

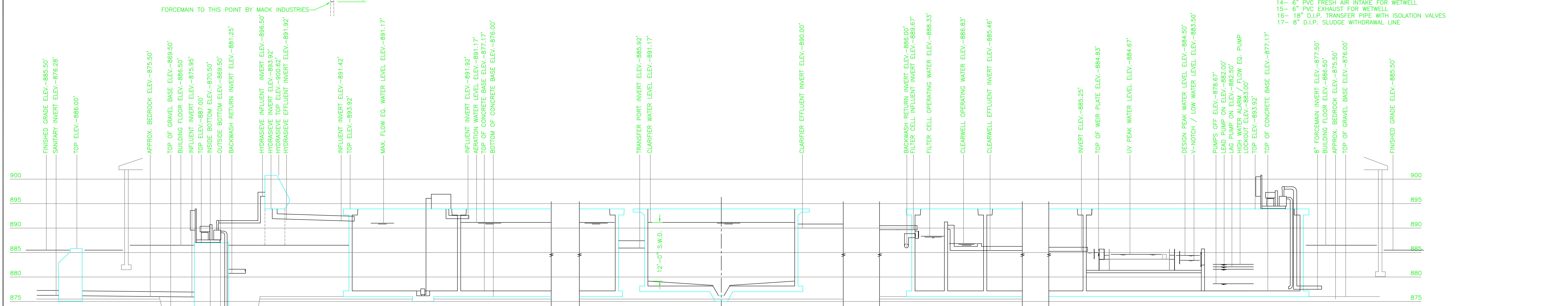
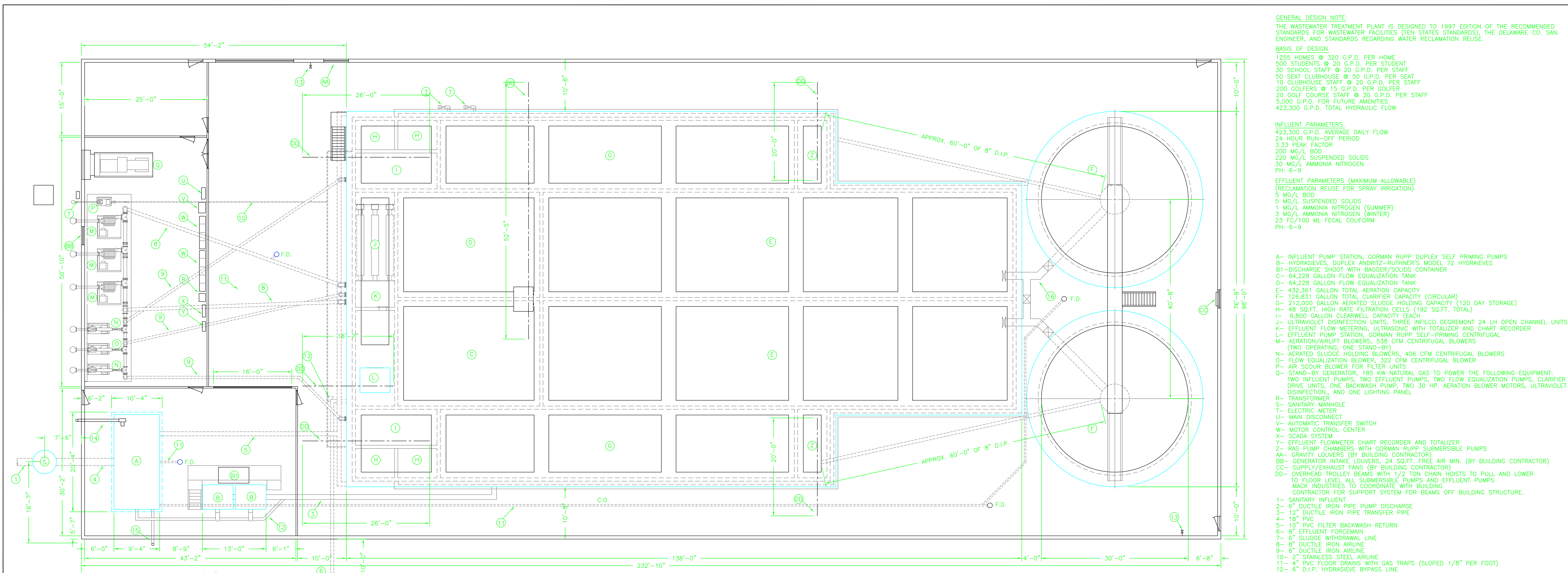
GENERAL DESIGN NOTE:
 THE WASTEWATER TREATMENT PLANT IS DESIGNED TO 1997 EDITION OF THE RECOMMENDED STANDARDS FOR WASTEWATER FACILITIES (TEN STATES STANDARDS), THE DELAWARE CO. SAN. ENGINEER, AND STANDARDS REGARDING WATER RECLAMATION REUSE.

BASIS OF DESIGN
 1255 HOMES @ 320 G.P.D. PER HOME
 500 STUDENTS @ 20 G.P.D. PER STUDENT
 30 SCHOOL STAFF @ 20 G.P.D. PER STAFF
 50 SEAT CLUBHOUSE @ 50 G.P.D. PER SEAT
 10 CLUBHOUSE STAFF @ 20 G.P.D. PER STAFF
 200 GOLFERS @ 15 G.P.D. PER GOLFER
 20 GOLF COURSE STAFF @ 20 G.P.D. PER STAFF
 5,000 G.P.D. FOR FUTURE AMENITIES
 423,300 G.P.D. TOTAL HYDRAULIC FLOW

INFLUENT PARAMETERS
 423,300 G.P.D. AVERAGE DAILY FLOW
 24 HOUR RUN-OFF PERIOD
 3.33 PEAK FACTOR
 200 MG/L BOD
 220 MG/L SUSPENDED SOLIDS
 30 MG/L AMMONIA NITROGEN
 PH: 6-9

EFFLUENT PARAMETERS (MAXIMUM ALLOWABLE)
 (RECLAMATION REUSE FOR SPRAY IRRIGATION)
 5 MG/L BOD
 5 MG/L SUSPENDED SOLIDS
 1 MG/L AMMONIA NITROGEN (SUMMER)
 3 MG/L AMMONIA NITROGEN (WINTER)
 23 FC/100 ML FECAL COLIFORM
 PH: 6-9

- A- INFLUENT PUMP STATION, GORMAN RUPP DUPLEX SELF PRIMING PUMPS
- B- HYDRASIEVES, DUPLEX ANDRITZ-RUTHNER'S MODEL 72 HYDRASIEVES
- B1- DISCHARGE SHOOT WITH BAGGER/SOLIDS CONTAINER
- C- 64,228 GALLON FLOW EQUALIZATION TANK
- D- 64,228 GALLON FLOW EQUALIZATION TANK
- E- 432,361 GALLON TOTAL AERATION CAPACITY
- F- 126,831 GALLON TOTAL CLARIFIER CAPACITY (CIRCULAR)
- G- 212,000 GALLON AERATED SLUDGE HOLDING CAPACITY (120 DAY STORAGE)
- H- 48 SQ.FT. HIGH RATE FILTRATION CELLS (192 SQ.FT. TOTAL)
- I- 6,800 GALLON CLEARWELL CAPACITY (EACH)
- J- ULTRAVIOLET DISINFECTION UNITS, THREE INFILCO DEGREMONT 24 LH OPEN CHANNEL UNITS
- K- EFFLUENT FLOW METERING, ULTRASONIC WITH TOTALIZER AND CHART RECORDER
- L- EFFLUENT PUMP STATION, GORMAN RUPP SELF-PRIMING CENTRIFUGAL
- M- AERATION/AIRLIFT BLOWERS, 538 CFM CENTRIFUGAL BLOWERS (TWO OPERATING, ONE STAND-BY)
- N- AERATED SLUDGE HOLDING BLOWERS, 406 CFM CENTRIFUGAL BLOWERS
- O- FLOW EQUALIZATION BLOWER, 322 CFM CENTRIFUGAL BLOWER
- P- AIR SCOUR BLOWER FOR FILTER UNITS
- Q- STAND-BY GENERATOR, 185 KW NATURAL GAS TO POWER THE FOLLOWING EQUIPMENT: TWO INFLUENT PUMPS, TWO EFFLUENT PUMPS, TWO FLOW EQUALIZATION PUMPS, CLARIFIER DRIVE UNITS, ONE BACKWASH PUMP, TWO 30 HP. AERATION BLOWER MOTORS, ULTRAVIOLET DISINFECTION, AND ONE LIGHTING PANEL
- R- TRANSFORMER
- S- SANITARY MANHOLE
- T- ELECTRIC METER
- U- MAIN DISCONNECT
- V- AUTOMATIC TRANSFER SWITCH
- W- MOTOR CONTROL CENTER
- X- SCADA SYSTEM
- Y- EFFLUENT FLOWMETER CHART RECORDER AND TOTALIZER
- Z- RAS PUMP CHAMBERS WITH GORMAN RUPP SUBMERSIBLE PUMPS
- AA- GRAVITY LOUVERS (BY BUILDING CONTRACTOR)
- BB- GENERATOR INTAKE LOUVERS, 24 SQ.FT. FREE AIR MIN. (BY BUILDING CONTRACTOR)
- CC- SUPPLY/EXHAUST FANS (BY BUILDING CONTRACTOR)
- DD- OVERHEAD TROLLEY BEAMS WITH 1/2 TON CHAIN HOISTS TO PULL AND LOWER TO FLOOR LEVEL ALL SUBMERSIBLE PUMPS AND EFFLUENT PUMPS
- EE- MACK INDUSTRIES TO COORDINATE WITH BUILDING CONTRACTOR FOR SUPPORT SYSTEM FOR BEAMS OFF BUILDING STRUCTURE.



DRAWING INDEX

SHEET	DESCRIPTION
1	WWTP LAYOUT AND HYDRAULIC PROFILE
2	INFLUENT PUMP STATION, BLOWER ASSEMBLIES
3	WWTP PLAN VIEW
4	WWTP SECTION VIEWS
5	CIRCULAR CLARIFIER DETAILS
6	ELECTRICAL LAYOUT
7	BASE SLAB LAYOUTS
8	SLAB AND HANDRAILING LAYOUTS
9	CAP AND YARD PIPING LAYOUTS
10	WWTP PIPING ASSEMBLY

THE FOLLOWING ELEVATIONS PROVIDED BY R.D. ZANDE & ASSOCIATES (REVISED 12/18/98 BY R.D. ZANDE & ASSOCIATES)
 EXISTING GRADE ELEV.-880.00'
 FINISHED GRADE ELEV.-885.50'
 BUILDING FLOOR ELEV.-886.50'
 INFLUENT INVERT ELEV.-876.28'
 APPROX. BEDROCK ELEV.-875.50'

11/11/98 REVISION LIST
 1. REVISED FLOW DATA
 2. SEE SHEETS 2 THRU 6 FOR ALL OTHER SPECIFIC REVISIONS

12/1/98 REVISION LIST
 1. CHANGED UV UNITS BACK TO HORIZONTAL TYPE
 2. ADDED OVERHEAD TROLLEY SYSTEM

12/21/98 REVISION LIST
 1. REVISED ELEVATIONS PER R.D. ZANDE AND ASSOC.

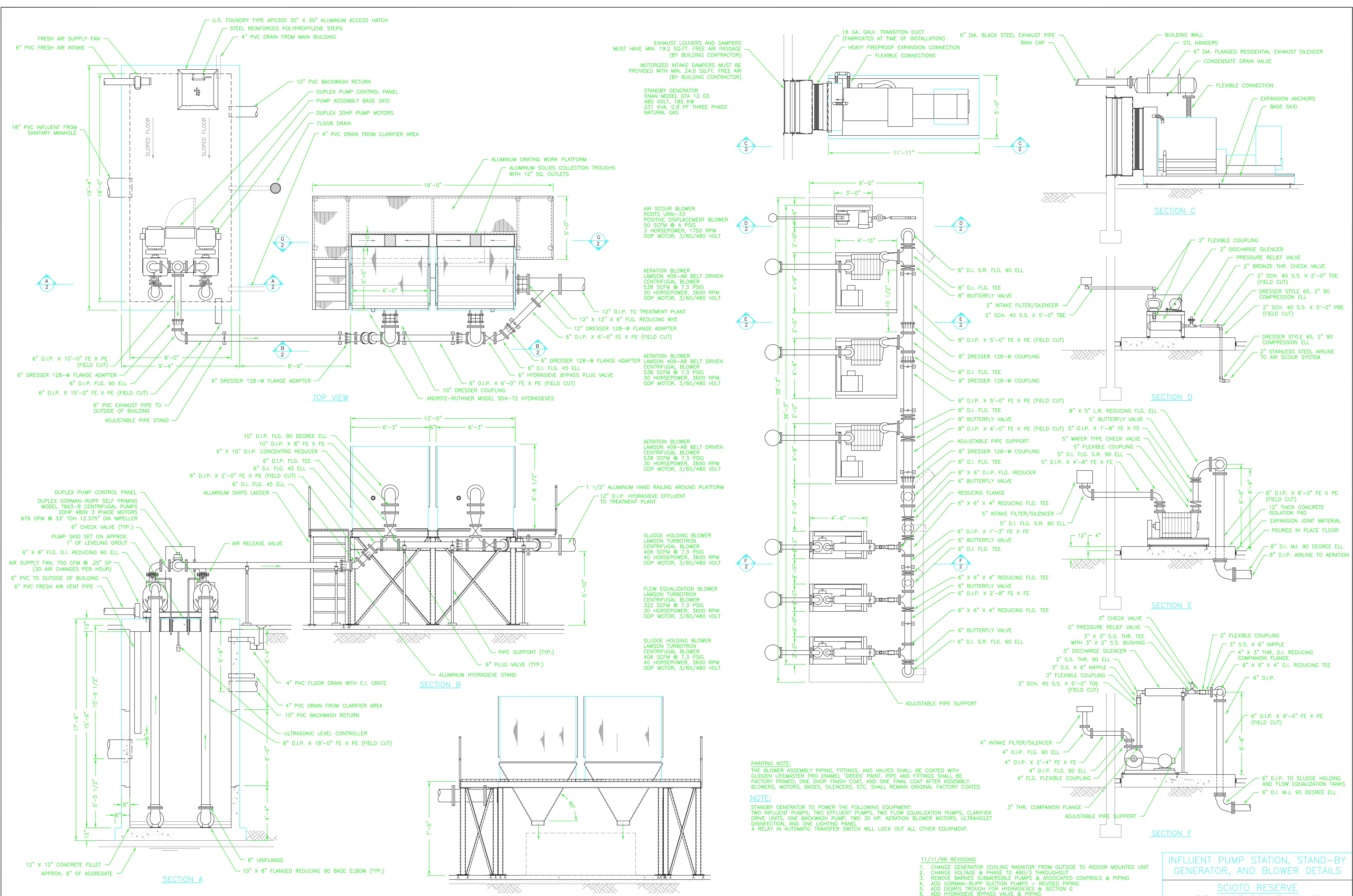
ELEVATION NOTE:
 THE BEDROCK ELEVATION SHOWN IS BASED ON SOIL BORINGS PREFORMED NEAR THE WWTP SITE. IF DURING INITIAL EXCAVATION THE BEDROCK ELEVATION DIFFERS, THE TREATMENT PLANT CAN BE ADJUSTED AS NECESSARY AFTER APPROVAL OF R.D. ZANDE AND MACK INDUSTRIES.

WASTEWATER TREATMENT FACILITY PLAN AND HYDRAULIC PROFILE
 SCIOTO RESERVE
 DELAWARE COUNTY, OHIO

DRAWN BY:	ADM	9/22/98 ADM
CHECKED BY:		11/11/98 ADM
DATE:	8/19/98	12/1/98 ADM
SCALE:	1/8"=1'	12/21/98 ADM
DRAWING NO.	2983178W	SHT. 1 OF 10

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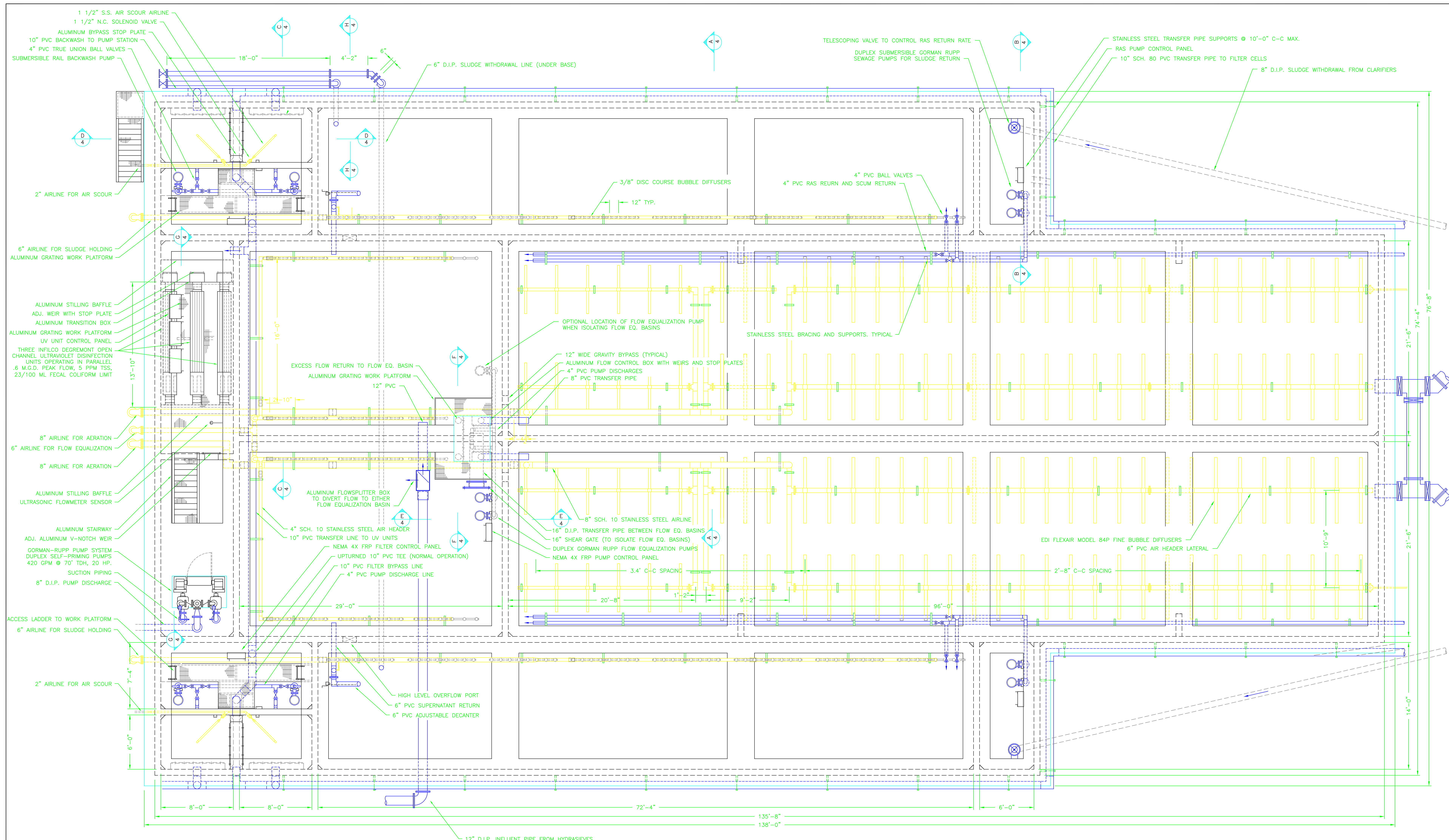
INFLUENT PUMP STATION, STAND-BY GENERATOR, AND BLOWER DETAILS

SCIOTO RESERVE
DELAWARE COUNTY, OHIO

DRAWN BY:	ADM	REVISIONS:
CHECKED BY:	9/22/98 ADM	
DATE:	8/22/98	11/11/98 CJ
SCALE:	3/8"=1'	4/8/99 ADM
DRAWING NO.	2983178B	SHT. 2 OF 10

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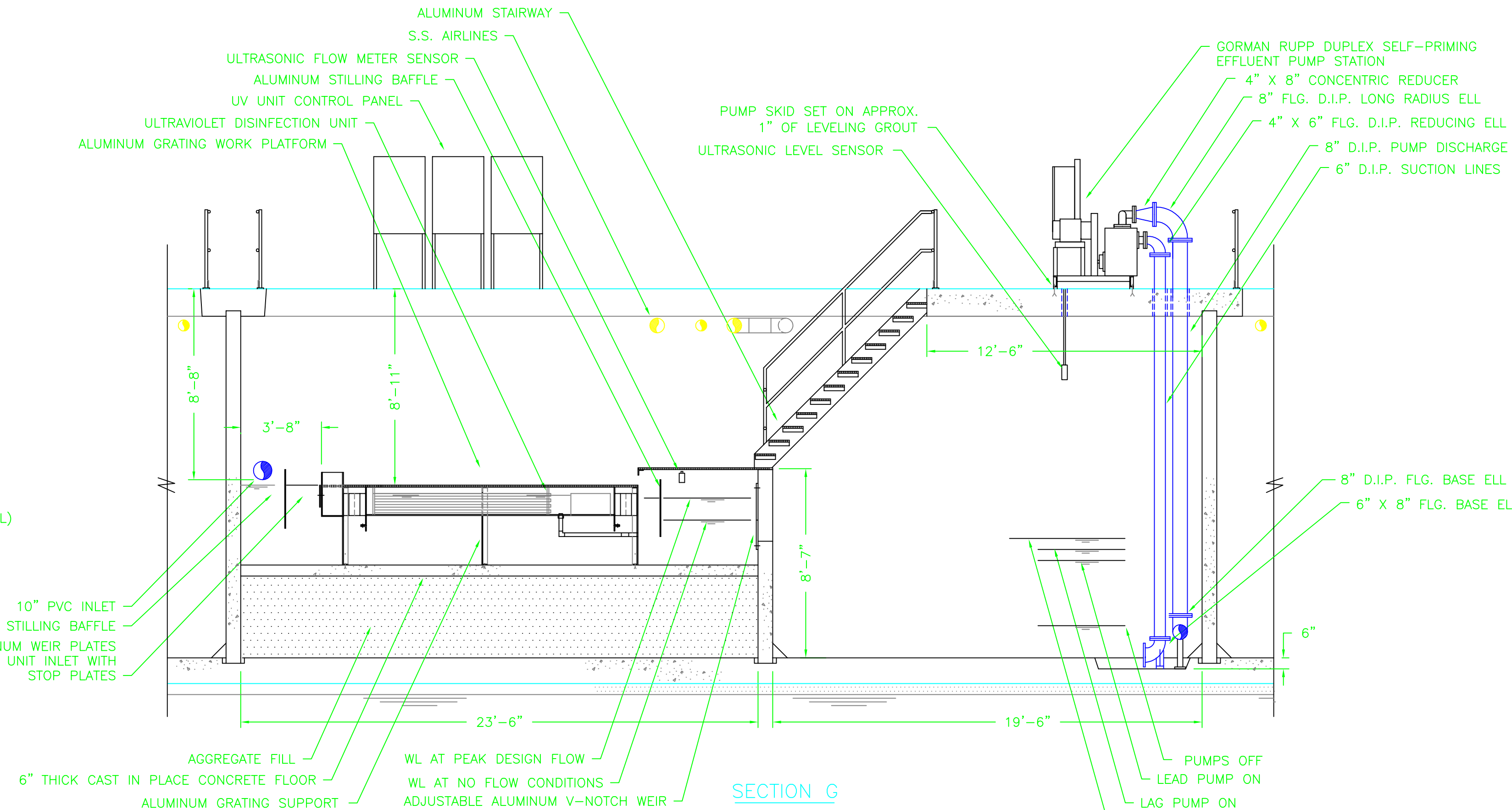
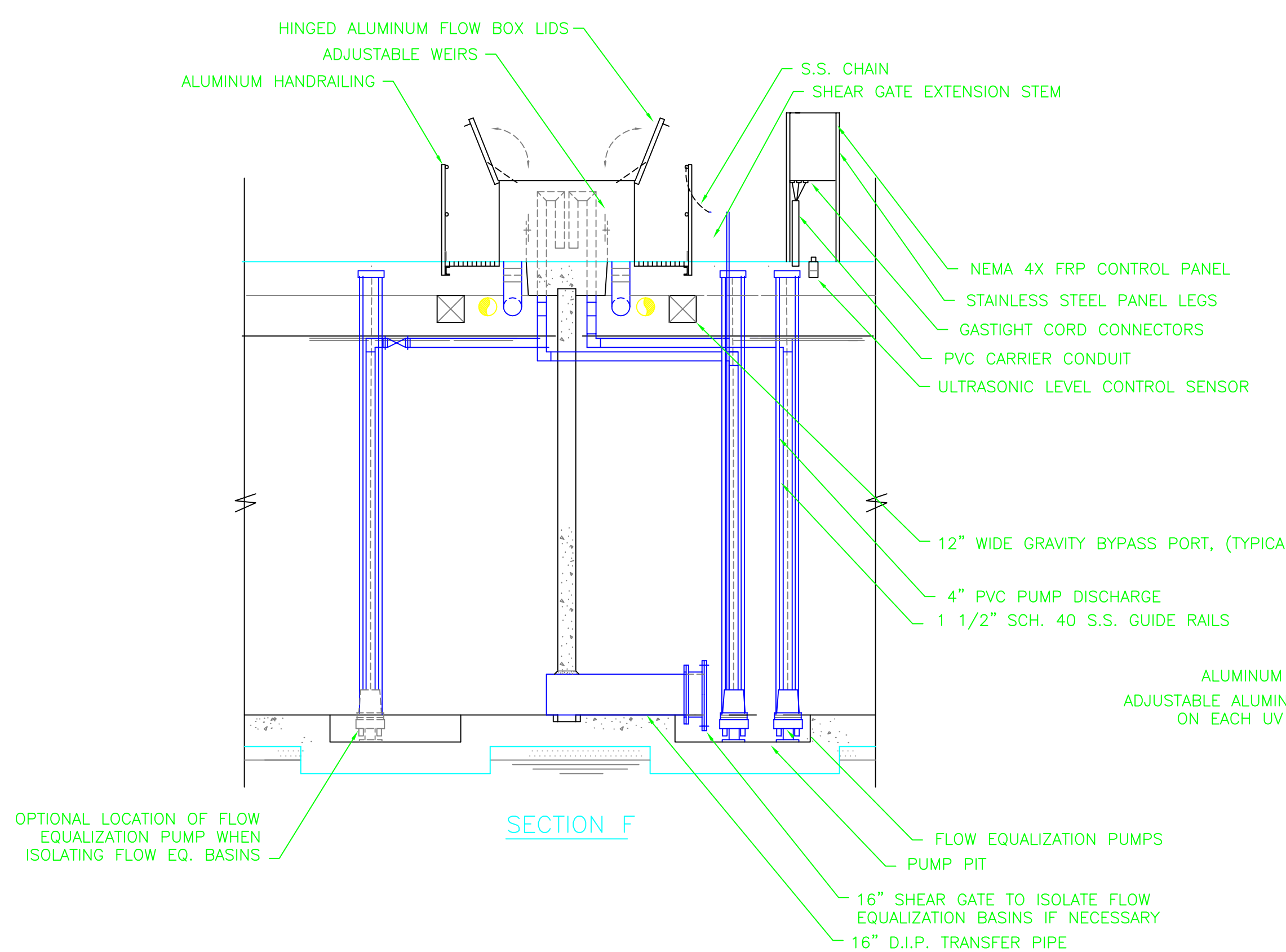
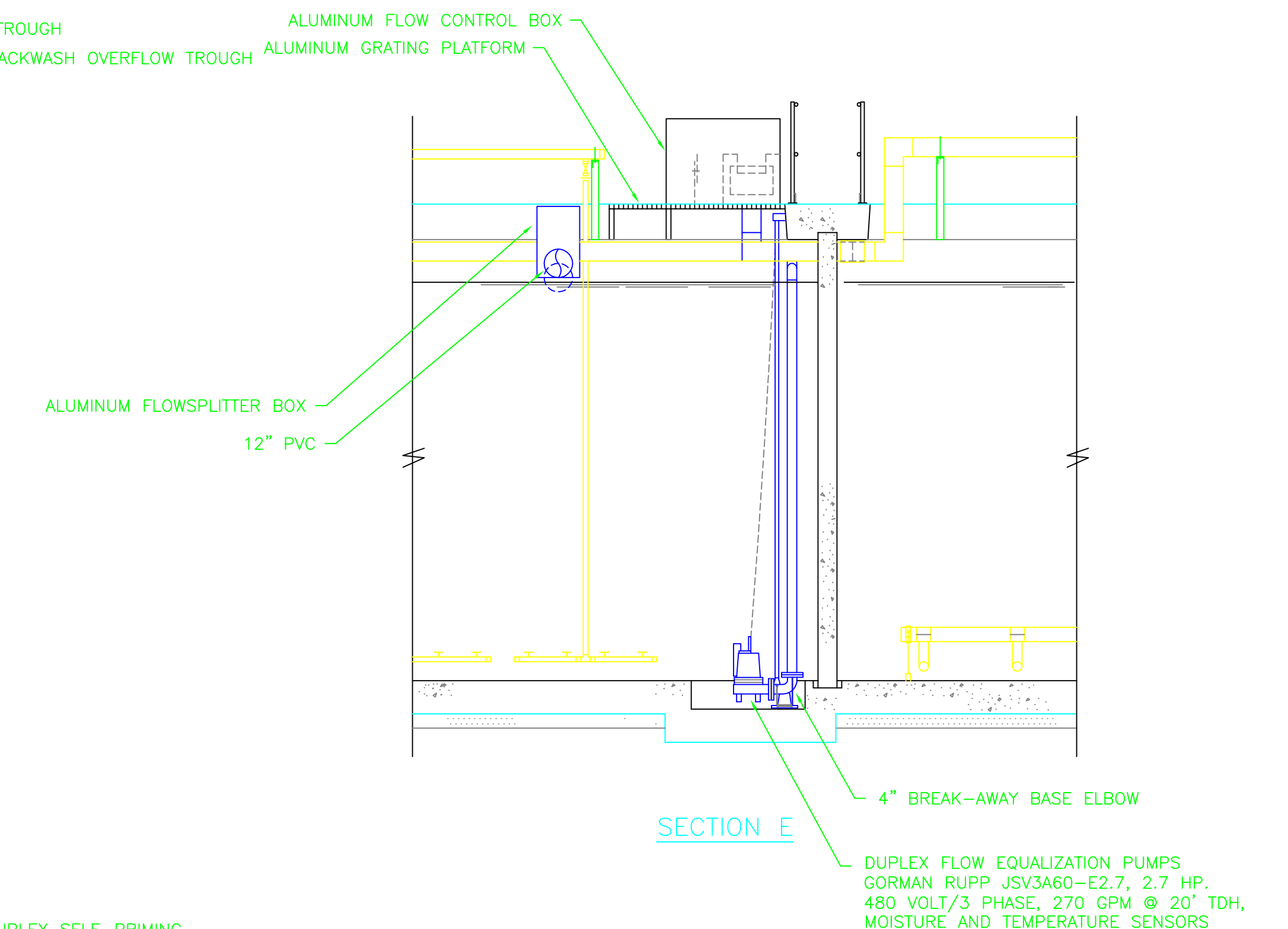
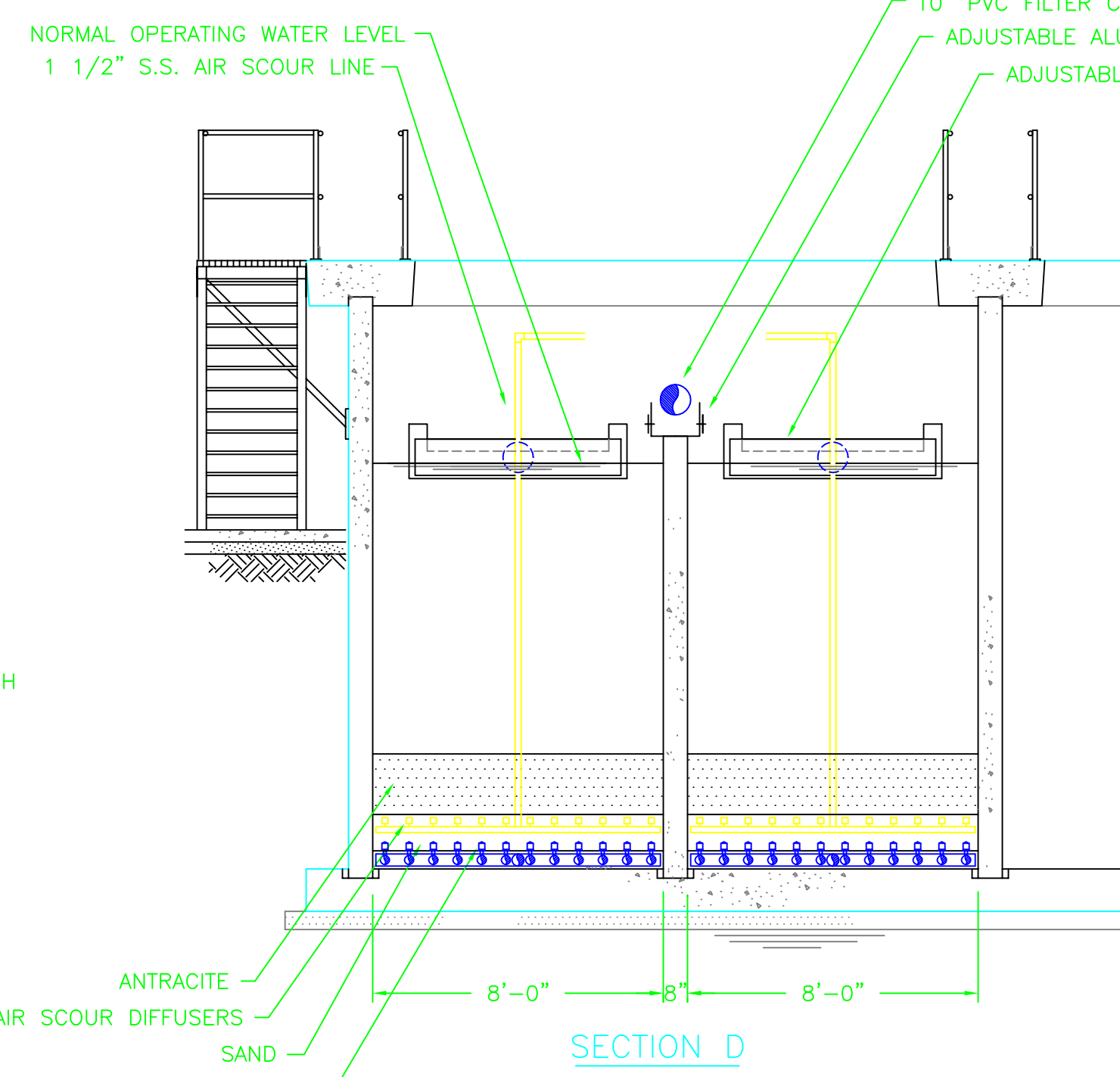
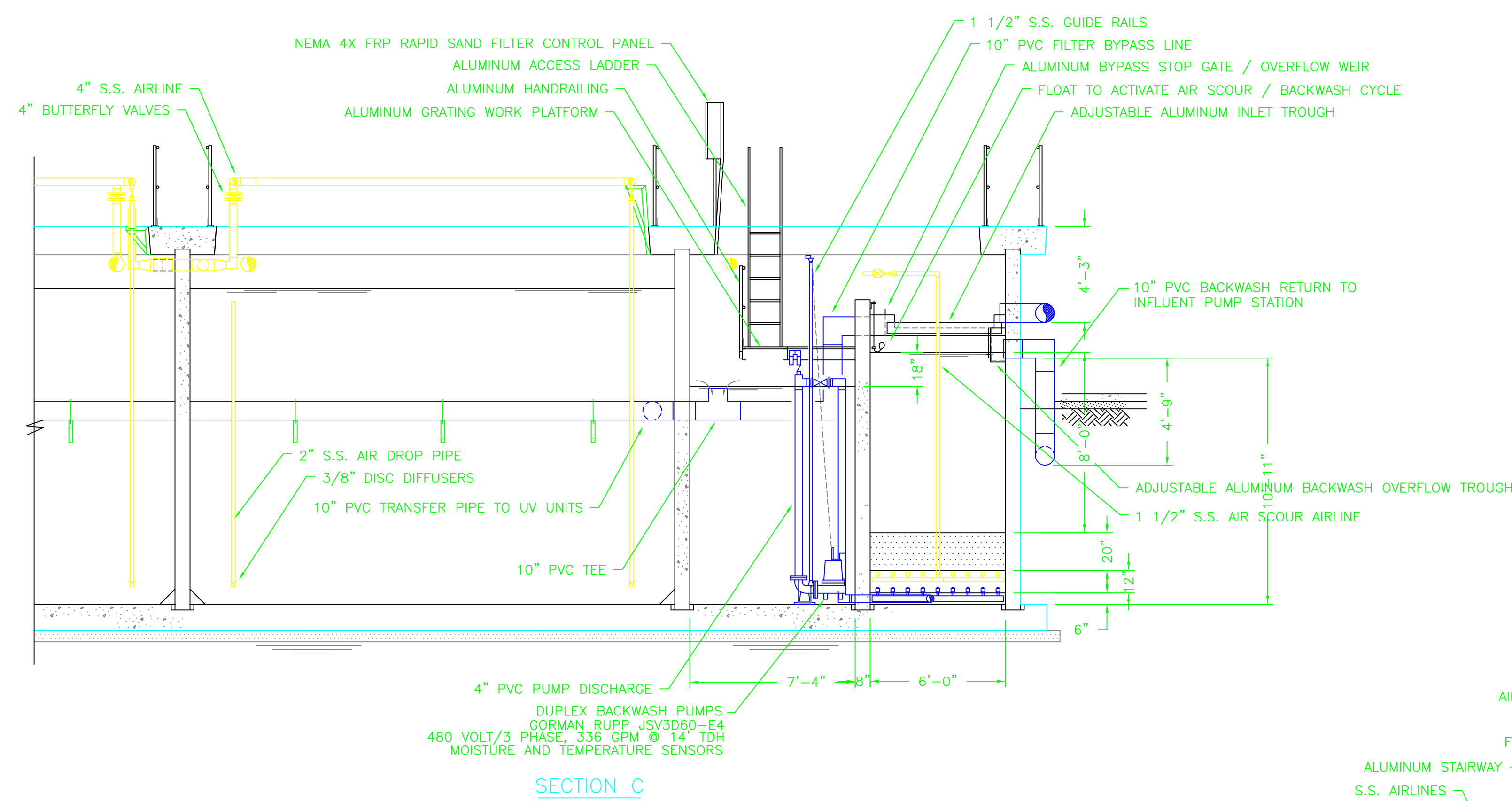
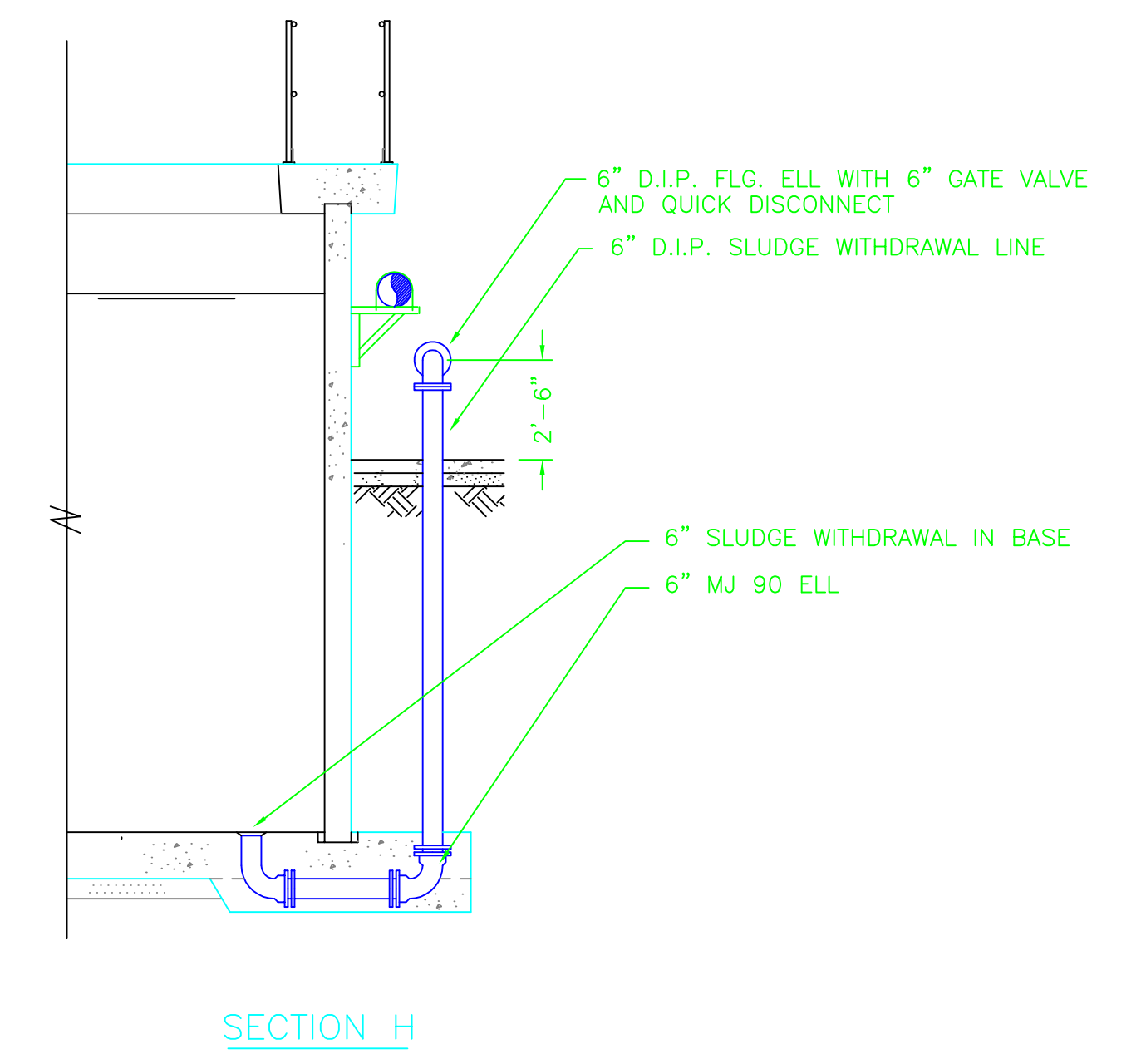
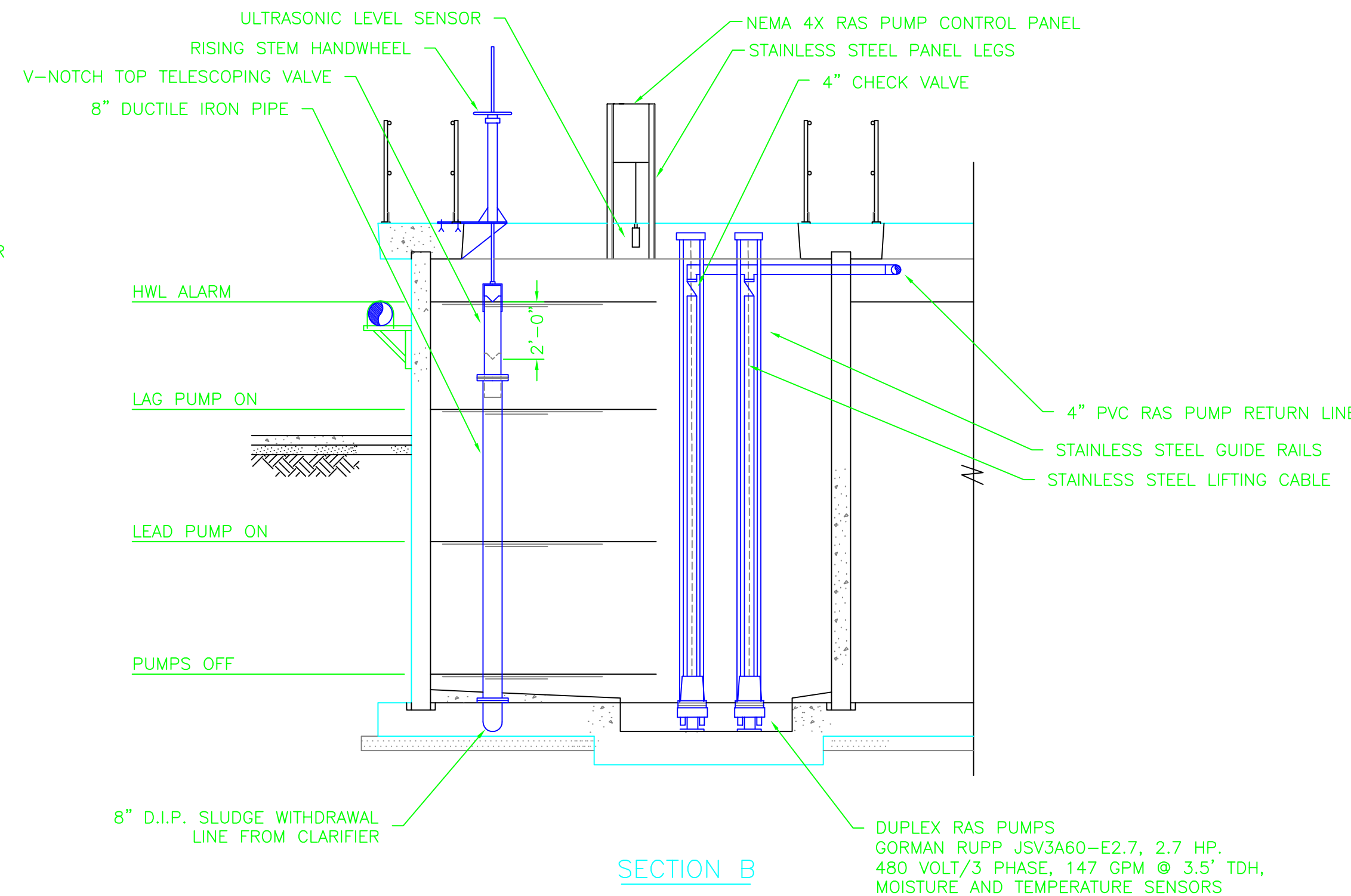
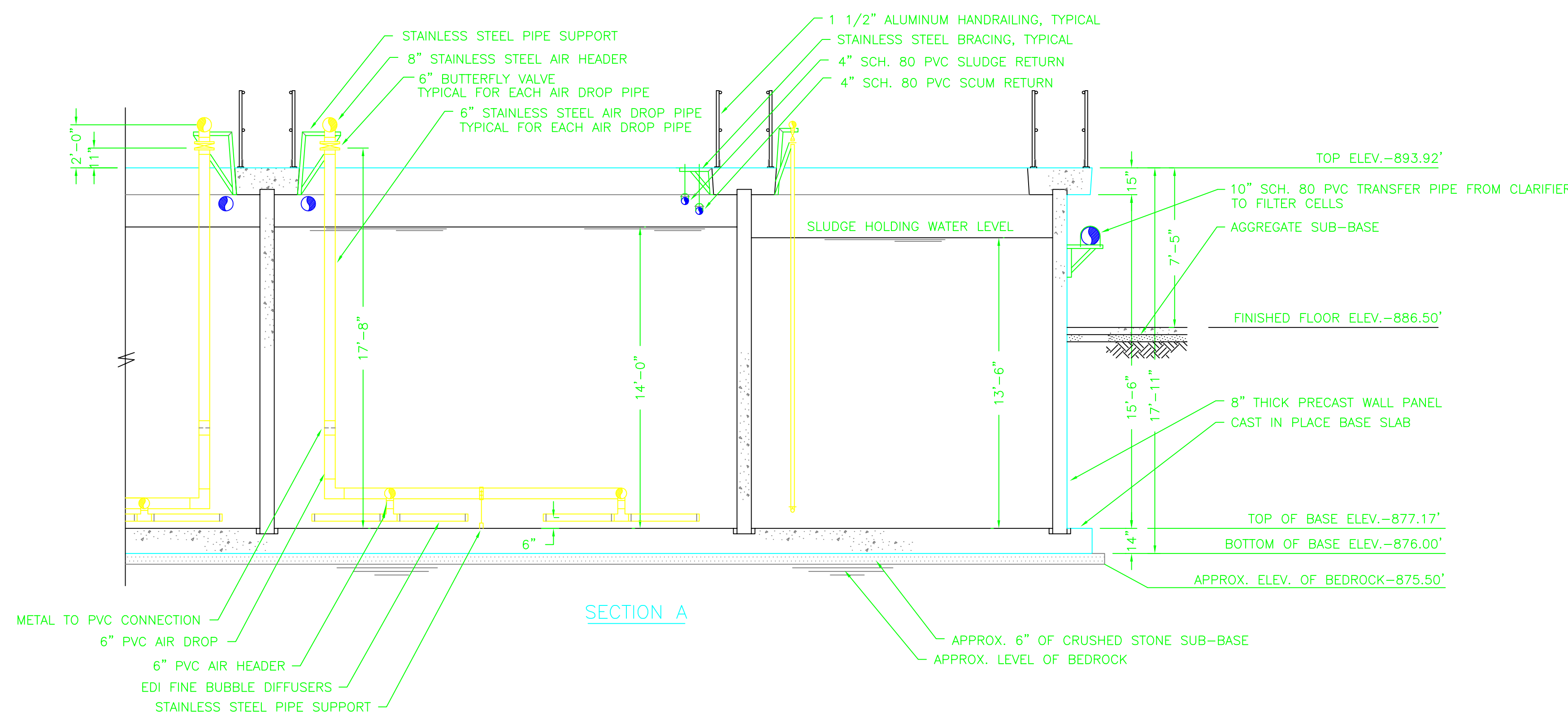


- PIPING AND BRACING NOTES:**
- ALL AIRLINE PIPING SHALL BE TYPE 304 STAINLESS STEEL.
4" DIA. AND LARGER TO BE SCHEDULE 10 WITH BUTT WELDED FITTING.
3" AND SMALLER TO BE SCHEDULE 40 WITH THREADED FITTINGS.
 - ALL SLUDGE AND TRANSFER PIPING SHALL BE SCHEDULE 80 PVC.
 - PIPE SUPPORTS, HANGERS, FASTENERS ETC. SHALL TYPE 304 STAINLESS STEEL.
- 11/15/98 REVISIONS**
- DELETED RECTANGULAR CLARIFIERS
 - ADDED INFLUENT SPLITTER BOX IN ORDER TO ISOLATE FLOW EQUALIZATION BASINS
 - ADDED OPTIONAL LOCATION FOR FLOW EQUALIZATION PUMP
 - ADDED GRAVITY BYPASSES FROM FLOW EQUALIZATION TO AERATION BASINS
 - ALL PUMPS CHANGED TO GORMAN RUPP
 - CHANGED AERATION SYSTEM TO FLOOR COVERAGE EDI DIFFUSERS
 - CHANGED UV UNITS TO VERTICAL UNITS
 - ADDED ELECTRIC SLUDGE PUMPS FOR RAS AND WASTE SLUDGE.
- 12/1/98 REVISIONS**
- CHANGED UV UNITS BACK TO HORIZONTAL
 - DELETED HOIST SOCKETS (ADDED OVERHEAD TROLLEY SYSTEM)
- 2/18/99 REVISIONS**
- ADDED ANOXIC ZONES AND REVISED DIFFUSERS SPACING PER R.D. ZANDE'S REQUEST

PLAN VIEW WASTEWATER TREATMENT FACILITY	
SCIOTO RESERVE DELAWARE COUNTY, OHIO	
DRAWN BY:	ADM REVISIONS:
CHECKED BY:	9/22/98 2/18/99 ADM
DATE:	8/14/98 11/15/98 ADM
SCALE:	1/4"=1' 12/1/98 ADM
DRAWING NO.	2983178X SHT. 3 OF 10

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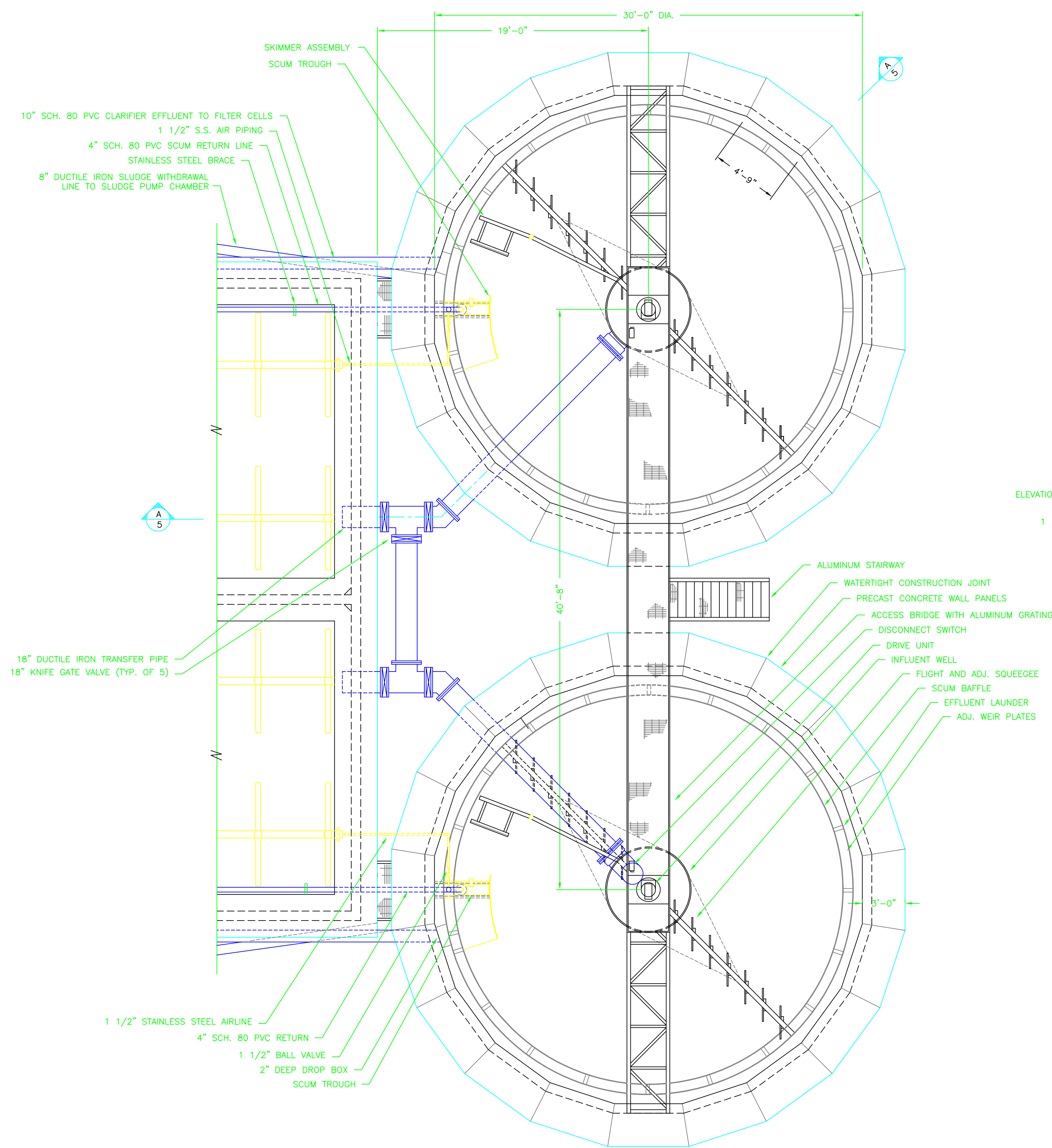


- 11/14/98 REVISIONS
 1. CHANGED SECTION 'B' (DELETED RECTANGULAR SECTION AND ADDED SECTION THRU RAS CHAMBER)
 2. REVISED ALL SECTION VIEWS TO CONFORM TO REVISIONS MADE ON PLAN VIEW SHEET 3 OF 6.
 12/1/98 REVISIONS
 1. CHANGED UV UNITS TO HORIZONTAL TYPE.
 12/21/98 REVISIONS
 1. CHANGED ELEVATIONS PER R.D. ZANDE'S COMMENTS.

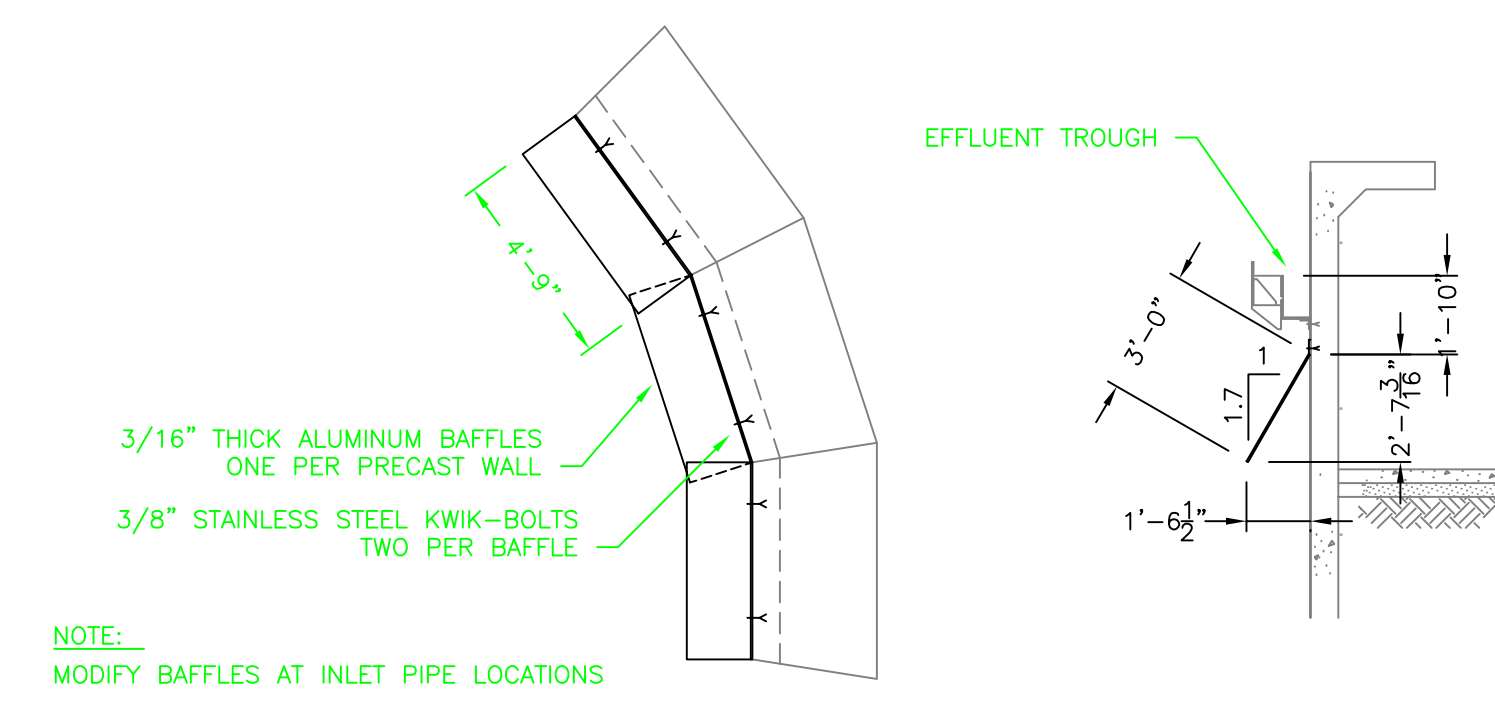
SECTION VIEWS WASTEWATER TREATMENT FACILITY		
SCIOTO RESERVE DELAWARE COUNTY, OHIO		
DRAWN BY:	ADM	9/22/98 ADM
CHECKED BY:		11/14/98 ADM
DATE:	8/17/98	12/1/98 ADM
SCALE:	1/4"=1'	12/21/98 ADM
DRAWING NO.	2983178Y	SHT. 4 OF 10

MACK INDUSTRIES, INC.

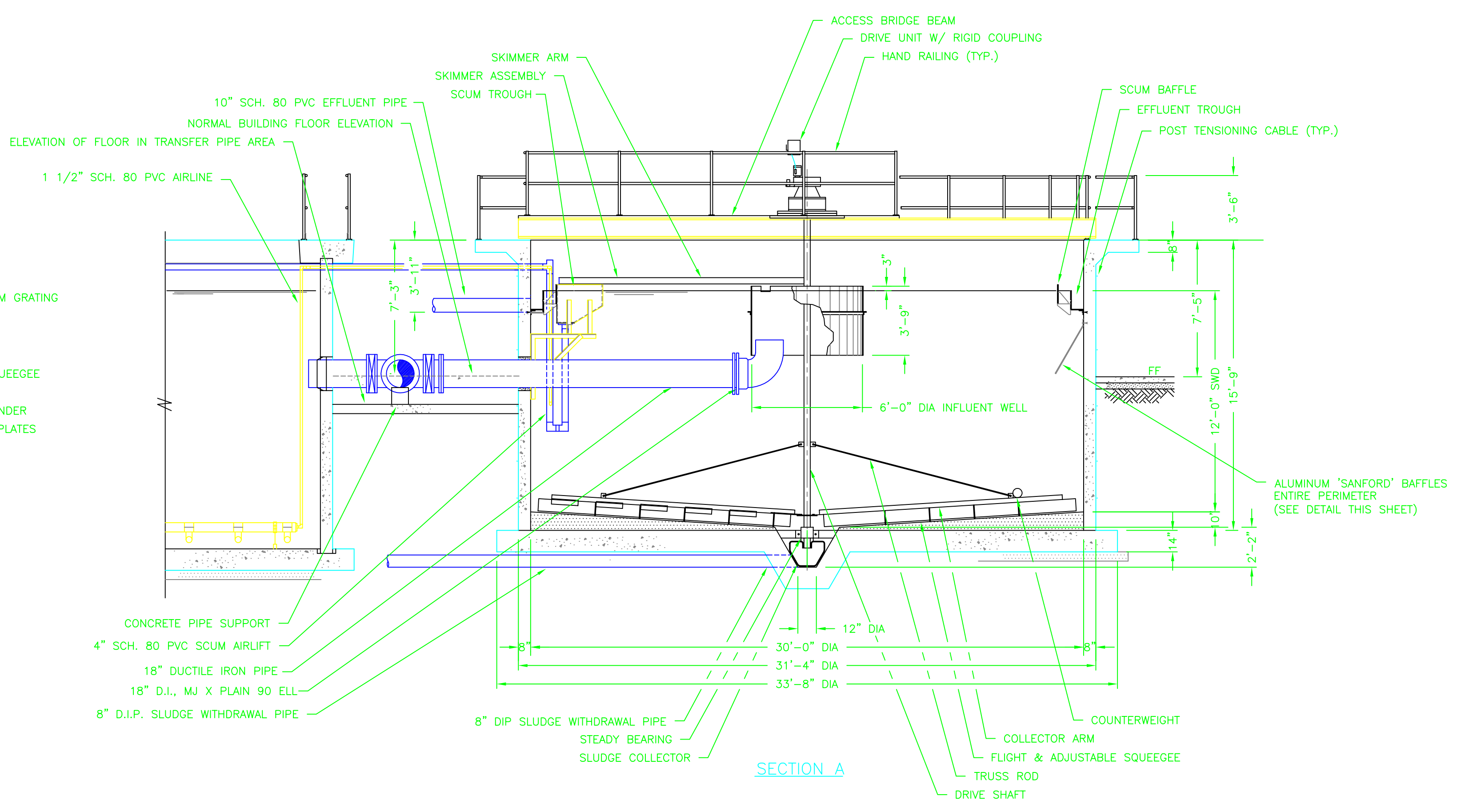
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 VALLEY CITY, OHIO 44280
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PLAN VIEW



"SANFORD" BAFFLE DETAIL

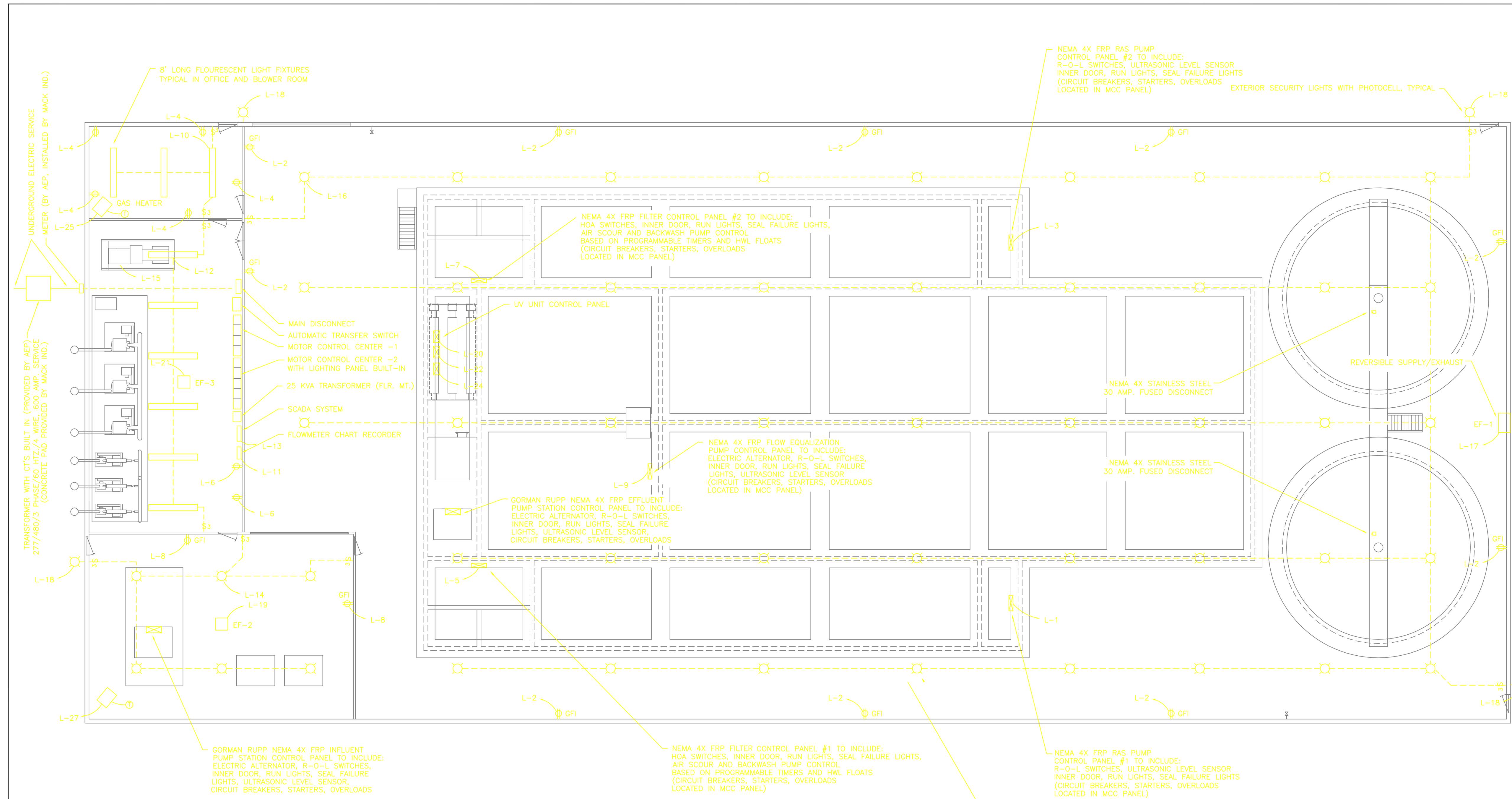


SECTION A

MACK INDUSTRIES, INC.

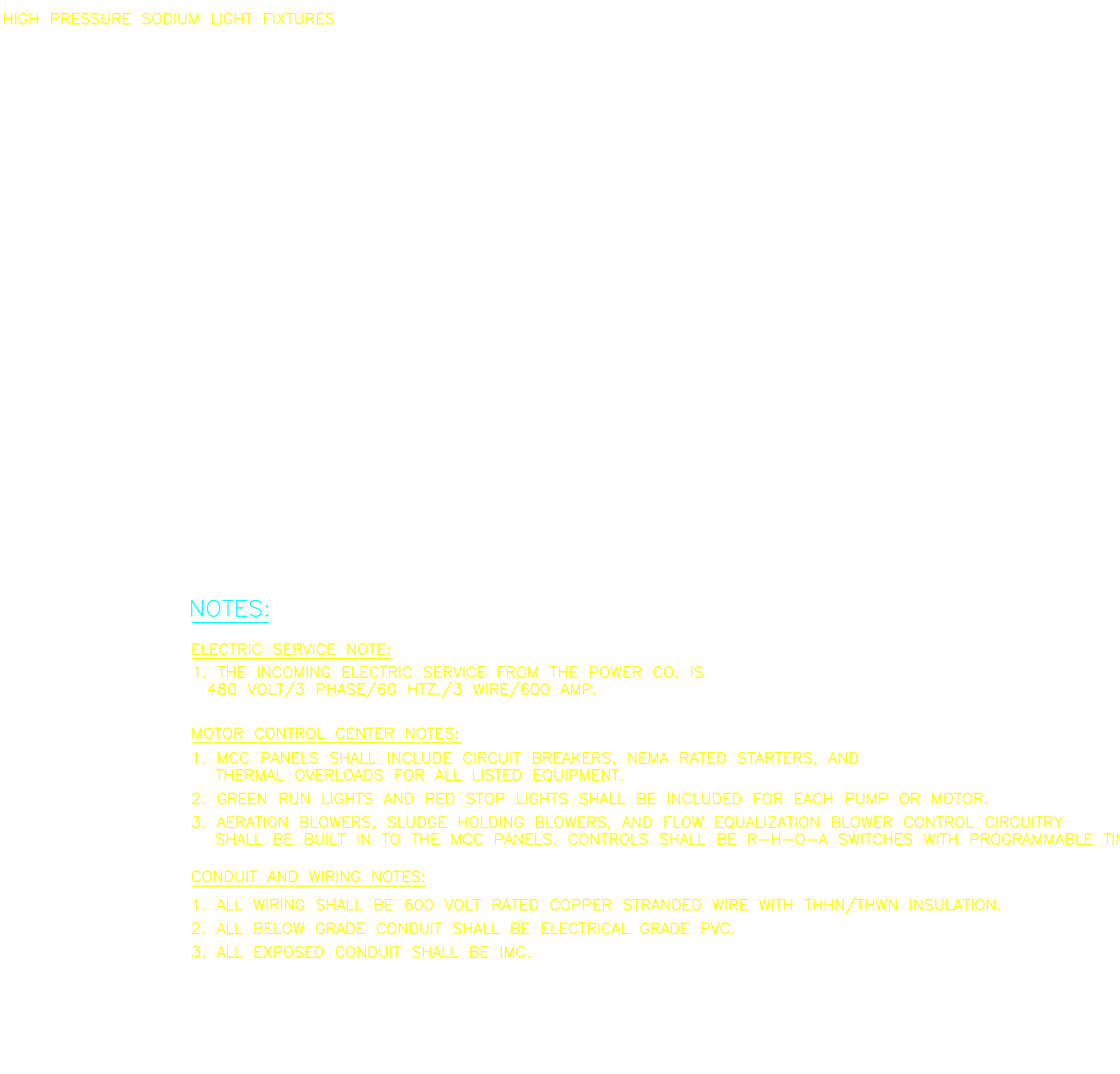
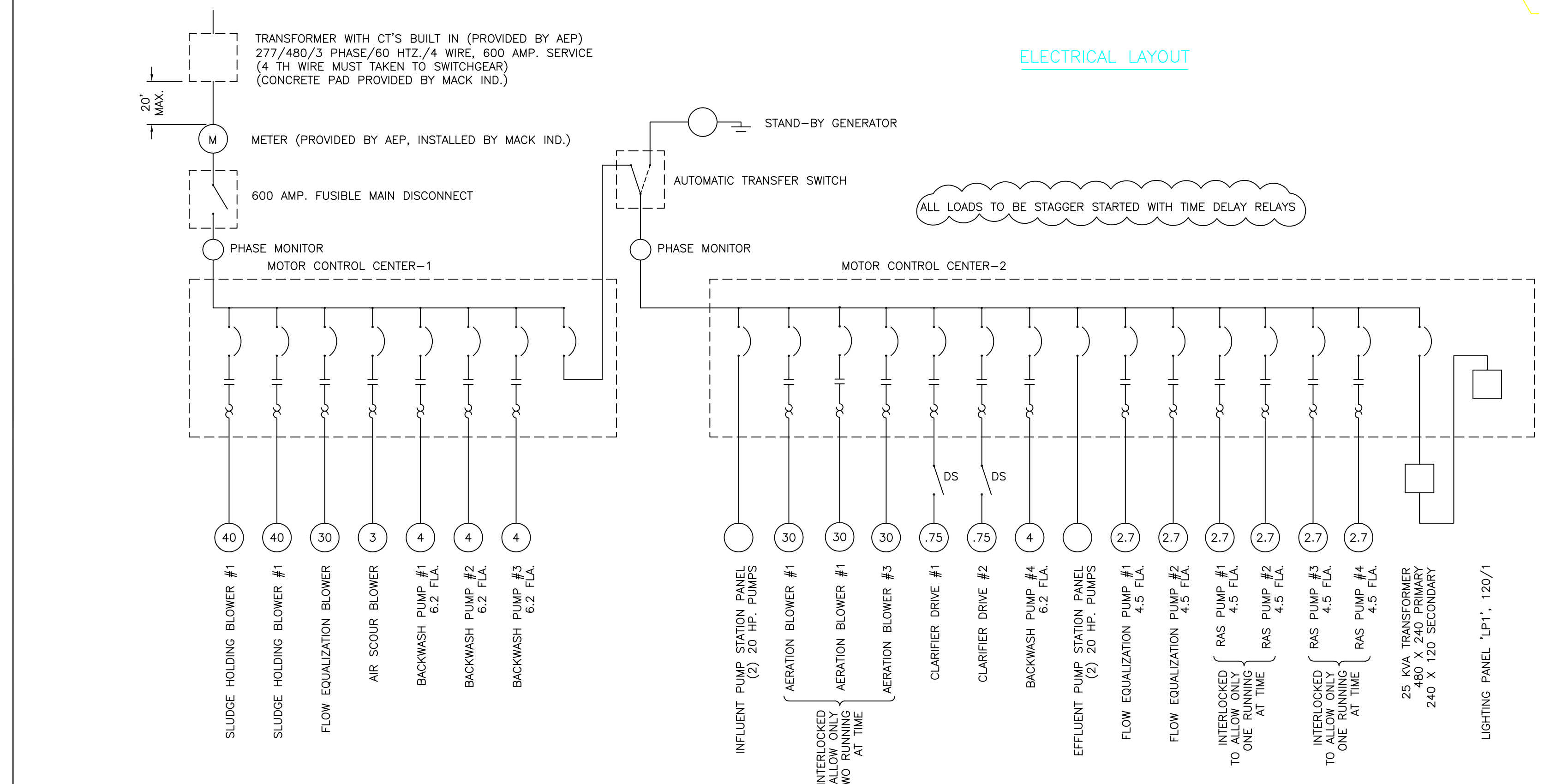
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CIRCULAR CLARIFIERS	
SCIOTO RESERVE DELAWARE COUNTY, OHIO	
DRAWN BY: ADM	REVISIONS:
CHECKED BY:	11/17/98 CJ
DATE: 11/16/98	3/31/99 ADM
SCALE: 1/4" = 1'-0"	
DRAWING NO. 2983178Z	SHT. 5 OF 10



SCADA MONITORING AND REMOTE CONTROL LIST

EQUIPMENT ITEM	MONITORING	REMOTE CONTROL	LOCAL CONTROL
LOSS OF POWER	STATUS	NONE	NONE
BUILDING INTRUSION	STATUS	NONE	NONE
RTU PANEL INTRUSION	STATUS	NONE	NONE
RTU BATTERY VOLTAGE	STATUS	NONE	NONE
FLOW METERING (4-20 ma)	ANALOG	NONE	NONE
FLOW TOTALIZATION	ANALOG	NONE	NONE
INFLUENT PS WATER LEVEL	ANALOG	NONE	NONE
INFLUENT PS HIGH WATER LEVEL	STATUS	NONE	NONE
INFLUENT PUMP #1	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
INFLUENT PUMP #2	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
EFFLUENT PS WATER LEVEL	ANALOG	NONE	NONE
EFFLUENT PS HIGH WATER LEVEL	STATUS	NONE	NONE
EFFLUENT PUMP #1	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
EFFLUENT PUMP #2	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
FLOW EQ. BASIN WATER LEVEL	ANALOG	NONE	NONE
FLOW EQ. BASIN HIGH WATER	STATUS	NONE	NONE
FLOW EQ. PUMP #1	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
FLOW EQ. PUMP #1 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
FLOW EQ. PUMP #2 SEAL FAILURE	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
FLOW EQ. PUMP #2 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
BACKWASH PUMP #1	STATUS	NONE	OFF, ON, AUTO, TIMER
BACKWASH PUMP #1 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
BACKWASH PUMP #2	STATUS	NONE	OFF, ON, AUTO, TIMER
BACKWASH PUMP #2 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
BACKWASH PUMP #3	STATUS	NONE	OFF, ON, AUTO, TIMER
BACKWASH PUMP #3 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
BACKWASH PUMP #4	STATUS	NONE	OFF, ON, AUTO, TIMER
BACKWASH PUMP #4 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
RAS PUMP #1	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
RAS PUMP #1 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
RAS PUMP #2	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
RAS PUMP #2 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
RAS PUMP #1 & #2 BASIN WATER LEVEL	ANALOG	NONE	NONE
RAS PUMP #3	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
RAS PUMP #3 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
RAS PUMP #4	STATUS	OFF, ON, AUTO	OFF, ON, AUTO
RAS PUMP #4 SEAL FAILURE	STATUS	NONE	NONE (SHUT OFF)
RAS PUMP #3 & #4 BASIN WATER LEVEL	ANALOG	NONE	NONE
FILTER CELL #1 AIR SCOUR	STATUS	NONE	OFF, ON, AUTO, TIMER
FILTER CELL #2 AIR SCOUR	STATUS	NONE	OFF, ON, AUTO, TIMER
FILTER CELL #3 AIR SCOUR	STATUS	NONE	OFF, ON, AUTO, TIMER
FILTER CELL #4 AIR SCOUR	STATUS	NONE	OFF, ON, AUTO, TIMER
UV UNITS	STATUS	NONE	OFF, ON
CLARIFIER DRIVE #1	STATUS	NONE	OFF, ON
CLARIFIER DRIVE #2	STATUS	NONE	OFF, ON
STAND-BY GENERATOR	STATUS	NONE	OFF, ON, AUTO-TRANSFER
BLOWER #1 (AERATION)	STATUS	OFF, ON, TIMER	OFF, ON, TIMER
BLOWER #2 (AERATION)	STATUS	OFF, ON, TIMER	OFF, ON, TIMER
BLOWER #3 (AERATION)	STATUS	OFF, ON, TIMER	OFF, ON, TIMER
BLOWER #4 (FLOW EQ.)	STATUS	OFF, ON, TIMER	OFF, ON, TIMER
BLOWER #5 (SLUDGE HOLDING)	STATUS	OFF, ON, TIMER	OFF, ON, TIMER
BLOWER #6 (SLUDGE HOLDING)	STATUS	OFF, ON, TIMER	OFF, ON, TIMER
BLOWER #7 (AIR SCOUR)	STATUS	NONE	OFF, ON, AUTO, TIMER



NOTES:

ELECTRIC SERVICE NOTE:
 1. THE INCOMING ELECTRIC SERVICE FROM THE POWER CO. IS 480 VOLT/3 PHASE/60 HZ/3 WIRE/600 AMP.

MOTOR CONTROL CENTER NOTES:
 1. MCC PANELS SHALL INCLUDE CIRCUIT BREAKERS, NEMA RATED STARTERS, AND THERMAL OVERLOADS FOR ALL LISTED EQUIPMENT.
 2. GREEN RUN LIGHTS AND RED STOP LIGHTS SHALL BE INCLUDED FOR EACH PUMP OR MOTOR.
 3. AERATION BLOWERS, SLUDGE HOLDING BLOWERS, AND FLOW EQUALIZATION BLOWER CONTROL CIRCUITRY SHALL BE BUILT IN TO THE MCC PANELS. CONTROLS SHALL BE R-H-O-A SWITCHES WITH PROGRAMMABLE TIMERS.

CONDUIT AND WIRING NOTES:
 1. ALL WIRING SHALL BE 600 VOLT RATED COPPER STRANDED WIRE WITH THHN/THWN INSULATION.
 2. ALL BELOW GRADE CONDUIT SHALL BE ELECTRICAL GRADE PVC.
 3. ALL EXPOSED CONDUIT SHALL BE IMC.

11/21/98 REVISION LIST
 1. REVISED ALL EQUIPMENT AND CIRCUITRY TO CONFORM TO ALL REVISIONS MADE ON SHEETS 1 THRU 6
 2. ADDED SCADA MONITORING AND REMOTE CONTROL LIST.
12/1/98 REVISION LIST
 1. REVISED UV CIRCUITRY.

SINGLE LINE DIAGRAM
 REVISED 2/4/99

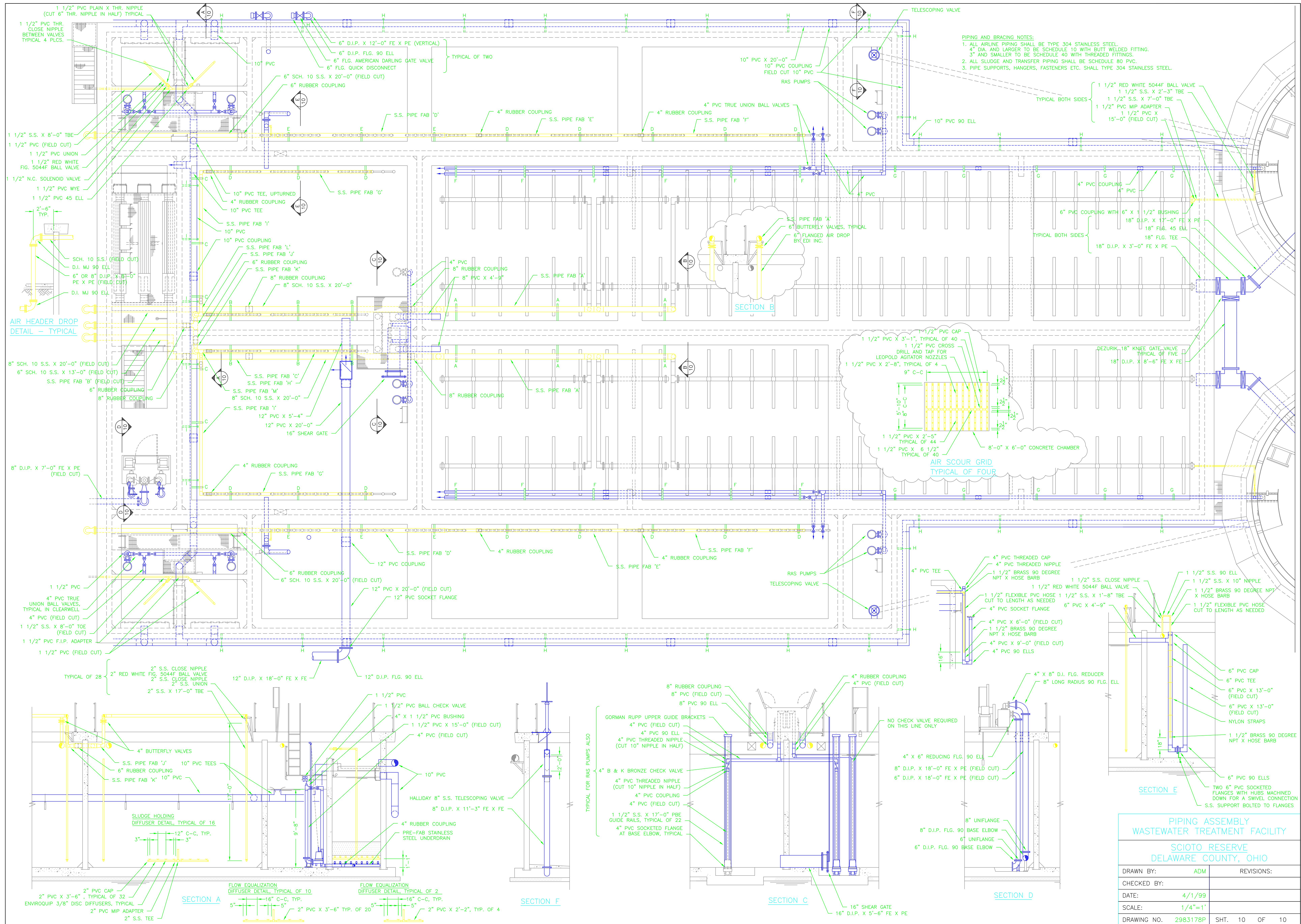
**WASTEWATER TREATMENT FACILITY
 ELECTRICAL DIAGRAM AND LAYOUT**

**SCIOTO RESERVE
 DELAWARE COUNTY, OHIO**

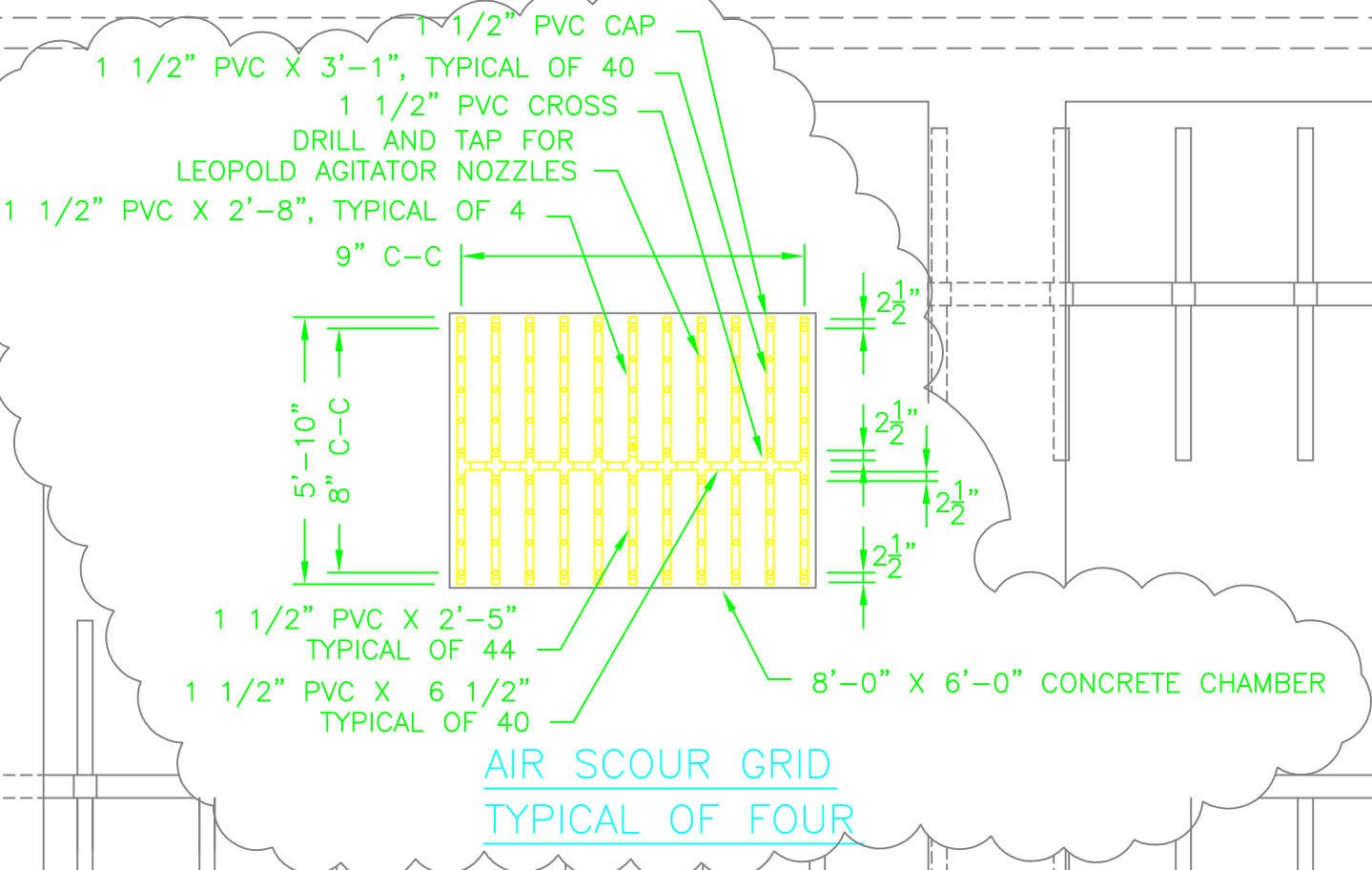
DRAWN BY:	ADM	REVISIONS:
CHECKED BY:	9/22/98 ADM	4/1/99 ADM
DATE:	9/2/98	11/21/98 ADM
SCALE:	1/8"=1'	12/1/98 ADM
DRAWING NO.	2983178V	SHT. 6 OF 10

MACK INDUSTRIES, INC.

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 (330) 483-3111



PIPING AND BRACING NOTES:
 1. ALL AIRLINE PIPING SHALL BE TYPE 304 STAINLESS STEEL.
 4" DIA. AND LARGER TO BE SCHEDULE 10 WITH BUTT WELDED FITTING.
 3" AND SMALLER TO BE SCHEDULE 40 WITH THREADED FITTINGS.
 2. ALL SLUDGE AND TRANSFER PIPING SHALL BE SCHEDULE 80 PVC.
 3. PIPE SUPPORTS, HANGERS, FASTENERS ETC. SHALL TYPE 304 STAINLESS STEEL.



PIPING ASSEMBLY WASTEWATER TREATMENT FACILITY	
SCIOTO RESERVE DELAWARE COUNTY, OHIO	
DRAWN BY:	ADM
CHECKED BY:	
DATE:	4/1/99
SCALE:	1/4"=1'
DRAWING NO.	2983178P
SHT.	10 OF 10