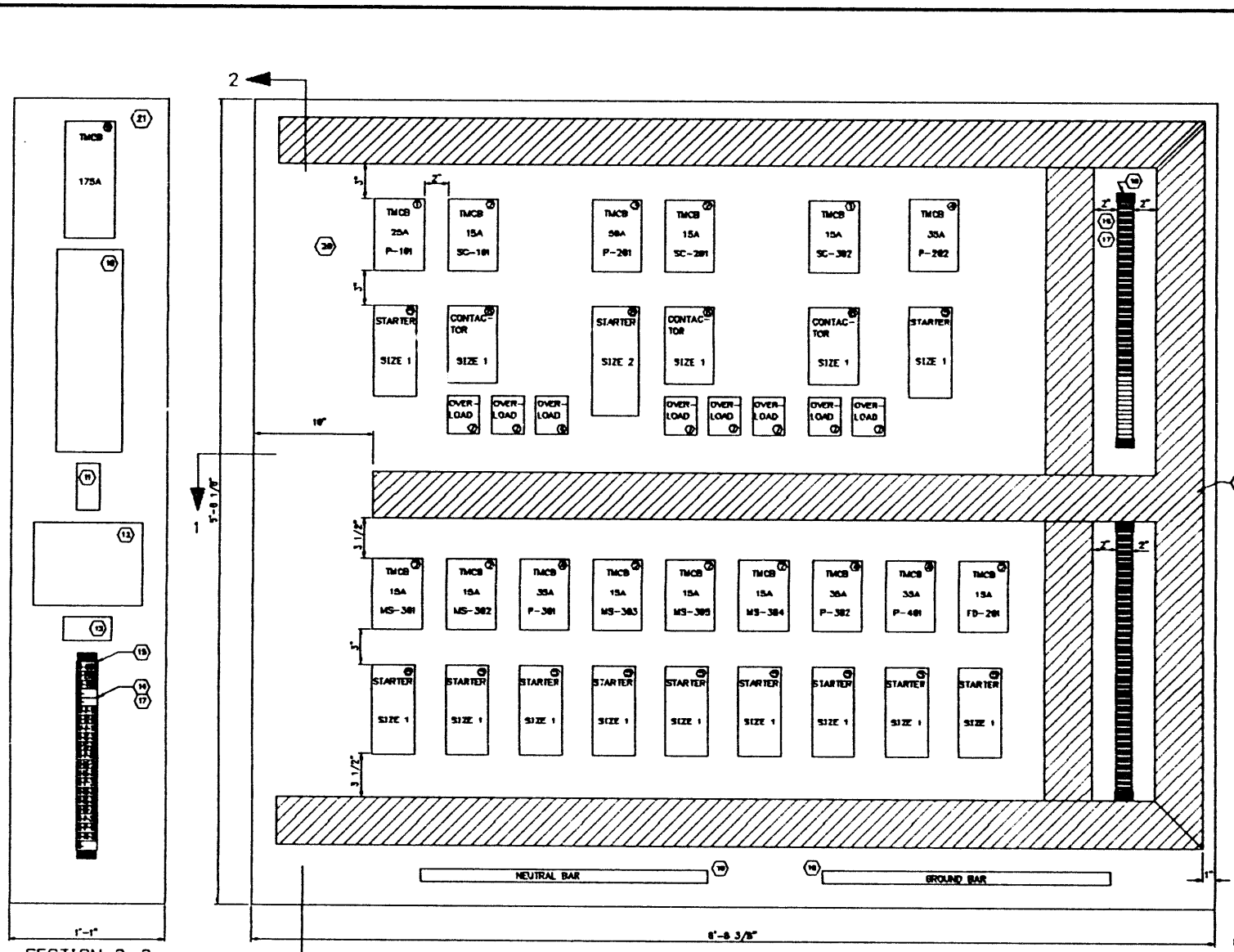
CJ CORPORATION
450 PARK WEST DRIVE, PITTSBURGH PA 15275

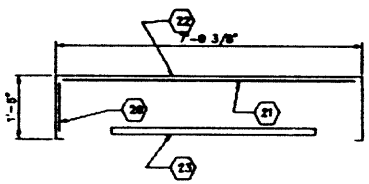
U.S. DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

MICRONIZED MAGNETITE PROCESS BENCH SCALE

INSTRUMENT LOOPS-PRESSURE, FLOW, DENSITY

JOB No. J93113 | DWG No. E-007 | REV B





BILL OF MATERIAL

MARK NO.	QTY	DESCRIPTION	CATALOG
1	1	MOTOR CIRCUIT BREAKER, 25A	WESTINGHOUSE HFD3825
2	8	MOTOR CIRCUIT BREAKER, 15A	WESTINGHOUSE HFD3815
3	1	MOTOR CIRCUIT BREAKER, 50A	WESTINGHOUSE HFD3850
4	4	MOTOR CIRCUIT BREAKER, 35A	WESTINGHOUSE HFD3835
5	11	MOTOR STARTER SIZE1, FVNR	ALLEN BRADLEY 509-BOD
6	3	CONTACTOR SIZE1	ALLEN BRADLEY 509-BOBOR
7	8	OVERLOAD RELAY	ALLEN BRADLEY 592-JOV16
8	1	MOTOR STARTER SIZE2, FVNR	ALLEN BRADLEY 509-COD
9	1	1 M CKT. BKR. 175A	WESTINGHOUSE HJD3175
10	2	POWER DISTRIBUTION BLOCK	SQUARE 'D' LBC385212
11	1	PRIMARY FUSE	SQUARE 'D' FB261-1
12	1	POWER TRANSFORMER 3KVA	SQUARE 'D' K3KBB01
13	1	SECONDARY FUSE	SQUARE 'D' FB123-1
14	21	FUSE HOLDER	ALLEN BRADLEY
15	6	END BARRIER	ALLEN BRADLEY 1492-N23
16	104	TERMINAL BLOCK	ALLEN BRADLEY 1492-F8
17	A/R	MOUNTING CHANNEL	ALLEN BRADLEY 1492-N1
18	2	BUS, COPPER 1/4 X 1" X 2"	
19	A/R	PLASTIC WIRING DUCT 4" W, 4" DP.	PANDUIT
20	1	PANEL WHITE ENAMEL	HOFFMAN
21	1	PANEL WHITE ENAMEL	HOFFMAN
22	1	[illegible]	HOFFMAN
23	1	FLUORESCENT LIGHT	

NOTES:
1. ALL MOTOR CIRCUIT BREAKERS WILL BE EQUIPED WITH AUXILLARY SWITCHES.
2. CONTACTORS SHALL BE FURNISHED WITH 120VAC @ 60HZ COILS.

D.O.E. CONTRACT No. DE-AC22-93PC92288

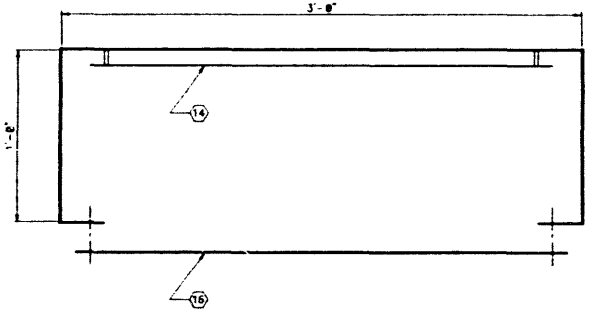
No	DATE	REVISION	BY	APP
B	2/3/94	GENERAL REVISION	JV	
A	12/16/93	ISSUE FOR APPROVAL	A.A.B.	

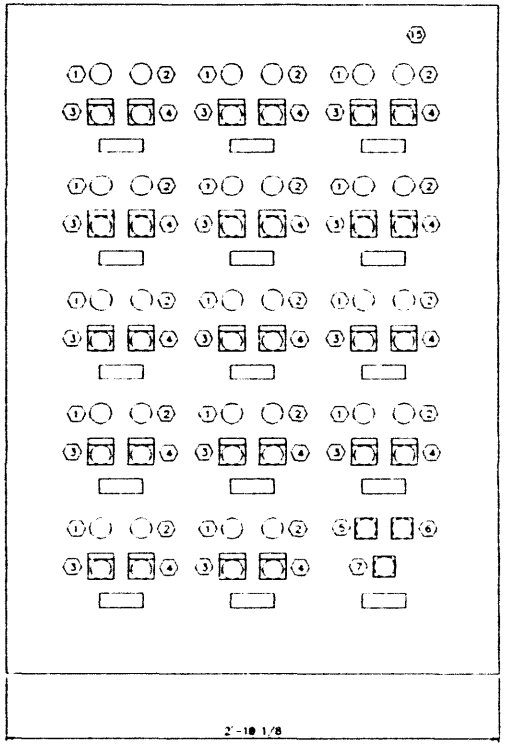
SCALE: 3"=1'-0" DATE
DESIGNED BY: TA 08-08-92
DRAWN BY: R. VARUOLO 12-14-93
CHECKED BY: -
APPR: -
APPR:

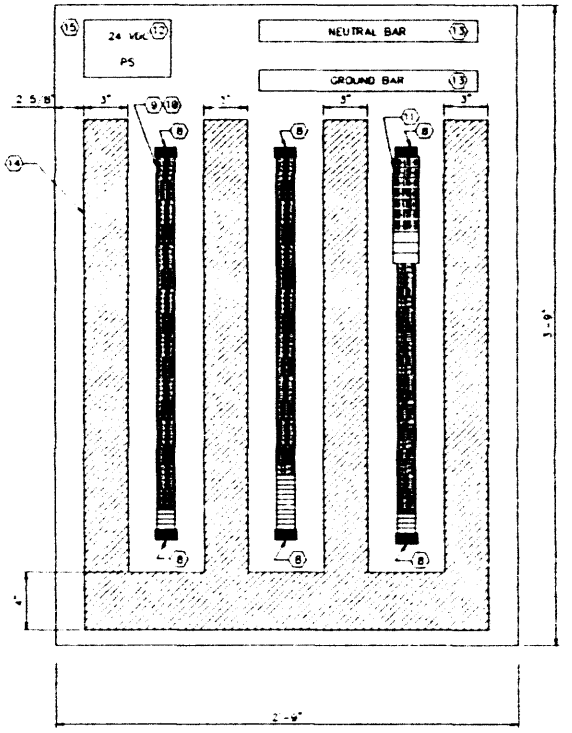
CLI CORPORATION (412)788-0988
430 PARK WEST ONE, PITTSBURGH PA 15275
U. S. DEPT OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

MCC CABINET

JOB No J9313 | DWG No. E-005 | REV B







BILL OF MATERIAL

MARK NO	QTY	DESCRIPTION	CATALOG
1	14	TRANSFORMER TYPE PILOT LIGHT, GREEN NO LEGEND PLATE	ALLEN BRADLEY 800T-P16R
2	14	TRANSFORMER TYPE PILOT LIGHT, RED NO LEGEND PLATE	ALLEN BRADLEY 800T-P16R
3	14	PUSH BUTTON, GREEN, START	ALLEN BRADLEY 800T-A1A
4	14	PUSH BUTTON, RED, STOP	ALLEN BRADLEY 800T-B6A
5	1	TRANSFORMER TYPE PILOT LIGHT, GREEN, ON	ALLEN BRADLEY 800T-P16R
6	1	TRANSFORMER TYPE PILOT LIGHT, RED, OFF	ALLEN BRADLEY 800T-P16R
7	1	3 POSITION SELECTOR SWITCH, HAND-OFF AUTO	ALLEN BRADLEY 800T-J2A
8	6	END BLOCKS	ALLEN BRADLEY 1492-N23
9	207	TERMINAL BLOCKS	ALLEN BRADLEY 1492-N23
10	A/R	MOUNTING CHANNELS	ALLEN BRADLEY 1492-N1
11	18	FUSE HOLDERS	ALLEN BRADLEY 1492-N5
12	1	PS, 24VDC	
13	2	BUS, COPPER	
14	A/R	PLASTIC WIRING DUCT 3" W x 4" D	PANDUIT
15	1	PANEL, WHITE ENAMEL	HOFFMAN A-48P36
16	1	ENCLOSURE, NEMA 4	HOFFMAN A-48H36OLP

D.O.E. CONTRACT No. DE-AC22-93PC92286

NO	DATE	REVISION	BY	CH	APP
A	12/13/93	ISSUE FOR APPROVAL	J	A	D

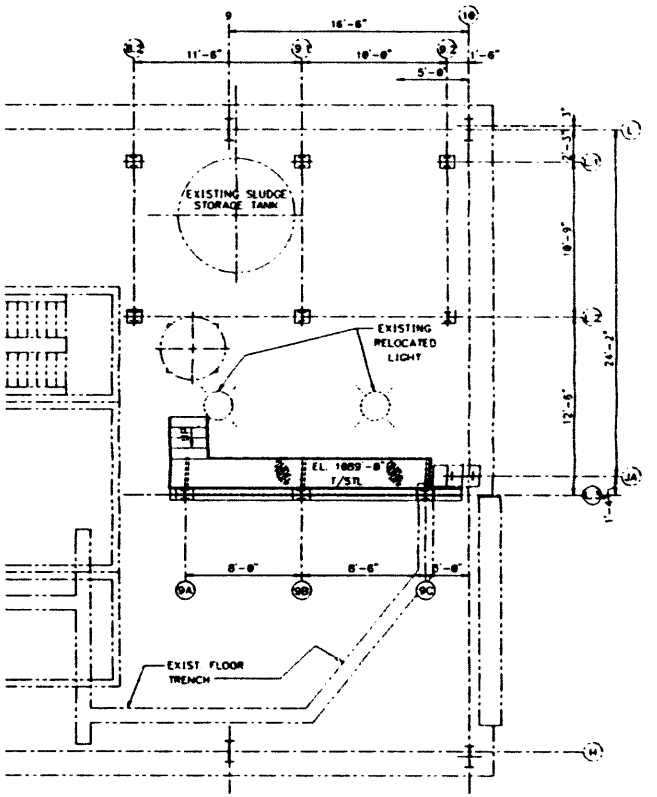
		DATE
SCALE	3"=1'-0"	
DESIGNED BY	TA	09-08-92
DRAWN BY	M VARUOLO	12-14-93
CHECKED BY	-	
APPR	-	
APPR		

CLI CORPORATION (412)788-8888
430 PARK WEST ONE, PITTSBURGH PA 15275
U S DEPT OF ENERGY PGH ENERGY TECHNOLOGY CENTER

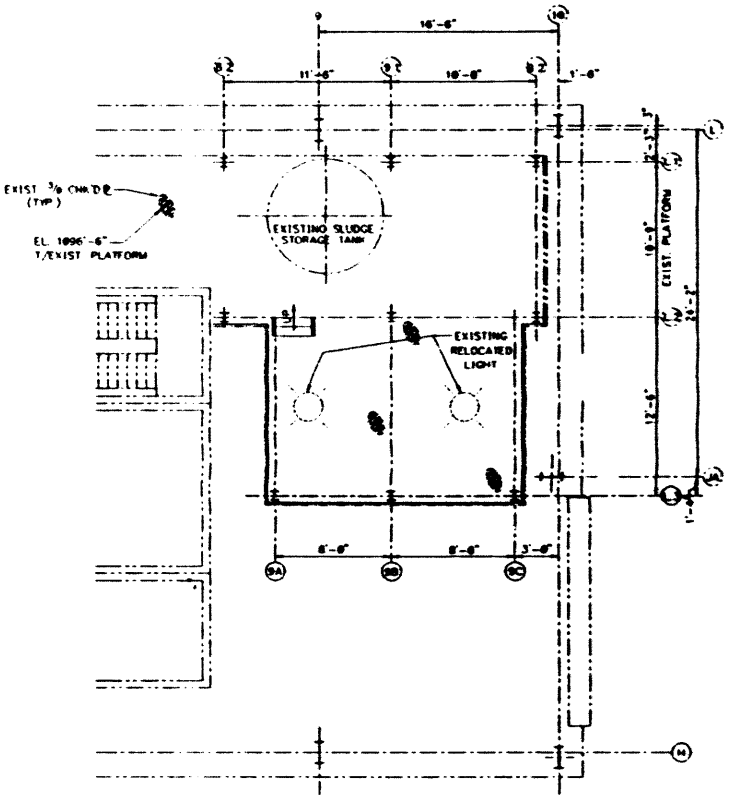
CONTROL CABINET

JOB No J93113 DWG No E 889 REV A

FILE: M:\AUTOCAD\J93113-1.DWG PLOT DATE: Feb 02 1994 - 15:54:26



PLAN @ T/EXISTING CONCRETE FLOOR EL. 1086'-0



PLAN @ T/STEEL EL. 1095'-0
AND @ EXIST. T/STEEL EL. 1096'-5 5/8

NOTE:

1. CONTRACTOR TO TIE INTO EXISTING LIGHTING CIRCUITS.
2. CONTRACTOR TO CHECK CIRCUIT LOAD AND MODIFY AS NECESSARY
3. FIXTURES TO BE HAZLUX DH-817C840-TQL-P2-VR22P

D.O.E. CONTRACT No. DE-AC22-93PC92286

No	DATE	REVISION	BY	APP
A	12/22/93	ISSUED FOR APPROVAL	JAD	

SCALE	1/4"-1'-0"
DESIGNED BY	TA
DATE	12-21-93
DRAWN BY	J. DeMARINO
DATE	12-21-93
CHECKED BY	-
APPR	-
APPR	-

CLI CORPORATION (412)788-6660
430 PARK WEST ONE, PITTSBURGH PA 15275

U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

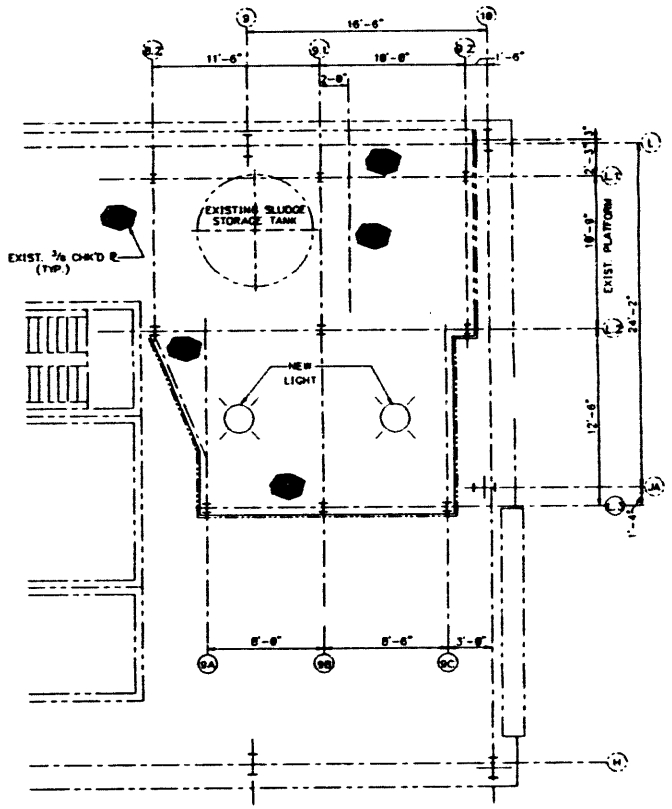
MICRONIZED MAGNETITE PROCESS BENCH SCALE

ELECTRICAL LIGHTING ARRANGEMENT - PLANS

JOB No. J93113 | DWG No. E-010 | REV A

PLOT DATE: Feb 02 1994 - 195543

FILE: J:\CAD\J93113\E-010



PLAN @ T/STEEL EL. 1106'-5 5/8

NOTE:

1. CONTRACTOR TO TIE INTO EXISTING LIGHTING CIRCUITS
2. CONTRACTOR TO CHECK LOAD AND MODIFY AS NECESSARY
3. FIXTURES TO BE HAZLUX DH-017C840-TQL-P2-VR22P.

D.O.E. CONTRACT No DE-AC22-93PC92286

No	DATE	REVISION	BY	CK	APP
A	12/22/93	ISSUED FOR APPROVAL	JAD		

		DATE
SCALE:	1/4"=1'-0	
DESIGNED BY	IA	12-21-93
DRAWN BY	J. DeMARINO	12-21-93
CHECKED BY	-	
APPR	-	
APPR	-	

CLI CORPORATION (412)788-6688
430 PARK WEST ONE, PITTSBURGH PA 15275

U.S.DEPT. OF ENERGY PGH. ENERGY TECHNOLOGY CENTER

MICRONIZED MAGNETITE PROCESS BENCH SCALE

ELECTRICAL LIGHTING ARRANGEMENT - PLANS

JOB No. J93113 | DWG No. E-011 | REV A

PLOT DATE: Feb 08, 1994 - 15:56:46
FILE#: DOE\J93113\E-011

DATE
FILMED
5/24/94
END