

OGDEN



20 November 1999

Ogden Martin Systems of Lake, Inc.  
3830 Rogers Industrial Park Road  
Okahumpka, FL 34762  
352 365 1611  
Fax 352 365 6359

Mr. Scott Sheplak, P.E.  
Title V Administrator  
Florida Department of Environmental Protection  
2600 Blair Stone Road  
Tallahassee, FL 32399

RECEIVED

OCT 25 1999

*SUBJ: Addendum to Title V Application  
Ogden Martin Systems of Lake, Inc.*

BUREAU OF AIR REGULATION

Dear Mr. Sheplak:

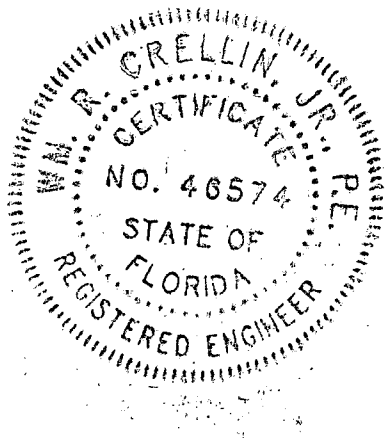
Please be advised that Ogden Martin Systems of Lake, Inc. will be installing a selective non-catalytic reduction (SNCR) system to control the emissions of nitrogen oxides (NOx) at our facility in Okahumpka. Attached please find the following information to be appended to our previously submitted Application for Major Source (Title V) Operating Permit:

- Updated site plan showing location of aqueous ammonia tank
- Brief description of the SNCR equipment
- Drawing showing location of furnace injection nozzles

If additional information is needed, we will be pleased to provide it during your engineer's application review period.

Sincerely,

William Crellin, P.E.  
Ogden Martin Systems of Lake, Inc.



Copies: Mike Hewitt  
Len Korlov, CD 2/4/00  
2/22



## SELECTIVE NON-CATALYTIC REDUCTION SYSTEM

### 1. GENERAL

An SNCR system shall be provided for the reduction of nitrogen oxides such that the Facility at least meets the applicable CAA Modification Acceptance Criteria. The SNCR system shall be based on the injection of aqueous ammonia into the furnace. The SNCR system shall be designed to provide a sufficient rate of aqueous ammonia injection to all three boilers while each boiler is operating at 110% of the Maximum Continuous Rating (MCR) for each boiler.

The SNCR system shall comply with all federal, state and local codes, standards, laws, rules, regulations and requirements relative to aqueous ammonia receiving, storage and handling. The SNCR system shall consist of an aqueous ammonia storage tank, aqueous ammonia feed pumps, carrier water system, a purge air system and injection nozzles. The feed system design shall be based on delivering the design MAR. consumption rate simultaneously to all three boilers.

### 2. STORAGE AND LOADING

A 10,000 gallon aqueous ammonia storage tank with level gage, level switches, high level alarm and pressure gauges shall be provided. The aqueous ammonia storage tank shall be constructed of SA 36 plate steel for the sides, with the top and bottom components comprised of AS 515 Grade 70 steel. It shall be designed and located in accordance with applicable codes and standards and Factory Mutual recommendations, if applicable. The aqueous ammonia storage tank shall be located within a diked containment area with a containment capacity at least equal to the maximum volume of the tank plus freeboard. The diked containment area shall be constructed of reinforced concrete and shall be sloped to a sump. A pump shall be provided to remove any accumulated rain water on an as needed basis.

Aqueous ammonia shall be delivered to the Facility in tank trucks. The tank trucks shall be unloaded such that vapor displaced from the aqueous ammonia storage tank, as the tank is being filled, shall be circulated back to the tank truck and not released to the atmosphere.

### 3. AQUEOUS AMMONIA FEED PUMPS

Two one hundred percent capacity aqueous ammonia feed pumps (seal-less "canned" type) shall be provided. Each pump shall be sized to transfer at least the maximum design consumption rate simultaneously to all three boilers. One pump shall therefore serve as a spare. The aqueous ammonia supply and recirculation lines shall be provided with isolations valves and a flow meter.

### 4. INJECTION NOZZLES

The aqueous ammonia solution shall be injected into the boiler via injection nozzles that penetrate the boiler walls. A minimum of two nozzles per boiler shall be provided. Access platforms, ladders and stairs shall be provided at each location as necessary.

## 5. PURGE AIR SYSTEM

A nozzle purge air system shall be provided to minimize slagging of the nozzles. Two one hundred percent capacity low pressure rotary blowers shall be provided. One blower shall serve as a spare.

## 6. PIPING

Only carbon steel and stainless steel shall be used for piping, valves, fittings and gages which come into contact with the aqueous ammonia solution. Brass, bronze or copper bearing materials shall not be used since ammonia is corrosive to those materials.

## 7. ELECTRICAL SYSTEMS

All electrical equipment necessary to supply the SNCR system shall be provided. NEMA 4X shall be used for all cabinets and devices. All electrical wiring shall be run in conduit and/or existing or new cable trays.

Outdoor lighting for the aqueous ammonia storage area and power for the two aqueous ammonia feed pumps and the sump pump shall be provided. All conduit and cables shall be located outside of the corrosive area if possible. Power for the two purge air blowers and potable water booster pump shall also be provided.

## 8. INSTRUMENTATION AND CONTROLS

New CRT graphic display screens shall be configured based upon the P&ID's for the new SNCR system. The screens shall include, at a minimum, process graphics, face plates and trend displays.

Under normal operating conditions, aqueous ammonia shall be injected into the boilers to control the NO<sub>x</sub> level at the stack to a set point of approximately 180 ppm<sub>dv</sub> corrected to 7% O<sub>2</sub> in order to assure compliance with the CAA Modification Acceptance Criteria for NO<sub>x</sub>. The control system shall maintain the NO<sub>x</sub> concentration at the stack by adjusting the aqueous ammonia feed rate to each boiler. The aqueous ammonia injection control loop shall be a cascade arrangement, with the inner loop controlling the aqueous ammonia flow to the flow set point, based on aqueous ammonia flow measurement, and the outer loop controlling the aqueous ammonia flow set point based on the NO<sub>x</sub> concentration at the stack. The stack NO<sub>x</sub> concentration signal shall be generated by the CEMS.

The aqueous ammonia feed pumps recirculation flow shall be controlled by the restriction orifice.

A rotameter with a high turn down needle valve shall be installed in the aqueous ammonia line to each injection nozzle. The rotameters shall be designed to provide the means for equally distributing the aqueous ammonia flow among the nozzles.

At least two emergency stop button switches shall be installed for each boiler, one at the nozzle

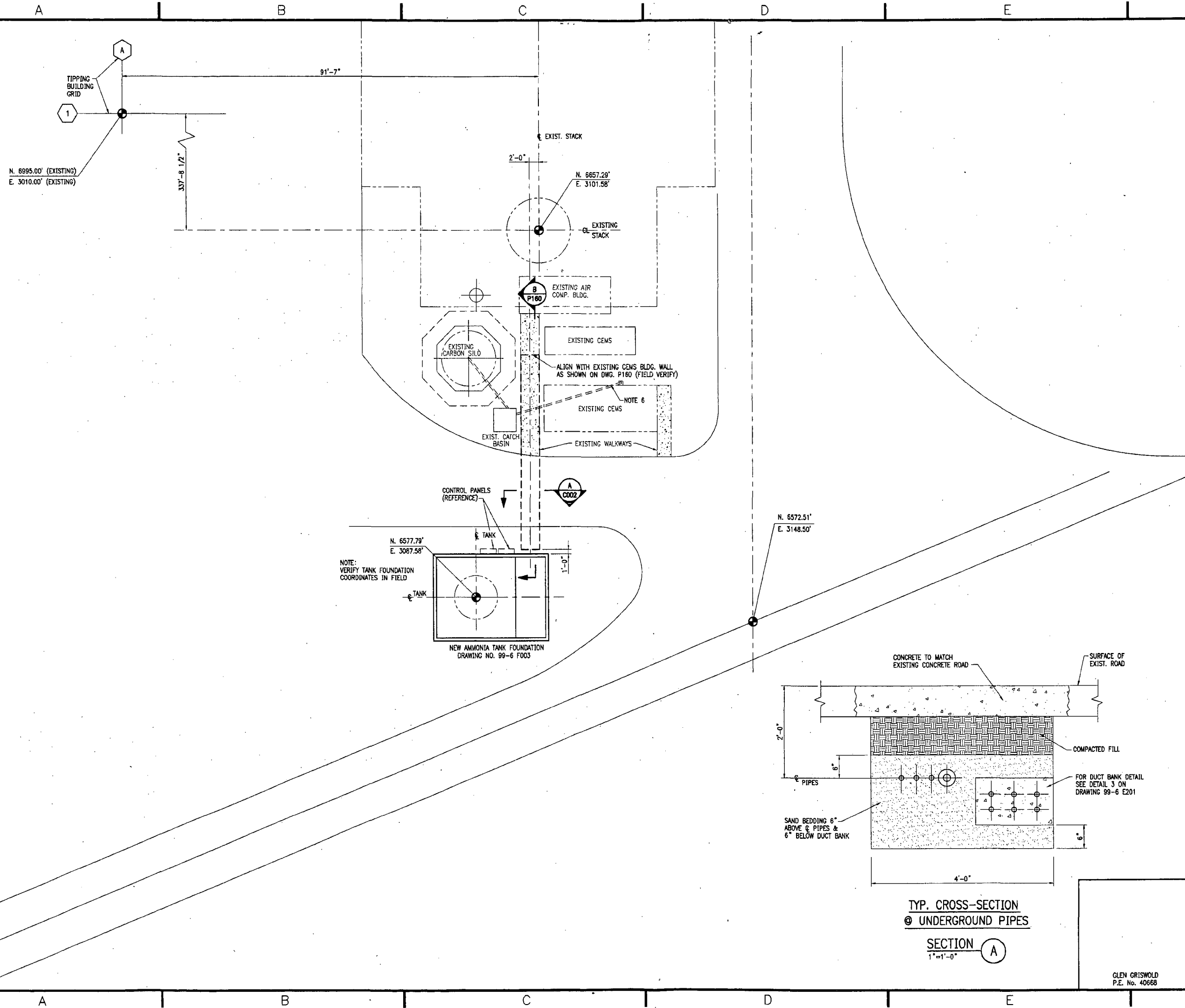
elevation area, and each of them shall trip the aqueous ammonia injection control valve closed. The aqueous ammonia injection control valve shall also trip closed when the boiler forced draft fan trips or is stopped.

The carrier water pressure at the nozzles shall be maintained constant. A self-contained pressure control valve shall be installed for each distribution header. A rotameter shall be installed in the carrier water line to each injection nozzle. The rotameters shall provide visual indication of carrier water flow to the nozzles and help detect nozzle pluggages.

A aqueous ammonia truck filling panel shall be provided for filling the aqueous ammonia storage tank, and shall have a "high level" and "low level" indicating lights, one for each, and a lights test push-button.

All of the eyewash and shower stations shall have a flow switch in the water supply line. The switch shall be sized to actuate at the smaller flow of the eyewash fountain .

The SNCR system shall be monitored and controlled remotely from the control room. All control actions, including start/stop equipment, open/close valves, manual/auto and set point shall be from the operator interface station in the control room.



**GENERAL NOTES:**

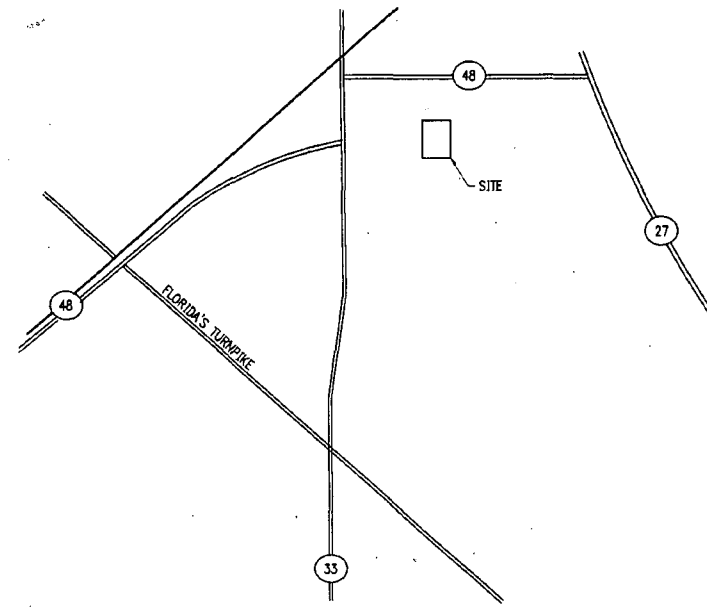
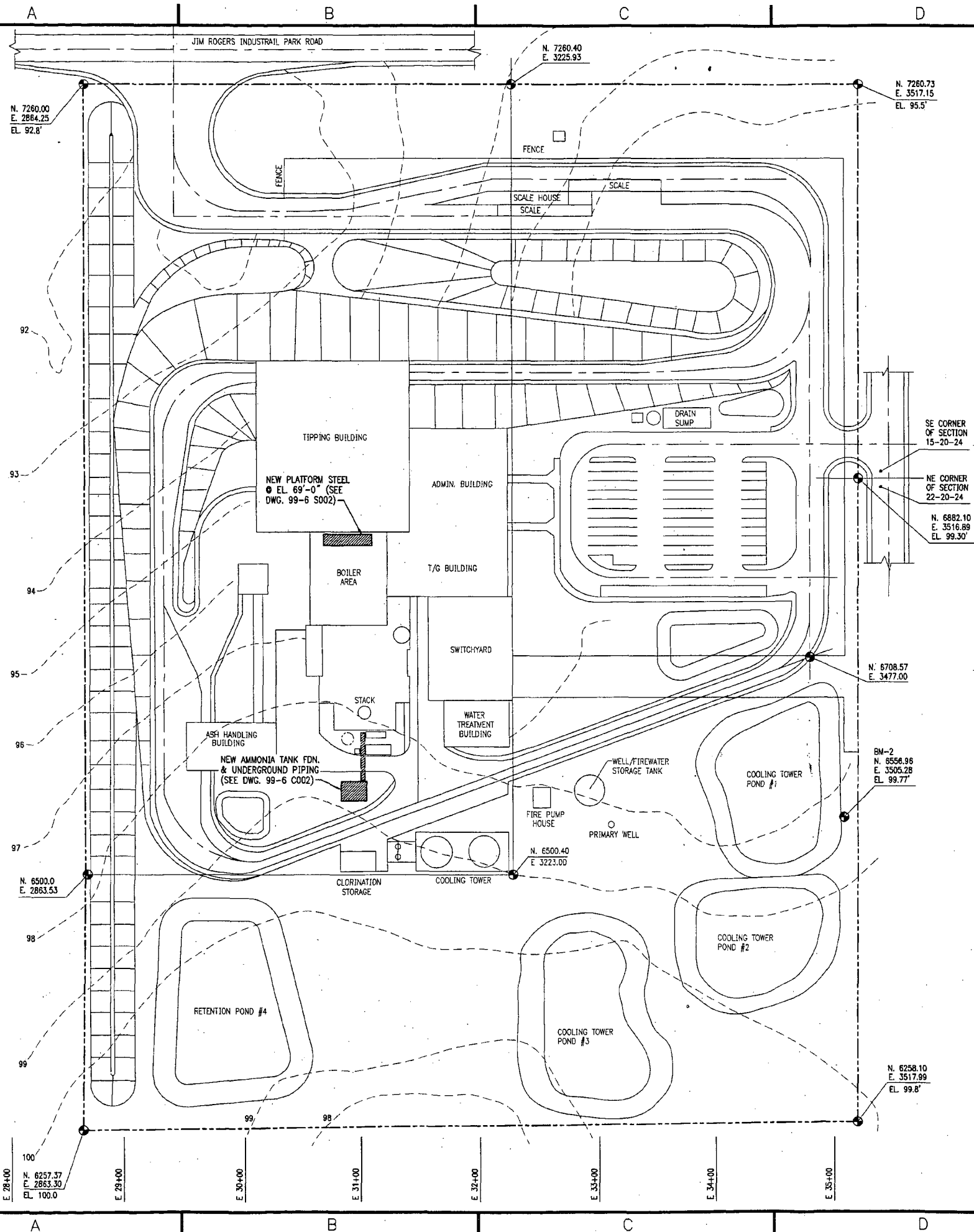
- PIPES SHALL BE INSTALLED BELOW GRADE AND BE PROVIDED WITH A MINIMUM OF 18" OF COVER. BEDDING SHALL CONSIST OF SANDY OR SANDY/CLAY MATERIAL. BACKFILL SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY PER ASTM D1557 UNDER ROADWAYS OR STRUCTURES. COMPACT TO A MINIMUM OF 85% IN OTHER AREAS.
- FOR STRUCTURAL DESIGN NOTES SEE DRAWING 99-6 S001.
- REFER TO GEOTECHNICAL REPORT FOR EXCAVATION, COMPACTING & BACKFILL REQUIREMENTS.
- WORK THIS DRAWING WITH DRAWINGS 99-6 E101 & 99-6 P160.
- GRADE SITE AROUND PROJECT AREA UP TO EXISTING FINISH GRADE: ELEVATION ±100 FEET (VERIFY).
- EXISTING 4" # DRAIN PIPING AT APPROX. 1'-4" BELOW EXISTING GRADE. FIELD VERIFY LOCATION.
- FIELD VERIFY LOCATIONS OF DRAINS & UTILITIES PRIOR TO EXCAVATION & CONSTRUCTION.

ISSUED FOR CONSTRUCTION	DATE	BY	CHECKED	PROJ. ENG.	APPROVED	MARK	PROJ. MGR.

<b>NATIONAL ENERGY PRODUCTION CORPORATION</b>	
DRAWN BY: JHD	ENGINEERED BY: FPL
SCALE: NONE	DATE: 11:12, 17 JUN 99
THIS DRAWING IS THE PROPERTY OF NEPCO AND IS NOT TO BE USED IN ANY WAY INJURIOUS TO THEIR INTERESTS AND IS TO BE RETURNED UPON REQUEST.	
OGDEN MARTIN SYSTEMS OF LAKE, INC.	
LAKE COUNTY SNCR RETROFIT LAKE COUNTY, FLORIDA	
ENLARGED SITE PLAN	
DWG. NO. 99-6 C002	

**TYP. CROSS-SECTION  
OF UNDERGROUND PIPES**  
SECTION A  
1"=1'-0"

GLEN GRISWOLD  
P.E. No. 40668



VICINITY MAP

**GENERAL NOTES:**

1. SITE SURVEY AND EXISTING GRADE CONTOURS DEVELOPED FROM HALL FARNER AND ASSOC. INC.
2. THIS DRAWING HAS BEEN DEVELOPED FROM A DIGITIZED SCAN OF A HAND-CREATED DRAWING & SHOULD NOT BE SCALED.

**LEGAL DESCRIPTION**

THAT PART OF SECTIONS 15 & 22, TOWNSHIP 20 SOUTH, RANGE 24 EAST, LAKE COUNTY, FLORIDA DESCRIBED AS FOLLOWS:

COMMENCING AT THE S.E. CORNER OF SAID SECTION 15 (N.E. CORNER OF SECTION 22), RUN S.89°56'10"W. ALONG THE SOUTH LINE OF SAID SECTION IS A DISTANCE OF 25.0 FEET TO THE WEST RIGHT-OF-WAY OF A COUNTY ROAD DIST. 2-3210 AND THE POINT OF BEGINNING OF THIS DESCRIPTION, THENCE N.0°03'15"E. ALONG SAID RIGHT-OF-WAY 378.63 FEET TO THE SOUTH RIGHT-OF-WAY OF A ROAD, THENCE S.89°56'10"W. ALONG SAID RIGHT-OF-WAY 653.0 FEET, THENCE S.0°03'15"W. 1002.63 FEET, MORE OR LESS, TO THE SOUTH LINE OF THE NORTH 624.0 FEET OF THE N.E. 1/4 OF AFORESAID SECTION 22, THENCE N.89°56'10"E. PARALLEL WITH THE NORTH LINE OF SAID N.E. 1/4 A DISTANCE OF 654.69 FEET TO THE AFORESAID WEST RIGHT-OF-WAY OF COUNTY ROAD DIST. 2-3120, THENCE N.0°06'03"W. ALONG SAID WEST RIGHT-OF-WAY 624.00 FEET TO THE POINT OF BEGINNING. SUBJECT TO ALL EASEMENTS, RIGHTS-OF-WAY AND RESTRICTIONS OF RECORD.

ISSUED FOR CONSTRUCTION	DATE	BY	CHECKED	PROJ. ENG.	APPROVED

**NATIONAL ENERGY PRODUCTION CORPORATION**  
NEPCO

DRAWN BY: JHB      ENGINEERED BY: FPL  
SCALE: N.T.S.      DATE: 11-04-17 JUN 99

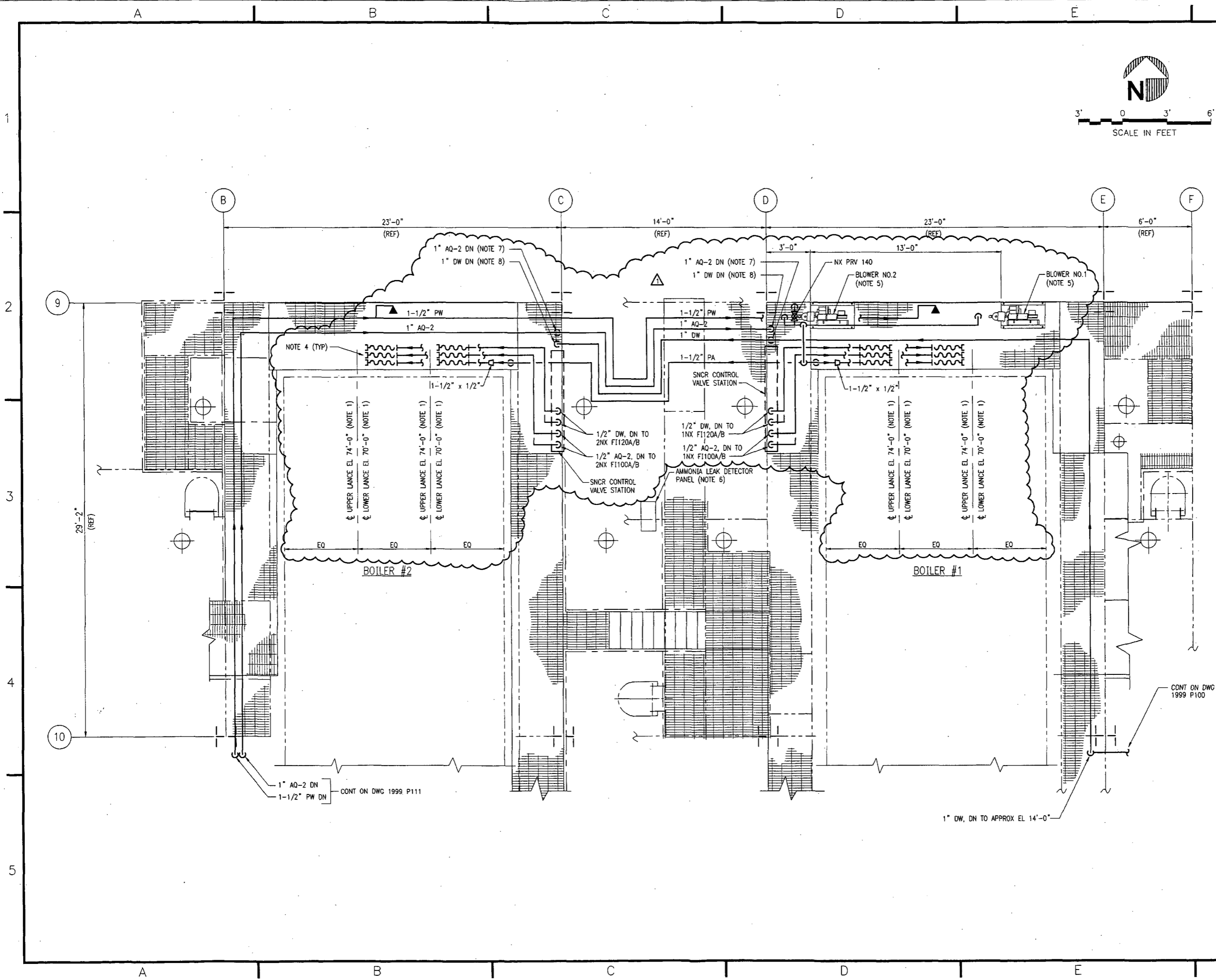
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**OGDEN MARTIN SYSTEMS OF LAKE, INC.**  
LAKE COUNTY SNCR RETROFIT  
LAKE COUNTY, FLORIDA  
**SITE PLAN**

DWG. NO. 99-6 C001

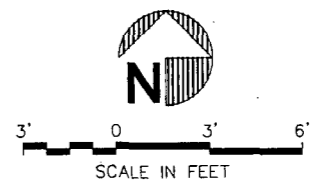
GLEN GRISWOLD  
P.E. No. 40668

ASST. CIVIL ENGR.    CIVIL ENGR.    MECH. ENGR.    ELECTR. ENGR.    PIPING ENGR.    STRUCT. ENGR.    INSTR. ENGR.



**GENERAL NOTES:**

1. FOR LANCE AND FURNACE WALL BOX DETAILS, SEE 99-6 P163.
2. ▲ DENOTES LOCATION OF SAFETY SHOWER/EYEWASH.
3. PIPE ROUTING IS SCHEMATIC. CONTRACTOR SHALL FIELD ROUTE AND SUPPORT PIPING. PIPE ROUTING SHALL PROVIDE SUFFICIENT CLEARANCE TO EXISTING FACILITIES TO MAINTAIN ACCESS AND MAINTENANCE SPACE. APPROVAL OF ROUTING BY OWNER'S REPRESENTATIVE IS REQUIRED PRIOR TO INSTALLATION.
4. FLEXIBLE HOSES CONNECT TO INJECTION LANCE ASSEMBLY. SEE DWG 99-6 P163.
5. MOUNT BLOWERS AGAINST TIPPING BUILDING WALL TO MAINTAIN MAXIMUM CLEARANCE ON ACCESS PLATFORM.
6. AMMONIA LEAK DETECTOR IS NOT IN THE MECHANICAL SCOPE OF WORK. IT WILL BE INSTALLED UNDER THE ELECTRICAL/ INSTRUMENTATION SCOPE OF WORK.
7. LOCATION FOR AQUEOUS AMMONIA CONTROL VALVE STATION, INCLUDING FV100, FV100A, FV100B AND ASSOCIATED FIELD MOUNTED INSTRUMENTS. PROVIDE STEEL MOUNTING STAND TO SUPPORT PIPING AND INSTRUMENTS.
8. LOCATION FOR DEMINERALIZED WATER CONTROL VALVE STATION, INCLUDING: PRV120, FV120A, FV120B AND ASSOCIATED FIELD MOUNTED INSTRUMENTS. MOUNT ON STAND AS PER NOTE 7.



**ORIGINAL**

REVISION	DATE	BY	CHECKED	PROJ. ENG.	APPROVED	INSTR.
1		JJ	KB	KB	KSZ	DD
2		JJ	KB	KB	KSZ	DD

**NATIONAL ENERGY PRODUCTION CORPORATION**  
**NEPCO**

DRAWN BY: J. JAY      ENGINEERED BY: KB  
SCALE: 1" = 3'-0"      DATE: 08/16/01 OCT 99

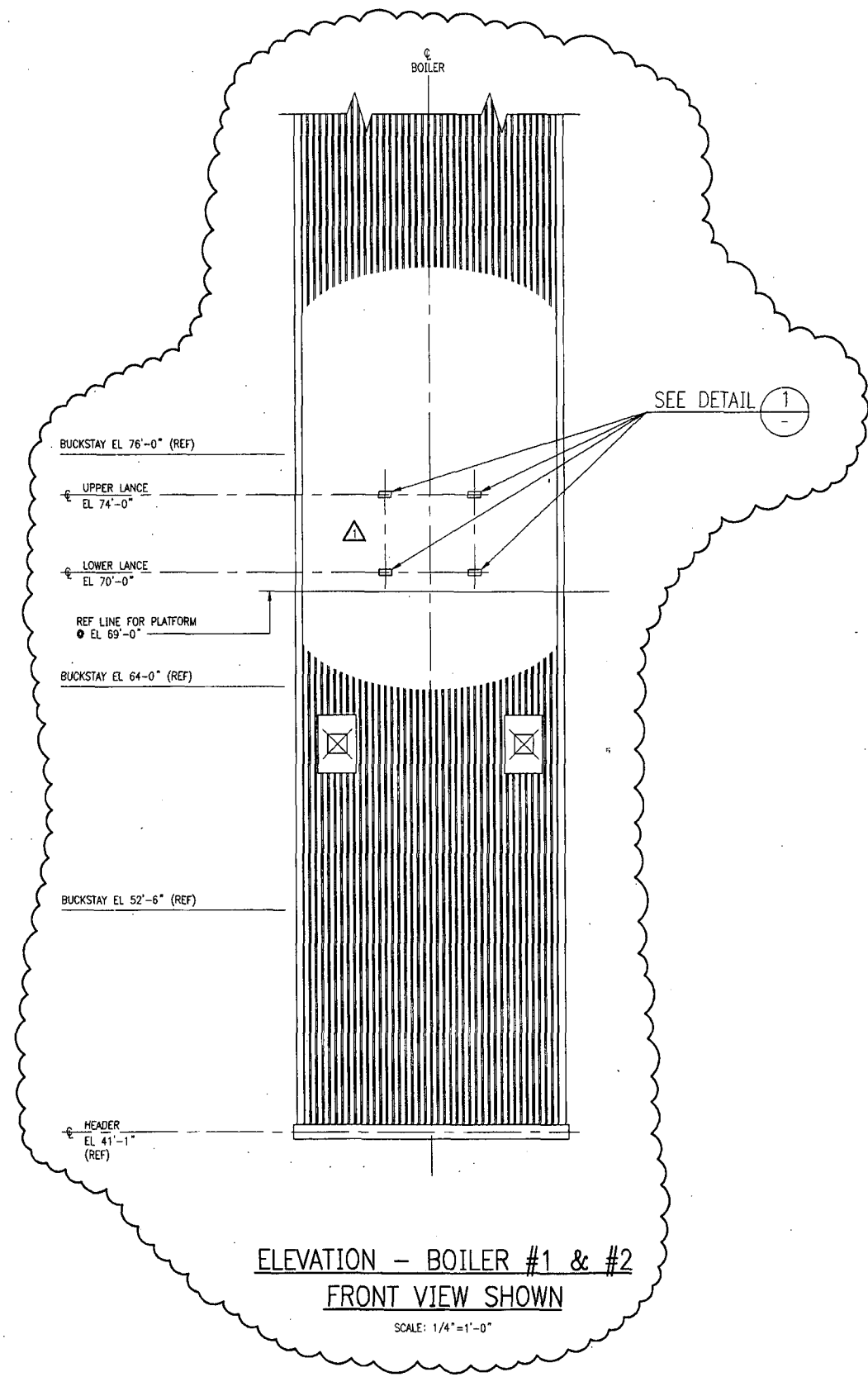
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**OGDEN MARTIN SYSTEMS OF LAKE, INC.**  
**LAKE COUNTY SNCR RETROFIT**  
**LAKE COUNTY, FLORIDA**  
**PIPING ARRANGEMENT-EL 69'-0"**  
DWG. NO. 99-6 P162

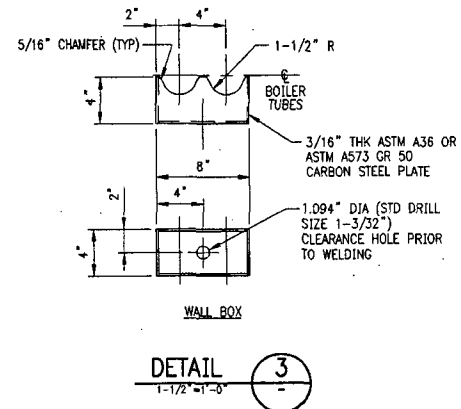
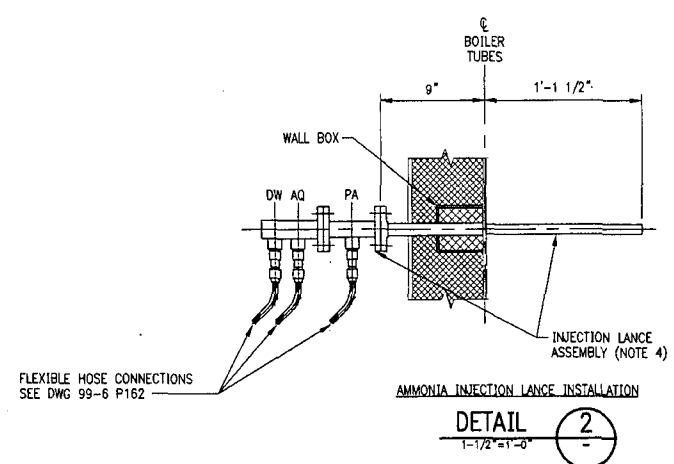
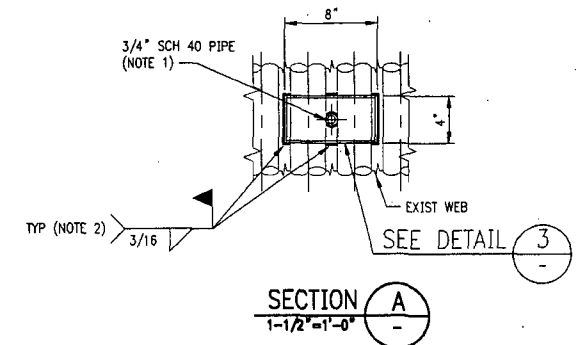
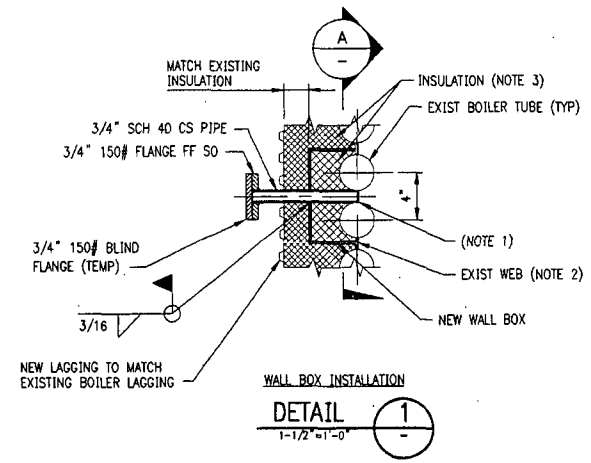
CONT ON DWG 1999 P100

CONT ON DWG 1999 P111

1" DW, DN TO APPROX EL 14'-0"



ELEVATION - BOILER #1 & #2  
FRONT VIEW SHOWN  
SCALE: 1/4"=1'-0"



GENERAL NOTES:

1. DRILL 11/16" HOLE IN EXISTING BOILER WEB. CHAMFER 3/4" PIPE TO BUTT UP THE END OF THE PIPE TO THE WEB. WELD 3/4" PIPE TO WEB ONLY. DO NOT WELD TO BOILER TUBES.
2. WELD WALL BOX TO BOILER WEB ONLY. DO NOT WELD TO BOILER TUBES.
3. WALL BOX TO BE INSULATED INSIDE WITH LOOSE FILL AND OUTSIDE (WITH 1" THICK INSULATION) FOR PERSONNEL PROTECTION. NEW INSULATION MUST BE FLUSH WITH EXISTING BOILER INSULATION. THE INSULATION SHALL BE CER-WOOL TYPE RT HAVING A DENSITY OF 8#/CFT AND A TEMPERATURE RATING OF 2300° F.
4. INJECTION LANCE ASSEMBLY IS TO BE PROVIDED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

ORIGINAL

REVISION	DATE	BY	CHECKED	PROJ. ENG.	APPROVED	TYP. ENR.	PROJ. MGR.	ELECT	INSTR.
1		JJ	KB	KB	KSZ				
2		JJ	KB	KB	KSZ				

**NATIONAL ENERGY PRODUCTION CORPORATION**  
NEPCO

DRAWN BY: J. JAY      ENGINEERED BY: KB  
SCALE: AS NOTED      DATE: 08/28, 01 OCT 99

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OGDEN ENERGY GROUP, INC.  
LAKE COUNTY SNGR RETROFIT  
LAKE COUNTY, FLORIDA  
AMMONIA INJECTION LANCE  
INSTALLATION DETAILS

DWG. NO. 99-6 P163