

**APPENDIX D**  
**UTILITY ASSESSMENT**

# CONTENTS

- D.1. INTRODUCTION
- D.2. UTILITY IDENTIFICATION, HISTORY, AND DESCRIPTION
  - D.2.1 SANITARY WATER
  - D.2.2 RECIRCULATING COOLING WATER
  - D.2.3 STORM SEWER
  - D.2.4 SANITARY SEWER
  - D.2.5 FIRE WATER
  - D.2.6 COMPRESSED AIR
  - D.2.7 NITROGEN
  - D.2.8 STEAM
  - D.2.9 NATURAL OR PROPANE GAS
  - D.2.10 ELECTRICITY
- D.3. UTILITY CAPACITY, RELIABILITY, AND AVAILABILITY
  - D.3.1 SANITARY WATER
  - D.3.2 RECIRCULATING COOLING WATER
  - D.3.3 STORM DRAIN
  - D.3.4 SANITARY SEWER
  - D.3.5 FIRE WATER
  - D.3.6 COMPRESSED AIR
  - D.3.7 NITROGEN
  - D.3.8 STEAM
  - D.3.9 NATURAL OR PROPANE GAS
  - D.3.10 ELECTRICITY
- D.4. UTILITY COSTS
- D.5. SITE UTILITY DRAWINGS
- D.6. UTILITY TIE-IN POINTS
  - D.6.1 SANITARY WATER
  - D.6.2 RECIRCULATING COOLING WATER
  - D.6.3 STORM DRAIN
  - D.6.4 SANITARY SEWER
  - D.6.5 FIRE WATER
  - D.6.6 COMPRESSED AIR
  - D.6.7 NITROGEN
  - D.6.8 STEAM
  - D.6.9 NATURAL OR PROPANE GAS
  - D.6.10 ELECTRICITY

## **APPENDIX D**

### **UTILITY ASSESSMENT**

#### **D.1. INTRODUCTION**

This appendix provides information on the utility type, location, capacity, reliability, availability, and costs. The Paducah Gaseous Diffusion Plant (PGDP) began operation in the 1950s with the inclusion of adequate site utilities to function as a stand-alone operation, with the exception of imported electrical power and telecommunications. PGDP has an on-site steam plant, a water treatment facility, a sewage treatment facility, a compressed air system, recirculating cooling water systems, and a storm water management system.

The United States Enrichment Corporation (USEC) currently leases and operates the gaseous diffusion plant facilities and utilities from the U.S. Department of Energy (DOE). All utility rates will need to be negotiated with USEC or commercial vendors and listed rates will reflect current USEC and commercial vendor rates to DOE.

#### **D.2. UTILITY IDENTIFICATION, HISTORY, AND DESCRIPTION**

##### **D.2.1 SANITARY WATER**

The plant raw supply is taken from the Ohio River. A portion of this is treated at the C-611 Water Treatment Facility to provide sanitary “potable” water to the entire plant site. In addition to the removal of sediment and softening treatment that all the water receives, the sanitary stream is sand-filtered and post-chlorinated in accordance with the requirements of the Kentucky Division of Water and the Safe Drinking Water Act. The sanitary water is also used for non-process building fire protection.

For the location of the sanitary water line, refer to Utility Grid No. 28, drawing C5E-6128. (All drawings are included at the end of this appendix.)

##### **D.2.2 RECIRCULATING COOLING WATER**

The plant has four Recirculating Cooling Water (RCW) systems. The nearest and largest is the C-633 system, which provides cooling for the C-333 process building. The system has two primary cooling towers, each with eight riser cells, and two supplementary cooling towers, each with three riser cells. The C-631 pump house has ten pumps. Water is supplied at a pressure of approximately 90 psig through two piping loops. The system is designed to cool 140°F water to 95°F based on an 80°F wet bulb temperature.

For the location of the RCW lines, refer to Utility Grid No. 28, drawing C5E-6228.

### **D.2.3 STORM SEWER**

Storm water at the plant site is collected and routed to existing ditches or creeks on the perimeter of the site. These all eventually flow into either Little Bayou Creek on the east side or Big Bayou Creek on the west side. Both creeks deliver the water to the Ohio River.

### **D.2.4 SANITARY SEWER**

The plant sanitary sewage treatment system consists of a collection system with four lift stations that collect sanitary waste from most buildings and convey it to the C-615 Sewage Treatment Facility. The C-615 Sewage Treatment Facility uses primary and secondary treatment. Anaerobic digestion is provided in a heated digester and aerobic digestion by means of a trickling filter.

For the location of the sanitary sewer lines, refer to Utility Grid No. 27, drawing C5E-6427.

### **D.2.5 FIRE WATER**

The fire water system uses the C-631 recirculating cooling water tower basin and its six pumps as its supply. An elevated tank provides surge and buffering capacity for the system.

For the location of the fire water line, refer to Utility Grid No. 28, drawing C5E-6828.

### **D.2.6 COMPRESSED AIR**

The existing compressed air system has a 26,000 scfm capacity with drying systems. Normal production averages 9,000 scfm at  $-50^{\circ}\text{F}$  frost point at 80 psig.

For the location of the air line, refer to Utility Grid No. 28, drawing C5E-6728.

### **D.2.7 NITROGEN**

The nitrogen system has three high pressure storage tanks. The system maintains a vaporized nitrogen gas flow from the storage tanks to the distribution piping system at a fluctuating rate to maintain system pressure.

For the location of the steam line, refer to Utility Grid No. 28, drawing C5E-6728.

### **D.2.8 STEAM**

The existing plant steam system uses three boilers. Two boilers burn pulverized, low-sulfur coal with hot side electrostatic precipitators. One boiler is fired with natural gas or fuel oil.

For the location of the steam line, refer to Utility Grid No. 28, drawing C5E-6728.

## **D.2.9 NATURAL OR PROPANE GAS**

The closest natural gas line on the plant site is located at C-600. Propane use at the plant site is very limited and is supplied by small tanks for each particular user.

## **D.2.10 ELECTRICITY**

Electrical power is supplied to the plant site primarily from two local utility companies: Electric Energy, Inc. (EEI) in Joppa, Ill., which is located approximately 7 miles from plant site, and Tennessee Valley Authority's (TVA) Shawnee Steam Plant, which is 3½ miles northeast of the plant. EEI operates a coal-fired generating station, which presently supplies most of the power demand to PGDP. TVA also operates a fossil fuel generating station. Additionally, Kentucky Utilities Company (KU) supplies one transmission tie line, which connects to a small switching station in Paducah, KY.

There are six dedicated transmission lines connected to the site fed by the EEI plant and ten lines from the TVA power plant. These transmission lines are protected at both the supplier and plant ends through SF<sub>6</sub> (Sulfur Hexafluoride Puffer Vacuum) circuit breakers and oil-circuit-breakers (OCBs). The breakers are relay protected for ground fault and overcurrent with remote SCADA and telemetry control.

## **D.3. UTILITY CAPACITY, RELIABILITY, AND AVAILABILITY**

### **D.3.1 SANITARY WATER**

Water is pumped from C-611 at 70 psig. A 250,000-gal elevated tank provides surge and buffering capacity to the system. The sanitary water system can maintain a 4-hour fire flow demand of 3,800 gpm plus normal requirements. The C-611 Water Treatment Facility has the following pumping capacity.

- Pump No. 1            1,500 gpm
- Pump No. 2            1,200 gpm
- Pump No. 3            600 gpm
- Pump No. 4            2,000 gpm
- Pump No. 5            2,000 gpm
- Pump No. 6            600 gpm

The closest tie-in location for sanitary water is located at the southwest corner of the C-333 process building. There is a 12-in. carbon steel line that goes along the building perimeter. There are not any obstacles to running a tie line to the sanitary water system at this location. The cost of sanitary water service is \$0.70 per 1000 gal.

For the location of the sanitary water line, refer to Utility Grid No. 28, drawing C5E-6128. The tie-in point is approximately located at coordinates 4151-S, 3635-W.

### **D.3.2 RECIRCULATING COOLING WATER**

The C-633 RCW system has two primary cooling towers, each with eight riser cells and 8600-gpm capacity per riser, and two supplementary cooling towers, each with three riser cells and 8375-gpm capacity per riser. The C-631 pump house has four 10,000-gpm pumps and six 20,000-gpm pumps.

The closest tie-in location for RCW is located at the southwest corner of C-333. However, the piping is nearly 50 years old and subject to developing leaks. Therefore, it is not recommended to tie to a single loop. Both loops are close together at the southeast corner of C-333. At this location, a tie can be made to each C-633 RCW loop and tee these together for a single pair of supply and return piping to the conversion facility. The distance will probably require a booster pump somewhere on the new line. All four of the RCW lines are 60-in. carbon steel. The cost of RCW service is \$1.05 per 1000 gal.

For the location of the RCW lines, refer to Utility Grid No. 28, drawing C5E-6228. The tie-in points are approximately located at coordinates 4100-S, 2400-W.

The new lines would have to run along the south side of the C-333 process building to get around the cylinder yards and then be routed to the new facility. There are several obstacles along this route. There is a 12-in. sanitary water line at grid line 3060-W and three fire water lines (16-in., 16-in., and 10-in.) at grid lines 3009-W, 2725-W, and 2535-W. A storm drain runs along grid line 4161-S with multiple branches to the south. An electrical cable runs along grid line 4124-S and there is a cathodic protection line in the area of grid line 2500-W.

### **D.3.3 STORM DRAIN**

There is an existing drainage ditch running east to west from the cylinder yards and located right at the conversion facility site. Refer to Utility Grid No. 33, drawing C5E-6333. The ditch runs along grid line 5300-S.

### **D.3.4 SANITARY SEWER**

The C-615 Sewage Treatment Facility is a 500,000 gal/day plant using primary and secondary treatment. The facility currently operates at approximately 325,000 gal/day.

The most accessible tie-in location is west of C-100 on the line from C-103. The existing 2-in. line from C-103 ties into the main system west of the C-101 Cafeteria and outside the security fence. The main line is 8-in. vitrified clay pipe. Since the tie point is located on the 2-in. line, the 2-in. piping from the tie point to the main line would have to be replaced with a larger line based on the conversion facility's expected capacity. The service cost is \$1.50 per 1000 gal.

For the location of the sanitary sewer lines, refer to Utility Grid No. 27, drawing C5E-6427. The tie-in point on the 2-in. line is approximately located at coordinates 3368-S, 4734-W. The 8-in. line begins at the manhole located at 3083-S, 4749-W.

There are several obstacles along the route to the tie-in location. There is a 12-in. storm drain located near grid line 4100-S and a 60-in. storm drain at grid line 3770-S. There is an electrical line at grid line 4158-S and two communications lines at grid lines 3440-S and 4737-S.

### **D.3.5 FIRE WATER**

The capacity of the C-631 recirculating cooling water tower basin is 5 million gal. Six pumps at C-631 supply a pressure of 135 psig.

- Pump No. 1            250 gpm
- Pump No. 2            4,650 gpm
- Pump No. 3            4,650 gpm
- Pump No. 4            4,650 gpm
- Pump No. 5            4,500 gpm
- Pump No. 6            4,500 gpm

A 300,000-gal elevated tank provides surge and buffering capacity for the system. The system can provide a minimum 4-hour fire flow demand of 10,000 gpm with a pressure sag not to exceed 20 psig. The nearest tie-in location is at the southwest corner of C-333 process building. There is a 14-in. carbon steel line here off the main line that circles the C-333 process building. The cost of fire water service is \$0.70 per 1000 gal.

For the location of the fire water line, refer to Utility Grid No. 28, drawing C5E-6828. The tie-in point is approximately located at coordinates 4070-S, 3640-W.

There are two obstacles to routing a tie line to the fire water line. There is a 24-in. make-up water line to the C-633 cooling tower that runs along grid line 4081-S. There is a cathodic protection line that runs along grid line 3710-W.

### **D.3.6 COMPRESSED AIR**

The closest tie-in location is at the northwest corner of the C-333 process building. The air line is aboveground and is 8 in. at this location. There are not any obstacles between the conversion facility and this tie-in point. The cost of compressed air is \$0.50 per 1000 scf.

For the location of the air line, refer to Utility Grid No. 28, drawing C5E-6728. The tie-in point is approximately located at coordinates 2934-S, 3515-W.

### **D.3.7 NITROGEN**

The three high pressure storage tanks have a rated capacity of 11,000 gal/tank. The system maintains a pressure of approximately 50 psig.

The closest tie-in location is next to the air line at the northwest corner of the C-333 process building. The line is 6 in. and aboveground. There are not any obstacles between the conversion facility and this tie-in point. The cost of nitrogen is \$3.00 per 100 scf.

For the location of the steam line, refer to Utility Grid No. 28, drawing C5E-6728. The tie-in point is approximately located at coordinates 2932-S, 3514-W.

### **D.3.8 STEAM**

The existing plant steam generating capability is 300,000 lb/hour at 100 psig, saturated. The closest tie-in location is next to the air and nitrogen lines at the northwest corner of the C-333 process building. The line is 12 in. and aboveground. There are not any obstacles between the conversion facility and this tie-in point. The cost of steam is \$7.00 per 1000 lb.

For the location of the steam line, refer to Utility Grid No. 28, drawing C5E-6728. The tie-in point is approximately located at coordinates 2935-S, 3517-W.

### **D.3.9 NATURAL OR PROPANE GAS**

There is no practical route to get to the on-site natural gas line from the conversion facility site. If propane gas is needed, it should be supplied by a tank installed at the conversion facility site.

### **D.3.10 ELECTRICITY**

EEI and TVA have capacities of 1086 MW and 1500 MW, respectively. The newer SF<sub>6</sub> circuit breakers on the transmission lines have a short circuit capacity of 15,000 MVA or 50K Amps, and the older OCBs are rated at 10,000 MVA/36K Amps.

The plant switchyards have the ability to modify the reactive power on the transmission system by adding capacitor banks or synchronous condensers to the distribution busses as necessary. As such, the total average power factor can be maintained from > 0.9 to near unity.

Studies of average total harmonic distortion (THD) on transmission lines indicated anywhere from 1.5 to 5% THD depending on the type and level of plant operating loads.

Equipment necessary to supply the proposed DUF6 Conversion Facility site from the existing C-533 switchyard includes: medium voltage 15-kV feeder conductors, medium voltage terminations, cable tray systems with aboveground support structures, underground duct construction, control/metering/relay equipment modification, and distribution equipment to each major facility. Costs to supply the power requirements to the site will depend greatly upon the design and power capacity requirements including derating of feeders for continuous use. Costs will be greater if underground feeders are used rather than aboveground support structures.

Power billing costs can vary greatly depending upon plant power demand and season of the year. At present, the current rate (09/26/00) is \$30 per MW-hour.

## **D.4. UTILITY COSTS**

See Chap. D.3 for the cost rates effective as of 09/26/00. Future rates may change since fixed prices are negotiated between the Operating Contractor and USEC.

## D.5. SITE UTILITY DRAWINGS

Utility Grid No.	Drawing No.	System
27	C5E-6127	Sanitary Water
27	C5E-6327	Storm Drains
27	C5E-6427	Sanitary Sewers
27	C5E-6527	Electrical & Communications
28	C5E-6128	Sanitary Water
28	C5E-6228	Recirculating Cooling Water
28	C5E-6328	Storm Drains
28	C5E-6528	Electrical & Communications
28	C5E-6728	Air, Nitrogen, & Steam
28	C5E-6828	Fire Water
28	C5E-7128	Cathodic Protection
33	C5E-6333	Storm Drains
33	C5E-6533	Electrical & Communications
34	C5E-6234	Recirculating Cooling Water
34	C5E-6534	Electrical & Communications
34	C5E-6834	Fire Water

Utility drawings are provided after Sect. D.6.

## D.6. UTILITY TIE-IN POINTS

### D.6.1 SANITARY WATER

The closest tie-in location for sanitary water is located at the southwest corner of the C-333 process building. There is a 12-in. carbon steel line that goes along the building perimeter. There are not any obstacles to running a tie line to the sanitary water system at this location. The cost of sanitary water service is \$0.70 per 1000 gal.

For the location of the sanitary water line, refer to Utility Grid No. 28, drawing C5E-6128. The tie-in point is approximately located at coordinates 4151-S, 3635-W.

### D.6.2 RECIRCULATING COOLING WATER

The closest tie-in location for RCW is located at the southwest corner of C-333. However, the piping is nearly 50 years old and subject to developing leaks. Therefore, it is not recommended to tie to a single loop. Both loops are close together at the southeast corner of C-333. At this location, a tie can be made to each C-633 RCW loop and tee these together for a single pair of supply and return piping to the conversion facility. The distance will probably

require a booster pump somewhere on the new line. All four of the RCW lines are 60-in. carbon steel. The cost of RCW service is \$1.05 per 1000 gal.

For the location of the RCW lines, refer to Utility Grid No. 28, drawing C5E-6228. The tie-in points are approximately located at coordinates 4100-S, 2400-W.

### **D.6.3 STORM DRAIN**

There is an existing drainage ditch running east to west from the cylinder yards and located right at the conversion facility site. Refer to Utility Grid No. 33, drawing C5E-6333. The ditch runs along grid line 5300-S.

### **D.6.4 SANITARY SEWER**

The most accessible tie-in location is west of C-100 on the line from C-103. The existing 2-in. line from C-103 ties into the main system west of the C-101 Cafeteria and outside the security fence. The main line is 8-in. vitrified clay pipe. Since the tie point is located on the 2-in. line, the 2-in. piping from the tie point to the main line would have to be replaced with a larger line based on the conversion facility's expected capacity. The service cost is \$1.50 per 1000 gal.

For the location of the sanitary sewer lines, refer to Utility Grid No. 27, drawing C5E-6427. The tie-in point on the 2-in. line is approximately located at coordinates 3368-S, 4734-W. The 8-in. line begins at the manhole located at 3083-S, 4749-W.

There are several obstacles along the route to the tie-in location. There is a 12-in. storm drain located near grid line 4100-S and a 60-in. storm drain at grid line 3770-S. There is an electrical line at grid line 4158-S and two communications lines at grid lines 3440-S and 4737-S.

### **D.6.5 FIRE WATER**

For the location of the fire water line, refer to Utility Grid No. 28, drawing C5E-6828. The tie-in point is approximately located at coordinates 4070-S, 3640-W.

There are two obstacles to routing a tie line to the fire water line. There is a 24-in. make-up water line to the C-633 cooling tower that runs along grid line 4081-S. There is a cathodic protection line that runs along grid line 3710-W.

### **D.6.6 COMPRESSED AIR**

The closest tie-in location is at the northwest corner of the C-333 process building. The air line is aboveground and is 8 in. at this location. There are not any obstacles between the conversion facility and this tie-in point. The cost of compressed air is \$0.50 per 1000 scf.

For the location of the air line, refer to Utility Grid No. 28, drawing C5E-6728. The tie-in point is approximately located at coordinates 2934-S, 3515-W.

### **D.6.7 NITROGEN**

The closest tie-in location is next to the air line at the northwest corner of the C-333 process building. The line is 6-in. and aboveground. There are not any obstacles between the conversion facility and this tie-in point. The cost of nitrogen is \$3.00 per 100 scf.

For the location of the steam line, refer to Utility Grid No. 28, drawing C5E-6728. The tie-in point is approximately located at coordinates 2932-S, 3514-W.

### **D.6.8 STEAM**

The closest tie-in location is next to the air and nitrogen lines at the northwest corner of the C-333 process building. The line is 12 in. and aboveground. There are not any obstacles between the conversion facility and this tie-in point. The cost of steam is \$7.00 per 1000 lb.

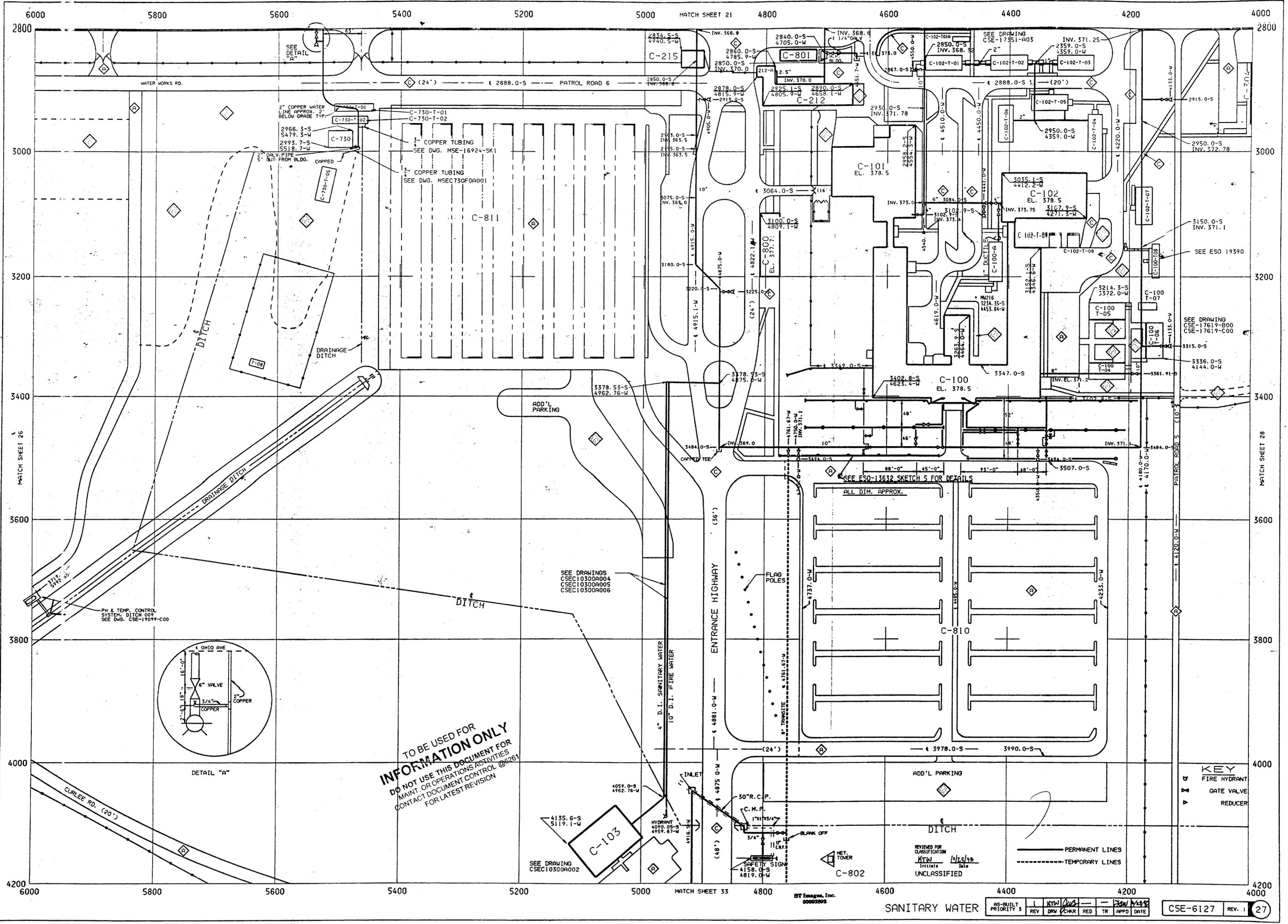
For the location of the steam line, refer to Utility Grid No. 28, drawing C5E-6728. The tie-in point is approximately located at coordinates 2935-S, 3517-W.

### **D.6.9 NATURAL OR PROPANE GAS**

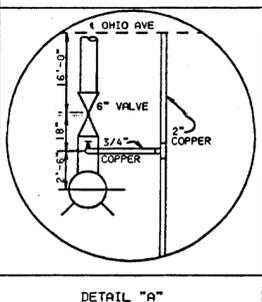
There is no practical route to get to the on-site natural gas line from the DUF6 Conversion Facility site. If propane gas is needed, it should be supplied by a tank installed at the conversion facility site.

### **D.6.10 ELECTRICITY**

Four existing switchyards at the plant site provide power to the PGDP process facilities. Three of the EEI lines and three TVA lines terminate at the PGDP C-533 switchyard, which is nearest the proposed DUF6 Conversion Facility (distance is approximately ½ mile). Therefore, the proposed supply of power to the DUF6 Conversion site is from the C-533 switchyard. The EEI lines and TVA lines are completely independent and fed from opposite directions, and all lines from both suppliers are tied to utility grid networks providing access to other remote power generating locations (nuclear, fossil fuel, and hydroelectric). The C-533 switchyard has a capacity of 1320 MW and a distribution voltage of 13.8-kV. There are eleven main power transformers, and eleven 13.8-kV busses in C-533, which are rated at 120 MW per bus. Each of the auxiliary distribution busses provide power through air-circuit-breakers (ACBs) and feeders, with the flexibility to parallel feed busses and transformers for increased reliability. The ACBs are rated at 2000 Amps maximum and can supply two 3-phase feeder circuits per breaker. Power to the proposed DUF6 Conversion Facility could be supplied through either aboveground cable tray systems or underground ducts, with multiple 15-MW, 650-A, 13.8-kV feeder circuits. The option of supplying power from the existing C-533 switchyard gives the lowest construction costs with the most flexibility to purchase power from three major utility suppliers and their sponsors.



**TO BE USED FOR INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6261 FOR LATEST REVISION



**KEY**  
 FIRE HYDRANT  
 GATE VALVE  
 REDUCER

REVIEWED FOR CLASSIFICATION  
 KTW / [Signature]  
 Initials Date  
 UNCLASSIFIED

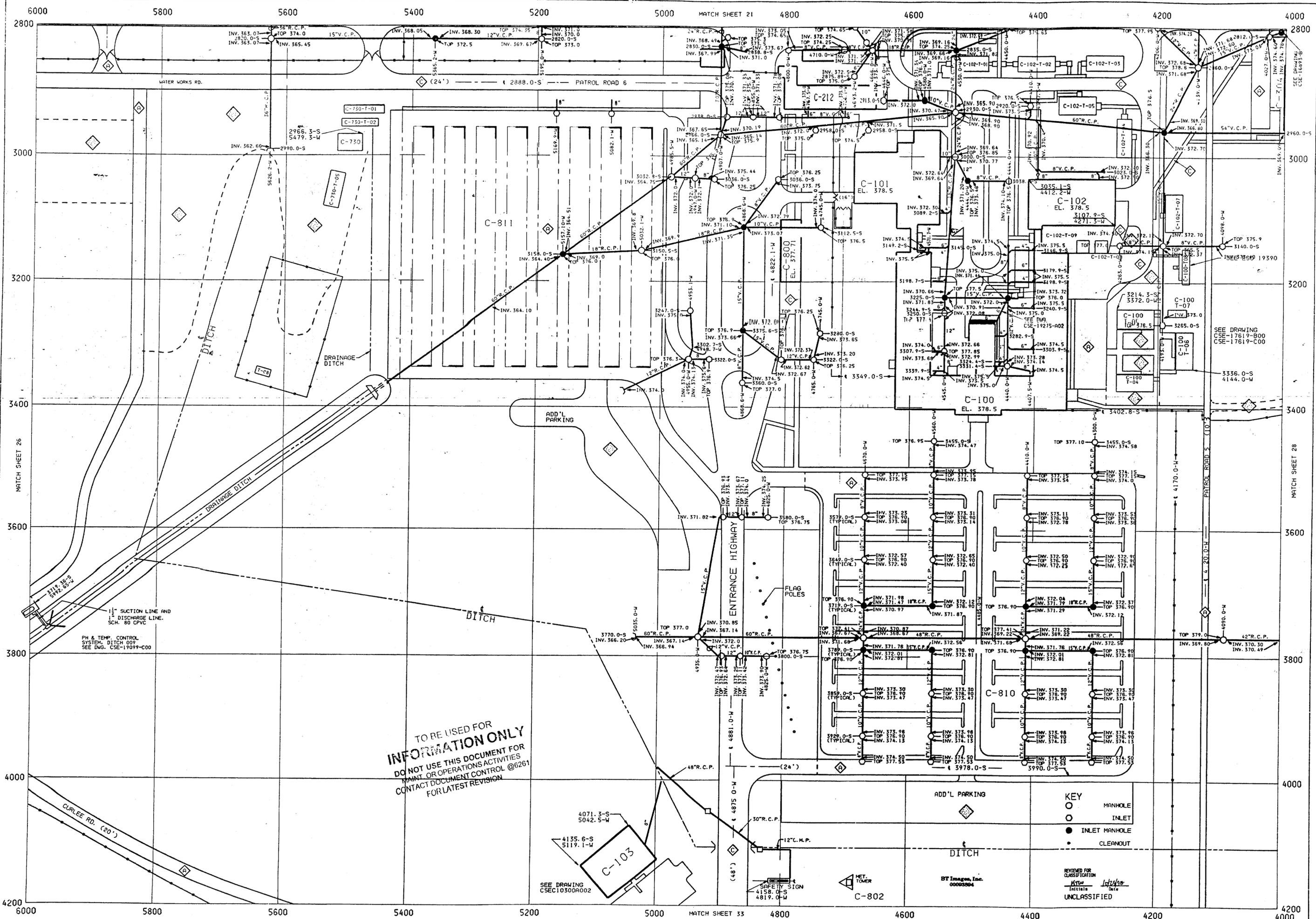
PERMANENT LINES  
 TEMPORARY LINES

SANITARY WATER

AS-BUILT	REV	DRW	CHKR	RED	TR	APPD	DATE

CSE-6127 REV. 1 27

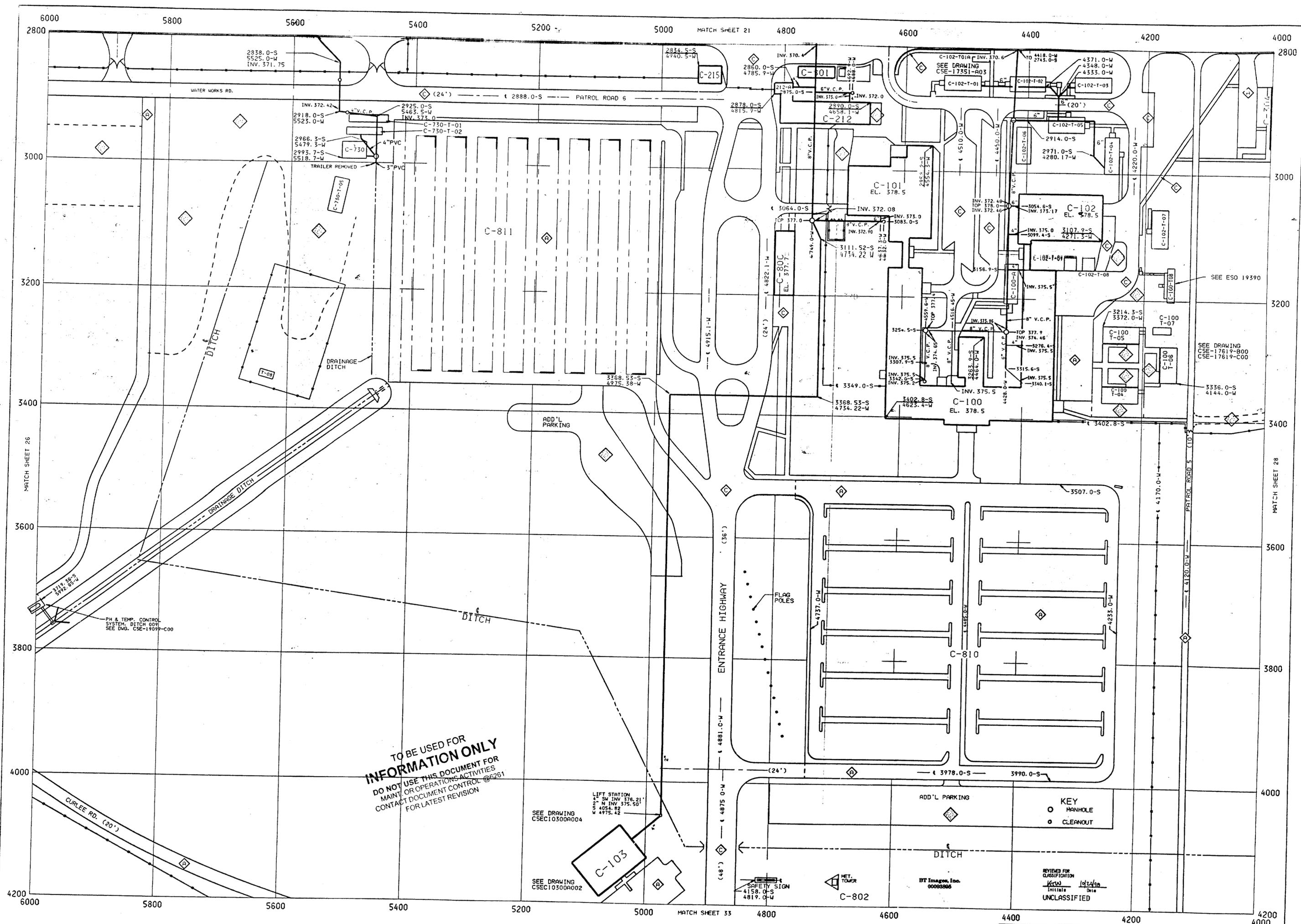
D C B A A B C D



TO BE USED FOR  
**INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR  
 MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6261  
 FOR LATEST REVISION

**KEY**  
 ○ MANHOLE  
 ○ INLET  
 ● INLET MANHOLE  
 • CLEANOUT

REVIEWED FOR  
 CLASSIFICATION  
 Initials  
 DATE  
 UNCLASSIFIED



**TO BE USED FOR INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR  
 MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @ 6261  
 FOR LATEST REVISION

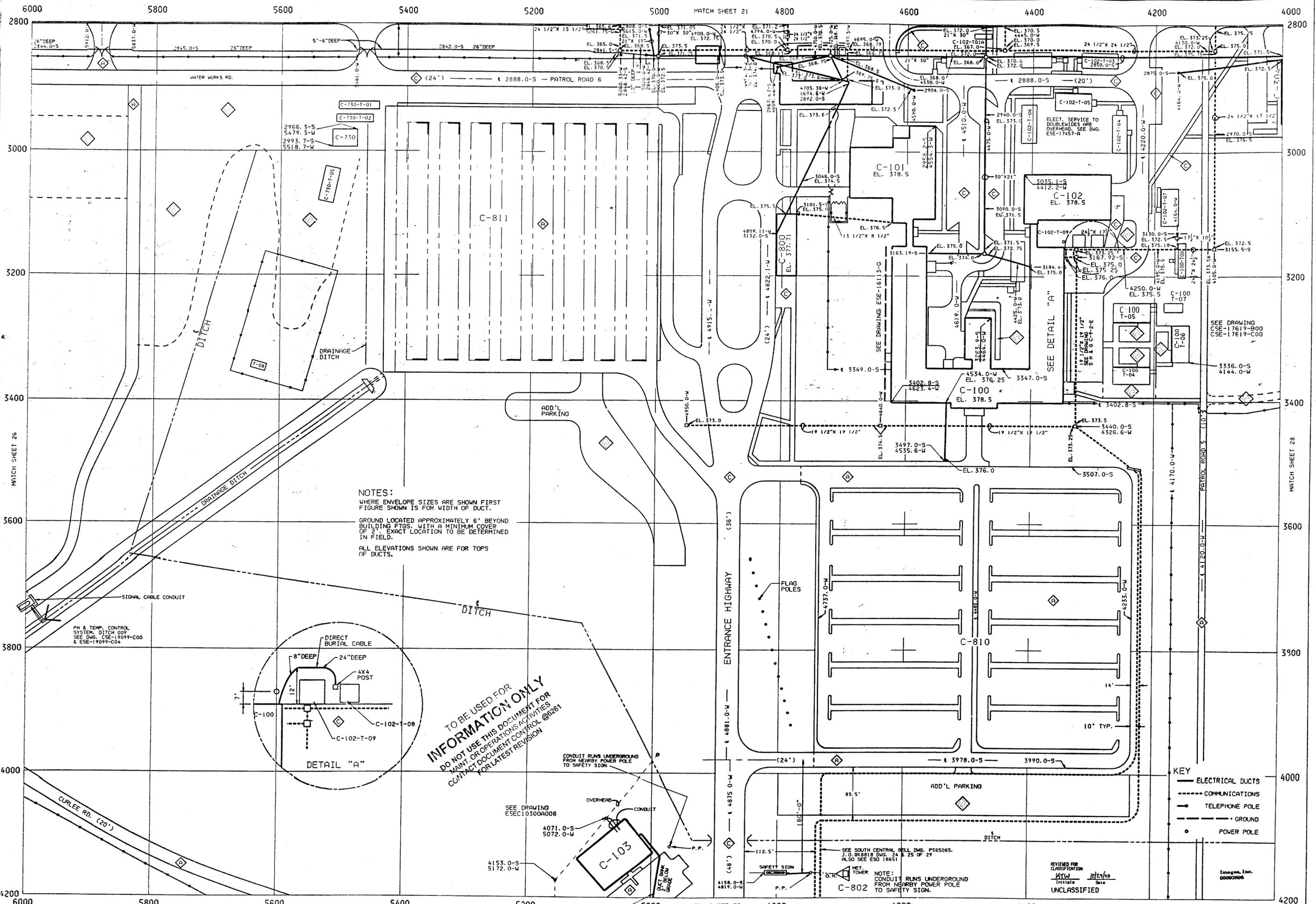
LIFT STATION  
 3" SW INV. 376.21'  
 2" N INV. 375.50'  
 4" SW INV. 4054.82'  
 4" SW INV. 4975.42'

SEE DRAWING  
 CSEC10300A004

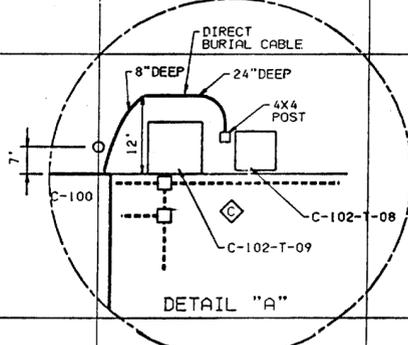
SEE DRAWING  
 CSEC10300A002

**KEY**  
 ○ MANHOLE  
 ● CLEANOUT

REVISED FOR CLASSIFICATION  
 KRW 10/2/08  
 Initials Date  
 UNCLASSIFIED



**NOTES:**  
 WHERE ENVELOPE SIZES ARE SHOWN FIRST FIGURE SHOWN IS FOR WIDTH OF DUCT.  
 GROUND LOCATED APPROXIMATELY 6' BEYOND BUILDING FTGS. WITH A MINIMUM COVER OF 2'. EXACT LOCATION TO BE DETERMINED IN FIELD.  
 ALL ELEVATIONS SHOWN ARE FOR TOPS OF DUCTS.



**TO BE USED FOR INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6281 FOR LATEST REVISION

- KEY**
- ELECTRICAL DUCTS
  - - - COMMUNICATIONS
  - TELEPHONE POLE
  - - - GROUND
  - POWER POLE

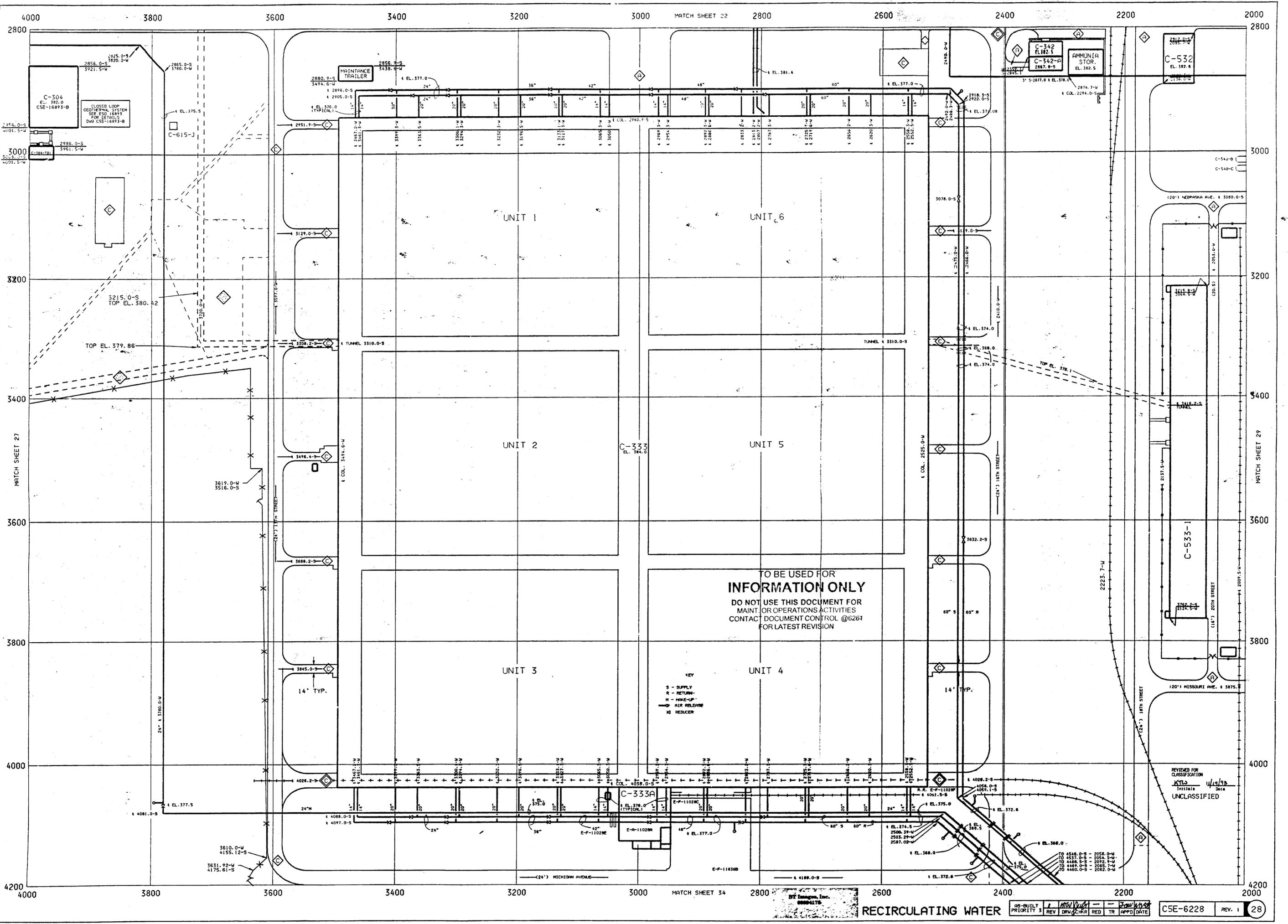
REVIEWED FOR CLASSIFICATION  
 Initials Date  
 UNCLASSIFIED

Images, Inc.  
 00063806

ELECTRICAL DUCTS-COMMUNICATIONS-GROUNDING

AS-BUILT	1	REV	DRW	CHKR	RED	TR	APPD	DATE	CSE-6527	REV. 1	27
----------	---	-----	-----	------	-----	----	------	------	----------	--------	----





TO BE USED FOR  
**INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR  
 MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6261  
 FOR LATEST REVISION

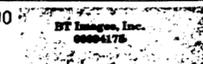
KEY  
 S - SUPPLY  
 R - RETURN  
 M - MAKE-UP  
 AIR RELEASE  
 REDUCER

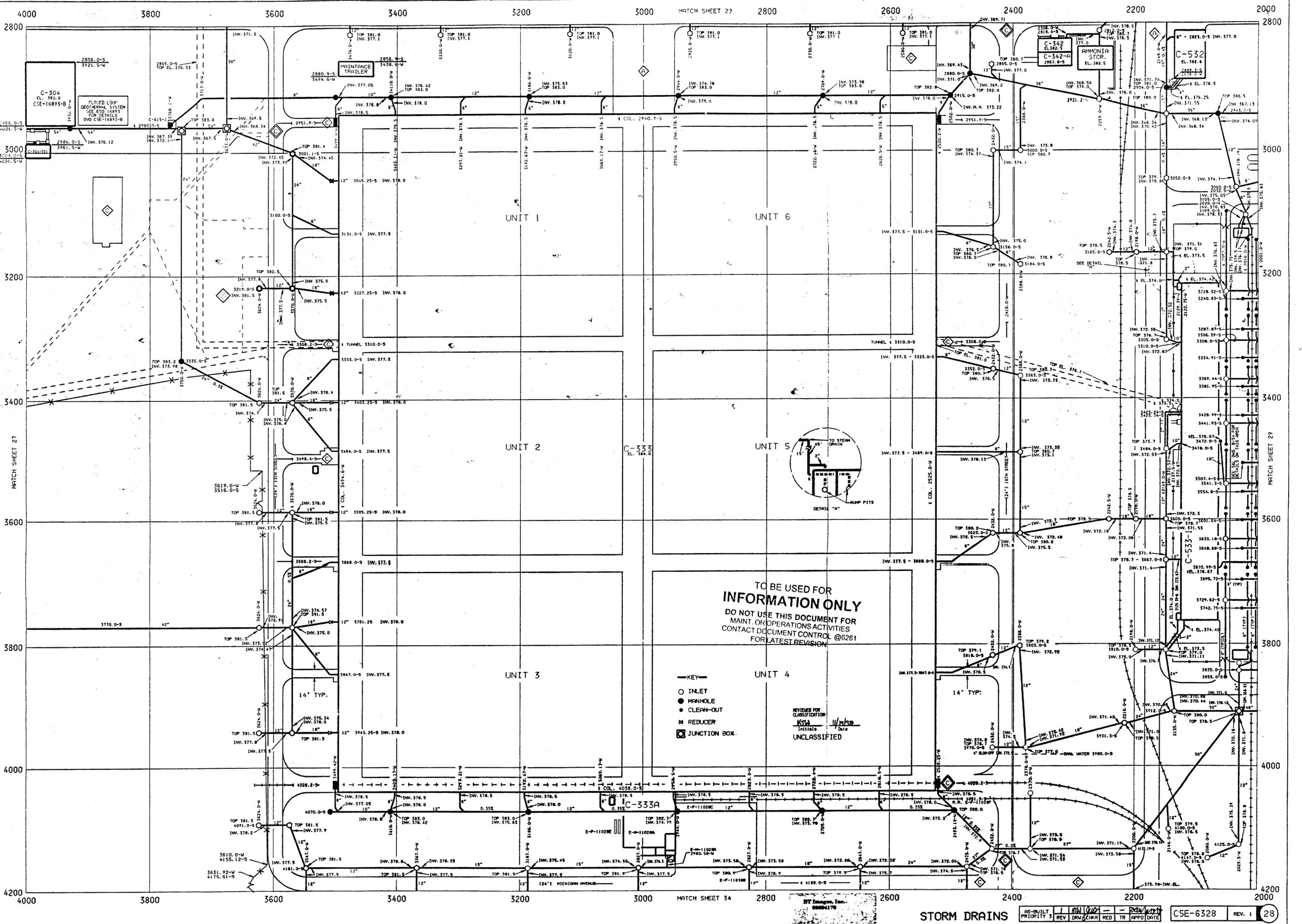
REVIEWED FOR  
 CLASSIFICATION  
 KTL/SL 4/10/88  
 INITIALS  
 UNCLASSIFIED

**RECIRCULATING WATER**

AS-BUILT	REV	DRW	CHK	RED	TR	APPD	DATE

CSE-6228 REV. 1 28





TO BE USED FOR  
 INFORMATION ONLY  
 DO NOT USE THIS DOCUMENT FOR  
 MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6261  
 FOR LATEST REVISION

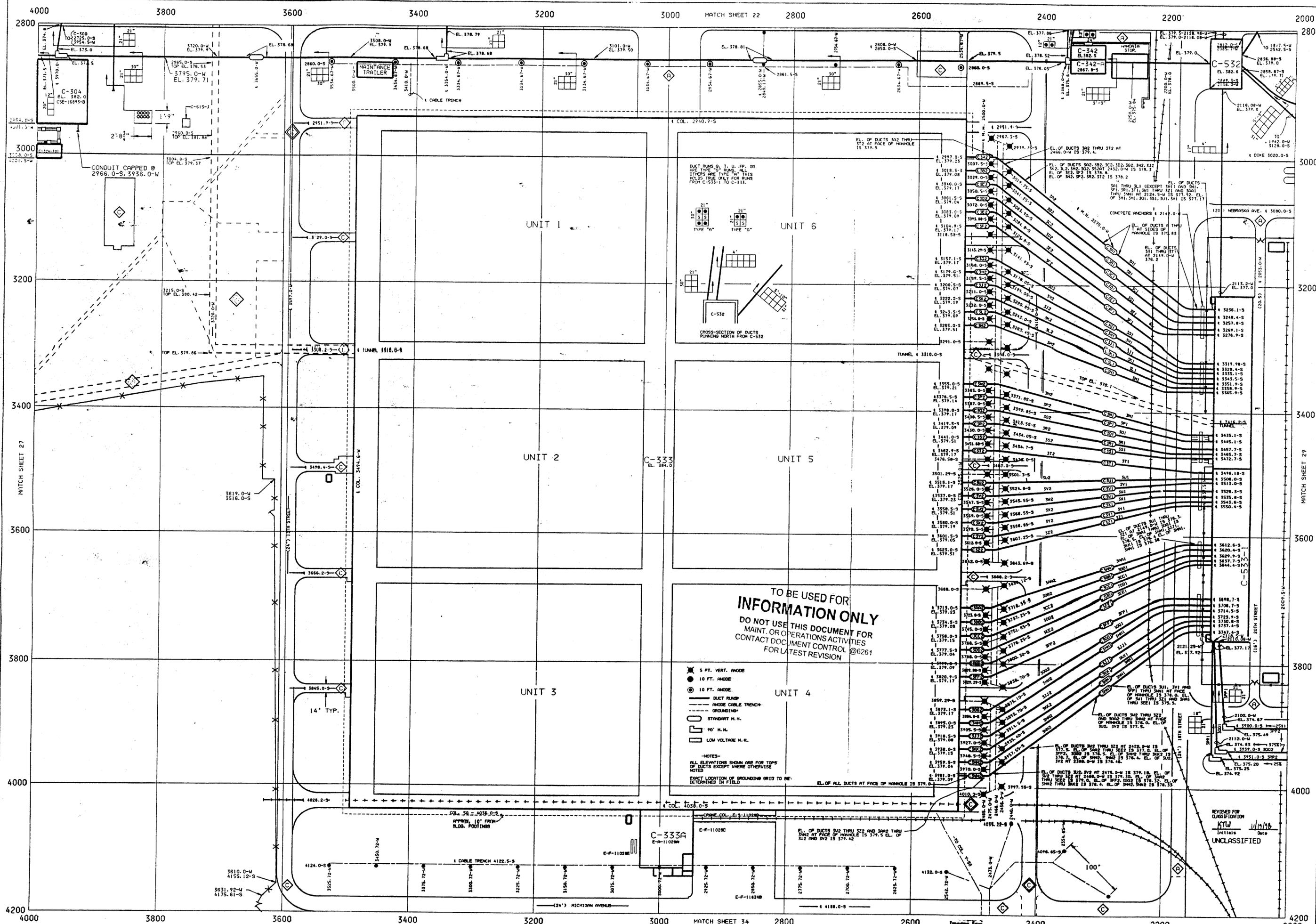
- KEY —
- INLET
  - MANHOLE
  - ◐ CLEAN-OUT
  - ◑ REDUCER
  - ◓ JUNCTION BOX

REVIEWED FOR  
 CLASSIFICATION  
 DATE 11/15/98  
 UNCLASSIFIED

AS-BUILT	REV	DRW	CHKR	RED	TR	APPD	DATE

STORM DRAINS

CSE-6328 REV. 1 28



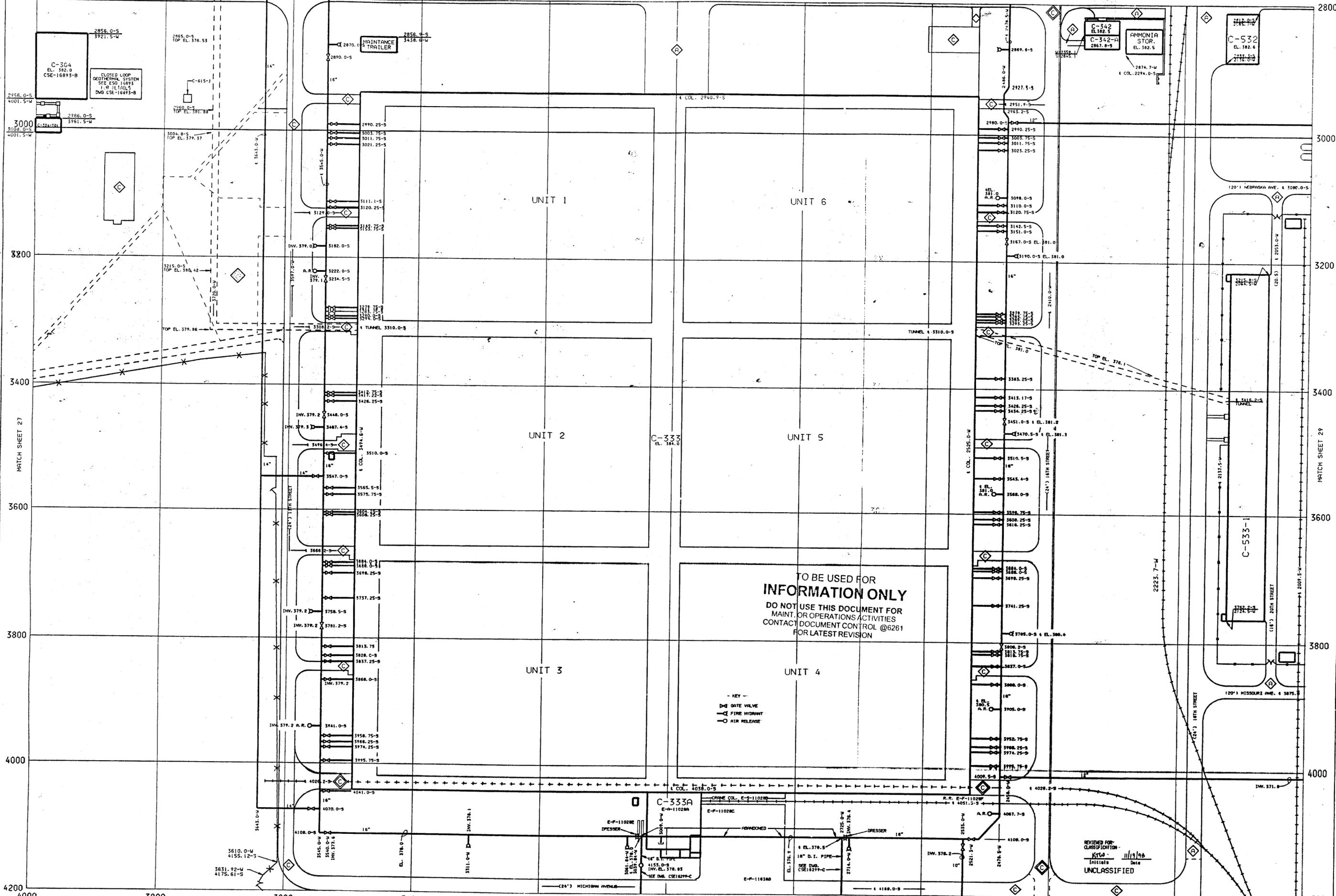
CATHODIC PROTECTION-ELECTRICAL DUCTS-COMMUNICATIONS-GROUNDING

AS-BUILT	REV	DATE	BY	CHKR	TR	APPD	DATE
PRIORITY 5							

CSE-6528 REV. 1 28



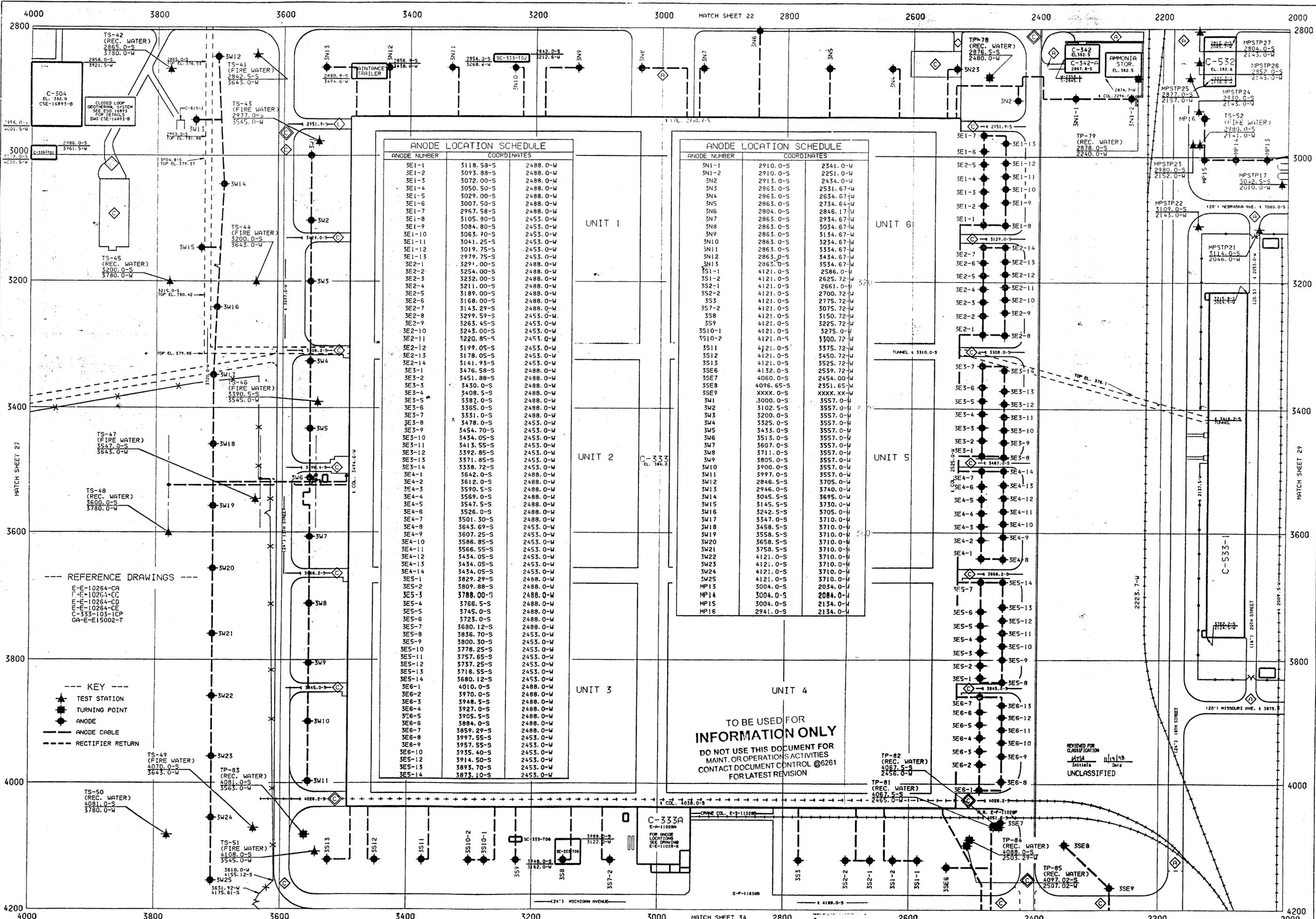




TO BE USED FOR  
**INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR  
 MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6261  
 FOR LATEST REVISION

- KEY -
- ◇ GATE VALVE
  - FIRE HYDRANT
  - AIR RELEASE

REVIEWED FOR  
 CLASSIFICATION  
 Initials Date  
 UNCLASSIFIED



ANODE LOCATION SCHEDULE		
ANODE NUMBER	COORDINATES	
3E1-1	3118.58-S	2488.0-W
3E1-2	3093.88-S	2488.0-W
3E1-3	3072.00-S	2488.0-W
3E1-4	3050.50-S	2488.0-W
3E1-5	3029.00-S	2488.0-W
3E1-6	3007.50-S	2488.0-W
3E1-7	2987.58-S	2488.0-W
3E1-8	3105.80-S	2453.0-W
3E1-9	3084.80-S	2453.0-W
3E1-10	3063.90-S	2453.0-W
3E1-11	3041.25-S	2453.0-W
3E1-12	3019.75-S	2453.0-W
3E1-13	2979.75-S	2453.0-W
3E2-1	3291.00-S	2488.0-W
3E2-2	3254.00-S	2488.0-W
3E2-3	3232.00-S	2488.0-W
3E2-4	3211.00-S	2488.0-W
3E2-5	3189.00-S	2488.0-W
3E2-6	3168.00-S	2488.0-W
3E2-7	3143.29-S	2488.0-W
3E2-8	3299.59-S	2453.0-W
3E2-9	3263.45-S	2453.0-W
3E2-10	3243.00-S	2453.0-W
3E2-11	3220.85-S	2453.0-W
3E2-12	3199.05-S	2453.0-W
3E2-13	3178.05-S	2453.0-W
3E2-14	3141.93-S	2453.0-W
3E3-1	3476.58-S	2488.0-W
3E3-2	3451.88-S	2488.0-W
3E3-3	3430.0-S	2488.0-W
3E3-4	3408.5-S	2488.0-W
3E3-5	3387.0-S	2488.0-W
3E3-6	3365.0-S	2488.0-W
3E3-7	3331.0-S	2488.0-W
3E3-8	3478.0-S	2453.0-W
3E3-9	3454.70-S	2453.0-W
3E3-10	3434.05-S	2453.0-W
3E3-11	3413.55-S	2453.0-W
3E3-12	3392.85-S	2453.0-W
3E3-13	3371.85-S	2453.0-W
3E3-14	3338.72-S	2453.0-W
3E4-1	3642.0-S	2488.0-W
3E4-2	3612.0-S	2488.0-W
3E4-3	3590.5-S	2488.0-W
3E4-4	3569.0-S	2488.0-W
3E4-5	3547.5-S	2488.0-W
3E4-6	3526.0-S	2488.0-W
3E4-7	3501.30-S	2488.0-W
3E4-8	3643.69-S	2453.0-W
3E4-9	3607.25-S	2453.0-W
3E4-10	3586.85-S	2453.0-W
3E4-11	3566.55-S	2453.0-W
3E4-12	3434.05-S	2453.0-W
3E4-13	3434.05-S	2453.0-W
3E4-14	3434.05-S	2453.0-W
3E5-1	3829.29-S	2488.0-W
3E5-2	3809.88-S	2488.0-W
3E5-3	3788.00-S	2488.0-W
3E5-4	3766.5-S	2488.0-W
3E5-5	3745.0-S	2488.0-W
3E5-6	3723.0-S	2488.0-W
3E5-7	3680.12-S	2488.0-W
3E5-8	3656.70-S	2453.0-W
3E5-9	3600.30-S	2453.0-W
3E5-10	3778.25-S	2453.0-W
3E5-11	3757.65-S	2453.0-W
3E5-12	3737.25-S	2453.0-W
3E5-13	3716.55-S	2453.0-W
3E5-14	3680.12-S	2453.0-W
3E6-1	4010.0-S	2488.0-W
3E6-2	3970.0-S	2488.0-W
3E6-3	3948.5-S	2488.0-W
3E6-4	3927.0-S	2488.0-W
3E6-5	3905.5-S	2488.0-W
3E6-6	3884.0-S	2488.0-W
3E6-7	3859.29-S	2488.0-W
3E6-8	3997.55-S	2453.0-W
3E6-9	3957.55-S	2453.0-W
3E6-10	3935.40-S	2453.0-W
3E6-12	3914.50-S	2453.0-W
3E6-13	3893.70-S	2453.0-W
3E6-14	3873.10-S	2453.0-W

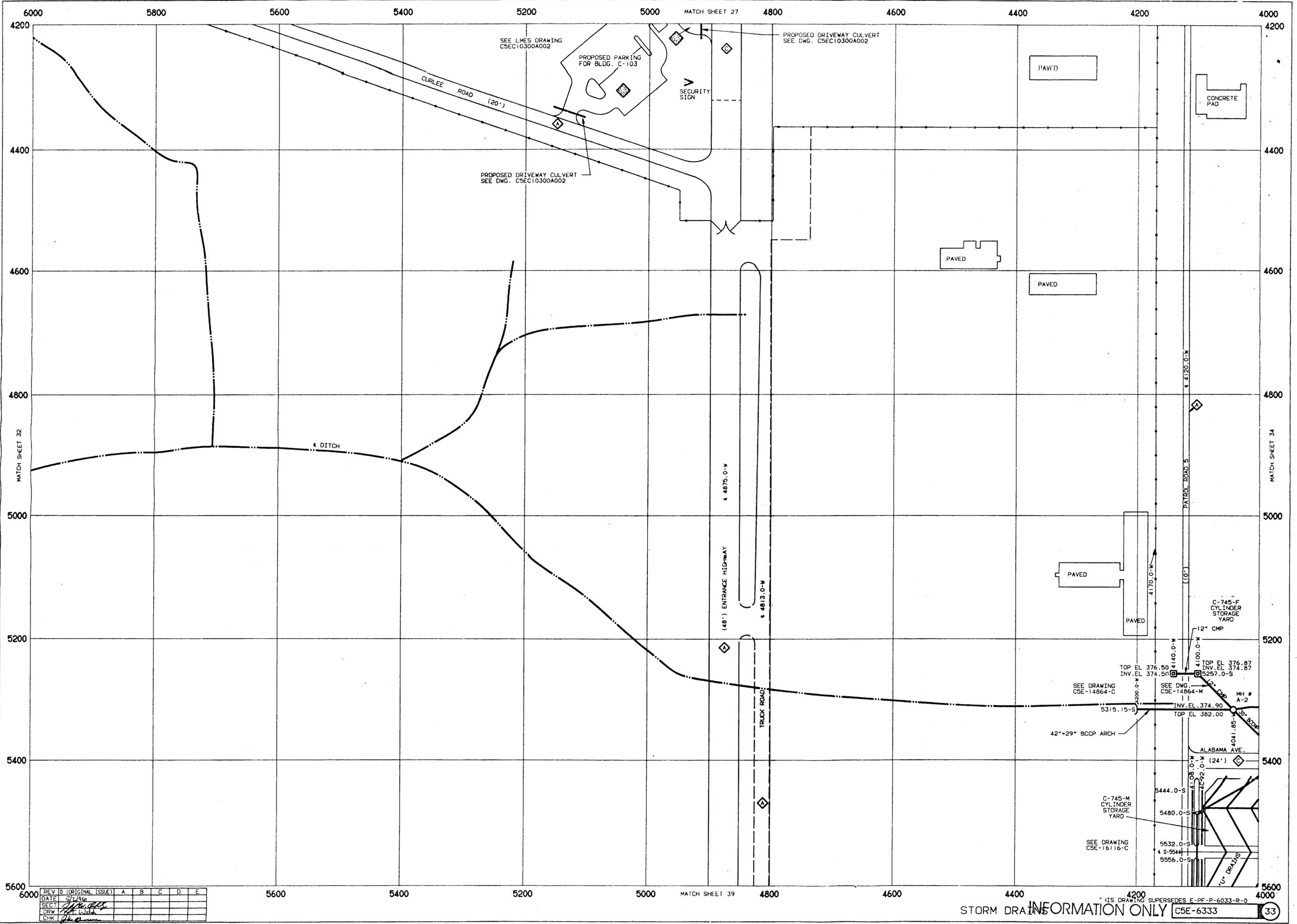
ANODE LOCATION SCHEDULE		
ANODE NUMBER	COORDINATES	
3N1-1	2910.0-S	2541.0-W
3N1-2	2910.0-S	2251.0-W
3N2	2913.0-S	2434.0-W
3N3	2863.0-S	2531.67-W
3N4	2863.0-S	2634.67-W
3N5	2863.0-S	2734.67-W
3N6	2804.0-S	2846.17-W
3N7	2863.0-S	2934.67-W
3N8	2863.0-S	3034.67-W
3N9	2863.0-S	3134.67-W
3N10	2863.0-S	3234.67-W
3N11	2863.0-S	3334.67-W
3N12	2863.0-S	3434.67-W
3N13	2863.0-S	3534.67-W
3S1-1	4121.0-S	2586.0-W
3S1-2	4121.0-S	2625.72-W
3S2-1	4121.0-S	2661.0-W
3S2-2	4121.0-S	2700.72-W
3S3	4121.0-S	2735.72-W
3S7-2	4121.0-S	3075.72-W
3S8	4121.0-S	3150.72-W
3S9	4121.0-S	3225.72-W
3S10-1	4121.0-S	3275.0-W
3S10-2	4121.0-S	3300.72-W
3S11	4121.0-S	3375.72-W
3S12	4121.0-S	3450.72-W
3S13	4121.0-S	3525.72-W
3S6	4132.0-S	2539.72-W
3S7	4060.0-S	2454.00-W
3S8	4096.65-S	2351.65-W
3S9	XXXX.0-S	XXXX.XX-W
3W1	3000.0-S	3557.0-W
3W2	3102.5-S	3557.0-W
3W3	3200.0-S	3557.0-W
3W4	3325.0-S	3557.0-W
3W5	3433.0-S	3557.0-W
3W6	3513.0-S	3557.0-W
3W7	3607.0-S	3557.0-W
3W8	3711.0-S	3557.0-W
3W9	3805.0-S	3557.0-W
3W10	3900.0-S	3557.0-W
3W11	3997.0-S	3557.0-W
3W12	2846.5-S	3705.0-W
3W13	2946.0-S	3740.0-W
3W14	3045.5-S	3695.0-W
3W15	3145.5-S	3730.0-W
3W16	3242.5-S	3705.0-W
3W17	3347.0-S	3710.0-W
3W18	3458.5-S	3710.0-W
3W19	3558.5-S	3710.0-W
3W20	3658.5-S	3710.0-W
3W21	3758.5-S	3710.0-W
3W22	4121.0-S	3710.0-W
3W23	4121.0-S	3710.0-W
3W24	4121.0-S	3710.0-W
3W25	4121.0-S	3710.0-W
MP13	3004.0-S	2034.0-W
MP14	3004.0-S	2084.0-W
MP15	3004.0-S	2134.0-W
MP16	2941.0-S	2134.0-W

- REFERENCE DRAWINGS ---
- E-E-10264-CA
  - F-F-10264-CC
  - E-E-10264-CD
  - E-E-10264-CE
  - C-333-103-1CP
  - GA-E-E15002-T

- KEY ---
- ★ TEST STATION
  - TURNING POINT
  - ANODE
  - ANODE CABLE
  - RECTIFIER RETURN

TO BE USED FOR INFORMATION ONLY  
DO NOT USE THIS DOCUMENT FOR MAINT. OR OPERATIONS ACTIVITIES  
CONTACT DOCUMENT CONTROL @6261 FOR LATEST REVISION

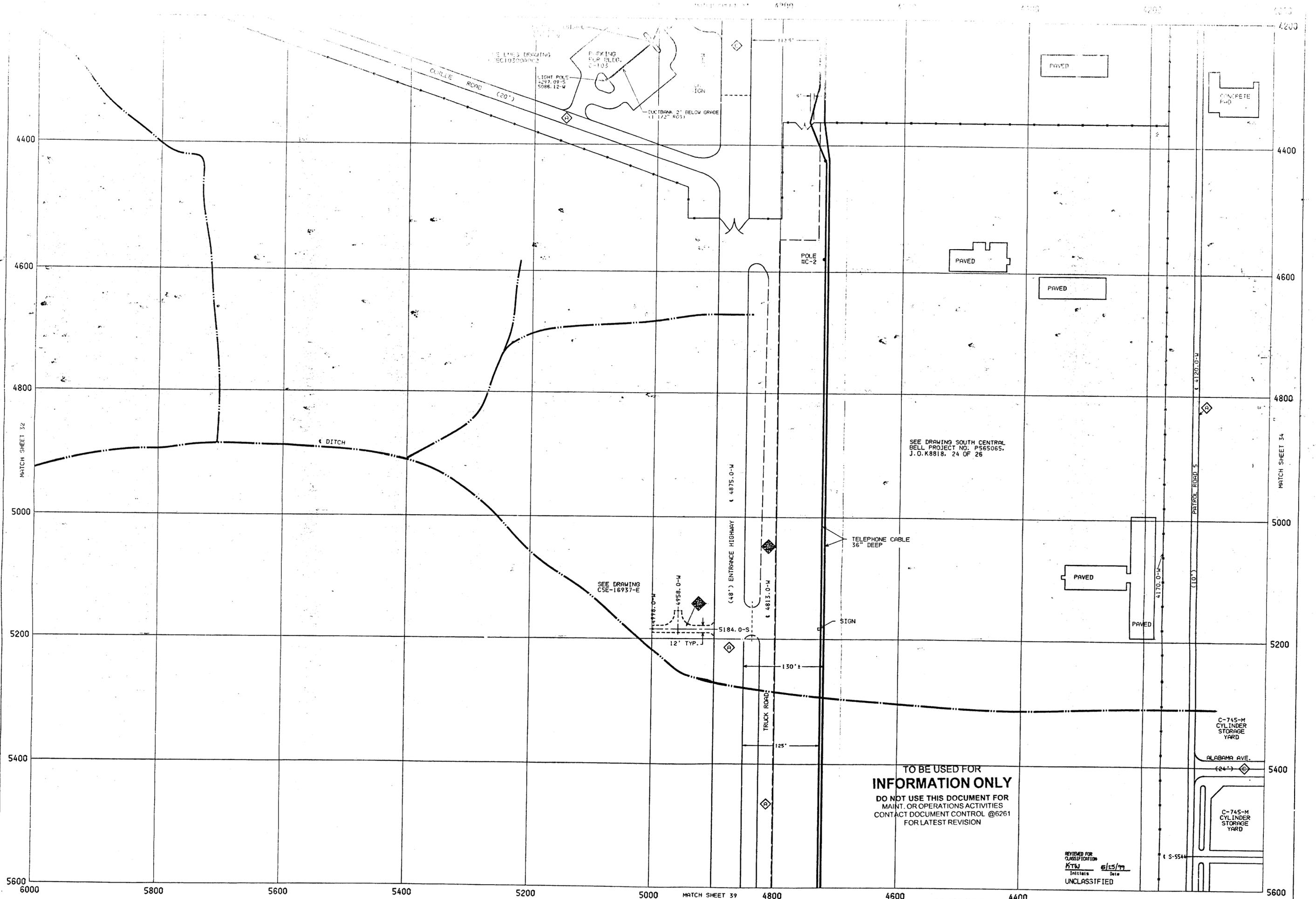
REVIEWED FOR CLASSIFICATION  
Initials Date  
UNCLASSIFIED



REV 0 (ORIGINAL ISSUE)	A	B	C	D	E
DATE					
SECT					
DRW					
CHK					

THIS DRAWING SUPERSEDES E-PF-P-6033-R-0  
 STORM DRAIN INFORMATION ONLY CSE-6333

DERIVATIVE CLASSIFIER  
 Name: J.A. Ettridge  
 Date: 7/21/97  
 Classification Officer



TO BE USED FOR  
**INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR  
 MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6261  
 FOR LATEST REVISION

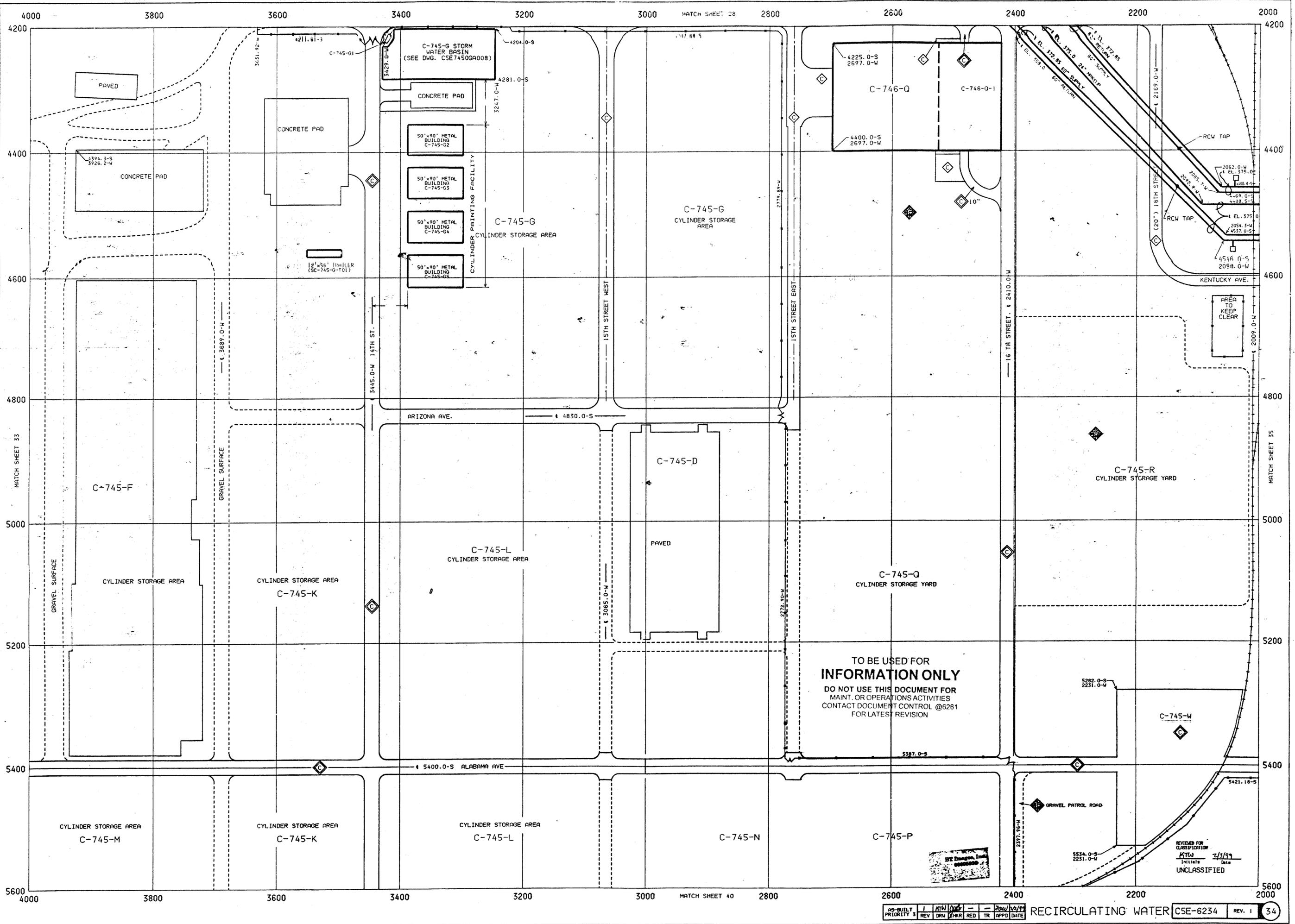
REVIEWED FOR  
 CLASSIFICATION  
 HTW Date 6/25/99  
 UNCLASSIFIED

AS-BUILT	1	HTW	TOP	-	DATE	DATE
PRIORITY 3	REV	DRW	CHKR	RED	TR	APPD DATE

**ELECTRICAL DUCTS, COMMUNICATIONS,  
 AND GROUNDING**

CSE-6533 REV. 1 33

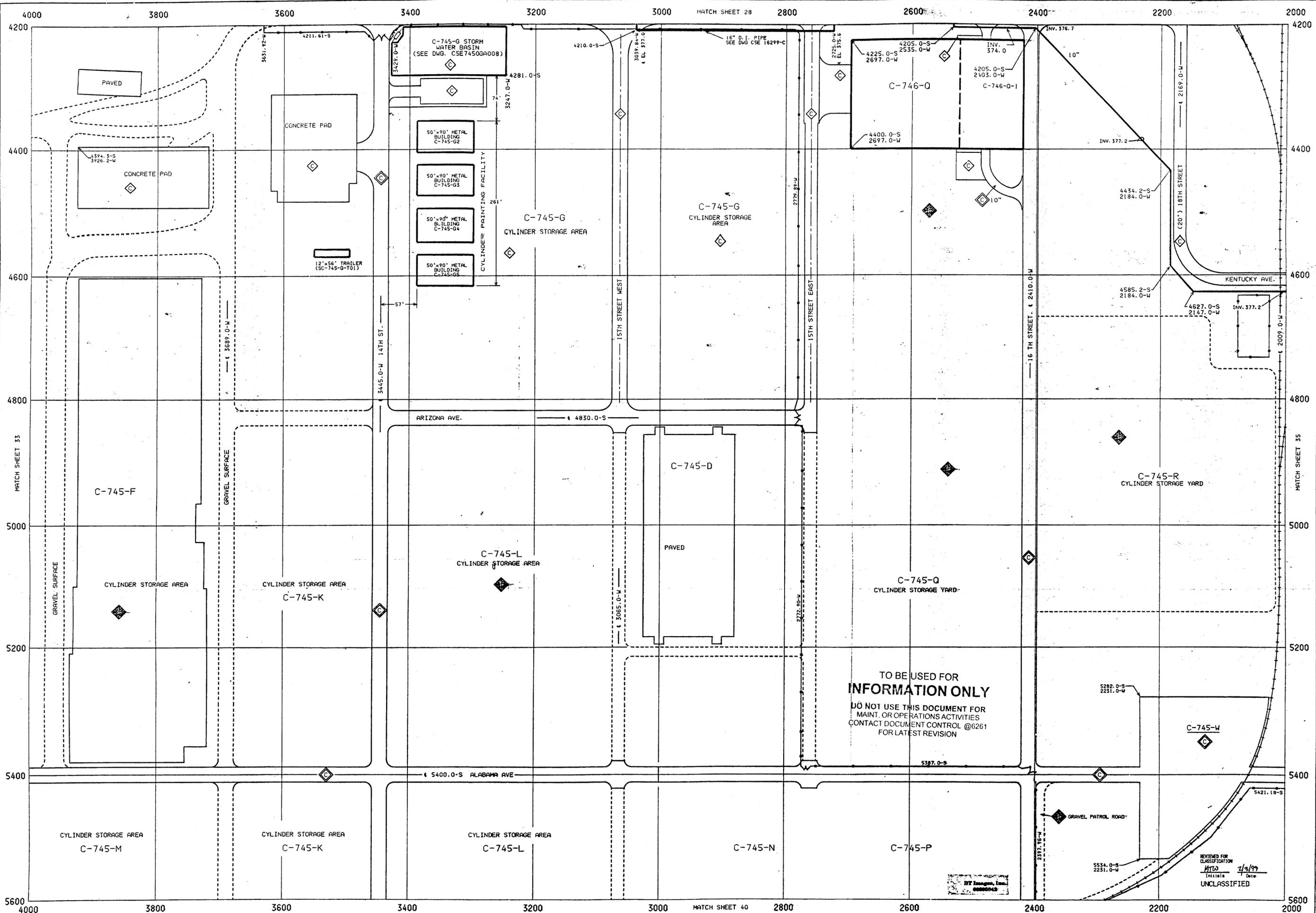




**TO BE USED FOR INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6261 FOR LATEST REVISION

REVIEWED FOR CLASSIFICATION  
 Initials: *[Signature]* Date: 2/3/99  
 UNCLASSIFIED





TO BE USED FOR  
**INFORMATION ONLY**  
 DO NOT USE THIS DOCUMENT FOR  
 MAINT. OR OPERATIONS ACTIVITIES  
 CONTACT DOCUMENT CONTROL @6261  
 FOR LATEST REVISION

REVIEWED FOR  
 CLASSIFICATION  
 Initials: *[Signature]* Date: 4/9/99  
 UNCLASSIFIED