SECTION W700

SLUDGE CAKE STORAGE, WEIGHING, AND LOADOUT SYSTEM

A. PURPOSE

The sludge cake storage system consists of 3 sludge storage bins, a system for weighing the sludge cake, equipment necessary for loading the sludge cake into hauling trucks, and a process logic controller for bin controlling and record keeping of the hauled sludge.

B. SYSTEM DESCRIPTION

Dewatered sludge cake from each centrifuge is pumped to one of two manifolds feeding the sludge storage bins. Sludge cake pumps 1, 3, and 5 pump sludge cake to the east side of sludge bins No. 1, 2, and 3 via one manifold while sludge cake pumps 2, 4, and 6 pump sludge to the west side of the bins via the other manifold. At each end of the sludge cake pipe discharge into the bins is an automated pneumatical control valve.

Each sludge cake bin is mounted on a scale located at each bin support point. Each scale has a load cell mounted in a saddle. The bin weight is transfer through the load cell to an active weighing platform which is suspended by two links.

The load cell is an electrical resistance element connected to a wheatstone bridge. The system is calibrated to match the resistance with the corresponding weight.

Each bin is divided into an east side and west side by two hopper bottoms. Each hopper bottom has a live bottom feeder with two screw augers. The motors are at opposite ends to each other and move the material towards the motor end. Four air operated knife gate valves are mounted on each live bottom feeder. Two valves serve one auger and the other two serve the second auger. At each valve is a bell bottom chute which guides

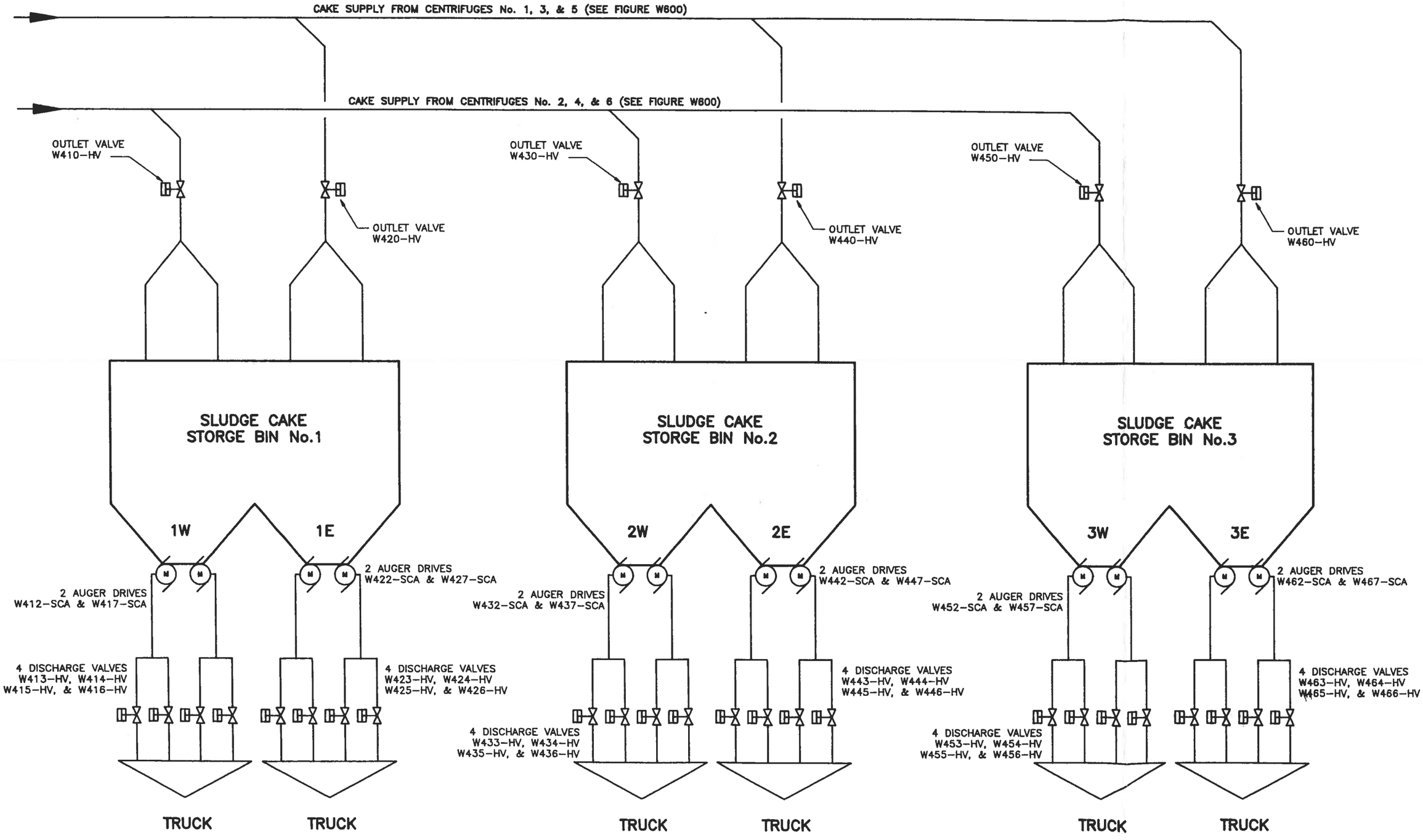
sludge into the sludge truck through the openings in the truck lid. Convex mirrors mounted between the chutes refers the position of the chutes at the openings in the truck lid.

Access by trucks to the storage bins is gained through one of two truck bay doors on the north side of the truck bay area. Two red/green stop lights are mounted on the exterior of the building to control the entrance of trucks. Six similar lights are located in the interior of the bay area to position trucks under one of the storage bins. A further set of overhead doors on the south side of the building allows vehicles to exit the area. These doors also have two stop lights mounted nearby to control truck egress.

The following equipment makes up the sludge cake storage, weighing, and loadout system:

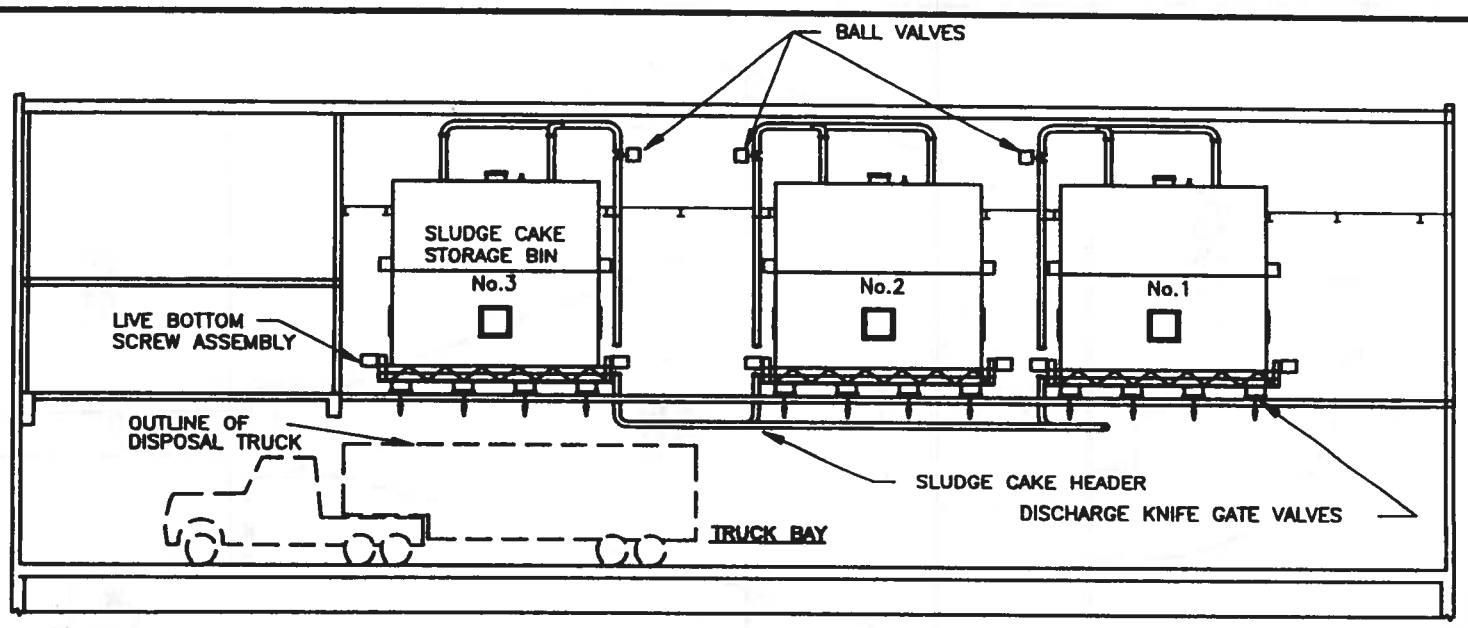
1) Three Sludge Cake Storage Bins - 200 m^3 capacity;
2) Six Pneumatic Outlet Valves - W410-HV to W460-HV;
3) Twelve Screw Augers - W412-SCA to W462-SCA & W417-SCA to W467-SCA;
4) Twenty Four Discharge Valves:
   - i) W413-HV to W416-HV;
   - ii) W423-HV to W426-HV;
   - iii) W433-HV to W436-HV;
   - iv) W443-HV to W446-HV;
   - v) W453-HV to W456-HV;
   - vi) W463-HV to W466-HV.
5) Four Overhead Doors - W510-TD, W511-TD, W520-TD, and W521-TD.

A schematic of the process is shown in Figure W700 while elevations are shown in Figures W701, W702, and W703. Locations of this equipment can be seen in Figures W704 to W707.

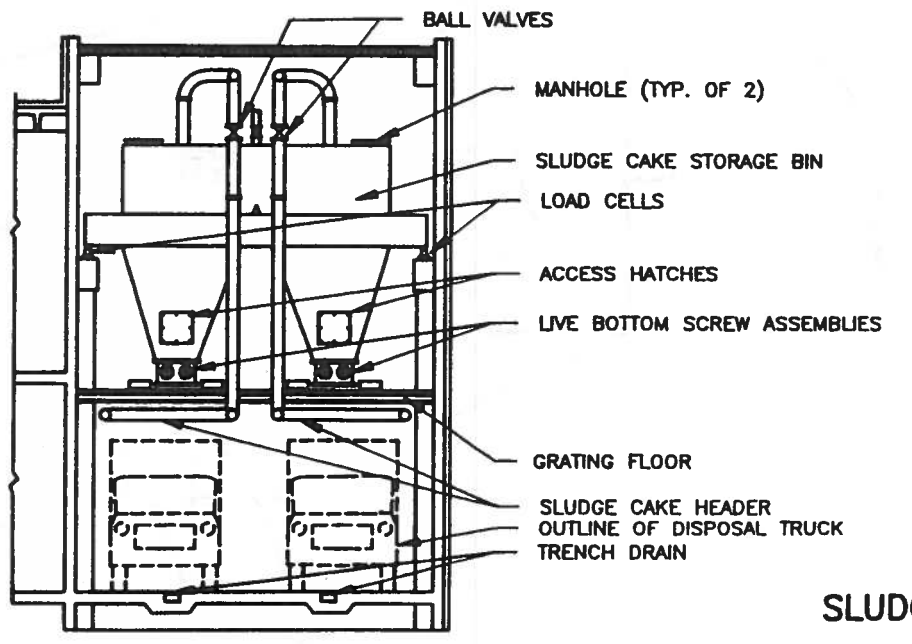


SLUDGE CAKE STORAGE SYSTEM SCHEMATIC

Date : March 1995
Figure W700



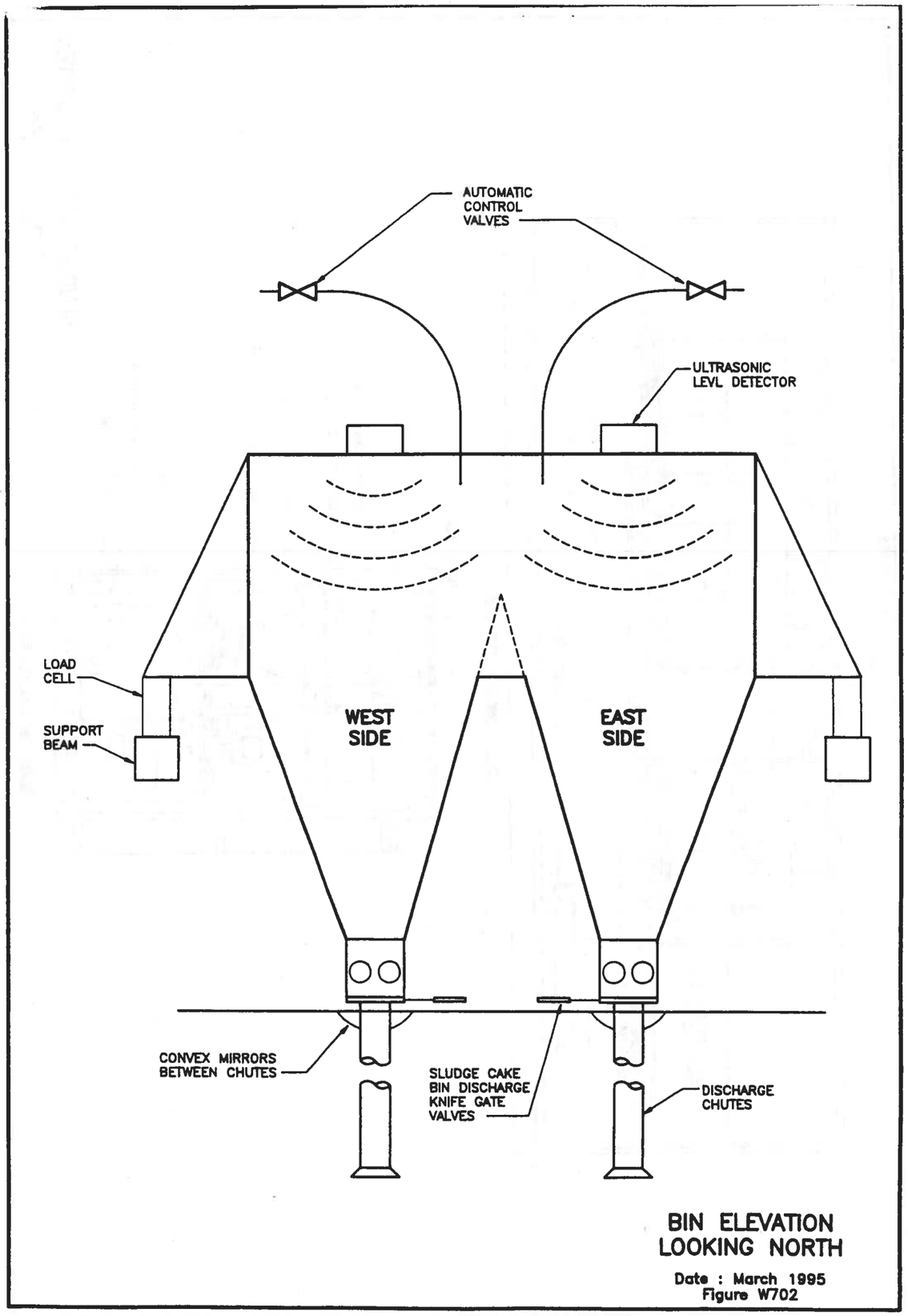
TRUCK BAY EAST ELEVATION

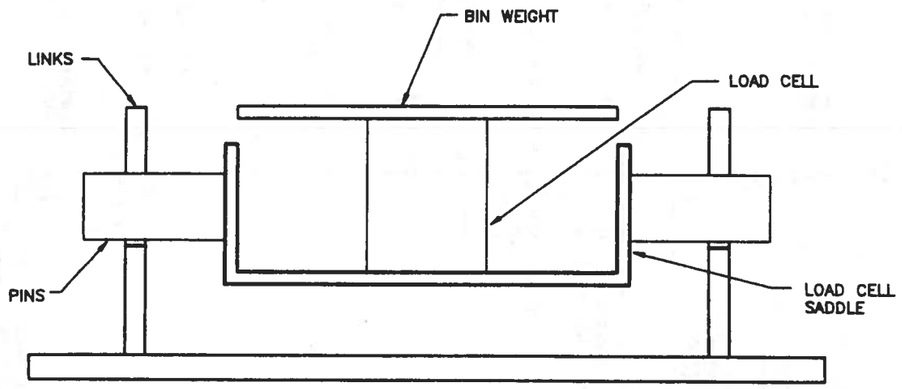


TRUCK BAY END ELEVATION

SLUDGE STORAGE SYSTEM

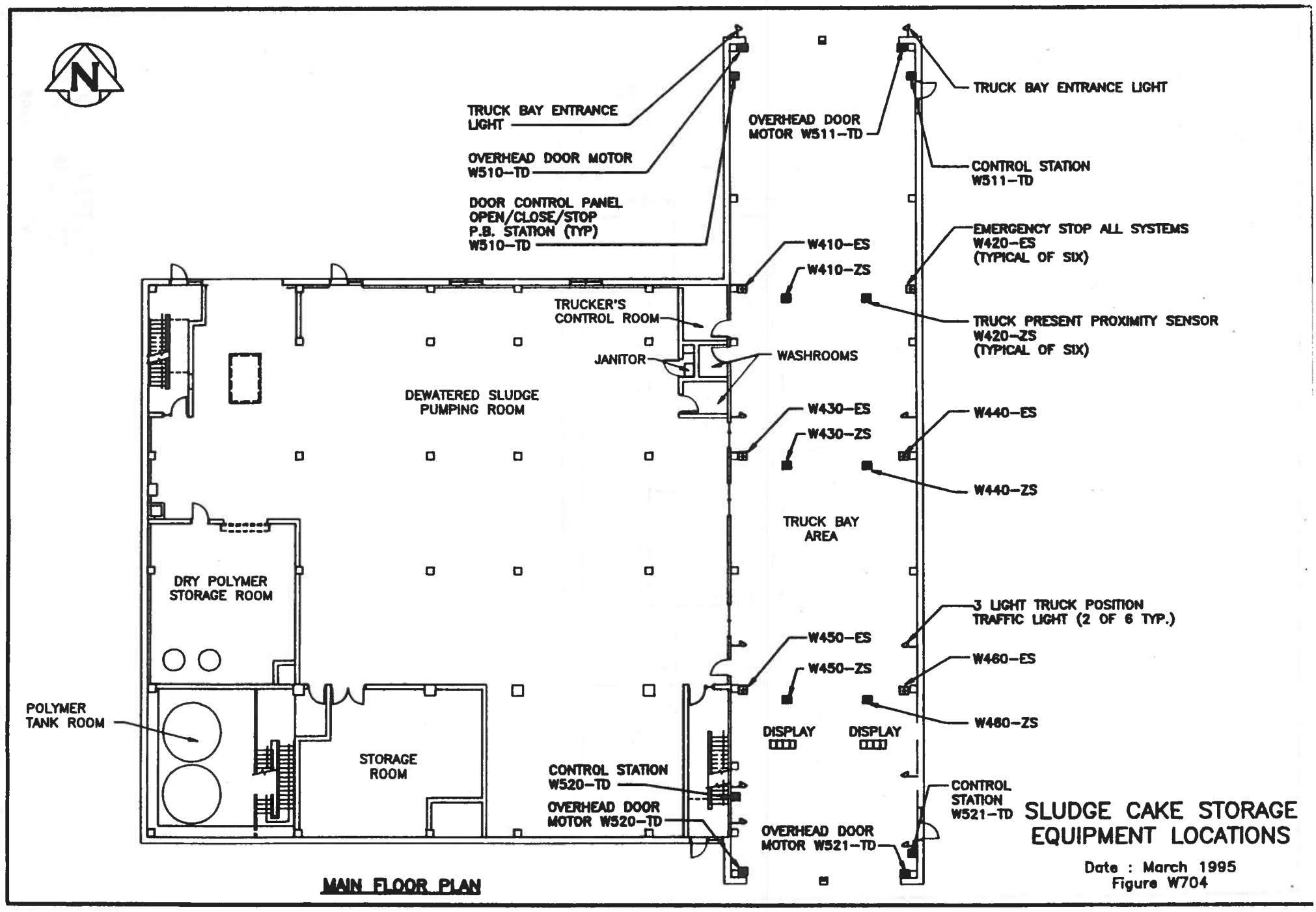
Date : March 1995
Figure W701


AUTOMATIC
CONTROL
VALVES
ULTRASONIC
LEVL DETECTOR
LOAD
CELL
SUPPORT
BEAM
WEST
SIDE
EAST
SIDE
CONVEX MIRRORS
BETWEEN CHUTES
SLUDGE CAKE
BIN DISCHARGE
KNIFE GATE
VALVES
DISCHARGE
CHUTES
BIN ELEVATION
LOOKING NORTH
Date : March 1995
Figure W702



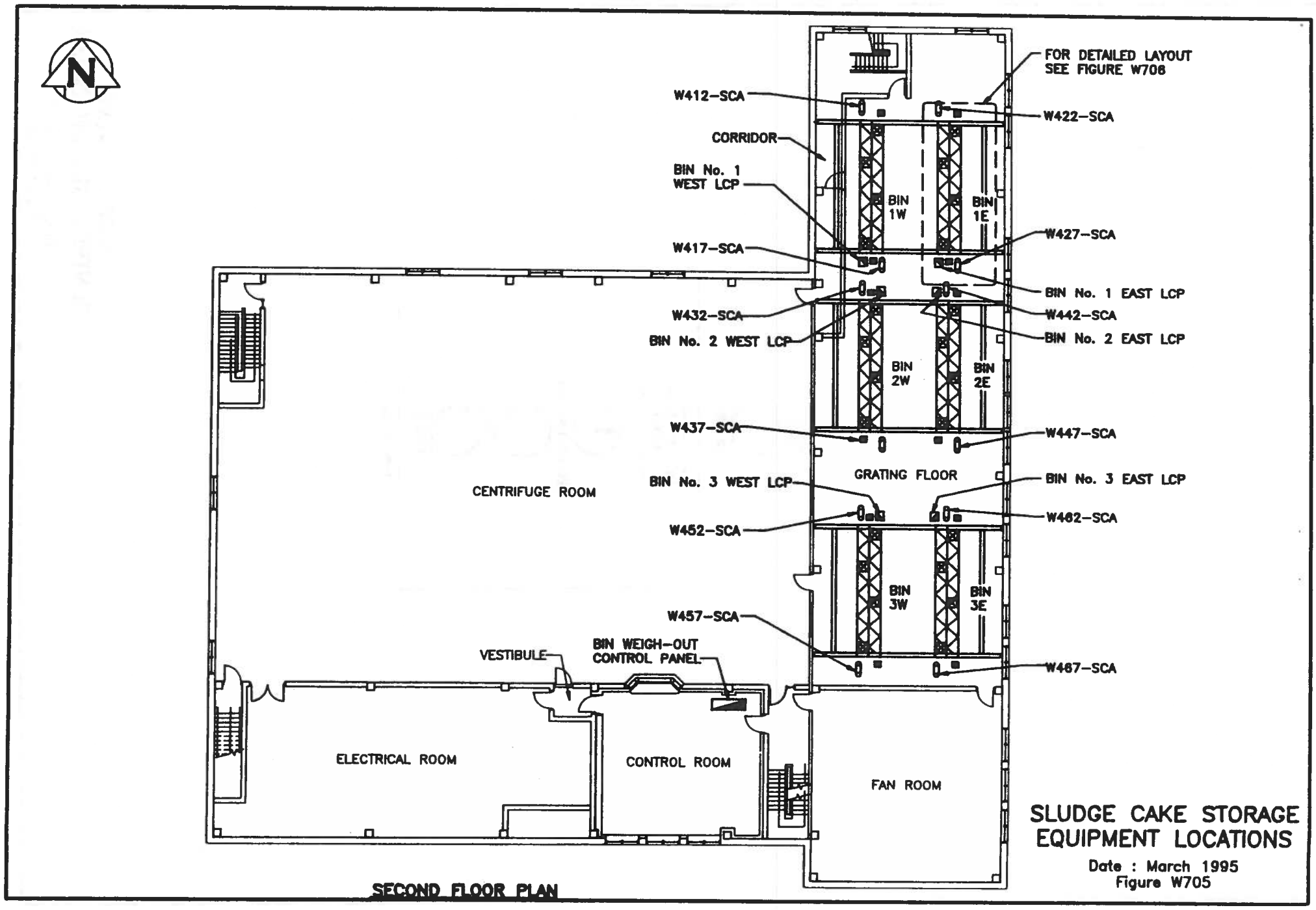
ELEVATION OF SCALE
WITH LOAD CELL

Date : March 1995
Figure W703



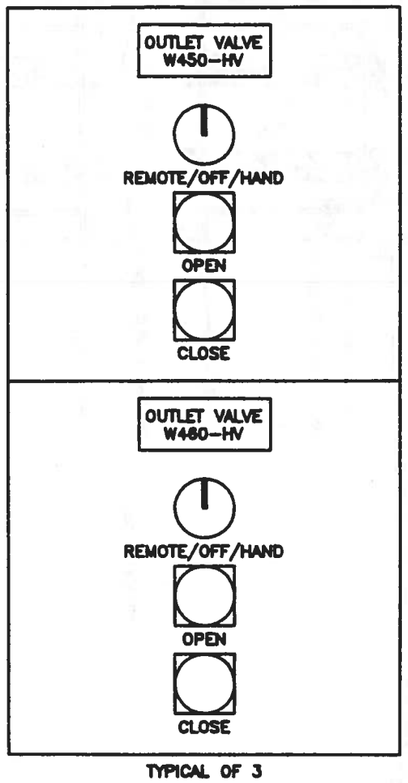
SLUDGE CAKE STORAGE EQUIPMENT LOCATIONS

Date : March 1995
Figure W704



SLUDGE CAKE STORAGE EQUIPMENT LOCATIONS

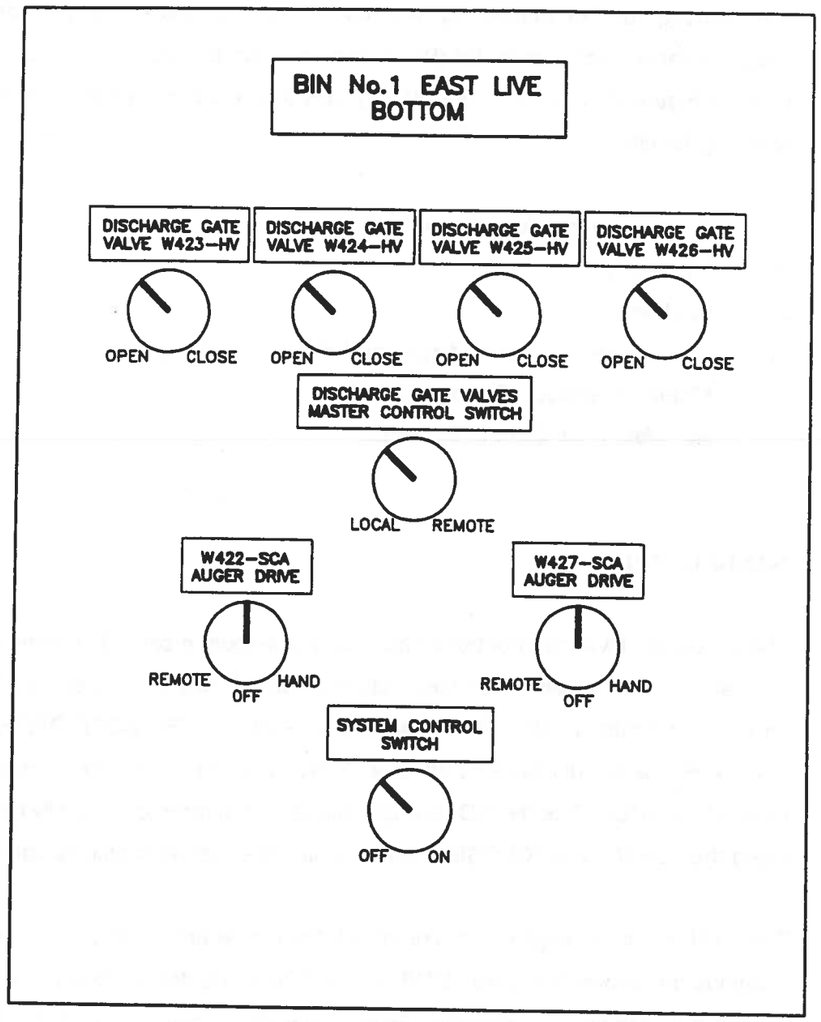
Date : March 1995
Figure W705



TYPICAL OF 3

OUTLET VALVE
CONTROL STATION DETAIL

Date : March 1995
Figure W706



TYPICAL OF SIX

BIN No.1 EAST
LOCAL CONTROL PANEL DETAIL

Date : March 1995
Figure W707

C. CONTROL

The majority of the monitoring and control of this system is provided through a Programmable Logic Controller (PLC) housed in the Bin Weigh-Out Control Panel (see location Figure W707). The Net 90 only acts in a supervisory capacity, monitoring the following functions:

1) Open/close position of outlet valves;
2) Bin weight;
3) Bin level;
4) Open/close position of discharge knife gate valves;
5) Motor run status of augers;
6) Bin Weigh-Out Controller failure.

C.1 MANUAL CONTROL

The six outlet valves are controlled from local pushbutton control stations mounted near the valves. The locations of these stations are shown in Figure W707 and a detail provided in Figure W708. The valve is controlled by a "REMOTE/OFF/HAND" switch. The "OFF" position disconnects all valve control while the "REMOTE" position surrenders control to the PLC. The "HAND" position allows an operator to manually control the valve using the "OPEN" and "CLOSE" pushbuttons. The Net 90 monitors valve position.

The twelve screw augers are controlled from different local control panels. Their locations are shown in Figures W705 and W706 and a detail provided in Figure W709. For the auger to be at all operative (either manually or automatically) the system control switch at the bottom of the panel must be in the "ON" position. The auger can now be controlled from the "REMOTE/OFF/HAND" switch. The "OFF" and "HAND" positions allow an operator to locally turn the auger on or off. The "REMOTE" position surrenders control to the PLC. The Net 90 monitors auger run status.

SLUDGE DEWATERING POLYMER FEED PUMP RATIO CONTROL

Purpose

The purpose of ratio control for the polymer feed pumps is to maintain a consistent polymer dosage to the centrifuges. In the ratio control mode, the polymer mass feed rate is automatically set according to the digested sludge mass feed rate to the same centrifuge. This means of control minimizes over/under dosing and thus provides more efficient polymer usage.

Method

By convention, the polymer dosage is expressed in Kg/T dry solids Kg of polymer per metric ton of dry sludge solids. Based on the concept of what goes in must come out, we use the sludge mass flow into the centrifuge to be representative of the dry sludge solids. The mass flow rate of the sludge is calculated using the sludge density meter (W101-DT) and the respective sludge feed flow meter (W0X2-FT) at each centrifuge. The polymer mass flow rate is calculated using the operator entered polymer concentration and the respective polymer flow meter (W0X3-FT). Conversion calculations are made accordingly to reflect the ratio value in Kg/T.

Operation

With the sludge feed pump in computer and running, the sludge flow control is set into automatic (auto) and the setpoint is set to the desired flow rate. With the polymer feed pump in computer and running, the flow controller can be put directly into ratio mode by pressing the RATIO key on the keyboard. The ratio value can now be set by pressing the SET key on the keyboard. The OIU will respond with "TARGET RI" and wait for a ratio setpoint. Upon entering the numeric ratio value and hitting the enter key, the ratio setpoint will be displayed in the lower left hand side of the controller box which is displayed in the lower right corner of OIU. Now as the mass flow rate of the digested sludge changes, you will see that the mass flow of the polymer will also change according to the constant ratio setpoint.

You will notice that if you are already running the polymer feed pump in automatic with a mass flow setpoint and you press the RATIO key to put the controller into ratio mode, the ratio controller will automatically calculate a ratio setpoint based on the current mass flows of the digested sludge and the polymer. This immediate ratio value may not reflect the polymer dosage which you wish to operate at. Therefore you must enter a new ratio setpoint by hitting the SET key and entering the desired value.

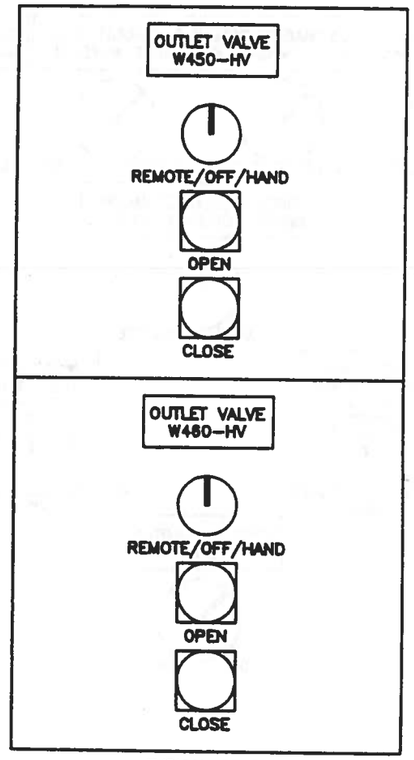
Important Notes:

In order for the ratio mode of the polymer feed pump controller to be effective, you must insure the following;

1) All instrumentation is fully functional and has been accurately been calibrated. This includes the sludge density meter, sludge flow meter(s) and polymer flow meter(s).

2) The correct value is entered for the polymer concentration. This value is set on graphic 9-U. The value entered should reflect the results obtained from the laboratory tests for polymer concentration.

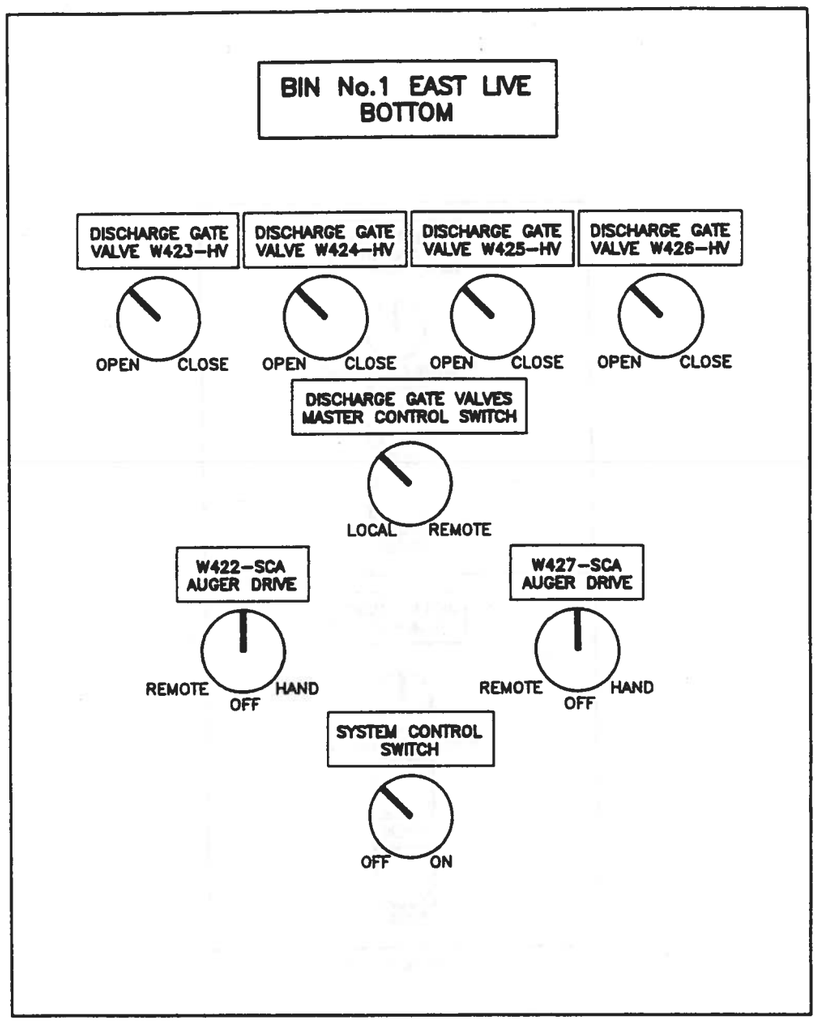
CGL



TYPICAL OF 3

OUTLET VALVE CONTROL STATION DETAIL

Date : March 1995
Figure W708



TYPICAL OF SIX

BIN No.1 EAST
LOCAL CONTROL PANEL DETAIL

Date : March 1995
Figuer W709

The twenty four discharge valves are also controlled from these same local panels. Here to, the system control switch must be in the "ON" position for the valves to be at all operative. To locally control any of the four valves the valve master control switch must be in the "LOCAL" position. The "REMOTE" position surrenders the control of all four valves to the PLC. In the "LOCAL" mode any of the valves can be controlled using the "OPEN/CLOSE" switch associated with each valve. The Net 90 monitors the position of each valve.

Six local emergency stop pushbuttons dedicated to each of the six independent bin systems are located near each bin discharge chute on the truck bay floor. These buttons will totally shut down all the equipment associated with each of the six bins. The locations of these buttons are shown in Figure W704.

The control of the eight stop lights and the four overhead doors is done automatically by the PLC. However, the four overhead doors have individual manual override control stations (see locations Figure W704). From here an operator can open and close a door or stop its movement in an emergency stop situation.

C.2 AUTOMATIC CONTROL

C.2.1 Bin Filling

The bin weigh out PLC monitors the level and weight in the bins and controls the feed valves to the bins. At the bin maximum carrying capacity, the PLC selects an empty or partially empty bin, opens the feed valve to that bin, and shuts the feed valve to the full bin. The PLC uses both level and weight in determining the bin filling capacity. When the capacity based on level or weight is exceeded, the filling will stop and the next bin is selected.

C.2.2 Sludge Loadout

When a truck arrives to be loaded the PLC determines which of the bins is the fullest. It checks to ensure the fill valve is closed and then uses the entrance doors and stop lights to instruct the driver as to which bin the truck should be positioned under. Proximity sensors in the truck bay floor (see locations Figure W704) tell the PLC when a truck has been correctly positioned.

The truck hauler commences the filling by inserting a magnetic card into the card reader. The PLC opens the four discharge valves to fill the truck. Weight sensors tell the PLC when to close these valves. A time/weight score board records the weight of the material as the sludge is filling the truck. The score board is used as a manual back-up in case the discharge valves are not closed at the correct weight. The emergency stop pushbutton (see location Figure W704) will immediately shut down the filling process by closing these valves. After filling, the PLC issues a receipt via the printer. The receipt records the weight, time, and destination point for the sludge hauler. The truck exits the building by triggering photocells.

Cross references between all this equipment and the Net 90 can be found in Bridging Table W700. Equipment/Instrument Summary Tables W701 to W704 provide a detailed summary of all control, monitoring, and alarm devices associated with this system. A listing of these alarms may be found in Dewatering Building Process Alarms Summary Table W106. Further control information is provided in the Process and Instrumentation Diagram shown in Figure W710.

D. INDIVIDUAL UNITS

1) <u>Sludge Cake Bins</u>

Manufacturer: Shopost Ltd.

TABLE W700

SLUDGE CAKE STORAGE SYSTEM/N90 BRIDGING TABLE

EQUIPMENT ID NUMBER	GRAPHIC DISPLAYS		GROUP DISPLAYS			
	DISPLAY NUMBER	REMOTE CONTROL INDEX NUMBER	TREND	CONTROL STATION	REMOTE CONTROL SWITCH	SINGLE POINT
W410-HV	9-A, B, V					
W411-LI	9-A, B, V					
W412-SCA	9-B, V					
W413-HV	9-B, V					
W420-HV	9-A, B, V					
W421-LI	9-A, B, V					
W422-SCA	9-B, V					
W423-HV	9-B, V					
W430-HV	9-A, B, V					
W431-LI	9-A, B, V					
W432-SCA	9-B, V					
W433-HV	9-B, V					
W440-HV	9-A, B, V					
W441-LI	9-A, B, V					
W442-SCA	9-B, V					
W443-HV	9-B, V					
W450-HV	9-A, B, V					
W451-LI	9-A, B, V					
W452-SCA	9-B, V					
W453-HV	9-B, V					
W460-HV	9-A, B, V					
W461-LI	9-A, B, V					
W462-SCA	9-B, V					
W463-HV	9-B, V					
W480-QF	9-V					
W481-WI	9-B, V		9-V			
W482-WI	9-B, V		9-V			
W483-WI	9-B, V		9-V			

TABLE W701

SLUDGE CAKE STORAGE BIN NO. 1 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W410-HS	Bin #1W sys cont-emer stop	S					
W410-HS4	Bin #1W sys cont (on/off)		C		I		
W410-HS5	Bin #1W disch valve cont-r/l		C				
W410-HS1	Outlet valve control (R/O/H)	C					
W410-HS2	Outlet valve control (open)	C			C		
W410-HS3	Outlet valve control (close)	C			C		
W410-ZD	Outlet valve status - open				I	I	
W410-ZB	Outlet valve status - closed				I	I	
W412-HS1	Auger #1 control (LOS)	S					
W412-HS2	Auger #1 control (R/O/H)		C				
W412-MM	Auger #1 status - run				I/C	I	
W417-HS1	Auger #2 control (LOS)	S					
W417-HS2	Auger #2 control (R/O/H)		C				
W417-MM	Auger #2 status - run				I/C	I	
W413-HS	Disch valve #1 cont (op/cl)		C		C		
W413-ZD	Disch valve #1 status-open				I	I	
W413-ZB	Disch valve #1 status-close				I	I	
W414-HS	Disch valve #2 cont (op/cl)		C		C		
W414-ZD	Disch valve #2 status-open				I	I	
W414-ZB	Disch valve #2 status-close				I	I	
W415-HS	Disch valve #3 cont (op/cl)		C		C		
W415-ZD	Disch valve #3 status-open				I	I	
W415-ZB	Disch valve #3 status-close				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

(continued)

TABLE W701 (continued)

SLUDGE CAKE STORAGE BIN NO. 1 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W416-HS	Disch valve #4 cont (op/cl)		C		C		
W416-ZD	Disch valve #4 status-open				I	I	
W416-ZB	Disch valve #4 status-close				I	I	
W411-LI	Bin #1W level				I	I	
W420-HS	Bin #1E sys cont-emer stop	S					
W420-HS4	Bin #1E sys cont (on/off)		C				
W420-HS5	Bin #1E disch valve cont-r/l		C				
W420-HS1	Outlet valve control (R/O/H)	C					
W420-HS2	Outlet valve control (open)	C			C		
W420-HS3	Outlet valve control (close)	C			C		
W420-ZD	Outlet valve status - open				I	I	
W420-ZB	Outlet valve status - closed				I	I	
W422-HS1	Auger #1 control (LOS)	S					
W422-HS2	Auger #1 control (R/O/H)		C				
W422-MM	Auger #1 status - run				I/C	I	
W427-HS1	Auger #2 control (LOS)	S					
W427-HS2	Auger #2 control (R/O/H)		C				
W427-MM	Auger #2 status - run				I/C	I	
W423-HS	Disch valve #1 cont (op/cl)		C		C		
W423-ZD	Disch valve #1 status-open				I	I	
W423-ZB	Disch valve #1 stat-closed				I	I	
W424-HS	Disch valve #2 cont (op/cl)		C		C		
W424-ZD	Disch valve #2 status-open				I	I	
W424-ZB	Disch valve #2 stat-closed				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

(continued)

TABLE W701 (continued)

SLUDGE CAKE STORAGE BIN NO. 1 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W425-HS	Disch valve #3 cont (op/cl)		C		C		
W425-ZD	Disch valve #3 status-open				I	I	
W425-ZB	Disch valve #3 stat-closed				I	I	
W426-HS	Disch valve #4 cont (op/cl)		C		C		
W426-ZD	Disch valve #4 status-open				I	I	
W427-ZB	Disch valve #4 stat-closed				I	I	
W421-LI	Bin #1E level				I	I	
W481-WI	Bin #1 weight				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

TABLE W702

SLUDGE CAKE STORAGE BIN NO. 2 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W430-HS	Bin #2W sys cont-emer stop	S					
W430-HS4	Bin #2W sys cont (on/off)		C		I		
W430-HS5	Bin #2W disch valve cont-r/l		C				
W430-HS1	Outlet valve control (R/O/H)	C					
W430-HS2	Outlet valve control (open)	C			C		
W430-HS3	Outlet valve control (close)	C			C		
W430-ZD	Outlet valve status - open				I	I	
W430-ZB	Outlet valve status - closed				I	I	
W432-HS1	Auger #1 control (LOS)	S					
W432-HS2	Auger #1 control (R/O/H)		C				
W432-MM	Auger #1 status - run				I/C	I	
W437-HS1	Auger #2 control (LOS)	S					
W437-HS2	Auger #2 control (R/O/H)		C				
W437-MM	Auger #2 status - run				I/C	I	
W433-HS	Disch valve #1 cont (op/cl)		C		C		
W433-ZD	Disch valve #1 status-open				I	I	
W433-ZB	Disch valve #1 stat-closed				I	I	
W434-HS	Disch valve #2 cont (op/cl)		C		C		
W434-ZD	Disch valve #2 status-open				I	I	
W434-ZB	Disch valve #2 stat-closed				I	I	
W435-HS	Disch valve #3 cont (op/cl)		C		C		
W435-ZD	Disch valve #3 status-open				I	I	
W435-ZB	Disch valve #3 stat-closed				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

(continued)

TABLE W702 (continued)

SLUDGE CAKE STORAGE BIN NO. 2 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W436-HS	Disch valve #4 cont (op/cl)		C		C		
W436-ZD	Disch valve #4 status-open				I	I	
W436-ZB	Disch valve #4 stat-closed				I	I	
W431-LI	Bin #4W level				I	I	
W440-HS	Bin #4E sys cont-emer stop	S					
W440-HS4	Bin #4E sys cont (on/off)		C				
W440-HS5	Bin #4E disch valve cont-r/l		C				
W440-HS1	Outlet valve control (R/O/H)	C					
W440-HS2	Outlet valve control (open)	C			C		
W440-HS3	Outlet valve control (close)	C			C		
W440-ZD	Outlet valve status - open				I	I	
W440-ZB	Outlet valve status - closed				I	I	
W442-HS1	Auger #1 control (LOS)	S					
W442-HS2	Auger #1 control (R/O/H)		C				
W442-MM	Auger #1 status - run				I/C	I	
W447-HS1	Auger #2 control (LOS)	S					
W447-HS2	Auger #2 control (R/O/H)		C				
W447-MM	Auger #2 status - run				I/C	I	
W443-HS	Disch valve #1 cont (op/cl)		C		C		
W443-ZD	Disch valve #1 status-open				I	I	
W443-ZB	Disch valve #1 status-close				I	I	
W444-HS	Disch valve #2 cont (op/cl)		C		C		
W444-ZD	Disch valve #2 status-open				I	I	
W444-ZB	Disch valve #2 status-close				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

(continued)

TABLE W702 (continued)

SLUDGE CAKE STORAGE BIN NO. 2 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W445-HS	Disch valve #3 cont (op/cl)		C		C		
W445-ZD	Disch valve #3 status-open				I	I	
W445-ZB	Disch valve #3 status-close				I	I	
W446-HS	Disch valve #4 cont (op/cl)		C		C		
W446-ZD	Disch valve #4 status-open				I	I	
W447-ZB	Disch valve #4 status-close				I	I	
W441-LI	Bin #2E level				I	I	
W482-WI	Bin #2 weight				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

TABLE W703

SLUDGE CAKE STORAGE BIN NO. 3 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W450-HS	Bin #3W sys cont-emer stop	S					
W450-HS4	Bin #3W sys cont (on/off)		C		I		
W450-HS5	Bin #3W disch valve cont-r/l		C				
W450-HS1	Outlet valve control (R/O/H)	C					
W450-HS2	Outlet valve control (open)	C			C		
W450-HS3	Outlet valve control (close)	C			C		
W450-ZD	Outlet valve status - open				I	I	
W450-ZB	Outlet valve status - closed				I	I	
W452-HS1	Auger #1 control (LOS)	S					
W452-HS2	Auger #1 control (R/O/H)		C				
W452-MM	Auger #1 status - run				I/C	I	
W457-HS1	Auger #2 control (LOS)	S					
W457-HS2	Auger #2 control (R/O/H)		C				
W457-MM	Auger #2 status - run				I/C	I	
W453-HS	Disch valve #1 cont (op/cl)		C		C		
W453-ZD	Disch valve #1 status-open				I	I	
W453-ZB	Disch valve #1 status-close				I	I	
W454-HS	Disch valve #2 cont op/cl)		C		C		
W454-ZD	Disch valve #2 status-open				I	I	
W454-ZB	Disch valve #2 status-close				I	I	
W455-HS	Disch valve #3 cont (op/cl)		C		C		
W455-ZD	Disch valve #3 status-open				I	I	
W455-ZB	Disch valve #3 status-close				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

(continued)

TABLE W703 (continued)

SLUDGE CAKE STORAGE BIN NO. 3 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W456-HS	Disch valve #4 cont (op/cl)		C		C		
W456-ZD	Disch valve #4 status-open				I	I	
W456-ZB	Disch valve #4 status-close				I	I	
W451-LI	Bin #3W level				I	I	
W460-HS	Bin #3E sys cont-emer stop	S					
W460-HS4	Bin #3E sys cont (on/off)		C				
W460-HS5	Bin #3E disch valve cont-r/l		C				
W460-HS1	Outlet valve control (R/O/H)	C					
W460-HS2	Outlet valve control (open)	C			C		
W460-HS3	Outlet valve control (close)	C			C		
W460-ZD	Outlet valve status - open				I	I	
W460-ZB	Outlet valve status-closed				I	I	
W462-HS1	Auger #1 control (LOS)	S					
W462-HS2	Auger #1 control (R/O/H)		C				
W462-MM	Auger #1 status - run				I/C	I	
W467-HS1	Auger #2 control (LOS)	S					
W467-HS2	Auger #2 control (R/O/H)		C				
W467-MM	Auger #2 status - run				I/C	I	
W463-HS	Disch valve #1 cont (op/cl)		C		C		
W463-ZD	Disch valve #1 status-open				I	I	
W463-ZB	Disch valve #1 status-close				I	I	
W464-HS	Disch valve #2 cont (op/cl)		C		C		
W464-ZD	Disch valve #2 status-open				I	I	
W464-ZB	Disch valve #2 status-close				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

(continued)

TABLE W703 (continued)

SLUDGE CAKE STORAGE BIN NO. 3 EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W465-HS	Disch valve #3 cont (op/cl)		C		C		
W465-ZD	Disch valve #3 status-open				I	I	
W465-ZB	Disch valve #3 status-close				I	I	
W466-HS	Disch valve #4 cont (op/cl)		C		C		
W466-ZD	Disch valve #4 status-open				I	I	
W467-ZB	Disch valve #4 status-close				I	I	
W461-LI	Bin #3E level				I	I	
W483-WI	Bin #3 weight				I	I	

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.

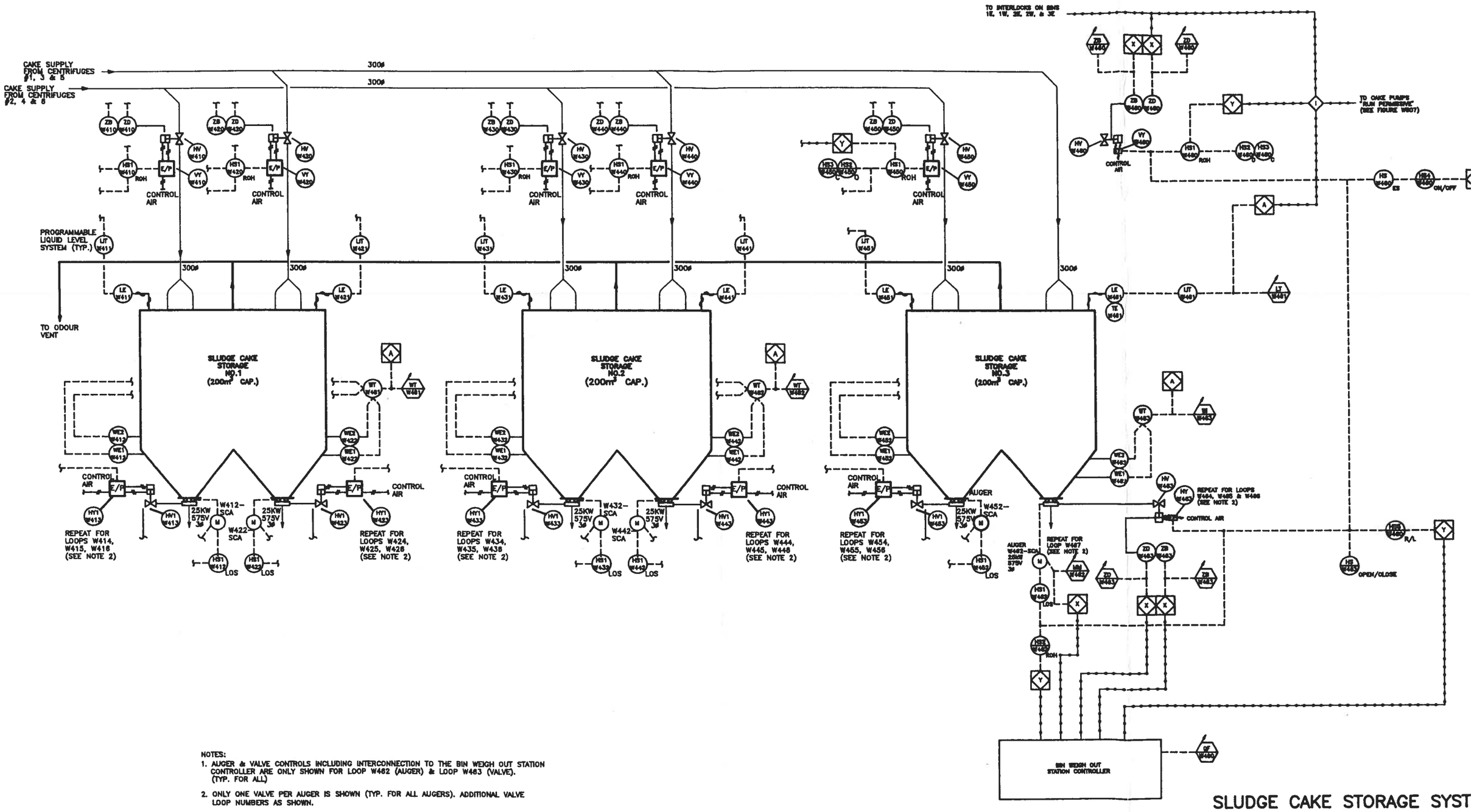
TABLE W704

SLUDGE CAKE LOADOUT SYSTEM EQUIPMENT/INSTRUMENT SUMMARY

INSTR TAG NO.	SERVICE	LOCAL	LOCAL PANEL	FDP-M	PLC	BAILEY N-90	REMARKS NORMAL RANGE SET POINT
W510-HS	Truck bay door cont (O/C/S)	C			C		
W511-HS	Truck bay door cont (O/C/S)	C			C		
W520-HS	Truck bay door cont (O/C/S)	C			C		
W521-HS	Truck bay door cont (O/C/S)	C			C		
W410-ZS	Proximity sensor	C					
W420-ZS	Proximity sensor	C					
W430-ZS	Proximity sensor	C					
W440-ZS	Proximity sensor	C					
W450-ZS	Proximity sensor	C					
W460-ZS	Proximity sensor	C					

S - SAFETY STOP A - ALARM C - CONTROL I - INDICATION R - RESET Q - COMMON ALARM

All instruments on this page found in Figure W710.



NOTES:

1. AUGER & VALVE CONTROLS INCLUDING INTERCONNECTION TO THE BIN WEIGH OUT STATION CONTROLLER ARE ONLY SHOWN FOR LOOP W462 (AUGER) & LOOP W463 (VALVE). (TYP. FOR ALL)
2. ONLY ONE VALVE PER AUGER IS SHOWN (TYP. FOR ALL AUGERS). ADDITIONAL VALVE LOOP NUMBERS AS SHOWN.

SLUDGE CAKE STORAGE SYST
PROCESS & INSTR. DIAGRAM

Date : March 1995
Figure W710