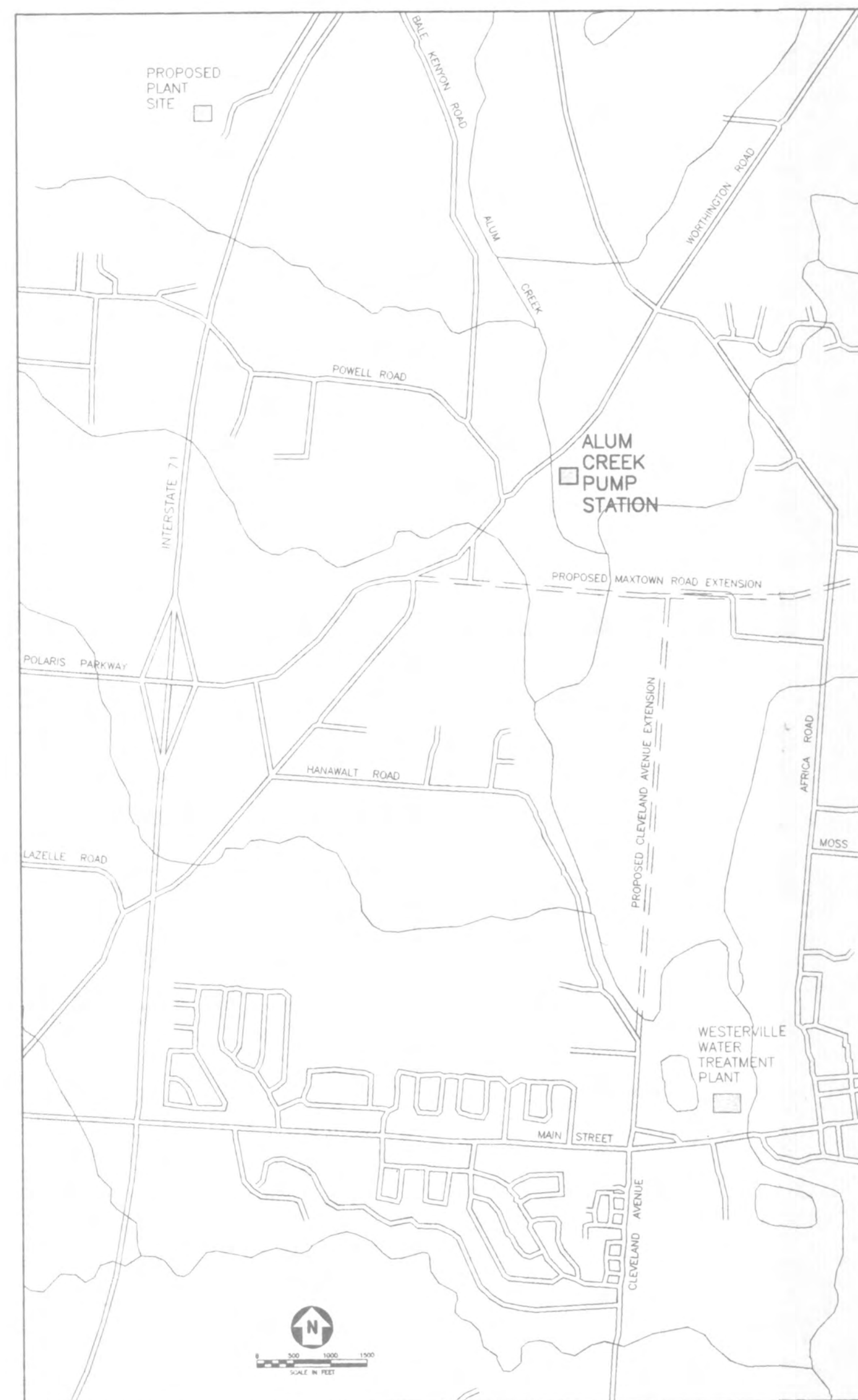


ALUM CREEK PUMP STATION

DELAWARE COUNTY, OHIO

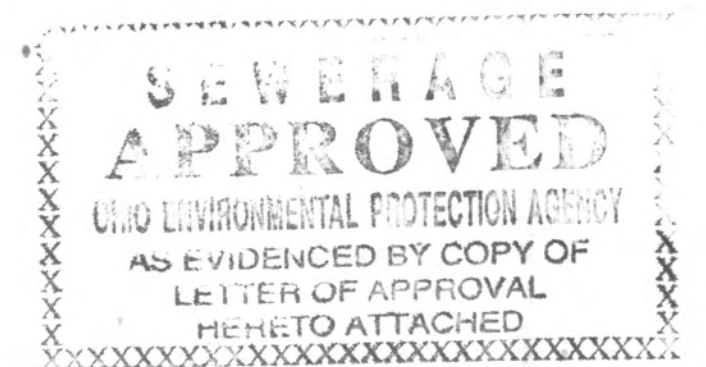
COUNTY STAFF

BRIAN E. STANFILL	COUNTY ADMINISTRATOR
SCOTT A. PIKE	DIRECTOR OF ENVIRONMENTAL SERVICES
JACK R. SMELKER	SANITARY ENGINEER
RICK L. VARNER	PLANT SUPERINTENDENT
PAUL D. SANDSTROM	ASST. PLANT SUPERINTENDENT



BOARD OF COUNTY COMMISSIONERS

DEBORAH B. MARTIN
 JAMES D. WARD
 DONALD E. WUERTZ



RECEIVED
 MAR 17 1998
 ENVIRONMENTAL DIVISION

PAID 61-797
 Amount \$15,100.00 Date 3/16/98
 Check # 268557 Date 2/2/98



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

JOB NO.	20571
DESIGNED BY:	BEF
DRAWN BY:	DRR
CHECKED BY:	SLW
APPROVED BY:	SLW
DATE:	1998

TITLE SHEET

SCALE:	
1" = 1500'	
SHEET NO.	OF
1	16

ABBREVIATIONS

AB ANCHOR BOLT	FT FEET OR FOOT	R RADIUS OR RISER
ACP ASBESTOS CEMENT PIPE	FTG FOOTING	RAD RADIUS
ADJ ADJUSTABLE		RA RETURN AIR
AFF ABOVE FINISHED FLOOR	GA GAUGE OR GAUGE	RB ROOF BEAM
ALT ALTERNATE	GAL GALLON	RCP REINFORCED CONCRETE PIPE
ALUM ALUMINUM	GALV GALVANIZED	RD ROOF DRAIN
@ AT	GEN GENERAL	REINF REINFORCING
AVG AVERAGE	GRD GROUND OR GRADE	REQ'D REQUIRED
AUTO AUTOMATIC	GSP GALVANIZED STEEL PIPE	RPBP REDUCED PRESSURE BACKFLOW PREVENTER
	GYP GALVANIZED YOLOY PIPE	RT RIGHT
B BEAM OR BOTTOM		R/W RIGHT-OF-WAY
BB BUMPER BLOCK	HM HOLLOW METAL	
BD BALANCING DAMPER	HORIZ HORIZONTAL	S SLAB
BLDG BUILDING	HP HORSEPOWER	SA SUPPLY AIR
BM BENCH MARK	HS HIGH SERVICE	SAN SANITARY
BOT BOTTOM	HU HEATING UNIT	SAS SANITARY SEWER
BRG BEARING	HWL HIGH WATER LEVEL	SCH SCHEDULE
		SECT SECTION
C COLUMN	ID INSIDE DIAMETER	SF SQUARE FEET
CB CATCH BASIN	IF INSIDE FACE	SHT SHEET
CDF CONTROLLED DENSITY FILL	IJ ISOLATION JOINT	SJ SAW JOINT
CF CUBIC FEET	INFL INFLUENT	SP SEWER PIPE
CFM CUBIC FEET PER MINUTE	INT INTERIOR	SPC SPACES
CI CAST IRON	INV INVERT	SPG SPACING
CIP CAST IRON PIPE	IP IRON PIN	SQ SQUARE
CL CENTERLINE		ST STRAIGHT
C/C CENTERLINE TO CENTERLINE	LAV LAVATORY	STA STATION
CL CLEAR OR CLASS	LB POUND	STD STANDARD
CLG CEILING	LG LENGTH	STIR STIRRUPS
CMP CORRUGATED METAL PIPE	LL LIVE LOAD	ST.STL.,SS STAINLESS STEEL
COL COLUMN	LLV LONG LEG VERTICAL	STL STEEL
CONC CONCRETE	LS LOW SERVICE	STR STRUCTURAL
COP COPPER OR COPPER PIPE	LTG LIGHTING	STS STORM SEWER
CJ CONSTRUCTION JOINT	LWL LOW WATER LEVEL	SY SQUARE YARD
CONTR JT CONTRACTION JOINT	LT LEFT	SYM SYMMETRICAL
CONST CONSTRUCTION		
CONT CONTINUOUS	MAX MAXIMUM	T TOP OR TREAD
CY CUBIC YARD	MCC MOTOR CONTROL CENTER	T&B TOP AND BOTTOM
	MGD MILLION GALLONS PER DAY	TC TOP OF COVER
DIA DIAMETER	MH MANHOLE	T&G TONGUE AND GROOVE
DIM DIMENSION	MIN MINIMUM, MINUTE	THD THREADED
DIP DUCTILE IRON PIPE	MJ MECHANICAL JOINT	TP TURNING POINT OR
DL DEAD LOAD	MK MARK	TANGENT POINT
DO DOOR OPENING	MO MASONRY OPENING OR MOTOR OPERATED	TS STRUCTURAL TUBE
DS DOWN SPOUT	MRP METAL REINFORCED PLASTIC PIPE	TYP TYPICAL
DWG DRAWING		
	NC NORMALLY CLOSED	UNO UNLESS NOTED OTHERWISE
EA EACH	NF NEAR FACE	URN URINAL
ED EQUIPMENT DRAIN	NO NORMALLY OPEN	
EF EACH FACE	NO. NUMBER	V VACUUM
EFFL EFFLUENT	NS NEAR SIDE	VAR VARIES
EL.,ELEV ELEVATION	NWL NORMAL WATER LEVEL	VCP VALVE CONTROL PANEL
EW EACH WAY		VERT VERTICAL
EWC ELECTRIC WATER COOLER	OC ON CENTER	
EXF EXHAUST FAN	OD OUTSIDE DIAMETER	W/ WITH
EXIST EXISTING	OF OUTSIDE FACE	W/O WITHOUT
EXL EXHAUST LOUVER	OPG OPENING	WC WATER CLOSET
EXP JT EXPANSION JOINT	OPP OPPOSITE	WH WATER HEATER OR WALL HYDRANT
EXT EXTERIOR	OZ OUNCE	WL WATER LEVEL OR WATER LINE
		WWF WELDED WIRE FABRIC
FA FRESH AIR	PB PULL BOX	YH YARD HYDRANT
FAF FRESH AIR FAN	PCF POUNDS PER CUBIC FOOT	YP YOLOY PIPE
FAL FIXED AIR LOUVER	PCP PUMP CONTROL PANEL	
FB FLOOR BOX OR FOUNDATION BEAM	PE POLYETHYLENE OR PLAIN END	
FD FLOOR DRAIN	PEJM PREMOLDED EXP. JT. MATERIAL	
FDN FOUNDATION	PLATE OR PROPERTY LINE	
FEC FIRE EQUIPMENT CABINET	PNL PANEL	
FF FAR FACE	POL POLISHED	
FIN FINISHED	PP POLYPROPYLENE	
FH FIRE HYDRANT	PRCP PRESTRESSED REINFORCED CONCRETE PIPE	
FLG FLANGE	PSF POUNDS PER SQUARE FOOT	
FLR FLOOR	PSI POUNDS PER SQUARE INCH	
FOC FACE OF COLUMN	PVC POLYVINYL CHLORIDE	
FRP FIBERGLASS REINFORCED PLASTIC PIPE	QUAN QUANTITY	

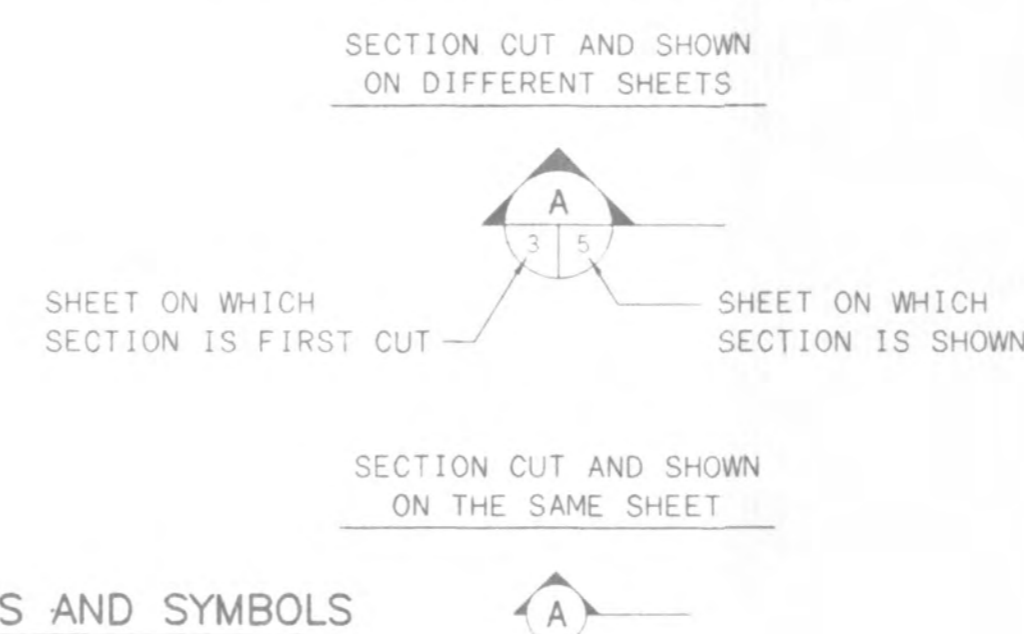
SECTION SYMBOLS

	CONCRETE
	MASONRY
	METAL
	WOOD
	EXISTING GRADE
	FINISHED GRADE
	UNDISTURBED SUBGRADE
	ROCK
	POROUS BACKFILL
	COMPACTED GRANULAR BACKFILL
	SAND
	CONTROLLED DENSITY FILL
	GROUT

TWO LINE PIPING SYMBOLS

	FLANGED JOINT
	MECHANICAL JOINT
	BELL & SPIGOT JOINT
	SCREWED JOINT
	FLEXIBLE COUPLING
	EXPANSION COUPLING
	SLEEVE COUPLING
	FLANGED COUPLING ADAPTER
	WALL PIPE; FLANGE MECHANICAL JOINT
	WALL SLEEVE
	GATE VALVE
	CHECK VALVE (FLOW →)
	BUTTERFLY VALVE
	PLUG VALVE
	BALL VALVE
	WEDGE GATE VALVE
	GLOBE VALVE
	* REPRESENTS FUNCTION

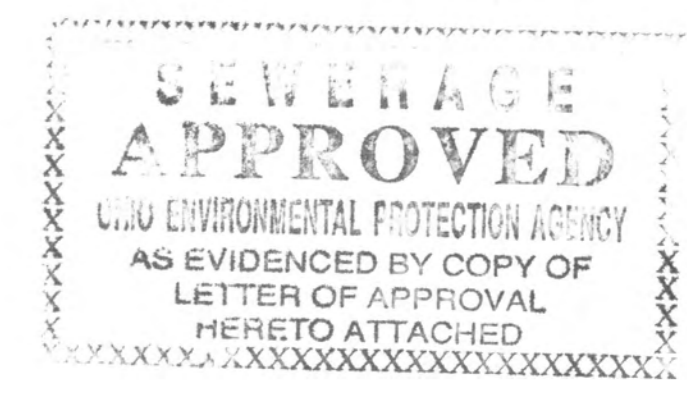
SECTION DESIGNATIONS



01A1 INDEX, ABBREVIATIONS AND SYMBOLS

INDEX OF DRAWINGS

CADD FILE	DESCRIPTION	SHEET NO.
4714COV1	COVER SHEET	1
4714INDX	INDEX SYMBOLS & ABBREVIATIONS	2
4714SITE	SITE PLAN	3
4714PE01	PLAN AT EL. 822.00	4
4714PE02	PLAN AT EL. 805.67	5
4714PE03	PLAN AT EL. 800.42	6
4714PE04	PLAN AT EL. 779.67	7
4714PE05	SECTIONS & DETAILS	8
4714PE06	SECTIONS & DETAILS	9
4714PE07	SECTIONS & DETAILS	10
4714PE09	SECTIONS & DETAILS	11
4714E14	ELECTRICAL SYMBOLS & ABBREVIATIONS	12
4714E12	BASIC NORMAL & EMERGENCY POWER DISTRIBUTION	13
4714CD2	INSTRUMENTATION CONTROL SYMBOLS & ABBREVIATIONS	14
4714ED1	RAW WATER PUMPS PROCESS DIAGRAM	15
4714EE01	PUMP STATION PROCESS DIAGRAM	16



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DELAWARE COUNTY, OHIO
ALUM CREEK WASTEWATER FACILITIES

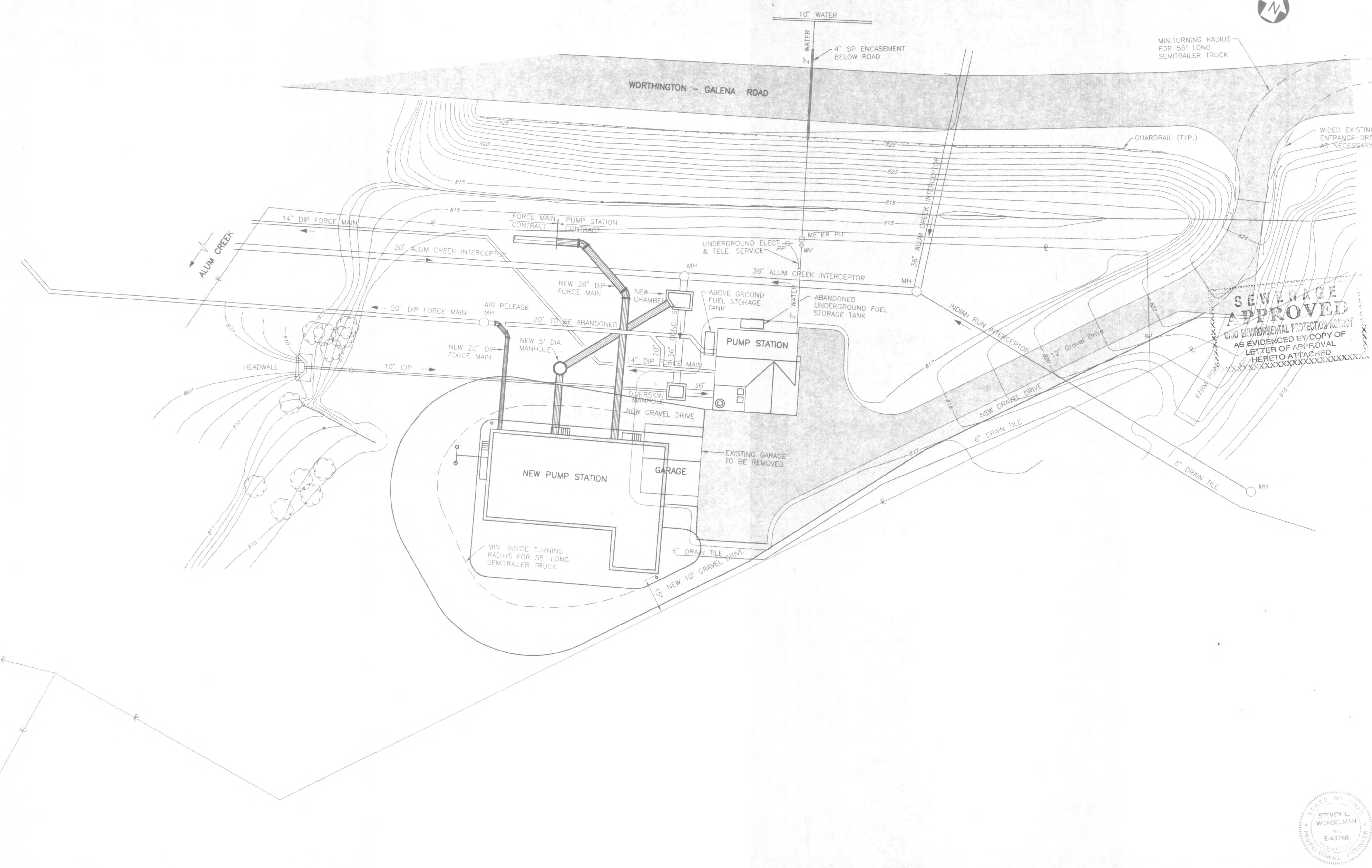
JOB NO.	20571
DESIGNED BY:	FXW
DRAWN BY:	RCD
CHECKED BY:	
APPROVED BY:	
DATE:	1998

INDEX, SYMBOLS, AND ABBREVIATIONS

SCALE:	NONE
SHEET NO.	2
OF	16



101-4714INDX
02/26/98 10-14



SEWERAGE APPROVED
 Ohio Environmental Protection Agency
 AS EVIDENCED BY COPY OF
 LETTER OF APPROVAL
 HERETO ATTACHED

NO.	REVISIONS	DATE	BY	CHK.



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Jones & Henry Engineers, Ltd.

DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

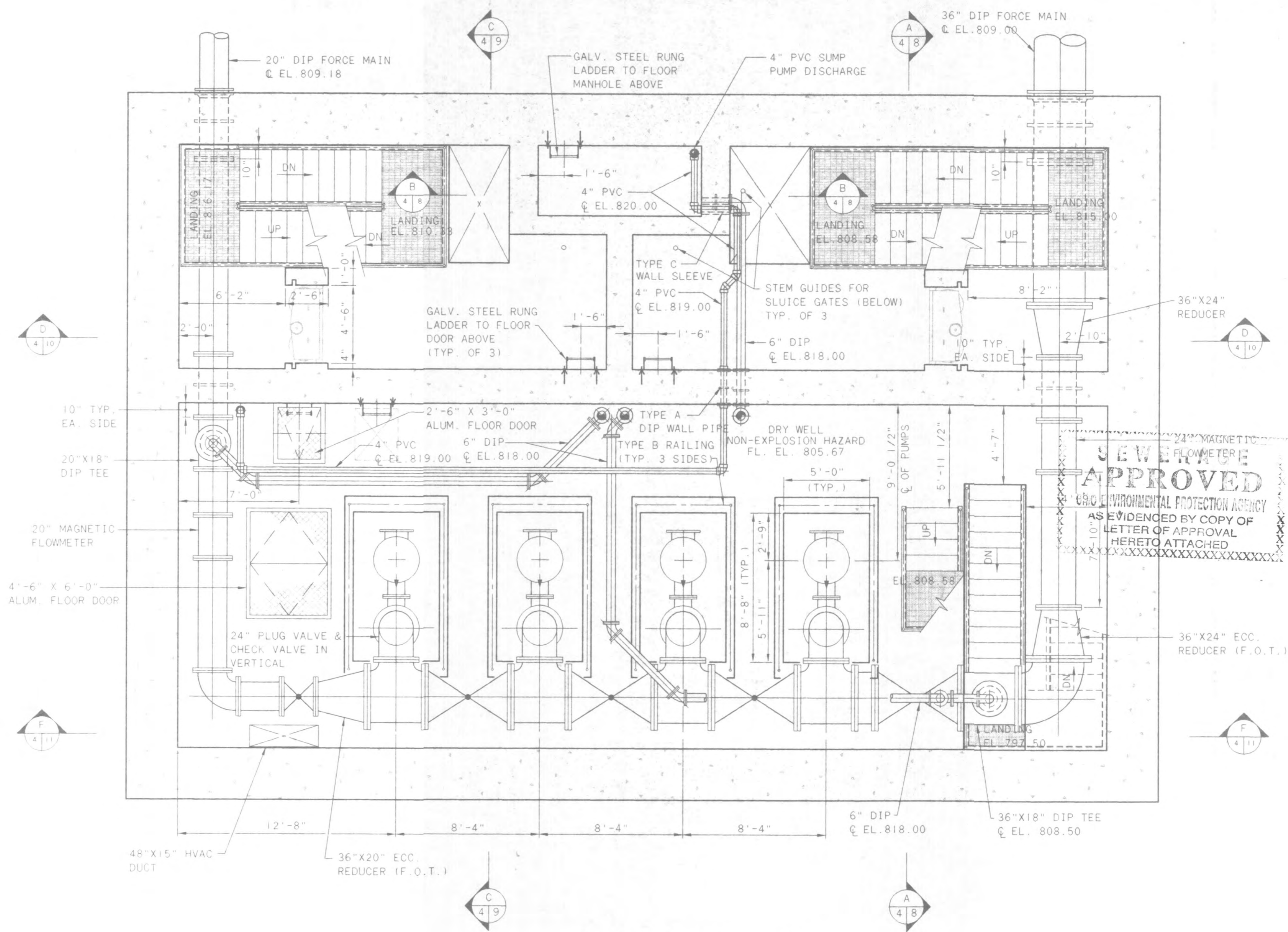
JOB NO.	20571
DESIGNED BY:	FXW
DRAWN BY:	RCD
CHECKED BY:	
APPROVED BY:	
DATE:	1998

SITE PLAN



SCALE:	1"=20'
SHEET NO.	3
OF	16

TEL. 371-4576
 03/11/98 02-12



PLAN AT EL. 805.67



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

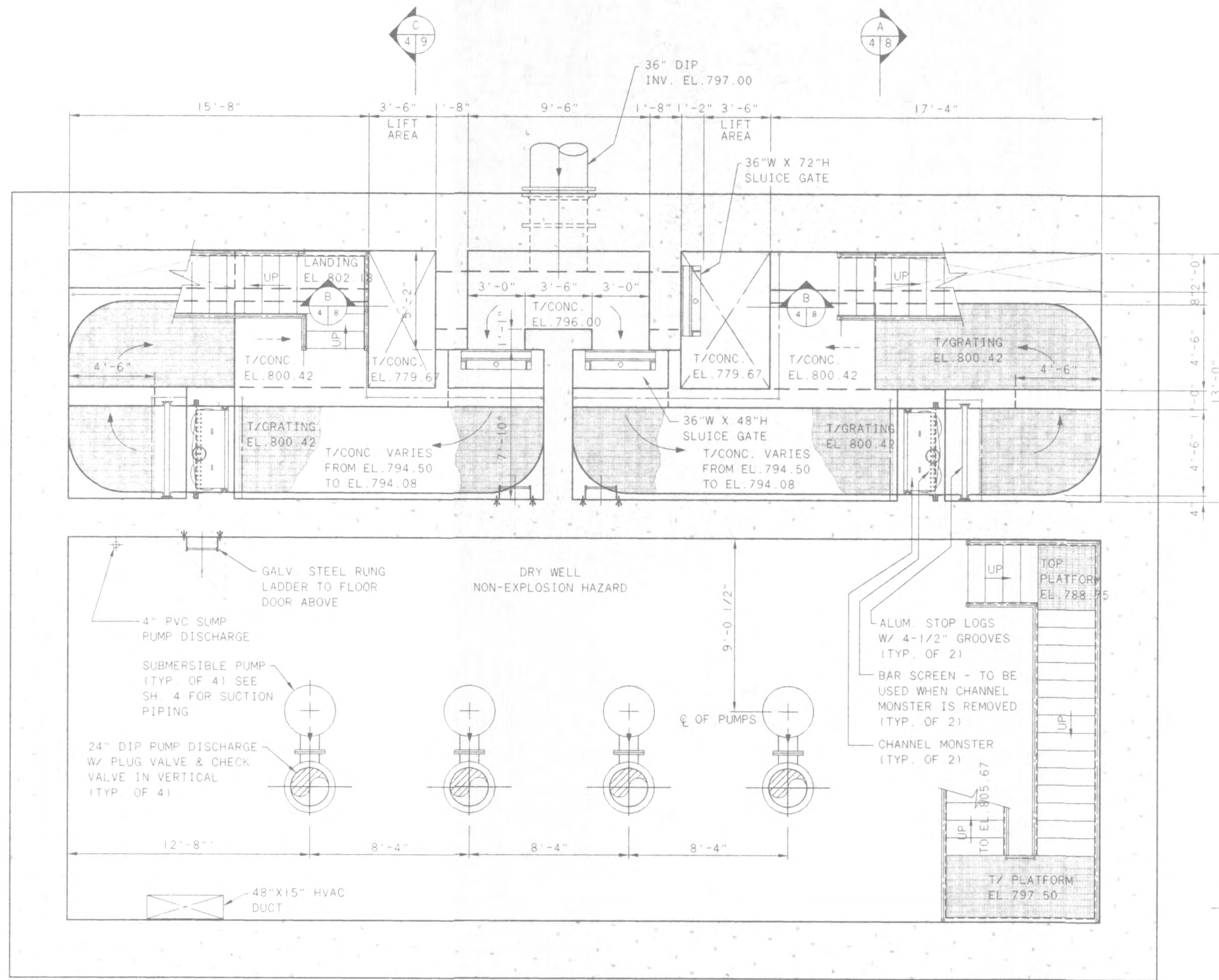
DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

JOB NO.	84-471
DESIGNED BY:	FXW
DRAWN BY:	RCD
CHECKED BY:	FXW
APPROVED BY:	SLW
DATE:	1998

PLAN AT EL. 805.67

SCALE:	1/4" = 1'-0"
SHEET NO.	5
OF	16

TOL-471-REC02
 02/27/98 08-12



PLAN AT EL. 800.42

SEWERAGE APPROVED
 UNDER ENVIRONMENTAL PROTECTION ACT
 AS EVIDENCED BY COPY OF
 LETTER OF APPROVAL
 HERETO ATTACHED



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

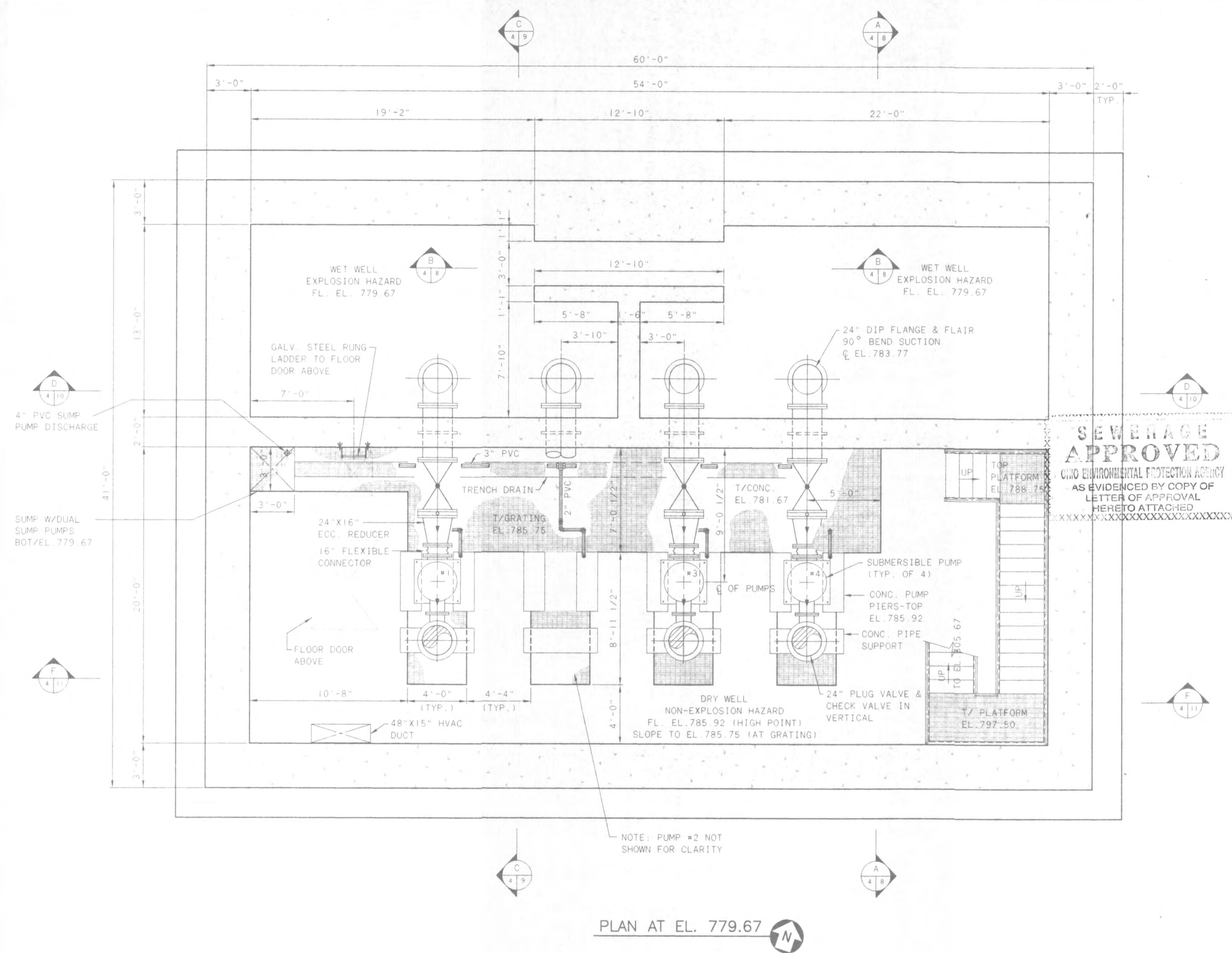
DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

JOB NO.	84-471
DESIGNED BY:	FXW
DRAWN BY:	RCD
CHECKED BY:	FXW
APPROVED BY:	SLW
DATE:	1998

PLAN AT EL. 800.42

SCALE:	
1/4" = 1'-0"	
SHEET NO.	OF
6	16

TOL-4714FE03
 02/27/98 08-12



SEWERAGE APPROVED
 CIVIL ENGINEERING PROTECTION AGENCY
 AS EVIDENCED BY COPY OF LETTER OF APPROVAL HERETO ATTACHED

PLAN AT EL. 779.67



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

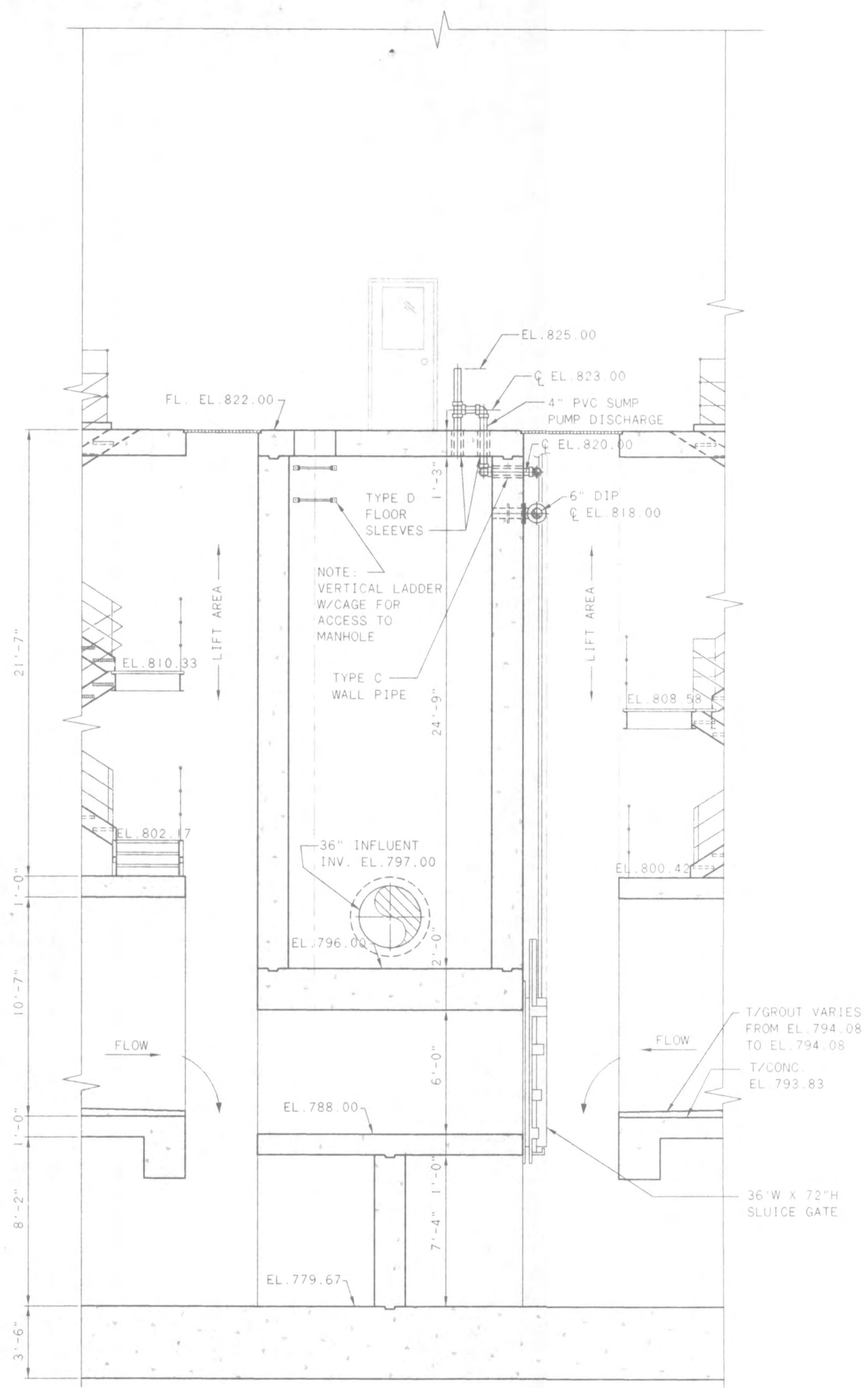
DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

JOB NO. 84-471
 DESIGNED BY: FXW
 DRAWN BY: RCD
 CHECKED BY: FXW
 APPROVED BY: SLW
 DATE: 1998

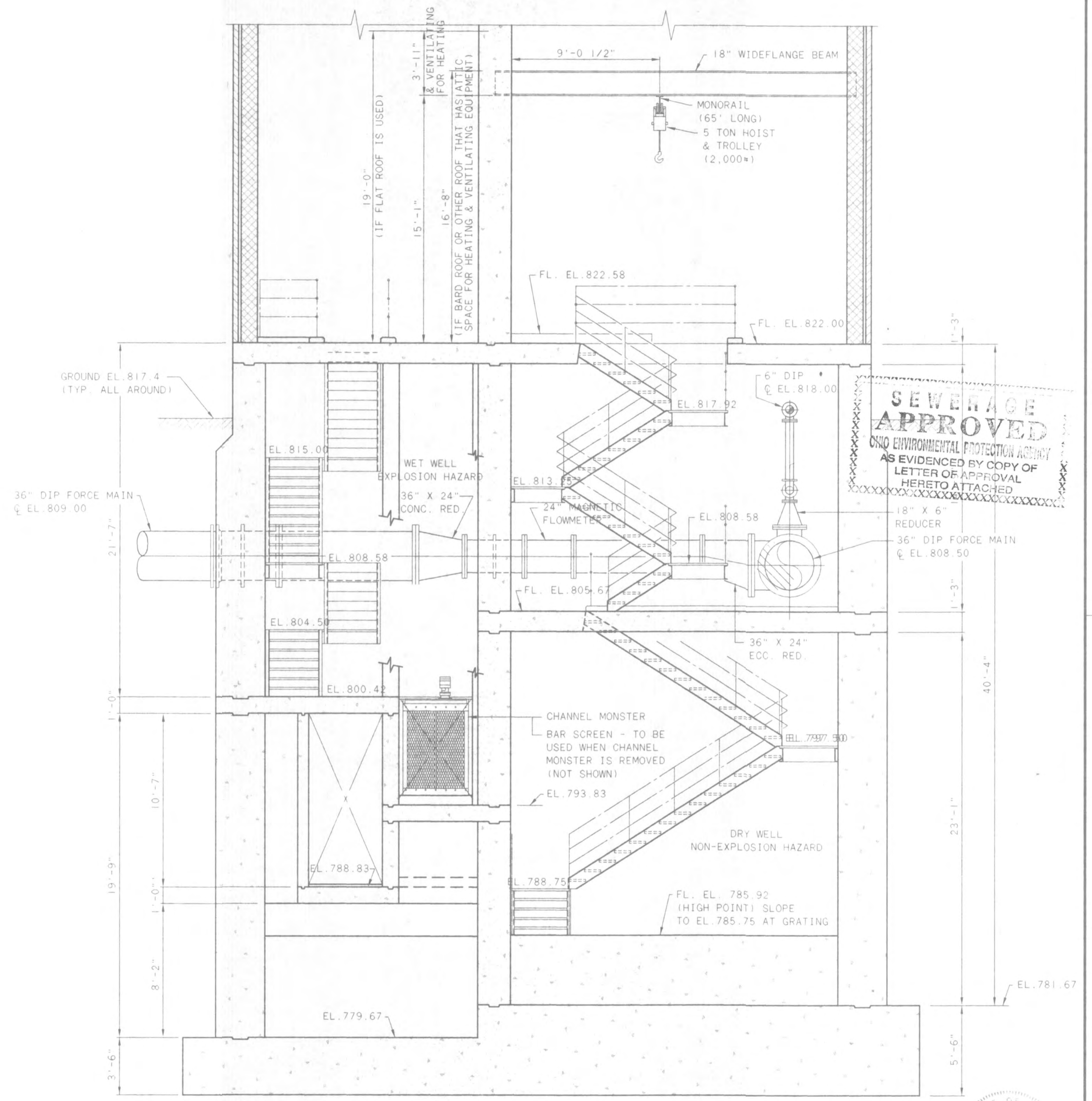
PLAN AT EL. 779.67

SCALE: 1/4" = 1'-0"
 SHEET NO. 7 OF 16

TOL-4714FE04
 02/27/98 08-12



SECTION B
418



SECTION A
418

SEWERAGE APPROVED
BY THE ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF LETTER OF APPROVAL HERETO ATTACHED



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

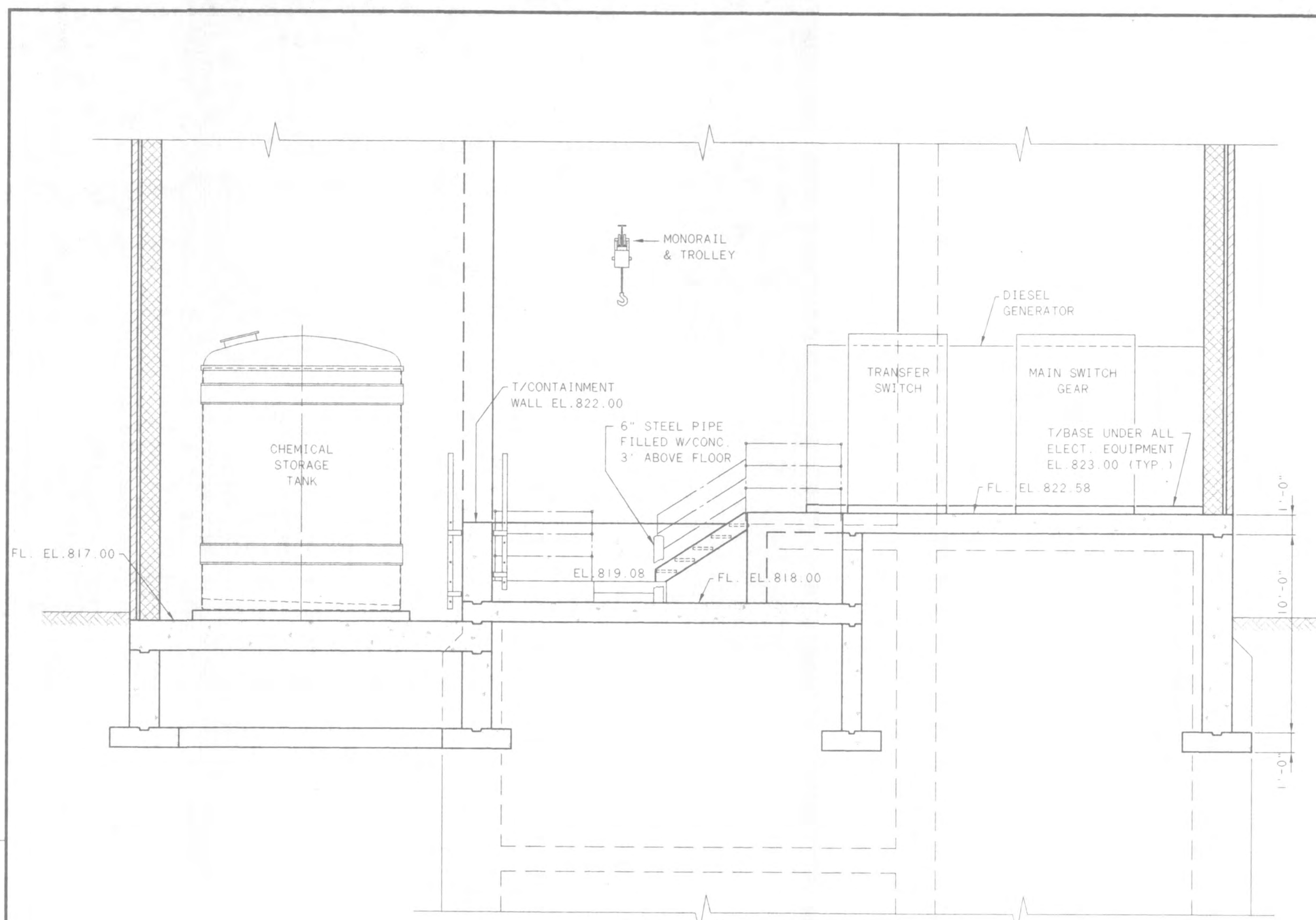
DELAWARE COUNTY, OHIO
ALUM CREEK WASTEWATER FACILITIES

JOB NO.	84-471
DESIGNED BY:	FXW
DRAWN BY:	RCD
CHECKED BY:	FXW
APPROVED BY:	SLW
DATE:	1998

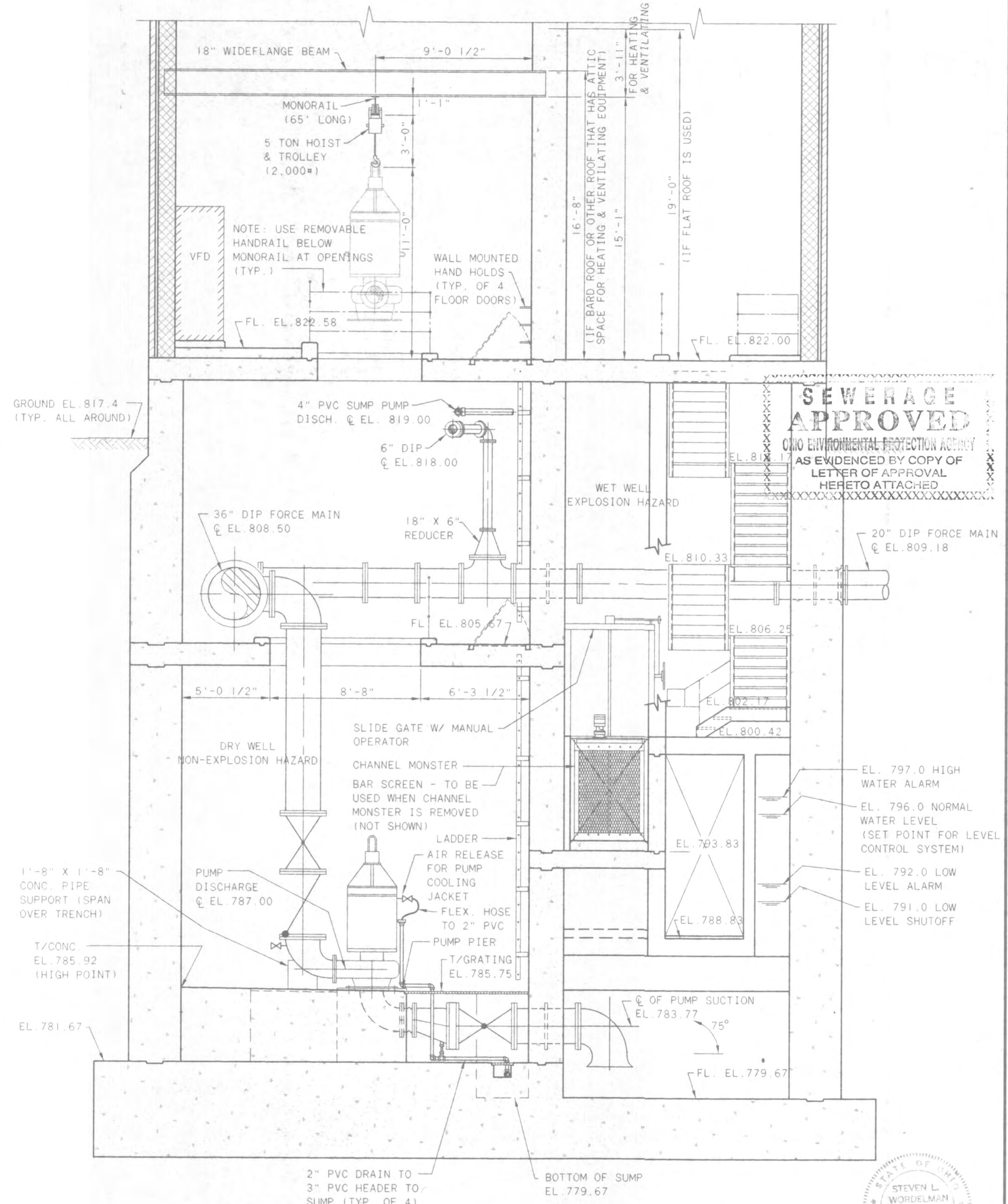
SECTIONS AND DETAILS

SCALE:	1/4" = 1'-0"
SHEET NO.	8
OF	16

TOL-47148605 03/11/98 02-12



SECTION E
4/9



SECTION C
4/9

SEWERAGE APPROVED
 OHIO ENVIRONMENTAL PROTECTION AGENCY
 AS EVIDENCED BY COPY OF LETTER OF APPROVAL HERETO ATTACHED



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

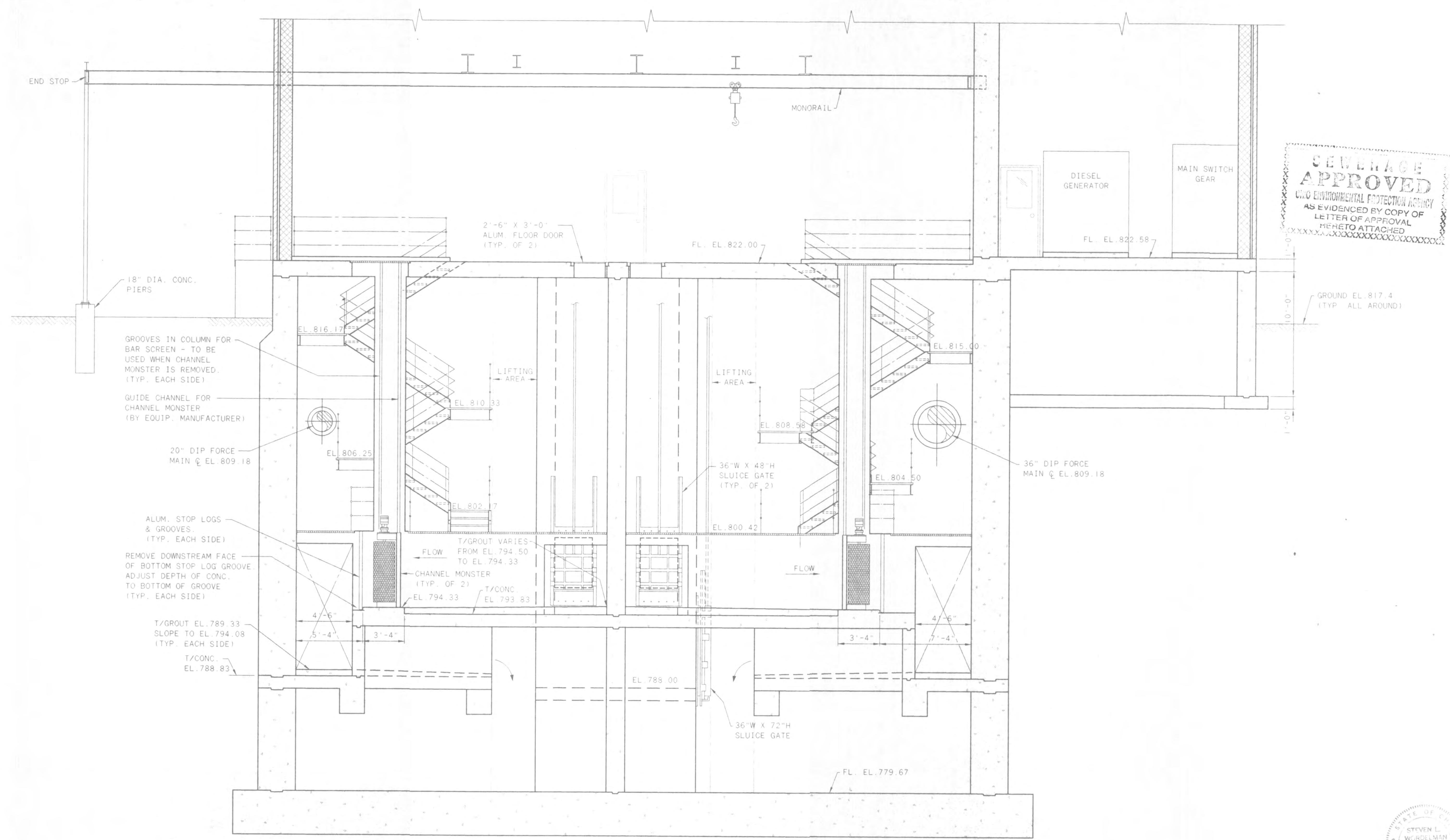
DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

JOB NO.	84-4714
DESIGNED BY:	FXW
DRAWN BY:	RCD
CHECKED BY:	FXW
APPROVED BY:	SLW
DATE:	1998

SECTIONS AND DETAILS

SCALE: 1/4" = 1'-0"	
SHEET NO. 9	OF 16

00-4714REC06
 05/11/98 02-12



SEWERAGE APPROVED
 CIVIL ENGINEERING
 AS EVIDENCED BY COPY OF LETTER OF APPROVAL HERETO ATTACHED

SECTION D
4/10

NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

JOB NO.	84-4714
DESIGNED BY:	FXW
DRAWN BY:	RCD
CHECKED BY:	FXW
APPROVED BY:	SLW
DATE:	1998

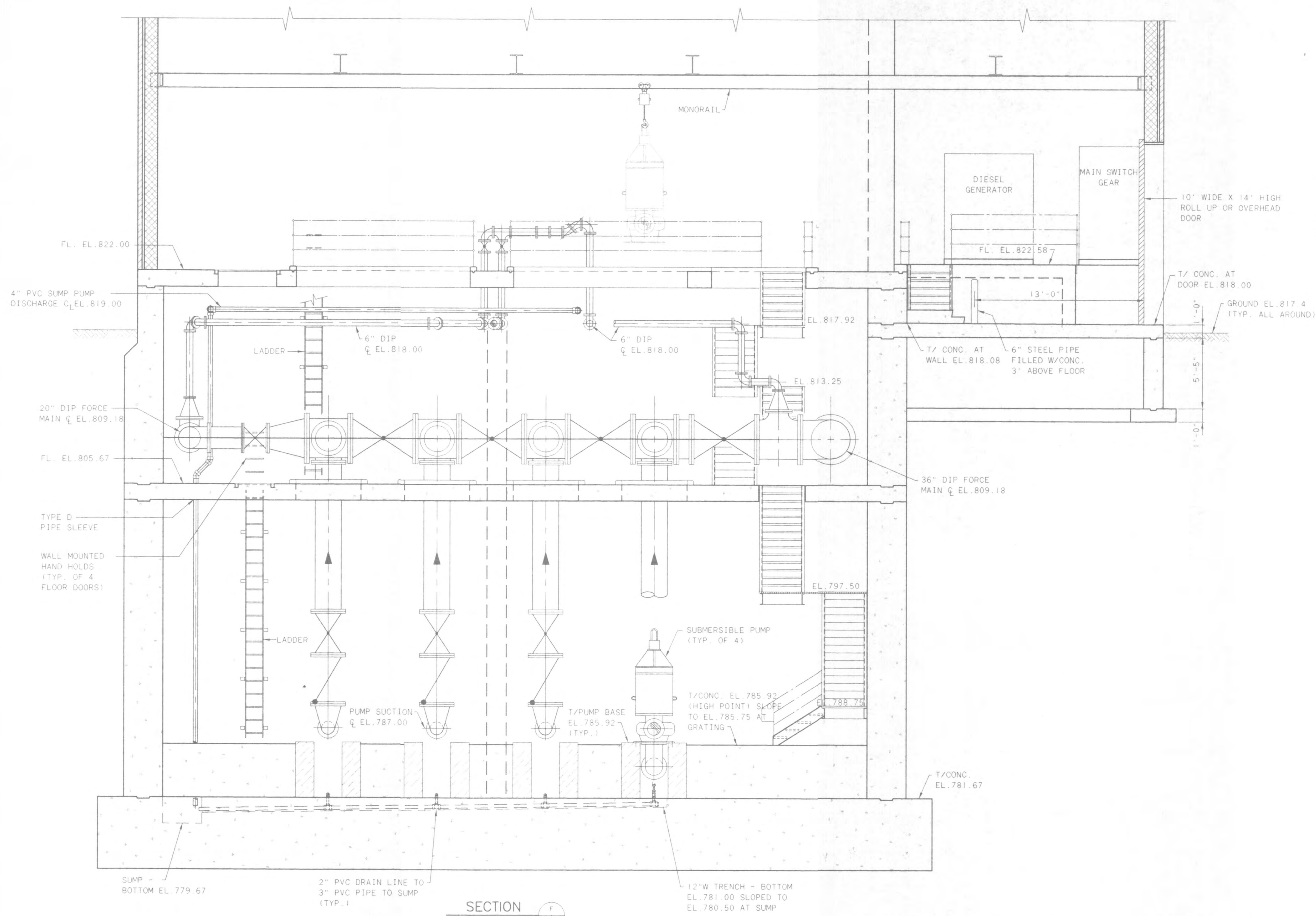
SECTIONS AND DETAILS



SCALE:	1/4" = 1'-0"
SHEET NO.	10
OF	16

TOL-471-HP07
 02/27/98 08-12

**SEWERAGE
APPROVED**
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED
XXXXXXXXXXXXXXXXXXXXXXXXXXXX



SECTION F
4 | 11



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

DELAWARE COUNTY, OHIO
ALUM CREEK WASTEWATER FACILITIES

JOB NO. 84-4714
DESIGNED BY: FXW
DRAWN BY: RCD
CHECKED BY: FXW
APPROVED BY: SLW
DATE: 1998

SECTIONS AND DETAILS

SCALE: 1/4" = 1'-0"	
SHEET NO. 11	OF 16

TOL-4714-PC09
02/27/98 08-12

SINGLE LINE DIAGRAM LEGEND

	FUSED DISCONNECT SWITCH (SWITCH SIZE, FUSE TYPE, AND FUSE SIZE AS SHOWN)
	UNFUSED DISCONNECT SWITCH (SWITCH SIZE AS SHOWN)
	THERMAL-MAGNETIC CIRCUIT BREAKER OR MOTOR CIRCUIT PROTECTOR-MCP (TRIP SIZE AS SHOWN)
	HIGH OR MEDIUM VOLTAGE CIRCUIT BREAKER
	LIGHTING OR POWER TRANSFORMER, THREE PHASE UNLESS NOTED OTHERWISE (CONNECTION, SIZE & RATING AS SHOWN)
	FULL VOLTAGE NON-REVERSING MOTOR STARTER WITH OVERLOADS (FVNR)
	FULL VOLTAGE REVERSING MOTOR STARTER WITH OVERLOADS (FVR)
	TWO SPEED MOTOR STARTER WITH OVERLOADS
	VACUUM CONTACTOR
	THREE PHASE AC MOTOR (HORSEPOWER AS SHOWN)
	CURRENT TRANSFORMER WITH AMMETER SWITCH, AND AMMETER (RATIO AS SHOWN)
	CURRENT TRANSFORMER WITH SHORTING BLOCK (RATIO AS SHOWN)
	POTENTIAL TRANSFORMER WITH VOLTMETER SWITCH, AND VOLTMETER
	LIGHTNING ARRESTER (VOLTAGE RATING AS SHOWN)
	TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS)
	GROUND CONNECTION

	OPEN CONTACTS WITH TIME-DELAY CLOSING
	CLOSED CONTACTS WITH TIME-DELAY OPENING
	OPEN CONTACTS WITH TIME-DELAY OPENING
	CLOSED CONTACTS WITH TIME-DELAY CLOSING
	FLOW SWITCH CLOSURES ON INCREASE IN FLOW
	FLOW SWITCH OPENS ON INCREASE IN FLOW
	LIQUID LEVEL SWITCH CLOSURES ON RISING LEVEL
	LIQUID LEVEL SWITCH OPENS ON RISING LEVEL
	PRESSURE OR VACUUM SWITCH CLOSURES ON RISING PRESSURE
	PRESSURE OR VACUUM SWITCH OPENS ON RISING PRESSURE
	TEMPERATURE SWITCH CLOSURES ON RISING TEMPERATURE
	TEMPERATURE SWITCH OPENS ON RISING TEMPERATURE
	LIMIT SWITCH NORMALLY OPEN
	LIMIT SWITCH NORMALLY OPEN - HELD CLOSED
	LIMIT SWITCH NORMALLY CLOSED
	LIMIT SWITCH NORMALLY CLOSED - HELD OPEN
	FOOT SWITCH OPENS BY FOOT PRESSURE
	FOOT SWITCH CLOSURES BY FOOT PRESSURE

	KIRK KEY (DASHED LINES TO INTERLOCKED DEVICES)
	DRAWOUT FOR SWITCHGEAR OR MOTOR CONTROL CENTER
	POWER FACTOR CORRECTION CAPACITOR -(PFCC) (SIZE PER MOTOR MANUFACTURER RECOMMENDATIONS.)
	HIGH OR MEDIUM VOLTAGE FUSED CUTOUT (SIZE AS SHOWN)
	CABLE LIMITER (SIZE AS SHOWN)
	STAND-BY GENERATOR (SIZE AS SHOWN) WITH FIELD PROTECTION CIRCUIT BREAKER (TRIP SIZE AS SHOWN)
	VARIABLE FREQUENCY DRIVE WITH A BY-PASS OPTION
	CP = CONTROL PANEL SSRVS = SOLID STATE REDUCED VOLTAGE STARTER (SHOWN WITH EXTERNAL DISCONNECT HANDLE)
	ELECTRONIC POWER MONITOR
	WATT-HOUR METER
	AUTOMATIC TRANSFER SWITCH (ATS)
	MANUAL TRANSFER SWITCH (MTS)

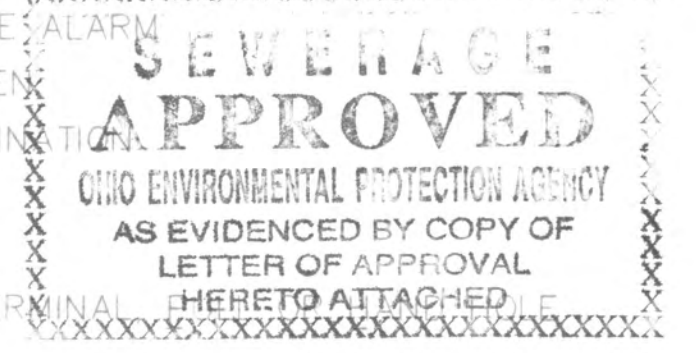
ELECTRICAL NOTES

- 1.) STRUCTURAL MATERIALS ARE NOT SHOWN ON ELECTRICAL DRAWINGS REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS
- 2.) ALL ELECTRICAL EQUIPMENT ELEVATIONS SHOWN ARE TO BOTTOM OF DEVICE OR PANEL, UNLESS OTHERWISE NOTED.
- 3.) NUMBER SHOWN (I.E. 117351), INDICATES A SPECIFICATION REFERENCE FOR ITEMS OTHER THAN DIVISION 16. THE ELECTRICAL ITEM UNDER THIS REFERENCE IS SUPPLIED BY THE GENERAL CONTRACTOR. UNLESS OTHERWISE NOTED IN THAT SPECIFICATION, THE ELECTRICAL CONTRACTOR SHALL INSTALL AND WIRE THE ITEM PER THE DRAWINGS AND DIVISION 16 SPECIFICATIONS
- 4.) CONTROL WIPING SHALL CONFORM TO ALL REQUIREMENTS AS SHOWN ON THE P & ID DRAWINGS WHETHER SHOWN ON THE ELECTRICAL DRAWINGS OR NOT
- 5.) WHERE LINES ARE SHOWN CONNECTING ELECTRICAL EQUIPMENT, THEY ARE NOT INTENDED AS CONDUIT ROUTING. CONTRACTOR SHALL ROUTE ALL CONDUIT RUNS (SHOWN OR NOT) PER DIVISION 16 SPECIFICATIONS.
- 6.) WP INDICATES WATERPROOF LETTER ON LIGHT FIXTURE INDICATES TYPE, PER SECTION 16500. NUMBER WITH LIGHT FIXTURE OR RECEPTACLE INDICATES CIRCUIT NUMBER.

ELECTRICAL PLAN LEGEND

	GROUND WIRE
	DIRECT BURIAL CABLE.
	CONDUIT CONCEALED
	CONDUIT EXPOSED
	CONDUIT IN CONCRETE DUCT BANK.
	HOMERUN
	CONDUIT TURNS UP
	CONDUIT TURNS DOWN
	CAPPED CONDUIT (FUTURE USE)
	CONDUIT TEE
	CADWELD CONNECTION
	B = BUSWAY
	C = CABLE TRAY
	S SINGLE POLE TOGGLE SWITCH
	S ₂ DOUBLE POLE TOGGLE SWITCH
	S ₃ THREE-WAY TOGGLE SWITCH
	S ₄ FOUR-WAY TOGGLE SWITCH
	S _p TOGGLE SWITCH WITH GREEN PILOT LIGHT
	S _k KEY-OPERATED SWITCH
	5 SINGLE RECEPTACLE
	3 DUPLEX RECEPTACLE
	5 RECEPTACLE, (SINGLE) 120, 30A OR LARGER
	6, 8 RECEPTACLE, (SINGLE) 240V, 2POLE
	4, 6, 8 POWER RECEPTACLE 480V, 3PH WITH DISCONNECT SWITCH (SIZE AS SHOWN)
	TELEPHONE RECEPTACLE
	COMPUTER RECEPTACLE
	@2 CEILING MOUNTED FIXTURE
	H-01 WALL MOUNTED FIXTURE
	POLE MOUNTED FIXTURE
	FLUORESCENT FIXTURE
	FLUORESCENT TROFFER - GRID CEILING LAY IN
	EMERGENCY LIGHTING FIXTURE
	EXIT FIXTURE (WITH DIRECTION ARROW WHERE INDICATED)
	MCC MOTOR CONTROL CENTER (MCC) OR SWITCHGEAR (SWG)
	DISTRIBUTION PANEL 480V OR 480Y/277V
	LIGHTING PANEL 120/208V OR 120/240V
	UPS UNINTERRUPTIBLE POWER SUPPLY
	E-PP EMERGENCY POWER PACK
	CP CONTROL PANEL (SHOWN WITH EXTERNAL DISCONNECT HANDLE)
	MAGNETIC MOTOR STARTER 480V, 3 PHASE
	MAGNETIC MOTOR STARTER 120V, 1 PHASE
	COMBINATION MAGNETIC MOTOR STARTER 480V, 3 PHASE
	COMBINATION MAGNETIC MOTOR STARTER 120V, 1 PHASE
	S _M MANUAL MOTOR STARTER 480V, 3 PHASE
	S _V MANUAL MOTOR STARTER 120V, 1 PHASE
	DISCONNECT SWITCH (SEE SINGLE LINE DIAGRAM FOR SIZE & TYPE)

	SINGLE PHASE AC MOTOR (HORSEPOWER AS SHOWN, DC INDICATES DC MOTOR)
	THREE PHASE AC MOTOR (HORSEPOWER AS SHOWN)
	MOTOR OPERATED VALVE, 3 PHASE, WITH MAGNETIC STARTER AND CONTROLS
	MOTOR OPERATED VALVE, 1 PHASE, WITH MAGNETIC STARTER AND CONTROLS
	GROUND ROD WITH CADWELD CONNECTION
	PP = POWER POLE, LP = LIGHT POLE
	AIR TERMINAL (LIGHTNING PROTECTION)
	STROBE LIGHT (F= FIRE ALARM, G= GAS ALARM)
	HEAT DETECTOR - RATE OF RISE/FIXED TEMPERATURE
	SMOKE DETECTOR - (P = PHOTOELECTRIC, I = IONIZATION)
	PULL STATION - FIRE ALARM
	HORN, BELL, OR SIREN
	HORN/STROBE COMBINATION
	CAPACITOR
	CONTROL STATION
	BOX - JUNCTION, TERMINAL (HERE TO ATTACHED)
	ELECTRIC MANHOLE
	TRANSFORMER (SEE SINGLE LINE FOR SIZE & TYPE)
	LIGHTING CONTACTOR
	FLOW TRANSMITTER
	LEVEL TRANSMITTER
	PRESSURE TRANSMITTER
	TEMPERATURE TRANSMITTER
	ANALYSIS TRANSMITTER (I.E. OXYGEN, TURBIDITY)
	INDICATOR - PRESSURE, FLOW, LEVEL
	DENSITY TRANSMITTER
	LIMIT (POSITION) SWITCH
	PRESSURE SWITCH
	TEMPERATURE SWITCH (I.E. MOTOR THERMO PROTECTOR)
	CONVEYOR CABLE SWITCH
	SPEED SWITCH
	FLOW SWITCH
	LEVEL SWITCH
	MOISTURE SWITCH
	TORQUE SWITCH
	VIBRATION SWITCH
	LOAD CELL
	TRANSMITTER SENSING ELEMENT - LEVEL, FLOW, DENSITY
	SOLENOID
	THERMOSTAT
	HEATER IN MOTOR
	PHOTOELECTRIC CELL
	GAS DETECTOR WITH CONTROL PANEL (GAS TYPE AS SHOWN)
	THERMOCOUPLE
	PNEUMATIC VALVE OPERATOR
	CURRENT TO PRESSURE TRANSDUCER



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

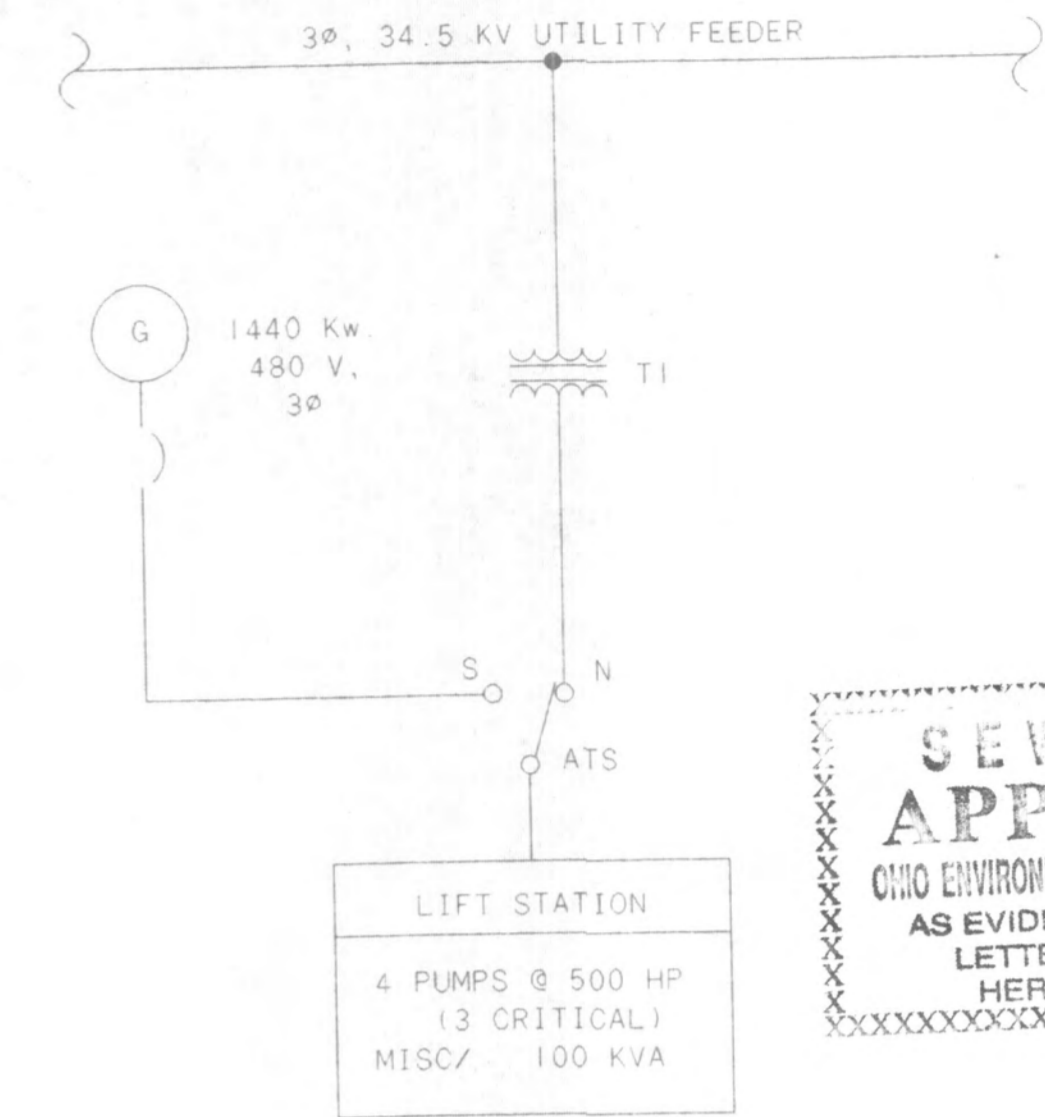
DELAWARE COUNTY, OHIO
ALUM CREEK WASTEWATER FACILITIES

JOB NO.	20571
DESIGNED BY:	DLH
DRAWN BY:	LEY
CHECKED BY:	
APPROVED BY:	
DATE:	1998

ELECTRICAL SYMBOLS AND ABBREVIATIONS

SCALE:	NONE
SHEET NO.	12
OF	16

105-5714E14
02/27/98 05-12



**SEWERAGE
APPROVED**
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERETO ATTACHED

- LEGEND**
- ATS - AUTOMATIC TRANSFER SWITCH
 - N - NORMAL
 - S - STANDBY
 - N.O. - NORMALLY OPEN CIRCUIT BREAKER
 - N.C. - NORMALLY CLOSED CIRCUIT BREAKER
 - ◇ - KIRK KEY INTERLOCK
 - G - GENERATOR
 - T - TRANSFORMER



NO.	REVISIONS	DATE	BY	CHK.



Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

DELAWARE COUNTY, OHIO
ALUM CREEK WASTEWATER FACILITIES

JOB NO.	20571
DESIGNED BY:	DLH
DRAWN BY:	LEY
CHECKED BY:	DLH
APPROVED BY:	SLW
DATE:	1998

LIFT STATION
BASIC NORMAL & EMERGENCY
POWER DISTRIBUTION

SCALE:	NONE
SHEET NO.	13
OF	16

TD-971812
02/27/98 03-12

INSTRUMENT AND DEVICE LETTERING TABLE		
	FIRST LETTER	SUCCEEDING LETTERS
A	ANALYSIS	ALARM
B	BURNER FLAME	CLOSE OR DECREASE
C	CONDUCTIVITY	CONTROL
D	DENSITY	OPEN OR INCREASE
E	VOLTAGE	PRIMARY ELEMENT
F	FLOW RATE	RATIO
G	GAUGE	SUM OR ADD
H	HAND (MANUALLY OPERATED)	HIGH
I	CURRENT (ELEC)	INDICATE
J	POWER	LIGHT
K	TIME	CONTROL STATION
L	LEVEL	LOW
M	MOTOR	OPERATE OR ON/OFF
N	USER'S CHOICE	START/STOP OR OPEN/CLOSE
O	TORQUE	OVERLOAD
P	PRESSURE OR VACUUM	POINT OR TEST
Q	QUANTITY OR EVENT	TOTALIZE OR INTEGRATE
R	RADIOACTIVITY	RECORDER
S	SPEED OR FREQUENCY	SWITCH
T	TEMPERATURE	TRANSMITTER
U	MULTIVARIABLE	MULTIFUNCTION
V	VIBRATION, MOTION	USER'S CHOICE
W	WEIGHT OR FORCE	WELL
X	USER'S CHOICE	EXCESS
Y	COMPUTER	RELAY OR COMPUTE
Z	POSITION	DRIVE OR ACTUATE
Δ	DIFFERENTIAL	

INSTRUMENTATION AND CONTROL NOTES

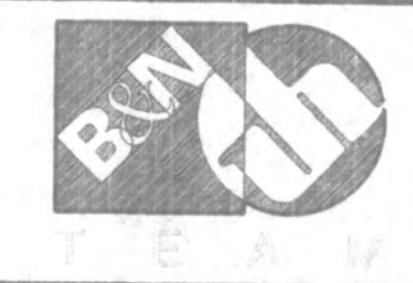
1. NUMBER SHOWN (I.E. 11735), INDICATES A SPECIFICATION REFERENCE FOR ITEMS OTHER THAN DIVISION 16. THE ELECTRICAL ITEM UNDER THIS REFERENCE IS SUPPLIED BY THE GENERAL CONTRACTOR. UNLESS OTHERWISE NOTED IN THAT SPECIFICATION, THE ELECTRICAL CONTRACTOR SHALL INSTALL AND WIRE THE ITEM PER THE DRAWINGS AND DIVISION 16 SPECIFICATIONS.
2. THE CONTRACTOR SHALL PROVIDE ALL ITEMS NECESSARY FOR THE COMPLETE INSTALLATION OF THE EQUIPMENT AS RECOMMENDED OR REQUIRED BY THE MANUFACTURER OF THE EQUIPMENT OR REQUIRED BY CODE WITHOUT ADDITIONAL COST TO THE OWNER REGARDLESS WHETHER THE ITEMS ARE SHOWN ON THE DRAWINGS OR COVERED IN IN THE SPECIFICATIONS.

PROCESS AND INSTRUMENTATION DIAGRAM DEVICE SYMBOLS AND DESIGNATION			
SYMBOL	DESCRIPTION	SYMBOL	INSTRUMENT OR DEVICE IDENTIFICATION
	FIRST LETTER SUCCEEDING LETTER LOOP NUMBER		ELECTRIC SUPPLY VOLTAGE (24VDC, 120VAC, ETC.) DISCRETE DATA OUTPUT POINT
	FRONT PANEL MOUNTED INSTRUMENT OR DEVICE		DISCRETE DATA INPUT POINT
	BACK PANEL MOUNTED INSTRUMENT OR DEVICE		ANALOG DATA OUTPUT POINT
	FIELD MOUNTED INSTRUMENT OR DEVICE		ANALOG DATA INPUT POINT
	ANNUNCIATOR WINDOW WITH DESCRIPTION		PROCESS FLOW DIRECTION NORMAL
	SINGLE PHASE AC MOTOR (DC INDICATES DC MOTOR)		ELECTRICAL CONNECTION WIRE (24V, 120V, 240V, ETC.)
	THREE PHASE AC MOTOR		ELECTRICAL CONNECTION WIRE 480V
	STAND-BY GENERATOR		ANALOG SIGNAL WIRE (USUALLY 4-20 MA)
	MOTOR STARTER		PROCESS FLOW LINE
	COMBINATION MOTOR STARTER		MECHANICAL CONNECTION
	DISCONNECT SWITCH		PNEUMATIC OR HYDRAULIC SIGNAL
	EQUIPMENT PROVIDED UNDER SPECIFICATION NUMBER SHOWN.		HORN, BELL OR SIREN
	EQUIPMENT PROVIDED UNDER DIVISION 16		TYPICAL VALVE IDENTIFICATION LETTER INDICATES VALVE TYPE (SEE DIVISION 15)
	PUMP		TYPICAL SPECIFICATION REFERENCE NUMBER WITHIN SECTION 16902
	BLOWER		TYPICAL SPECIFICATION SECTION NUMBER
	AIR COMPRESSOR		
	SLUICE GATE (SG) OR SLIDE GATE (SLG)		
	VALVE		
	THREE WAY VALVE		
	CHECK VALVE		
	SOLENOID VALVE		

**SEWERAGE
APPROVED**
OHIO ENVIRONMENTAL PROTECTION AGENCY
AS EVIDENCED BY COPY OF
LETTER OF APPROVAL
HERE TO ATTACHED



NO.	REVISIONS	DATE	BY	CHK.



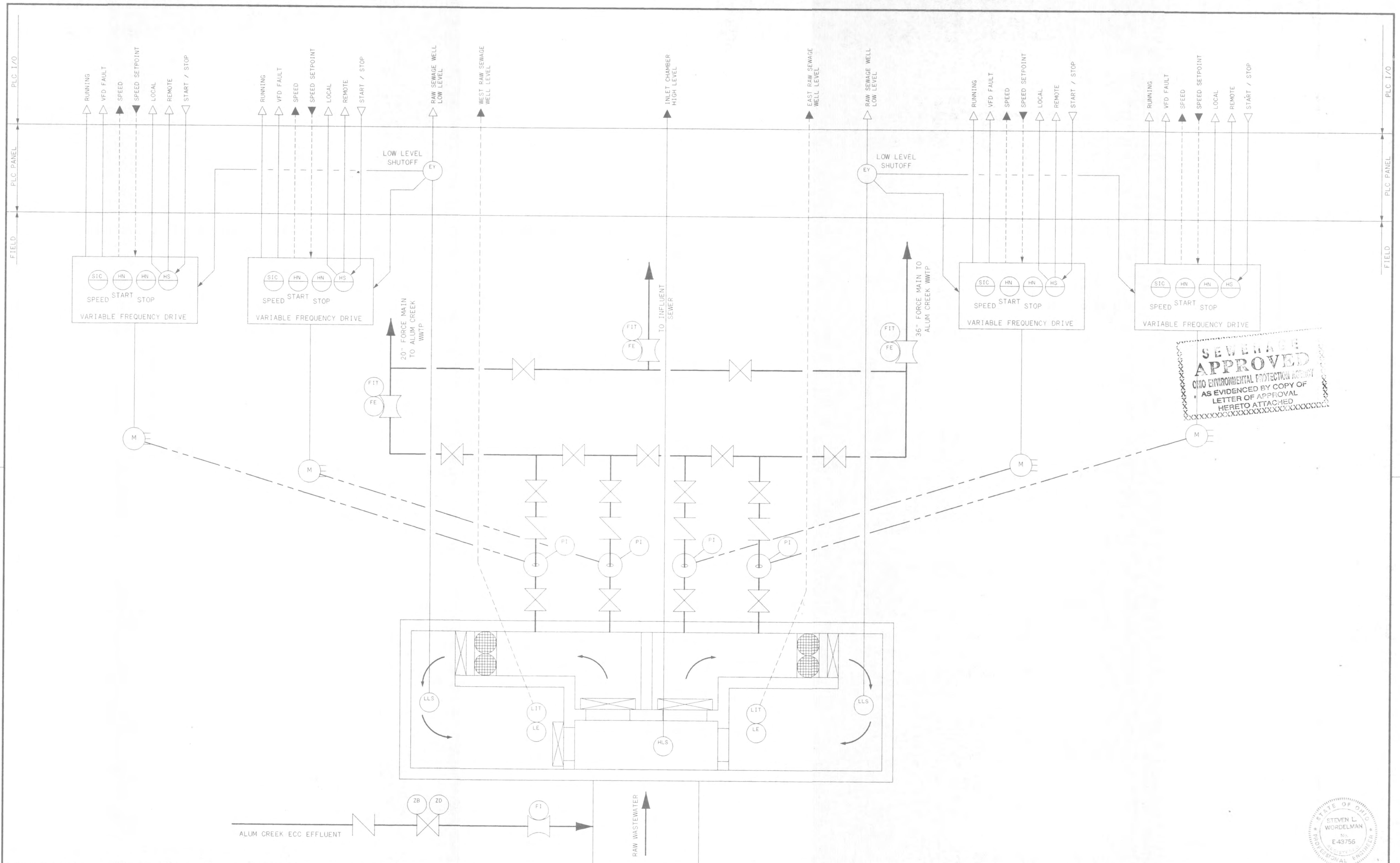
Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

DELAWARE COUNTY, OHIO
ALUM CREEK WASTEWATER FACILITIES

JOB NO. 20571
DESIGNED BY: DLH
DRAWN BY: DRR
CHECKED BY: DLH
APPROVED BY:
DATE: 1998

INSTRUMENTATION AND CONTROL
SYMBOLS AND ABBREVIATIONS

SCALE:
NONE
SHEET NO. 14 OF 16



SEWERAGE APPROVED
 OHIO ENVIRONMENTAL PROTECTION AGENCY
 AS EVIDENCED BY COPY OF
 LETTER OF APPROVAL
 HERETO ATTACHED

NO.	REVISIONS	DATE	BY	CHK.



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Jones & Henry Engineers, Ltd.

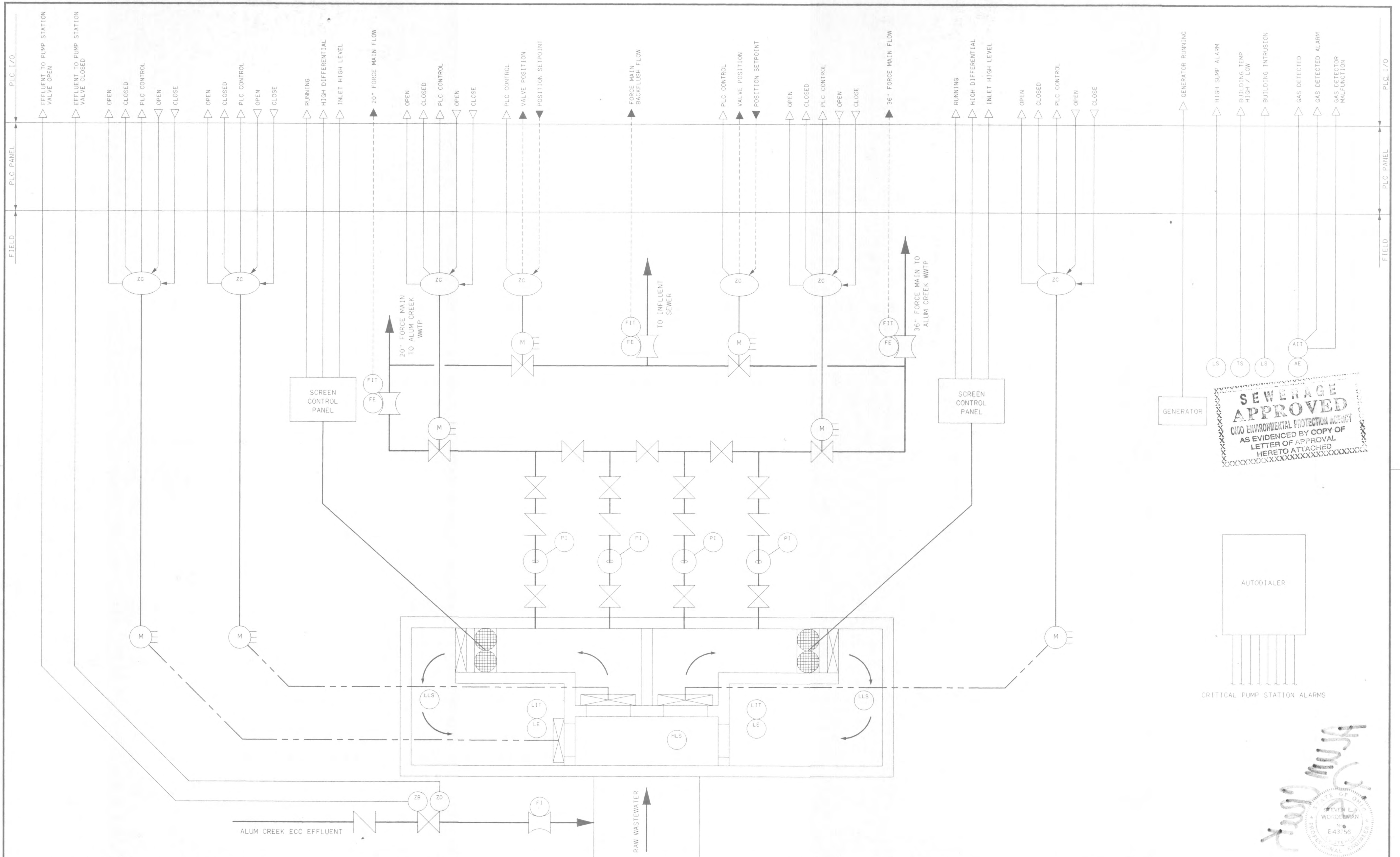
DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

JOB NO.	20571
DESIGNED BY:	MAM
DRAWN BY:	LEY
CHECKED BY:	MAM
APPROVED BY:	SLW
DATE:	1998

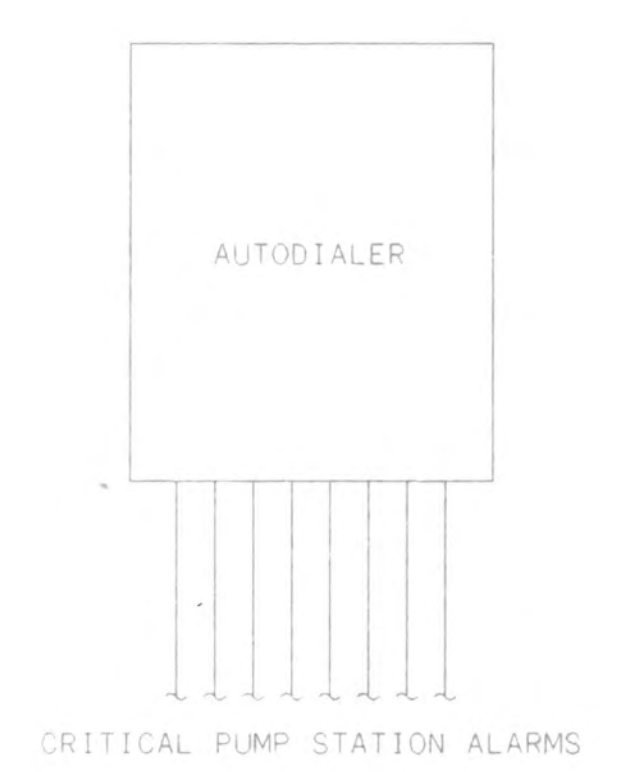
**RAW WASTEWATER PUMPS
 PROCESS DIAGRAM**



SCALE:	NONE
SHEET NO.	15
OF	16



SEWERAGE APPROVED
 OHIO ENVIRONMENTAL PROTECTION AGENCY
 AS EVIDENCED BY COPY OF LETTER OF APPROVAL HERETO ATTACHED



NO.	REVISIONS	DATE	BY	CHK.

Burgess & Niple, Limited
Jones & Henry Engineers, Ltd.

DELAWARE COUNTY, OHIO
 ALUM CREEK WASTEWATER FACILITIES

JOB NO.	20571
DESIGNED BY:	MAM
DRAWN BY:	LEY
CHECKED BY:	MAM
APPROVED BY:	SLW
DATE:	1998

PUMP STATION
 PROCESS DIAGRAM

SCALE:	NONE
SHEET NO.	16
OF	16

100-4714E01
 05/17/98 09-14

Handwritten signature
 STEVEN L. WORDSWORTH
 E-43156
 PROFESSIONAL ENGINEER