

NOTE
 1. ON ALL CONDUIT RUNS EXITING THE GROUND AND SECURED TO A WALL OR STRUCTURE THE CONTRACTOR SHALL INSTALL AN EXPANSION FITTING AS CLOSE AS PRACTICAL TO THE GROUND EXIT POINT, BEFORE THE FIRST WALL SUPPORT DEVICE.

FOR PLAN CONTINUATION SEE DRAWING 220-SE3

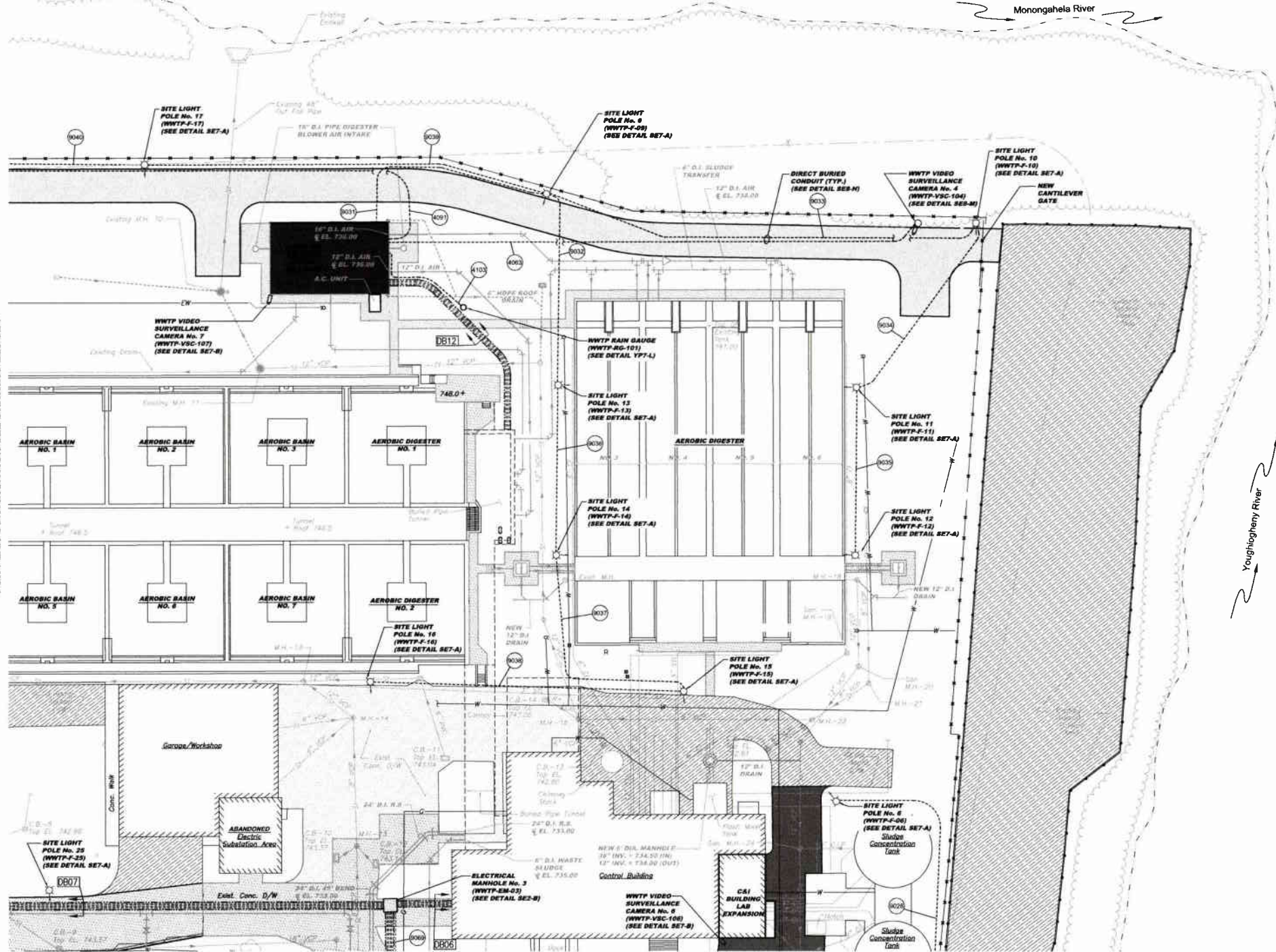
WWTP ELECTRICAL ENLARGED SITE PLAN
SE4-A
 SCALE: 1" = 20'

FOR PLAN CONTINUATION SEE DRAWING 220-SE5

Scale:	1" = 20'	Revision:	
Date:	DEC. 2010	Date:	
Drawn By:	DCW	Revision:	RELEASE FOR BID
Checked By:	MLM	Date:	L-2011
Approved By:	gao	Date:	
Sheet No.	4	8173 CAMPBELL BLVD PITTSBURGH, PA 15203 PHONE: 412-445-9438 FAX: 412-445-9438 INFO@KLHENGINEERS.COM	
Drawing No.	220-SE4	MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION WWTP ELECTRICAL ENLARGED SITE PLAN SHEET 3 OF 4	



FOR PLAN CONTINUATION SEE DRAWING 220-SE4



FOR PLAN CONTINUATION SEE DRAWING 220-SE4

WWTP ELECTRICAL ENLARGED SITE PLAN

SE5-A

SCALE: 1" = 20'

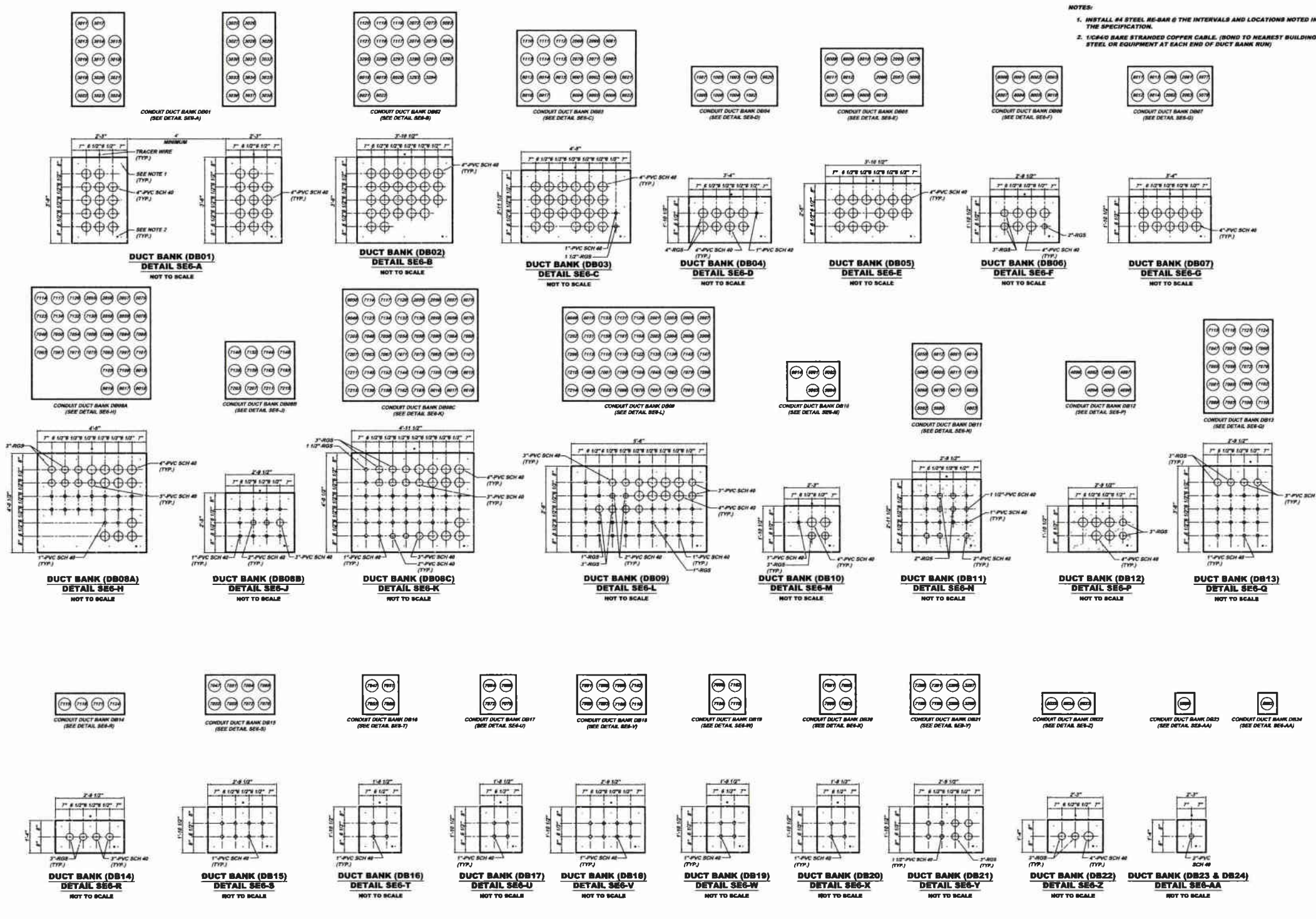
Scale:	1" = 20'	Date:	DEC 2010
Drawn By:	DCW	Revisions:	RELEASE FOR BID
Checked By:	MJM	Date:	
Approved By:	SHG	Drawn:	
Sheet No.:	5	Checked:	
Drawing No.:	220-SE5	Approved:	

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MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 WWTP ELECTRICAL ENLARGED SITE PLAN SHEET 4 OF 4

- NOTES:**
1. INSTALL #4 STEEL RE-BAR @ THE INTERVALS AND LOCATIONS NOTED IN THE SPECIFICATION.
 2. 1/4"Ø COPPER STRANDED COPPER CABLE (BOND TO NEAREST BUILDING STEEL OR EQUIPMENT AT EACH END OF DUCT BANK RUN)



Revision	Date	By	Check	Appr.
1	12/11/11	MM	MM	MM
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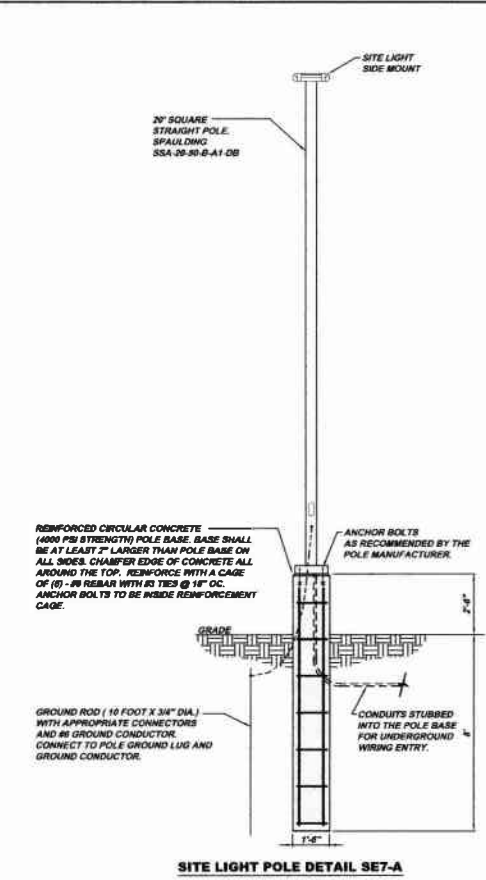
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**MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
 ALLEGANY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 WWTPL ELECTRICAL DUCT BANK DETAILS**

Scale: As Shown
 Date: DEC. 2010
 Drawn By: DCW
 Checked By: M.M.
 Approved By: SWS

Sheet No. 6
 Drawing No. 220-SE6

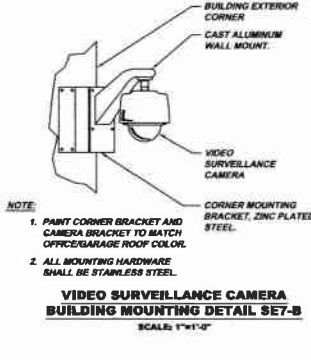


SITE LIGHT POLE DETAIL SE7-A
SCALE: 3/8" = 1'-0"

ELECTRICAL LEGEND	
UNDERGROUND DUCT BANK	---
UNDERGROUND CONDUIT	---
ABOVEGROUND CONDUIT	---
CONDUIT ELBOW, TURNING DOWNWARDS	---
CONDUIT ELBOW, TURNING UPWARDS	---
SEE DUCT BANK DETAILS DRAWING 220-369	DB01
GROUND ROD CONNECTION	⊕
LIQUDTIGHT FLEXIBLE METAL CONDUIT OR EXPLOSION PROOF COUPLING	⊕
CONDUIT DESIGNATION NUMBER SEE SPECIFICATION SECTION 16100	⊕
JUNCTION BOX	⊕
THERMOSTAT	⊕
120V QUAD RECEPTACLE	⊕
120V DUPLEX RECEPTACLE	⊕
120V SINGLE RECEPTACLE	⊕
208V SINGLE RECEPTACLE	⊕
SINGLE POLE SWITCH	⊕
THREE WAY SWITCH	⊕
SINGLE POLE SWITCH (PILOT GLOWS WHEN SWITCH IS ON)	⊕
DATA NETWORK RECEPTACLE	⊕
TELEPHONE RECEPTACLE	⊕
FAX RECEPTACLE	⊕
MOTOR	⊕
SWITCH OCCUPANCY SENSOR	⊕

ABBREVIATIONS	
A	AMPERES
AC	ALTERNATING CURRENT
AL	ALARM
AWG	AMERICAN WIRE GAUGE
CB	CIRCUIT BREAKER
CP	CONTROL PANEL
CP	CONTROL PANEL
DB	DUCT BANK
DC	DIRECT CURRENT
DS	DISCONNECT SWITCH
DWG	DRAWING
EF	EXHAUST FAN
EX	EXPLSION PROOF
FU	TUBE
FVNR	FULL VOLTAGE NON-REVERSING
GFCL	GROUND FAULT CIRCUIT INTERRUPTER
GND	GROUND
H	HOT
HP	HORSEPOWER
HS	HOT
HW	HOT WATER HEATER
HW	HOT WATER
KCMIL	THOUSAND CIRCULAR MILS
LIT	LEVEL INDICATING TRANSMITTER
LPMC	LIQUDTIGHT FLEXIBLE METAL CONDUIT
LP	LIGHTING PANEL
LT	LEVEL TRANSMITTER
LV	LOUVER
MA	MILLIAMPERES
MCC	MOTOR CONTROL CENTER
MCCB	MOLDED CASE CIRCUIT BREAKER
MCP	MOTOR CIRCUIT PROTECTOR
MOP	MOTOR OPERATED VALVE
MMS	MANUAL MOTOR STARTER
MTR	MOTOR
MS	MOTOR STARTER
N	NEUTRAL
OC	OVERLOAD
P	PUMP
PS	PUSH BUTTON
PH	PHASE
PS	PRESSURE SWITCH
RT	ROOM THERMOSTAT
PVC	POLY VINYL CHLORIDE
REC	RECEPTACLE
RSG	RIGID GALVANIZED STEEL SCREEN
TH	THERMOSTAT
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSER
UH	UNIT HEATER
V	VOLTS
VFD	VARIABLE FREQUENCY DRIVE
W	WIRE
WP	WEATHER PROOF
WFM	TRANSFORMER

LIGHTING LEGEND	
	4' x 2' LIGHTING FIXTURE CEILING MOUNT
	4' x 1' LIGHTING FIXTURE CEILING MOUNT
	EMERGENCY LIGHTING FIXTURE WITH BATTERY CHARGER PACK
	EMERGENCY LIGHTING FIXTURE PLATE MOUNT
	EMERGENCY EXIT LIGHTING
	WALL MOUNT LIGHT FIXTURE
	WALL MOUNT LIGHT FIXTURE PHOTO CONTROLLED (INTEGRAL TO FIXTURE)
	BUILDING EXTERIOR CORNER CAST ALUMINUM WALL MOUNT.
	VIDEO SURVEILLANCE CAMERA



VIDEO SURVEILLANCE CAMERA BUILDING MOUNTING DETAIL SE7-B
SCALE: 1" = 1'-0"

LIGHTING FIXTURE SCHEDULE							
FIXTURE LETTER	QTY.	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	LAMPS	BALLASTS	REMARKS
A1	22	48" FLUORESCENT LIGHTING FIXTURES, ENCLOSED, GASKETED AND SUITABLE FOR WET LOCATIONS, 120VAC.	COLUMBIA	LUNA-332-3EU-S8L-LUNNR-P8U	3-32 WATT LAMPS	ELECTRONIC T-3 LAMP	CONTRACTOR TO SUPPLY 316 STAINLESS STEEL CHAIR
A2	21	48" FLUORESCENT LIGHTING FIXTURES, ENCLOSED, GASKETED AND SUITABLE FOR WET LOCATIONS, 120VAC.	COLUMBIA	LUNA-332-EU-S8L-LUNNR-P8U	2-32 WATT LAMPS	ELECTRONIC T-3 LAMP	
B1	50	LED WALL PACK, WEATHER TIGHT LED DRIVER COMPARTMENT, RUGGED ALUMINUM HOUSING	BETA LED	SEC-EDG-25-WM-04-C-12-82-P	40 LED'S	ELECTRONIC	PHOTOCONTROL
B2	2	LED WALL PACK, WEATHER TIGHT LED DRIVER COMPARTMENT, RUGGED ALUMINUM HOUSING	BETA LED	SEC-EDG-25-WM-02-C-12-82-P	20 LED'S	ELECTRONIC	PHOTOCONTROL
C1	21	FOR USE IN HAZARDOUS LOCATION, COPPER-FREE ALUMINUM BALLAST HOUSING, 316 S.S. EXTERNAL HARDWARE AND WIRE GUARD, UL844, 15' DROP AND FULL 360° FREE SWING SWIVEL HANGER	HUBBELL	NLHFX-265-1-3-WL-NLF-WG3	3-32 WATT FLUORESCENT T3	ELECTRONIC T-3 LAMP	SEE DETAIL PSE7-C FOR MOUNTING HARDWARE
C2	48	FOR USE IN HAZARDOUS LOCATION, COPPER-FREE ALUMINUM BALLAST HOUSING, 316 S.S. EXTERNAL HARDWARE AND WIRE GUARD, UL844, 15' DROP AND FULL 360° FREE SWING SWIVEL HANGER	HUBBELL	NLHFX-265-1-4-WL-NLF-WG3	4-32 WATT FLUORESCENT T3	ELECTRONIC T-4 LAMP	
D	12	EMERGENCY LIGHT FOR USE IN HAZARDOUS LOCATION, CLASS 1, DIV. 1, COPPER-FREE ALUMINUM ASSEMBLY, UL844 & 1203	COOPNR CROUSE-HINDS	ELP3822 EYL412	2-14W HALOGEN LAMP	N/A	PROVIDE REMOTE LAMP HEAD EVAL12 AS SHOWN
E	22	EMERGENCY UNIT NEMA 1-1 HOUSING WALL MOUNTED SHELF.	HUBBELL DUALLITE	A513N-A11-WB-8 OMSSB0607	2-7.2W LAMPS	N/A	PROVIDE REMOTE LAMP HEAD OMSSB0607 AS SHOWN
F	26	SLIM, LOW PROFILE DESIGN, FIXTURE SIDES ARE RUGGED CAST ALUMINUM WITH INTEGRAL WEATHER-TIGHT LED DRIVER COMPARTMENTS	BETA LED	ARE-EDG-4M-DL-10-C-10-82	100 LED'S	ELECTRONIC	INCLUDE SSA-20-00-8-A-1-D8
G	34	LED WHITE DOWNLIGHT, WEATHER/COOROSION RESISTANT LAMP ASSEMBLY AND HOUSING, INSTANT ON/OFF, CLASS 1, DIV. 2, GROUPS A, B, C, D	DALIGHT	HZ02201111212 HCC200	LED'S	ELECTRONIC	PHOTOCONTROL
H	33	COMPACT FLUORESCENT LIGHTING FIXTURES, INSTANT ON, POLYCARBONATE REFRACTOR, WITH WIRE GUARD, 2 BALLAST, (6) 42W PLT LAMPS, WET LOCATIONS, PENDANT MOUNTED.	HUBBELL	SHW942P-SW-WG	6-42 WATT LAMPS	INSTANT ON/ INSTANT RE-STRIKE	0 %, 50 %, AND 100 % SWITCHING
J1	49	FULL DISTRIBUTION LUMINAIRE, LOW PROFILE HOUSING, HIGH EFFICIENT	COLUMBIA	EPC24-2320-DL EPU-PLU535	2-28 WATT LAMPS	ELECTRONIC	
J2	20	FULL DISTRIBUTION LUMINAIRE, LOW PROFILE HOUSING, HIGH EFFICIENT	COLUMBIA	EPC24-2320-DL EPU-PLU535-EL	2-28 WATT LAMPS	ELECTRONIC	EMERGENCY BATTERY PACK
J3	3	FULL DISTRIBUTION LUMINAIRE, LOW PROFILE HOUSING, HIGH EFFICIENT	COLUMBIA	EPC24-2325M-DL EPU-PLU535	2-28 WATT LAMPS	ELECTRONIC	
J4	1	FULL DISTRIBUTION LUMINAIRE, LOW PROFILE HOUSING, HIGH EFFICIENT	COLUMBIA	EPC24-2325M-DL EPU-PLU535-EL	2-28 WATT LAMPS	ELECTRONIC	EMERGENCY BATTERY PACK
K	6	DE FORMED STEEL HOUSING, 5% UPLIGHT, UL LISTED 1586	COLUMBIA	CS84-332-U-3EU CSRWCC3HC	3-32 WATT LAMPS	ELECTRONIC	
L	2	EMERGENCY UNLIMITED EXIT LIGHT UV-STABLE THERMOPLASTIC HOUSING CEILING AND WALL MOUNTED.	HUBBELL DUALLITE	L2581	1-6V, 5W HALOGEN LAMP	N/A	PROVIDE WISEFL TESTING ELECTRONICS
M	4	EMERGENCY UNLIMITED EXIT SIGN UV-STABLE THERMOPLASTIC HOUSING CEILING AND WALL MOUNTED.	HUBBELL DUALLITE	LT-I-R-W-3-4-OMSSB0605	1-6V, 5W HALOGEN LAMP	N/A	PROVIDE REMOTE LAMP HEAD OMSSB0605 AS SHOWN
N	5	1" DEEP SLIM UNDERCABINET	COLUMBIA	UCS24-205-FNU-WSW-FW	120V, (2) 8W T5 LAMPS	PREHEAT	UNDER KITCHEN CABINET
P	1	RECESSED MOUNTING EDGE-LIT LED EXIT SIGN EXTRUDED ALUMINUM CONSTRUCTION	HUBBELL DUALLITE	LE-C-D-R-C-S-E-1	3.3W LED	N/A	PROVIDE WISEFL TESTING ELECTRONICS
Q	1	RECESSED MOUNTING EDGE-LIT LED EXIT SIGN EXTRUDED ALUMINUM CONSTRUCTION	HUBBELL DUALLITE	LE-C-S-R-R-S-E-1-M	3.3W LED	N/A	PROVIDE WISEFL TESTING ELECTRONICS

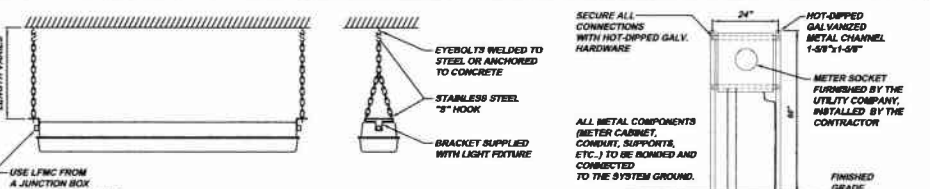
ARROW REPRESENTS THE DIRECTION OF DOMINANT LIGHT DISTRIBUTION. (NO ARROW INDICATES THAT THE FIXTURE CAN BE MOUNTED IN ANY DIRECTION BECAUSE DISTRIBUTION IS SYMMETRICAL)

SWITCHING CIRCUIT DESIGNATION

SEQUENTIAL FIXTURE NUMBER

FIXTURE LETTER, SEE BELOW

SITE DESIGNATION



TYPICAL INDOOR LIGHT MOUNTING DETAIL SE7-C
NOT TO SCALE



METER SOCKET MOUNTING DETAIL SE7-D
NOT TO SCALE

WWTP AREA	ASSOCIATED DEVICE OF UTILIZATION EQUIPMENT	EQUIPMENT TYPE	UTILIZATION EQUIPMENT	
			SEQUENTIAL EQUIPMENT No. FOR SPECIFIC EQUIPMENT	SEQUENTIAL No. FOR MULTIPLE ASSOCIATED DEVICES
ADMINISTRATION BUILDING	ANALYSIS ELEMENT	LEVEL ELEMENT	CONTROL DAMPER	MECHANICAL SCREEN
CHLORINE BUILDING	ALARM	LEVEL SWITCH	CIRCUIT BREAKER	TEMPERATURE TRANSMITTER
CONTROL & INCINERATION BUILDING	AUTOMATIC TRANSFER SWITCH	LIGHTING PANEL	DISTRIBUTION PANEL	WASHER COMPACTOR
DIGESTER AIR BUILDING	BLOWER	MOTOR CONTROL CENTER	GRINDER	MOTORIZED GATE
HEADWORKS BUILDING	BOILER	MOTOR	FUME HOOD	FLOWER SUPPLY UNIT
PROCESS AIR BUILDING	CONTROL PANEL	MOTOR STARTER	CONVEYOR	RAW SEWAGE PUMP
WWTP PUMP STATION	CURRENT TRANSFORMER	METER SOCKET	RAIN GAUGE	ANALYTICAL ELEMENT
SEWAGEAL TREATMENT AREA	DISCONNECT SWITCH	PUSH BUTTON/PULL BOX	HOT WATER HEATER	ANALYTICAL TRANSMITTER
ULTRAVIOLET DISINFECTION AREA	EXHAUST FAN	RAW SEWAGE PUMP	MOTOR OPERATED VALVE	ALARM
WASTE WATER TREATMENT PLANT	FLOW METER	SUMP PUMP	RECEPTACLE	PRESSURE INDICATING TRANSMITTER
	FLOW INDICATING TRANSMITTER	TERMINAL BOX	LOCAL CONTROL STATION	CAPACITOR BANK
	GENERATOR	TEMPERATURE TRANSMITTER	LIGHTING CONTACTOR	TRANSFORMER
	GATE OPERATOR	TEMPERATURE SWITCH	PRESSURE SWITCH	VIDEO SURVEILLANCE CAMERA
	HOTST	THERMOSTAT	OLENOID VALVE	VARIABLE FREQUENCY DRIVE
	INTAKE FAN	UNIT HEATER	SUPPLY FAN	JUNCTION BOX

★ INCLUDES SITE AND EXISTING PLANT AREA.
★ DOES NOT APPLY TO THE EXISTING WWTP EQUIPMENT UNLESS SHOWN OTHERWISE.

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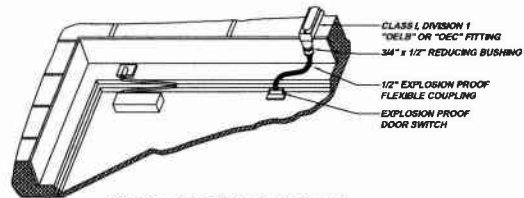
MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGANY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2014-01 AND 2014-02
WASTEWATER TREATMENT PLANT EXPANSION
WWTP ELECTRICAL DETAILS SHEET 1 OF 2

As Shown: DEC. 2010
 Date: DEC. 2010
 Drawn By: DCM
 Checked By: MJM
 Approved By: SHD

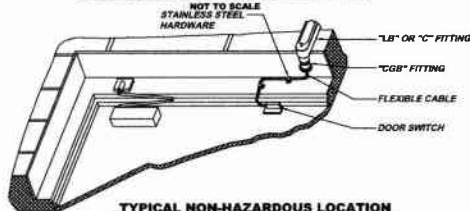
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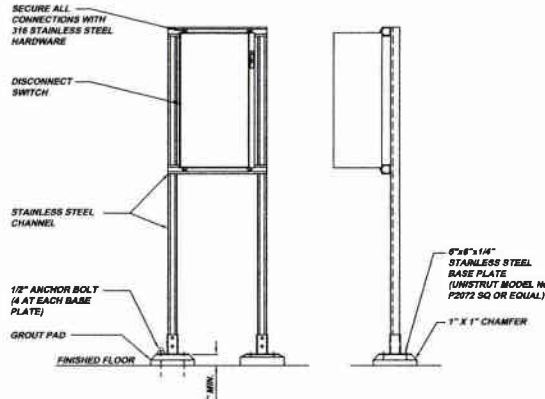
Sheet No. 7
 Drawing No. 220-SE7



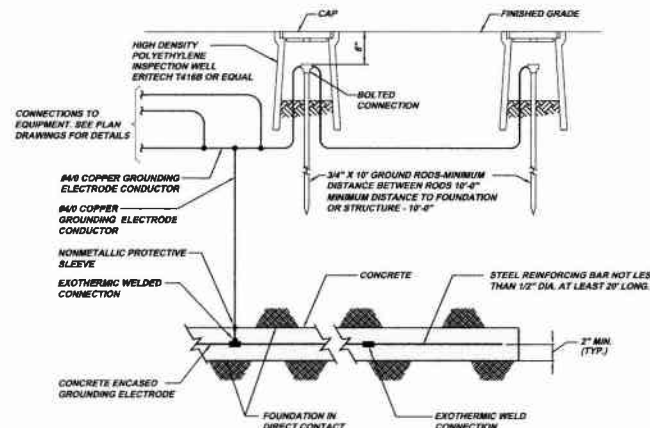
TYPICAL HAZARDOUS LOCATION DOOR SWITCH MOUNTING DETAIL SEB-A



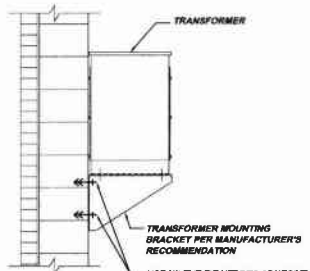
TYPICAL NON-HAZARDOUS LOCATION DOOR SWITCH MOUNTING DETAIL SEB-B



TYPICAL MOTOR DISCONNECT MOUNTING DETAIL SEB-C

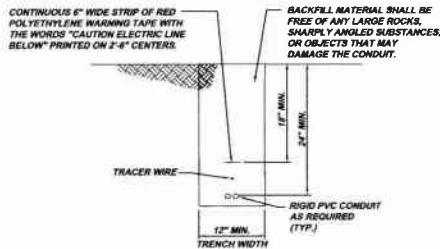


CONCRETE ENCASED GROUNDING ELECTRODE DETAIL SEB-D



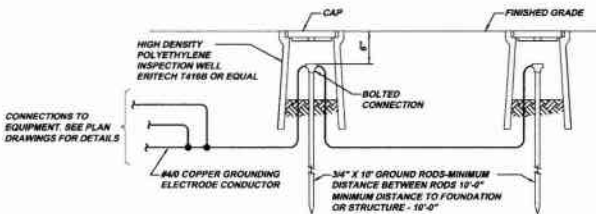
TYPICAL TRANSFORMER MOUNTING DETAIL SEB-E

SCALE: 3/4" = 1'-0"



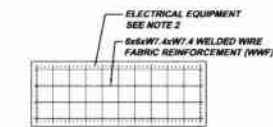
DIRECT BURIED CONDUIT DETAIL SEB-H

NOT TO SCALE



GROUNDING DETAIL SEB-F

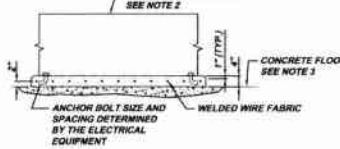
NOT TO SCALE



EQUIPMENT MOUNTING PAD DETAIL SEB-G

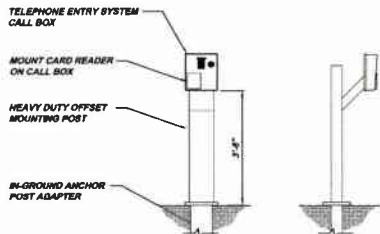
NOT TO SCALE

SEE NOTES 1 THROUGH 5



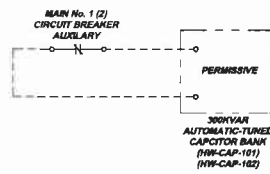
EQUIPMENT MOUNTING PAD NOTE:

1. PLACE WWF AT HALF THE HEIGHT OF THE PAD.
2. USE A MINIMUM 2" OVERHANG, OR MATCH EXISTING OVERHANG.
3. ROUGH UP CONCRETE FLOOR SLAB SURFACE AND APPLY BONDING AGENT.
4. FOR USE ON EXISTING CONCRETE SURFACE OR FORMED ON NEW STRUCTURALLY DESIGNED FLOOR SLAB.
5. USE 4,000 PSI CONCRETE.



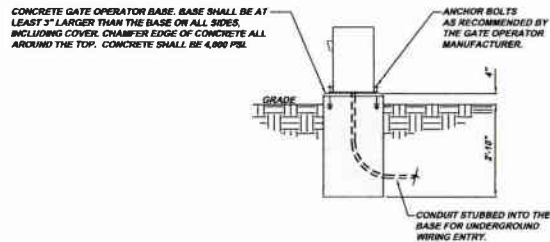
MOTORIZED GATE OPERATOR CALL BOX DETAIL SEB-J

NOT TO SCALE



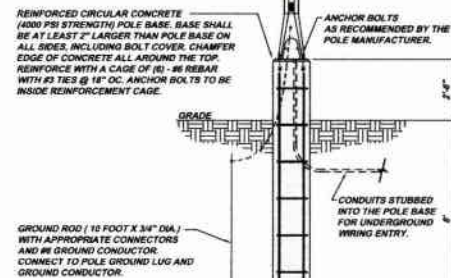
CAPACITOR BANK INTERLOCK DETAIL SEB-K

NOT TO SCALE



MOTORIZED GATE OPERATOR MOUNTING DETAIL SEB-L

NOT TO SCALE



WWT VIDEO SURVEILLANCE CAMERA POLE DETAIL SEB-M

NOT TO SCALE

Revisions	Date	Emotions	RELEASE FOR BID
Date	1-2011		
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KLH ENGINEERS, INC.			
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION WWT ELECTRICAL DETAILS SHEET 2 OF 2			
Scale:	As Shown	Drawn By:	MM
Date:	DEC. 2010	Checked By:	MM
		Approved By:	MM
Sheet No.	8		
Drawing No.	220-SE8		

SPARE 480VAF NO. 1, LSG	POWER QUALITY METER	SPD CATEGORY C 3PH-4W	SPARE 480VAF NO. 1, LSG	TRANSFER CONTROL	POWER QUALITY METER
CHILDREN BUILDING DISTRIBUTION PANEL (CL-DP-101)	MAIN No. 1 4,800VAF 3,000AT EO, LSG	WWTP PUMP STATION MOTOR CONTROL CENTER (PS-MCC-101)	EXISTING C & I Building Main Distribution Panel (CH-DP-101)	MAIN No. 2 4,800VAF 3,000AT EO, LSG	
HEADWORKS BUILDING MOTOR CONTROL CENTER (HW-MCC-101)	TIE 4,800VAF 3,000AT EO, LSG	EXISTING C & I Building Main Distribution Panel (CH-DP-101)	3PH-4W 480VAF 1,000AT MO, LSG	SPD CATEGORY C 3PH-4W	
PROCESS AIR BUILDING MOTOR CONTROL CENTER (PA-MCC-101)	3PH-4W 480VAF 1,000AT MO, LSG	3PH-4W 480VAF 1,000AT MO, LSG			

MAIN WWTP SWITCHGEAR (HW-SWGR-101)
DETAIL S-E-A
SCALE: 3/4" = 1'-0"

400A MAIN LUG	0.75 HP FVWR MAIN BUILDING INTAKE FAN No. 1 (HW-F-101)	0.75 HP FVWR MAIN BUILDING INTAKE FAN No. 2 (HW-F-102)	0.75 HP FVWR MAIN BUILDING INTAKE FAN No. 3 (HW-F-103)	1 HP FVWR STAIRWELL INTAKE FAN (HW-F-107)	1 HP FVWR SCREENING CONVEYOR (CNV-103)	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	1,800VAF 1,000AT MAIN CIRCUIT BREAKER
METERING	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	
SPD CATEGORY B 3P-4W	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	

HEADWORKS BUILDING MOTOR CONTROL CENTER (HW-MCC-101)
DETAIL S-E-B
SCALE: 3/4" = 1'-0"

350A CB DIGGER AIR BLOWER No. 3 VFD FEEDER	350A CB DIGGER AIR BLOWER No. 1 VFD FEEDER	3 HP FVWR EXHAUST FAN No. 1 (DA-ES-101)	METERING	1,000AT MAIN CIRCUIT BREAKER
350A CB DIGGER AIR BLOWER No. 4 VFD FEEDER	350A CB DIGGER AIR BLOWER No. 2 VFD FEEDER	3 HP FVWR EXHAUST FAN No. 2 (DA-ES-102)	SPD CATEGORY B 3P-4W	
SPACE	SPACE	35A CB 35A CB 35A CB 35A CB	35A CB 35A CB 35A CB 35A CB	
SPACE	SPACE	35A CB 35A CB 35A CB 35A CB	35A CB 35A CB 35A CB 35A CB	
SPACE	SPACE	35A CB 35A CB 35A CB 35A CB	35A CB 35A CB 35A CB 35A CB	

DIGGER AIR BUILDING MOTOR CONTROL CENTER (DA-MCC-100)
DETAIL S-E-C
SCALE: 3/4" = 1'-0"

20 HP FVWR SBR BASIN No. 1 MIXER No. 1 (SBR-MX-101)	20 HP FVWR SBR BASIN No. 2 MIXER No. 2 (SBR-MX-102)	225A CB SBR BLOWER No. 1 VFD FEEDER (SBR-BD-101)	225A CB SBR BLOWER No. 2 VFD FEEDER (SBR-BD-102)	225A CB SBR BLOWER No. 3 VFD FEEDER (SBR-BD-103)	225A CB SBR BLOWER No. 4 VFD FEEDER (SBR-BD-104)	225A CB SBR BLOWER No. 5 VFD FEEDER (SBR-BD-105)	METERING	1,800VAF 1,000AT MAIN CIRCUIT BREAKER
20 HP FVWR SBR BASIN No. 3 MIXER No. 3 (SBR-MX-103)	20 HP FVWR SBR BASIN No. 4 MIXER No. 4 (SBR-MX-104)	26A CB SBR BLOWER No. 1 EXHAUST FAN No. 1 (PA-EF-101)	26A BCP SBR BLOWER No. 2 EXHAUST FAN No. 2 (PA-EF-102)	26A CB SBR BLOWER No. 3 EXHAUST FAN No. 3 (PA-EF-103)	26A CB SBR BLOWER No. 4 EXHAUST FAN No. 4 (PA-EF-104)	26A CB SBR BLOWER No. 5 EXHAUST FAN No. 5 (PA-EF-105)	SPD CATEGORY B 3P-4W	
20 HP FVWR SBR BASIN No. 1 MIXER No. 1 (SBR-MX-101)	20 HP FVWR SBR BASIN No. 2 MIXER No. 2 (SBR-MX-102)	26A CB SBR BLOWER No. 1 EXHAUST FAN No. 1 (PA-EF-101)	26A CB SBR BLOWER No. 2 EXHAUST FAN No. 2 (PA-EF-102)	26A CB SBR BLOWER No. 3 EXHAUST FAN No. 3 (PA-EF-103)	26A CB SBR BLOWER No. 4 EXHAUST FAN No. 4 (PA-EF-104)	26A CB SBR BLOWER No. 5 EXHAUST FAN No. 5 (PA-EF-105)	26A CB SBR BLOWER No. 6 EXHAUST FAN No. 6 (PA-EF-106)	
20 HP FVWR SBR BASIN No. 1 MIXER No. 1 (SBR-MX-101)	20 HP FVWR SBR BASIN No. 2 MIXER No. 2 (SBR-MX-102)	26A CB SBR BLOWER No. 1 EXHAUST FAN No. 1 (PA-EF-101)	26A CB SBR BLOWER No. 2 EXHAUST FAN No. 2 (PA-EF-102)	26A CB SBR BLOWER No. 3 EXHAUST FAN No. 3 (PA-EF-103)	26A CB SBR BLOWER No. 4 EXHAUST FAN No. 4 (PA-EF-104)	26A CB SBR BLOWER No. 5 EXHAUST FAN No. 5 (PA-EF-105)	26A CB SBR BLOWER No. 6 EXHAUST FAN No. 6 (PA-EF-106)	

PROCESS AIR BUILDING MOTOR CONTROL CENTER (PA-MCC-101)
DETAIL S-E-D
SCALE: 3/4" = 1'-0"

350A CB RAW SEWAGE PUMP No. 1 VFD FEEDER	350A CB RAW SEWAGE PUMP No. 2 VFD FEEDER	350A CB RAW SEWAGE PUMP No. 3 VFD FEEDER	350A CB RAW SEWAGE PUMP No. 4 VFD FEEDER	METERING	1,800VAF 1,000AT MAIN CIRCUIT BREAKER
25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	SPD CATEGORY B 3P-4W	
25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	
25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	25A CB 25A CB 25A CB 25A CB	

WWTP PUMP STATION MOTOR CONTROL CENTER (PS-MCC-101)
DETAIL S-E-E
SCALE: 3/4" = 1'-0"

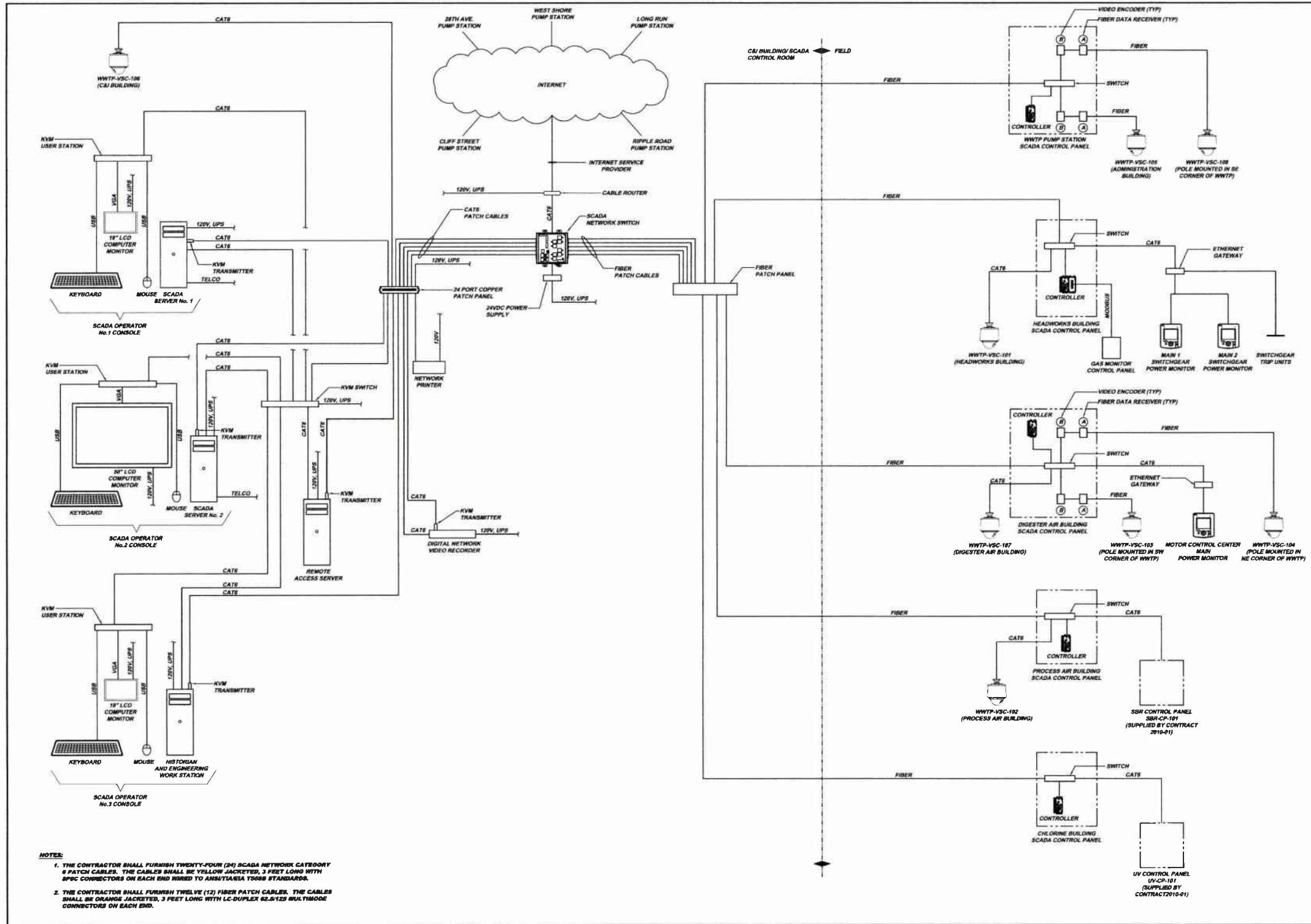
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
1000 EAST 20TH AVENUE
WASHINGTON, PA 15686
WWTP ELECTRICAL MOTOR CONTROL CENTER DETAILS

Scale: As Shown
Date: DEC 2010
Drawn By: JCM
Checked By: MAM
Approved By: BJD

Sheet No. 9

Drawing No. 220-SE9

Revision
1-2011 RELEASE FOR BIDDING
Date
3/1/2011
3173 CAMPBELL RUN ROAD
PITTSBURGH, PA 15203
TEL: 412-644-0426
FAX: 412-644-0426
IN: @clh-engineers.com



- NOTES:**
1. THE CONTRACTOR SHALL FURNISH TWENTY-FOUR (24) SCADA NETWORK CATEGORY 6 PATCH CABLES. THE CABLES SHALL BE YELLOW JACKETED, 3 FEET LONG WITH SPIC CONNECTORS ON EACH END RATED TO ANSI/TIA/EIA 568B STANDARDS.
 2. THE CONTRACTOR SHALL FURNISH TWELVE (12) FIBER PATCH CABLES. THE CABLES SHALL BE ORANGE JACKETED, 3 FEET LONG WITH LC-DUPLEX 62-5123 MULTIMODE CONNECTORS ON EACH END.

Revision	Date	Revisions	Date
1	12/2011	RELEASE FOR BID	

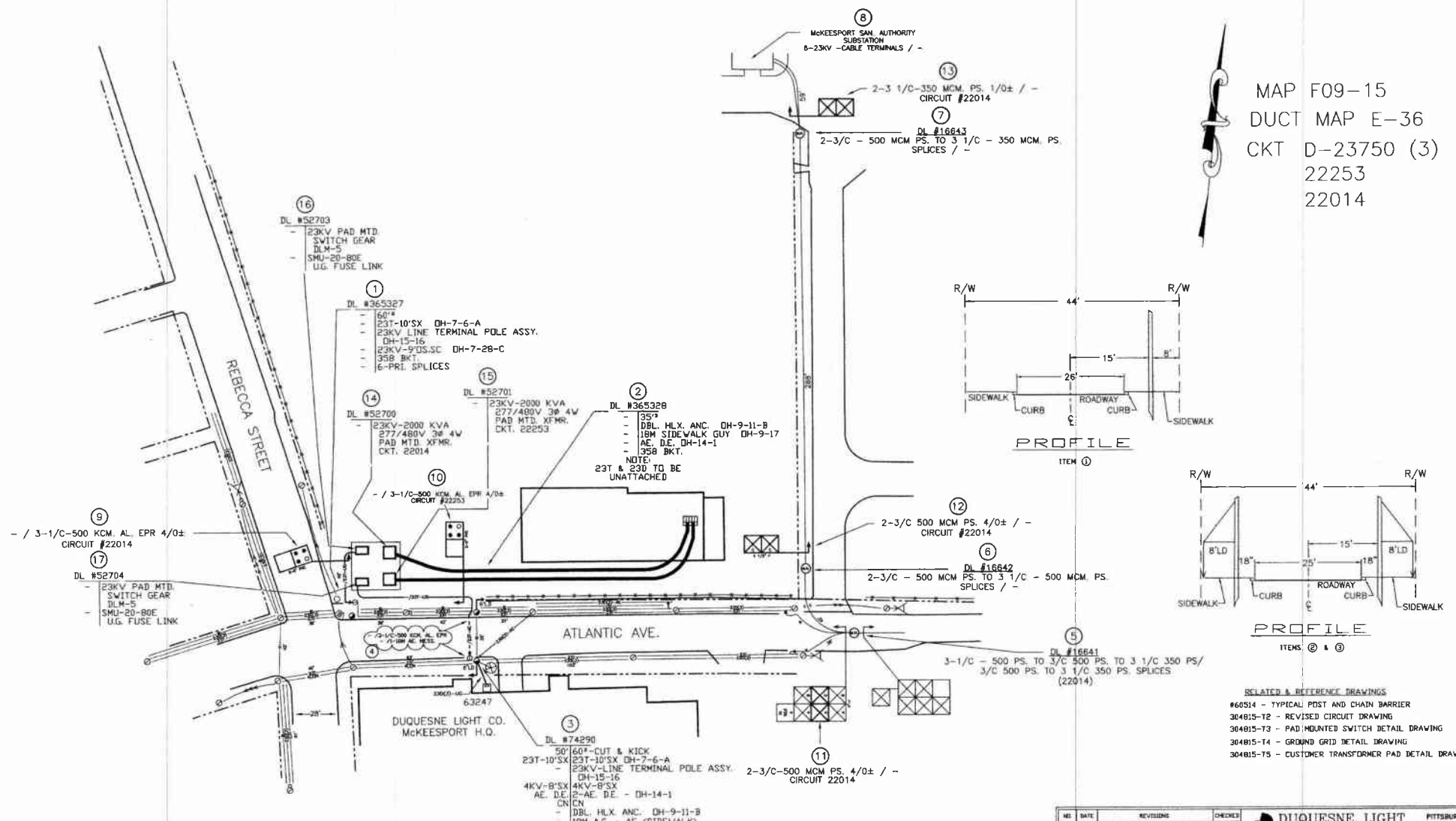
5173 CAMPBELL RUN ROAD
 ALLEGHENY COUNTY, PENNSYLVANIA
 PHONE: 412-439-0310
 WWW.KLHE.COM
 INFO@KLHE.COM

KLH ENGINEERS, INC.

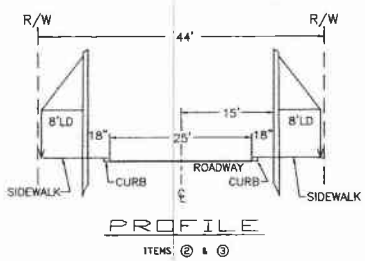
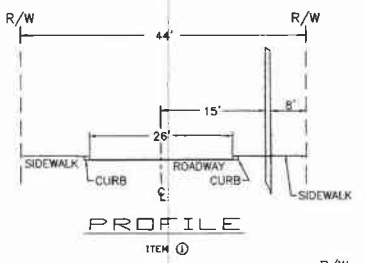
**MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 SCADA COMMUNICATIONS & VIDEO SURVEILLANCE OVERVIEW DIAGRAM**

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	MWS
Checked By:	MJM
Approved By:	SHG

Sheet No. 10
 Drawing No. 220-SE10



MAP F09-15
DUCT MAP E-36
CKT D-23750 (3)
22253
22014



RELATED & REFERENCE DRAWINGS
#60514 - TYPICAL POST AND CHAIN BARRIER
#04815-12 - REVISED CIRCUIT DRAWING
#04815-13 - PAD MOUNTED SWITCH DETAIL DRAWING
#04815-14 - GROUND GRID DETAIL DRAWING
#04815-15 - CUSTOMER TRANSFORMER PAD DETAIL DRAWING

SUMMARY

DLCO WORK	MUNICIPAL R/W	PRIVATE PROPERTY
INSTALL POLES	2 (1) & (2)	
REPLACE POLES	1 (1)	
INSTALL ANCS	2 (1) & (3)	
REMOVE ANCS		
M.V. & RP. POLE		

REV	DATE	REVISIONS	CHECKED
1			
2			
3			
4			
5			
6			
7			
8			

DUQUESNE LIGHT
PITTSBURGH, PA
TITLE: NEW BUSINESS - INCREASED SERVICE
SUMMARY: DL TO INSTALL, REMOVE & REPLACE POLES, WIRE, CABLE, SWITCHES & TRANSFORMERS
LOCATION: ATLANTIC AVE. - McKEESPORT - ALLEGHENY CO. CD

DRAWN	TRACED	FIELDED	APPROVED	SCALE	NUMBER
HLM		T.S.D.	[Signature]	1"=40'	304815-T1
02/11/09		HLL	05-09		

NUMBER
304815-T1

Revisions

Date	Revisions	Date	Revisions
1/2011	RELEASE FOR BID		

5172 DANFELLE RUN ROAD
ALLEGHENY COUNTY, PENNSYLVANIA
PHONE: 412-444-8300
FAX: 412-444-8348
info@klhengineers.com

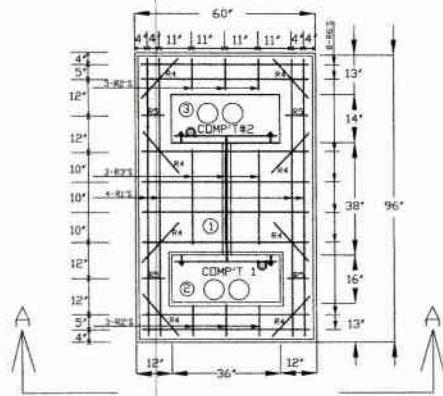
KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF McKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRIC UTILITY CONSTRUCTION DETAILS SHEET 1 OF 4

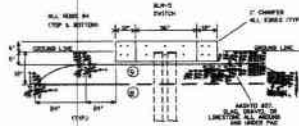
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Date: DEC. 2010
Drawn By: COV
Checked By: M.M.
Approved By: SHZ

Sheet No. 11
Drawing No. 220-SE11

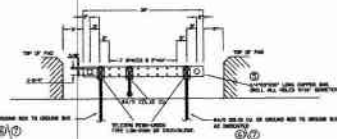
No. 304815-T3



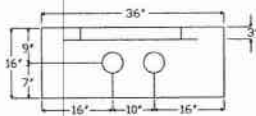
FRONT OF PAD
PLAN VIEW
STRUCTURAL PLAN FOR TWO REINFORCED CONCRETE PAD
FOR PAD MOUNTED SWITCH
(DLM-3 or 5)



SECTION A-A
CONSTRUCTION DETAIL OF REINFORCED CONCRETE DLM-3 or 5 PAD

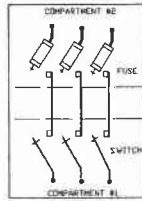


SECTION X-X
REINFORCING BAR DETAILS
FOR SWITCH COMPARTMENTS

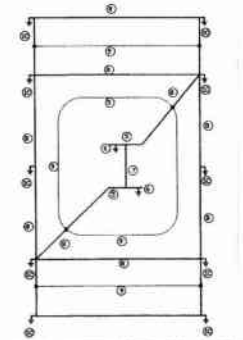


DETAIL
CONDUIT LAYOUT
IN SWITCH COMPARTMENTS

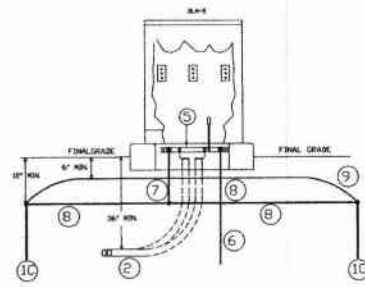
BAR	SIZE	REQ'D	LENGTH
R1	5	4	7'-9"
R2	5	16	0'-11"
R3	5	3	2'-9"
R4	5	8	1'-6"
R5	5	4	0'-9"
R6	5	8	4'-9"



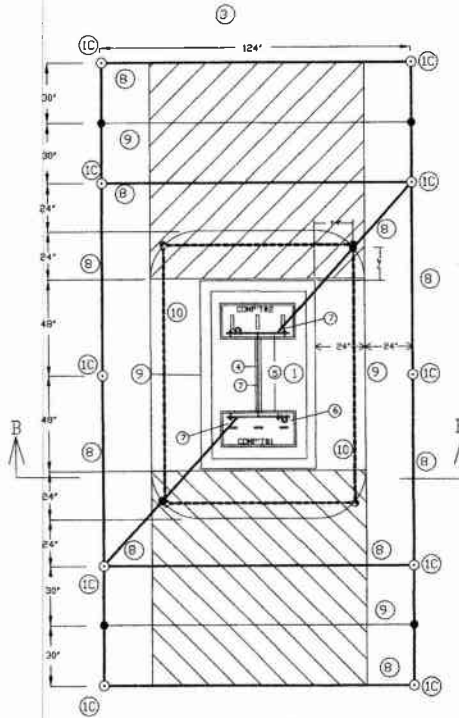
CONNECTION DIAGRAM
DLM-5



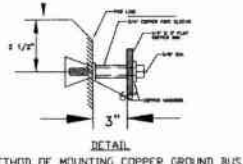
GROUND SYSTEM SCHEMATIC DIAGRAM



SECTION B-B
EQUIPMENT LAYOUT AND GROUNDING SYSTEM PLAN FOR
DLM 3 or 5 PAD MOUNTED SWITCH
FRONT VIEW



FRONT OF PAD
EQUIPMENT LAYOUT AND GROUNDING SYSTEM PLAN FOR
DLM 3 or 5 PAD MOUNTED SWITCH
PLAN VIEW



DETAIL
METHOD OF MOUNTING COPPER GROUND BUS

- CUSTOMER'S WORK**
- DESTRUCT SWITCHGEAR, PANS, CONDUIT SYSTEM, AND GROUNDING SYSTEM TO CONFORM TO UNDERGROUND AND LOCAL BUILDING CODES AND AS SHOWN ON THIS DRAWING. DUQUESNE LIGHT MUST WITNESS OR INSPECT THE CONSTRUCTION OF THIS INSTALLATION BEFORE ALLOWING TO PROCEED.
 - THE INSTALLATION OF ALL PRIMARY CONDUITS AND BENDS PRIOR TO BACKFILLING.
 - THE INSTALLATION OF CONCRETE FORMS AND REINFORCING BAR MATS PRIOR TO CONCRETE POUR.
 - THE INSTALLATION OF GROUND REBBS, GROUND WIRE, AND BACKFILLING OVER GROUND REBBS.
 - FINAL PAD INSPECTION INCLUDING GROUND BUS INSTALLATION, GROUND REBBS, AND GROUND GRID CONNECTIONS TO THE GROUND BUS, & ANY OTHER ITEM AS DESIGNATED BY THE CONSTRUCTION INSPECTOR AS REQUIRING INSPECTION.
 - FOR VARIOUS INSPECTING CONTACT: TIM BANE, (412) 953-8317.
- INSTALL 2-3/4" RIGID CONDUITS FROM DLM-5, COMP 1 TO TERMINAL A RISER POLES.
 - INSTALL 2-3/4" RIGID CONDUITS FROM DLM-5, COMP 2 TO PAD TRANSFORMERS.
 - INSTALL 1-1/2" PVC GROUND WIRE CONDUITS BETWEEN PAD OPENINGS.
 - INSTALL A 1/4"x2"x2" x 3/8" COPPER BAR GROUND BUS IN EACH OPENING OF THE PAD. USE DETAIL "A" ON THIS DRAWING. ALL WIRE CONNECTIONS TO THE GROUND BUS MUST BE MADE WITH A MINIMUM OF TWO 1/2" SILICON BRONZE OR STAINLESS STEEL BOLTS. GROUND BAR IS TO BE TIED AT ALL CONNECTION LOCATIONS.
 - INSTALL ONE 3/4" x 1/4" COPPER CLAD GROUND ROD IN AND CONNECT TO GROUND BUS WITH A SILENT EYE BOLT CONNECTOR SIMILAR TO TELEPHONE UNDER WIRE UNDERGROUND INSTALLATIONS MUST BE APPROVED BY DUQUESNE LIGHT COMPANY PRIOR TO INSTALLATION.
 - CONNECT THE GROUND BUSES WITH A #4/0 AWG SOFT BRAHN STRANDED COPPER WIRE. CONNECTIONS TO BE MADE WITH COPPER CONNECTORS HAVING A MINIMUM OF TWO BOLTS OR COMPRESSIONS OVER EACH WIRE AND BE CONNECTED TO THE BUS BAR WITH A MINIMUM OF TWO 1/2" SILICON BRONZE OR STAINLESS STEEL BOLTS.
 - INSTALL A 4/8 SOFT BRAHN SOLID COPPER WIRE GROUND GRID AND CONNECT TO THE GROUND RODS WITH EXOTHERMIC WELDS.
 - INSTALL A #4 AWG SOFT BRAHN SOLID COPPER WIRE POTENTIAL GROUND GRID AND CONNECT TO THE 4/8 GROUND GRID AS INDICATED USING EXOTHERMIC WELDS.
 - INSTALL A POST AND CHAIN BARRIER OF HEIGHT AS SHOWN AND PER DLM LIGHT COMPANY STANDARD DRAWING NO. 660514. CONNECT THE STEEL POSTS TO THE GROUND BUS USING #4 SOFT BRAHN SOLID COPPER WIRE. POSTS TO BE EXOTHERMIC WELDED TO THE WIRE. THE POSITION OF THE INSTALLATION MAY BE ADJUSTED AFTER THE PAD IS CONSTRUCTED. NOTE TO BE INSTALLED A PIECE OF 2" PVC CONDUIT UNDER THE PAD FOR SUBSEQUENT GROUND WIRE INSTALLATION.

- GENERAL NOTES**
- NOTE: THE FOLLOWING CONDUIT SYSTEMS QUALITY AS NOTED:
- GALVANIZED STEEL
 - PVC TYPE 68 IN ACCORDANCE WITH NEMA TC-6-1978.
- TERMINATE EACH CONDUIT RUN WITH A 3" ID 30" 30# GALVANIZED STEEL BEND CONNECT WITH A #4 SOFT BRAHN SOLID COPPER WIRE. EXTEND BENDS 3" INTO PAD OPENING. SELL FOR 1/2" DIAMETER HOLES ON 2" C/C. AT LOW POINT OF BEND. REMOVE ALL INTERNAL BURRS AND INSTALL AN "IMPREG" SELF-DRYING BRUSH. INSTALL A THREADED ISOLATED GROUNDING BRUSH ON EACH BEND AND CONNECT TO THE GROUND BUS USING #4 SOFT BRAHN SOLID COPPER WIRE. ON ALL CONDUIT NO BACKFILLING OF ELECTRICAL INSTALLATION SHALL BE DONE UNTIL THE INSTALLATION HAS BEEN INSPECTED BY DUQUESNE LIGHT CO.
- ALL BELOW GRADE GROUNDING CONNECTIONS MUST BE EXOTHERMICALLY WELDED.
- IN COMPLIANCE WITH ACT 38 CONSENTUALITY OF PA THE CUSTOMER'S CONSULTING ENGINEER IS TO FURNISH TO THE INSTALLER A LOCATION OF EXISTING UNDERGROUND FACILITIES IN THE VICINITY OF THE PROPOSED UNDERGROUND CONSTRUCTION.
- DUQUESNE LIGHT COMPANY IS TO HAVE RIGHT OF ACCESS AND EGRESS AT ALL TIMES. DUQUESNE LIGHT COMPANY TO BE ABSOLVED FROM ALL PROPERTY DAMAGE DUE TO NON-NEGLIGENT IMPROVEMENTS IN EXCESS OF DUQUESNE LIGHT COMPANY PERSONNEL OR EQUIPMENT.
- PRIOR TO REQUESTING INSTALLATION OF DUQUESNE LIGHT COMPANY EQUIPMENT AN UNRESTRICTED ACCESS WAY CAPABLE OF WITHSTANDING 75,000 POUND TRUCK LOADING MUST BE PROVIDED AND MAINTAINED BY THE CUSTOMER.
- THE CUSTOMER IS TO INSTALL A FALLOUT CONSISTING OF 18 GAUGE NYLON CORD HAVING A MINIMUM BREAKING STRENGTH OF 170 POUNDS IN THE CONDUITS.
- CONCRETE PAD MUST BE ALLOWED A MINIMUM OF SEVEN DAYS CURING TIME PRIOR TO THE INSTALLATION OF ELECTRICAL LIGHT COMPANY EQUIPMENT.

- LEGEND**
- 3/4" COPPER CLAD GROUND ROD
 - #4 CU TO 4/8 CU WELD
 - 4/8 SOLID CU
 - #4 SOLID CU
- CUSTOMER MUST MAINTAIN A CLEAR, LEVEL WORKSPACE EXTENDING A MIN. OF 9' x 9' FROM FACES OF PAD**

- RELATER & REFERENCE DRAWINGS**
- 660514 - TYPICAL POST AND CHAIN BARRIER
 - 304815-T1 - CONSTRUCTION DRAWING
 - 304815-T2 - REVISED CIRCUIT DRAWING
 - 304815-T4 - GROUND GRID DETAIL DRAWING
 - 304815-T5 - CUSTOMER TRANSFORMER PAD DETAIL DRAWING

REVISIONS

1	
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Duquesne Light Our Energy...Your Power
CONSTRUCTION ENGINEERING

SCALE: DATE: 05/11/09
DRAWN BY: M.L. MATTHEW
CHECKED BY: T.R. BANE
DATE: 05/11/09

NEW BUSINESS - MCKEESPORT SAN. AUTH.
ATLANTIC AVE. - MCKEESPORT - ALLEGHENY CO.
INCREASED SERVICE
DL TO INST. REM. & REPL. POLES, WIRE, CABLE, SW, XFMR'S

Checked By: **A**
Drawing No. **304815-T3**

REV. 0

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2007-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRIC UTILITY CONSTRUCTION DETAILS SHEET 2 OF 4

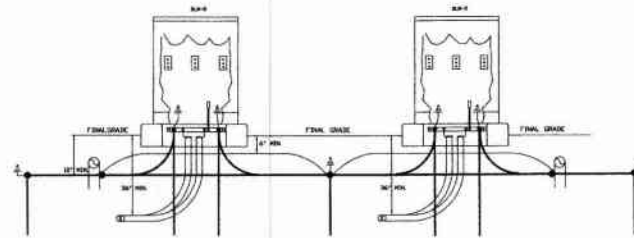
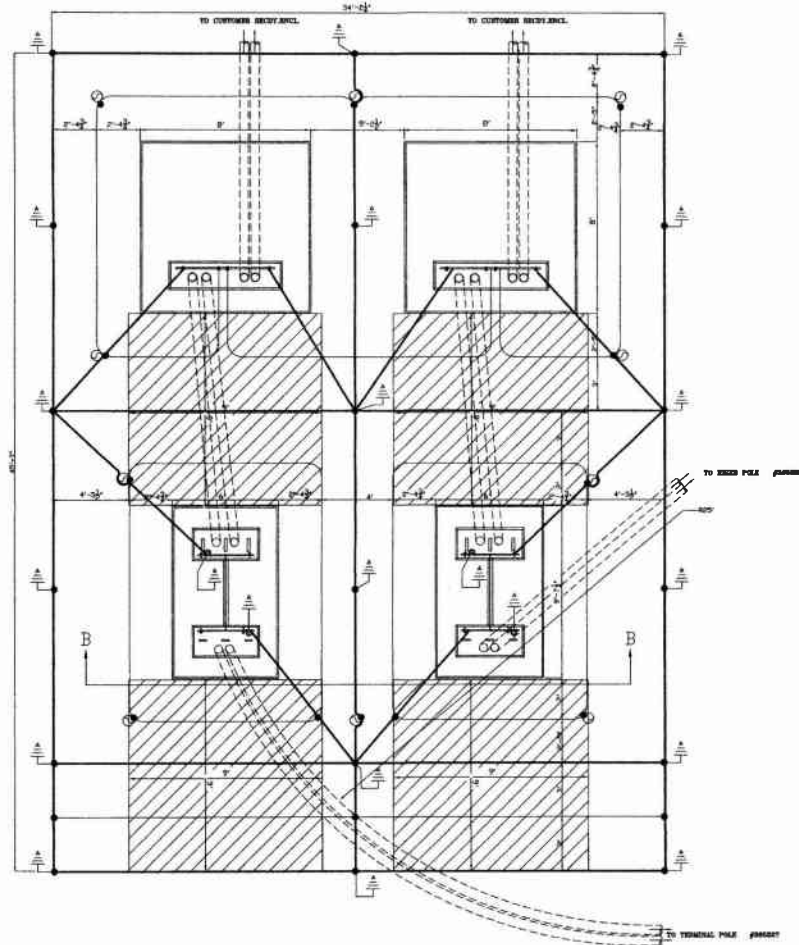
KLH ENGINEERS, INC.

8173 LANFELLS BLVD ROAD
MCKEESPORT, PA 15110
PHONE: 412-464-4411
FAX: 412-464-4426
INFO@KLHENGINEERS.COM

Scale: Not to Scale
Date: DEC. 2010
Drawn By: DCW
Checked By: M.M.
Approved By: B.H.G.

Sheet No. 12
Drawing No. 220-SE12

No. 304815-T4



SECTION B-B
EQUIPMENT LAYOUT AND GROUNDING SYSTEM PLAN FOR
DLM 3 or 5 PAD MOUNTED SWITCH
FRONT VIEW

LEDGEND

- 4# 20.000L
- 4# 0.00.00L
- 1" x 1/2" GROUND ROD
- EARTHING (GAS VELD)
- TYPICAL POST & CHAIN BARRIER FOR E. P.V.C. GOLF

- RELATED & REFERENCE DRAWINGS
- #60514 - TYPICAL POST AND CHAIN BARRIER
 - 304815-T1 - CONSTRUCTION DRAWING
 - 304815-T2 - REVISED CIRCUIT DRAWING
 - 304815-T3 - PAD MOUNTED SWITCH DETAIL DRAWING
 - 304815-T5 - CUSTOMER TRANSFORMER PAD DETAIL DRAWING

REVISIONS

Duquesne Light Our Energy...Your Power
CONSTRUCTION ENGINEERING

Scale: N.T.S.
Date: 05/11/09
Drawn By: M. MATTHEW
Checkd By: T. BANE
Apprvd By: HFD

NEW BUSINESS - MCKEESPORT SAN. AUTH.
ATLANTIC AVE. - MCKEESPORT - ALLEGHENY CO.
INCREASED SERVICE
DL TO INST. REM. & REPL. POLES, WIRE, CABLE, SW, XFMR'S

Project No. 304815-T4

REV. 0

Revisions

Date	Revisions	Date	Revisions
1-2011	RELEASE FOR BID		

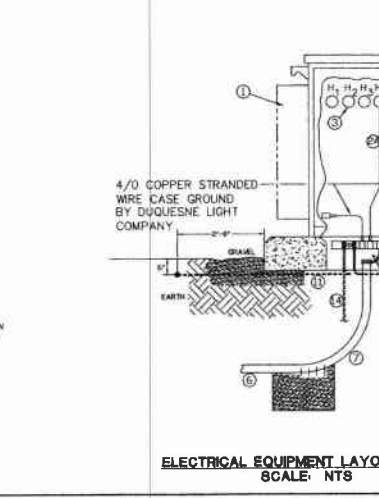
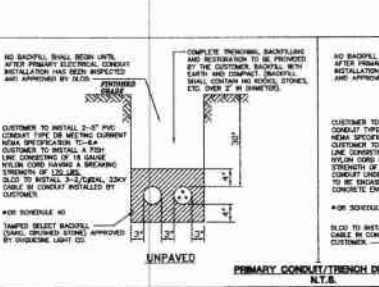
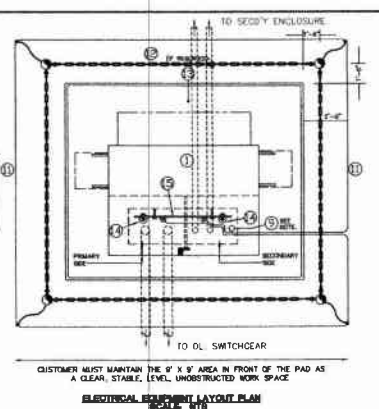
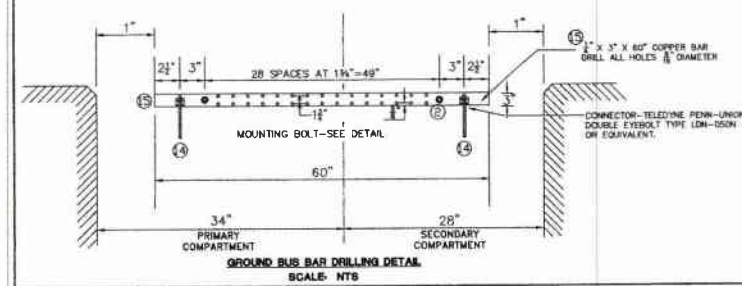
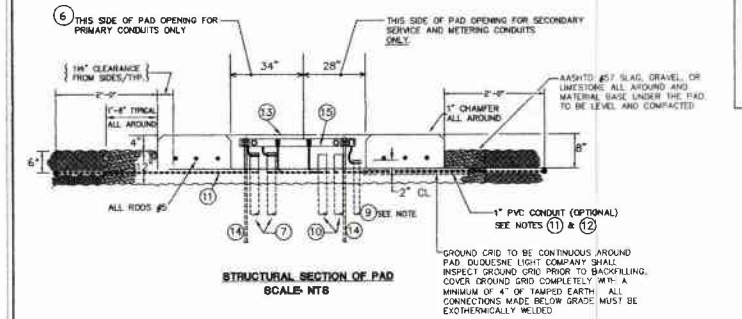
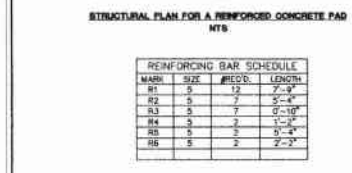
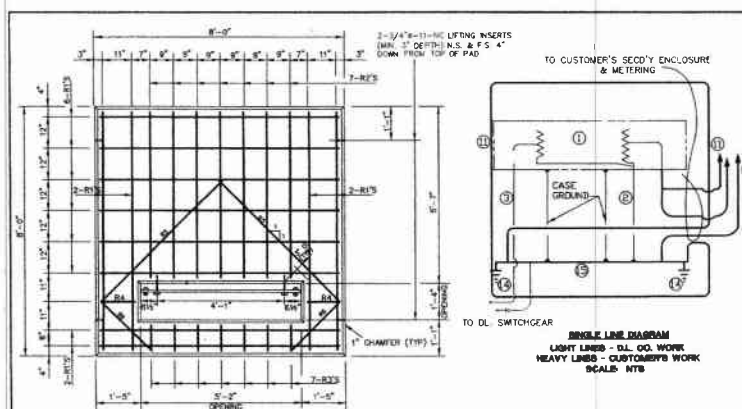
5172 CAMPBELL RUN ROAD
MCKEESPORT, PA 15109
PHONE: 412-492-0310
FAX: 412-492-0346
INR@klh-engineers.com

KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRIC UTILITY CONSTRUCTION DETAILS SHEET 3 OF 4

Not to Scale
Date: DEC. 2010
Drawn By: DCW
Checkd By: MAM
Apprvd By: SHD

Sheet No. 13
Drawing No. 220-SE13

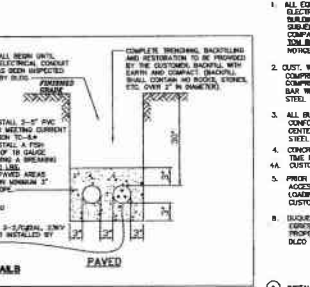


PRECAST CONCRETE NOTES

- REINFORCING BARS SHALL BE #3 BARS.
- REINFORCING BARS SHALL BE SPACED TO 18" ON-CENTER.
- CONCRETE SHALL BE FURNISHED WITH 1 1/2" AIR SMALL CURVE TO 18" ON-CENTER.
- ADDITIONAL BARS SHALL BE AS SHOWN.
- CONCRETE SHALL BE 3000 PSI.
- CONCRETE SHALL BE 3000 PSI.
- CONCRETE SHALL BE 3000 PSI.
- CONCRETE SHALL BE 3000 PSI.
- CONCRETE SHALL BE 3000 PSI.
- CONCRETE SHALL BE 3000 PSI.
- CONCRETE SHALL BE 3000 PSI.

CAST-IN-PLACE CONCRETE NOTES (OPTIONAL)

- CONCRETE SHALL BE 3000 PSI.
- CONCRETE SHALL BE 3000 PSI.
- CONCRETE SHALL BE 3000 PSI.
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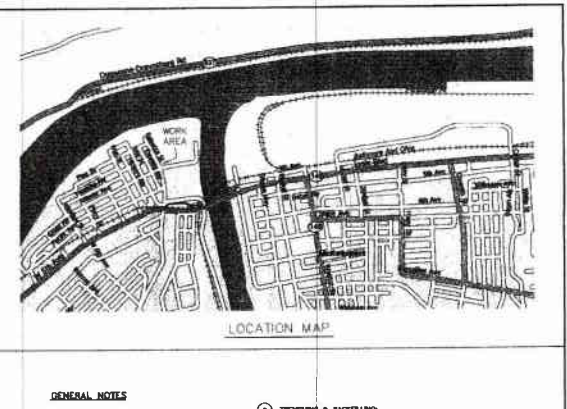


DUQUESNE LIGHT COMPANY WORK

- INSTALL 2-2000 VOLT DISTRIBUTION TRANSFORMER CONNECTED WYE-BASE FOR 277/480 VOLTS, 3 WIRE OPERATION.
- INSTALL TWO 1/2" DIA. COPPER CABLES WITH A WIRE SEPARATOR AND ONE 4/0 COPPER WIRE FOR 3 WIRE SERVICES FROM THE PAD. WIRE SEPARATOR ATTACHED TO THE SERVICE BOLT. BOLT WITH TWO 1/2" SLICER BRASS BOLTS AT EACH CONNECTION.
- INSTALL AN 18 GAUGE WYLOM CORD HAVING A MINIMUM BREAKING STRENGTH OF 170 LBS. IN EACH CONDUIT AND ELBOW.
- CONNECT TRENCHING, BACKFILLING AND RESTORATION TO BE PROVIDED BY THE CUSTOMER. BACKFILL SHALL BE APPROVED BY DLCS. COMPLETE TRENCHING, BACKFILLING AND RESTORATION TO BE PROVIDED BY THE CUSTOMER. BACKFILL SHALL BE APPROVED BY DLCS. COMPLETE TRENCHING, BACKFILLING AND RESTORATION TO BE PROVIDED BY THE CUSTOMER. BACKFILL SHALL BE APPROVED BY DLCS.

CUSTOMER'S WORK

- COMPLETE TRENCHING, BACKFILLING AND RESTORATION TO BE PROVIDED BY THE CUSTOMER. BACKFILL SHALL BE APPROVED BY DLCS. COMPLETE TRENCHING, BACKFILLING AND RESTORATION TO BE PROVIDED BY THE CUSTOMER. BACKFILL SHALL BE APPROVED BY DLCS.
- INSTALL 1 1/2" x 3/8" COPPER BAR GROUND BUS IN THE PAD. CONNECT EACH GROUND ROD TO THE BUS WITH A DOUBLE END-BOLT TYPE CONNECTOR SIMILAR TO THE TELETYPE PENN-UNION TYPE LHM-150N OR EQUIVALENT. ALL CONNECTIONS MUST BE APPROVED BY DUQUESNE LIGHT COMPANY PRIOR TO INSTALLATION.
- INSTALL 1 1/2" x 3/8" COPPER BAR GROUND BUS IN THE PAD. CONNECT EACH GROUND ROD TO THE BUS WITH A DOUBLE END-BOLT TYPE CONNECTOR SIMILAR TO THE TELETYPE PENN-UNION TYPE LHM-150N OR EQUIVALENT. ALL CONNECTIONS MUST BE APPROVED BY DUQUESNE LIGHT COMPANY PRIOR TO INSTALLATION.
- INSTALL SERVICE CABLES AND CONNECT TO THE SECONDARY TERMINALS OF THE TRANSFORMER. THE MINIMUM SIZE OF THE CUSTOMER'S SECONDARY CONDUITS IS 1/2" DIA. ON 1/2" DIA. TERMINALS. THE MINIMUM RANGE OF SECONDARY CONDUITS FOR THIS TRANSFORMER IS 1/2" DIA. TERMINALS WITH BUSHING NOT EXCEEDING 1/2". EACH CONNECTOR SHALL BE WELDED TO THE TRANSFORMER TERMINAL USING TWO 1/2" SLICER WELDS OR STAINLESS STEEL WELDS. ALL TERMINAL CONNECTIONS MUST BE WELDED TO THE TRANSFORMER TERMINAL USING TWO 1/2" SLICER WELDS OR STAINLESS STEEL WELDS. ALL TERMINAL CONNECTIONS MUST BE WELDED TO THE TRANSFORMER TERMINAL USING TWO 1/2" SLICER WELDS OR STAINLESS STEEL WELDS. ALL TERMINAL CONNECTIONS MUST BE WELDED TO THE TRANSFORMER TERMINAL USING TWO 1/2" SLICER WELDS OR STAINLESS STEEL WELDS.
- EXTEND CLEARING A MINIMUM OF 3' AND A MAXIMUM OF 4' INTO PAD OPENING OR UP POLE. DRILL FOUR 1/2" DIA. HOLES (MIN. 3" CENTER TO CENTER) AT THE LOW POINT OF EACH ELBOW AND REMOVE ALL INTERNAL BUSHING. INSTALL AN 1/2" DIA. HOLES (MIN. 3" CENTER TO CENTER) AT THE LOW POINT OF EACH ELBOW AND REMOVE ALL INTERNAL BUSHING. INSTALL AN 1/2" DIA. HOLES (MIN. 3" CENTER TO CENTER) AT THE LOW POINT OF EACH ELBOW AND REMOVE ALL INTERNAL BUSHING.



GENERAL NOTES

- ALL EQUIPMENT AND WORK SHALL CONFORM WITH THE NATIONAL ELECTRICAL CODE AND APPLICABLE UNDERWRITERS AND GOVERNMENTAL TESTING CODES. CERTAIN ITEMS AS NOTED ON THIS DRAWING ARE SUBJECT TO INSPECTION AND APPROVAL BY THE DUQUESNE LIGHT COMPANY. FOR ALL DUQUESNE LIGHT COMPANY INSPECTIONS, CALL YOUR BUREAU (412)-262-2822, A MINIMUM OF TWO DAYS PRIOR TO INSPECTION.
- CUSTOMER SHALL PROVIDE ALL TRENCHING, BACKFILLING AND RESTORATION. NO BACKFILL SHALL BE DONE UNTIL AFTER PRIMARY ELECTRICAL CONDUIT INSTALLATION HAS BEEN COMPLETED AND APPROVED BY DLCS. COMPLETE TRENCHING, BACKFILLING AND RESTORATION TO BE PROVIDED BY THE CUSTOMER. BACKFILL SHALL BE APPROVED BY DLCS. COMPLETE TRENCHING, BACKFILLING AND RESTORATION TO BE PROVIDED BY THE CUSTOMER. BACKFILL SHALL BE APPROVED BY DLCS.
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RELATED & REFERENCE DRAWINGS

- 860514 - TYPICAL POST AND CHAIN BARRIER
- 304815-T1 - CONSTRUCTION DRAWING
- 304815-T2 - REVISED CIRCUIT DRAWING
- 304815-T3 - PAD MOUNTED SWITCH DETAIL DRAWING
- 304815-T4 - GROUND GRID DETAIL DRAWING

APPROVED BY: [Signature]

DATE: 12/11/2011

SCALE: AS SHOWN

PROJECT NO.: 304815-T5

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2011-06-41 AND 2011-06-42
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRIC UTILITY CONSTRUCTION DETAILS SHEET 4 OF 4

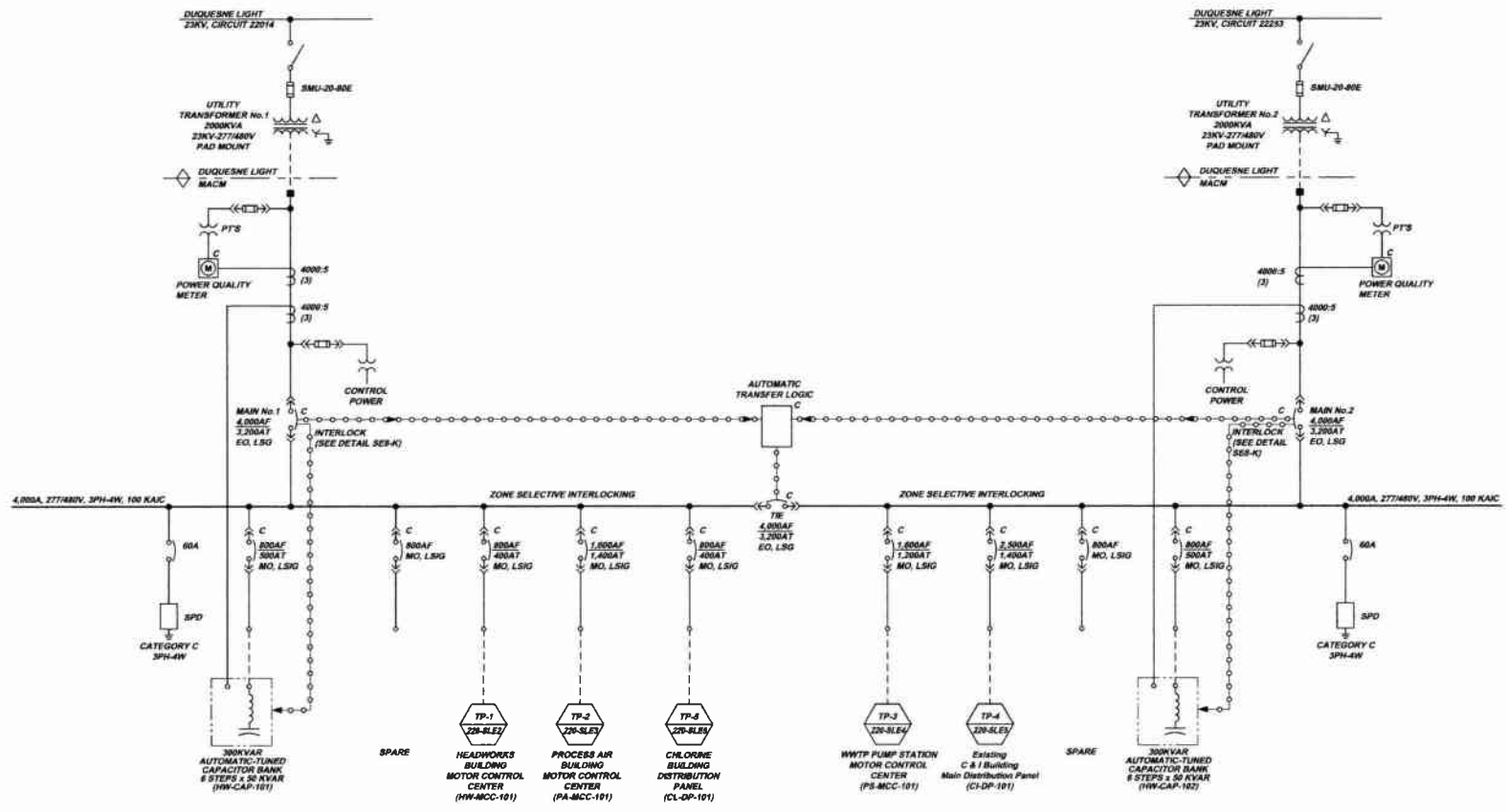
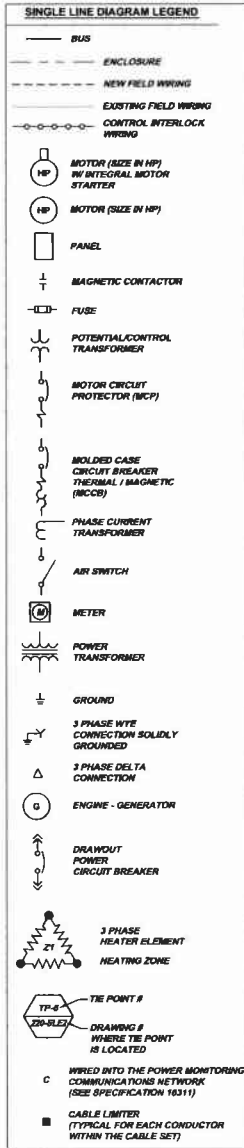
KLH ENGINEERS, INC.

3172 CAMPBELL RUN ROAD
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Scale: Not to Scale
Date: DEC. 2011
Drawn By: DOW
Checked By: MAM
Approved By: MHC

Revision: 1
Date: 12/11/2011
Description: RELEASE FOR BIDD

Sheet No. 14
Drawing No. 220-SE14



ABBREVIATIONS

EO	ELECTRICALLY OPERATED
MO	MANUALLY OPERATED
AF	AMP - FRAME
AT	AMP - TRIP
L.SIG	L - LONG TIME
S	SHORT TIME
I	INSTANTANEOUS
G	GROUND
PT	POTENTIAL TRANSFORMER
SPD	SURGE PROTECTIVE DEVICE
FVNR	FULL VOLTAGE NON-REVERSING

NOTES:

- EACH AUTOMATIC CAPACITOR BANK SHALL BE INTERLOCKED WITH ITS ASSOCIATED MAIN BUS CIRCUIT BREAKER. THE BANK SHALL ONLY BE OPERATIONAL WHEN THE CIRCUIT BREAKER IS CLOSED. THIS SHALL APPLY TO BOTH AUTOMATIC AND MANUAL OPERATION.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010CP AND 2010CZ
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SINGLE LINE DIAGRAM SHEET 1 OF 5

Scale:	As Shown
Date:	DEC-2010
Drawn By:	DOV
Checked By:	MAM
Approved By:	SHG

Revisions:

Date	Revisions
1-2011	RELEASE FOR BID

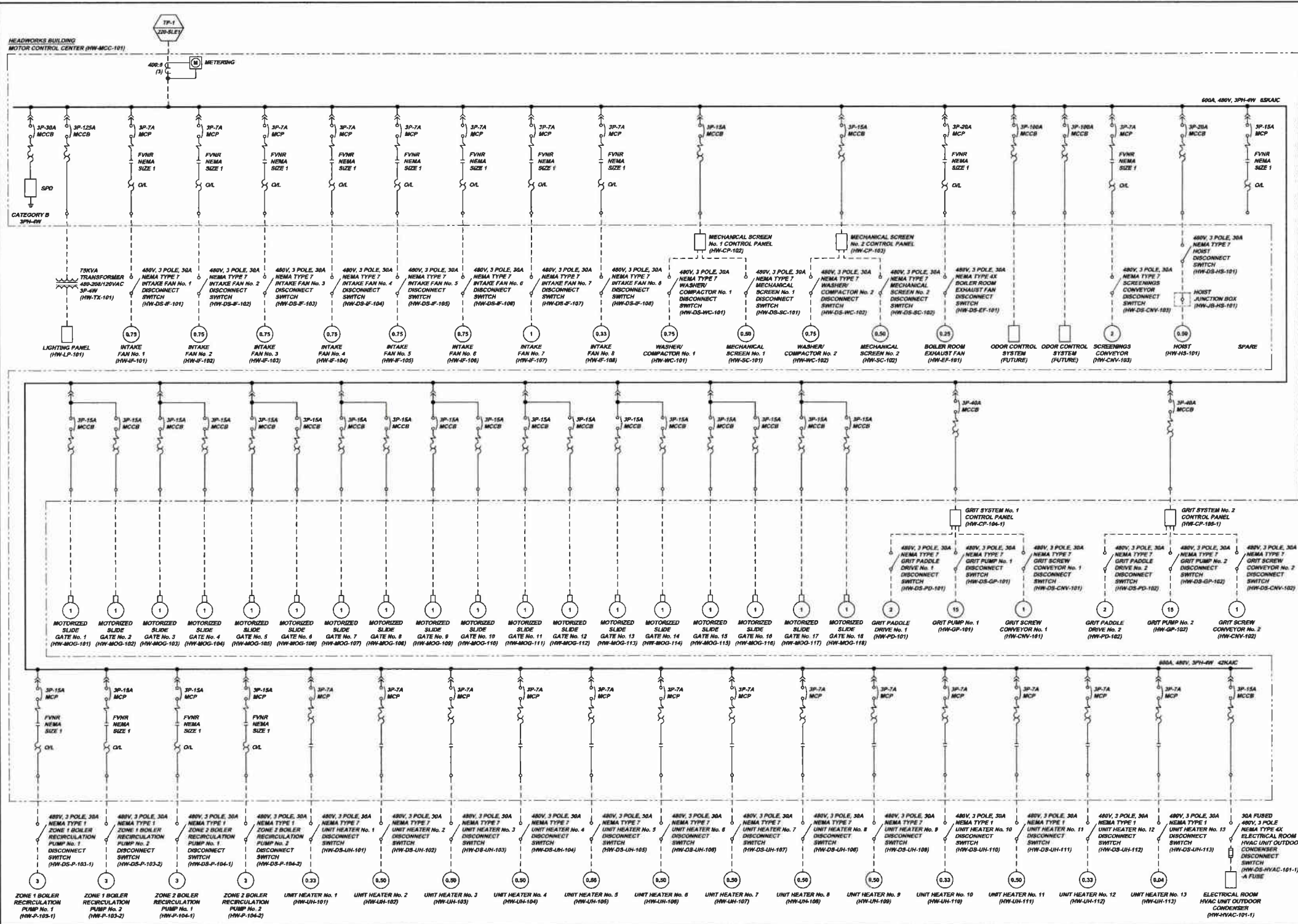
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Sheet No. **1**

Drawing No. **220-SLE1**



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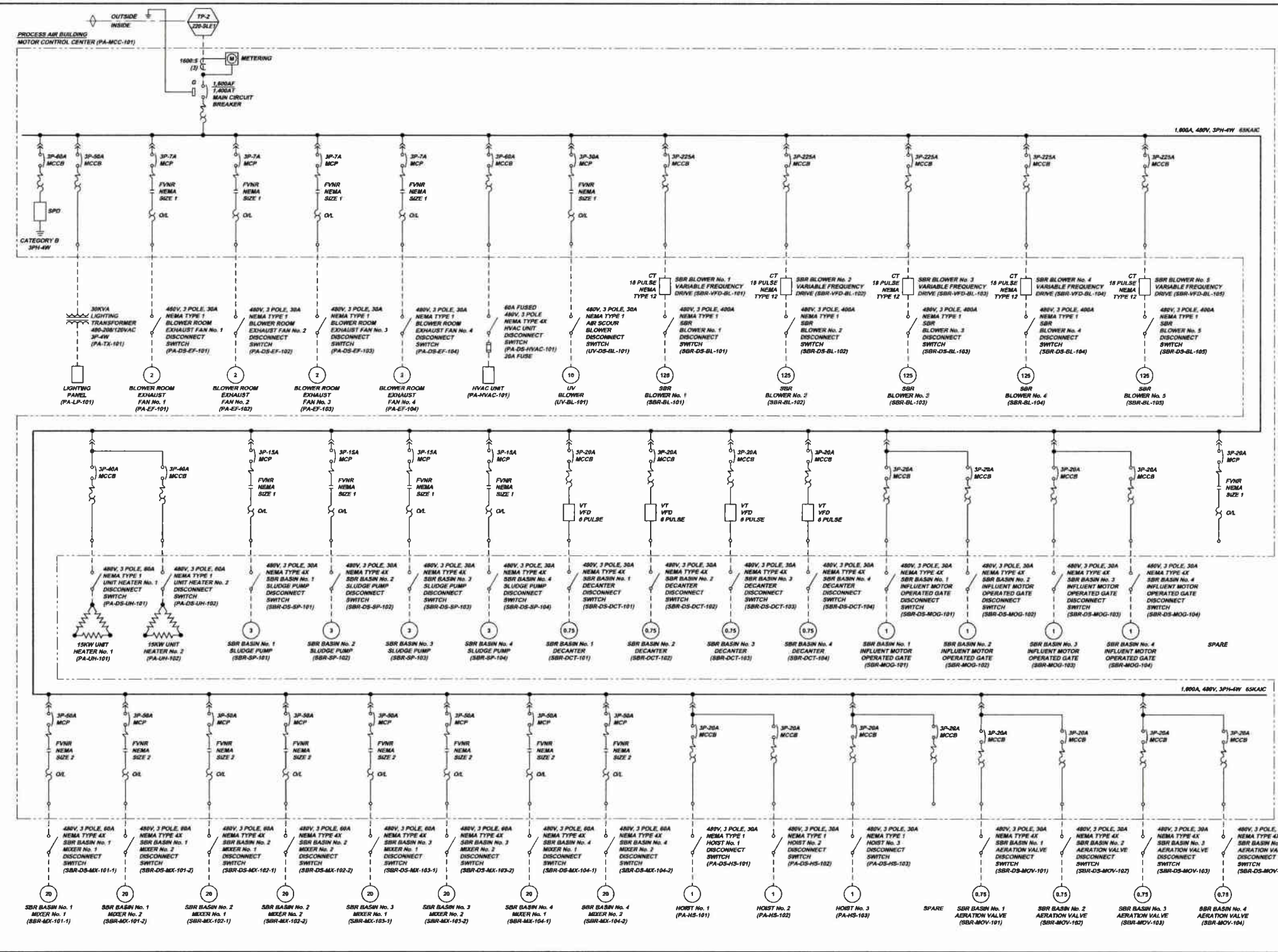


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Date:	DEC. 2010
Drawn By:	DOV
Checked By:	MAN
Approved By:	SHD
Sheet No.:	2
Drawing No.:	220-SLE2

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 ELECTRICAL SINGLE LINE DIAGRAM SHEET 2 OF 5

5175 CAMPBELL BLVD. ROAD
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KLH ENGINEERS, INC.



Revision	Date	By
1-2011	RELEASE FOR BID	

3173 CAMPBELL RUN ROAD
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 201-0-01 AND 201-0-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SINGLE LINE DIAGRAM SHEET 3 OF 5

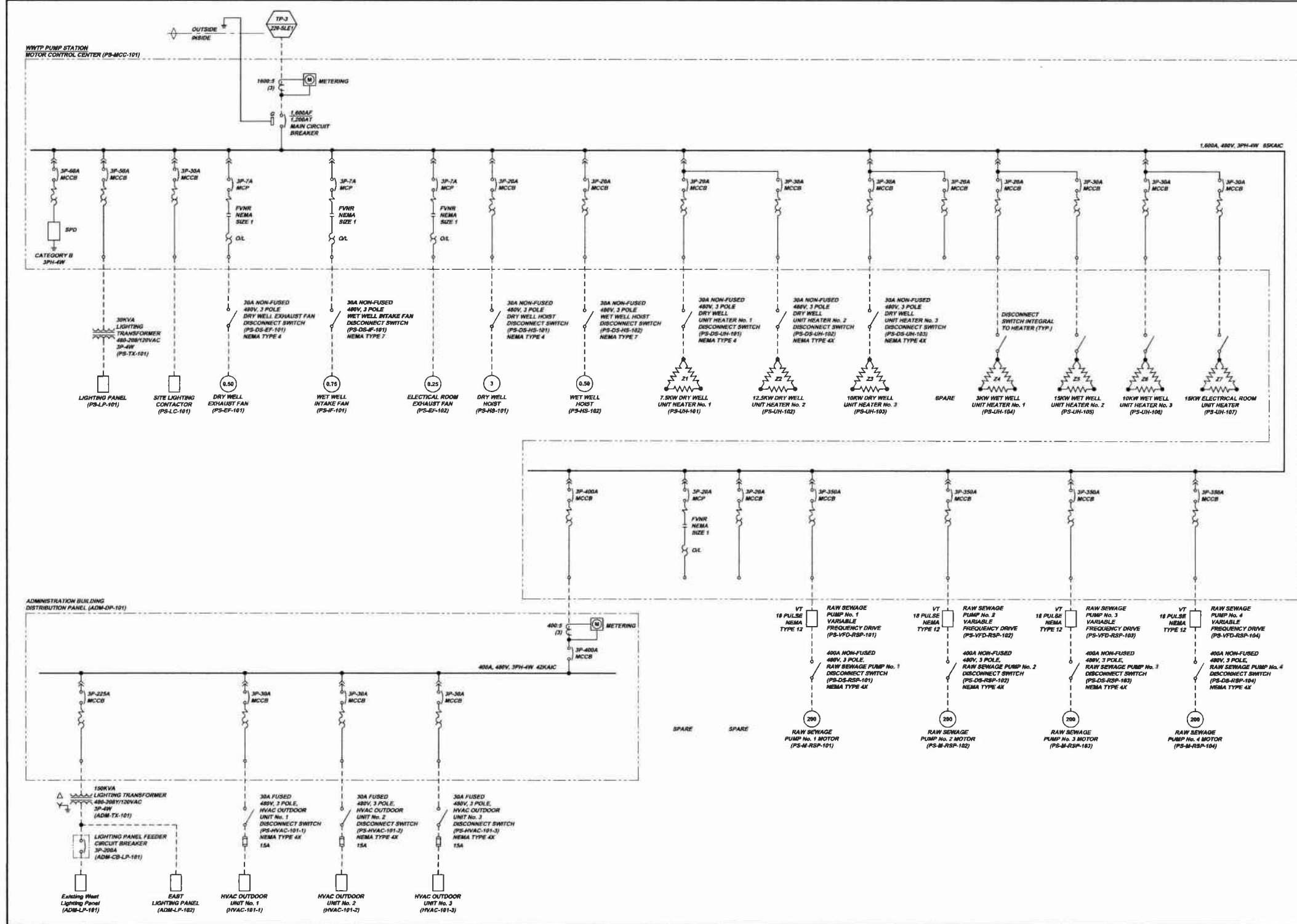
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ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 201-0-01 AND 201-0-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SINGLE LINE DIAGRAM SHEET 3 OF 5

As Shown	DEC. 2010
Scale	1" = 100'
Drawn By	MM
Checked By	MM
Approved By	MM

Sheet No. **3**

Drawing No. **220-SLE3**



Date	Revisions
1/2011	
RELEASE FOR BID	

5173 GARFELLS RUN ROAD
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info@klhengineers.com

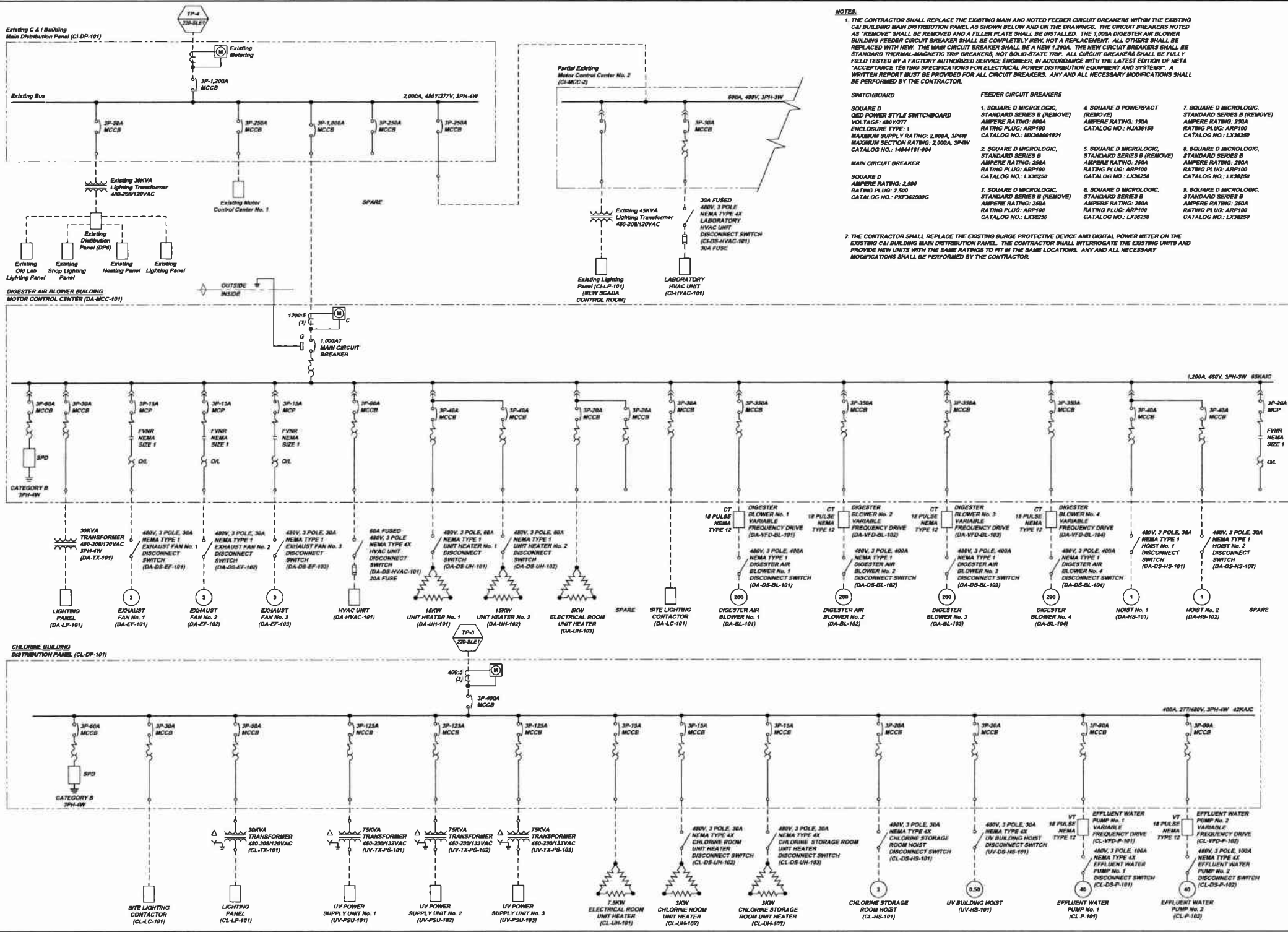
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MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SINGLE LINE DIAGRAM SHEET 4 OF 5

As Shown	DEC. 2010
Sheet	DCW
Drawn By	MM
Checked By	
Approved By	SKG

Sheet No. 4

Drawing No. **220-SLE4**



NOTES:

- THE CONTRACTOR SHALL REPLACE THE EXISTING MAIN AND NOTED FEEDER CIRCUIT BREAKERS WITHIN THE EXISTING C&I BUILDING MAIN DISTRIBUTION PANEL AS SHOWN BELOW AND ON THE DRAWINGS. THE CIRCUIT BREAKERS NOTED AS "REMOVE" SHALL BE REMOVED AND A FILLER PLATE SHALL BE INSTALLED. THE 1,000A DIGESTER AIR BLOWER BUILDING FEEDER CIRCUIT BREAKER SHALL BE COMPLETELY NEW, NOT A REPLACEMENT. ALL OTHERS SHALL BE REPLACED WITH NEW. THE MAIN CIRCUIT BREAKER SHALL BE A NEW 1,200A. THE NEW CIRCUIT BREAKERS SHALL BE STANDARD THERMAL-MAGNETIC TRIP BREAKERS, NOT SOLID-STATE TRIP. ALL CIRCUIT BREAKERS SHALL BE FULLY FIELD TESTED BY A FACTORY AUTHORIZED SERVICE ENGINEER, IN ACCORDANCE WITH THE LATEST EDITION OF NETA "ACCEPTANCE TESTING SPECIFICATIONS FOR ELECTRICAL POWER DISTRIBUTION EQUIPMENT AND SYSTEMS". A WRITTEN REPORT MUST BE PROVIDED FOR ALL CIRCUIT BREAKERS. ANY AND ALL NECESSARY MODIFICATIONS SHALL BE PERFORMED BY THE CONTRACTOR.

SWITCHBOARD

SQUARE D
 600 POWER STYLE SWITCHBOARD
 VOLTAGE: 480Y/277
 ENCLOSURE TYPE: 1
 MAXIMUM SUPPLY RATING: 2,000A, 3PHW
 MAXIMUM SECTION RATING: 2,000A, 3PHW
 CATALOG NO.: 14844181-004

MAIN CIRCUIT BREAKER

SQUARE D
 AMPERE RATING: 2,500
 RATING PLUG: 2,500
 CATALOG NO.: PXP362500G

FEEDER CIRCUIT BREAKERS

1. SQUARE D MICROLOGIC, STANDARD SERIES B (REMOVE) AMPERE RATING: 800A RATING PLUG: ARP100 CATALOG NO.: M33600R1821	4. SQUARE D POWERPACT (REMOVE) AMPERE RATING: 150A RATING PLUG: ARP100 CATALOG NO.: LK36250	7. SQUARE D MICROLOGIC, STANDARD SERIES B (REMOVE) AMPERE RATING: 250A RATING PLUG: ARP100 CATALOG NO.: LK36250
2. SQUARE D MICROLOGIC, STANDARD SERIES B (REMOVE) AMPERE RATING: 250A RATING PLUG: ARP100 CATALOG NO.: LK36250	5. SQUARE D MICROLOGIC, STANDARD SERIES B (REMOVE) AMPERE RATING: 250A RATING PLUG: ARP100 CATALOG NO.: LK36250	8. SQUARE D MICROLOGIC, STANDARD SERIES B (REMOVE) AMPERE RATING: 250A RATING PLUG: ARP100 CATALOG NO.: LK36250
3. SQUARE D MICROLOGIC, STANDARD SERIES B (REMOVE) AMPERE RATING: 250A RATING PLUG: ARP100 CATALOG NO.: LK36250	6. SQUARE D MICROLOGIC, STANDARD SERIES B (REMOVE) AMPERE RATING: 250A RATING PLUG: ARP100 CATALOG NO.: LK36250	9. SQUARE D MICROLOGIC, STANDARD SERIES B (REMOVE) AMPERE RATING: 250A RATING PLUG: ARP100 CATALOG NO.: LK36250

2. THE CONTRACTOR SHALL REPLACE THE EXISTING SURGE PROTECTIVE DEVICE AND DIGITAL POWER METER ON THE EXISTING C&I BUILDING MAIN DISTRIBUTION PANEL. THE CONTRACTOR SHALL INTERROGATE THE EXISTING UNITS AND PROVIDE NEW UNITS WITH THE SAME RATINGS TO FIT IN THE SAME LOCATIONS. ANY AND ALL NECESSARY MODIFICATIONS SHALL BE PERFORMED BY THE CONTRACTOR.

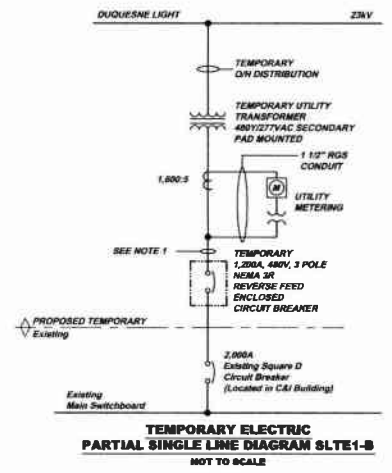
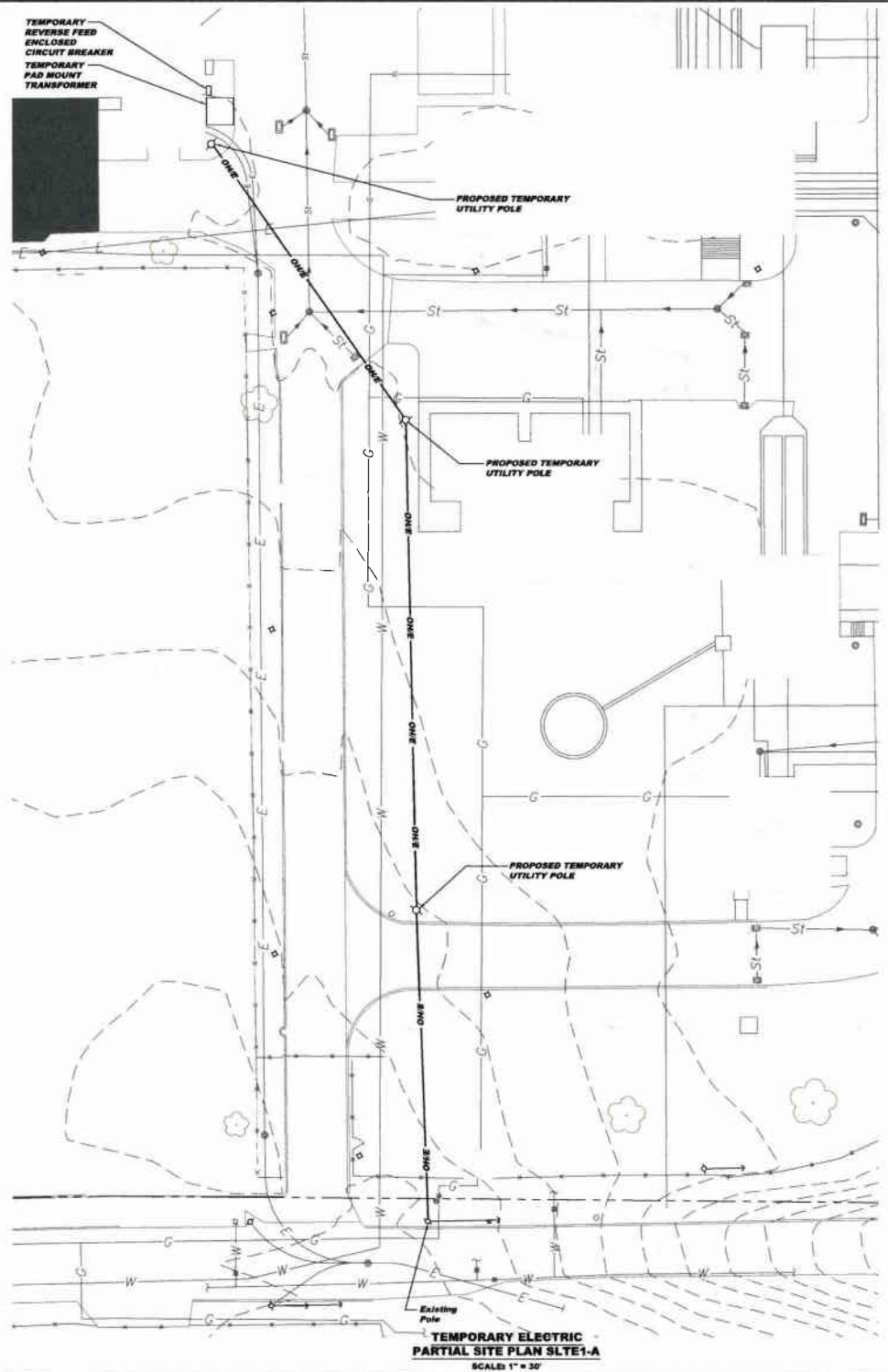
KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF WICKESPORT
 ALL CEMETERY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2011-01-01 AND 2016-03
 WASTEWATER TREATMENT PLANT EXPANSION
 ELECTRICAL SINGLE LINE DIAGRAM SHEET 5 OF 5

Scale:	As Shown
Date:	DEC 2010
Drawn By:	DCW
Checked By:	MM
Approved By:	SHS

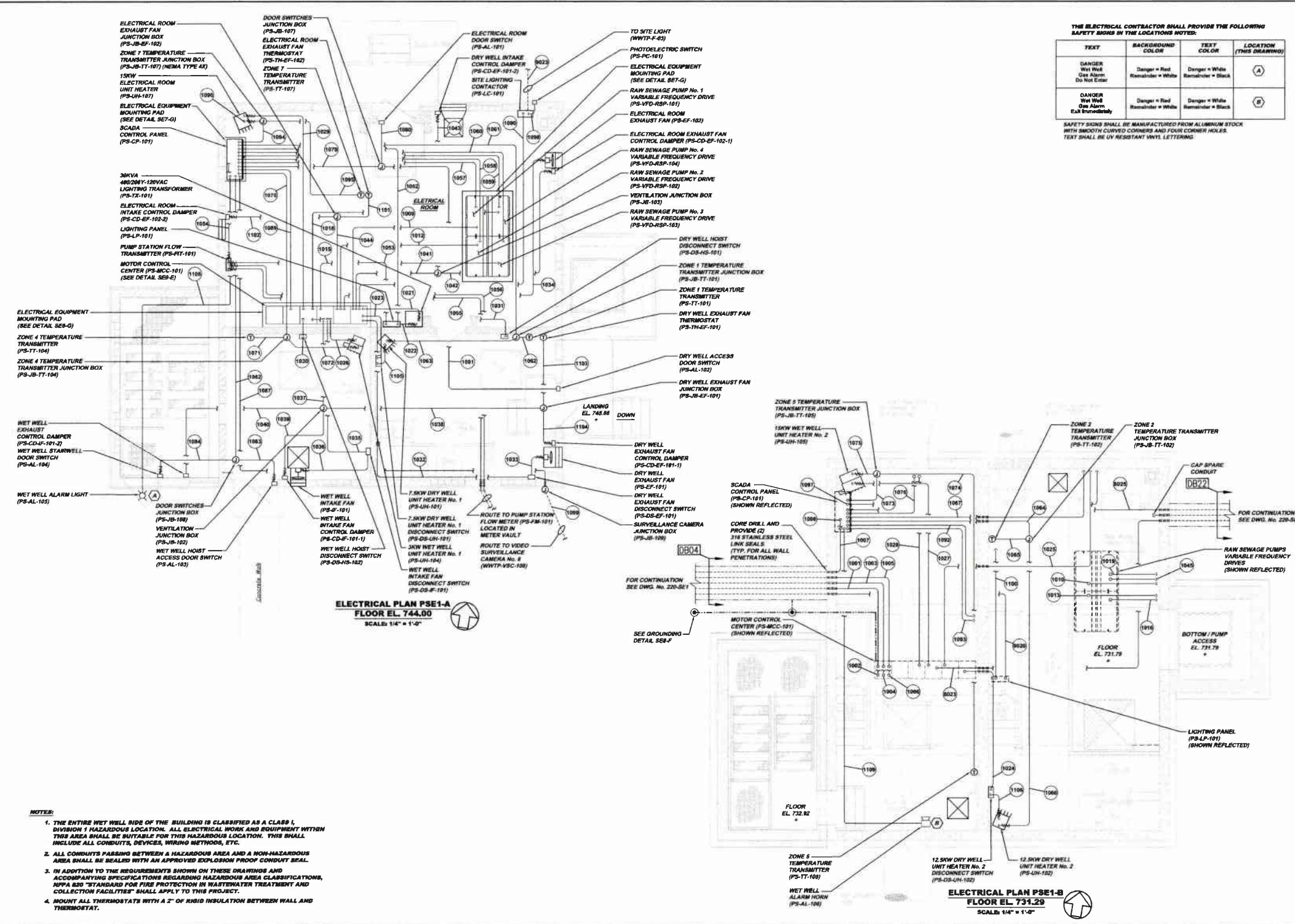
Sheet No. 5

Drawing No. **220-SLES**



- NOTES:**
1. INTERCEPT THE THREE (3) EXISTING RGS CONDUITS AND ROUTE TO THE TEMPORARY 1,200A ENCLOSED CIRCUIT BREAKER. FURNISH AND INSTALL THREE (3) TEMPORARY RGS/PVC CONDUITS BETWEEN THE TEMPORARY TRANSFORMER AND THE ENCLOSED CIRCUIT BREAKER. FURNISH AND INSTALL 3 SETS OF 4-1/2\"/>
 2. FURNISH AND INSTALL A CONCRETE MOUNTING PAD FOR THE PAD MOUNT TRANSFORMER.
 3. FURNISH AND INSTALL A 1\"/>
 4. SEE SPECIFICATION 16400 FOR ADDITIONAL DETAILS AND REQUIREMENTS OF THE TEMPORARY ELECTRIC SERVICE.

5172 DARRELLE BLVD ROAD WASHINGTON, PA 15387 Phone: 412-494-0313 Fax: 412-494-0426 info@klh-engineers.com	KLH ENGINEERS, INC.	MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 15-10-1 AND 2014-3 WASTEWATER TREATMENT PLANT EXPANSION WWTP TEMPORARY ELECTRIC PARTIAL SITE PLAN AND SINGLE LINE DIAGRAM	All Sheets: DEC. 2010 Drawn By: DCW Checked By: MJB Approved By: BNG	Sheet No. 6	Drawing No. 220-SLTE1
Date: 1-2011 Revisions: RELEASE FOR BID	Date:	Revisions:	Date:	Revisions:	Date:



THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE FOLLOWING SAFETY SIGNS IN THE LOCATIONS NOTED:

TEXT	BACKGROUND COLOR	TEXT COLOR	LOCATION (THIS DRAWING)
DANGER Wet Well Gas Alarm Do Not Enter	Danger = Red Remainder = White	Danger = White Remainder = Black	(A)
DANGER Wet Well Gas Alarm Call Immediately	Danger = Red Remainder = White	Danger = White Remainder = Black	(B)

SAFETY SIGNS SHALL BE MANUFACTURED FROM ALUMINUM STOCK WITH SMOOTH CURVED CORNERS AND FOUR CORNER HOLES. TEXT SHALL BE UV RESISTANT WHITE LETTERING.

- NOTES:**
1. THE ENTIRE WET WELL BIDS OF THE BUILDING IS CLASSIFIED AS A CLASS I, DIVISION 1 HAZARDOUS LOCATION. ALL ELECTRICAL WORK AND EQUIPMENT WITHIN THIS AREA SHALL BE SUITABLE FOR THIS HAZARDOUS LOCATION. THIS SHALL INCLUDE ALL CONDUITS, DEVICES, WIRING METHODS, ETC.
 2. ALL CONDUITS PASSING BETWEEN A HAZARDOUS AREA AND A NON-HAZARDOUS AREA SHALL BE SEALED WITH AN APPROVED EXPLOSION PROOF CONDUIT SEAL.
 3. IN ADDITION TO THE REQUIREMENTS SHOWN ON THESE DRAWINGS AND ACCOMPANYING SPECIFICATIONS REGARDING HAZARDOUS AREA CLASSIFICATIONS, NFPA 820 "STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES" SHALL APPLY TO THIS PROJECT.
 4. MOUNT ALL THERMOSTATS WITH A 2" OF RIGID INSULATION BETWEEN WALL AND THERMOSTAT.

KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-041 AND 2010-042
WASTEWATER TREATMENT PLANT EXPANSION
PUMP STATION ELECTRICAL PLANS AND DETAILS

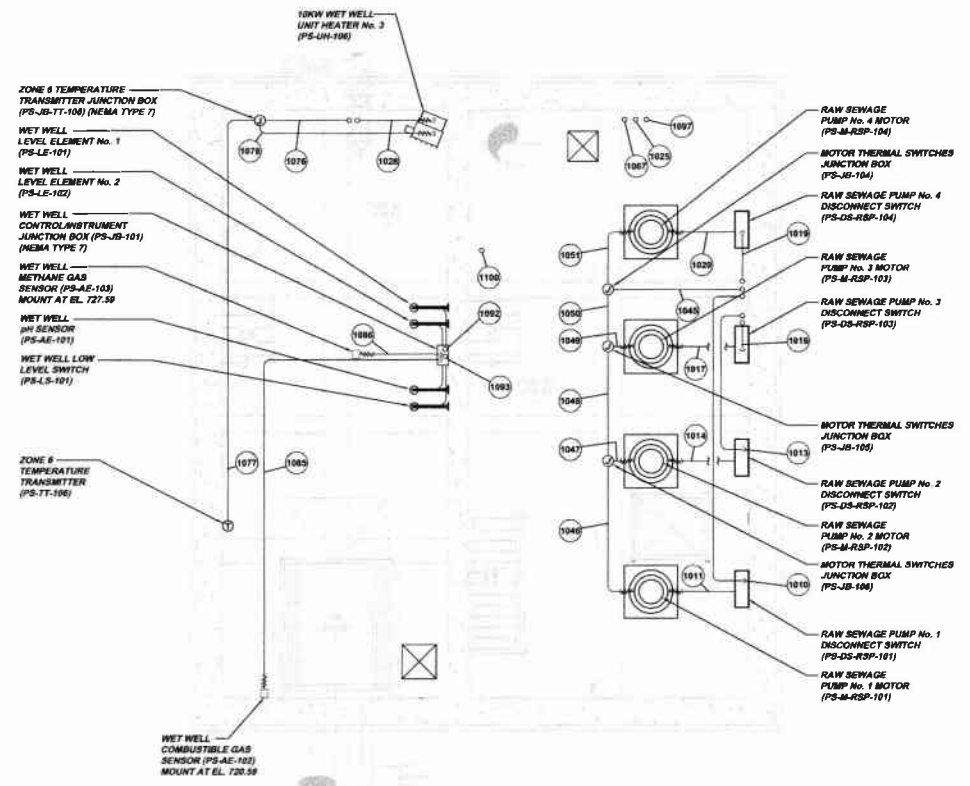
Revisions	Date	Revision	Date
RELEASE FOR BID	1/20/11		

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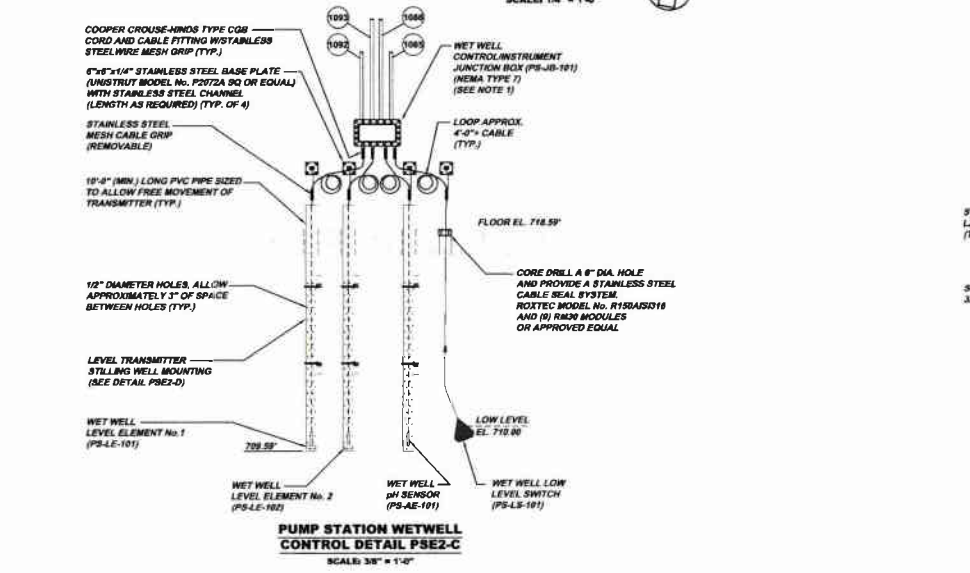
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Date:	DCB	2010	DCW
Drawn By:	MJM		
Checked By:	MJM		
Approved By:	BWS		

Sheet No. 1

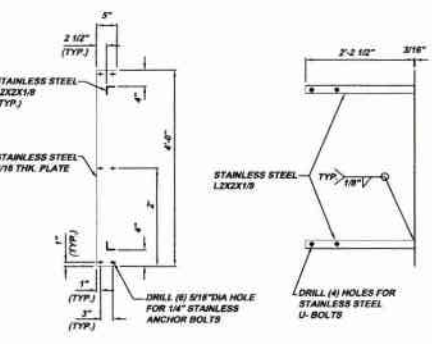
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ELECTRICAL PLAN PSE2-A
FLOOR EL. 718.59
 SCALE: 1/4" = 1'-0"

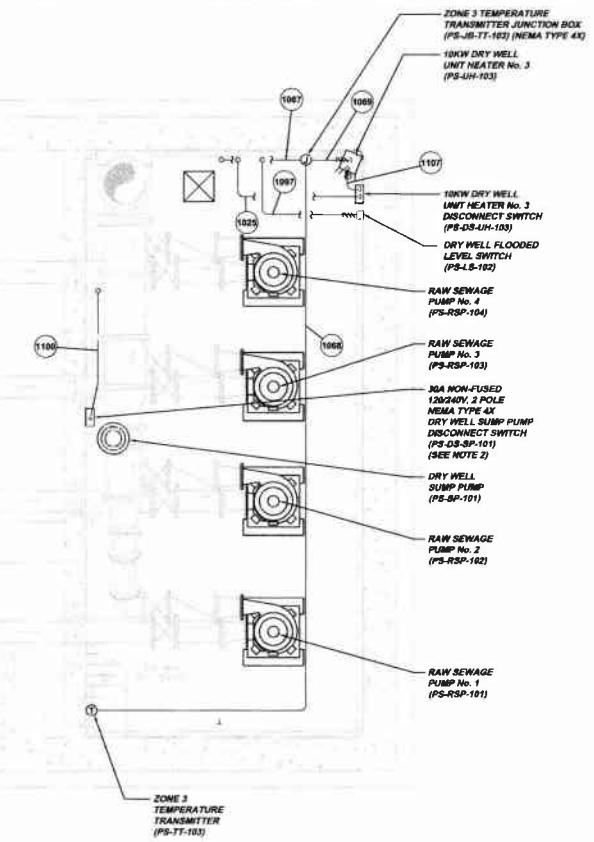


PUMP STATION WETWELL CONTROL DETAIL PSE2-C
 SCALE: 3/8" = 1'-0"



LEVEL TRANSMITTER/pH SENSOR STILLING WELL MOUNTING DETAIL PSE2-D
 SCALE: 3/4" = 1'-0"

ELECTRICAL PLAN PSE2-B
FLOOR EL. 706.00 AND EL. 703.00
 SCALE: 1/4" = 1'-0"



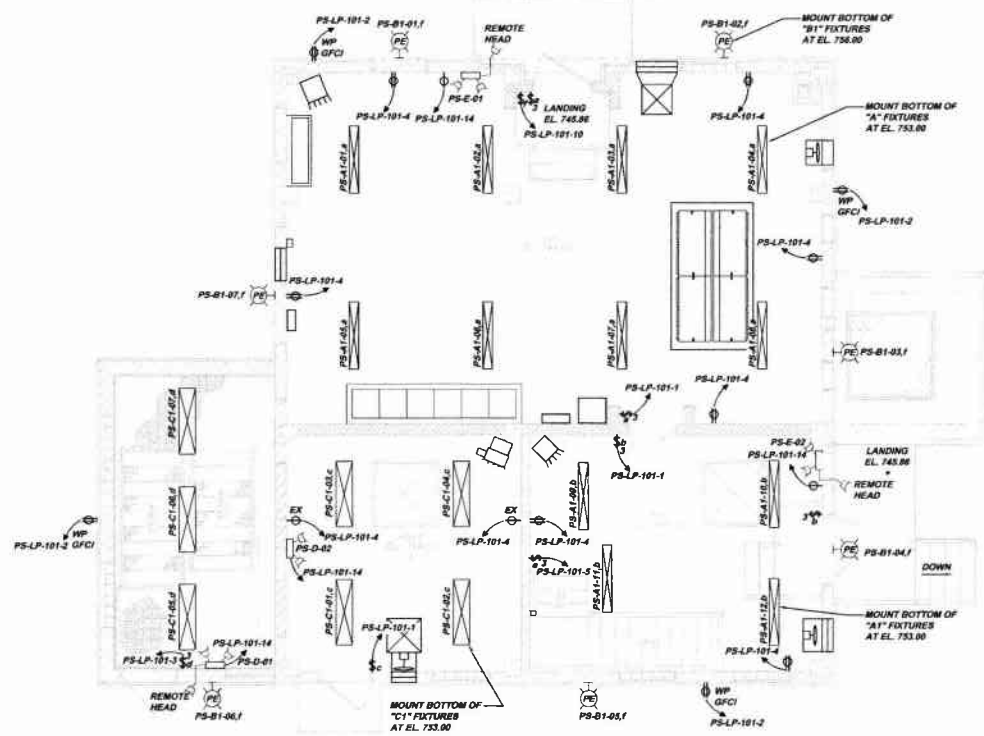
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				DCW
				MJM
				SHG
Sheet No.	2			
Drawing No.	220-PSE2			

MUNICIPAL AUTHORITY OF THE CITY OF WICKESPORT
 ALL LEGHAY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2011-05-11 AND 2012-05-02
 WASTEWATER TREATMENT PLANT EXPANSION
 PUMP STATION ELECTRICAL PLANS AND DETAILS

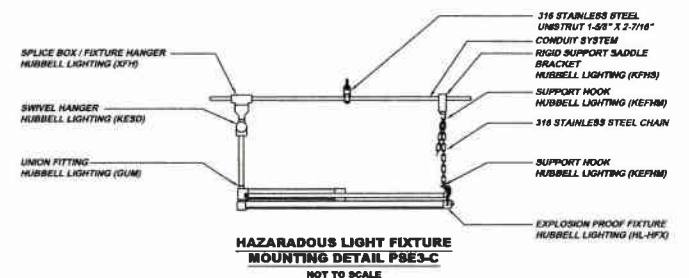


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- NOTES:**
1. WET WELL CONTROL/INSTRUMENT JUNCTION BOX (PS-JB-101) SHALL BE A COOPER CROUSE-HINDS TYPE EJB, STYLE C, ALUMINUM, SIZED TO HOUSE ALL REQUIRED TERMINAL BLOCKS, REQUIRED BAROMETRIC VENT FOR LEVEL ELEMENTS, PLUS 20 PERCENT SPARE CAPACITY COMPLETE WITH MOUNTING PLATE AND A COMBINATION EXPLOSION PROOF BREATHER / DRAIN. BREATHER / DRAIN SHALL BE A COOPER CROUSE-HINDS MODEL NO. ECD18 OR EQUAL.
 2. CBL APPROX. 2 FEET OF CABLE AND SUPPORT WITH STAINLESS STEEL SUPPORTS. FURNISH W/PUMP A COOPER CROUSE-HINDS TYPE CMB CORD AND CABLE FITTING W/STAINLESS STEEL MESH CORD GRIP. ELECTRICAL CONTRACTOR IS TO INSTALL.



LIGHTING PLAN PSE3-A
FLOOR EL. 744.00
 SCALE: 1/4" = 1'-0"

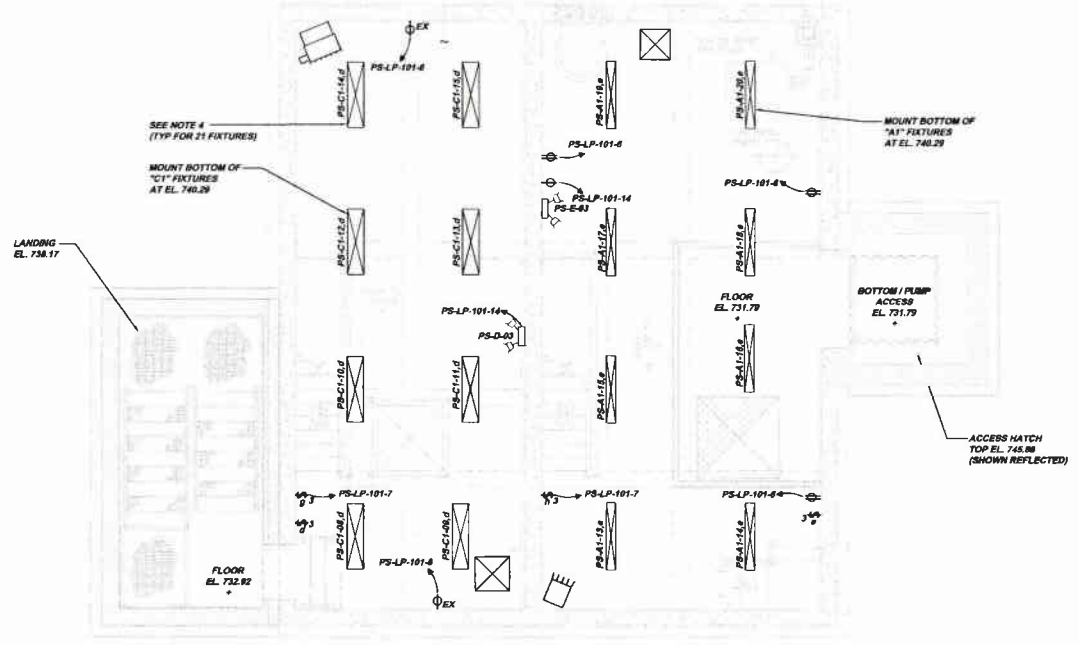


HAZARDOUS LIGHT FIXTURE
MOUNTING DETAIL PSE3-C
 NOT TO SCALE

- NOTE:**
- SINGLE GANG DIVISION PROOF RECEPTACLES SHALL BE COOPER CROUSE-HINDS 20 AMP, TYPE ENR SINGLE GANG DEAD END ASSEMBLIES OR EQUAL, EACH SUPPLIED WITH ONE 20 AMP, TYPE ENR PLUG.
 - EXPLOSION PROOF LIGHT SWITCHES SHALL BE COOPER CROUSE-HINDS TYPE ED3 OR EQUAL.
 - THE ENTIRE WET WELL SIDE OF THE PUMP STATION IS CLASSIFIED AS A CLASS 1, DIVISION 1 HAZARDOUS LOCATION. THIS SHALL INCLUDE THE WET WELL STAIRWELL. ALL ELECTRICAL WORK AND EQUIPMENT WITHIN THIS AREA SHALL BE SUITABLE FOR THIS HAZARDOUS LOCATION. THIS SHALL INCLUDE ALL CONDUITS, DEVICES, WIRING METHODS, ETC.
 - PROVIDE SUFFICIENT SPACE TO RE-LAMP "C1" FIXTURES.

LIGHTING PANEL (PS-LP-101)												
VOLTS, PHASE, WIRE:		PANEL SIZE & TYPE:		MAIN SIZE & TYPE:			CABINET:					
200Y/120V, 3PH, 4W		100A SURFACE		8GA MCCB			NEMA TYPE 1					
NO	TRIP	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	TRIP	NO	
1	20A	1st FLOOR LIGHTS	1564			720			EXTERIOR RECEPTACLES	20A	2	
3	20A	2nd FLOOR WET WELL LIGHTS		1540			1620		1st FLOOR RECEPTACLES	20A	4	
5	20A	2nd FLOOR DRY WELL LIGHTS			636			900	2nd FLOOR RECEPTACLES	20A	6	
7	20A	3rd FLOOR LIGHTS	1480			1440			3rd & 4th FLOOR RECEPTACLES	20A	8	
9	20A	4th FLOOR LIGHTS		656			385		EXTERIOR LIGHTS	20A	10	
11	20A	SUMP PUMP			400			50	FLOW TRANSMITTER	20A	12	
13	20A	SCADA CONTROL PANEL	1000				616		EMERGENCY LIGHTS	20A	14	
16	20A	ATLANTIC AVE. GATE OPERATOR		378					SPARE	20A	16	
17	20A	SPARE			378				SPARE	20A	18	
19	20A	SPARE							SPARE	20A	20	
21	20A	SPARE							SPARE	20A	22	
23	20A	SPARE							SPARE	20A	24	
25	20A	SPARE							SPD	20A	26	
27	20A	SPARE							SPD	20A	28	
29	20A	SPARE								20A	30	
SUBTOTAL =			4,040	2,872	1,432	2,778	2,006	600				
TOTAL CONNECTED A =			4,815									
TOTAL CONNECTED B =			4,777									
TOTAL CONNECTED C =			2,382									
TOTAL PANEL CONNECTED =			13,774									
PANEL AMP'S =			38.3									

INTERNAL 3P-4W SPD



LIGHTING PLAN PSE3-B
FLOOR EL. 731.29
 SCALE: 1/4" = 1'-0"

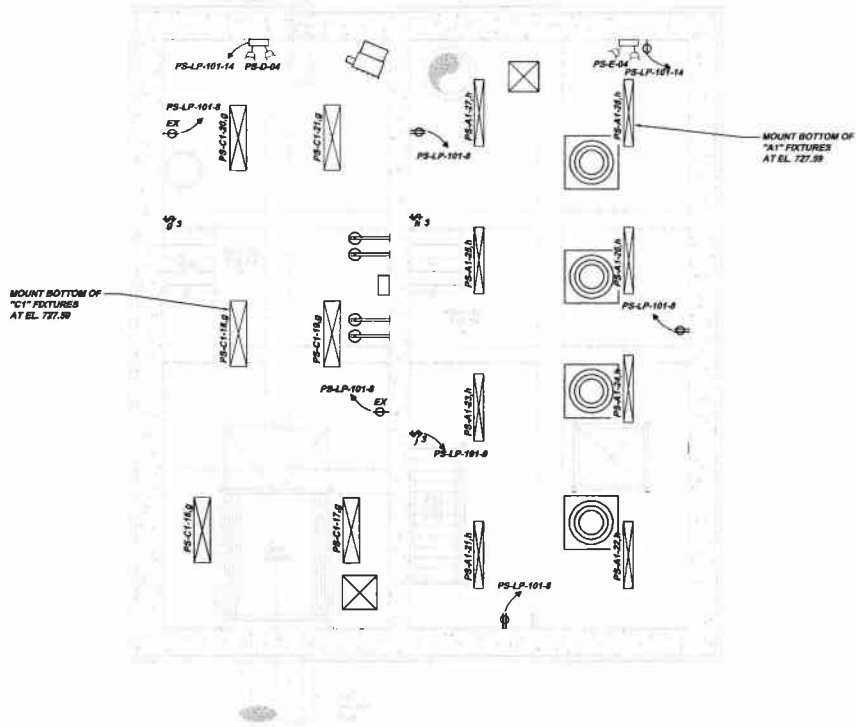
KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 PUMP STATION LIGHTING PLANS

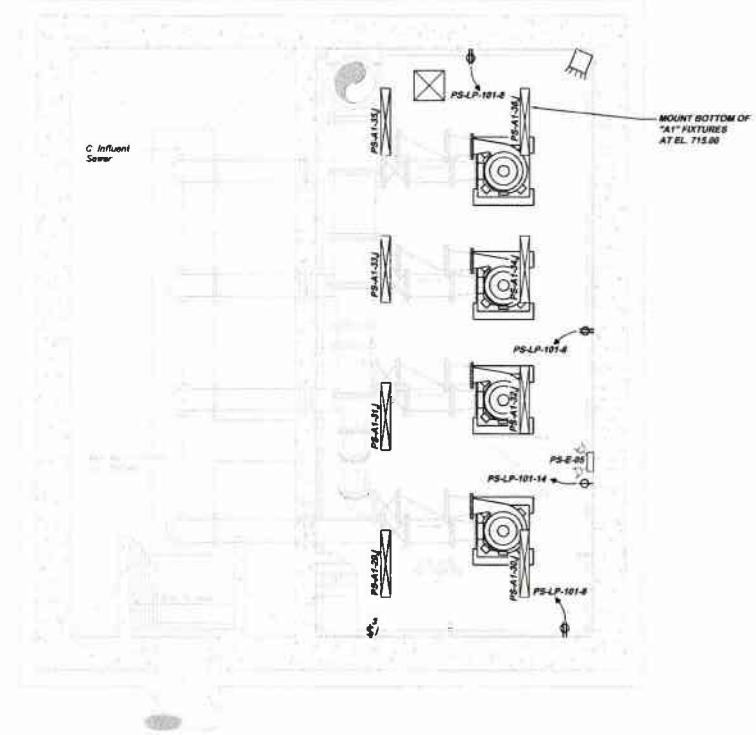
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Drawn By:	DCW
Checked By:	MJM
Approved By:	SHG

Sheet No. **3**

Drawing No. **220-PSE3**



LIGHTING PLAN PSE4-A
FLOOR EL. 718.39
 SCALE: 1/4" = 1'-0"



LIGHTING PLAN PSE4-B
FLOOR EL. 706.00 AND EL. 703.00
 SCALE: 1/4" = 1'-0"



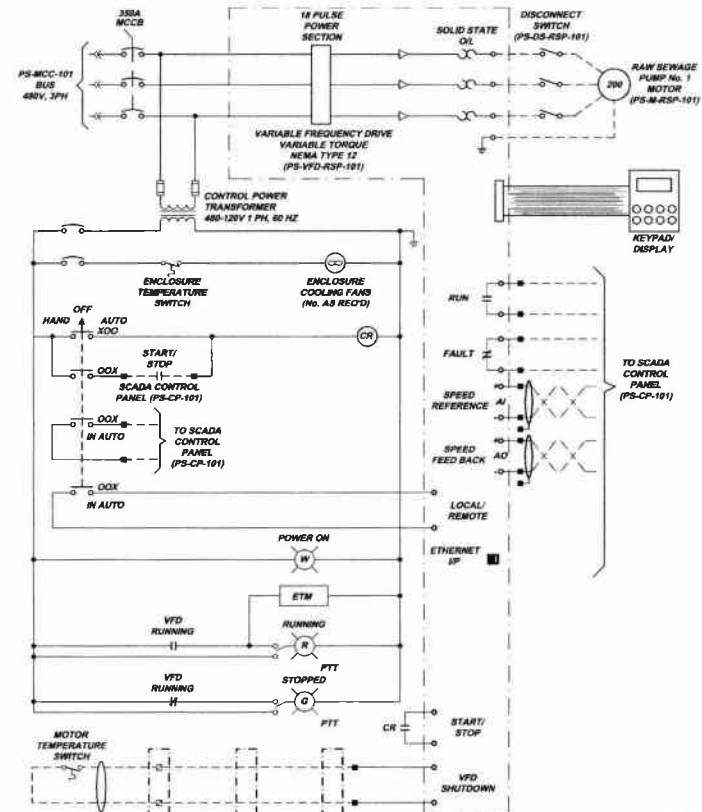
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Date:	Date:
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Checked By: MJM	REVISIONS:
Approved By: SWS	DATE:
Sheet No.:	DATE:
4	DATE:
Drawing No.:	DATE:
220-PSE4	DATE:

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGANY COUNTY, PENNSYLVANIA
 CONTRACT NUMBERS 2011-04-01 AND 2011-04-02
 WASTEWATER TREATMENT PLANT EXPANSION
 PUMP STATION LIGHTING PLANS

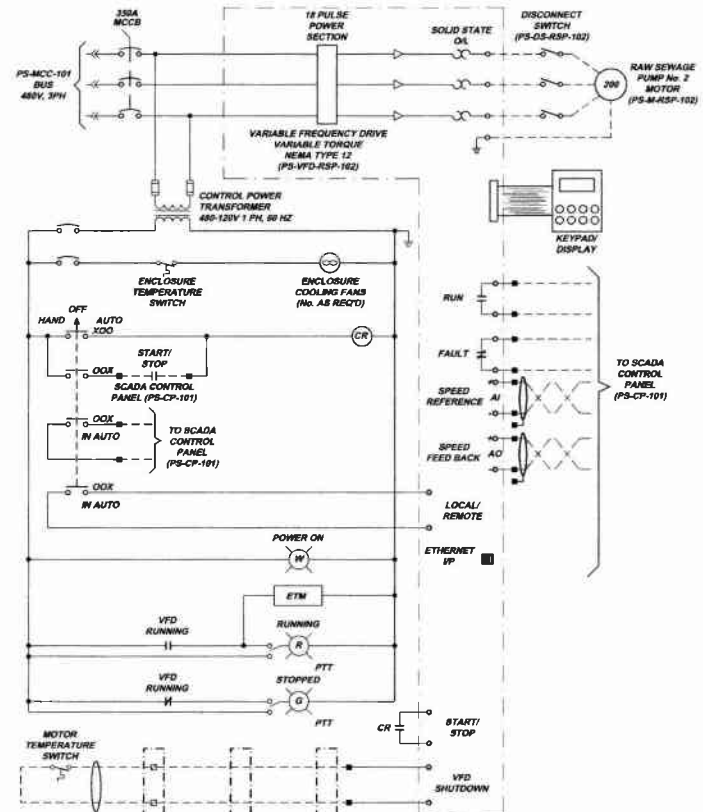


5175 CAMPBELL RUN ROAD
 PITTSBURGH, PA 15201
 PHONE: 412-494-0310
 FAX: 412-494-0326
 info@klhengineers.com

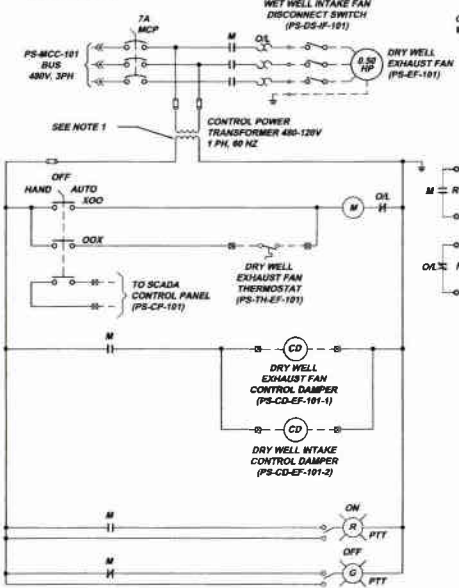
Date:	Revisions:
1-2011	REVISIONS:
REVISIONS:	DATE:
RELEASE FOR BID	DATE:



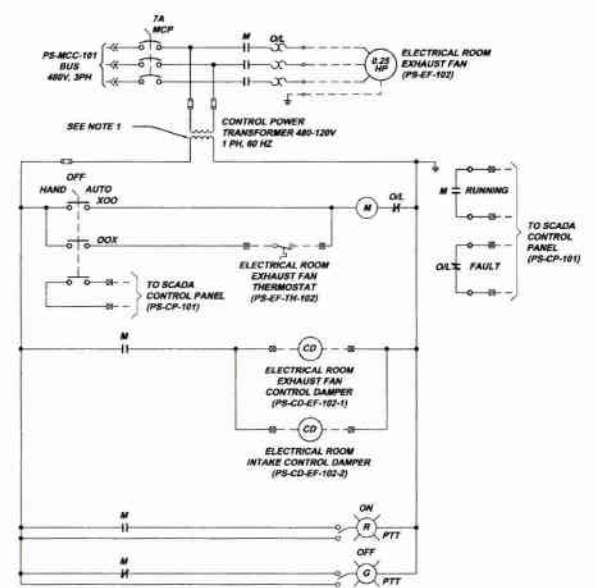
RAW SEWAGE PUMP No. 1
SCHMATIC PSES-A
NOT TO SCALE



RAW SEWAGE PUMP No. 2
SCHMATIC PSES-B
NOT TO SCALE



DRY WELL EXHAUST FAN
SCHMATIC PSES-C
NOT TO SCALE



ELECTRICAL ROOM EXHAUST FAN
SCHMATIC PSES-D
NOT TO SCALE

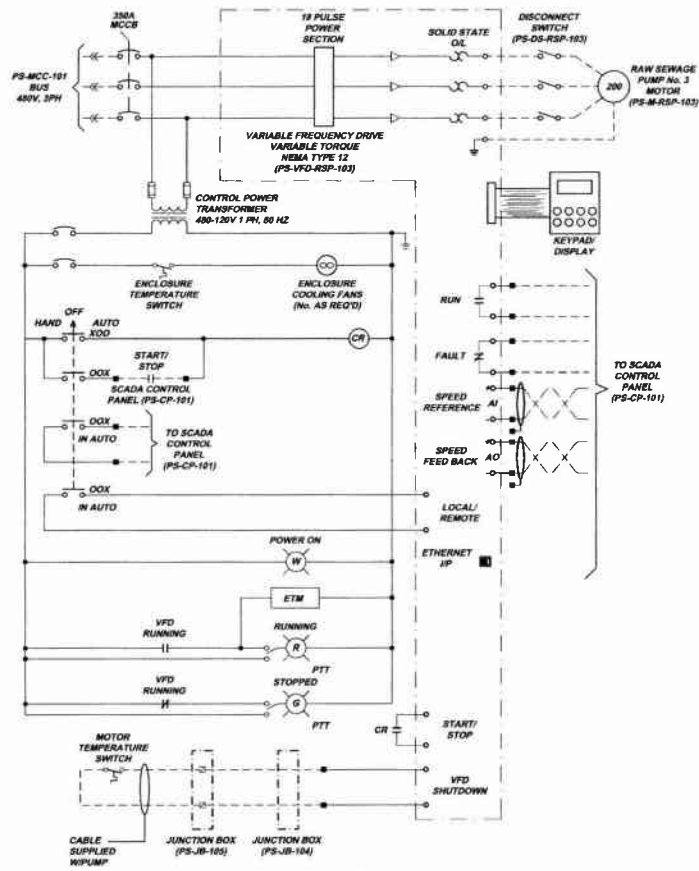
NOTE:
1. CONTROL POWER TRANSFORMERS SHALL BE OVERSIZED TO ACCOUNT FOR ADDITIONAL CONTROL LOADS, WHERE SHOWN, USE AN ADDITIONAL 15VA FOR EACH NON-HAZARDOUS CONTROL DAMPER AND 110 VA FOR EACH CLASS 1, DIVISION 1 CONTROL DAMPER.

SCHEMATIC SYMBOL LEGEND	
■	TERMINAL LOCATED IN VFD ENCLOSURE
□	TERMINAL LOCATED IN JUNCTION BOX
⊠	TERMINAL LOCATED IN MOTOR CONTROL CENTER
—	LOCAL WIRING
- - -	FIELD WIRING

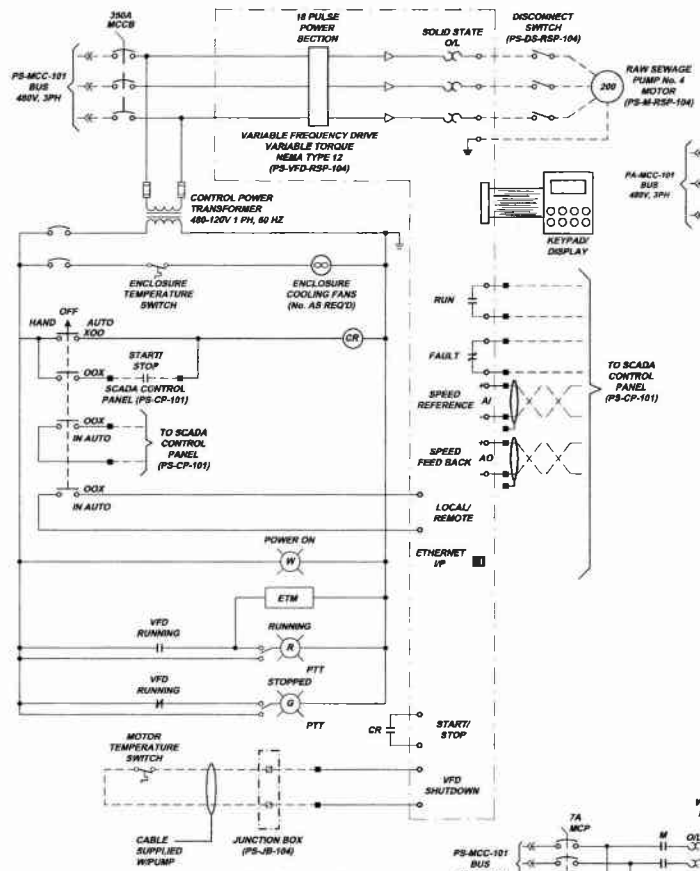
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Date:	DEC. 2010
Drawn By:	DCW
Checked By:	MJM
Approved By:	SKG
Sheet No.:	5
Drawing No.:	220-PSE5

KLH ENGINEERS, INC.

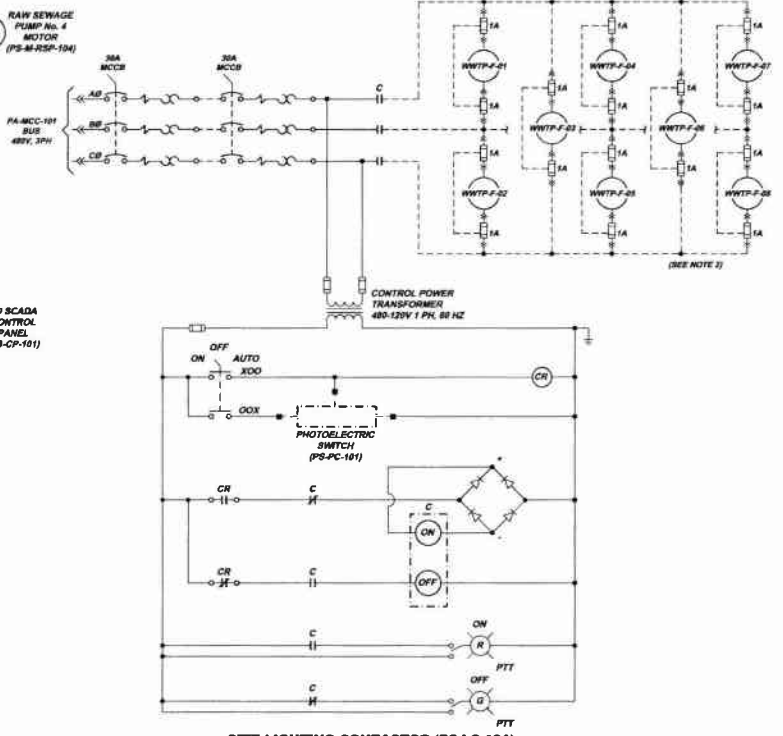
MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SCHEMATIC SHEET 1 OF 2



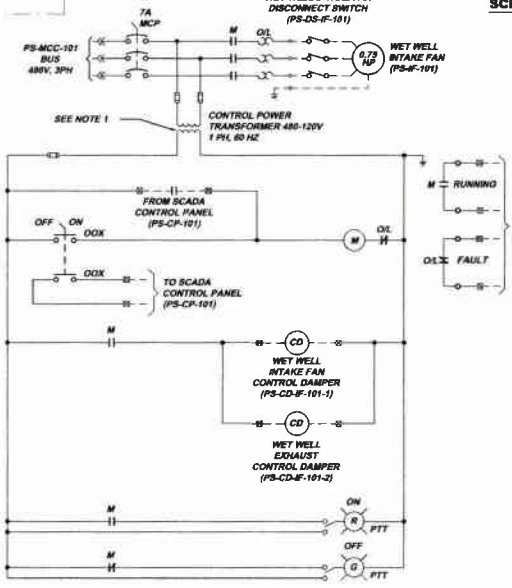
**RAW SEWAGE PUMP No. 3
SCHEMATIC PSE6-A**
NOT TO SCALE



**RAW SEWAGE PUMP No. 4
SCHEMATIC PSE6-B**
NOT TO SCALE



**SITE LIGHTING CONTACTOR (PS-LC-101)
SCHEMATIC PSE6-C**
NOT TO SCALE



**WET WELL INTAKE FAN
SCHEMATIC PSE6-D**
NOT TO SCALE

- NOTE:**
- CONTROL POWER TRANSFORMERS SHALL BE OVERSIZED TO ACCOUNT FOR ADDITIONAL CONTROL LOADS, WHERE KNOWN, USE AN ADDITIONAL 18VA FOR EACH NON-HAZARDOUS CONTROL DAMPER AND 110 VA FOR EACH CLASS 1, DIVISION 1 CONTROL DAMPER.
 - EACH SITE LIGHT FIXTURE SHALL BE PROTECTED WITH TWO IN-LINE FUSES LOCATED IN THE POLE BASE. FUSES SHALL BE COOPER BUSMAN TYPE ITK-R OR EQUAL. FUSE HOLDERS SHALL BE COOPER BUSMAN TYPE HEY, DOUBLE POLE, WATER RESISTANT WITH BREAKAWAY HOLDERS.

SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN VFD ENCLOSURE OR CONTACTOR
□	TERMINAL LOCATED IN JUNCTION BOX
⊠	TERMINAL LOCATED IN MOTOR CONTROL CENTER
—	LOCAL WIRING
- - -	FIELD WIRING

Revision	Date
1	12/2011
2	12/2011
3	12/2011
4	12/2011
5	12/2011
6	12/2011
7	12/2011
8	12/2011
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100	12/2011

5 1/2 DANIELLE RUN ROAD
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SCHEMATIC SHEET 2 OF 2

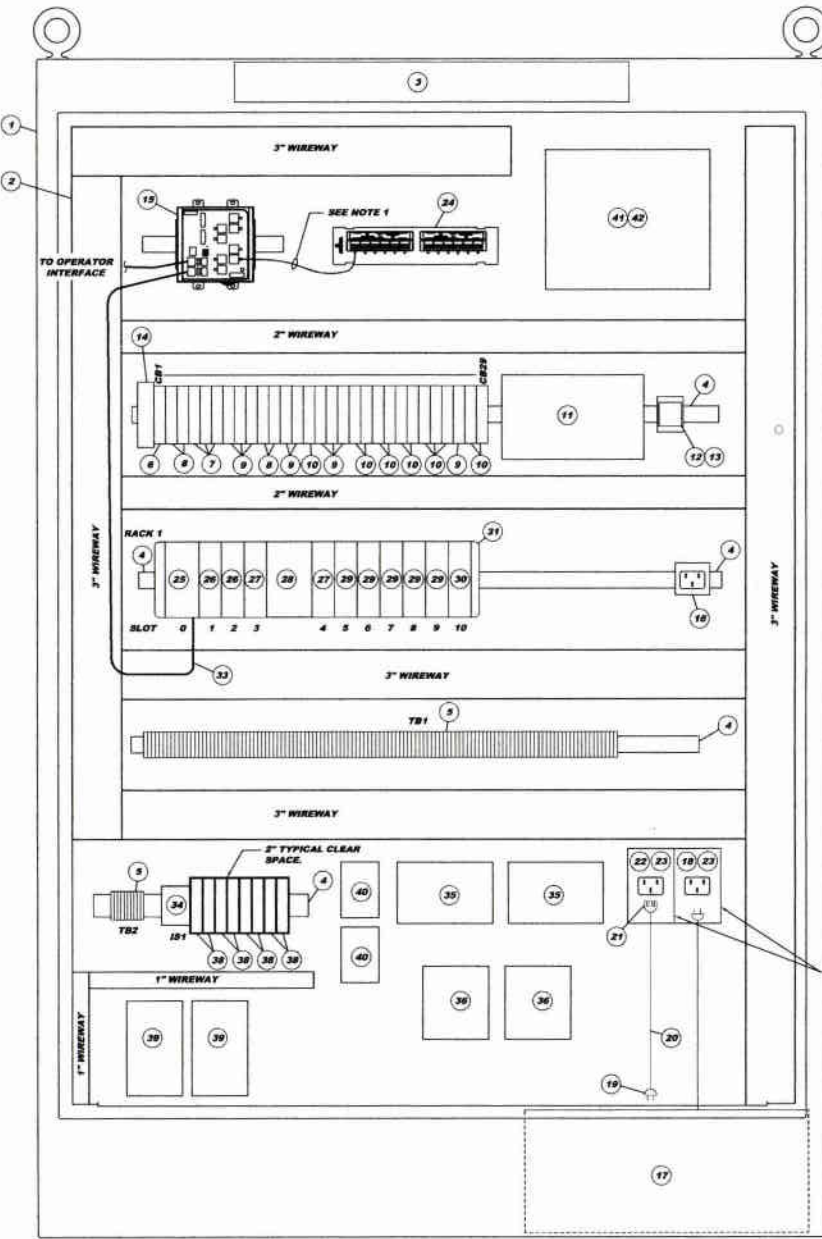
KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SCHEMATIC SHEET 2 OF 2

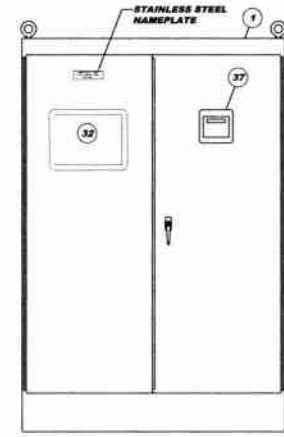
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Checked By:	NJM
Approved By:	SHG

Sheet No. 6

Drawing No. 220-PSE6



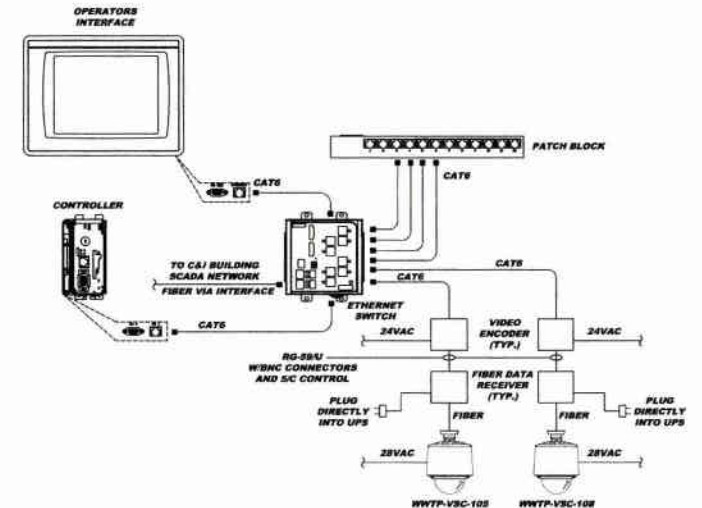
**WWTP PUMP STATION
SCADA CONTROL PANEL (PS-CP-101)
INTERIOR LAYOUT PSE7-A**
SCALE: 3" = 1'-0"



**WWTP PUMP STATION
SCADA CONTROL PANEL (PS-CP-101)
EXTERIOR LAYOUT PSE7-B**
SCALE: 1" = 1'-0"

ITEM QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	172"x44"x18" ENCLOSURE, NEMA TYPE 1Z	A724818FSD	HOFFMAN
2	90"x44" ENCLOSURE SUBPANEL	A7248F1	HOFFMAN
3	FLUORESCENT LIGHTING PACKAGE	ALF16D24R	HOFFMAN
4	AR DIN RAIL	199-DR1	ALLEN-BRADLEY
5	AR 30A FEED-THROUGH TERMINAL BLOCK	1492-3M1	ALLEN-BRADLEY
6	127VAC/50VDC SINGLE POLE 30A CIRCUIT BREAKER	1492-SP10300	ALLEN-BRADLEY
7	277VAC/50VDC SINGLE POLE 15A CIRCUIT BREAKER	1492-SP10150	ALLEN-BRADLEY
8	277VAC/50VDC SINGLE POLE 15A CIRCUIT BREAKER	1492-SP10100	ALLEN-BRADLEY
9	277VAC/50VDC SINGLE POLE 1A CIRCUIT BREAKER	1492-SP10050	ALLEN-BRADLEY
10	127VAC/50VDC SINGLE POLE 1A CIRCUIT BREAKER	1492-SP10020	ALLEN-BRADLEY
11	24 VDC POWER SUPPLY	1806-KL3402R	ALLEN-BRADLEY
12	CONTROL RELAY SOCKET	700-HW12S	ALLEN-BRADLEY
13	CONTROL RELAY, 120VAC	700-HA32A1	ALLEN-BRADLEY
14	TRANSIENT VOLTAGE SURGE SUPPRESSOR	T/R STORM-120-150A	TRANSTECTOR
15	10 PORT, 10/100 BASE TX ETHERNET SWITCH	1703-M510T	ALLEN-BRADLEY
16	CONVENIENCE RECEPTACLE	DM88A	ALTECH
17	1KVA UPS	Q-1000	POWER INNOVATIONS
18	120VAC 15A RECEPTACLE	5278-CWP	LEVITON
19	120VAC 15A PLUG	515PV	LEVITON
20	3/C #14-600 SEOW CABLE	-	-
21	120VAC 15A CONNECTOR	515CV	LEVITON
22	120VAC 15A INLET	5278-CWP	LEVITON
23	UTILITY BOX	-	-
24	12 PORT CAT5 UNIVERSAL PATCH BLOCK	69596-UB9	LEVITON
25	LOGIC CONTROLLER	1769-L35E	ALLEN-BRADLEY
26	DIGITAL INPUT MODULE	1769-AD16	ALLEN-BRADLEY
27	DIGITAL OUTPUT MODULE	1769-OW16	ALLEN-BRADLEY
28	POWER SUPPLY	1769-PA4	ALLEN-BRADLEY
29	ANALOG INPUT MODULE	1769-IF4I	ALLEN-BRADLEY
30	ANALOG OUTPUT MODULE	1769-OF4CI	ALLEN-BRADLEY
31	COMPACT I/O RIGHT END CAP	1769-SCR	ALLEN-BRADLEY
32	COLOR OPERATOR INTERFACE	2711P-T12C-4A9	ALLEN-BRADLEY
33	CATEGORY 6 PATCH CABLE	-	-
34	INTRINSICALLY SAFE RELAY, 120VAC CONTACT IN	14-40322Z	ITT
35	SINGLE MODE FIBER WST CONNECTOR	VF-1400R *	VICON
36	VIDEO ENCODER, ANALOG VIDEO TO TCP/IP	VN-301TV5 *	VICON
37	pH TRANSMITTER	m792AP	HACH
38	ANALOG INPUT INTRINSICALLY SAFE BARRIER	NK13-LI-EX024VDC	TURCK
39	CAMERA POWER SUPPLY, 28VAC	S28WPS-1 *	VICON
40	VIDEO ENCODER POWER SUPPLY, 24VAC	S24WPS-1 *	VICON
41	WST MULTIMEDIA ADAPTER PLATE (R)	NDD02ACAY	LEVITON
42	"3" FIBER JUMPER	-	-

* SUPPLIED UNDER SPECIFICATION 18410 AND SUPPLIED LOOSE. CONTROL PANEL MANUFACTURER SHALL INSTALL.



**NETWORK
DETAIL PSE7-C**
NOT TO SCALE

NOTES:
1. PROVIDE SEVEN (7) CATEGORY 6 MODULAR PATCH CORDS. THE LENGTH OF THE CORDS SHALL BE AS SHORT AS PRACTICAL TO REDUCE THE AMOUNT OF EXCESS WIRE INSIDE THE PANEL.
2. INTRINSICALLY SAFE WIRING, INCLUDING THE pH TRANSMITTER WIRING SHALL BE SEGREGATED FROM ALL OTHER WIRING BY A LEAST 2 INCHES OR A METAL BARRIER.

**MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION**

WWTP PUMP STATION SCADA CONTROL PANEL (PS-CP-101) LAYOUT AND DETAILS

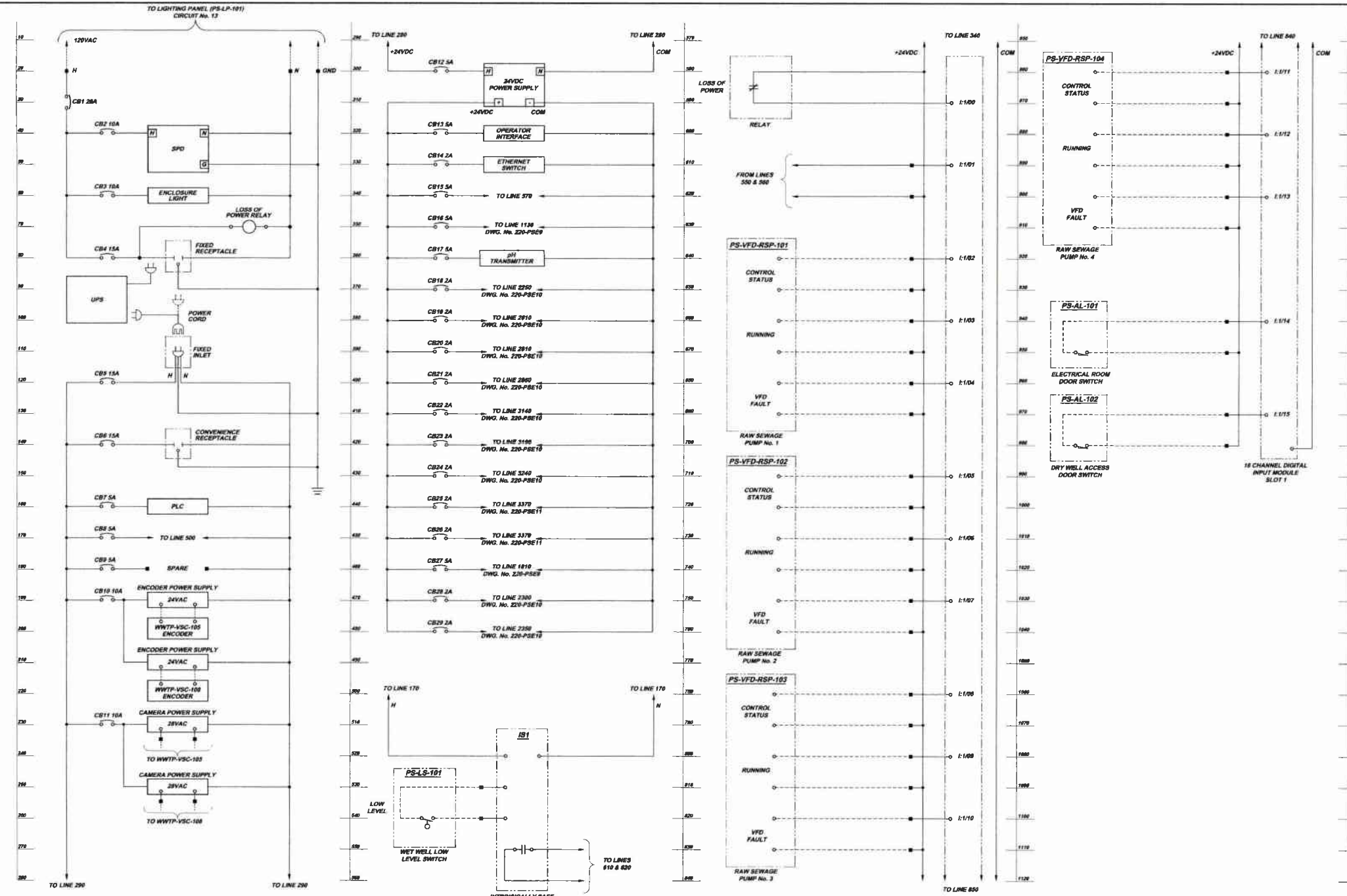
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Date:	October 2010
Drawn By:	DCW
Checked By:	MJM
Approved By:	SHG

Sheet No. 7
Drawing No. 220-PSE7



5172 DANFELLS RUN ROAD
MCKEESPORT, PA 15110
PHONE: 412-949-0310
FAX: 412-949-0311
WWW.KLHENGINEERS.COM
info@klhengineers.com

Date	Revision	Date	Revision
12/2011	RELEASE FOR BID		

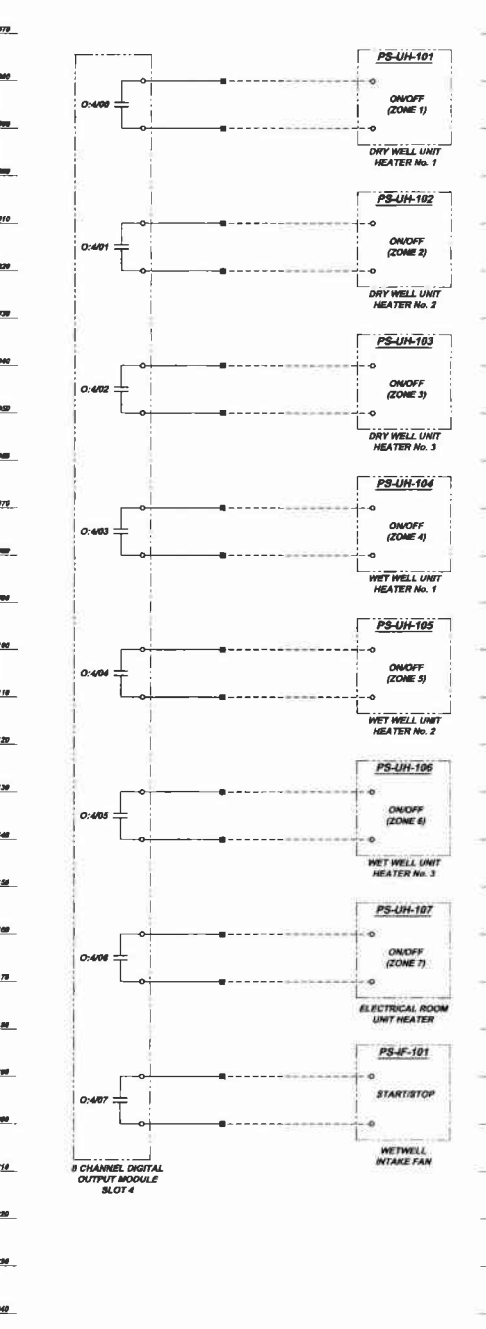
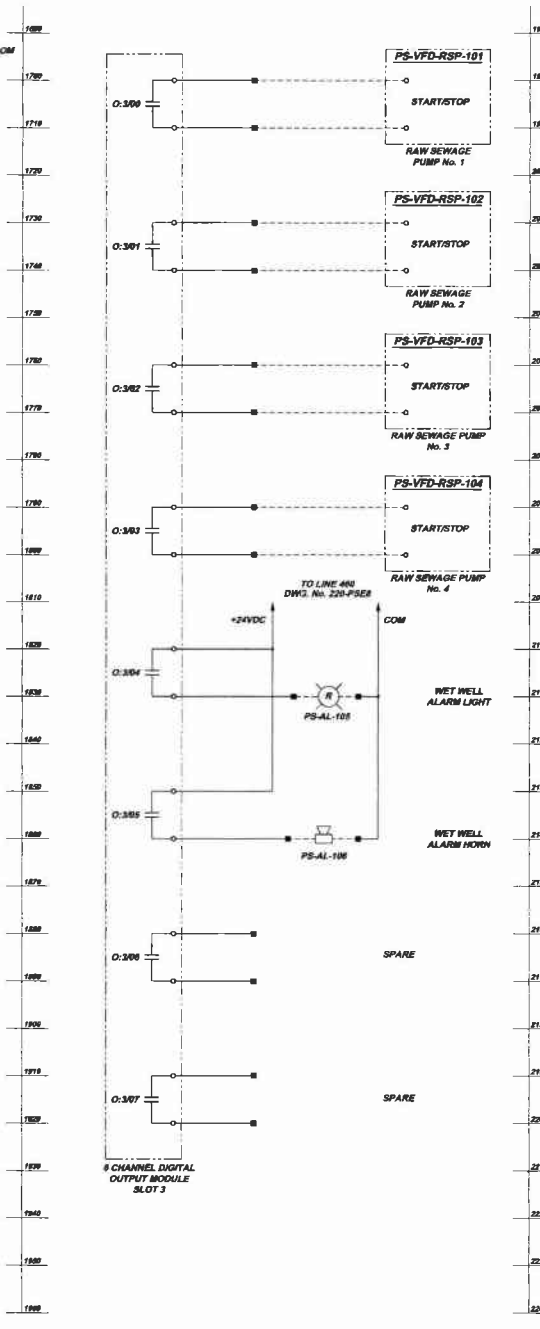
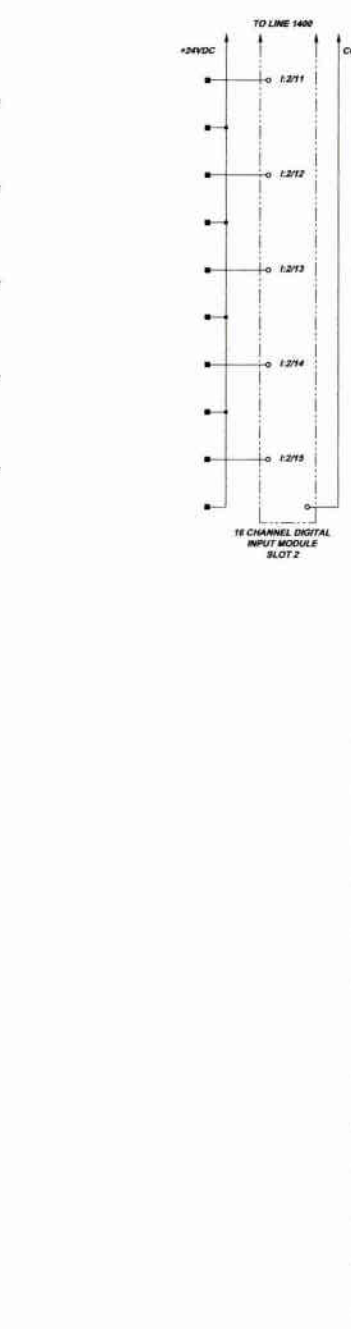
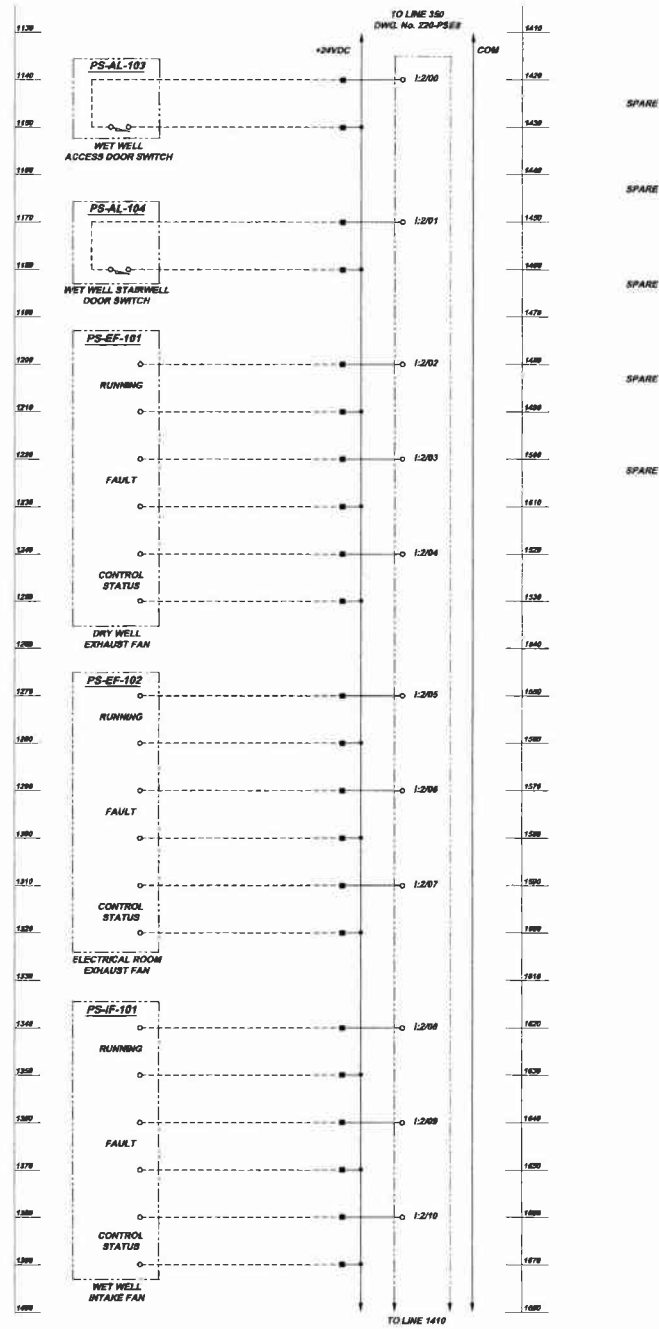


SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (PS-CP-101)
—	LOCAL WIRING
---	FIELD WIRING

**WWTP PUMP STATION
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

	Revisions				
	Date	Revisions	Date	Revisions	Date
		RELEASE FOR BID			
5173 DANIELLE RUN ROAD ALLEGHENY COUNTY, PENNSYLVANIA PHONE 412-454-9310 FAX 412-454-9318 INFO@KLHEngineers.com					
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION WWTP PUMP STATION SCADA CONTROL PANEL (PS-CP-101) SCHEMATICS SHEET 1 OF 4					
Scale:	As Shown	Date:	DEC. 2010	Drawn By:	DOW
		Checked By:	MLM	Approved By:	BHO
Sheet No.					
6					
Drawing No.					
220-PSEB					



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (PS-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

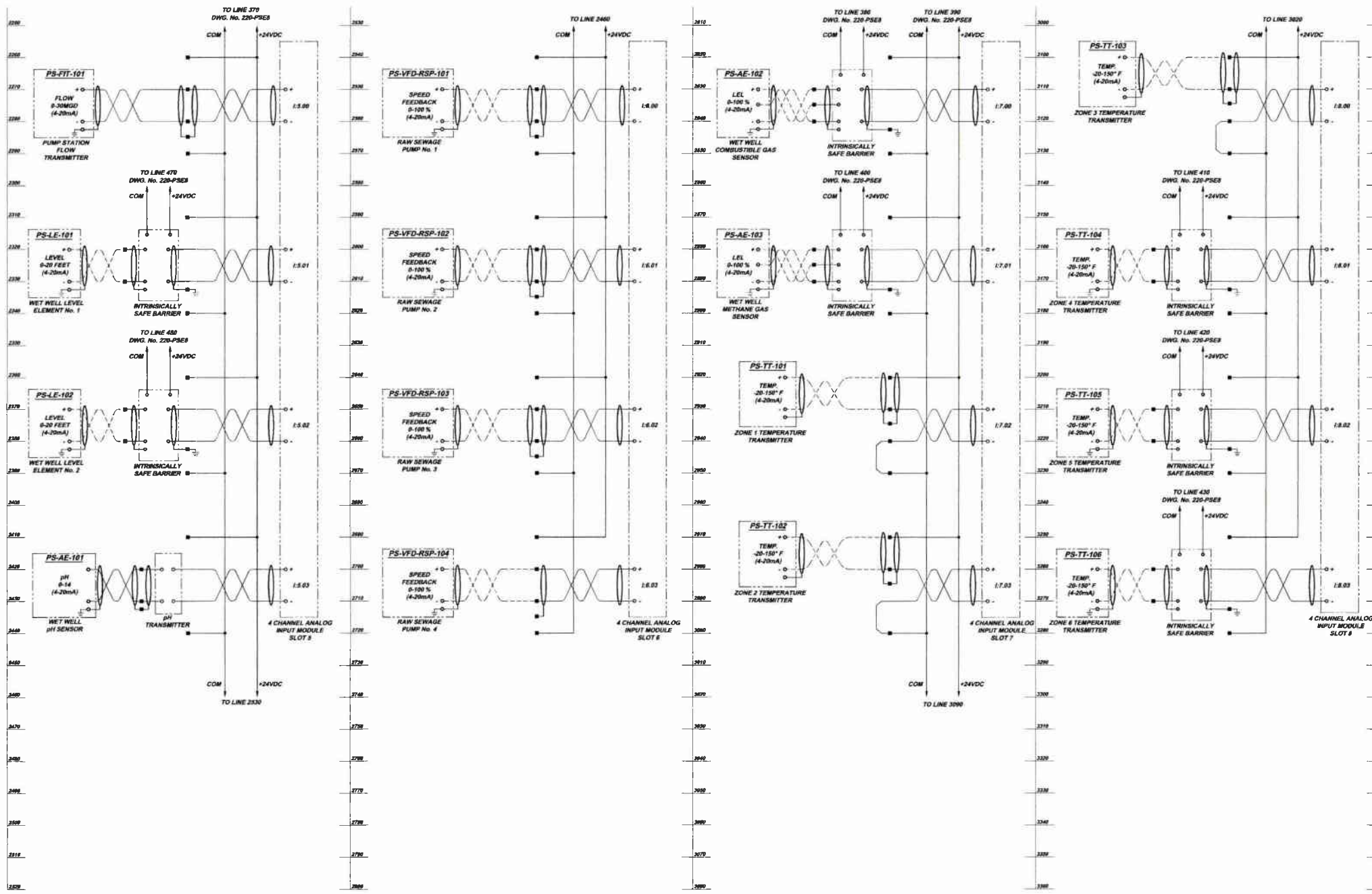
**WWTP PUMP STATION
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

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Date:	DEC. 2010
Drawn By:	DCW
Checked By:	MLH
Approved By:	SHG
Sheet No.:	9
Drawing No.:	220-PSE9

Revisions	Date	Revisions	Date
		RELEASE FOR BID	1-2011

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 WWTP PUMP STATION SCADA CONTROL PANEL (PS-CP-101) SCHEMATICS SHEET 2 OF 4

KLH ENGINEERS, INC.
 517 S DANIELLE RUN ROAD
 PITTSBURGH, PA 15201
 PHONE 412-454-0510
 FAX 412-454-0455
 INFO@KLHENGINEERS.COM



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (PS-CP-101)
—	LOCAL WIRING
---	FIELD WIRING

**WWTP PUMP STATION
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

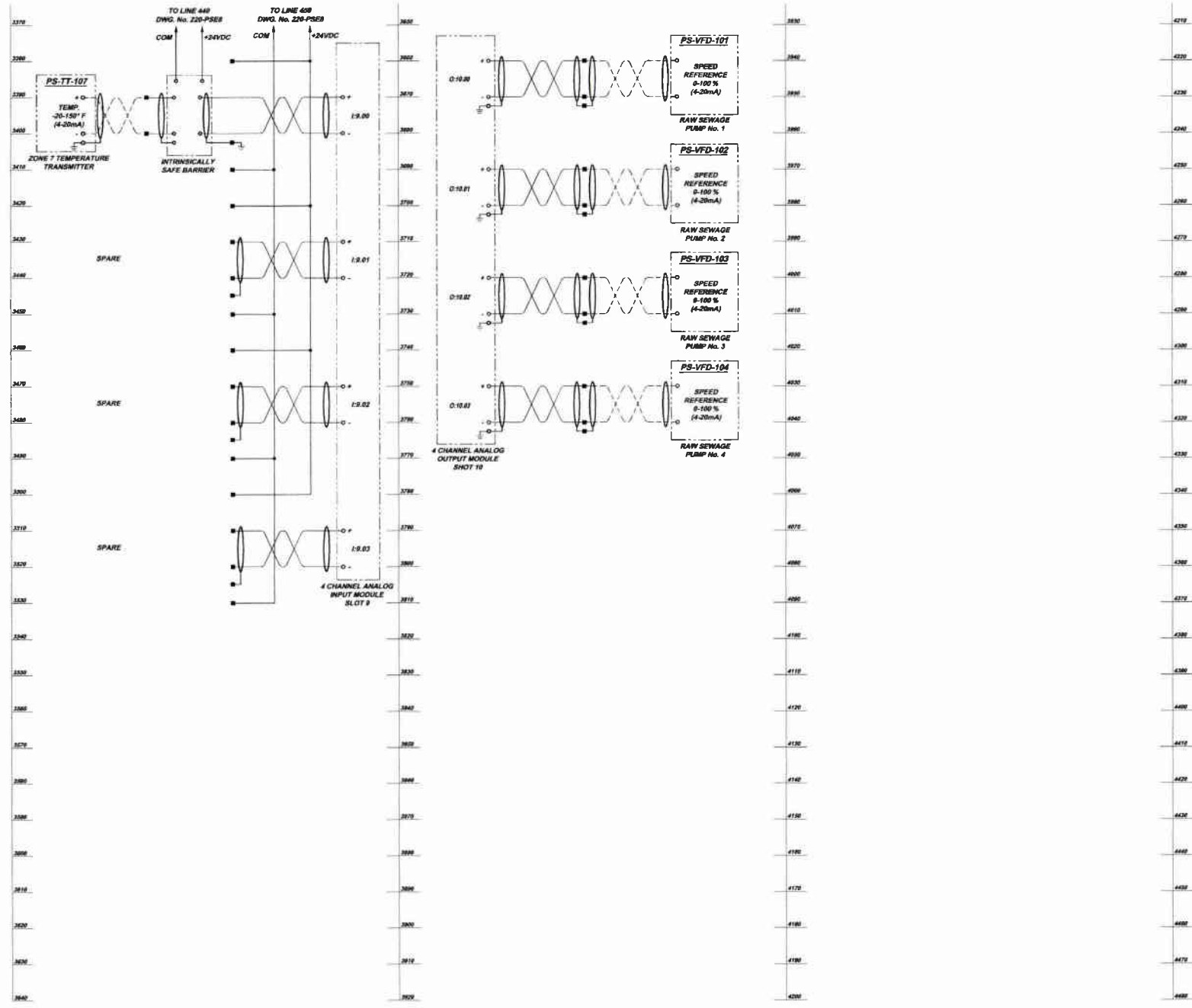
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Approved By:	BHQ
Sheet No.:	10
Drawing No.:	220-PSE10

**MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
WWTP PUMP STATION SCADA CONTROL PANEL (PS-CP-101) SCHEMATICS SHEET 3 OF 4**

KLH ENGINEERS, INC.

5175 CHARLETTA RUN ROAD
MCKEESPORT, PA 15110
PHONE: 412-442-0510
FAX: 412-442-0511
WWW.KLHENGINEERS.COM

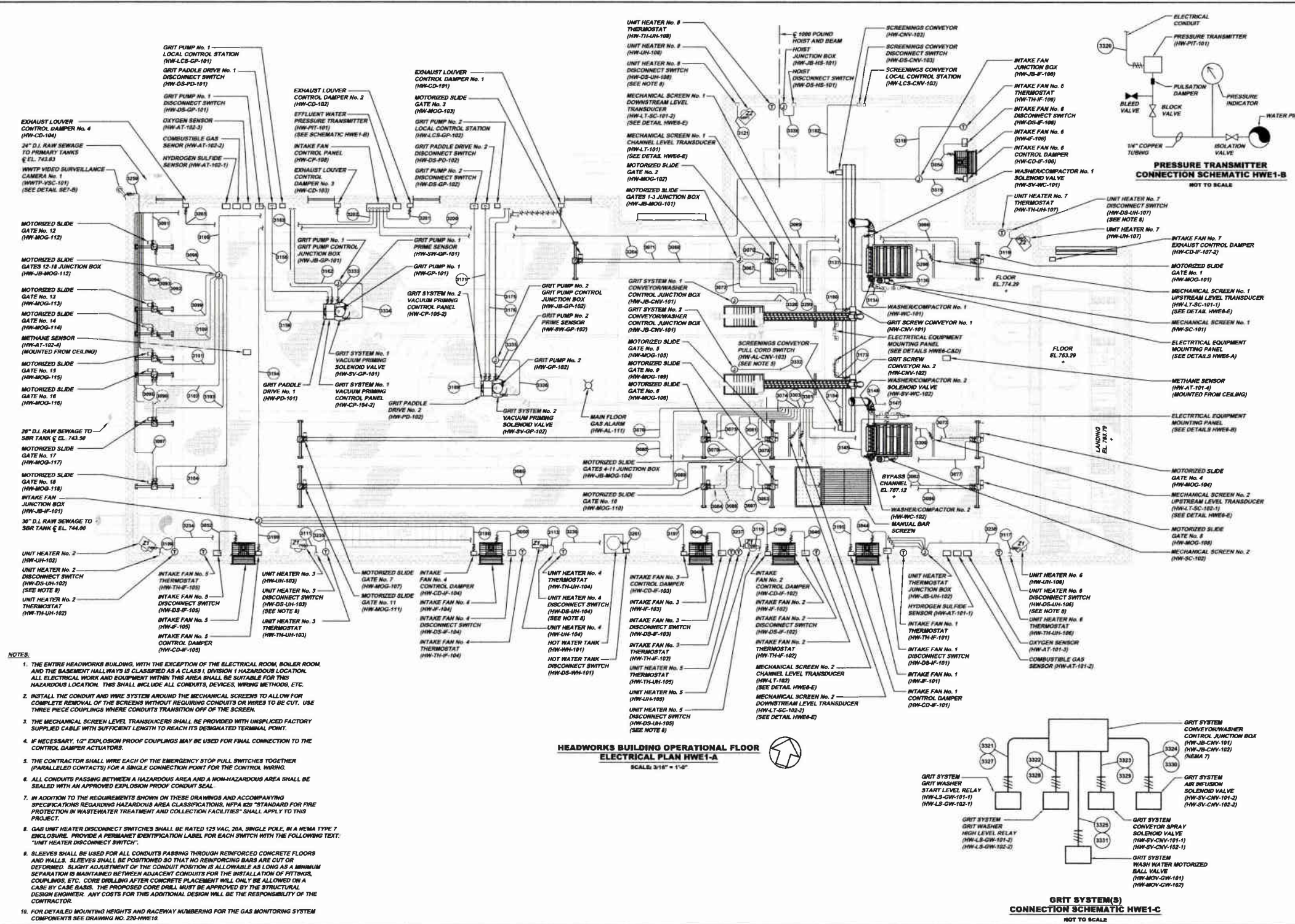
Date:	1-2011
Revisions:	RELEASE FOR BR
Drawn:	
Checked:	
Approved:	



SCHEMATICS SYMBOL LEGEND	
■	TERMINAL LOCATED IN SCADA CONTROL PANEL (PS-CP-101)
—	LOCAL WIRING
---	FIELD WIRING

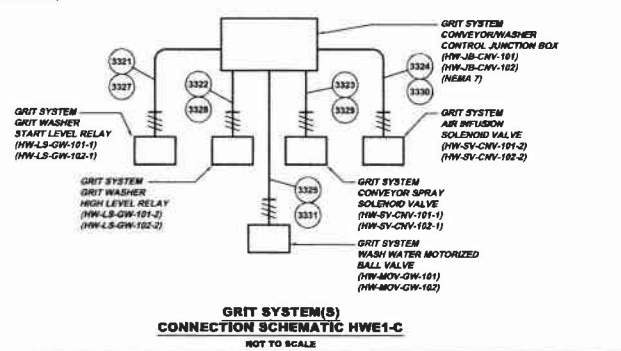
**WWTP PUMP STATION
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

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Date:	DEC. 2010
Drawn By:	DCW
Checked By:	MLH
Approved By:	SMG
Sheet No.	11
Drawing No.	220-PSE11
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION WWTP PUMP STATION SCADA CONTROL PANEL (PS-CP-101) SCHEMATICS SHEET 4 OF 4	
	5172 DANIELLE RUN ROAD WILKES BARRE, PA 18201 PHONE: 412-494-0510 FAX: 412-494-0508 INFO@KLHENGINEERS.COM
Revisions	Revisions
Date	Date
1-2011	RELEASE FOR BID



- NOTES:**
1. THE ENTIRE HEADWORKS BUILDING, WITH THE EXCEPTION OF THE ELECTRICAL ROOM, BOILER ROOM AND THE BASEMENT HALLWAYS IS CLASSIFIED AS A CLASS I, DIVISION 1 HAZARDOUS LOCATION. ALL ELECTRICAL WORK AND EQUIPMENT WITHIN THIS AREA SHALL BE SUITABLE FOR THIS HAZARDOUS LOCATION. THIS SHALL INCLUDE ALL CONDUITS, DEVICES, WIRING METHODS, ETC.
 2. INSTALL THE CONDUIT AND WIRE SYSTEM AROUND THE MECHANICAL SCREENS TO ALL OW FOR COMPLETE REMOVAL OF THE SCREENS WITHOUT REQUIRING CONDUITS OR WIRES TO BE CUT. USE THREE PIECE COUPLINGS WHERE CONDUITS TRANSITION OFF OF THE SCREEN.
 3. THE MECHANICAL SCREEN LEVEL TRANSDUCERS SHALL BE PROVIDED WITH UNSPLICED FACTORY SUPPLIED CABLE WITH SUFFICIENT LENGTH TO REACH ITS DESIGNATED TERMINAL POINT.
 4. IF NECESSARY, 1/2" EXPLOSION PROOF COUPLINGS MAY BE USED FOR FINAL CONNECTION TO THE CONTROL DAMPER ACTUATORS.
 5. THE CONTRACTOR SHALL WIRE EACH OF THE EMERGENCY STOP PULL SWITCHES TOGETHER (PARALLELED CONTACTS) FOR A SINGLE CONNECTION POINT FOR THE CONTROL WIRING.
 6. ALL CONDUITS PASSING BETWEEN A HAZARDOUS AREA AND A NON-HAZARDOUS AREA SHALL BE SEALED WITH AN APPROVED EXPLOSION PROOF CONDUIT SEAL.
 7. IN ADDITION TO THE REQUIREMENTS SHOWN ON THESE DRAWINGS AND ACCOMPANYING SPECIFICATIONS REGARDING HAZARDOUS AREA CLASSIFICATIONS, NFPA 820 "STANDARD FOR FIRE PROTECTION IN WASTEWATER TREATMENT AND COLLECTION FACILITIES" SHALL APPLY TO THIS PROJECT.
 8. GAS UNIT HEATER DISCONNECT SWITCHES SHALL BE RATED 125 VAC, 20A, SINGLE POLE, IN A NEMA TYPE 7 ENCLOSURE. PROVIDE A PERMANENT IDENTIFICATION LABEL FOR EACH SWITCH WITH THE FOLLOWING TEXT: "UNIT HEATER DISCONNECT SWITCH".
 9. SLEEVES SHALL BE USED FOR ALL CONDUITS PASSING THROUGH REINFORCED CONCRETE FLOORS AND WALLS. SLEEVES SHALL BE POSITIONED SO THAT NO REINFORCING BARS ARE CUT OR DEFORMED. SLIGHT ADJUSTMENT OF THE CONDUIT POSITION IS ALLOWABLE AS LONG AS A MINIMUM SEPARATION IS MAINTAINED BETWEEN ADJACENT CONDUITS FOR THE INSTALLATION OF FITTINGS, COUPLINGS, ETC. CORE DRILLING AFTER CONCRETE PLACEMENT WILL ONLY BE ALLOWED ON A CASE BY CASE BASIS. THE PROPOSED CORE DRILL MUST BE APPROVED BY THE STRUCTURAL DESIGN ENGINEER. ANY COSTS FOR THIS ADDITIONAL DESIGN WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 10. FOR DETAILED MOUNTING HEIGHTS AND RACEWAY NUMBERING FOR THE GAS MONITORING SYSTEM COMPONENTS SEE DRAWING NO. 220-HWE16.

**HEADWORKS BUILDING OPERATIONAL FLOOR
ELECTRICAL PLAN HWE1-A**
SCALE: 3/16" = 1'-0"



Revisions	Date	By	Check

DATE: 12/01/11
 RELEASE FOR BIDDING: 12/01/11

5173 CAMPBELL RUN ROAD
 ALLEGANY COUNTY, PENNSYLVANIA
 PHONE: 412-644-0010
 FAX: 412-644-0010
 WWW.KLHENGINEERS.COM

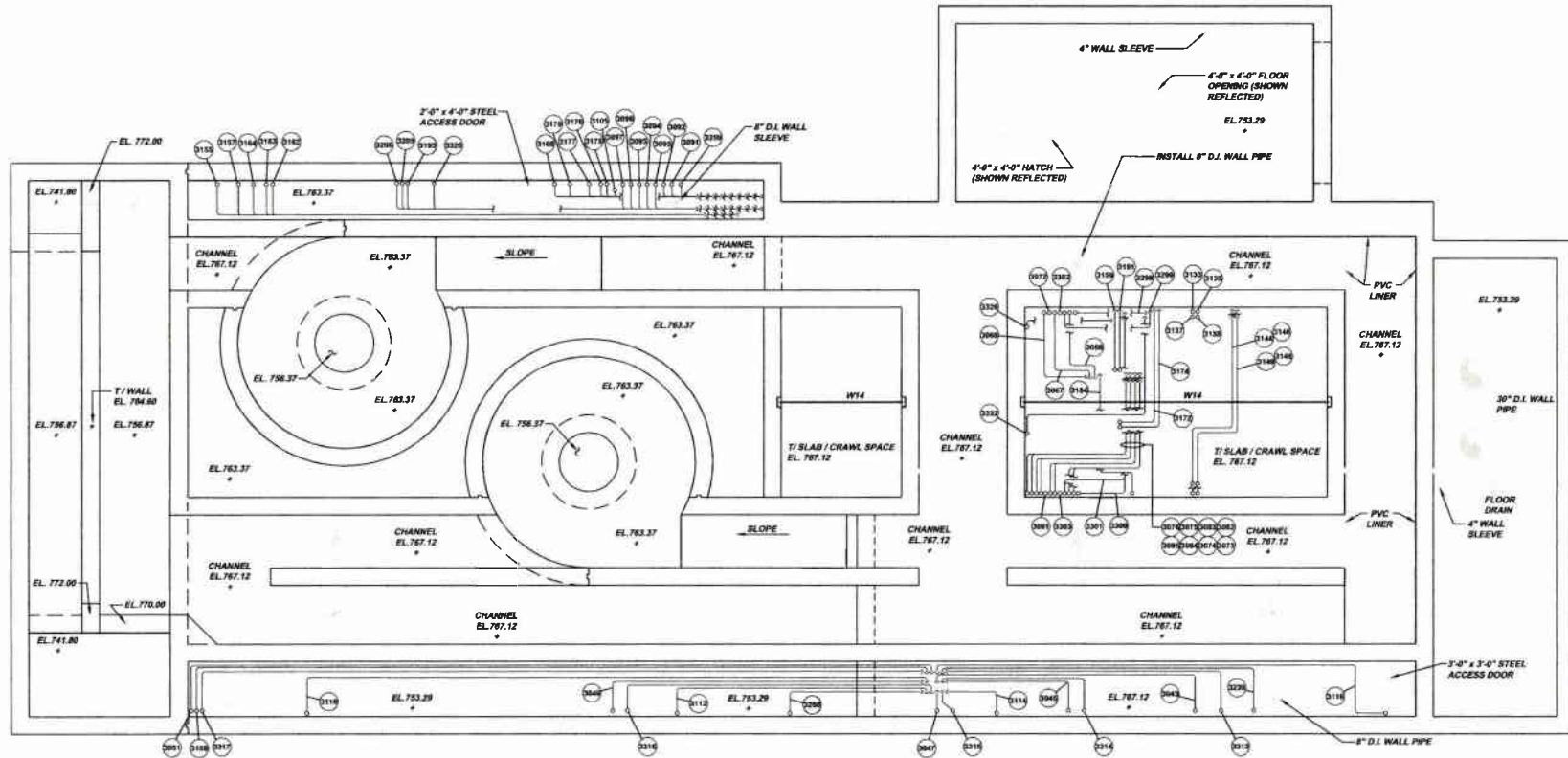
**KLH
ENGINEERS, INC.**

**MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGANY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 HEADWORKS BUILDING OPERATIONAL FLOOR ELECTRICAL PLAN**

As Shown	DEC. 2010		

Sheet No. **1**

Drawing No. **220-HWE1**



**HEADWORKS BUILDING CHASE
ELECTRICAL PLAN HWE1-A**

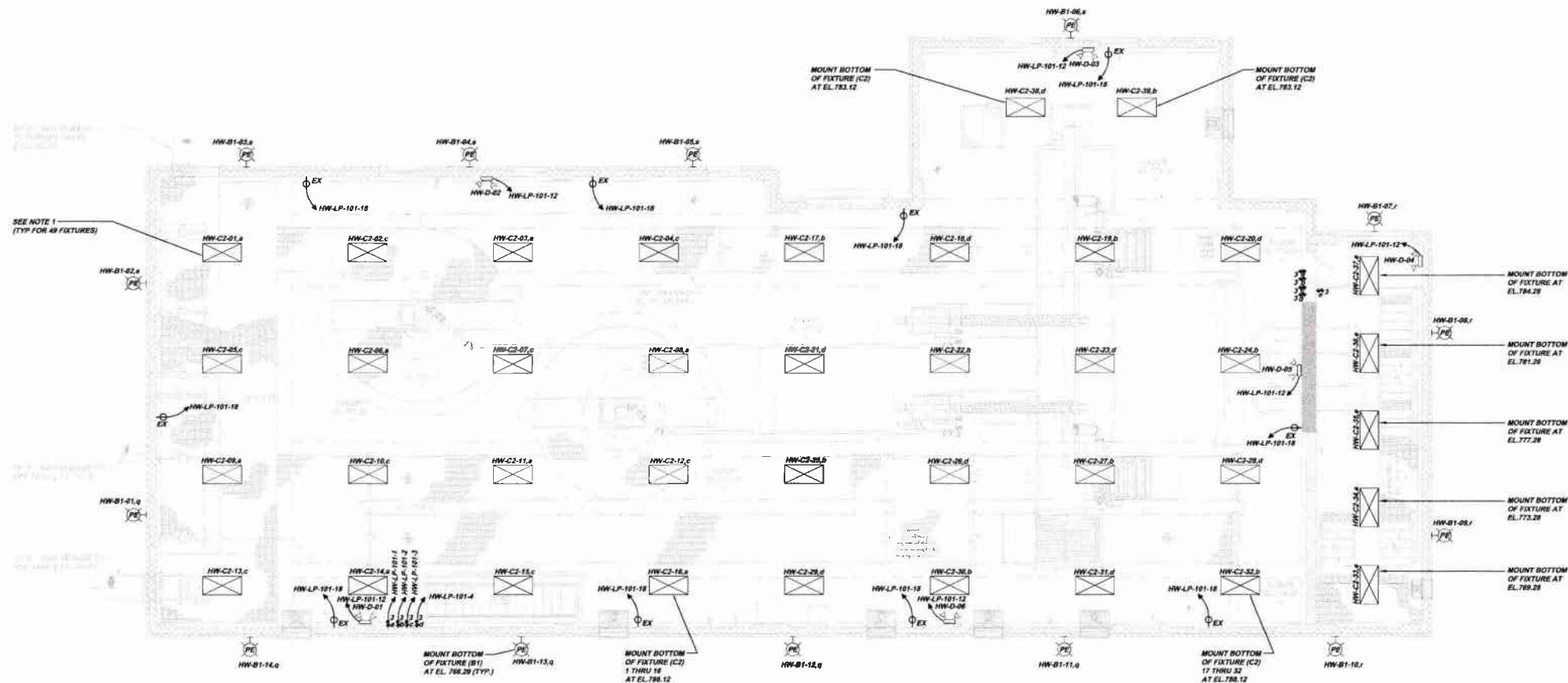
SCALE: 3/4" = 1'-0"



NOTE:

1. THE CRAWL SPACES AND CHASE AREAS BELOW ELEVATION 773.12 ARE CONSIDERED CONFINED SPACES. ELECTRICAL WORK IS REQUIRED IN THESE AREAS. THE AREAS ARE CLASSIFIED AS NON-HAZARDOUS. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE CODES, LAWS AND REQUIREMENTS SET FORTH BY THE AUTHORITIES HAVING JURISDICTION OVER THIS WORK. ACCESS INTO AND OUT OF THESE AREAS, AS WELL AS ALL REQUIRED SAFETY EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

Scale:	As Shown	At Scale:	As Shown
Date:	DEC. 2010	Drawn By:	DCW
Checked By:	MLM	Approved By:	SHG
Sheet No.	2		
Drawing No.	220-HWE2		
Revisions	Date	By	Description
1	1-2011		RELEASE FOR BID
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION HEADWORKS BUILDING CHASE ELECTRICAL PLAN			
5173 CHARLETTA RUN ROAD CHARLETTA, PA 15026 PHONE 412-442-0010 FAX 412-442-0010 INFO@KLHENGINEERS.COM			




SEE NOTE 1
(TYP FOR 49 FIXTURES)

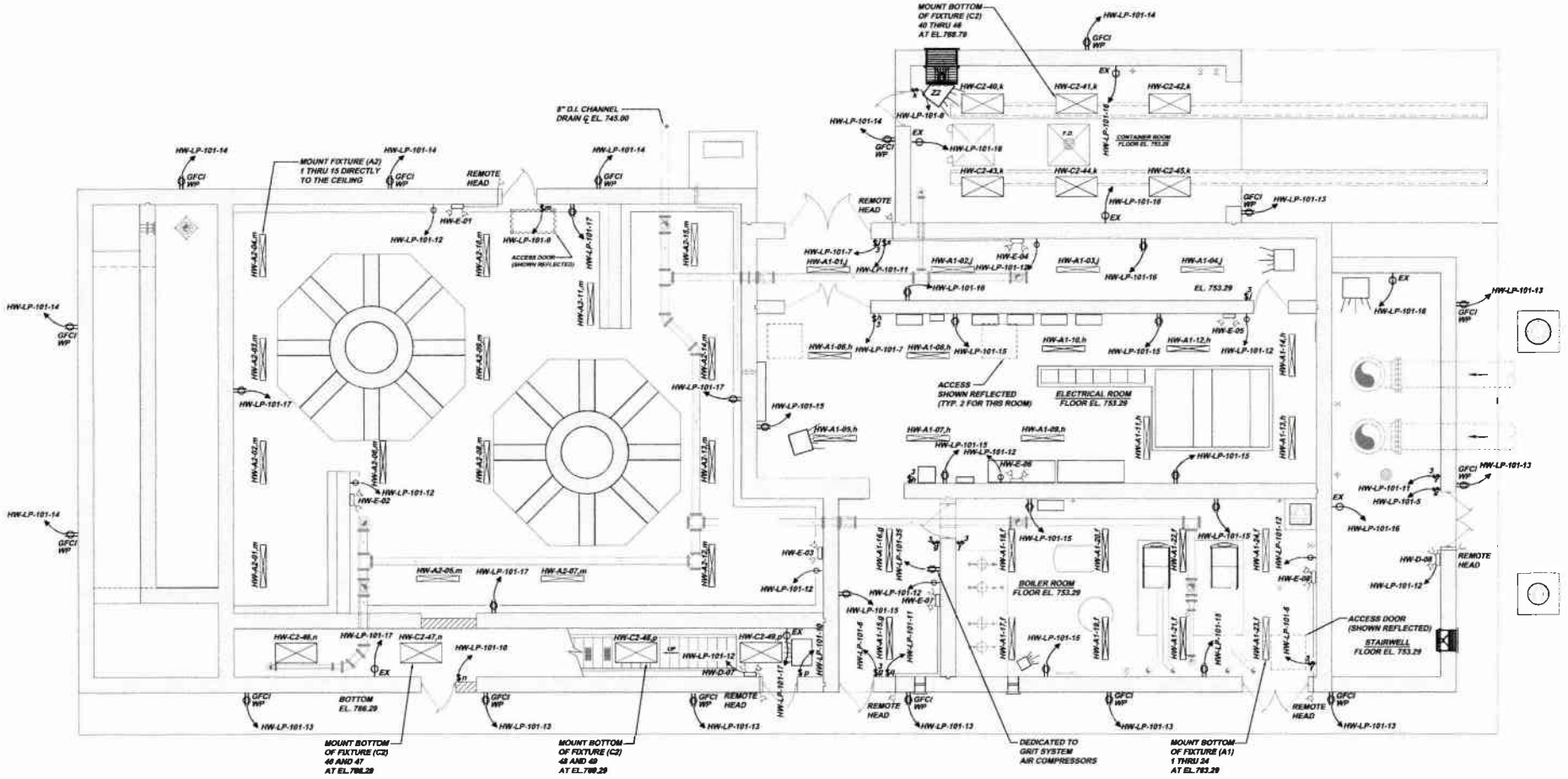
- NOTE:**
1. PROVIDE SUFFICIENT SPACE TO RE-LAMP "C2" FIXTURES.
 2. SINGLE GANG EXPLOSION PROOF RECEPTACLES SHALL BE COOPER CROUSE-HINDS 20 AMP, TYPE ENR 6 SINGLE GANG DEAD END ASSEMBLY OR EQUAL, EACH SUPPLIED WITH ONE 20 AMP, TYPE ENP PLUG.
 3. EXPLOSION PROOF LIGHT SWITCHES SHALL BE COOPER CROUSE-HINDS TYPE EDS OR EQUAL.

**HEADWORKS BUILDING OPERATIONAL FLOOR
LIGHTING PLAN HWE4-A**

SCALE: 3/8" = 1'-0"



Project:	As Shown	Date:	DEC. 2010
Drawn By:	DCN	Checked By:	MMH
Approved By:	BND		
Sheet No.:	4		
Drawing No.:	220-HWE4		
<p align="center"> MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION HEADWORKS BUILDING OPERATIONAL FLOOR LIGHTING PLAN </p>			
<p align="center">  KLH ENGINEERS, INC. </p>			
<p align="center"> <small>5172 CAMPBELL BLVD. ROAD PITTSBURGH, PA 15206 PHONE: 412-946-0288 FAX: 412-946-0289 WWW.KLHENGINEERS.COM</small> </p>			
Date:	11/20/11	Revision:	
Released For:	RELEASE FOR BID	Date:	
Revision:		Date:	



**HEADWORKS BUILDING BASEMENT
LIGHTING PLAN HWES-A**
SCALE: 3/16" = 1'-0"

	Revisions	Date	Revisions	Date	Revisions	Date
	RELEASE FOR BID	1-2011				

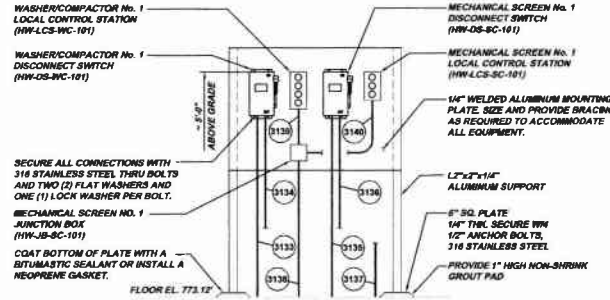
5172 DANFELLS RUN ROAD
 ALLEGANY COUNTY, PENNSYLVANIA
 PHONE: 724-294-2310
 FAX: 724-294-2326
 www.klh-engineers.com

K L H
 ENGINEERS, INC.

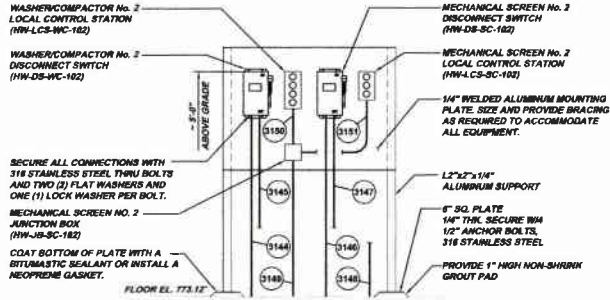
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGANY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 HEADWORKS BUILDING BASEMENT LIGHTING PLAN

As Shown:	DEC. 2010	DCW
Scale:	Drawn By:	BJM
	Checked By:	BHG
	Approved By:	

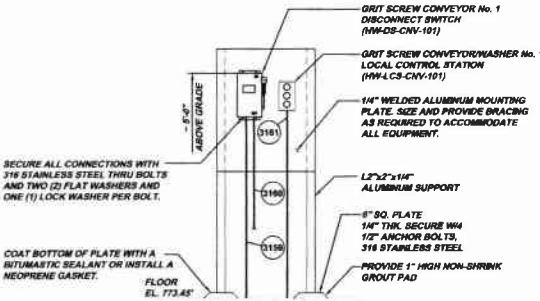
Sheet No. **5**
 Drawing No. **220-HWE5**



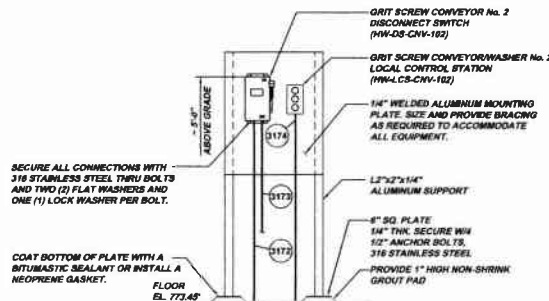
**ELECTRICAL EQUIPMENT MOUNTING PANEL
DETAIL HW6-A**
SCALE: 3/4" = 1'-0"



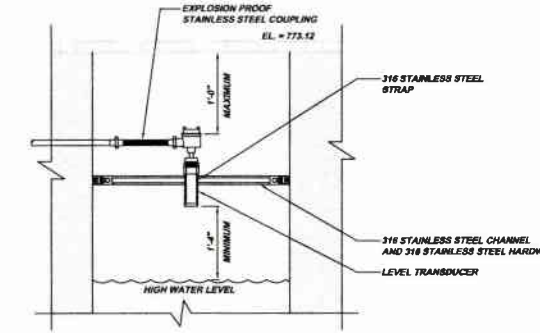
**ELECTRICAL EQUIPMENT MOUNTING PANEL
DETAIL HW6-B**
SCALE: 3/4" = 1'-0"



**ELECTRICAL EQUIPMENT MOUNTING PANEL
DETAIL HW6-C**
SCALE: 3/4" = 1'-0"



**ELECTRICAL EQUIPMENT MOUNTING PANEL
DETAIL HW6-D**
SCALE: 3/4" = 1'-0"



**MECHANICAL SCREENS CHANNEL
LEVEL TRANSDUCER
MOUNTING DETAIL HW6-E**
SCALE: 1" = 1'-0"

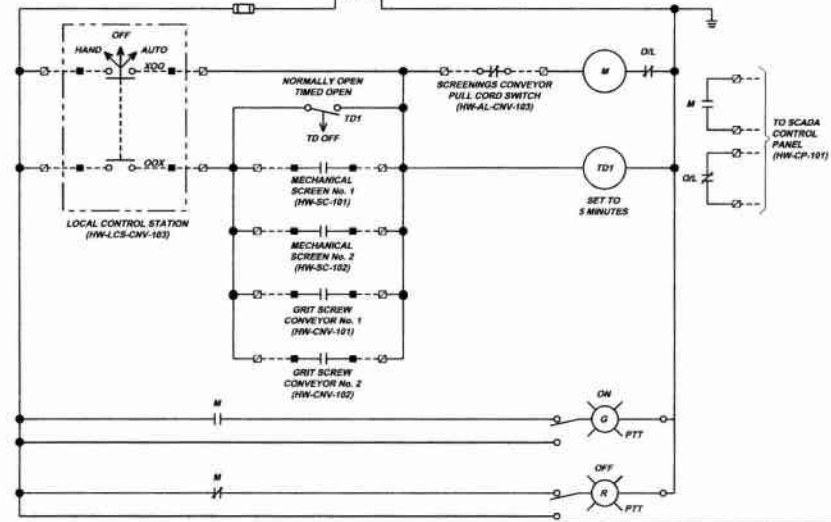
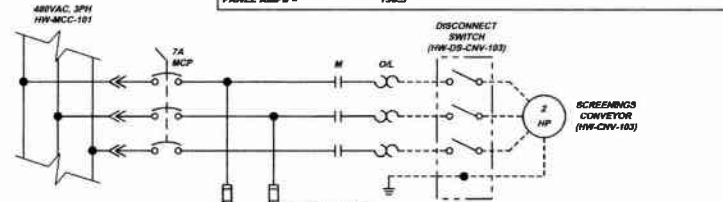
THE ELECTRICAL CONTRACTOR SHALL PROVIDE THE FOLLOWING SAFETY SIGNS IN THE LOCATIONS NOTED:

TEXT	BACKGROUND COLOR	TEXT COLOR	LOCATION (DRAWING 220-1 HW6-E)
DANGER Combustible Room Gas Alarm Do Not Enter	Danger = Red Remainder = White	Danger = White Remainder = Black	(A)
DANGER Headworks Building Gas Alarm Do Not Enter	Danger = Red Remainder = White	Danger = White Remainder = Black	(B)

SAFETY SIGNS SHALL BE MANUFACTURED FROM ALUMINUM STOCK WITH SMOOTH CURVED CORNERS AND FOUR CORNER HOLES. TEXT SHALL BE UV RESISTANT VINYL LETTERING.

LIGHTING PANEL (HW-LP-101)											
VOLTS, PHASE, WIRE, 208Y/120V, 3PH, 4W		PANEL SIZE & TYPE		MAIN SIZE & TYPE			CABINET			INTEGRAL SPD	
NO	TRIP	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	TRIP	NO
1	20A	MAIN FLOOR LIGHTS	1120			1280			MAIN FLOOR LIGHTS	20A	2
3	20A	MAIN FLOOR LIGHTS	1120			1280			MAIN FLOOR LIGHTS	20A	4
5	20A	EAST STAIRWELL LIGHTS			700			820	BOILER ROOM AND HALLWAY LIGHTS	20A	5
7	20A	ELECTRICAL ROOM AND HALLWAY LIGHTS	1148			1120			CONTAINER ROOM LIGHTS	20A	8
9	20A	STORAGE AREA LIGHTS	840			800			SOUTH STAIRWELL LIGHTS	20A	10
11	20A	EXTERIOR LIGHTS			686				EXIT LIGHTS	20A	12
13	20A	SOUTH & EAST EXTERIOR RECEPTACLES	1820			1280			NORTH & WEST EXTERIOR RECEPTACLES	20A	14
15	20A	HALLWAY, BOILER, AND ELECTRICAL ROOM RECEPTACLES	1800			1280			HALLWAY, BOILER, AND CONTAINER ROOM RECEPTACLES	20A	16
17	20A	STORAGE AREA AND SOUTH STAIRWELL RECEPTACLES			1080			1600	MAIN FLOOR RECEPTACLES	20A	18
19	20A	CONDENSING BOILERS No. 1 & 2	1400			1500			CONDENSING BOILERS No. 1 & 2	20A	20
21	20A	ELECTRICAL ROOM HVAC INDOOR COOLING UNIT	1280			1500			HOT WATER HEATER	20A	22
23	20A	INTAKE FAN CONTROL PANEL	1250			1200			SCADA CONTROL PANEL	20A	24
25	20A	BOILER No. 2 HEAT EXCHANGER PUMP No. 1	800			2800			BOILER No. 2 HEAT EXCHANGER PUMP No. 1	30A	26
27	20A	BOILER No. 1 HEAT EXCHANGER PUMP No. 1	2800			2800			BOILER No. 2 HEAT EXCHANGER PUMP No. 2	30A	28
29	20A	BOILER No. 1 HEAT EXCHANGER PUMP No. 2	2800			900			GAS BLOWY CONTROL PANEL	30A	30
31	20A	SSR TANK No. 1 & 2 LIGHTS	1200			1000			SSR TANK No. 2 & 3 LIGHTS	20A	32
33	20A	SSR TANK No. 3 & 4 LIGHTS	1200			1800			SSR TANK RECEPTACLES	20A	34
35	20A	GRIT SYSTEM AIR COMPRESSOR RECEPTACLE			720				SPARE	20A	36
37	20A	SPARE							SPD	20A	38
39	20A	SPARE								20A	40
41	20A	SPARE								20A	42
SUBTOTAL =			7,280	0,010	7,230	8,840	0,180	5,320			
TOTAL CONNECTED A =			16,228								
TOTAL CONNECTED B =			18,180								
TOTAL CONNECTED C =			12,856								
TOTAL PANEL CONNECTED =			46,874								
PANEL AMPS =			130.8								

INTEGRAL 3P-0W SPD CATEGORY A



**SCREENINGS CONVEYOR (HW-CNV-103)
CONTROL SCHEMATIC HW6-F**
NOT TO SCALE

SCHEMATICS SYMBOL LEGEND

□	TERMINAL LOCATED IN MOTOR CONTROL CENTER (HW-MCC-101)
■	TERMINAL LOCATED IN CONTROL PANEL (HW-CP-101)
---	LOCAL WIRING
---	FIELD WIRING

KLH ENGINEERS, INC.

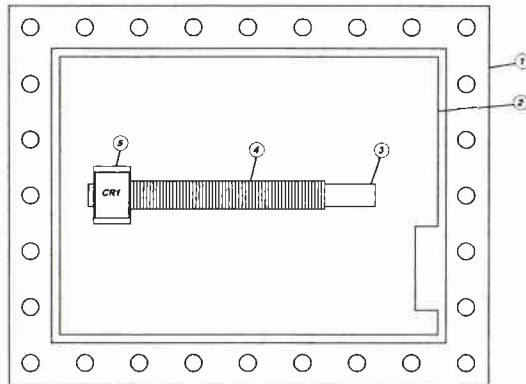
5175 DANFELLS RUN ROAD
LEWISBURG, PA 15115
PHONE 412-546-4000
FAX 412-546-6048
WWW.KLHENGINEERS.COM

**MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
HEADWORKS BUILDING ELECTRICAL DETAILS AND SCHEMATIC**

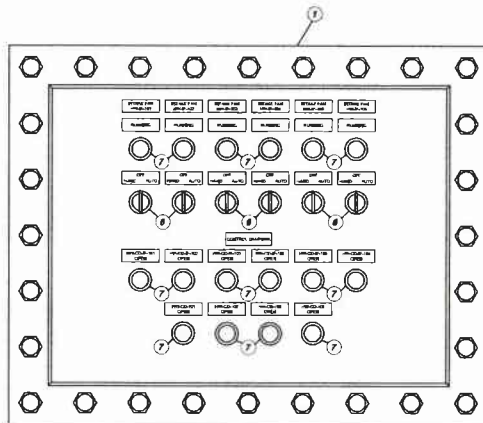
Scale: As Shown
Date: DEC. 2010
Drawn By: DCW
Checked By: MJK
Approved By: GHD

Sheet No. 6
Drawing No. 220-HW6

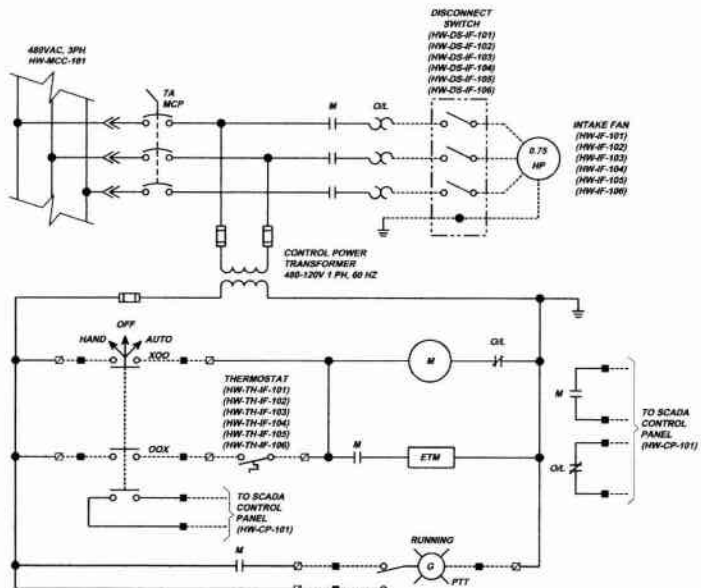
HEADWORKS BUILDING INTAKE FAN CONTROL PANEL (HW-CP-108) BILL OF MATERIALS			
ITEM QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	24"x18"x1" ENCLOSURE, NEMA TYPE 7	EJB241808	CROUSE-HINDS
2	MOUNTING PLATE KIT	EJB-MP2418	CROUSE-HINDS
3	DIR RAIL	190-DR1	ALLEN-BRADLEY
4	30A FEED-THROUGH TERMINAL BLOCK	1492-HM1	ALLEN-BRADLEY
5	CONTROL RELAY, 120VAC	700-R400A1	ALLEN-BRADLEY
6	3 POSITION SELECTOR SWITCH	EMP46	CROUSE-HINDS
7	PILOT LIGHT (GREEN)	EMP501-G3	CROUSE-HINDS



**HEADWORKS BUILDING
INTAKE FAN CONTROL PANEL (HW-CP-108)
INTERIOR LAYOUT HWE7-A**
SCALE: 3"=1'-0"

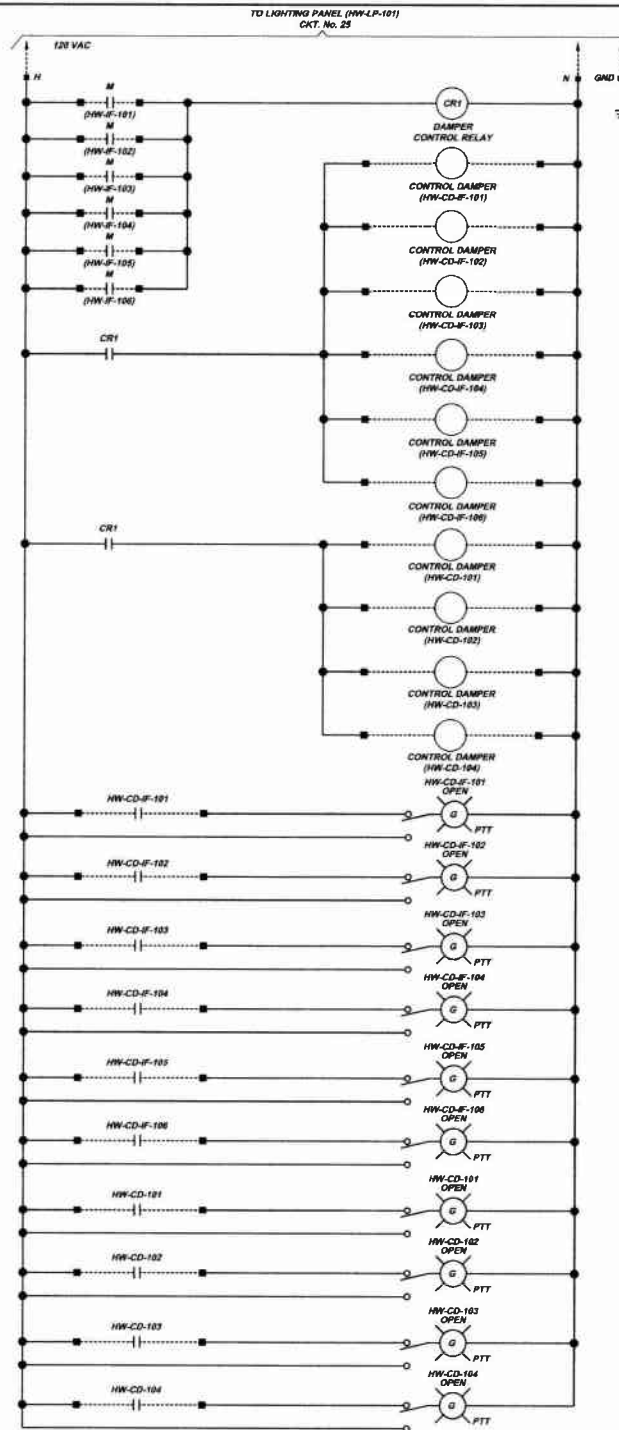


**HEADWORKS BUILDING
INTAKE FAN CONTROL PANEL (HW-CP-108)
EXTERIOR LAYOUT HWE7-B**
SCALE: 3"=1'-0"



**HEADWORKS BUILDING
INTAKE FAN (HW-F-101 THRU HW-F-106)
CONTROL SCHEMATIC HWE7-C**
NOT TO SCALE

SCHEMATICS SYMBOL LEGEND	
Ⓜ	TERMINAL LOCATED IN MOTOR CONTROL CENTER (HW-MCC-101)
■	TERMINAL LOCATED IN CONTROL PANEL (HW-CP-108)
—	LOCAL WIRING
- - -	FIELD WIRING



**HEADWORKS BUILDING
INTAKE FAN CONTROL PANEL (HW-CP-108)
CONTROL SCHEMATIC HWE7-D**
NOT TO SCALE

NOTE: CONTROL DAMPERS SHALL BE INSTALLED TO BE POWERED OPEN / SPRING CLOSE

MUNICIPAL AUTHORITY OF THE CITY OF NICKESPORTE
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2019-0-41 AND 2019-0-42
WASTEWATER TREATMENT PLANT EXPANSION
INTAKE FAN CONTROL PANEL (HW-CP-108) LAYOUT AND SCHEMATICS

Scale:	As Shown
Drawn By:	DCW
Checked By:	MLM
Approved By:	SUD

Sheet No. 7

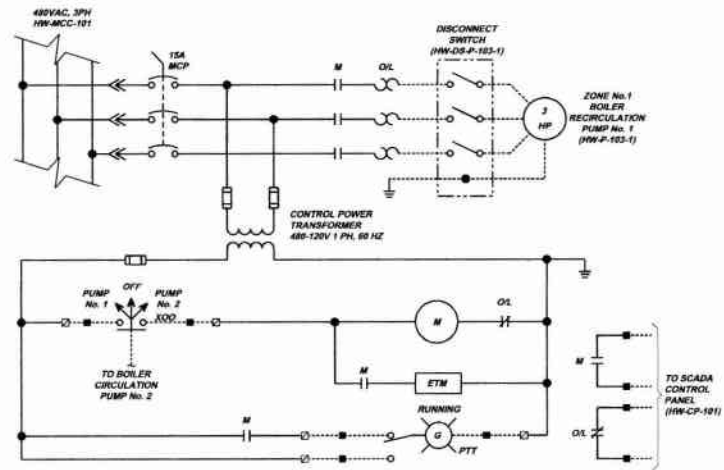
Drawing No. 220-HWE7

Revisions

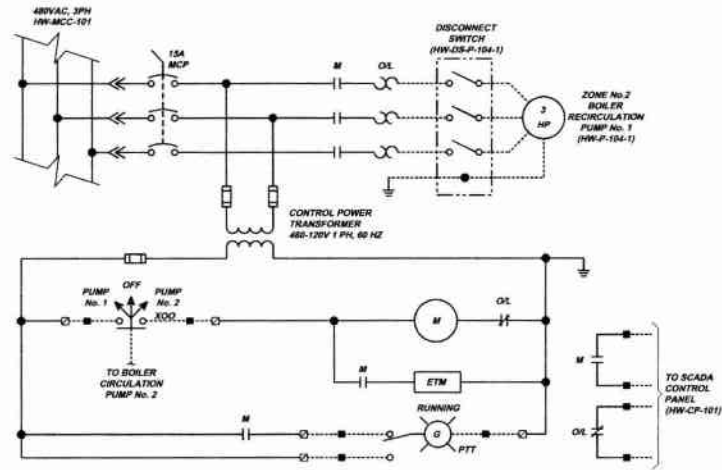
Date	Revisions
1-2011	RELEASE FOR BID

0173 DANIELLE RUN ROAD
PHOENIX, AZ 85042
PART 4 12-9-94-0258
HW-CP-108-108-108

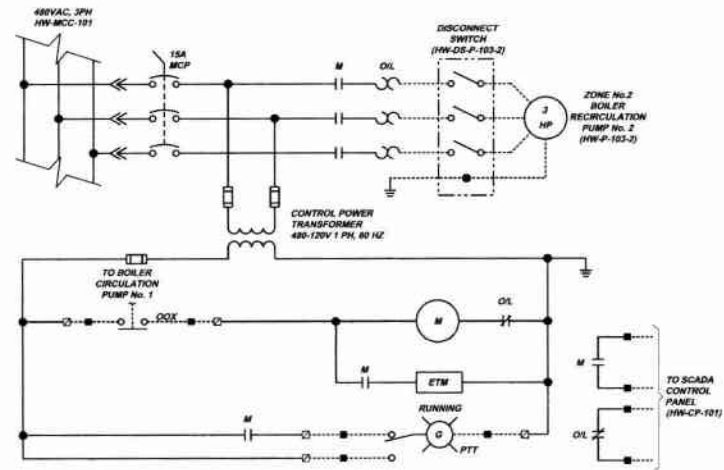
KLH ENGINEERS, INC.



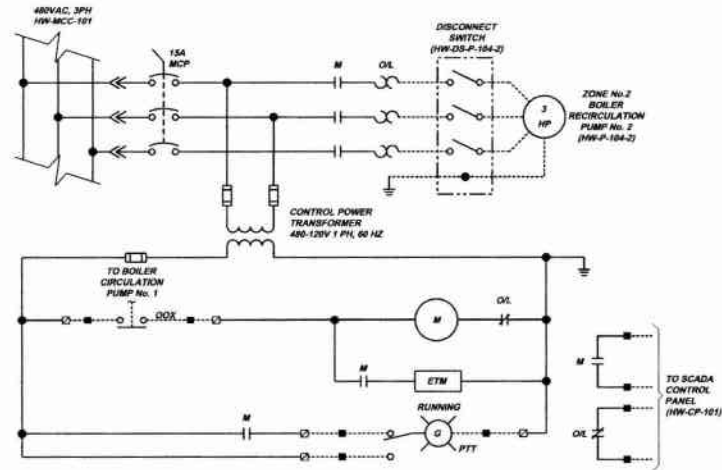
**HEADWORKS ZONE 1
BOILER RECIRCULATION PUMP No. 1
CONTROL SCHEMATIC HWB8-A**
NOT TO SCALE



**HEADWORKS ZONE 2
BOILER RECIRCULATION PUMP No. 1
CONTROL SCHEMATIC HWB8-B**
NOT TO SCALE



**HEADWORKS ZONE 1
BOILER RECIRCULATION PUMP No. 2
CONTROL SCHEMATIC HWB8-C**
NOT TO SCALE



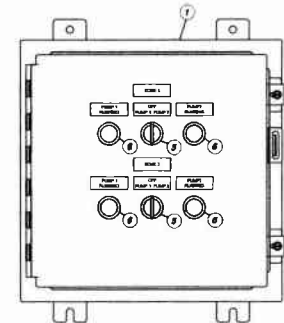
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BOILER RECIRCULATION PUMP No. 2
CONTROL SCHEMATIC HWB8-D**
NOT TO SCALE

SCHEMATICS SYMBOL LEGEND

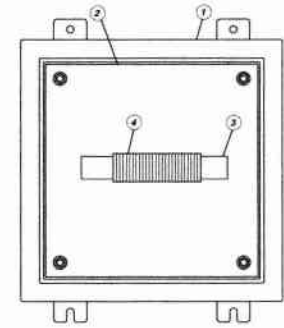
□	TERMINAL LOCATED IN MOTOR CONTROL CENTER (HW-MCC-101)
■	TERMINAL LOCATED IN CONTROL PANEL (HW-CP-101)
—	LOCAL WIRING
---	FIELD WIRING

BOILER RECIRCULATION PUMPS CONTROL PANEL (HW-CP-107) BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	1	18"x18" ENCLOSURE, NEMA TYPE 12	A18100MLP	HOFFMAN
2	1	13"x13" SUB PANEL	A18P10	HOFFMAN
3	AR	DIN RAIL	198-DRI	ALLEN-BRADLEY
4	AR	30A FEED-THROUGH TERMINAL BLOCK	1482-NM1	ALLEN-BRADLEY
5	2	3 POSITION SELECTOR SWITCH	800T-10A	ALLEN-BRADLEY
6	4	PILOT LIGHT (GREEN)	800T-P1H10G	ALLEN-BRADLEY



**HEADWORKS BOILER
RECIRCULATION PUMPS
CONTROL PANEL (HW-CP-107)
EXTERIOR LAYOUT HWB8-E**
NOT TO SCALE



**HEADWORKS BOILER
RECIRCULATION PUMPS
CONTROL PANEL (HW-CP-107)
INTERIOR LAYOUT HWB8-F**
NOT TO SCALE

Revisions

Date	Description
1-2011	RELEASE FOR BID

5173 CAMPBELL BLVD
ALLEGANY COUNTY, PENNSYLVANIA
PA 15512-4540
Tel: 412-454-0226
Fax: 412-454-0226
hw@klh-engineers.com

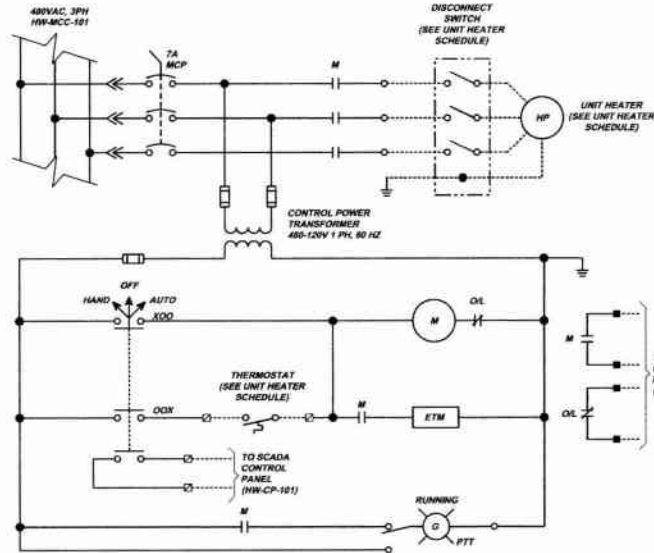
KLH ENGINEERS, INC.

**MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGANY COUNTY, PENNSYLVANIA
WASTEWATER TREATMENT PLANT EXPANSION
BOILER RECIRCULATION PUMPS CONTROL PANEL (HW-CP-107) LAYOUT AND SCHEMATICS**

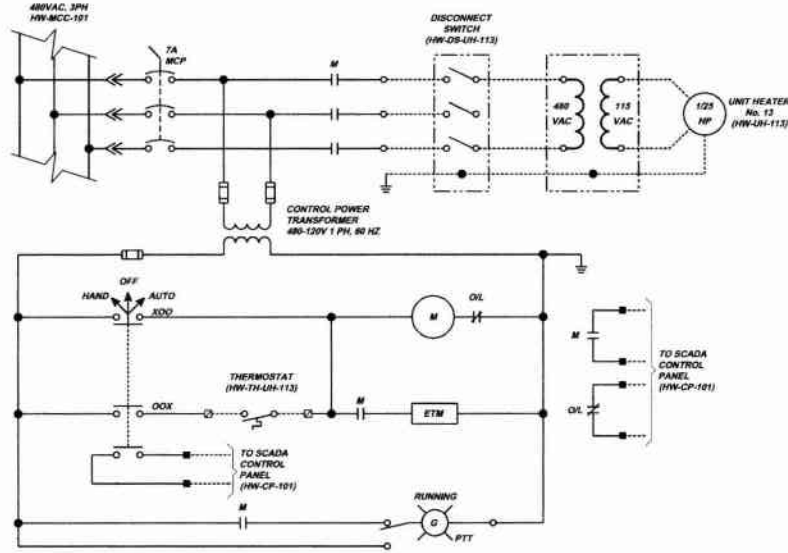
Scale: A: 8/20/11
Date: DEC 2010
Drawn By: JCM
Checked By: JCM
Approved By: JCM

Sheet No. 8

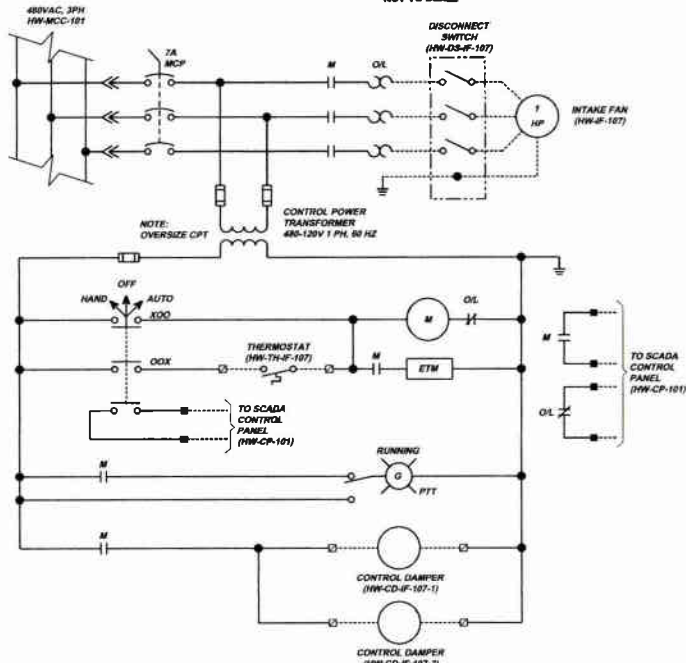
Drawing No. 220-HWB8



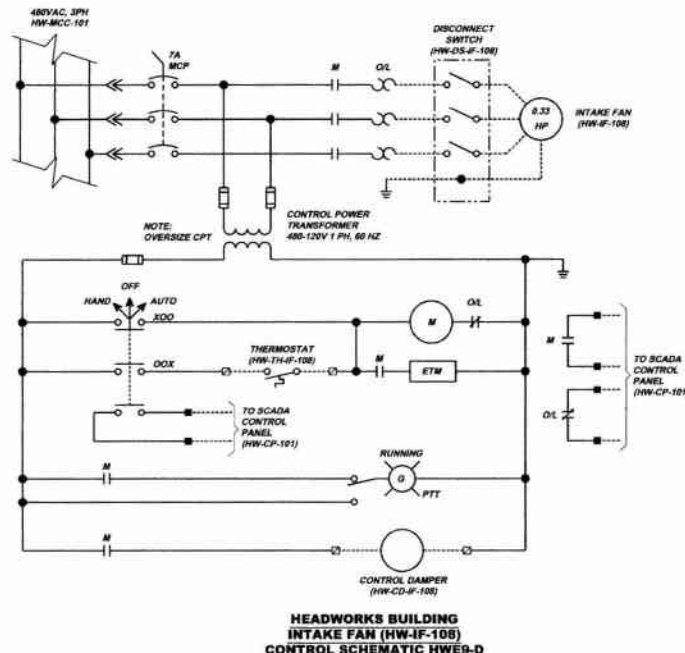
**HEADWORKS BUILDING
UNIT HEATER (HW-UH-101 THRU HW-UH-112)
CONTROL SCHEMATIC HW-E9-A**
NOT TO SCALE



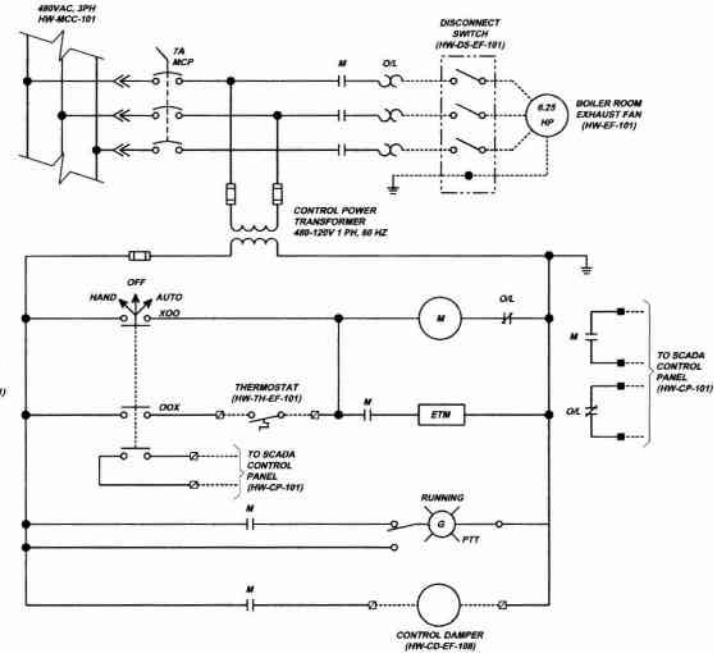
**HEADWORKS BUILDING
UNIT HEATER (HW-UH-113)
CONTROL SCHEMATIC HW-E9-B**
NOT TO SCALE



**HEADWORKS BUILDING
INTAKE FAN (HW-IF-107)
CONTROL SCHEMATIC HW-E9-C**
NOT TO SCALE



**HEADWORKS BUILDING
INTAKE FAN (HW-IF-108)
CONTROL SCHEMATIC HW-E9-D**
NOT TO SCALE



**HEADWORKS BUILDING
BOILER ROOM EXHAUST FAN (HW-EF-101)
CONTROL SCHEMATIC HW-E9-E**
NOT TO SCALE

SCHEMATIC'S SYMBOL LEGEND

□	TERMINAL LOCATED IN MOTOR CONTROL CENTER (HW-MCC-101)
■	TERMINAL LOCATED IN CONTROL PANEL
—	LOCAL WIRING
- - -	FIELD WIRING

UNIT HEATER SCHEDULE			
UNIT HEATER No.	UNIT HEATER FAN HP	DISCONNECT SWITCH No.	THERMOSTAT No.
HW-UH-101	1/2 HP	HW-DS-UH-101	HW-TH-UH-101
HW-UH-102	1/2 HP	HW-DS-UH-102	HW-TH-UH-102
HW-UH-103	1/2 HP	HW-DS-UH-103	HW-TH-UH-103
HW-UH-104	1/2 HP	HW-DS-UH-104	HW-TH-UH-104
HW-UH-105	1/2 HP	HW-DS-UH-105	HW-TH-UH-105
HW-UH-106	1/2 HP	HW-DS-UH-106	HW-TH-UH-106
HW-UH-107	1/2 HP	HW-DS-UH-107	HW-TH-UH-107
HW-UH-108	1/2 HP	HW-DS-UH-108	HW-TH-UH-108
HW-UH-109	1/2 HP	HW-DS-UH-109	HW-TH-UH-109
HW-UH-110	1/2 HP	HW-DS-UH-110	HW-TH-UH-110
HW-UH-111	1/2 HP	HW-DS-UH-111	HW-TH-UH-111
HW-UH-112	1/2 HP	HW-DS-UH-112	HW-TH-UH-112

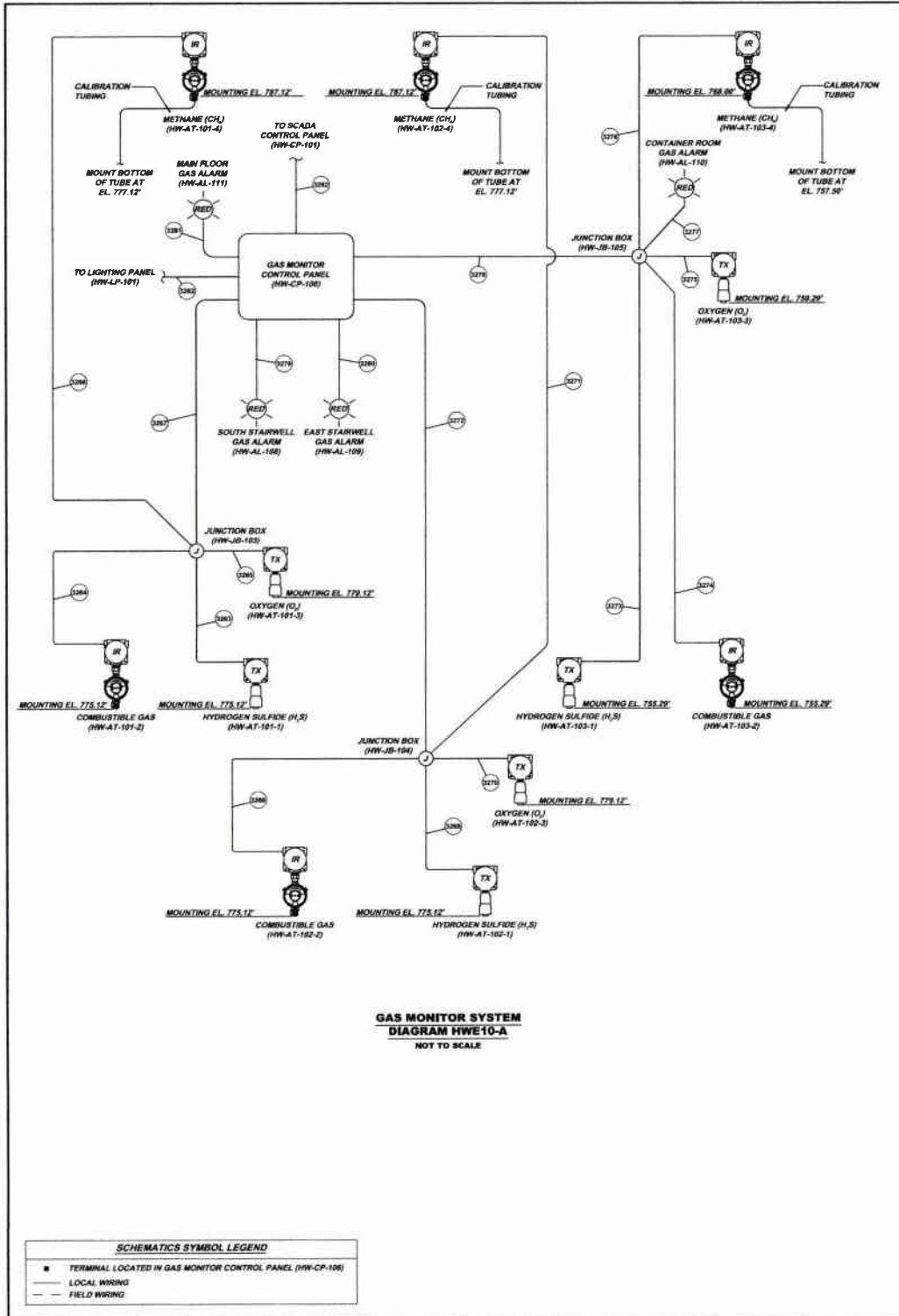
5178 DANIELLE RUN ROAD
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 WWW.KLHENGINEERS.COM

KLH ENGINEERS, INC.

**MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 HEADWORKS BUILDING ELECTRICAL SCHEMATICS**

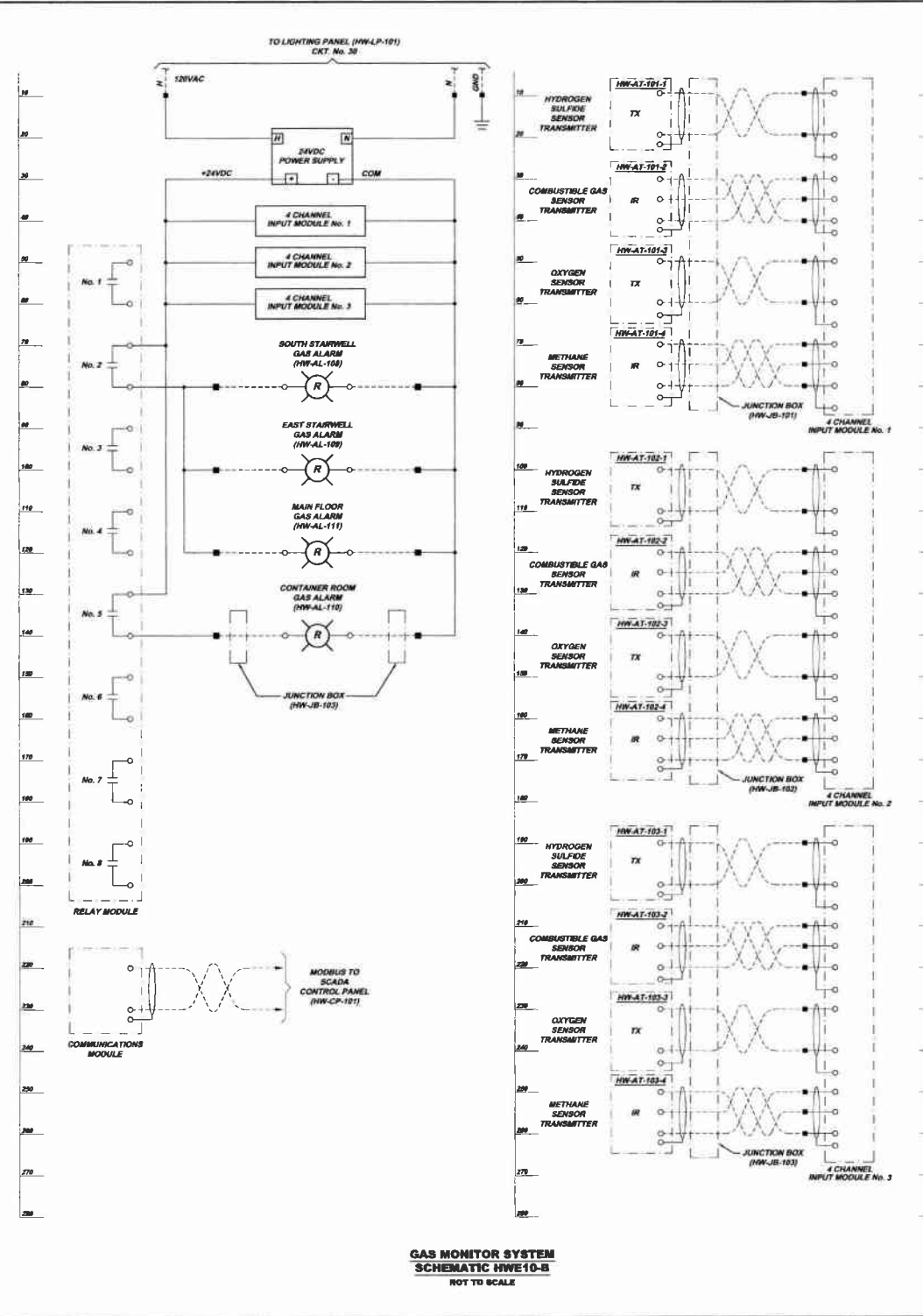
Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DOV
Checked By:	MJM
Approved By:	BNO

Sheet No. 9
 Drawing No. 220-HWE9



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN GAS MONITOR CONTROL PANEL (HW-CP-100)
—	LOCAL WIRING
---	FIELD WIRING



GAS MONITOR SYSTEM SCHEMATIC HWE10-B
NOT TO SCALE

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DCV
Checked By:	MM
Approved By:	SHG

MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 GAS MONITOR SYSTEM DIAGRAM AND SCHEMATIC

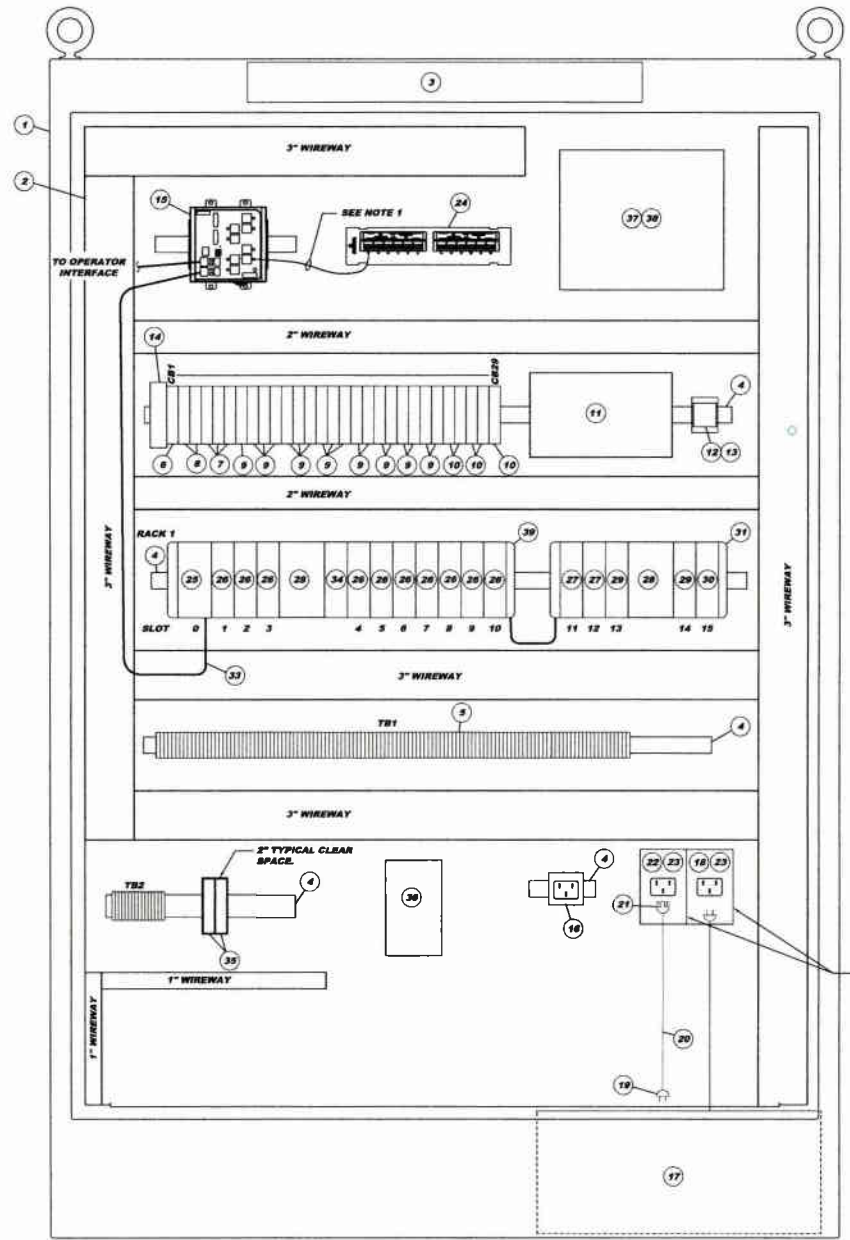
5173 CAMPBELL BLVD ROAD
 PITTSBURGH, PA 15201-1110
 PHONE: 412-246-0255
 INFO@KLEHENGINEERS.COM

KLEH ENGINEERS, INC.

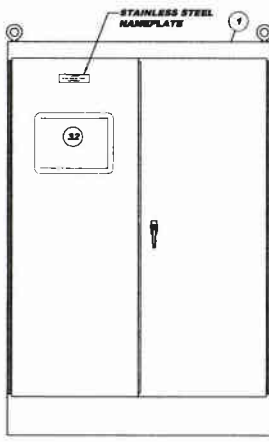
Rev.	Date	Revisions
1	12/2011	RELEASE FOR BIDD

Sheet No. **10**

Drawing No. **220-HWE10**



HEADWORKS SCADA CONTROL PANEL (HW-CP-101) INTERIOR LAYOUT HWE11-A
SCALE: 3" = 1'-0"

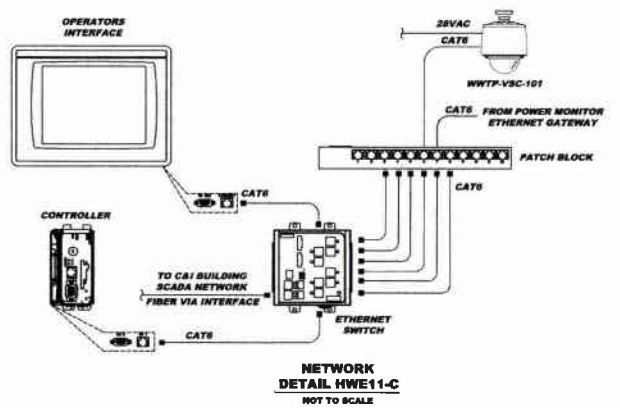


HEADWORKS SCADA CONTROL PANEL (HW-CP-101) EXTERIOR LAYOUT HWE11-B
SCALE: 1" = 1'-0"

SIZE UTILITY BOXES TO FIT THE RECEPTACLE AND INLET.

HEADWORKS SCADA CONTROL PANEL (HW-CP-101) BILL OF MATERIALS				
ITEM	QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	1	72"x48"x18" ENCLOSURE, NEMA TYPE 12	AT24818FS0	HOFFMAN
2	1	60"x48" ENCLOSURE SUBPANEL	AT2P48F1	HOFFMAN
3	1	FLUORESCENT LIGHTING PACKAGE	ALF16024R	HOFFMAN
4	AR	DIN RAIL	199-DR1	ALLEN-BRADLEY
5	AR	30A FEED-THROUGH TERMINAL BLOCK	1492-4M1	ALLEN-BRADLEY
6	1	277VAC/48VDC SINGLE POLE 30A CIRCUIT BREAKER	1492-SP1D200	ALLEN-BRADLEY
7	3	277VAC/48VDC SINGLE POLE 15A CIRCUIT BREAKER	1492-SP1D150	ALLEN-BRADLEY
8	2	277VAC/48VDC SINGLE POLE 15A CIRCUIT BREAKER	1492-SP1D100	ALLEN-BRADLEY
9	18	277VAC/48VDC SINGLE POLE 5A CIRCUIT BREAKER	1492-SP1D050	ALLEN-BRADLEY
10	9	277VAC/48VDC SINGLE POLE 2A CIRCUIT BREAKER	1492-SP1D020	ALLEN-BRADLEY
11	1	24 VDC POWER SUPPLY	1606-XL480P	ALLEN-BRADLEY
12	1	CONTROL RELAY SOCKET	700-NW12S	ALLEN-BRADLEY
13	1	CONTROL RELAY, 120VAC	700-NA32A1	ALLEN-BRADLEY
14	1	TRANSIENT VOLTAGE SURGE SUPPRESSOR	TR STORM-120-108A	TRANSECTOR
15	1	10 PORT, 10/100 BASE TX ETHERNET SWITCH	1783-MS10T	ALLEN-BRADLEY
16	1	CONVENIENCE RECEPTACLE	DMRBA	ALTECH
17	1	1KVA UPS	Q-1000	POWER INNOVATIONS
18	1	120VAC 15A RECEPTACLE	S27S-CWP	LEVITON
19	1	120VAC 15A PLUG	S18PV	LEVITON
20	AR	3C #14AWG RED/W CABLE	-	-
21	1	120VAC 15A CONNECTOR	S15CV	LEVITON
22	1	120VAC 15A INLET	S27S-CWP	LEVITON
23	2	UTILITY BOX	-	-
24	1	12 PORT CAT5 UNIVERSAL PATCH BLOCK	89568-428	LEVITON
25	1	LOGIC CONTROLLER	1789-L3SE	ALLEN-BRADLEY
26	10	DIGITAL INPUT MODULE	1789-IG16	ALLEN-BRADLEY
27	2	DIGITAL OUTPUT MODULE	1789-OG8I	ALLEN-BRADLEY
28	2	POWER SUPPLY	1789-P44	ALLEN-BRADLEY
29	2	ANALOG INPUT MODULE	1789-IF4I	ALLEN-BRADLEY
30	1	ANALOG OUTPUT MODULE	1789-OF4CI	ALLEN-BRADLEY
31	1	COMPACT I/O RIGHT END CAP	1789-SCR	ALLEN-BRADLEY
32	1	COLOR OPERATOR INTERFACE	2711F-Y12C-4A9	ALLEN-BRADLEY
33	AR	CATEGORY 6 PATCH CABLE	-	-
34	1	MODBUS NETWORK INTERFACE	MV169-MCM	PROSOFT
35	2	ANALOG INPUT INTRINSICALLY SAFE BARRIER	IM33-118x-NI24VDC	TURCK
36	1	CAMERA POWER SUPPLY	S28WPS-1	VICON
37	1	FIBER NETWORK INTERFACE	NID90ZACAY	LEVITON
38	AR	W37 MULTIMEDIA ADAPTER PLATE (S)	-	-
39	1	8" FIBER JUMPER	-	-
39	1	BUS CABLE	1789-CRR1	ALLEN-BRADLEY

* SUPPLIED UNDER SPECIFICATION 16810 AND SUPPLIED LOOSE. CONTROL PANEL MANUFACTURER SHALL INSTALL.



NETWORK DETAIL HWE11-C
NOT TO SCALE

NOTES:
1. PROVIDE SEVEN (7) CATEGORY 6 MODULAR PATCH CORDS. THE LENGTH OF THE CORDS SHALL BE AS SHORT AS PRACTICAL TO REDUCE THE AMOUNT OF EXCESS WIRE INSIDE THE PANEL.

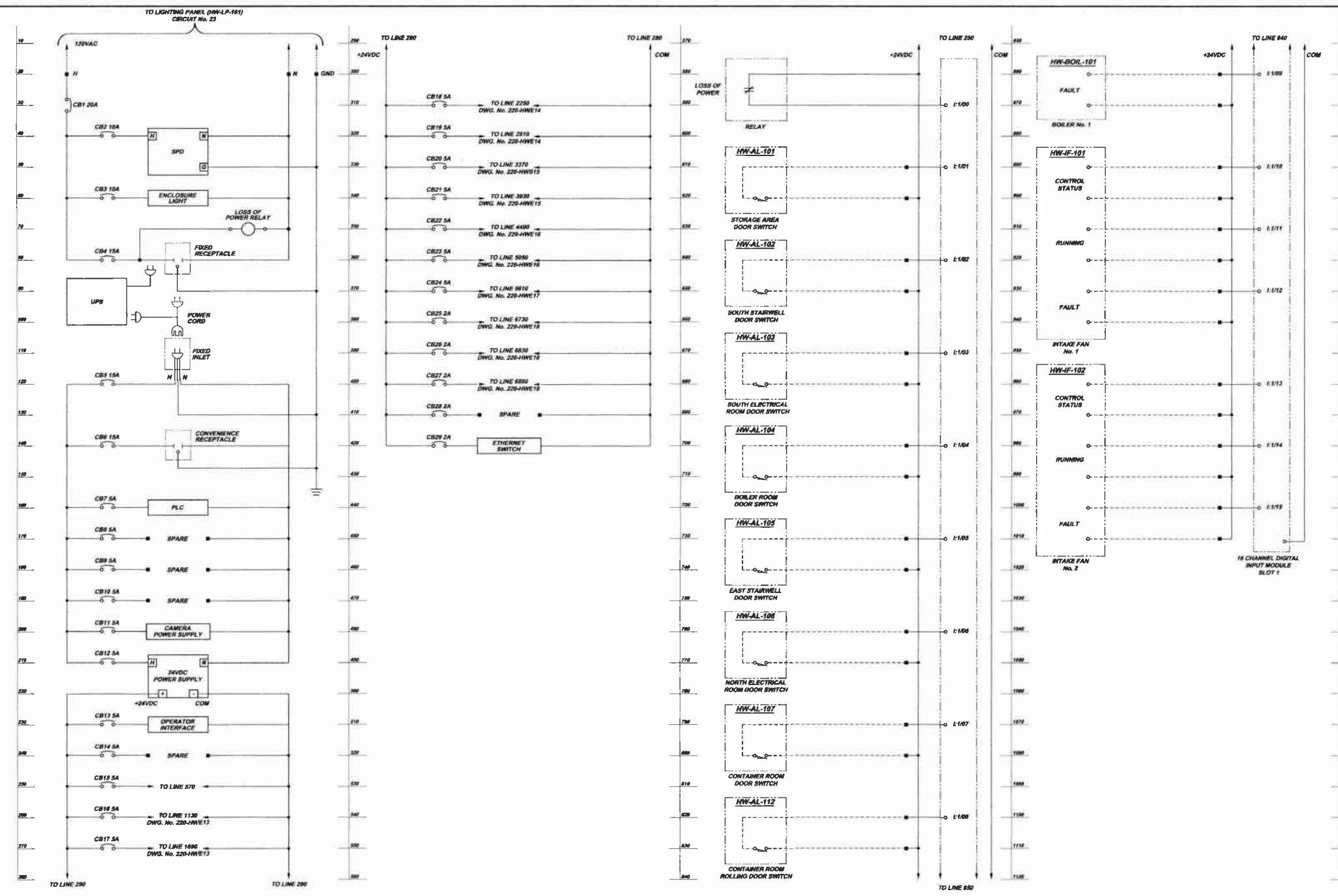
5175 DANFELLS RUN ROAD
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 HEADWORKS SCADA CONTROL PANEL (HW-CP-101) LAYOUT AND DETAILS

KLH ENGINEERS, INC.

Scale:	As Shown
Drawn By:	DCW
Checked By:	NJM
Approved By:	SHG

Date: 12/11/10
 Revision: 1
 Description: RELEASE FOR BID

Sheet No. 11
 Drawing No. 220-HWE11

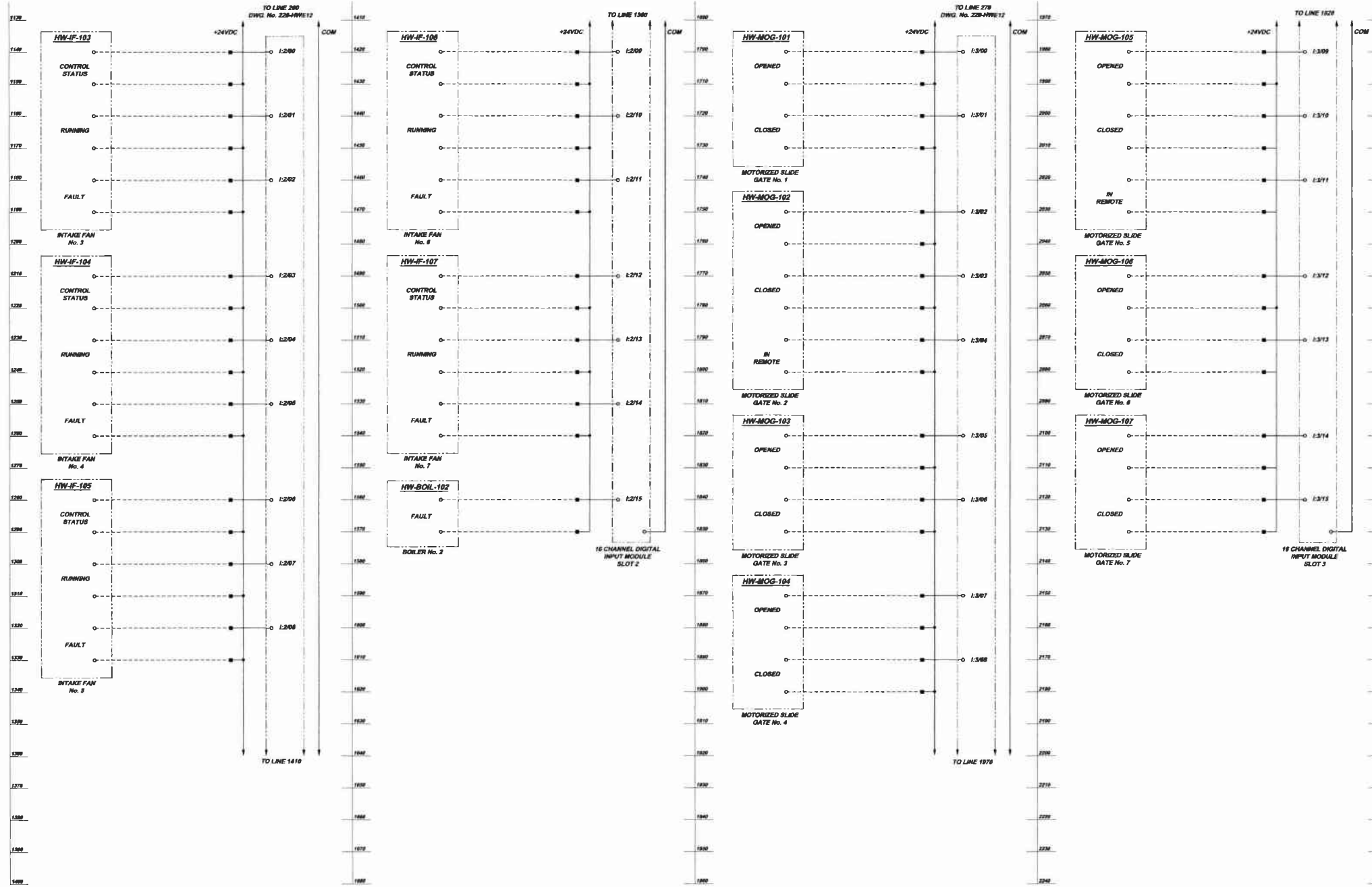


SCHEMATICS SYMBOL LEGEND

- TERMINAL LOCATED IN SCADA CONTROL PANEL (HW-CP-101)
- LOCAL WIRING
- - - FIELD WIRING

**HEADWORKS
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

Scale: Date: Drawn By: Checked By: Approved By:	DES: 2019 DCW MAM BHD	Sheet No. 12	Drawing No. 220- HWE12	Date: 1-2011	Revision: RELEASE FOR BID
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION HEADWORKS SCADA CONTROL PANEL (HW-CP-101) SCHEMATICS SHEET 1 OF 7					
5173 CAMPBELL RUN ROAD WASTEWATER TREATMENT PLANT MCKEESPORT, PA 15149-4031 TEL: 412-494-2426 FAX: 412-494-2426 HW@klhengineers.com					

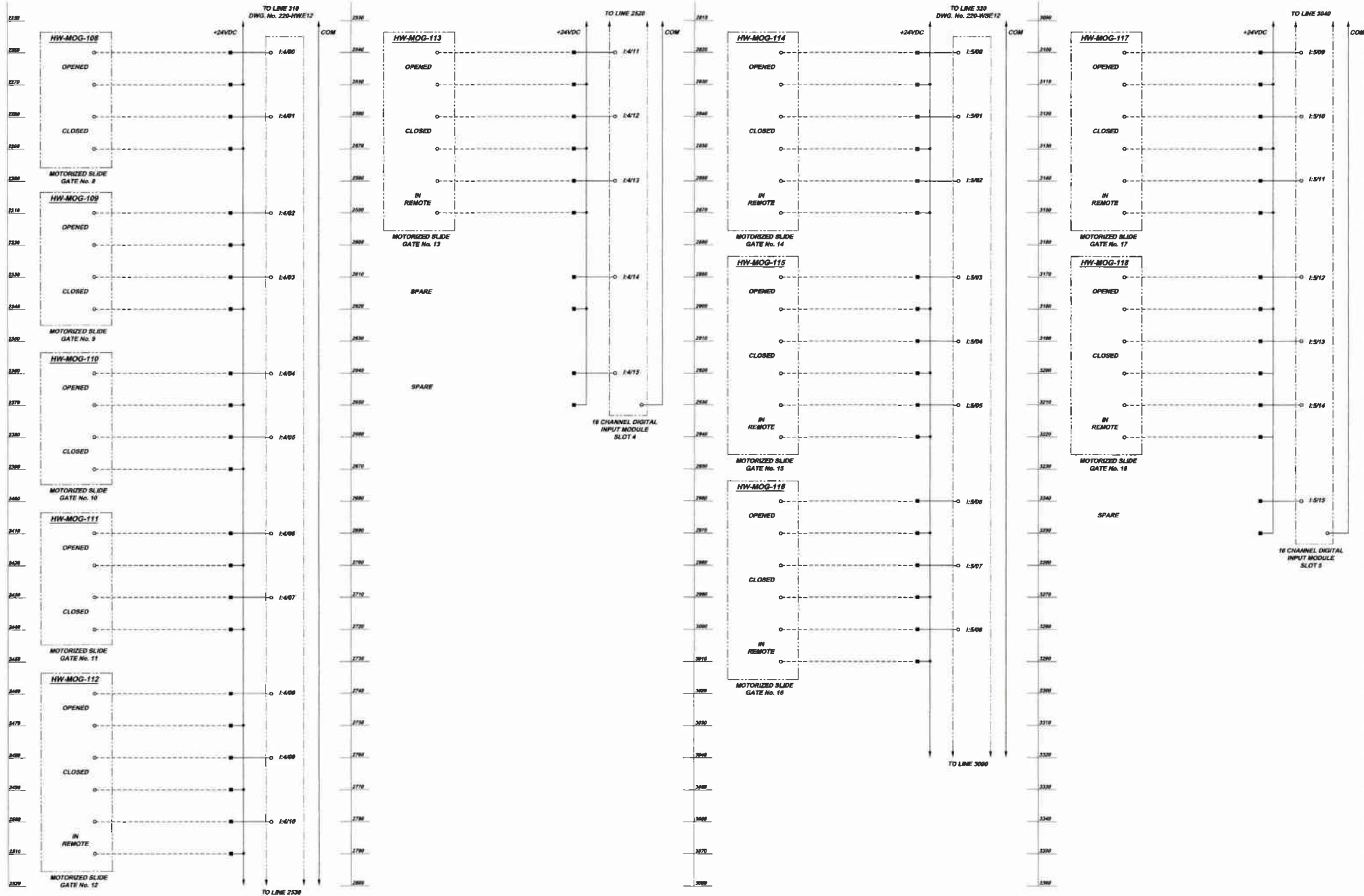


SCHEMATICS SYMBOL LEGEND

□	TERMINAL LOCATED IN SCADA CONTROL PANEL (HW-CP-101)
---	LOCAL WIRING
- - -	FIELD WIRING

HEADWORKS
SCADA CONTROL PANEL SCHEMATICS
 NOT TO SCALE

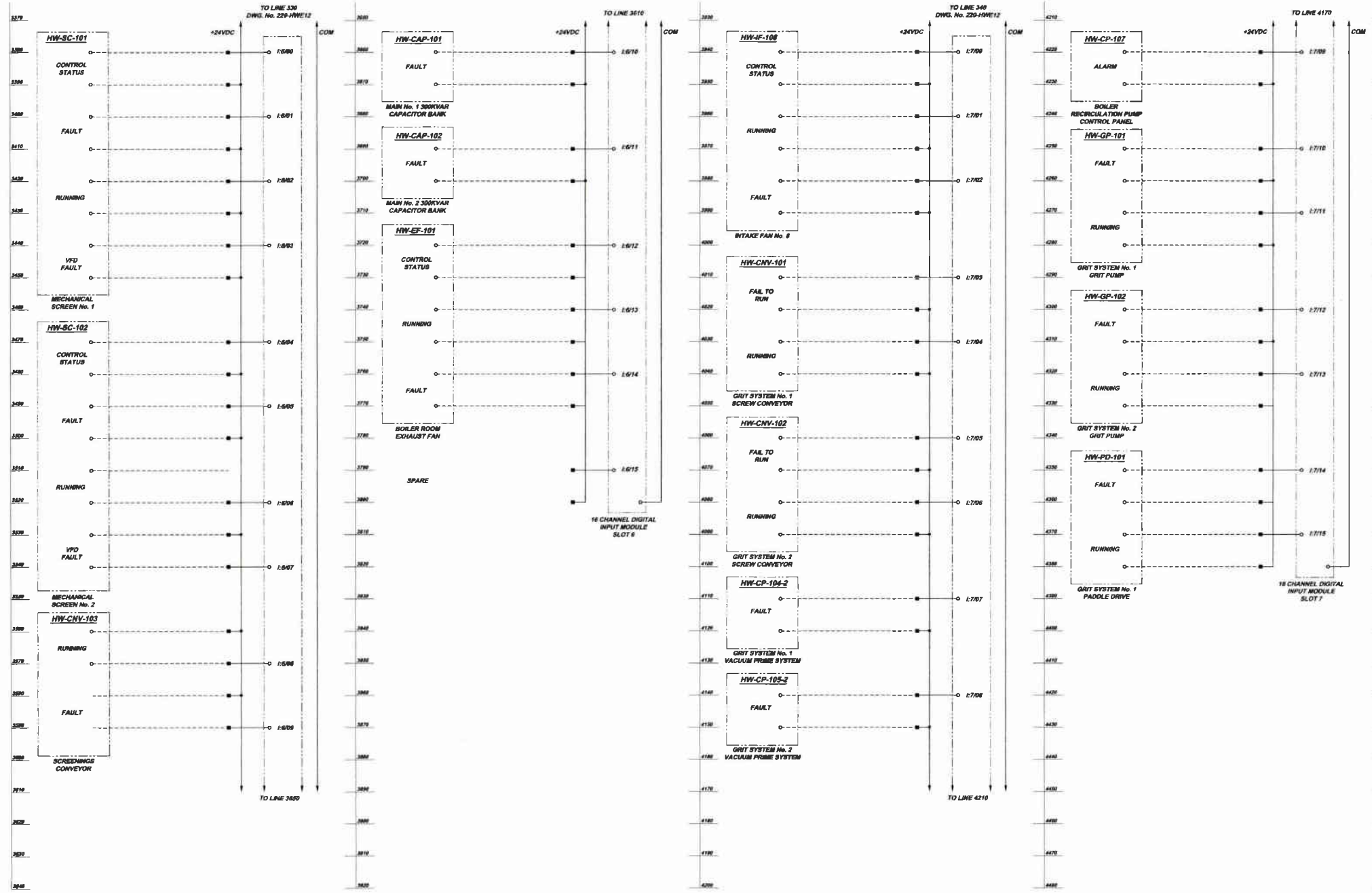
Scale: As Shown Date: DEC. 2016 Drawn By: DCW Checked By: MAM Approved By: SUG	Sheet No. <p align="center">13</p> Drawing No. <p align="center">220- HWE13</p>	Revisions <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th>Date</th> <th>Revisions</th> </tr> <tr> <td>1-31-11</td> <td>RELEASE FOR BID</td> </tr> </table>	Date	Revisions	1-31-11	RELEASE FOR BID
Date	Revisions					
1-31-11	RELEASE FOR BID					
KLH ENGINEERS, INC.						
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2011-0-01 AND 2010-0-02 WASTEWATER TREATMENT PLANT EXPANSION HEADWORKS SCADA CONTROL PANEL (HW-CP-101) SCHEMATICS SHEET 2 OF 7						
5172 DARBELLE RUN ROAD PITTSBURGH, PA 15201 PHONE 412-454-8810 FAX 412-454-8458 INFO@KLHENGINEERS.COM						



SCHEMATICS SYMBOL LEGEND	
■	TERMINAL LOCATED IN SCADA CONTROL PANEL (HW-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

**HEADWORKS
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

Scale:	A4 Sheet:		MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION HEADWORKS SCADA CONTROL PANEL (HW-CP-101) SCHEMATICS SHEET 3 OF 7
Date:	DEC. 2010		
Drawn By:	DCW		
Checked By:	MM		
Approved By:	SHG	5175 CAMPBELL RUN ROAD PITTSBURGH, PA 15204-0810 PHONE 412-644-8510 FAX 412-644-0426 info@klhengineers.com	
Sheet No.	14	Revisions Date Description 1-2011 RELEASE FOR BID	
Drawing No.	220-HWE14		



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (HW-CP-101)
---	LOCAL WIRING
---	FIELD WIRING

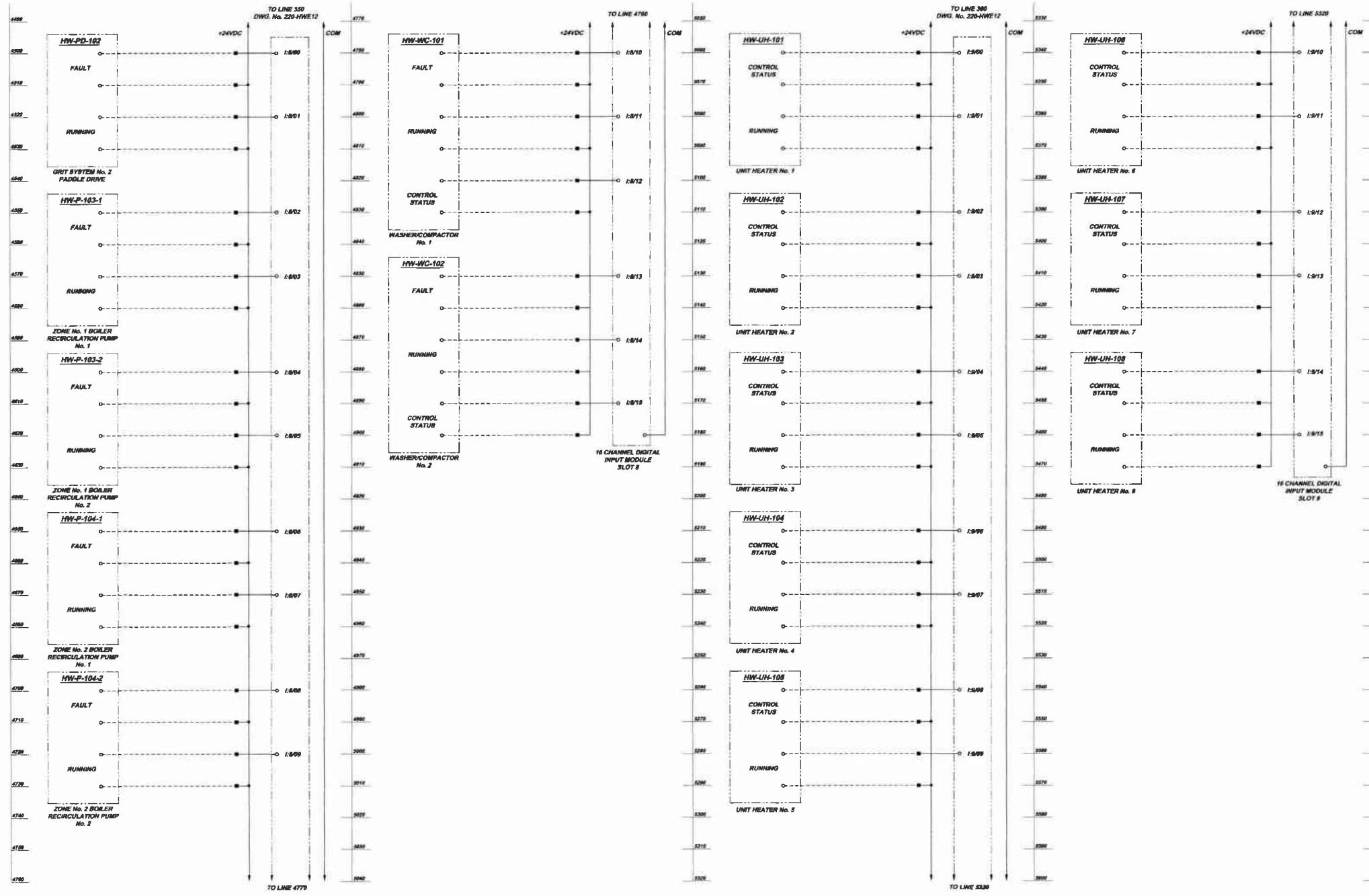
**HEADWORKS
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DCW
Checked By:	BJM
Approved By:	BJC
Sheet No.:	15
Drawing No.:	220-HWE15

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 HEADWORKS SCADA CONTROL PANEL (HW-CP-101) SCHEMATICS SHEET 4 OF 7

KLH ENGINEERS, INC.
 5172 CAMPBELL RUN ROAD
 PITTSBURGH, PA 15205
 PHONE: 412-244-0010
 FAX: 412-244-0026
 INFO@KLHENGINEERS.COM

Revision	Date	By	Description
1	1-2011		RELEASE FOR BID



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (HW-CP-101)
---	LOCAL WIRING
- - -	FIELD WIRING

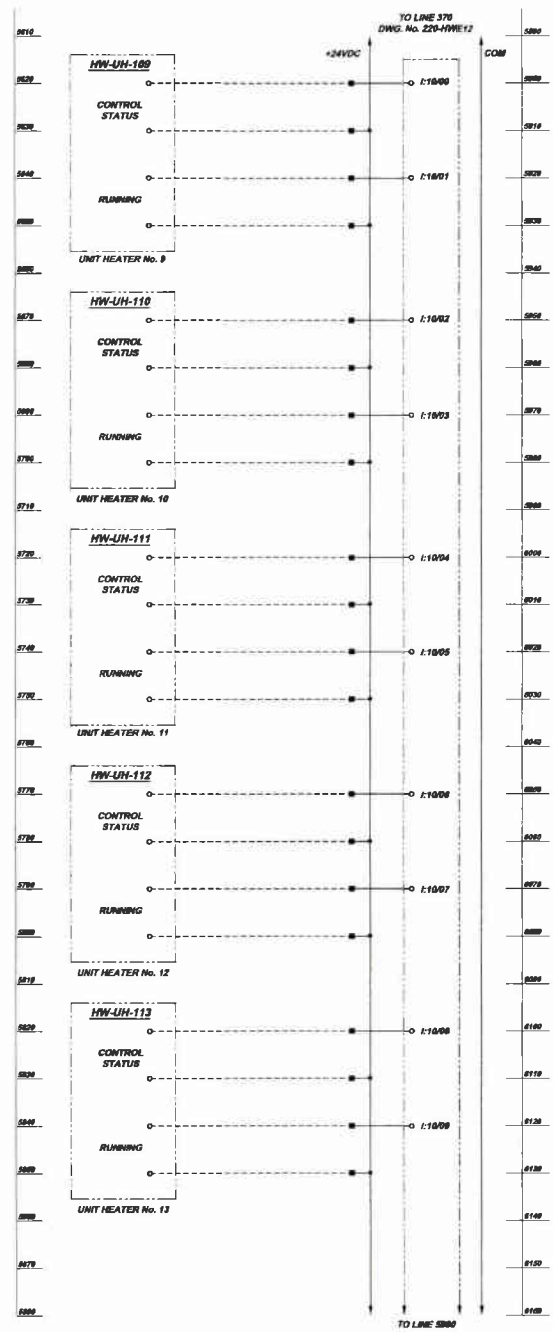
**HEADWORKS
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DOV
Checked By:	NJM
Approved By:	BHG
Sheet No.	16
Drawing No.	220-HWE16

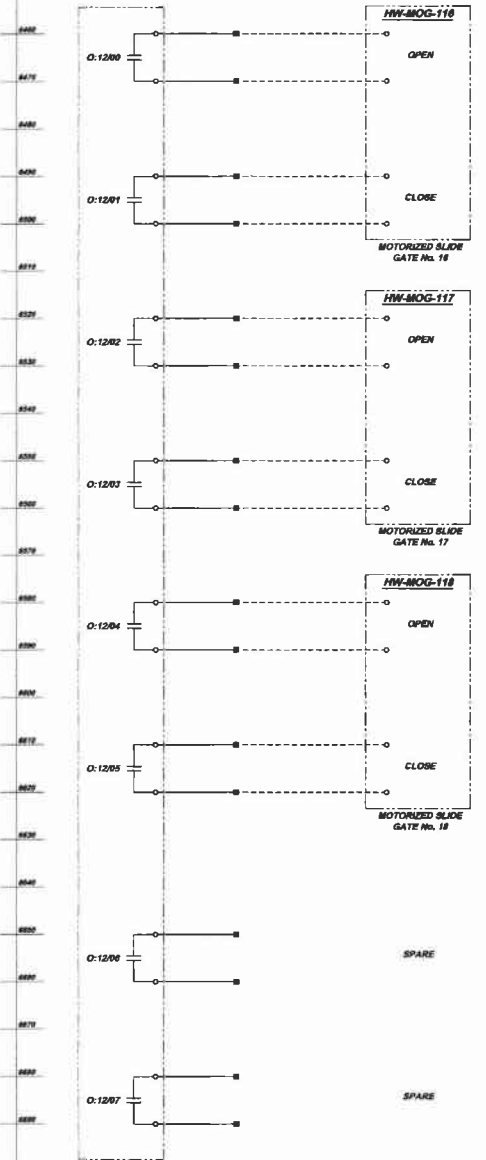
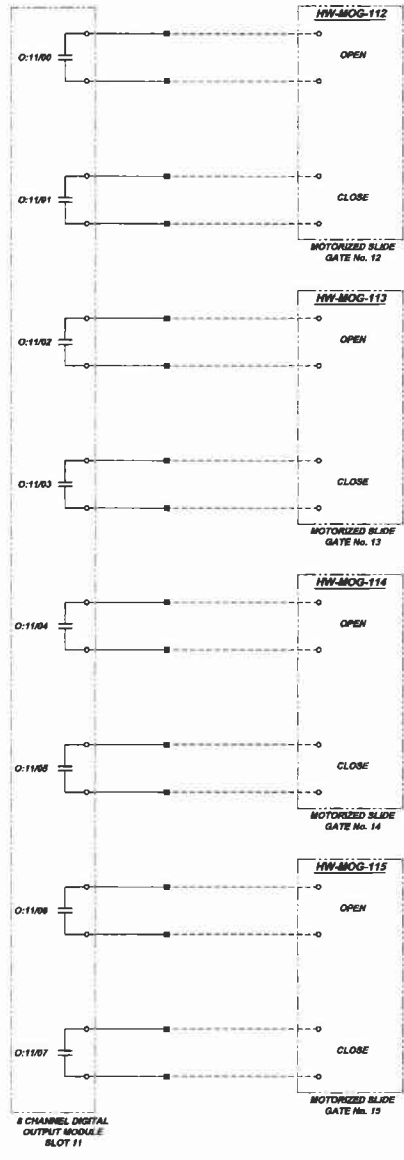
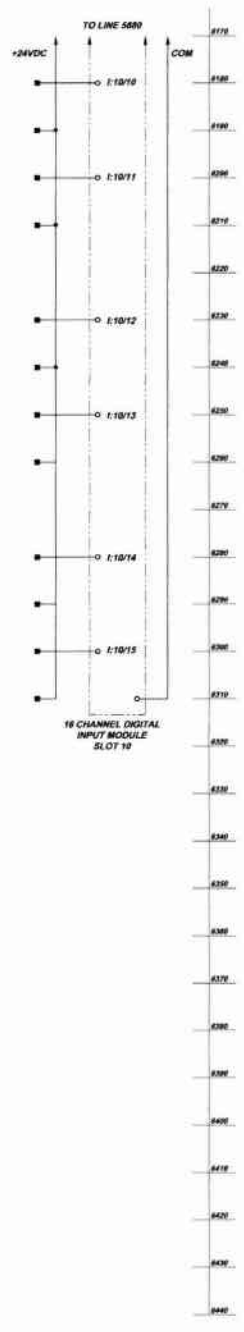
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 HEADWORKS SCADA CONTROL PANEL (HW-CP-101) SCHEMATICS SHEET 8 OF 7

KLH ENGINEERS, INC.
 5175 CAMPBELL RUN ROAD
 PHOENIX, AZ 85044-2810
 PHONE: 480-944-2810
 FAX: 480-944-2811
 INFO@KLHENGINEERS.COM

Date	Revision	Date	Revision
1-2011	RELEASE FOR BID		



SPARE
SPARE
SPARE
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SPARE

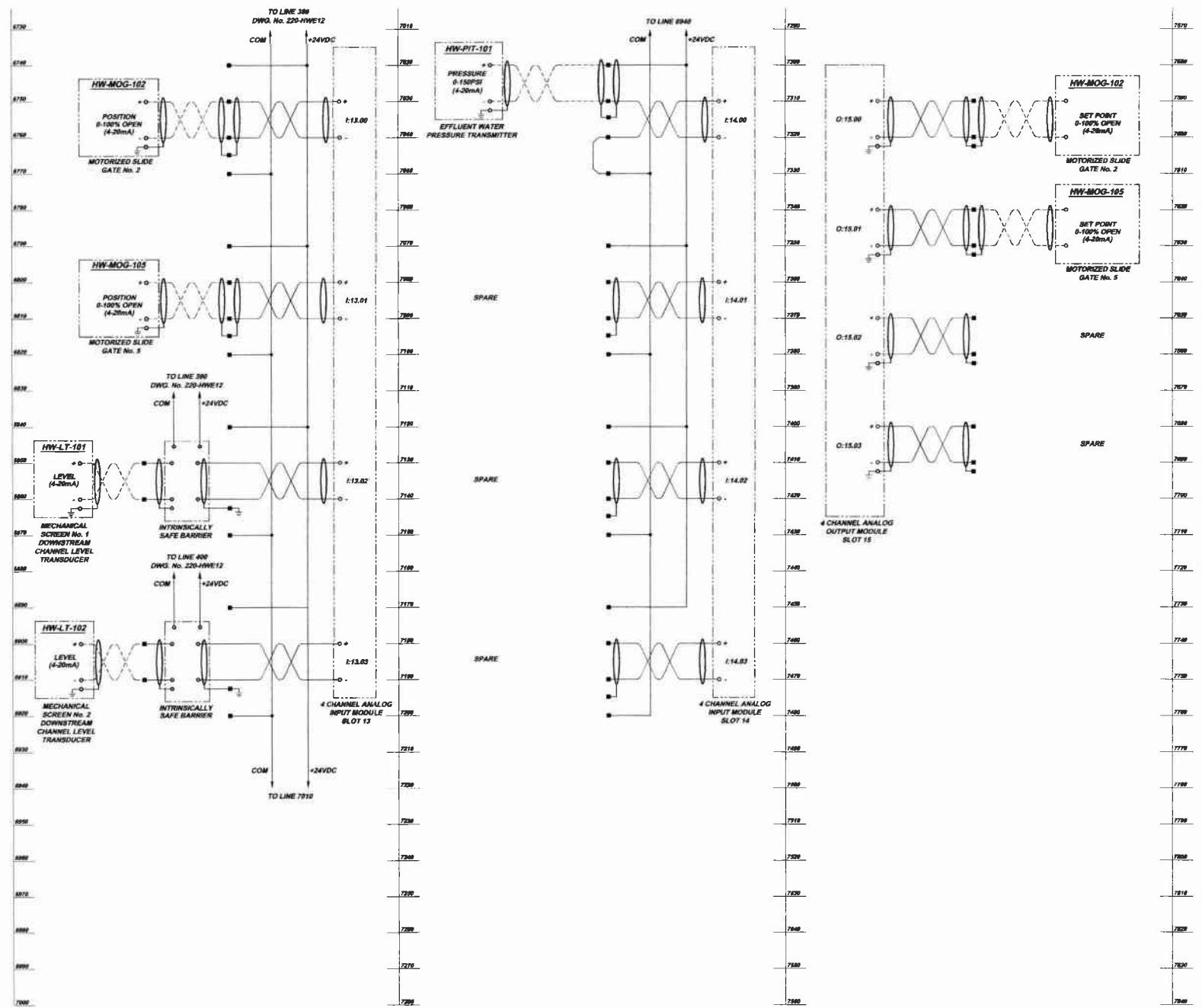


SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (HW-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

**HEADWORKS
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

Scale:	A4 Show	Rev:	
Date:	DEC. 2010	Rev:	
Drawn By:	DCV	Rev:	
Checked By:	MJM	Rev:	
Approved By:	SHD	Rev:	
Sheet No.	17	Revision	
Drawing No.	220-HWE17	Date	
		Revisions	
		RELEASE FOR BID	
		1-2011	
5172 CAMPBELL BLVD ALLEGHENY COUNTY, PENNSYLVANIA PHONE: 412-499-4310 FAX: 412-499-0226 info@klh-engineers.com			
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION HEADWORKS SCADA CONTROL PANEL (HW-CP-101) SCHEMATICS SHEET 6 OF 7			

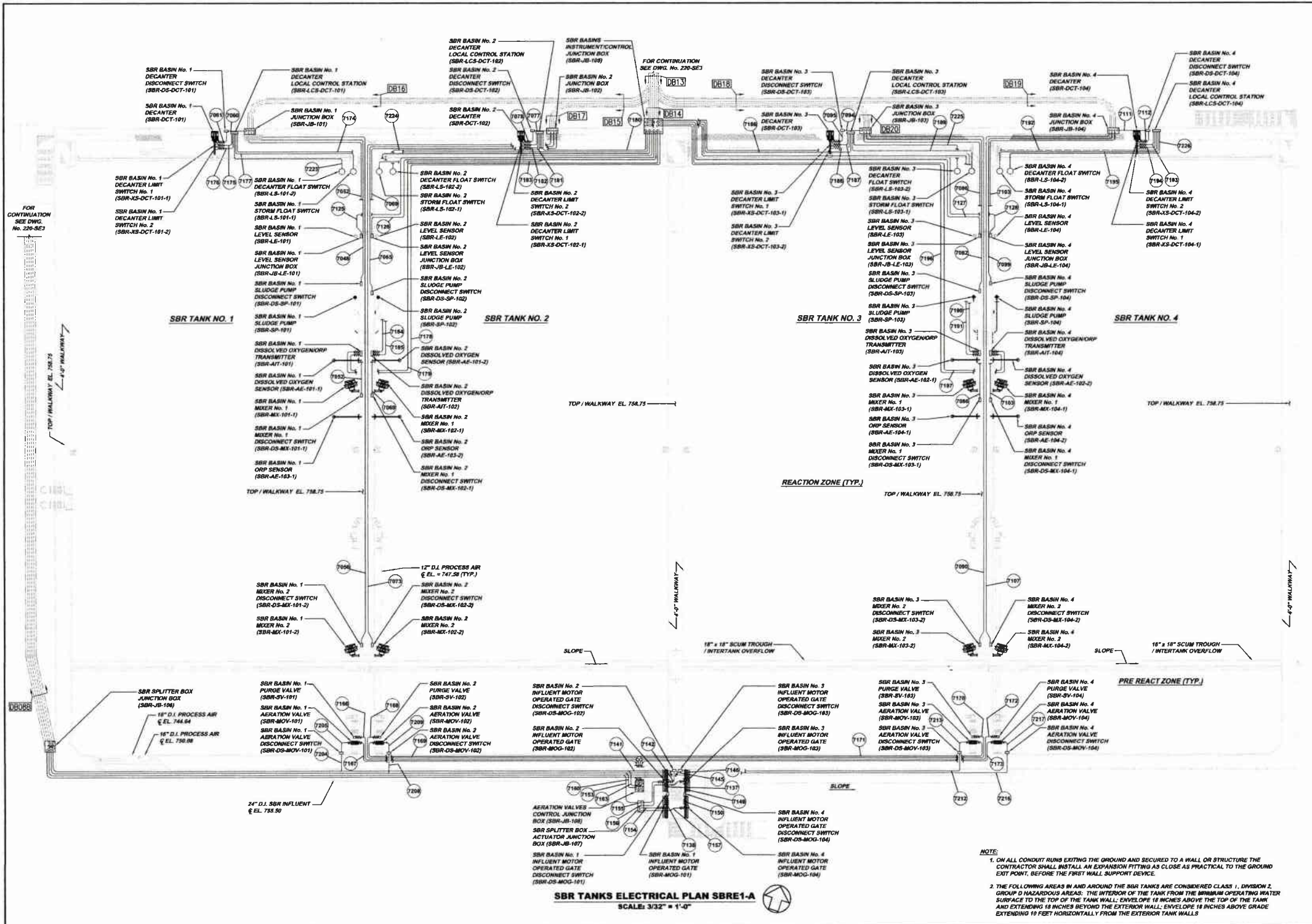


SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (HW-CP-101)
—	LOCAL WIRING
---	FIELD WIRING

**HEADWORKS
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

Scale:	As Shown	Date:	DEC. 2010	Drawn By:	DCW	Checked By:	MLM
Sheet No.:	18	Approved By:	SHG	<p align="center">MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION HEADWORKS SCADA CONTROL PANEL (HW-CP-101) SCHEMATICS SHEET 7 OF 7</p>			
<p align="center">KLH ENGINEERS, INC.</p>				<p align="center">5175 DANIELLE RUN ROAD WASHINGTON, PA 15387 PHONE 412-424-0510 FAX 412-424-0510 INFO@KLHENGINEERS.COM</p>			
Date:	1-2011	Revisions:		Drawings:	RELEASE FOR BID	Date:	



SBR TANKS ELECTRICAL PLAN SBRE1-A
SCALE: 3/32" = 1'-0"

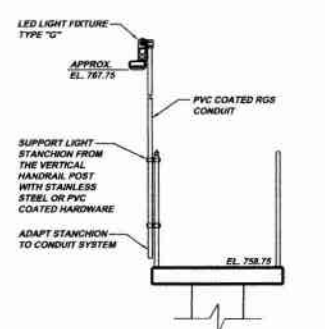
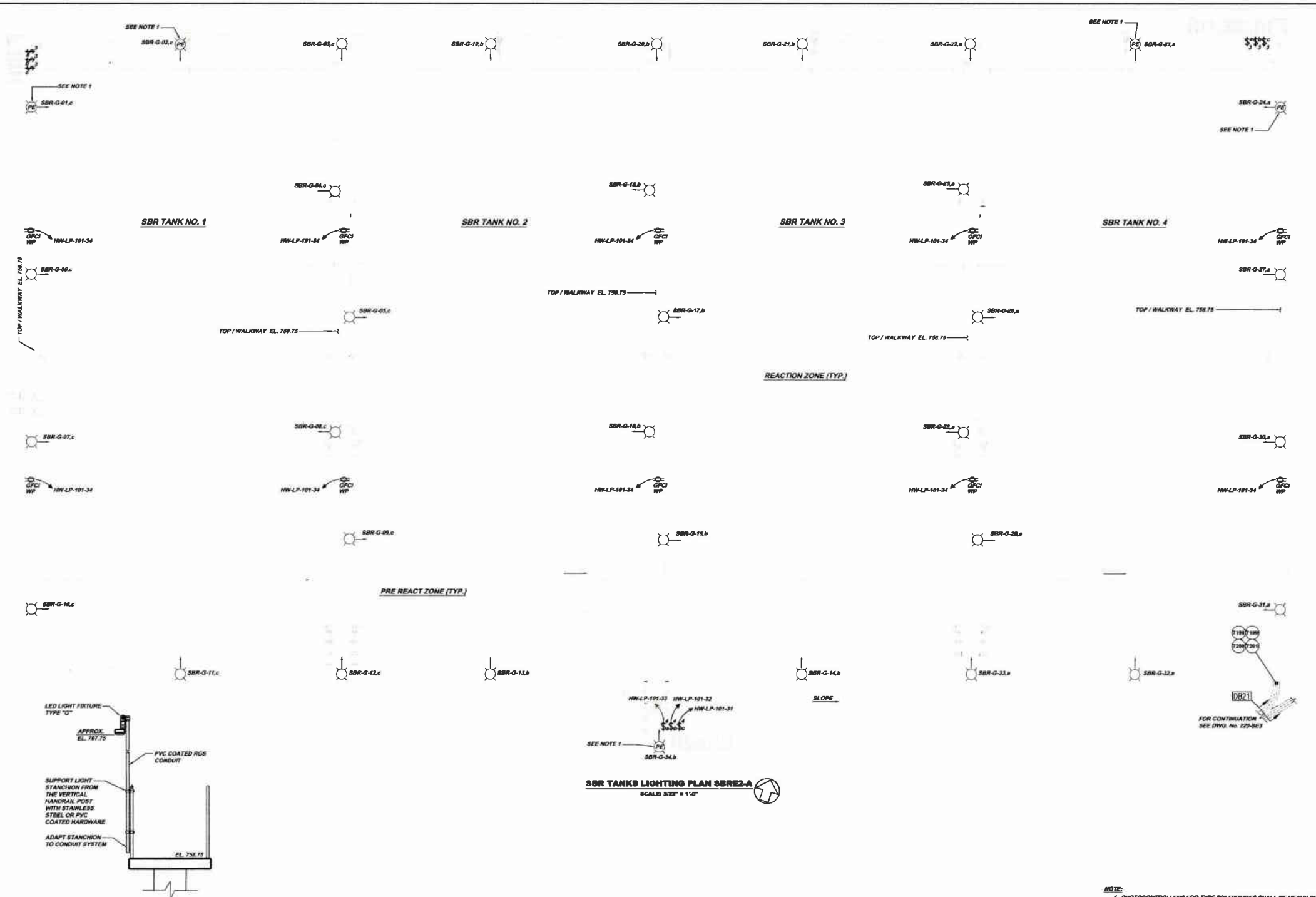
NOTE:

- ON ALL CONDUIT RUNS EXITING THE GROUND AND SECURED TO A WALL OR STRUCTURE THE CONTRACTOR SHALL INSTALL AN EXPANSION FITTING AS CLOSE AS PRACTICAL TO THE GROUND EXIT POINT, BEFORE THE FIRST WALL SUPPORT DEVICE.
- THE FOLLOWING AREAS IN AND AROUND THE SBR TANKS ARE CONSIDERED CLASS 1, DIVISION 2, GROUP D HAZARDOUS AREAS: THE INTERIOR OF THE TANK FROM THE IMBHAM OPERATING WATER SURFACE TO THE TOP OF THE TANK WALL; ENVELOPE 18 INCHES ABOVE THE TOP OF THE TANK AND EXTENDING 18 INCHES BEYOND THE EXTERIOR WALL; ENVELOPE 18 INCHES ABOVE GRADE EXTENDING 10 FEET HORIZONTALLY FROM THE EXTERIOR TANK WALLS

As Shown	DEC. 2010	DCW	MLM	BAG
Date:	DEC. 2010	DCW	MLM	BAG
Drawn By:	DCW	MLM	BAG	
Checked By:				
Approved By:				
Sheet No.	1			
Drawing No.	220-SBRE1			

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
SEQUENTIAL BATCH REACTOR (SBR) ELECTRICAL PLAN

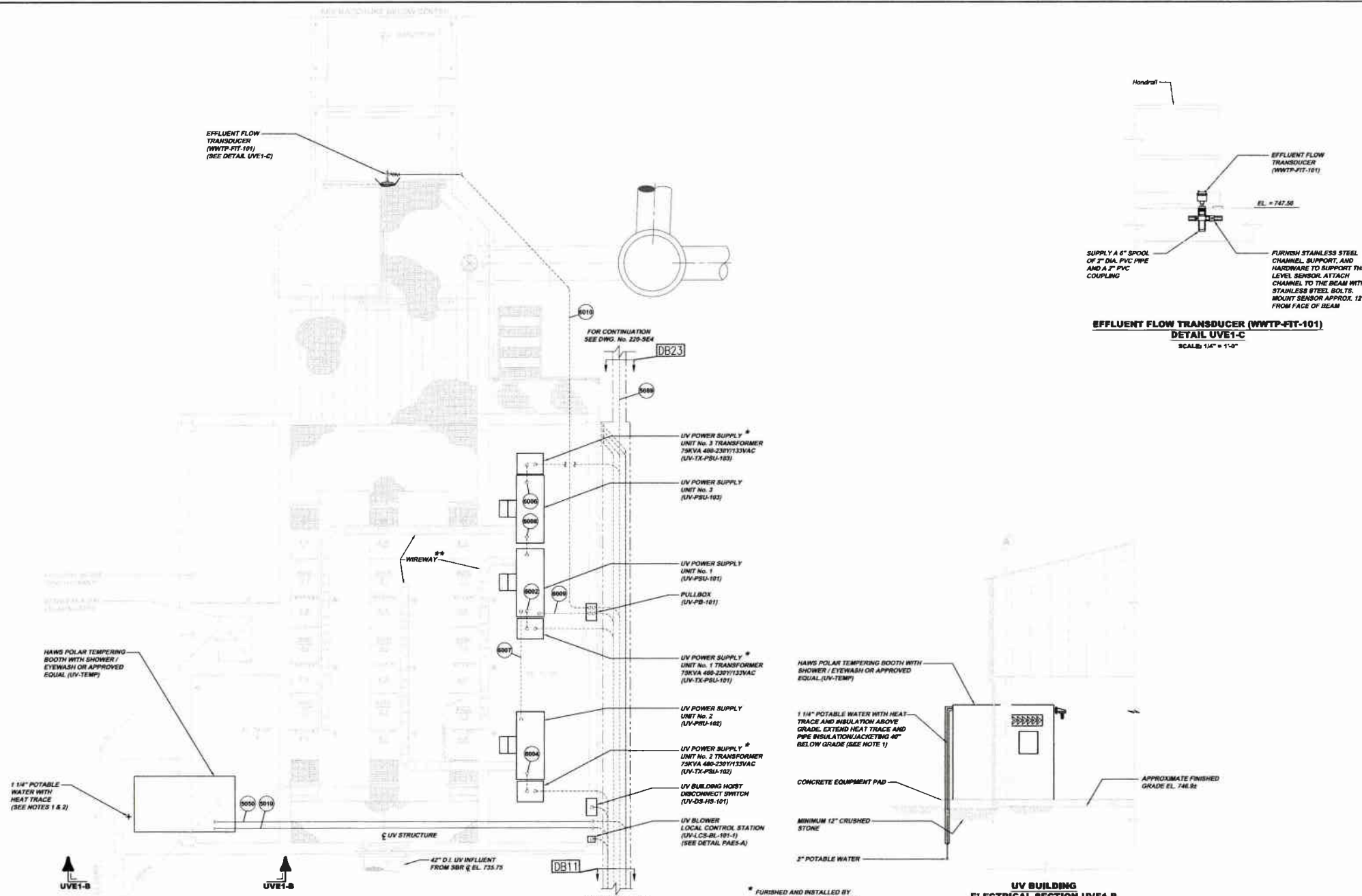
KLH ENGINEERS, INC.
 5173 DARRELLE RUN ROAD
 PITTSBURGH, PA 15204-2010
 PHONE: 412-944-0310
 FAX: 412-944-0310
 INFO@KLHENGINEERS.COM



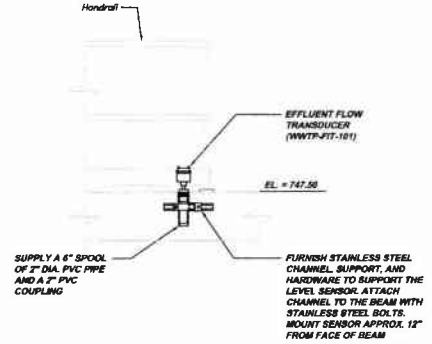
NOTE:
 1. PHOTOCONTROLLERS FOR TYPE "G" FIXTURES SHALL BE HEAVY DUTY IN A DIE CAST ZINC HOUSING, RATED 120 VAC, 1800VA WITH A SPST. THEY SHALL BE YORK CATALOG NO. 2101 OR EQUAL. INSTALL WITH 3/4"-1/2" REDUCER.

Revisions	Date	By	Checked By:	Approved By:
1-2011				
REVISIONS FOR BID				
Date	By	Checked By:	Approved By:	
1-2011				
5172 CAMPBELL RUN ROAD ALLENBY COUNTY, NORTH CAROLINA PHONE # 713-940-0100 FAX # 713-940-0108 INFO@KLHENGINEERS.COM				
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLENBY COUNTY, NORTH CAROLINA CONTRACT NUMBER 2010-01-0002 WASTEWATER TREATMENT PLANT EXPANSION SEQUENTIAL BATCH REACTOR (SBR) LIGHTING PLAN				
Scale:	As Shown	Drawn By:	Checked By:	Approved By:
DATE:	DEC. 2010	DCV	MM	SHD
Sheet No.	2			
Drawing No.	220-SBRE2			

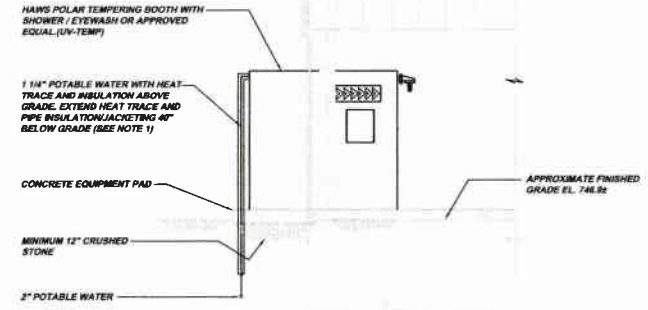
EFFLUENT FLOW TRANSDUCER (WWTP-FIT-101) (SEE DETAIL UVE1-C)



UV BUILDING ELECTRICAL PLAN UVE1-A
SCALE: 1/4" = 1'-0"



EFFLUENT FLOW TRANSDUCER (WWTP-FIT-101) DETAIL UVE1-C
SCALE: 1/4" = 1'-0"



UV BUILDING ELECTRICAL SECTION UVE1-B
SCALE: 1/4" = 1'-0"

* FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR PER SPECIFICATION 11390
 ** FURNISHED BY OZONIA INSTALLED BY ELECTRICAL CONTRACTOR

NOTE:
 1. INSTALL RAYCHEM TYPE M612 SELF REGULATING HEAT TRACE WITH AN HMB POWER CONNECTION KIT. ALSO INSTALL JOHNS MANVILLE MICRO-LOR PIPE INSULATION COVER THE INSULATION AND FITTINGS WITH JOHNS MANVILLE ZESTOW 2000 PVC COUPLER AND JACKETS. INSTALL A RIGID VINYL WRAP AROUND PIPE MARKER SIMILAR TO BRIMAR SYSTEM #1.
 2. THE CONTRACTOR SHALL FURNISH AND INSTALL A 20A, 120 VAC DUPLEX, WEATHER-PROOF, SINGLE-PHASE RECEPTACLE FOR THE HEAT TRACE POWER CONNECTION KIT ON THE EXTERIOR OF THE TEMPERING BOOTH. FREE THE RECEPTACLE FROM A 20A, SINGLE POLE CIRCUIT BREAKER INSIDE THE LIGHTING PANEL INSIDE THE TEMPERING BOOTH.

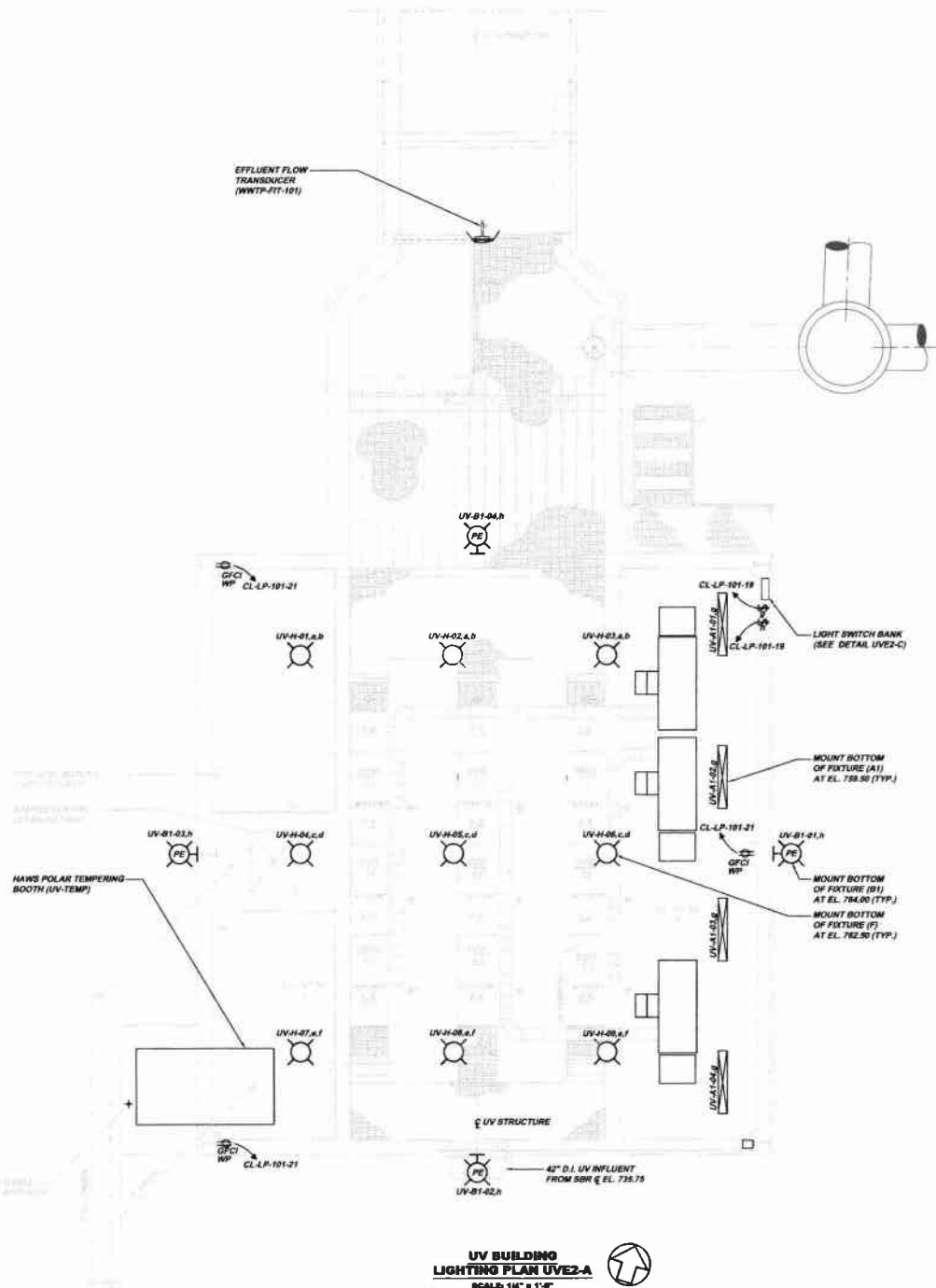
Revisions	Date
RELEASE FOR BID	1-2011

517 S CAMPBELL RUN ROAD PITTSBURGH, PA 15201-4010 PHONE: 412-434-0810 INFO@KLEHENGINEERS.COM	KLEH ENGINEERS, INC.
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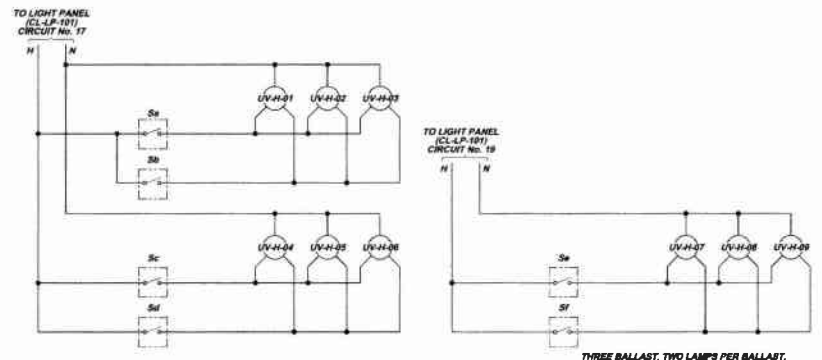
MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
UV BUILDING ELECTRICAL PLAN AND DETAILS

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DOY
Checked By:	MJM
Approved By:	BHG

Sheet No. 1
 Drawing No. **220- UVE1**

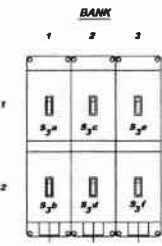


UV BUILDING LIGHTING PLAN UVE2-A
SCALE: 1/4" = 1'-0"



HIGH BAY LIGHT SWITCH CONTROL WIRING SCHEMATIC UVE2-B
NOT TO SCALE

THREE BALLAST, TWO LAMPS PER BALLAST, ONE BALLAST FOR ONE SWITCHING CIRCUIT AND TWO BALLAST FOR THE FOR THE OTHER SWITCHING CIRCUIT.



INSTALL SWITCHES BY COOPER DROUSE-HINDS PB-8775E TWO GANG TANDER DEVICE BOXES

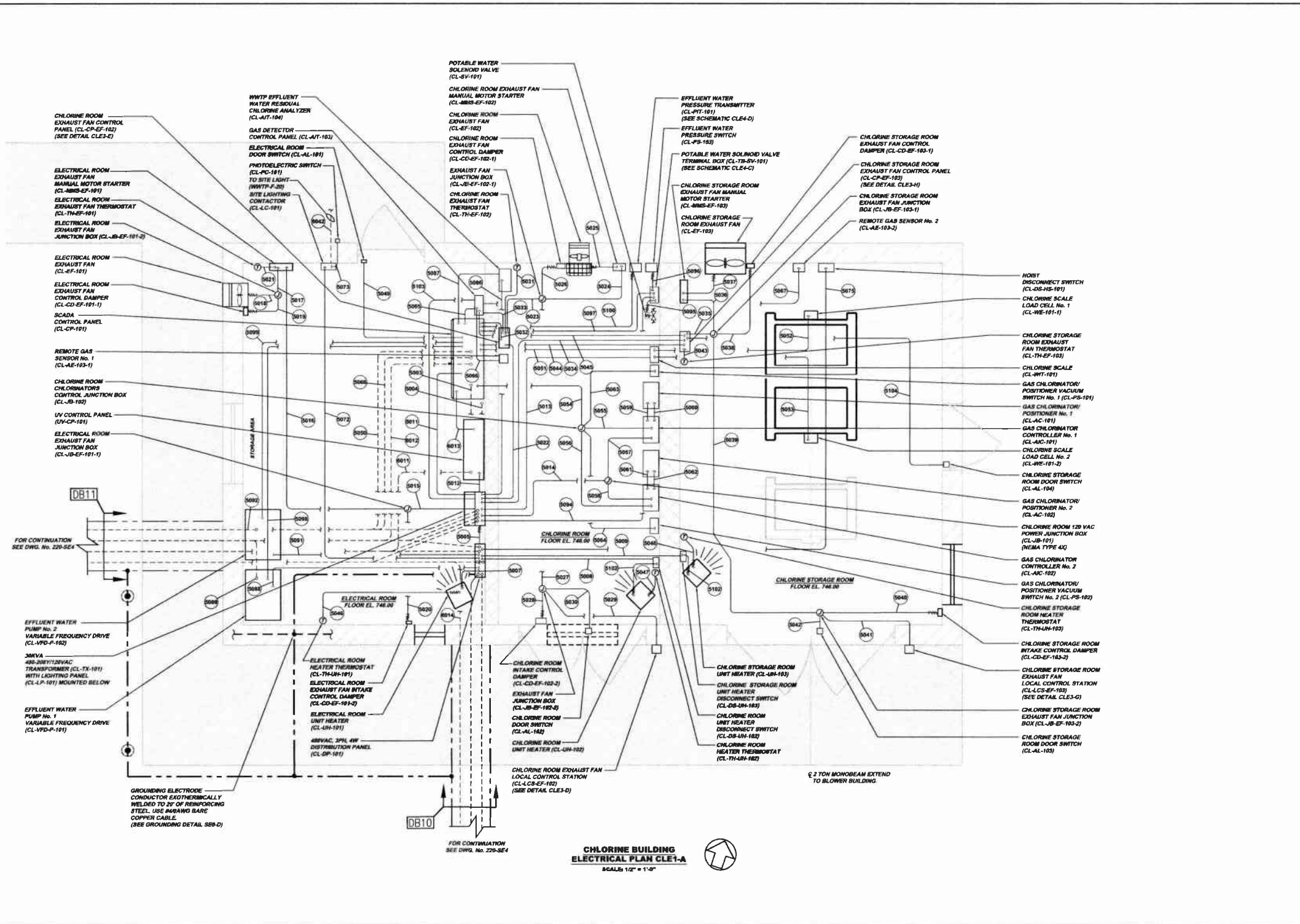
LIGHT SWITCH BANK DETAIL UVE2-C
SCALE: 3" = 1'-0"

Scale:	As Shown	Revision	
Date:	DEC. 2010	Date	
Drawn By:	DCH	Revision	RELEASE FOR BID
Checked By:	MJM	Date	1-20-11
Approved By:	BHQ		
Street No.	2		
Drawing No.	220- UVE2		

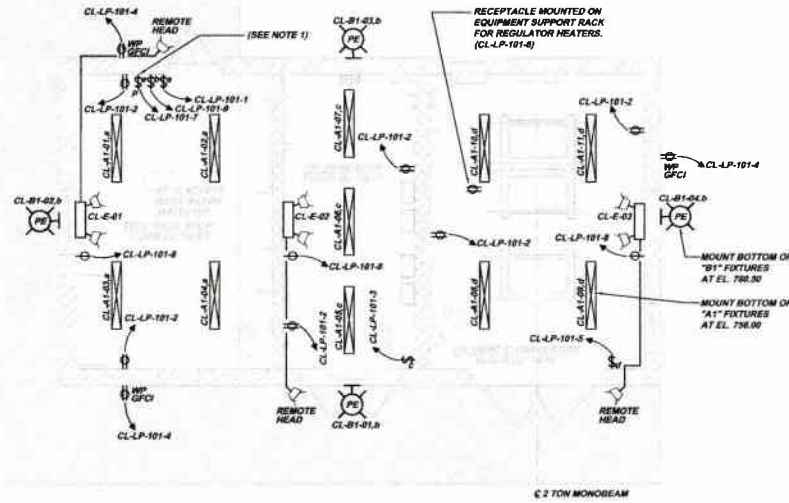


MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
UV BUILDING LIGHTING PLAN AND DETAILS

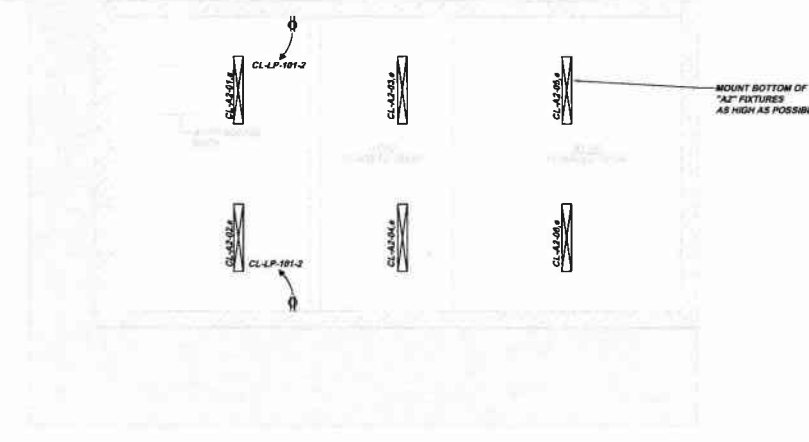
8172 CAMPBELL RUN ROAD
MCKEESPORT, PA 15116
PHONE: 412-944-2810
FAX: 412-944-0496
INFO@KLHENGINEERS.COM



Scale:	As Shown	Scale:	1/8" = 1'-0"
Date:	DEC. 2010	Drawn By:	DCW
Checked By:	MM	Approved By:	BHG
Sheet No.:	1	Drawing No.:	220-CL-E1
<p>MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION CHLORINE BUILDING ELECTRICAL PLAN</p>			
<p>KLH ENGINEERS, INC. 517 S. CAMPBELL RUN ROAD WASHINGTON, PA 15360-3010 PHONE: 412-434-0010 FAX: 412-434-0018 INFO@KLHENGINEERS.COM</p>			
Revisions:	Date:	By:	Description:
1	12/01		RELEASE FOR BIDDING



**CHLORINE BUILDING
LIGHTING PLAN CLE2-A**
SCALE: 1/4" = 1'-0"



**CHLORINE BUILDING
ATTIC LIGHTING PLAN CLE2-B**
SCALE: 1/4" = 1'-0"

DISTRIBUTION PANEL (CL-DP-101)												
VOLTS, PHASE, WIRE:		PANEL SIZE & TYPE:	MAIN SIZE & TYPE:			CABINET:			INTEGRAL SPD			
480V, 3PH, 4W		400A SURFACE	400A MCCB			NEMA TYPE 1			CATEGORY B			
NO	TRIP	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	TRIP	NO	
1			15000			15000					2	
3	125A	UV POWER SUPPLY UNIT No. 1		15000			15000		UV POWER SUPPLY UNIT No. 2	125A	4	
5					15000			15000			6	
7			15000		2000				LIGHTING PANEL TRANSFORMER (CL-TX-101)		8	
9	125A	UV POWER SUPPLY UNIT No. 3		15000			2000			50A	10	
11					15000			2000			12	
13			2500		1000						14	
15	15A	ELECTRICAL ROOM UNIT HEATER		2500			1000		CHLORINE ROOM UNIT HEATER	15A	16	
17					2500			1000			18	
19			1800		300						20	
21	15A	CHLORINE STORAGE ROOM UNIT HEATER		1000			300		SITE LIGHTING CONTACTOR	30A	22	
23				1000			300				24	
25			700		480						26	
27	20A	CHLORINE STORAGE ROOM HOIST		700			480		UV BUILDING HOIST	15A	28	
29				700			480				30	
31			12000		12000						32	
33	80A	EFFLUENT WATER PUMP No. 1		12000			12000		EFFLUENT WATER PUMP No. 2	80A	34	
35				12000			12000				36	
37			-			-					38	
39		PROVISION	-			-			PROVISION	-	40	
41			-			-					42	
43			-			-					44	
45		PROVISION	-			-			PROVISION	-	46	
47			-			-					48	
49			-			-					50	
51	30A	SPD	-			-			PROVISION	-	52	
53			-			-					54	
SUBTOTAL =			48,200	48,200	48,200	36,750	36,750	36,750				
TOTAL CONNECTED A =			82,980									
TOTAL CONNECTED B =			82,980									
TOTAL CONNECTED C =			82,980									
TOTAL PANEL CONNECTED =			248,840									
PANEL AMPS =			300.0									

LIGHTING PANEL (CL-LP-101)												
VOLTS, PHASE, WIRE:		PANEL SIZE & TYPE:	MAIN SIZE & TYPE:			CABINET:			INTEGRAL SPD			
208Y/120V, 3PH, 4W		100A SURFACE	100A MCCB			NEMA TYPE 1			CATEGORY A			
NO	TRIP	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	TRIP	NO	
1	20A	ELECTRICAL ROOM LIGHTS	328			1440			INTERIOR RECEPTACLES	20A	2	
3	20A	CHLORINE ROOM LIGHTS		248			540		EXTERIOR RECEPTACLES	20A	4	
5	20A	CHLORINE STORAGE ROOM LIGHTS			328			300	CHLORINE REGULATOR HEATERS RECEPTACLES	20A	6	
7	20A	ATTIC LIGHTS	336			228			EMERGENCY LIGHTS	20A	8	
9	20A	EXTERIOR LIGHTS		196			900		CHLORINE STORAGE ROOM EXHAUST FAN CONTROL PANEL	20A	10	
11	20A	CHLORINE ROOM EXHAUST FAN CONTROL PANEL ELECTRICAL ROOM EXHAUST FAN			900			100	CHLORINE SCALE	20A	12	
13	20A	UV BUILDING LIGHTS	900			4180			UV TEMPERING BOOTH	40A	14	
15	20A	UV MAIN CONTROL PANEL		1800			4150			16A	16	
17	20A	UV BUILDING LIGHTS			1416			1500	SCADA CONTROL PANEL	20A	18	
19	20A	UV BUILDING LIGHTS	1232			200			GAS CHLORINATOR CONTROLLERS	20A	20	
21	20A	UV BUILDING RECEPTACLES		540			100		RESIDUAL CHLORINE ANALYZER	20A	22	
23	20A	GAS DETECTOR CONTROL PANEL			100			300	POTABLE WATER SOLENOID VALVE TERMINAL BOX	20A	24	
25	20A	SPARE	-			-			SPARE	20A	26	
27	20A	SPARE	-			-			SPARE	20A	28	
29	20A	SPARE	-			-			SPARE	20A	30	
31	20A	SPARE	-			-			SPARE	20A	32	
33	20A	SPARE	-			-			SPARE	20A	34	
35	20A	SPARE	-			-			SPARE	20A	36	
37	20A	SPARE	-			-			SPARE	20A	38	
39	20A	SPARE	-			-			SPARE	20A	40	
41	20A	SPARE	-			-			SPD	30A	42	
SUBTOTAL =			2,796	2,482	2,744	8,015	6,600	2,200				
TOTAL CONNECTED A =			8,911									
TOTAL CONNECTED B =			8,172									
TOTAL CONNECTED C =			4,944									
TOTAL PANEL CONNECTED =			21,827									
PANEL AMPS =			91.0									

NOTE:
1. THE CONTRACTOR SHALL PROVIDE A PERMANENT THERMOPLASTIC IDENTIFICATION LABEL ABOVE THIS SWITCH WITH THE FOLLOWING TEXT: "ATTIC LIGHTS".

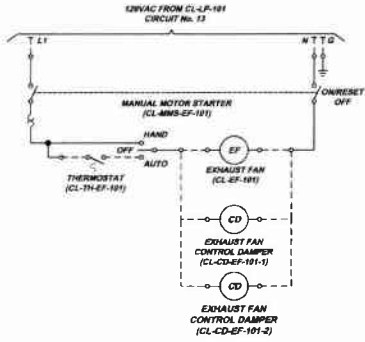
5173 CAMPBELL RUN ROAD
 PHOENIX, AZ 85018
 PHONE: 480-990-0310
 FAX: 480-990-0326
 INFO@KLHENGINEERS.COM

KLH ENGINEERS, INC.

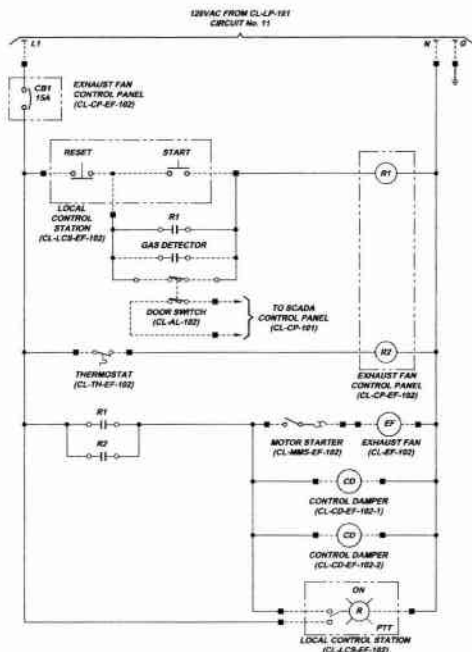
MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGANY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
CHLORINE BUILDING LIGHTING PLANS AND DETAILS

Scale: As Shown
 Date: DEC. 2010
 Drawn By: DCW
 Checked By: MAM
 Approved By: SHD

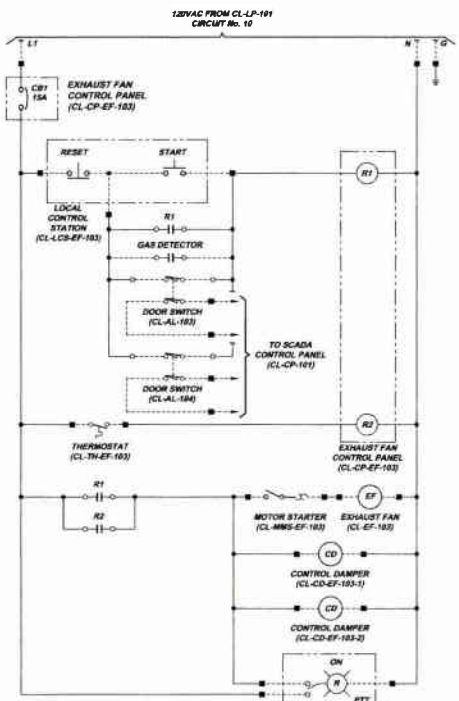
Sheet No. 2
 Drawing No. 220-CLE2



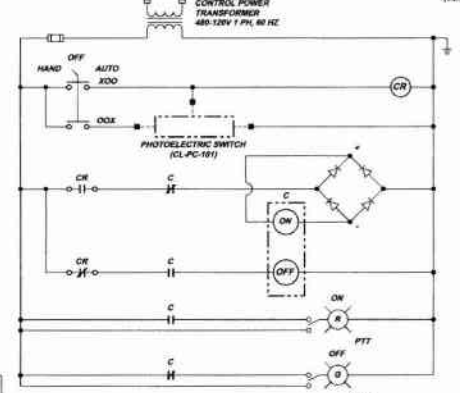
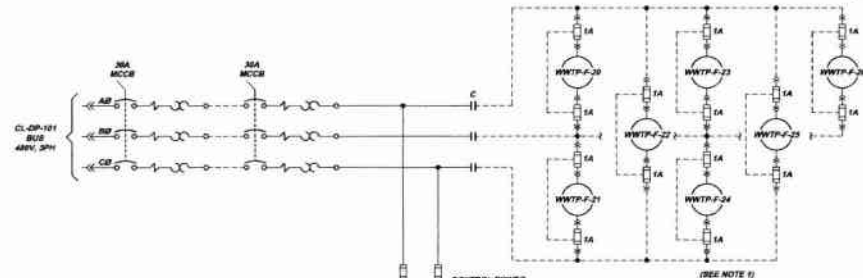
**ELECTRICAL ROOM EXHAUST FAN (CL-EF-101)
ELECTRICAL SCHEMATIC CLE3-A**
NOT TO SCALE



**CHLORINE ROOM EXHAUST FAN (CL-EF-102)
ELECTRICAL SCHEMATIC CLE3-B**
NOT TO SCALE



**CHLORINE STORAGE ROOM EXHAUST FAN (CL-EF-103)
ELECTRICAL SCHEMATIC CLE3-C**
NOT TO SCALE



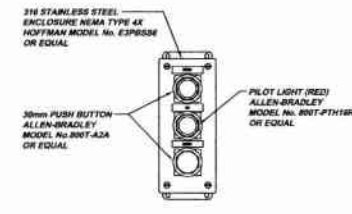
**SITE LIGHTING CONTACTOR (CL-LC-101)
SCHEMATIC CLE3-F**
NOT TO SCALE

SCHEMATICS SYMBOL LEGEND

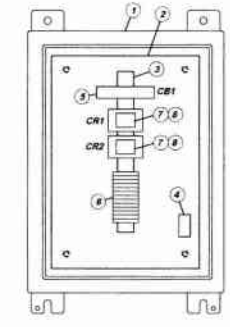
■	TERMINAL LOCATED IN CONTROL PANEL OR CONTACTOR
—	LOCAL WIRING
- - -	FIELD WIRING

CHLORINE ROOM EXHAUST FAN CONTROL PANEL (CL-CP-EF-102) BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	1	16"x12"x6" ENCLOSURE, NEMA TYPE 4X	A16H1206S6LP	HOFFMAN
2	1	13"x9" ENCLOSURE SUBPANEL	A16P12S6	HOFFMAN
3	4R	DIN RAIL	193-DR1	ALLEN-BRADLEY
4	1	GROUNDING LUG	-	-
5	1	277VAC/50VDC SINGLE POLE 15A CIRCUIT BREAKER	1492-CB10150	ALLEN-BRADLEY
6	4R	600V AC/DC 30A TERMINAL BLOCK	1493-HM1	ALLEN-BRADLEY
7	2	120V, DPDT CONTROL RELAY	700-HF32A1	ALLEN-BRADLEY
8	2	CONTROL RELAY SOCKET	700-HM116	ALLEN-BRADLEY



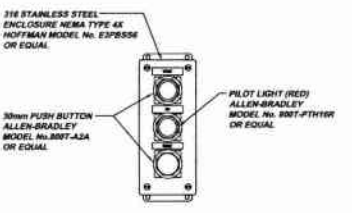
**CHLORINE ROOM EXHAUST FAN
LOCAL CONTROL STATION (CL-LCS-EF-102)
DETAIL CLE3-D**
SCALE: 3" = 1'-0"



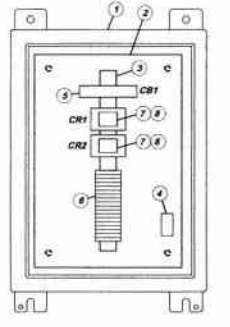
**CHLORINE ROOM EXHAUST FAN
CONTROL PANEL (CL-CP-EF-102)
INTERIOR LAYOUT CLE3-E**
SCALE: 3" = 1'-0"

CHLORINE STORAGE ROOM EXHAUST FAN CONTROL PANEL (CL-CP-EF-103) BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	1	16"x12"x6" ENCLOSURE, NEMA TYPE 4X	A16H1206S6LP	HOFFMAN
2	1	13"x9" ENCLOSURE SUBPANEL	A16P12S6	HOFFMAN
3	4R	DIN RAIL	1492-DR7	ALLEN-BRADLEY
4	1	GROUNDING LUG	-	-
5	1	277VAC/50VDC SINGLE POLE 15A CIRCUIT BREAKER	1492-CB10150	ALLEN-BRADLEY
6	4R	600V AC/DC 30A TERMINAL BLOCK	1493-HM1	ALLEN-BRADLEY
7	2	120V, DPDT CONTROL RELAY	700-HF32A1	ALLEN-BRADLEY
8	2	CONTROL RELAY SOCKET	700-HM116	ALLEN-BRADLEY



**CHLORINE STORAGE ROOM EXHAUST FAN
LOCAL CONTROL STATION (CL-LCS-EF-103)
DETAIL CLE3-G**
SCALE: 3" = 1'-0"



**CHLORINE STORAGE ROOM EXHAUST FAN
CONTROL PANEL (CL-CP-EF-103)
INTERIOR LAYOUT CLE3-H**
SCALE: 3" = 1'-0"

NOTE:
1. EACH SITE LIGHT FIXTURE SHALL BE PROTECTED WITH TWO INLINE FUSES LOCATED IN THE POLE BARE. FUSES SHALL BE COPPER BUSBAR TYPE RTR-4R OR EQUAL. FUSE HOLDERS SHALL BE COPPER BUSBAR TYPE RHT, DOUBLE POLE, WATER RESISTANT WITH BREAKAWAY HOLDERS.
2. DOOR SWITCHES (CL-AL-102 & CL-AL-103) SHALL BE AN ALLEN-BRADLEY 802R-A4 WITH AN 802-WZ ROLLER LEVER OR EQUAL.

Revisions

Date	Revisions
12/01	RELEASE FOR BID

Date

12/01

Scale

AS SHOWN

DATE

DEC. 2010

DRAWN BY

DCW

CHECKED BY

MM

APPROVED BY

SHO

Sheet No.

3

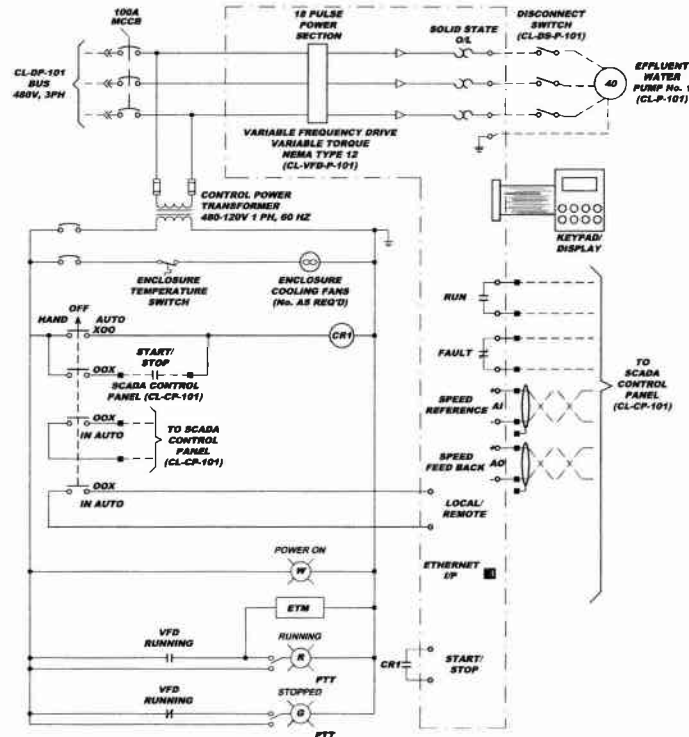
Drawing No.

**220-
CLE3**

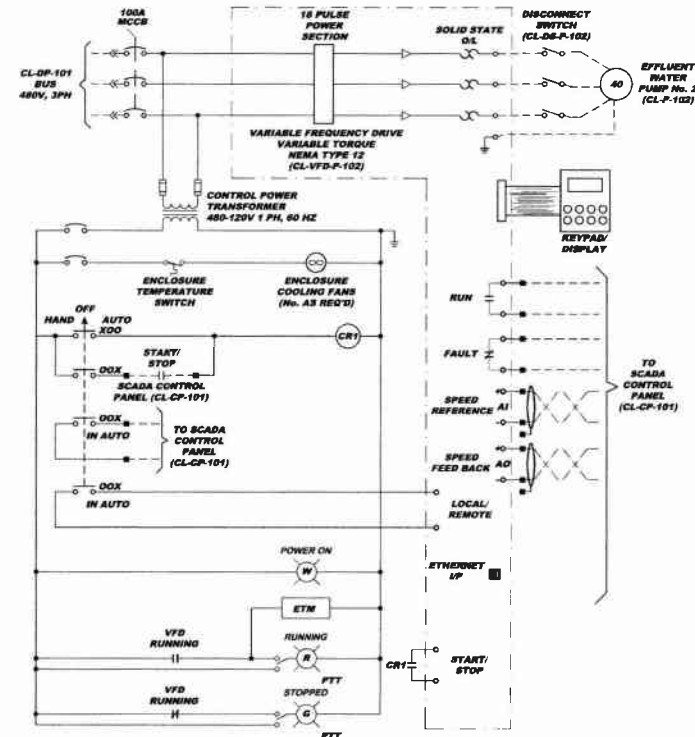
**MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
CHLORINE BUILDING DETAILS AND SCHEMATICS**

**KLH
ENGINEERS, INC.**

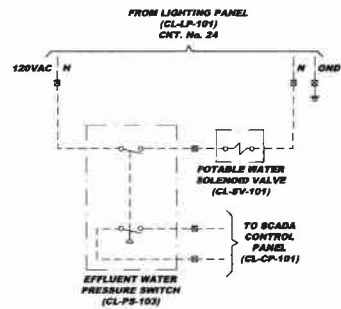
5175 Generalsville Run Road
Pittsburgh, PA 15205
Phone: 412-459-4310
Fax: 412-459-4326
www.klh-engineers.com



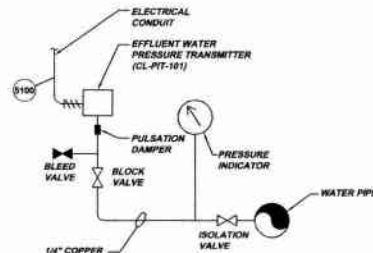
**EFFLUENT WATER PUMP No. 1
SCHEMATIC CLE4-A
NOT TO SCALE**



**EFFLUENT WATER PUMP No. 2
SCHEMATIC CLE4-B
NOT TO SCALE**



**POTABLE WATER SOLENOID VALVE
SCHEMATIC CLE4-C
NOT TO SCALE**

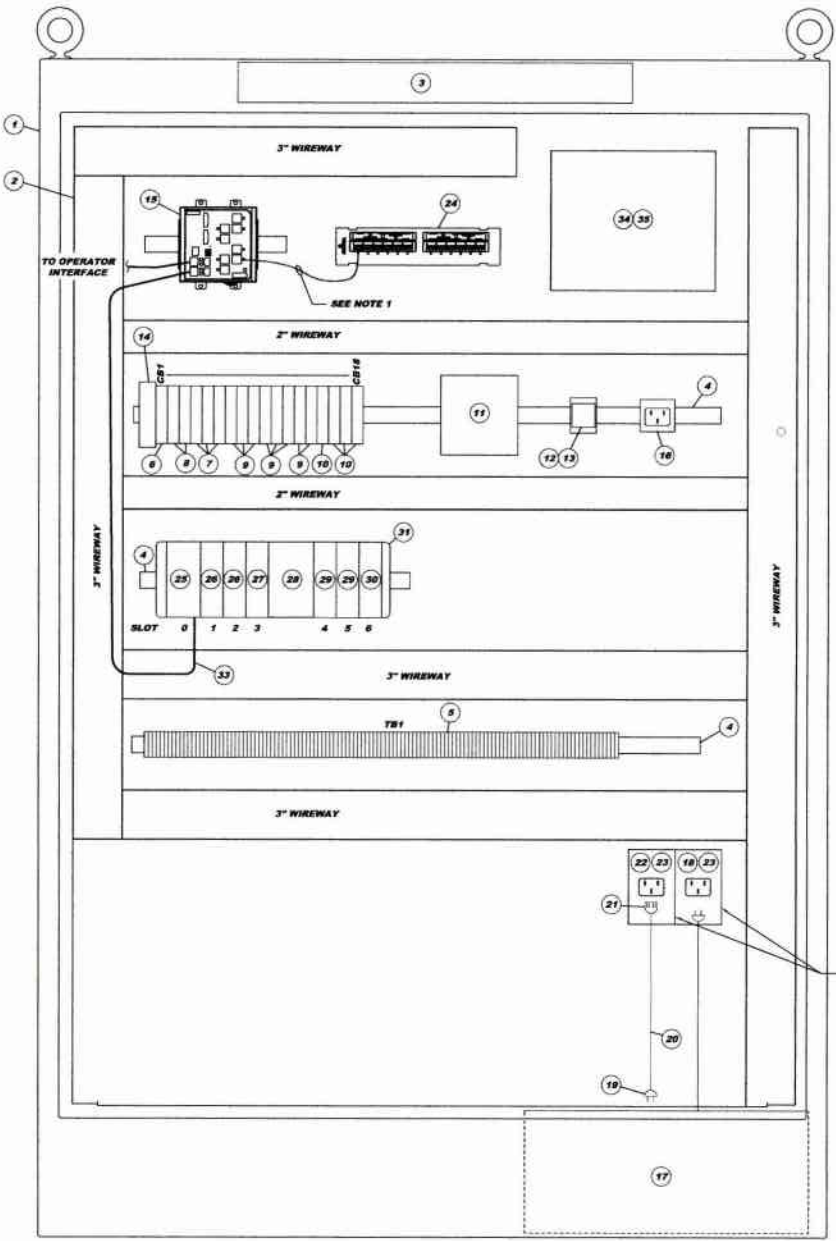


**PRESSURE TRANSMITTER
CONNECTION SCHEMATIC CLE4-D
NOT TO SCALE**

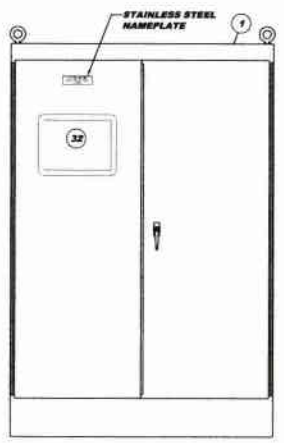
SCHEMATICS SYMBOL LEGEND

- TERMINAL LOCATED IN VFD ENCLOSURE
- ⊠ TERMINAL LOCATED IN POTABLE WATER SOLENOID VALVE TERMINAL BOX (CL-TB-SV-101)
- LOCAL WIRING
- - - FIELD WIRING

Revisions	Date	By
RELEASE FOR BID	1-2011	
5172 DANIELLE RUN ROAD ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 281-0401 AND 281-0402 WASTEWATER TREATMENT PLANT EXPANSION CHLORINE BUILDING ELECTRICAL SCHEMATICS info@klh-engineers.com		
Scale:	As Shown	
Date:	DEC. 2010	
Drawn By:	DOV	
Checked By:	MM	
Approved By:	BKS	
Sheet No.	4	
Drawing No.	220-CLE4	



**CHLORINE BUILDING
SCADA CONTROL PANEL (CL-CP-101)
INTERIOR LAYOUT CLES-A**
SCALE: 3" = 1'-0"



**CHLORINE BUILDING
SCADA CONTROL PANEL (CL-CP-101)
EXTERIOR LAYOUT CLES-B**
SCALE: 1" = 1'-0"

CHLORINE BUILDING SCADA CONTROL PANEL (CL-CP-101) BILL OF MATERIALS				
ITEM QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER	
1	1	72"x48"x18" ENCLOSURE, NEMA TYPE 12	A724818P50	HOFFMAN
2	1	60"x48" ENCLOSURE SUBPANEL	A72P48S1	HOFFMAN
3	1	FLOURESCENT LIGHTING PACKAGE	ALF18D34R	HOFFMAN
4	AR	DIN RAIL	199-DR1	ALLEN-BRADLEY
5	AR	30A FEED THROUGH TERMINAL BLOCK	1433-HM1	ALLEN-BRADLEY
6	1	177VAC-8VDC SINGLE POLE 20A CIRCUIT BREAKER	1492-SP18200	ALLEN-BRADLEY
7	3	177VAC-8VDC SINGLE POLE 15A CIRCUIT BREAKER	1492-SP1D150	ALLEN-BRADLEY
8	2	177VAC-8VDC SINGLE POLE 10A CIRCUIT BREAKER	1492-SP1D100	ALLEN-BRADLEY
9	2	177VAC-8VDC SINGLE POLE 5A CIRCUIT BREAKER	1492-SP1D500	ALLEN-BRADLEY
10	4	177VAC-8VDC SINGLE POLE 2A CIRCUIT BREAKER	1492-SP1D200	ALLEN-BRADLEY
11	1	24 VDC POWER SUPPLY	1608-XL2400R	ALLEN-BRADLEY
12	1	CONTROL RELAY SOCKET	700-HW125	ALLEN-BRADLEY
13	1	CONTROL RELAY, 120VAC	700-NA32A1	ALLEN-BRADLEY
14	1	TRANSIENT VOLTAGE SURGE SUPPRESSOR	1'R 3T00M-120-10KA	TRANSPECTOR
15	1	10 PORT, 10/100 BASE TX ETHERNET SWITCH	1783-BS10T	ALLEN-BRADLEY
16	1	CONVENIENCE RECEPTACLE	DMRBA	ALTECH
17	1	1KVA UPS	Q-1000	POWER INNOVATIONS
18	1	120VAC 15A RECEPTACLE	5278-CWP	LEVITON
19	1	120VAC 15A PLUG	515PV	LEVITON
20	AR	3C #14AWG SEOW CABLE	-	-
21	1	120VAC 15A CONNECTOR	515CV	LEVITON
22	1	120VAC 15A INLET	5278-CWP	LEVITON
23	2	UTILITY BOX	-	-
24	1	12 PORT CAT6 UNIVERSAL PATCH BLOCK	69586-U69	LEVITON
25	1	COMPACT LOGIX CONTROLLER	1789-L35E	ALLEN-BRADLEY
26	2	DIGITAL INPUT MODULE	1789-IG1E	ALLEN-BRADLEY
27	1	DIGITAL OUTPUT MODULE	1789-OW1E	ALLEN-BRADLEY
28	1	POWER SUPPLY	1789-PA4	ALLEN-BRADLEY
29	2	ANALOG INPUT MODULE	1789-IF4I	ALLEN-BRADLEY
30	1	ANALOG OUTPUT MODULE	1789-OF4CI	ALLEN-BRADLEY
31	1	COMPACT I/O RIGHT END CAP	1789-ECR	ALLEN-BRADLEY
32	1	COLOR OPERATORS INTERFACE	2711P-T12C-4A9	ALLEN-BRADLEY
33	AR	CATEGORY 6/7E PATCH CABLE	-	-
34	1	W37 MULTIMEDIA ADAPTER PLATE (R)	MID502ACAY	LEVITON
35	AR	"BT" FIBER JUMPER	-	-

Revisions
Date
1-2011
RELEASE FOR BID

5173 CAMPBELL RUN ROAD
ALLEGHENY COUNTY, PENNSYLVANIA
PHONE 412-454-0510
FAX 412-454-0456
info@klhengineers.com

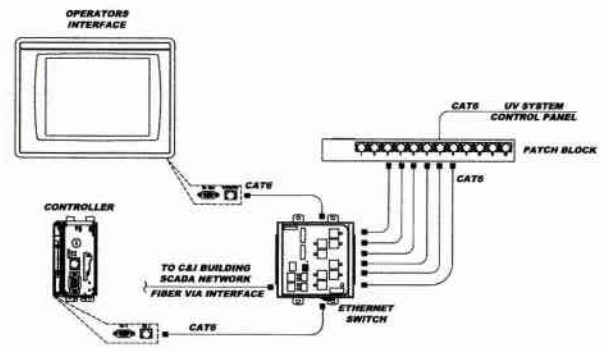
KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
CHLORINE BUILDING SCADA CONTROL PANEL (CL-CP-101) LAYOUT AND DETAILS

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DMW
Checked By:	MLM
Approved By:	BJG

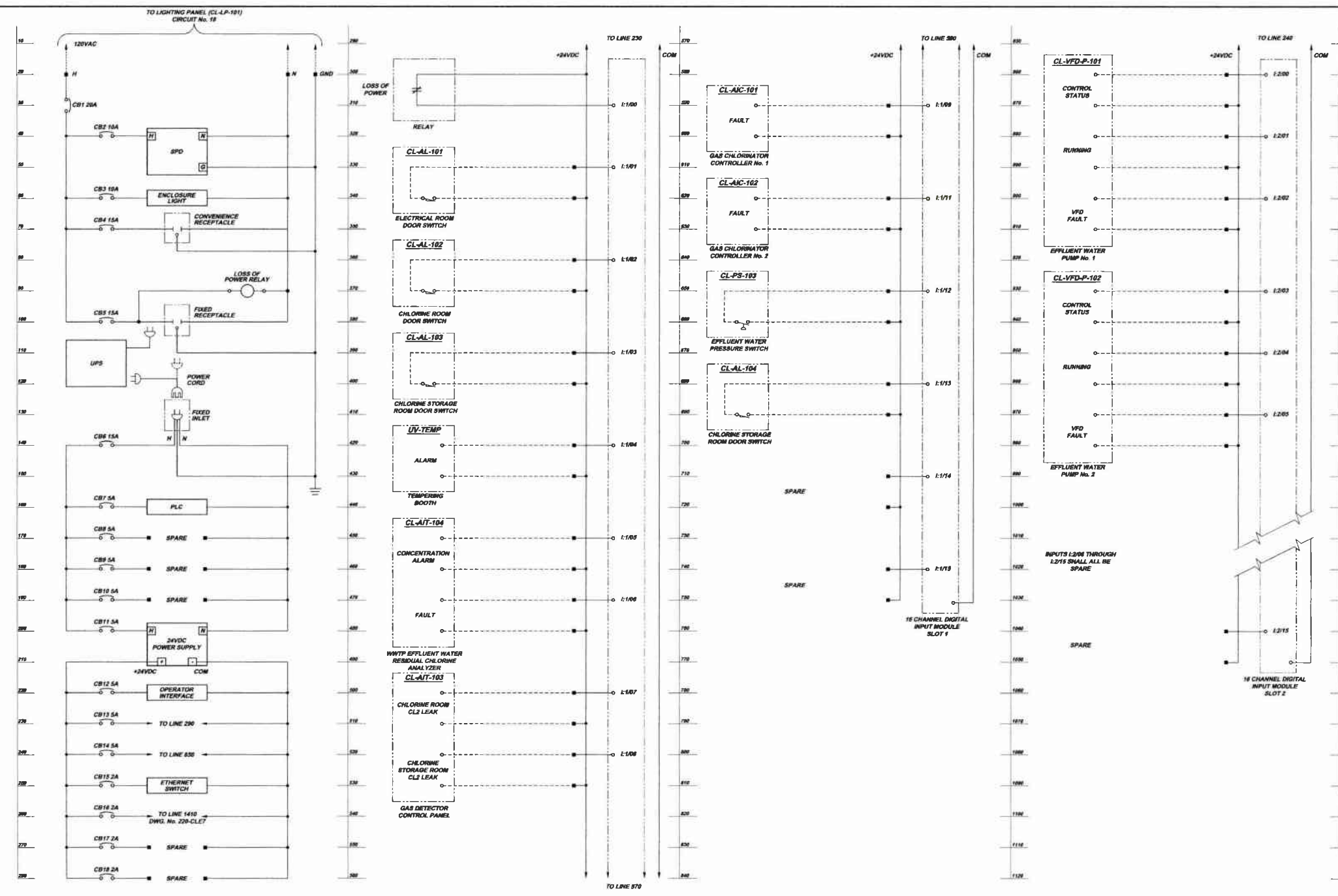
Sheet No. 5

Drawing No. 220-CLE5



**NETWORK
DETAIL CLES-C**
NOT TO SCALE

NOTES:
1. PROVIDE SIX (6) CATEGORY 6 MODULAR PATCH CORDS. THE LENGTH OF THE CORDS SHALL BE AS SHORT AS PRACTICAL TO REDUCE THE AMOUNT OF EXCESS WIRE INSIDE THE PANEL.



SCHEMATICS SYMBOL LEGEND

●	TERMINAL LOCATED IN SCADA CONTROL PANEL (CL-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

SCADA CONTROL PANEL SCHEMATICS
NOT TO SCALE

Scale:	As Shown	Date:	DEC. 2010	Drawn By:	DCH	Checked By:	MJM
Sheet No.:	6	Drawing No.:	220-CLE6	Approved By:	SHG		

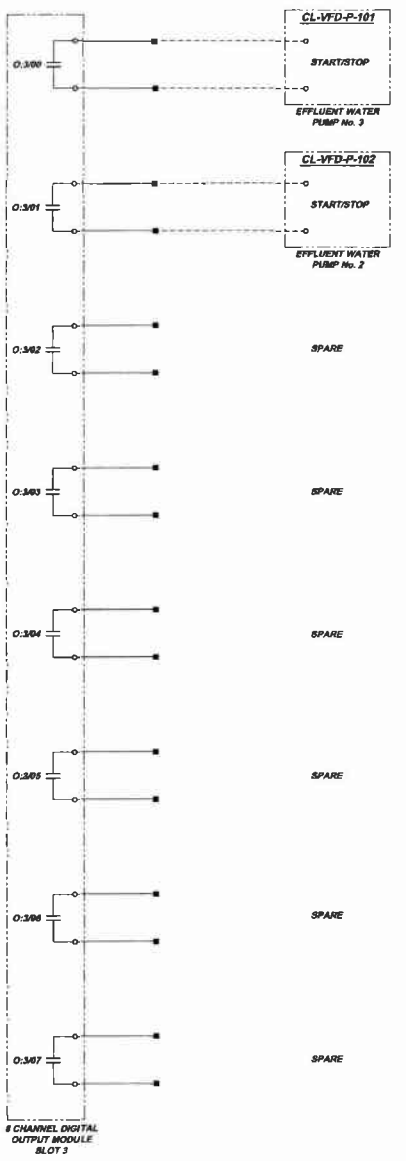
MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 CHLORINE BUILDING SCADA CONTROL PANEL (CL-CP-101) SCHEMATICS SHEET 1 OF 2

KLH ENGINEERS, INC.

5173 CAMPBELL RUN ROAD
 PITTSBURGH, PA 15206
 PHONE: 412-494-8110
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 INFO@KLHENGINEERS.COM

Revisions	Date	Revised By	Reason

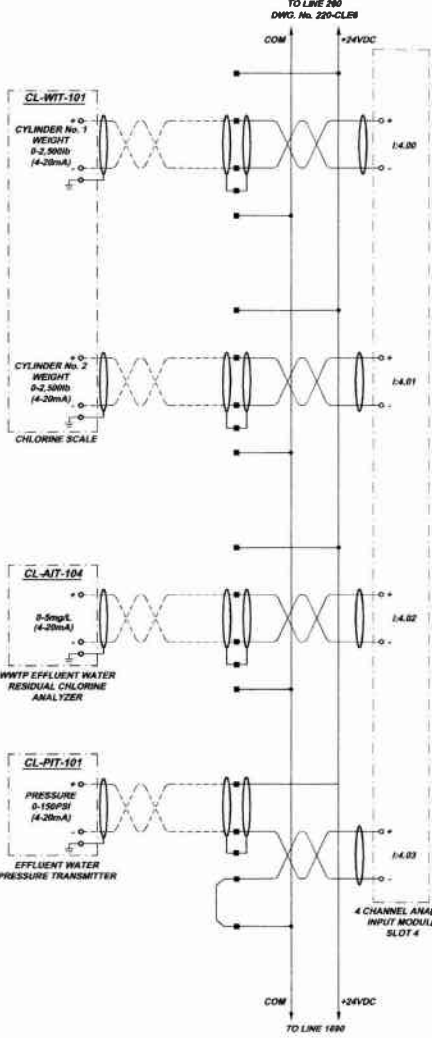
1130
1140
1150
1160
1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400



4 CHANNEL DIGITAL OUTPUT MODULE SLOT 3

SCHEMATICS SYMBOL LEGEND	
■	TERMINAL LOCATED IN SCADA CONTROL PANEL (CL-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

1410
1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700

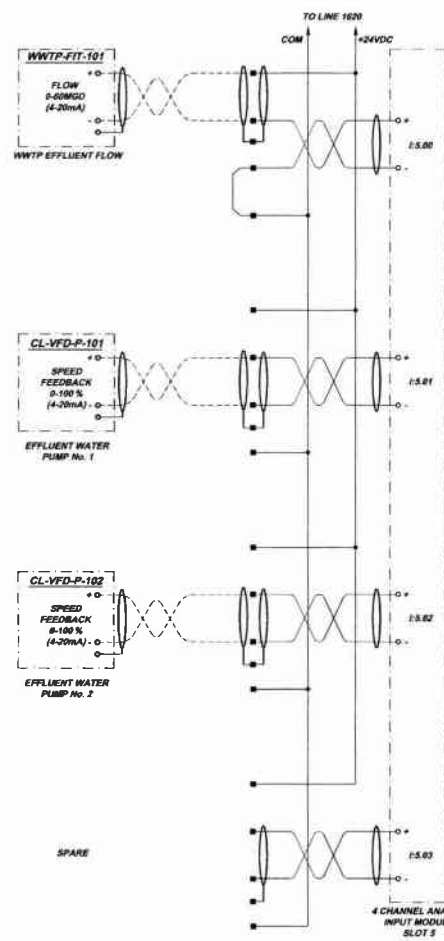


4 CHANNEL ANALOG INPUT MODULE SLOT 4

TO LINE 200
DWG. No. 220-CL8

COM
+24VDC
TO LINE 1600

1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000

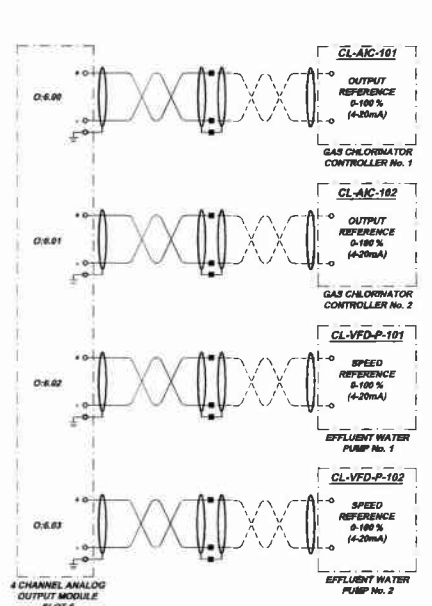


4 CHANNEL ANALOG INPUT MODULE SLOT 5

TO LINE 1600

COM
+24VDC

1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240



4 CHANNEL ANALOG OUTPUT MODULE SLOT 6

Scale:	A4 Shown	Revisions:	
Date:	DEC. 2010	Date:	
Drawn By:	DCV	Released For:	
Checked By:	MM	Date:	1/2011
Approved By:	SKD	Revision:	

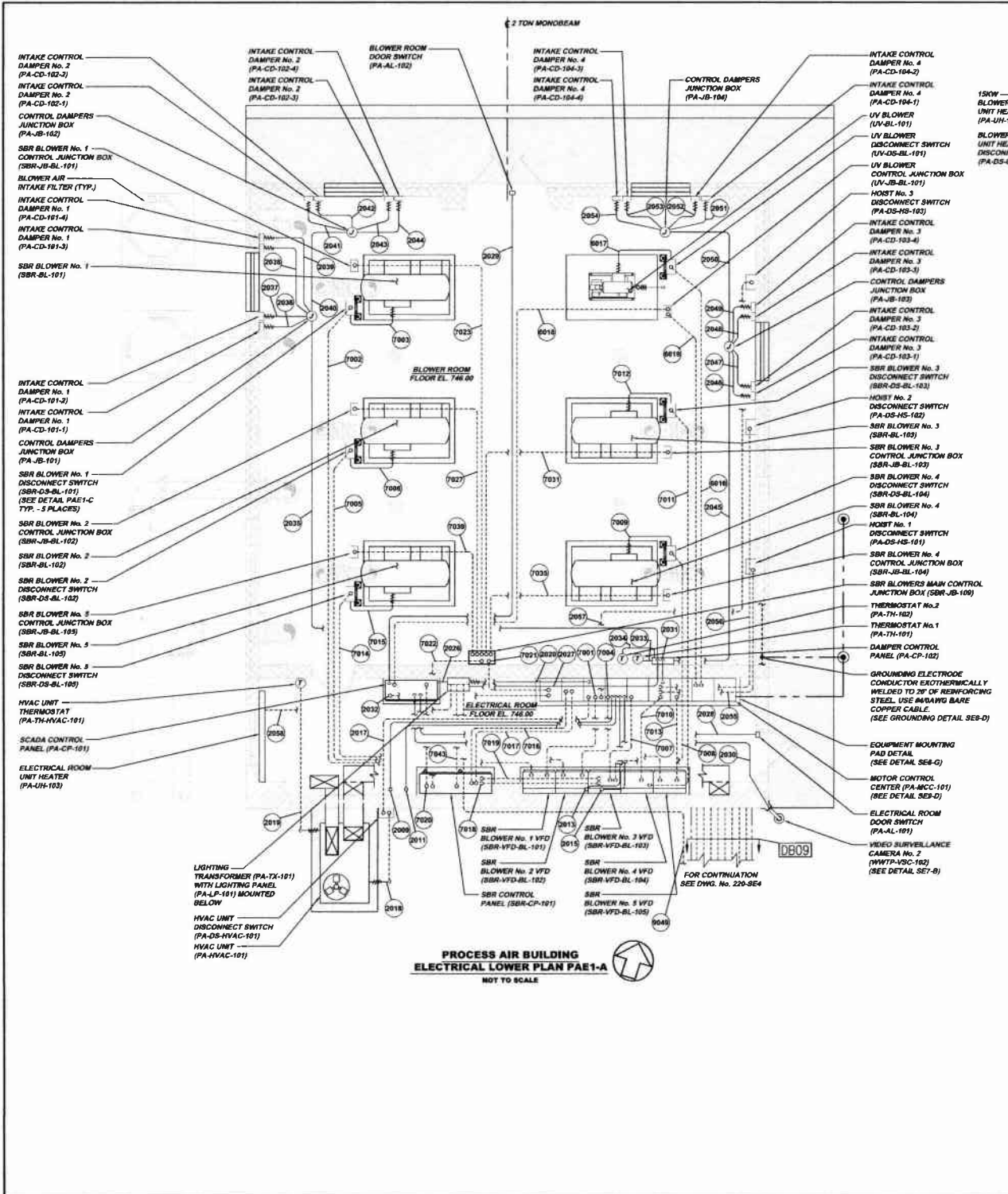
5175 CAMPBELL RUN ROAD
ALLEN COUNTY, PENNSYLVANIA
PHILADELPHIA, PA 19104-2010
FAX: 412-940-0226
info@klh-engineers.com

KLH ENGINEERS, INC.

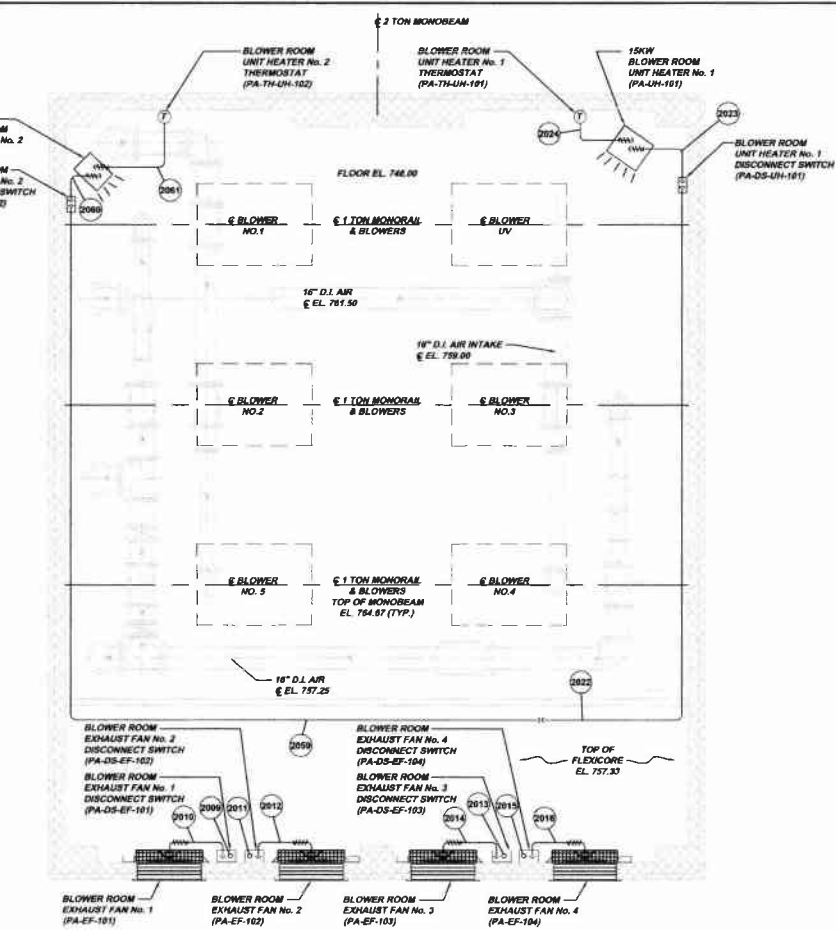
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEN COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-0003
WASTEWATER TREATMENT PLANT REPAIR
CHLORINE BUILDING SCADA CONTROL PANEL (CL-CP-101) SCHEMATICS SHEET 2 OF 2

Sheet No. 7

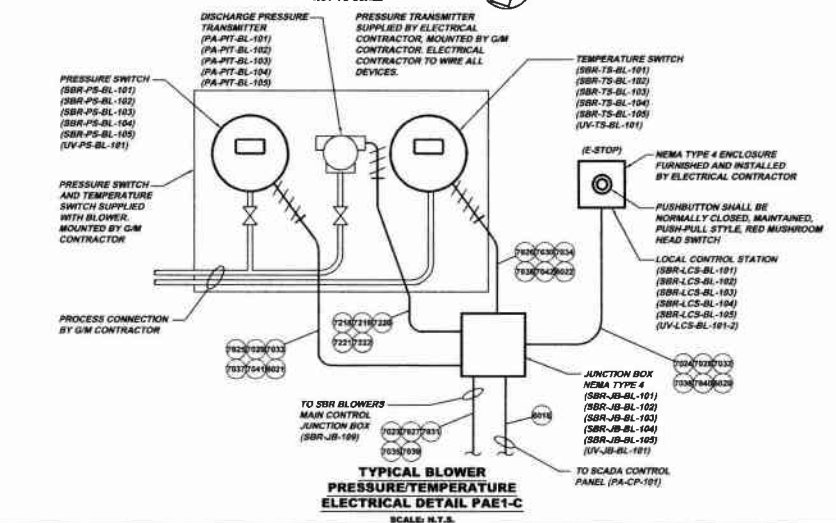
Drawing No. 220-CL87



**PROCESS AIR BUILDING
ELECTRICAL LOWER PLAN PAE1-A**
NOT TO SCALE



**PROCESS AIR BUILDING
ELECTRICAL UPPER PLAN PAE1-B**
NOT TO SCALE



**TYPICAL BLOWER
PRESSURE/TEMPERATURE
ELECTRICAL DETAIL PAE1-C**
SCALE: N.T.S.

Revisions	Date	By	Check	Appr.
1	12/21/10	MM	MM	MM

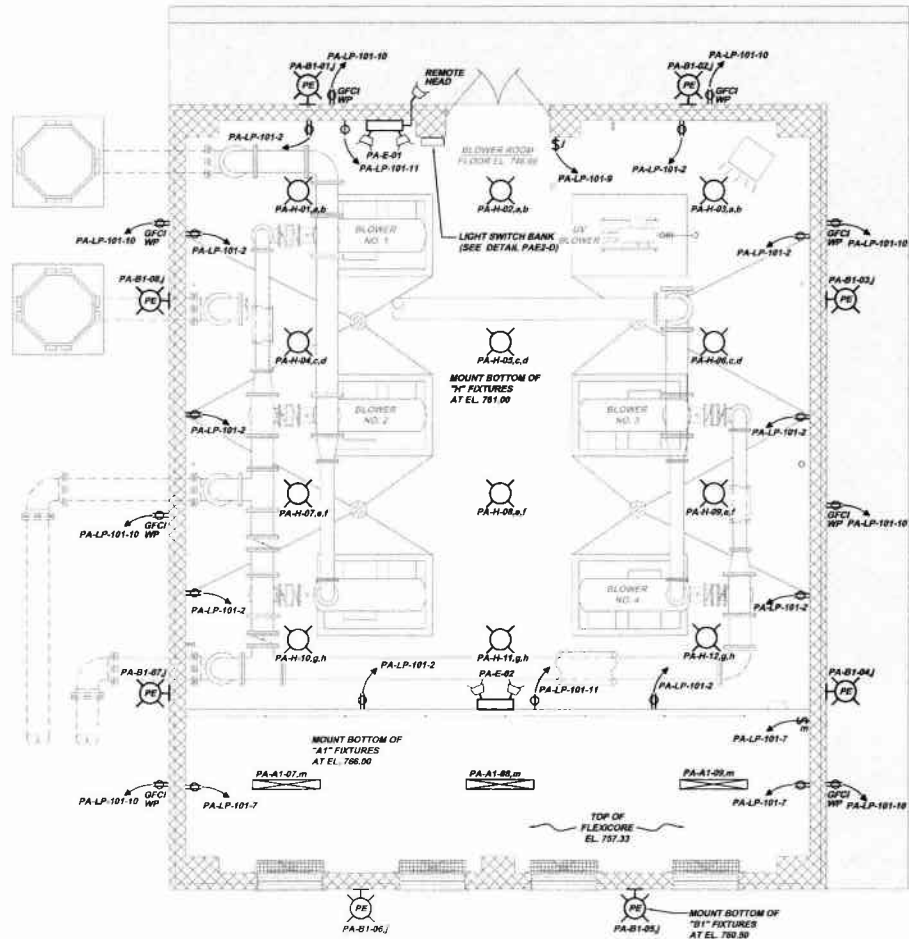
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Scale:	Dec. 2010	DCV	MM	SHC	

Sheet No.	Drawing No.
1	220-PAE1

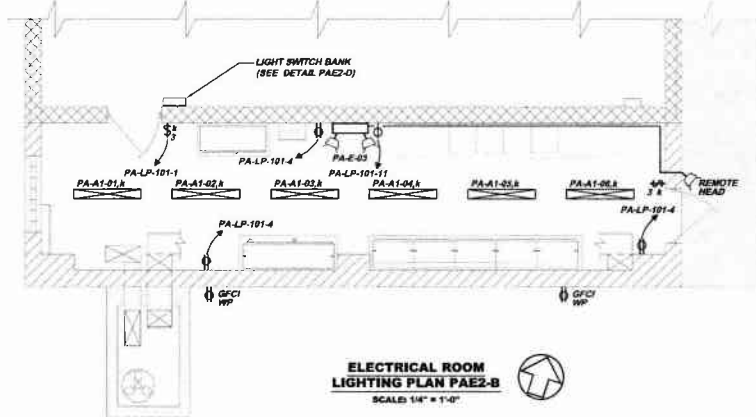


MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
PROCESS AIR BUILDING ELECTRICAL PLANS

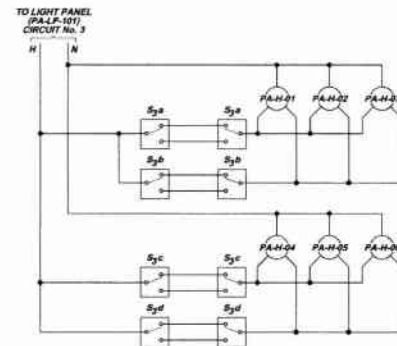
5175 CAMPBELL BLVD. ROAD
PITTSBURGH, PA 15204-1118
PHONE: 412-644-0318
FAX: 412-644-0318
www.klh-engineers.com



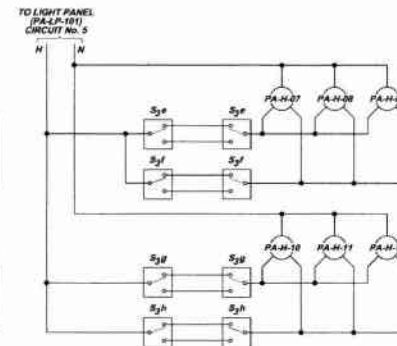
**PROCESS AIR BUILDING
LIGHTING PLAN PAE2-A**
SCALE: 1/4" = 1'-0"



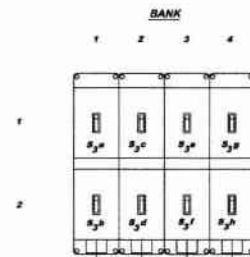
**ELECTRICAL ROOM
LIGHTING PLAN PAE2-B**
SCALE: 1/4" = 1'-0"



**LIGHT SWITCH BANK
CONTROL WIRING SCHEMATIC PAE2-C**
NOT TO SCALE



THREE BALLAST, TWO LAMPS PER BALLAST,
ONE BALLAST FOR ONE SWITCHING CIRCUIT AND
TWO BALLAST FOR THE OTHER SWITCHING CIRCUIT.



LIGHT SWITCH BANK DETAIL PAE2-D
SCALE: 3" = 1'-0"

LIGHTING PANEL (PA-LP-101)											
VOLTS, PHASE, WIRE: 200Y/120V, 3PH, 4W		PANEL SIZE & TYPE: 100A IN/SHD MCC	BANK SIZE & TYPE: 100A MCCB			CABINET: NEMA TYPE 1					
NO	TRIP	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	TRIP	NO
1	20A	ELECTRICAL ROOM LIGHTS	482			1800			ELECTRICAL ROOM RECEPTACLES	20A	2
2	20A	BLOWER ROOM LIGHTS (NORTH)		1418			840		BLOWER ROOM RECEPTACLES	20A	4
3	20A	BLOWER ROOM LIGHTS (SOUTH)			1418			1500	DAMPERS CONTROL PANEL	20A	6
7	20A	STORAGE AREA LIGHTS & RECEPTACLES	606			1500			200V CONTROL PANEL	20A	8
8	20A	EXTERIOR BUILDING LIGHTS		392			1440		EXTERIOR RECEPTACLES	20A	10
11	20A	EMERGENCY LIGHTS			225			1500	SCALES CONTROL PANEL	20A	12
13	40A	ELECTRICAL ROOM HEATER	2625						SPARE	20A	14
16			2625						SPARE	20A	16
17	20A	SPARE							SPARE	20A	18
19	20A	SPARE							SPARE	20A	20
21	20A	SPARE							SPARE	20A	22
23	20A	SPARE							SPARE	20A	24
25	20A	SPARE									26
27	20A	SPARE							SPD	30A	28
29	20A	SPARE									30
SUBTOTAL =			3,723	4,433	1,641	3,300	1,980	3,000			
TOTAL CONNECTED A =			7,023								
TOTAL CONNECTED B =			6,413								
TOTAL CONNECTED C =			4,641								
TOTAL PANEL CONNECTED =			18,077								
PANEL AMP'S =			50.2								

INTEGRAL
3P-3W SPD
CATEGORY A

Revisions
Date
1/30/11
RELEASE FOR BID

5173 CARABELLE RUN ROAD
ALLEGHENY COUNTY, PENNSYLVANIA
PHONE: 412-454-0310
FAX: 412-454-0488
info@klhengineers.com

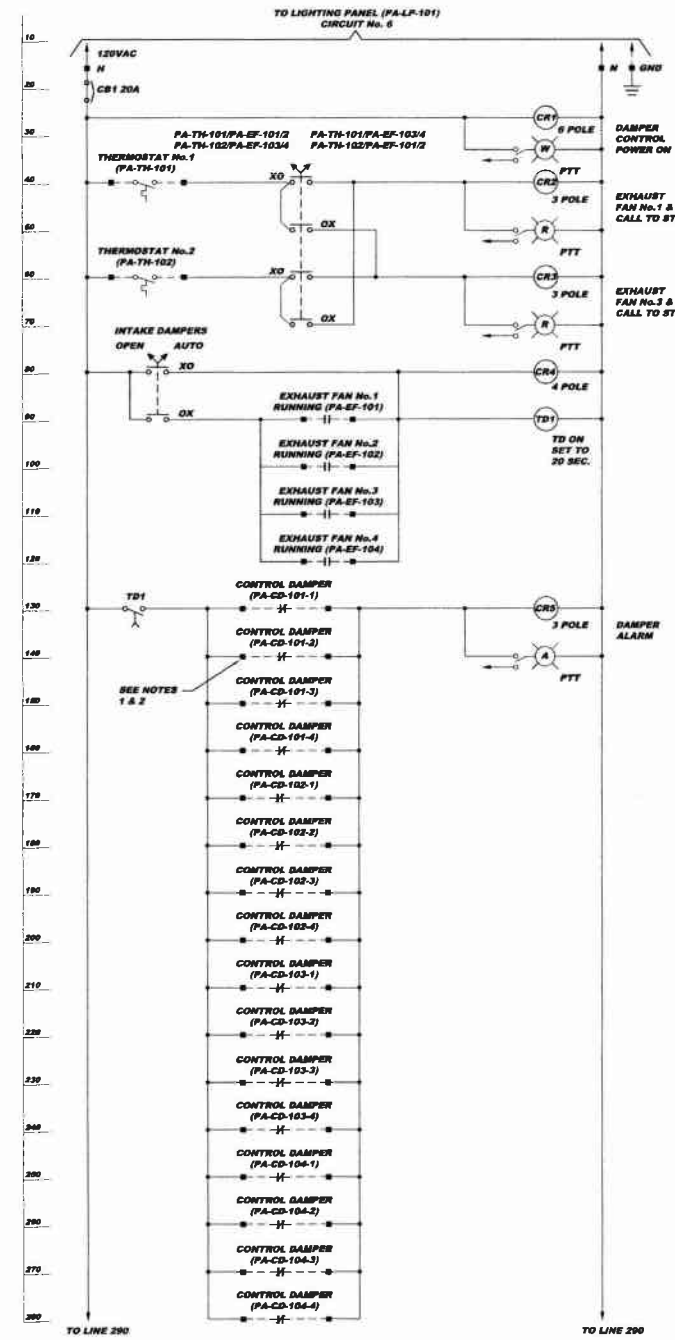
KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-0-01 AND 2010-0-02
WASTEWATER TREATMENT PLANT EXPANSION
PROCESS AIR BUILDING LIGHTING PLANS AND DETAILS

As Shown
Date: DEC. 2010
Drawn By: DCW
Checked By: MUM
Approved By: SHG

Sheet No.
2

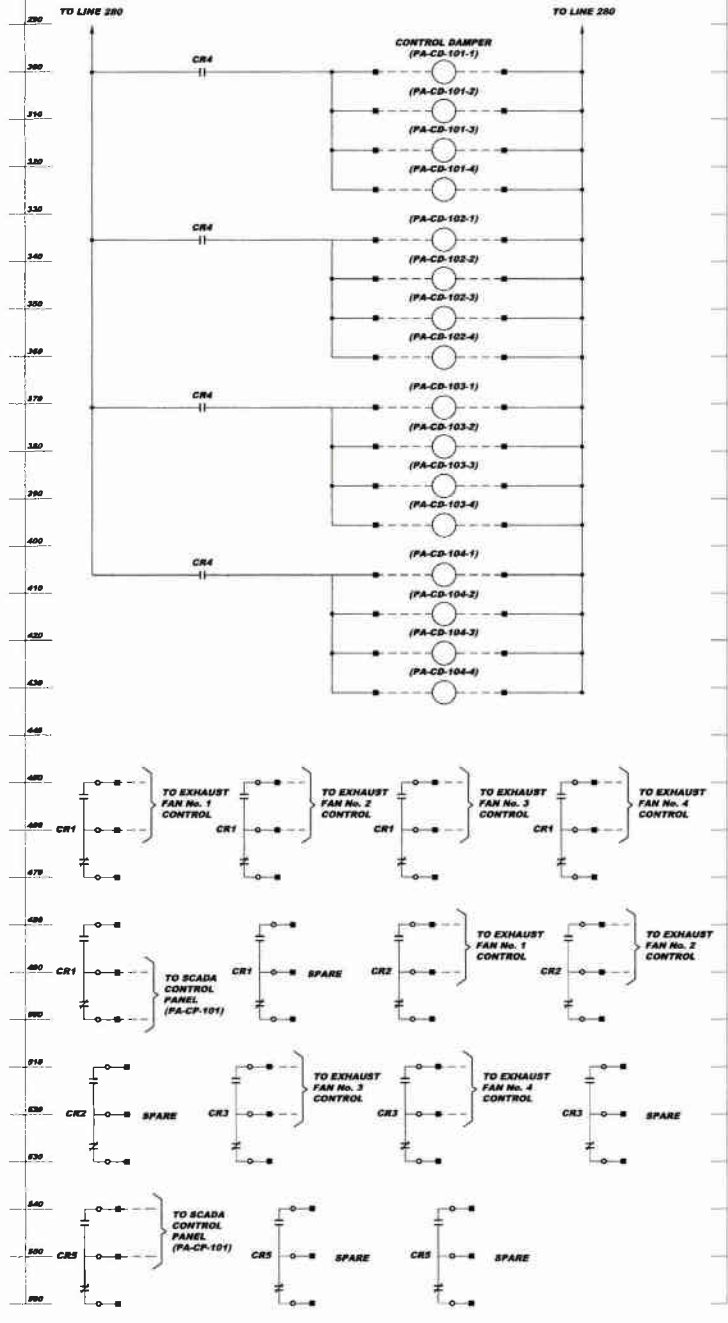
Drawing No.
220-PAE2



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN CONTROL PANEL PA-CF-102
—	LOCAL WIRING
- - -	FIELD WIRING

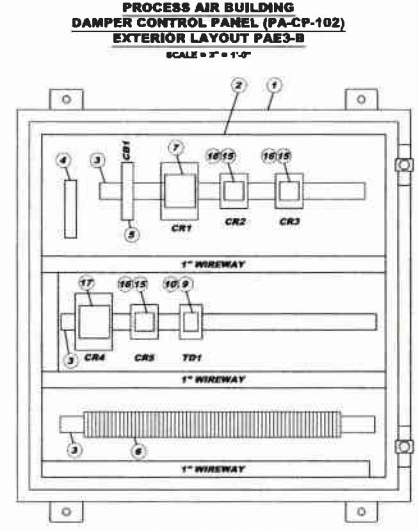
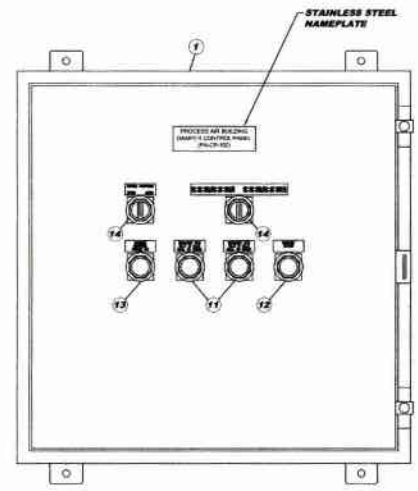
PROCESS AIR BUILDING DAMPER CONTROL PANEL SCHEMATICS PAE3-A
NOT TO SCALE



- NOTES:**
1. EACH CONTROL DAMPER MAY REQUIRE MORE THAN ONE ACTUATOR. PROVIDE SUFFICIENT NUMBER OF TERMINAL BLOCKS TO ACCOMMODATE ALL ACTUATORS WITH FOUR MINIMUM.
 2. CONTROL DAMPER CONTACTS SHOWN WITH DAMPER CLOSED.

PROCESS AIR BUILDING DAMPER CONTROL PANEL (PA-CF-102) BILL OF MATERIALS

ITEM QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	24"x24"x6" ENCLOSURE, NEMA TYPE 12	A242406LP	HOFFMAN
2	21"x21" ENCLOSURE SUBPANEL	A24P24	HOFFMAN
3	AR DIN RAIL	1492-DRT	ALLEN-BRADLEY
4	GROUNDING LUG	-	-
5	277VAC/50HZ SINGLE POLE 25A CIRCUIT BREAKER	1492-CB1G200	ALLEN-BRADLEY
6	AR 600V AC/DC 30A TERMINAL BLOCK	1492-HM1	ALLEN-BRADLEY
7	120V, 6 POLE, N.O. CONTROL RELAY, 10A	700-PH600A1	ALLEN-BRADLEY
8	-	-	-
9	120V, DPDT ON DELAY TIMER RELAY 1.0 - 100 SEC.	700-HT125U120	ALLEN-BRADLEY
10	8 PIN ON DELAY TIMER RELAY SOCKET	700-HM125	ALLEN-BRADLEY
11	2 PILOT LIGHT (RED)	800TPTH16R	ALLEN-BRADLEY
12	1 PILOT LIGHT (AMBER)	800TPTH16A	ALLEN-BRADLEY
13	1 PILOT LIGHT (WHITE)	800TPTH16W	ALLEN-BRADLEY
14	2 POSITION SELECTOR SWITCH	800N-HR4C	ALLEN-BRADLEY
15	3 120V, 3PDT CONTROL RELAY	700-NA33A1	ALLEN-BRADLEY
16	3 CONTROL RELAY SOCKET	700-HM205	ALLEN-BRADLEY
17	1 120V, 4 POLE, N.O. CONTROL RELAY, 35A	700-PH400A1	ALLEN-BRADLEY



PROCESS AIR BUILDING DAMPER CONTROL PANEL (PA-CF-102) INTERIOR LAYOUT PAE3-C
SCALE = 3" = 1'-0"

5175 CAMPBELL RUN ROAD
ALLEGANY COUNTY, PENNSYLVANIA
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FAX: 412-444-8210
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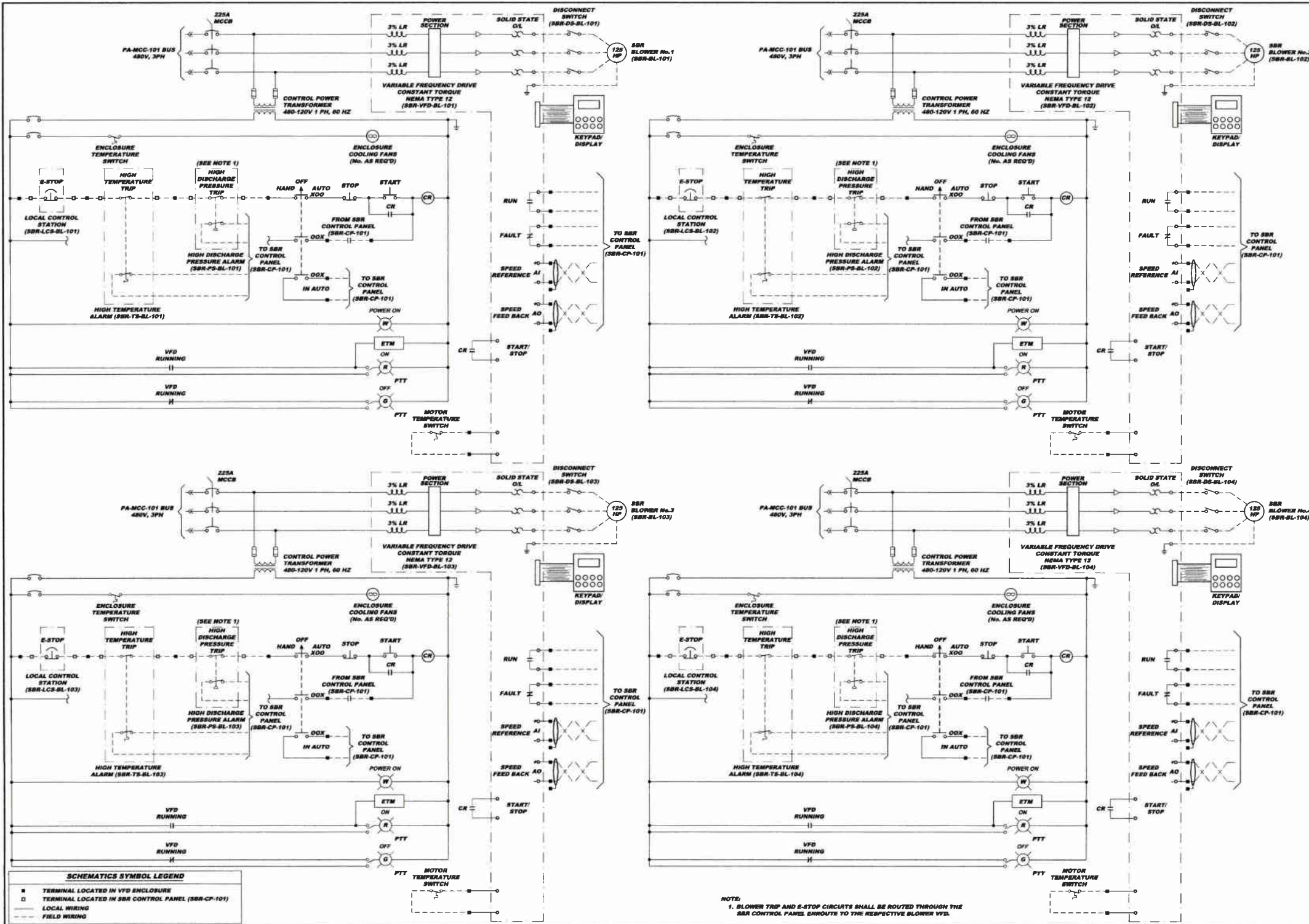
KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGANY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
PROCESS AIR BUILDING DAMPER CONTROL PANEL (PA-CF-102) SCHEMATIC AND LAYOUT

Scale:	A4 Shown
Drawn By:	DEC-2010
Checked By:	DCW
Approved By:	BJG

Sheet No. 3

Drawing No. 220-PAE3



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN VFD ENCLOSURE
□	TERMINAL LOCATED IN SBR CONTROL PANEL (SBR-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

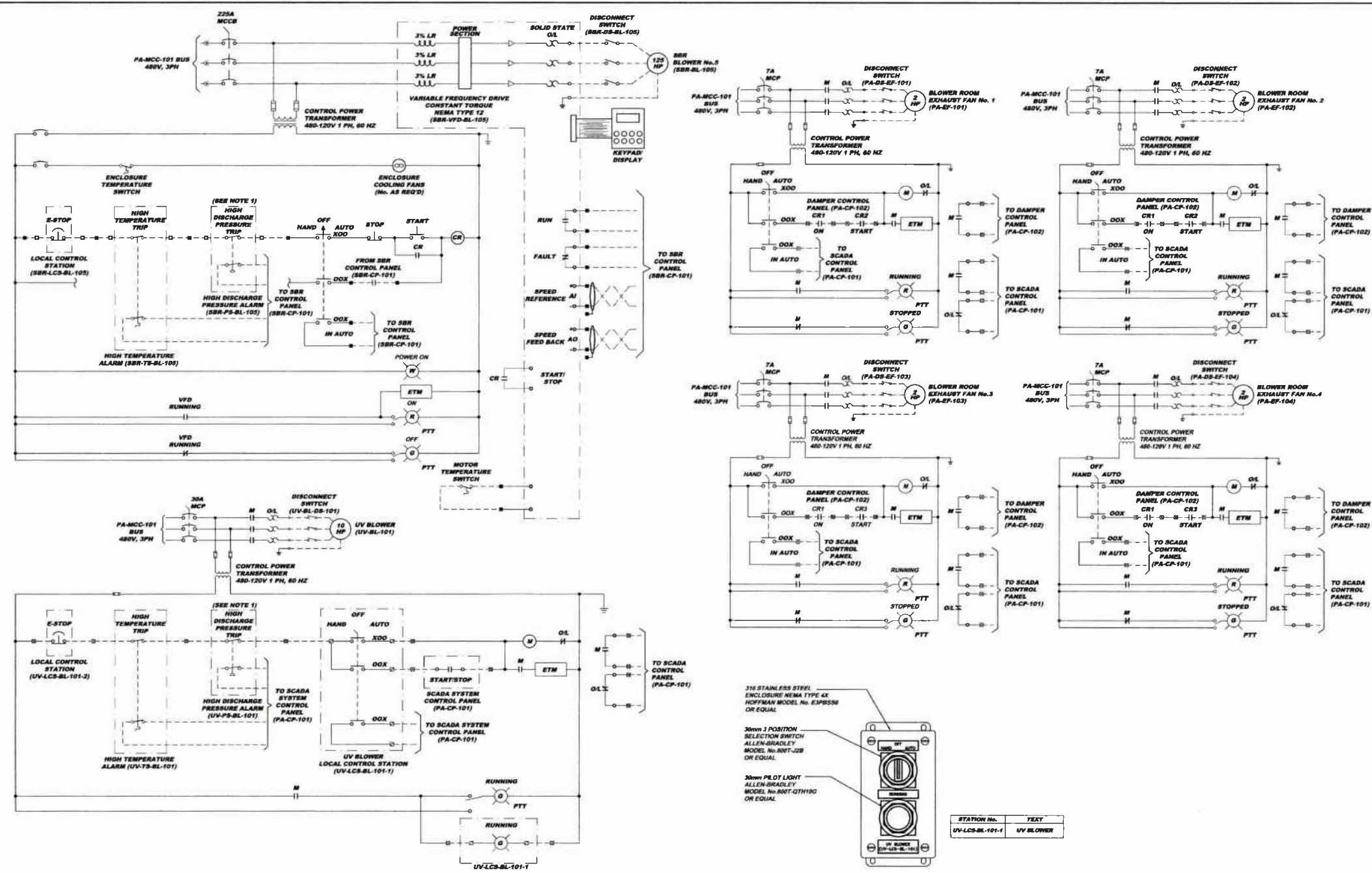
NOTE:
1. BLOWER TRIP AND E-STOP CIRCUITS SHALL BE ROUTED THROUGH THE SBR CONTROL PANEL ENROUTE TO THE RESPECTIVE BLOWER VFD.

Scale:	As Shown
Drawn By:	DEC 2010
Checked By:	DCM
Approved By:	BLM
Sheet No.:	4
Drawing No.:	220-PAE4

MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONWATA WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SCHEMATICS SHEET 1 OF 3

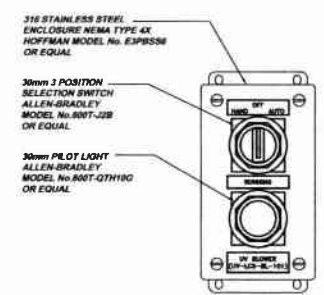
KLH ENGINEERS, INC.

5173 CAMPBELL RUN ROAD
 PITTSBURGH, PA 15205
 PHONE: 412-784-0226
 FAX: 412-784-0226
 INFO@KLHENGINEERS.COM



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN VFD ENCLOSURE
□	TERMINAL LOCATED IN LOCAL CONTROL STATION/TERMINAL BOX
○	TERMINAL LOCATED IN MOTOR CONTROL CENTER
◇	TERMINAL LOCATED IN SBR CONTROL PANEL (SBR-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING



STATION No.	TEXT
UV-LCS-BL-101-1	UV BLOWER

UV BLOWER LOCAL CONTROL STATION (UV-LCS-BL-101-1) DETAIL PAES-A
NOT TO SCALE

NOTE:
1. BLOWER TRIP AND E-STOP CIRCUITS SHALL BE ROUTED THROUGH THE SBR CONTROL PANEL ENROUTE TO THE RESPECTIVE BLOWER VFD.

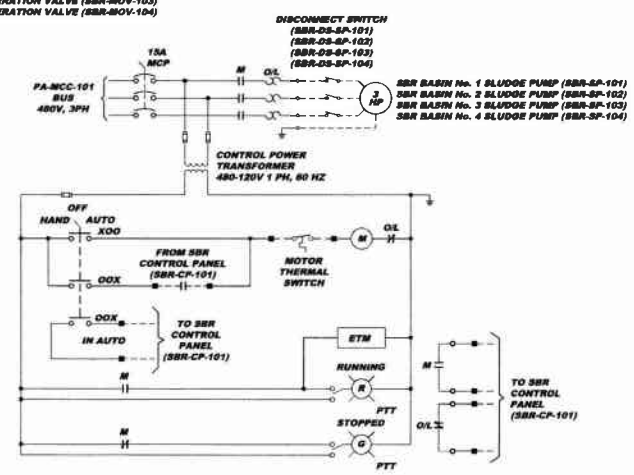
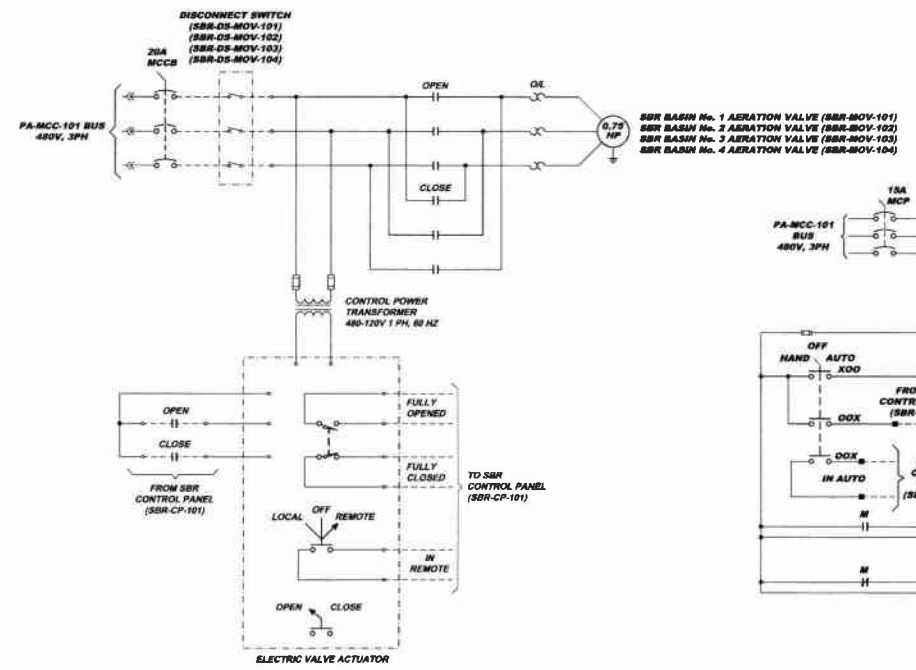
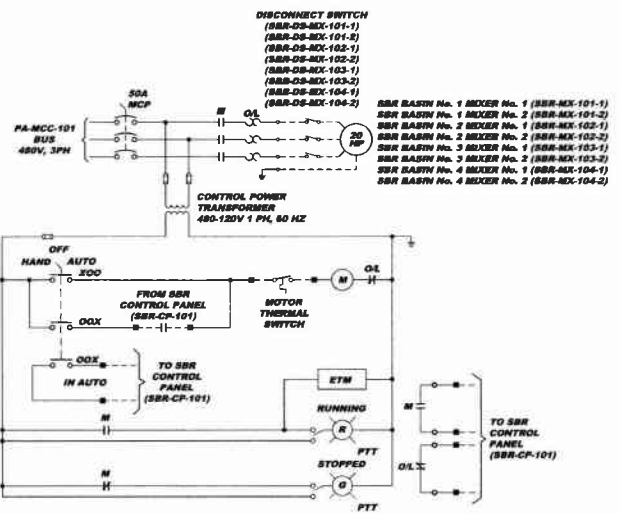
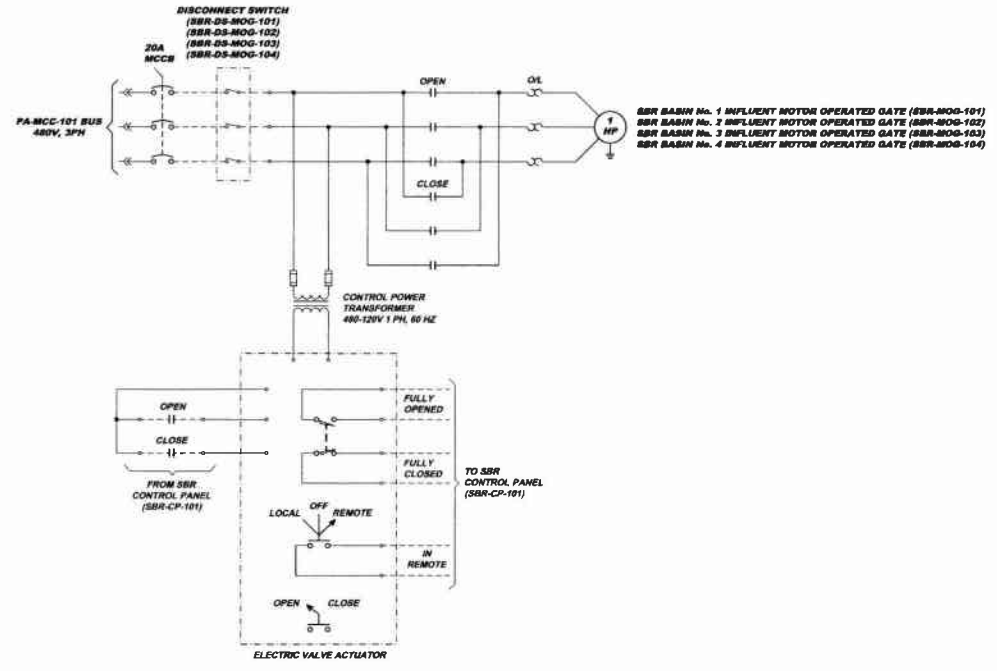
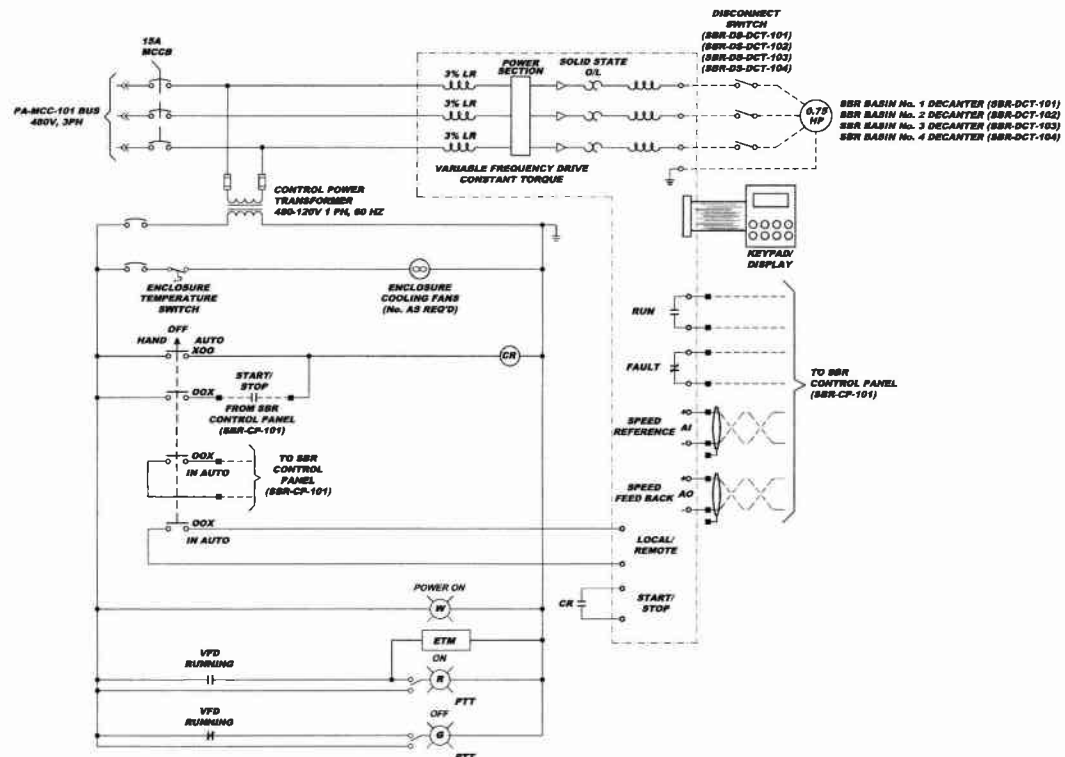
KLH ENGINEERS, INC.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SCHEMATICS SHEET 2 OF 3

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DOV
Checked By:	BJM
Approved By:	SLG

Sheet No. **5**

Drawing No. **220-PAE5**



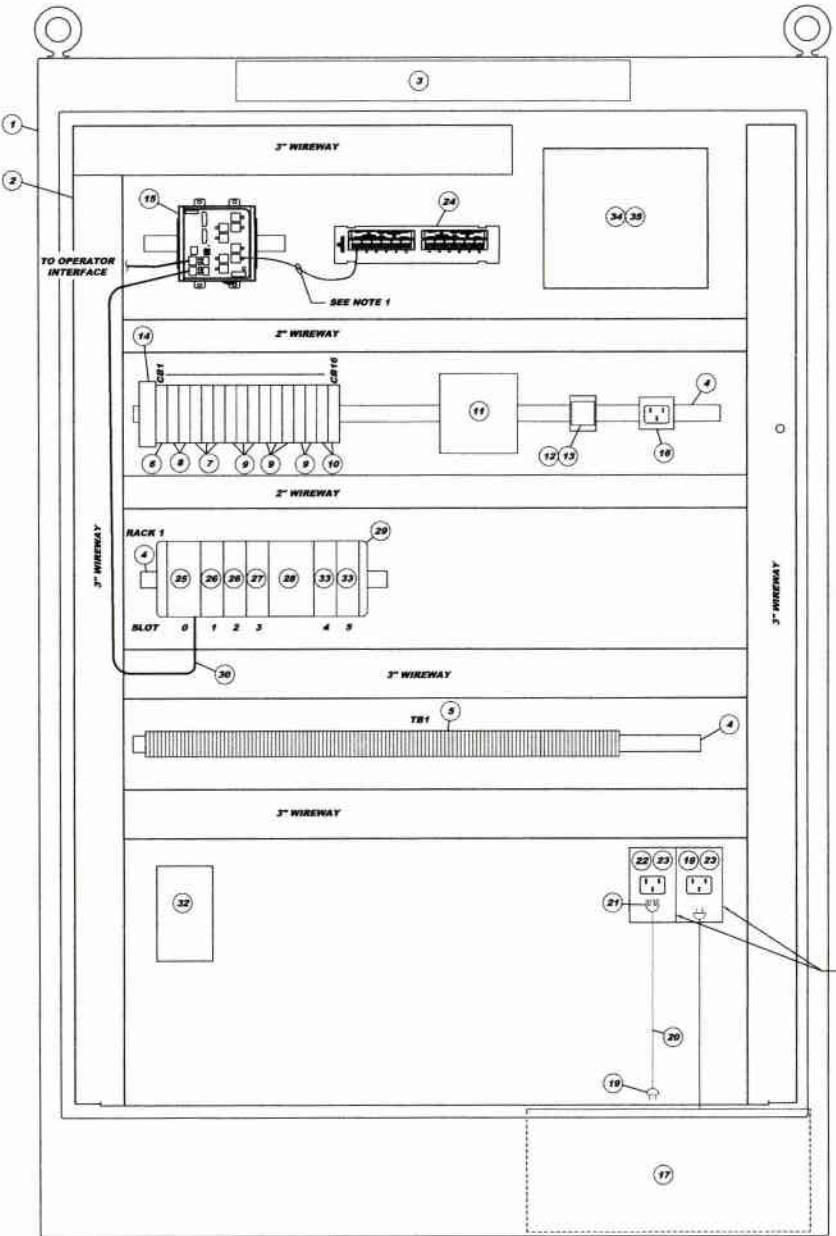
SCHEMATICS SYMBOL LEGEND

	TERMINAL LOCATED IN MOTOR CONTROL CENTER
	LOCAL WIRING
	FIELD WIRING

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 ELECTRICAL SCHEMATICS SHEET 3 OF 3

Scale:	As Shown
Drawn By:	DEC. 2010
Checked By:	DOV
Approved By:	MLM
Sheet No.:	6
Drawing No.:	220-PAE6

3172 CAMBELLE RUN ROAD
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 FAX 412-454-0348
 INFO@KLHENGINEERS.COM



**PROCESS AIR BUILDING
SCADA CONTROL PANEL (PA-CP-101)
INTERIOR LAYOUT PAE7-A**
SCALE: 3" = 1'-0"



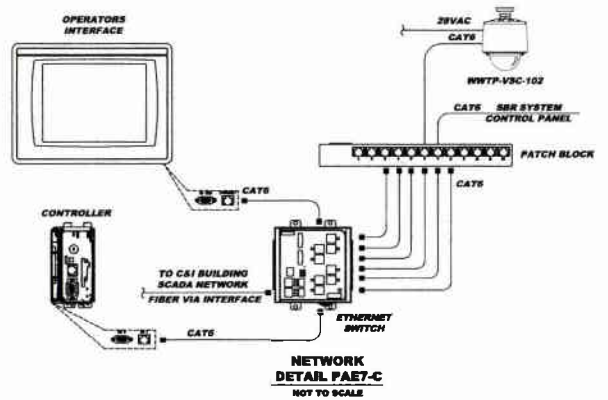
**PROCESS AIR BUILDING
SCADA CONTROL PANEL (PA-CP-101)
EXTERIOR LAYOUT PAE7-B**
SCALE: 1" = 1'-0"

SIZE UTILITY BOXES TO FIT THE RECEPTACLE AND INLET.

PROCESS AIR BUILDING SCADA CONTROL PANEL (PA-CP-101) BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	1	72"x48"x18" ENCLOSURE, NEMA TYPE 12	A724818FS0	HOFFMAN
2	1	60"x44" ENCLOSURE SUBPANEL	A72P48P1	HOFFMAN
3	1	FLUORESCENT LIGHTING PACKAGE	ALF16034R	HOFFMAN
4	AR	DIN RAIL	199-DR1	ALLEN-BRADLEY
5	AR	30A FEED-THROUGH TERMINAL BLOCK	1482-4M1	ALLEN-BRADLEY
6	1	277VAC/3VDC SINGLE POLE 30A CIRCUIT BREAKER	1492-SP1D200	ALLEN-BRADLEY
7	3	277VAC/3VDC SINGLE POLE 15A CIRCUIT BREAKER	1492-SP1D150	ALLEN-BRADLEY
8	2	277VAC/3VDC SINGLE POLE 10A CIRCUIT BREAKER	1492-SP1D100	ALLEN-BRADLEY
9	8	277VAC/3VDC SINGLE POLE 5A CIRCUIT BREAKER	1492-SP1D050	ALLEN-BRADLEY
10	2	277VAC/3VDC SINGLE POLE 3A CIRCUIT BREAKER	1492-SP1D020	ALLEN-BRADLEY
11	1	24 VDC POWER SUPPLY	1606-XL2400R	ALLEN-BRADLEY
12	1	CONTROL RELAY SOCKET	700-4W12R	ALLEN-BRADLEY
13	1	CONTROL RELAY, 120VAC	700-NA32A1	ALLEN-BRADLEY
14	1	TRANSIENT VOLTAGE SURGE SUPPRESSOR	1'R STORM-120-108A	TRANSECTOR
15	1	10 PORT, 10/100 BASE TX ETHERNET SWITCH	1783-MS10T	ALLEN-BRADLEY
16	1	CONVENIENCE RECEPTACLE	DMRBA	ALTECH
17	1	1KVA UPS	Q-1000	POWER INNOVATIONS
18	1	120VAC 15A RECEPTACLE	S279-CWP	LEVITON
19	1	120VAC 15A PLUG	315PV	LEVITON
20	AR	3" CAT5A SCREW CABLE	-	-
21	1	120VAC 15A CONNECTOR	515CV	LEVITON
22	1	120VAC 15A INLET	S278-CWP	LEVITON
23	2	UTILITY BOX	-	-
24	1	12 PORT CAT5 UNIVERSAL PATCH BLOCK	88586-U09	LEVITON
25	1	LOGIC CONTROLLER	1769-L35E	ALLEN-BRADLEY
26	2	DIGITAL INPUT MODULE	1769-101E	ALLEN-BRADLEY
27	1	DIGITAL OUTPUT MODULE	1769-0W9	ALLEN-BRADLEY
28	1	POWER SUPPLY	1769-PA4	ALLEN-BRADLEY
29	1	COMPACT I/O RIGHT END CAP	1769-ECR	ALLEN-BRADLEY
30	1	COLOR OPERATOR INTERFACE	2711P-T12C-4AS	ALLEN-BRADLEY
31	AR	CATEGORY 6 PATCH CABLE	-	-
32	1	CAMERA POWER SUPPLY	S28WPS-1	VICON
33	2	ANALOG INPUT MODULE	1769-IF4I	ALLEN-BRADLEY
34	1	FIBER NETWORK INTERFACE	-	-
35	AR	10/31 MULTIMEDIA ADAPTER PLATE (B)	NID502ACAY	LEVITON
35	AR	1" ST FIBER JUMPER	-	-

* SUPPLIED UNDER SPECIFICATION 16610 AND SUPPLIED LOOSE. CONTROL PANEL MANUFACTURER SHALL INSTALL.



NOTES:
1. PROVIDE SIX (6) CATEGORY 6 MODULAR PATCH CORDS. THE LENGTH OF THE CORDS SHALL BE AS SHORT AS PRACTICAL TO REDUCE THE AMOUNT OF EXCESS WIRE INSIDE THE PANEL.

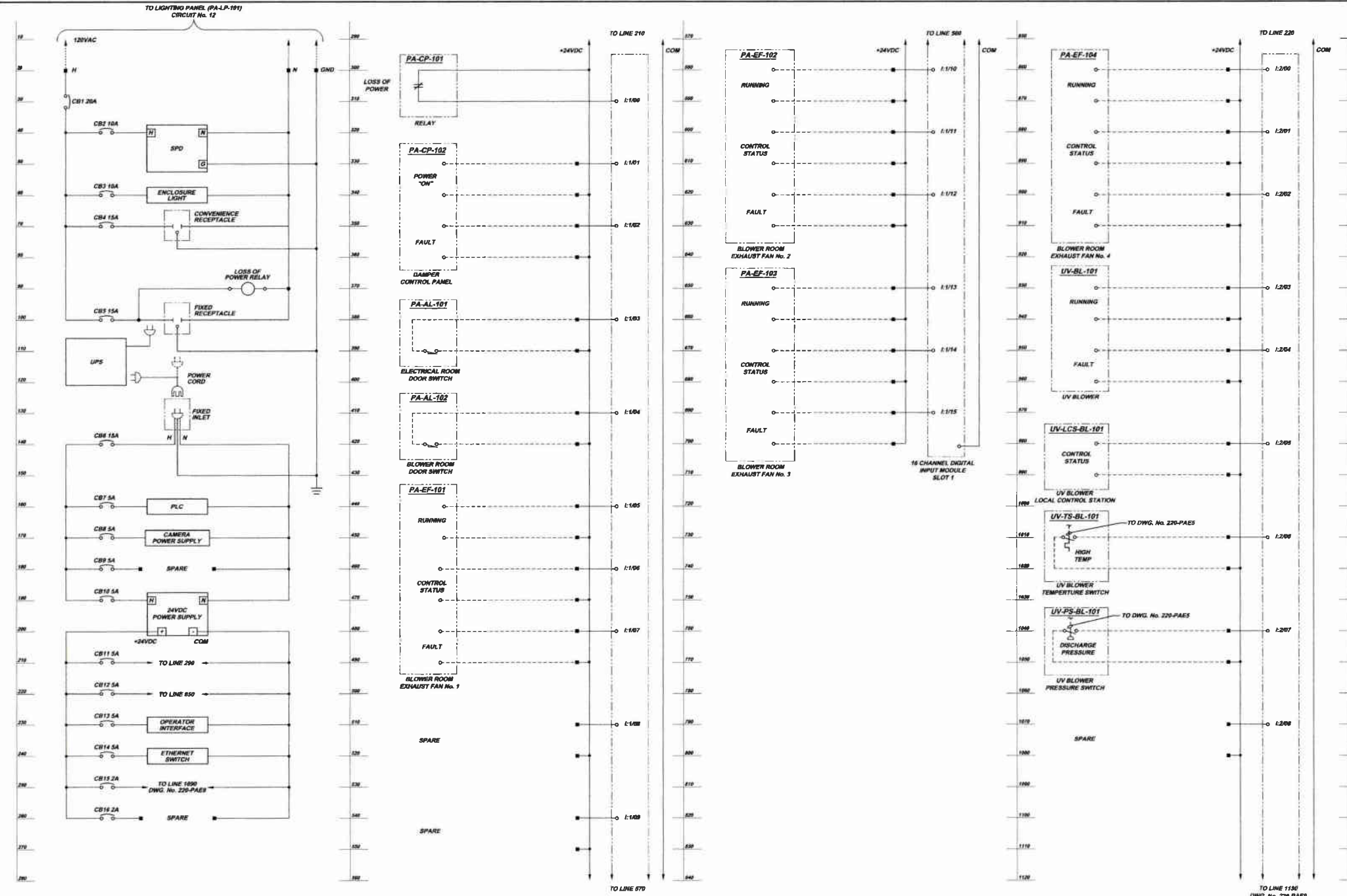
Revisions
 Date
 Revision
 RELEASE FOR BID
 Date
 Revision
 8178 DANIELLE RUN ROAD
 PITTSBURGH, PA 15110
 PHONE: 412-444-0310
 FAX: 412-444-0310
 WWW.KLHENGINEERS.COM

KLH ENGINEERS, INC.

**MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 20-1041 AND 20-1042
 WASTEWATER TREATMENT PLANT EXPANSION
 PROCESS AIR BUILDING SCADA CONTROL PANEL (PA-CP-101) LAYOUT AND DETAILS**

As Shown
 Scale:
 Date: DEC. 2010
 Drawn By: DCH
 Checked By: MJM
 Approved By: SHG

Sheet No.
7
 Drawing No.
220-PAE7

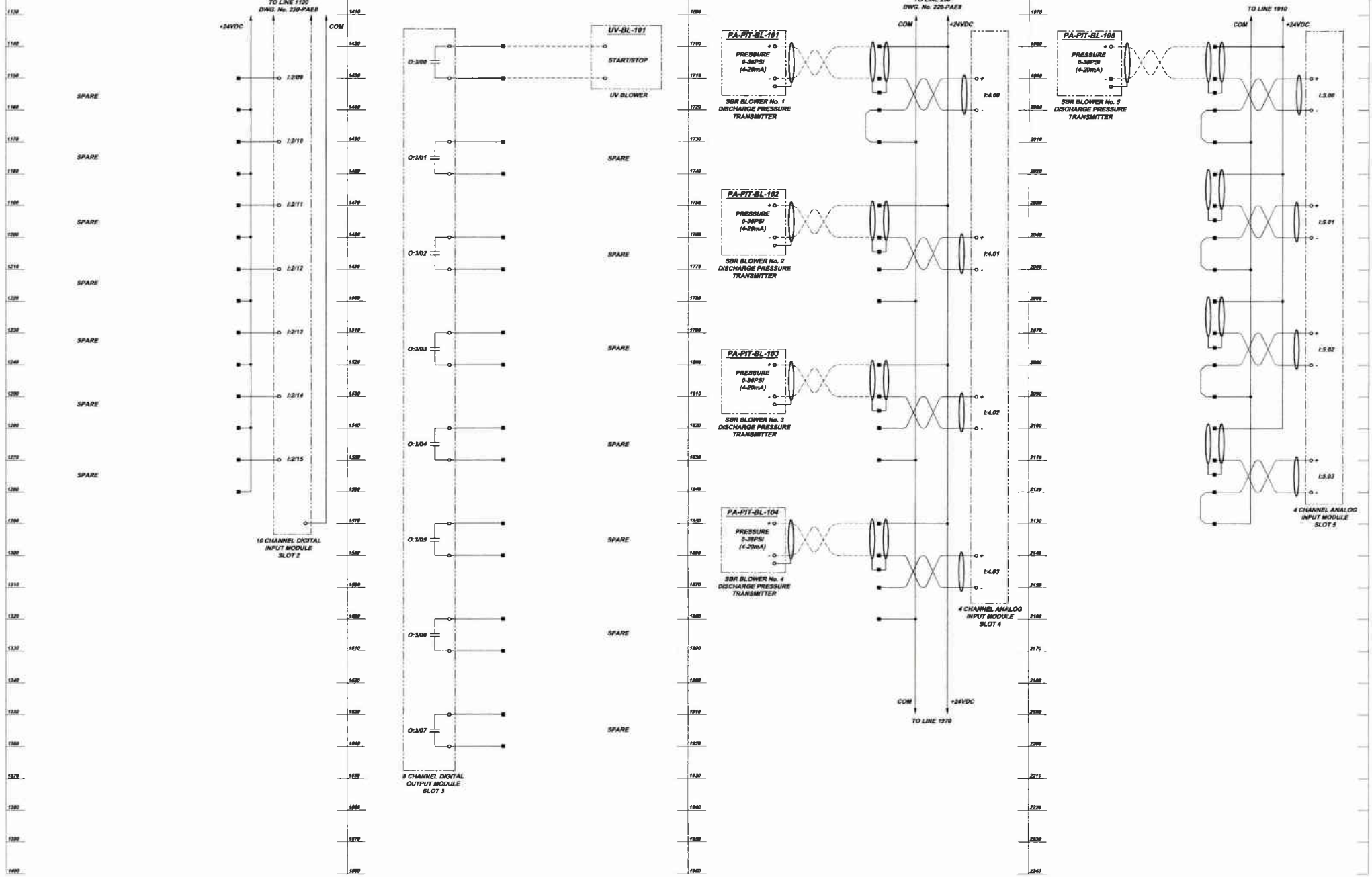


SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (PA-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

**PROCESS AIR BUILDING
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

5173 SANDWELL BLVD ROAD ALLEGHENY COUNTY, PENNSYLVANIA PHONE: 812-494-0310 FAX: 812-494-0326 info@klh-engineers.com	
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION PROCESS AIR BUILDING SCADA CONTROL PANEL (PA-CP-101) SCHEMATICS SHEET 1 OF 2	
Scale: Date: DEC. 2010 Drawn By: DCW Checked By: M.M. Approved By: SHD	Revisions: Date: 1-2011 Revisions: RELEASE FOR BID
Sheet No.	0
Drawing No.	220-PAE8



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (PA-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

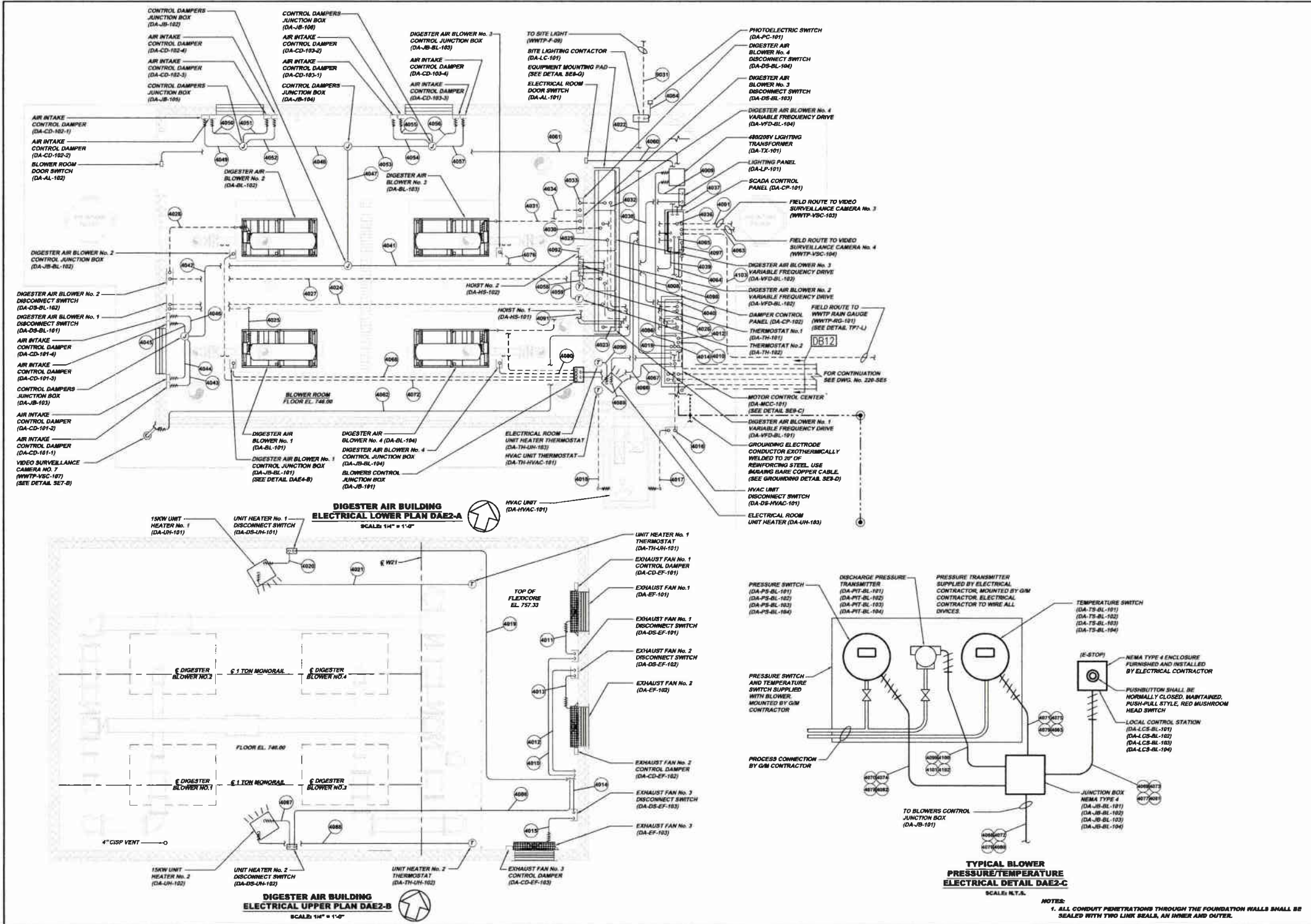
**PROCESS AIR BUILDING
SCADA CONTROL PANEL SCHEMATICS**
NOT TO SCALE

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DCW
Checked By:	MM
Approved By:	SHD
Sheet No.	9
Drawing No.	220-PAE9

Revisions	Date	By
RELEASE FOR BID	1-2011	

KLH ENGINEERS, INC.
 5173 DANIELLE BLVD
 ALLEGHENY COUNTY, PENNSYLVANIA
 PROJECT #12-49-4-0110
 PHONE #724-840-0310
 INFO@KLHENGINEERS.COM

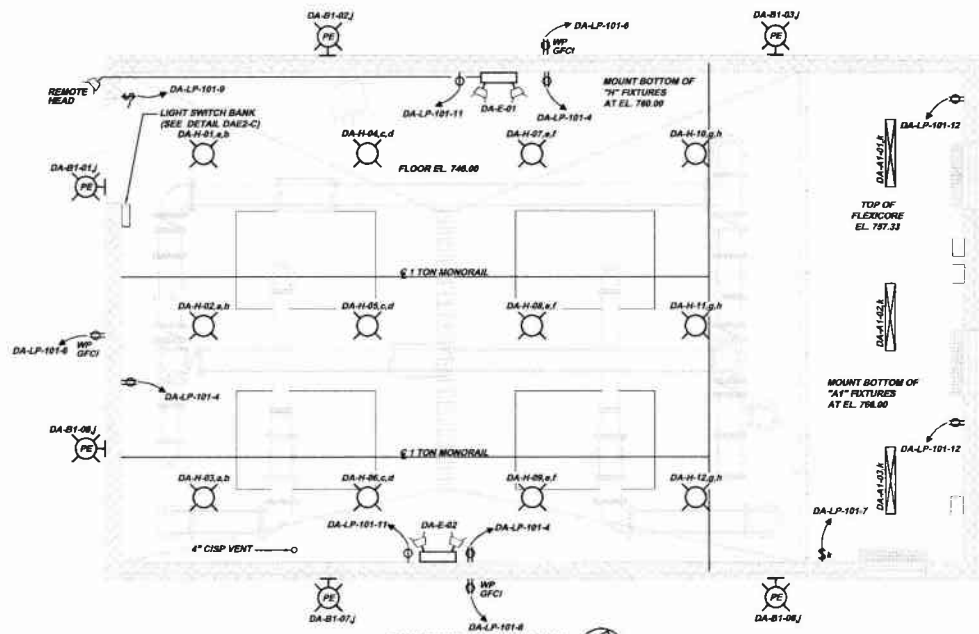
MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 PROCESS AIR BUILDING SCADA CONTROL PANEL (PA-CP-101) SCHEMATICS SHEET 2 OF 2



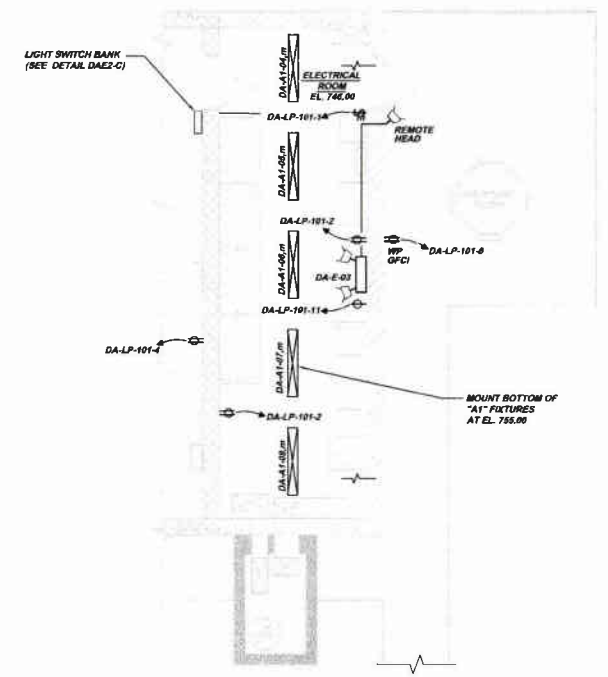
Revision	Date	By	Check
1	12/2011	RELEASE FOR BID	

As Shown	Scale	Sheet No.	Drawing No.
DEC. 2010		1	220-DAE1
Drawn By:	Checked By:	Approved By:	

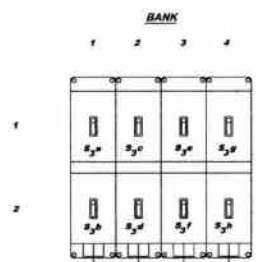
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT A WATER TREATMENT PLANT EXPANSION DIGESTER AIR BUILDING ELECTRICAL PLANS	
5175 CAMPBELL BLVD MCKEESPORT, PA 15110 PH: 412-944-0000 FAX: 412-944-0006 INFO@KLHENGINEERS.COM	



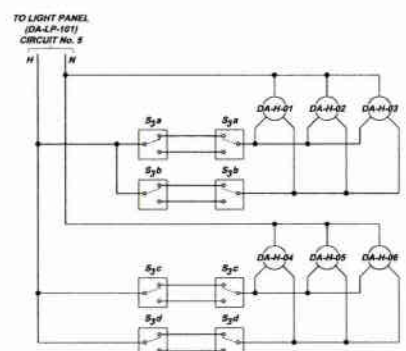
DIGESTER AIR BUILDING LIGHTING PLAN DAE2-A
SCALE: 1/4" = 1'-0"



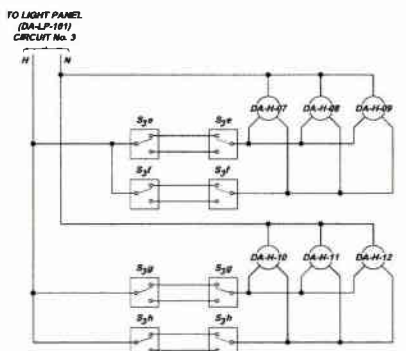
ELECTRICAL ROOM LIGHTING PLAN DAE2-B
SCALE: 1/4" = 1'-0"



LIGHT SWITCH BANK DETAIL DAE2-C
SCALE: 3" = 1'-0"



LIGHT SWITCH BANK WIRING SCHEMATIC DAE2-D
NOT TO SCALE



THREE BALLAST, TWO LAMPS PER BALLAST, ONE BALLAST FOR ONE SWITCHING CIRCUIT AND TWO BALLAST FOR THE FOR THE OTHER SWITCHING CIRCUIT.

LIGHTING PANEL (DA-LP-101)												
VOLTS, PHASE, WIRE		PANEL SIZE & TYPE		MAIN SIZE & TYPE			CABINET					
208Y/120V, 3PH, 4W		100A RNSIDE MCC		100A MCCS			NEMA TYPE 1					
NO	TRIP	DESCRIPTION	A	B	C	A	B	C	DESCRIPTION	TRIP	NO	
1	20A	ELECTRICAL ROOM LIGHTS	410			360			ELECTRICAL ROOM RECEPTACLES	20A	2	
3	20A	BLOWER ROOM LIGHTS (EAST)		1418			720		BLOWER ROOM RECEPTACLES	20A	4	
5	20A	BLOWER ROOM LIGHTS (WEST)			1418			720	EXTERIOR RECEPTACLES	20A	6	
7	20A	STORAGE AREA LIGHTS	246			300			DAMPER CONTROL PANEL	20A	9	
9	20A	EXTERIOR BUILDING LIGHTS		392			1500		SCALES CONTROL PANEL	20A	10	
11	20A	EMERGENCY LIGHTS			225			360	ATTIC RECEPTACLES	20A	12	
13	20A	SPARE							SPARE	20A	14	
15	20A	SPARE							SPARE	20A	16	
17	20A	SPARE							SPARE	20A	18	
19	20A	SPARE							SPARE	20A	20	
21	20A	SPARE							SPARE	20A	22	
23	20A	SPARE							SPARE	20A	24	
25	20A	SPARE									26	
27	20A	SPARE							SPD	20A	28	
29	20A	SPARE									30	
SUBTOTAL =			858	1,808	1,641	1,280	2,220	1,080				
TOTAL CONNECTED A =			1,918									
TOTAL CONNECTED B =			4,828									
TOTAL CONNECTED C =			2,721									
TOTAL PANEL CONNECTED =			8,968									
PANEL AMP'S =			24.1									

INTERNAL 3P-4W SPD CATEGORY A

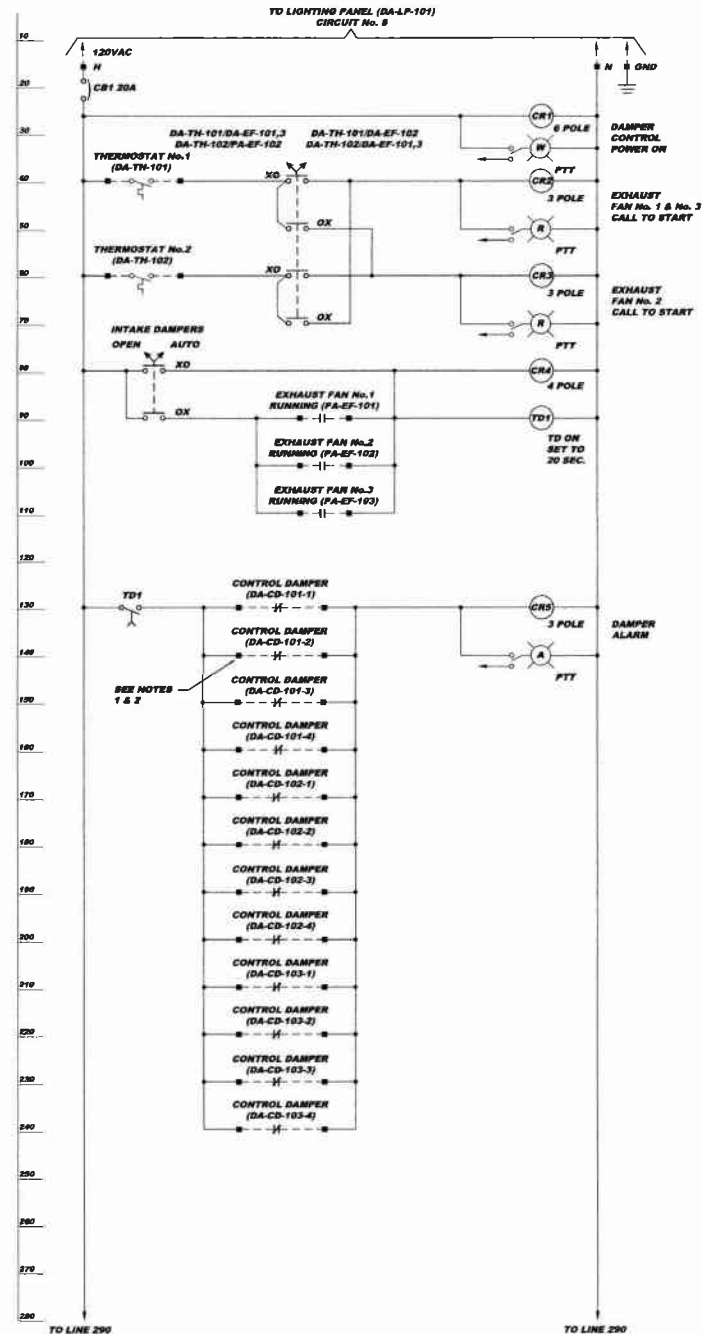
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
DIGESTER AIR BUILDING LIGHTING PLANS AND DETAILS

KLH ENGINEERS, INC.

Date	Revisions
1-2011	RELEASE FOR BID

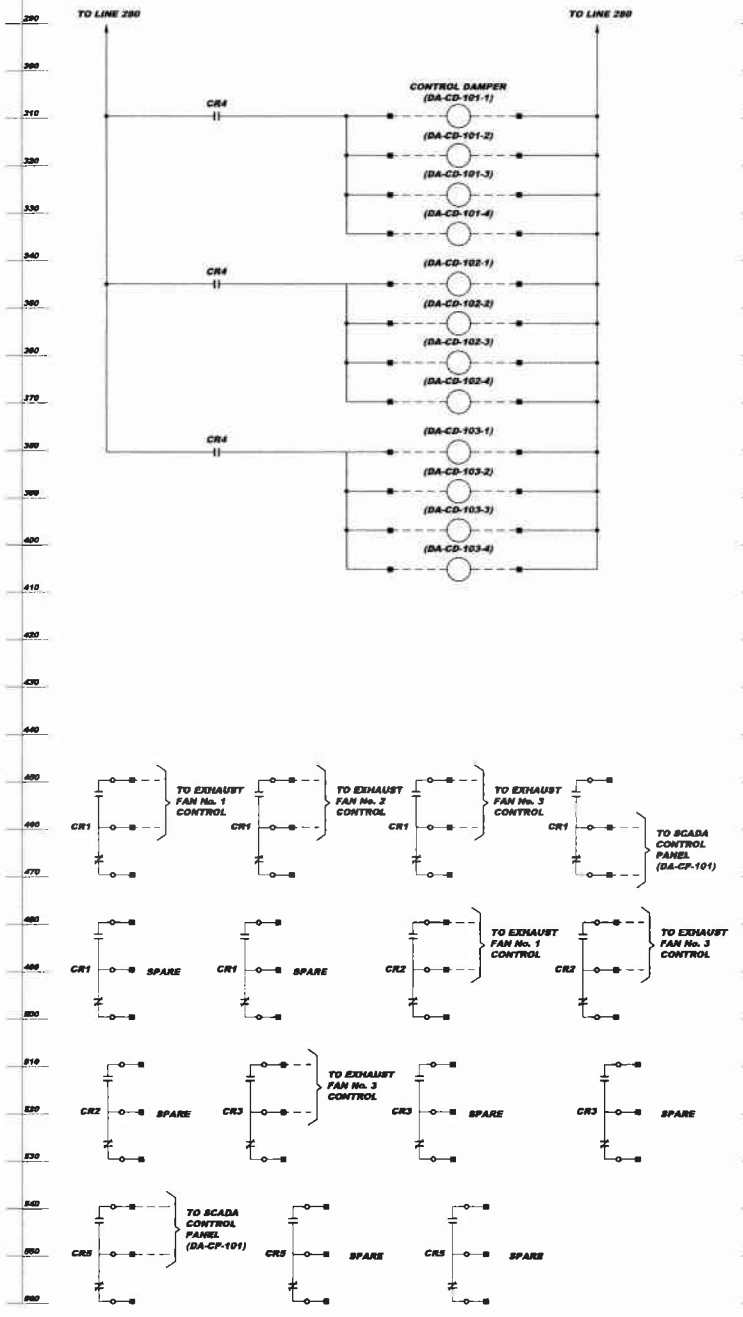
Scale: As Shown
Date: DEC. 2010
Drawn By: DCW
Checked By: NJM
Approved By: BMD

Sheet No. **2**
Drawing No. **220-DAE2**



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN CONTROL PANEL DA-CP-102
—	LOCAL WIRING
- - -	FIELD WIRING

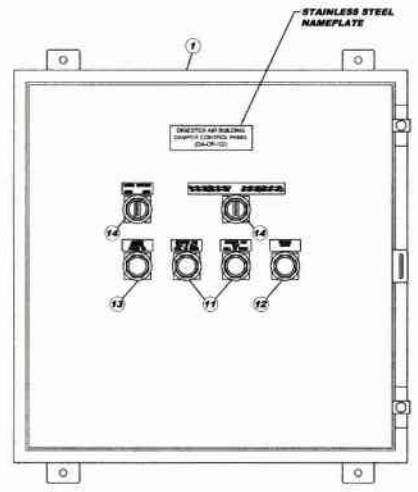


DIGESTER AIR BUILDING DAMPER CONTROL PANEL SCHEMATICS DAE3-A
NOT TO SCALE

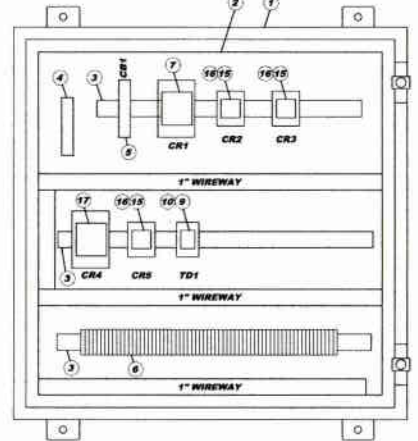
- NOTES:**
- EACH CONTROL DAMPER MAY REQUIRE MORE THAN ONE ACTUATOR. PROVIDE SUFFICIENT NUMBER OF TERMINAL BLOCKS TO ACCOMMODATE ALL ACTUATORS WITH FOUR MINIMUM.
 - CONTROL DAMPER CONTACTS SHOWN WITH DAMPER CLOSED.

DIGESTER AIR BUILDING DAMPER CONTROL PANEL (DA-CP-102) BILL OF MATERIALS

ITEM QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	24"x24"x6" ENCLOSURE, NEMA TYPE 12	A242406LP	HOFFMAN
2	21"x21" ENCLOSURE SUBPANEL	A24P24	HOFFMAN
3	AR DIN RAIL	199-DRT	ALLEN-BRADLEY
4	GROUNDING LUD		
5	277VAC/3WV SINGLE POLE 25A CIRCUIT BREAKER	1492-CR10200	ALLEN-BRADLEY
6	600V AC/DC 35A TERMINAL BLOCK	1492-HM1	ALLEN-BRADLEY
7	120V, 6 POLE, N.O. CONTROL RELAY, 10A	700-PH600A1	ALLEN-BRADLEY
8			
9	120V, DPDT ON DELAY TIMER RELAY 1.0 - 100 SEC.	700-NT12BU120	ALLEN-BRADLEY
10	8 PIN ON DELAY TIMER RELAY SOCKET	700-HN125	ALLEN-BRADLEY
11	PILOT LIGHT (RED)	800TP7H16R	ALLEN-BRADLEY
12	PILOT LIGHT (AMBER)	800TP7H16A	ALLEN-BRADLEY
13	PILOT LIGHT (WHITE)	800TP7H16W	ALLEN-BRADLEY
14	2 POSITION SELECTOR SWITCH	800N-HR4C	ALLEN-BRADLEY
15	120V, 3PDT CONTROL RELAY	700-NA33A1	ALLEN-BRADLEY
16	CONTROL RELAY SOCKET	700-HN205	ALLEN-BRADLEY
17	120V, 4 POLE, N.O. CONTROL RELAY, 35A	700-PH400A1	ALLEN-BRADLEY



DIGESTER AIR BUILDING DAMPER CONTROL PANEL (DA-CP-102) EXTERIOR LAYOUT DAE3-B
SCALE = 3" = 1'-0"



DIGESTER AIR BUILDING DAMPER CONTROL PANEL (DA-CP-102) INTERIOR LAYOUT DAE3-C
SCALE = 3" = 1'-0"

5175 CAMPBELL RUN ROAD
 BEAVER COUNTY, PENNSYLVANIA
 PHONE: 412-494-0310
 FAX: 412-494-0310
 INFO@KLHENGINEERS.COM

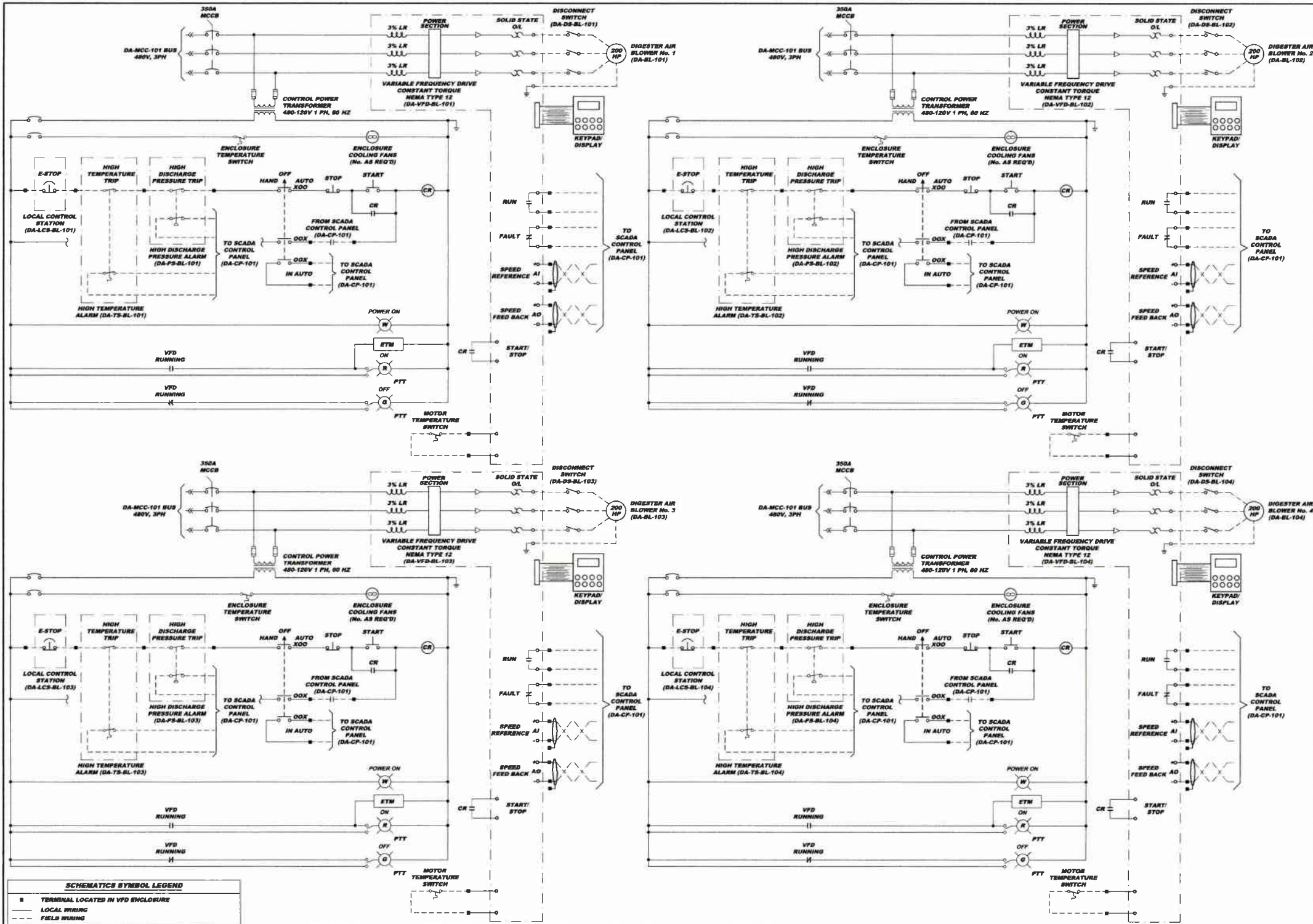
KLH ENGINEERS, INC.

VANPORT TOWNSHIP MUNICIPAL AUTHORITY
BEAVER COUNTY, PENNSYLVANIA
CONTRACT 2007-1 AND 2007-2
WASTEWATER TREATMENT PLANT EXPANSION
DIGESTER AIR BUILDING DAMPER CONTROL PANEL (DA-CP-102) SCHEMATIC AND LAYOUT

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DCH
Checked By:	NJM
Approved By:	SHG

Sheet No. **3**

Drawing No. **220-DAE3**



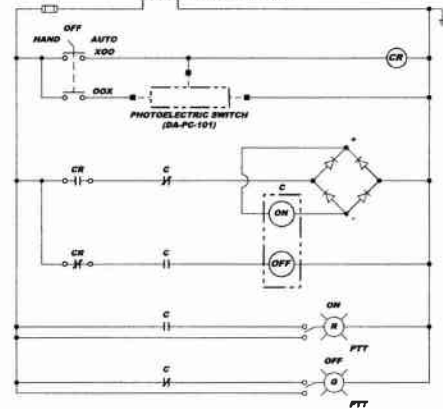
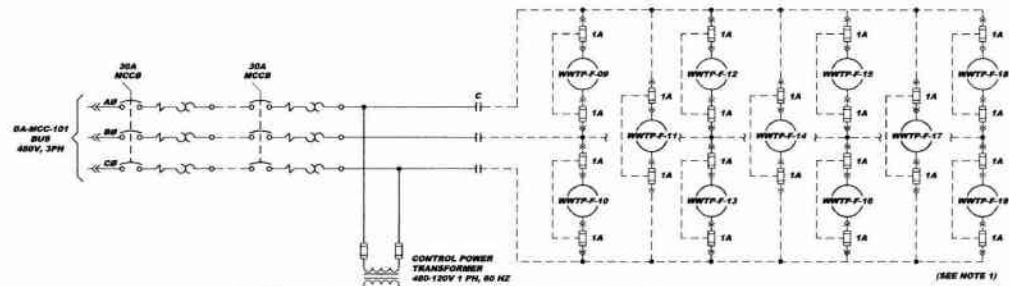
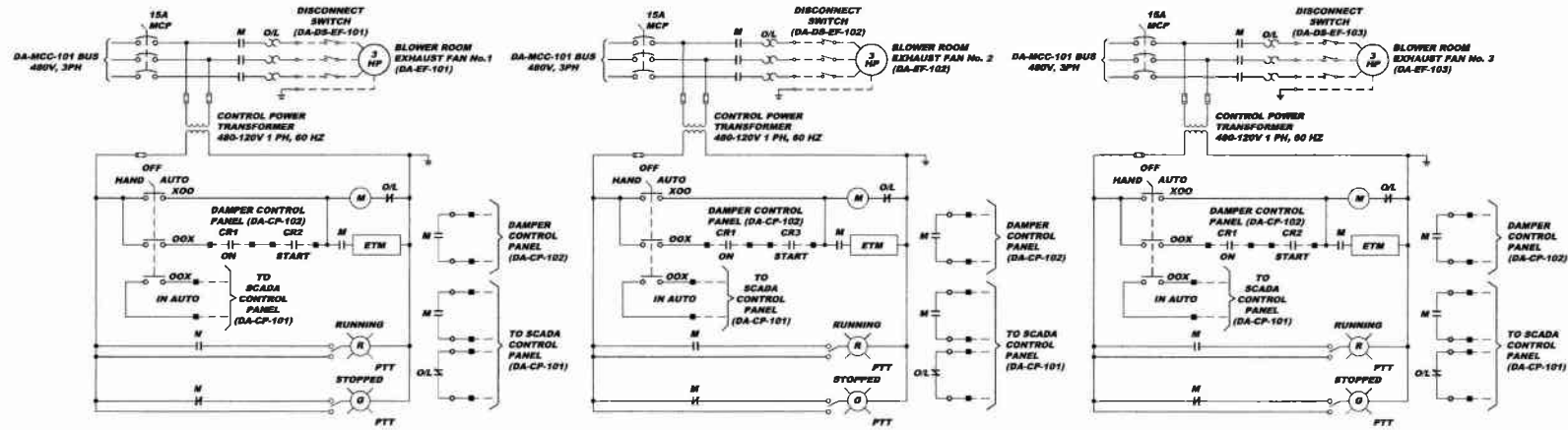
SCHEMATICS SYMBOL LEGEND

	TERMINAL LOCATED IN VFD ENCLOSURE
	LOCAL WIRING
	FIELD WIRING

Revision	
Date	
Release For	BD
Revision	1-2011
Date	
As Shown	DEC. 2010
Drawn By	DCV
Checked By	MLM
Approved By	BHG
Sheet No.	4
Drawing No.	220-DAE4

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 ELECTRICAL SCHEMATICS SHEET 1 OF 2

KLH ENGINEERS, INC.
 5173 CARROLLLE RUN, ROSS
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 FAX 412-449-8311
 INFO@KLHENGINEERS.COM



**SITE LIGHTING CONTACTOR (DA-LC-101)
SCHEMATIC DAES-A**
NOT TO SCALE

SCHEMATICS SYMBOL LEGEND

—	TERMINAL LOCATED IN CONTROL PANEL OR CONTACTOR
—	LOCAL WIRING
- - -	FIELD WIRING

NOTE:
1. EACH SITE LIGHT FIXTURE SHALL BE PROTECTED WITH TWO INLINE FUSES LOCATED IN THE POLE BARE. FUSES SHALL BE COOPER BUSSMAN TYPE KTH-R OR EQUAL. FUSE HOLDERS SHALL BE COOPER BUSSMAN TYPE HRY, DOUBLE POLE, WATER RESISTANT WITH BREAKAWAY HOLDERS.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
ELECTRICAL SCHEMATICS SHEET 2 OF 2



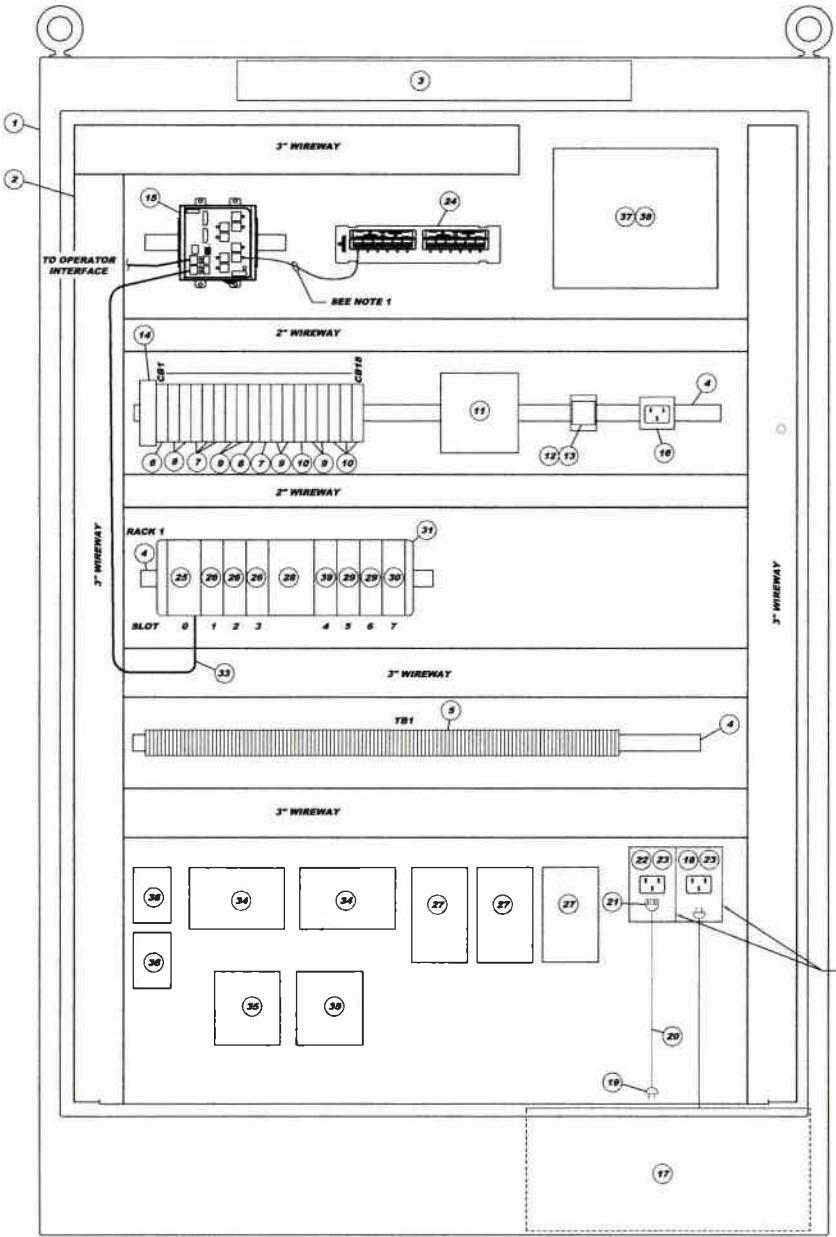
5172 CAMPBELL RUN ROAD
MCKEESPORT, PA 15110
PHONE 412-644-0310
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INFO@KLHENGINEERS.COM

Rev	Revisions	Rev	Revisions
1	RELEASE FOR BID		

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DDW
Checked By:	MLM
Approved By:	BHG

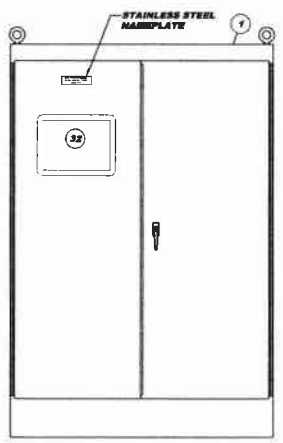
Sheet No. 5

Drawing No. 220-DAE5



**DIGESTER AIR BUILDING
SCADA CONTROL PANEL (DA-CP-101)
INTERIOR LAYOUT DAE6-A**
SCALE: 3" = 1'-0"

SIZE UTILITY BOXES TO FIT THE RECEPTACLE AND INLET.

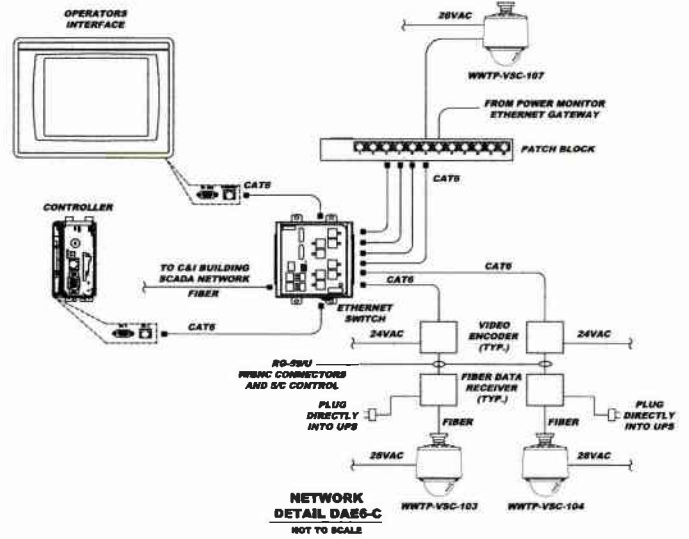


**DIGESTER AIR BUILDING
SCADA CONTROL PANEL (DA-CP-101)
EXTERIOR LAYOUT DAE6-B**
SCALE: 1" = 1'-0"

DIGESTER AIR BUILDING SCADA CONTROL PANEL (DA-CP-101) BILL OF MATERIALS

ITEM	QTY	DESCRIPTION	PRODUCT NUMBER	MANUFACTURER
1	1	72"x48"x18" ENCLOSURE, NEMA TYPE 12	AT2461FSD	HOFFMAN
2	1	60"x44" ENCLOSURE SUBPANEL	AT2F46P1	HOFFMAN
3	1	FLUORESCENT LIGHTING PACKAGE	ALF16024R	HOFFMAN
4	AR	DIN RAIL	199-DR1	ALLEN-BRADLEY
5	AR	30A FEED THROUGH TERMINAL BLOCK	1492-HM1	ALLEN-BRADLEY
6	1	177VAC/48VDC SINGLE POLE 30A CIRCUIT BREAKER	1493-SP10200	ALLEN-BRADLEY
7	4	177VAC/48VDC SINGLE POLE 15A CIRCUIT BREAKER	1493-SP10150	ALLEN-BRADLEY
8	3	177VAC/48VDC SINGLE POLE 10A CIRCUIT BREAKER	1493-SP10100	ALLEN-BRADLEY
9	8	177VAC/48VDC SINGLE POLE 5A CIRCUIT BREAKER	1493-SP10050	ALLEN-BRADLEY
10	4	177VAC/48VDC SINGLE POLE 2A CIRCUIT BREAKER	1493-SP10020	ALLEN-BRADLEY
11	1	24 VDC POWER SUPPLY	1606-KL2400R	ALLEN-BRADLEY
12	1	CONTROL RELAY SOCKET	700-MH123	ALLEN-BRADLEY
13	1	CONTROL RELAY, 120VAC	700-NA32A1	ALLEN-BRADLEY
14	1	TRANSIENT VOLTAGE SURGE SUPPRESSOR	TR STORM-120-100A	TRANSACTOR
15	1	10 PORT, 10/100 BASE TX ETHERNET SWITCH	1783-88510T	ALLEN-BRADLEY
16	1	CONVENIENCE RECEPTACLE	DMRBA	ALTECH
17	1	1KVA UPS	Q-1000	POWER INNOVATIONS
18	1	120VAC 15A RECEPTACLE	8279-CWP	LEVITON
19	1	120VAC 15A PLUG	518PV	LEVITON
20	AR	3C #14AWG SEOW CABLE	-	-
21	1	120VAC 15A CONNECTOR	518CV	LEVITON
22	1	120VAC 15A INLET	8279-CWP	LEVITON
23	2	UTILITY BOX	-	-
24	1	12 PORT CAT6 UNIVERSAL PATCH BLOCK	89586-UG9	LEVITON
25	1	COMPACT LOGIX CONTROLLER	1789-L35E	ALLEN-BRADLEY
26	3	DIGITAL INPUT MODULE	1789-ID16	ALLEN-BRADLEY
27	3	CAMERA POWER SUPPLY, 28VAC	828WPS-1 #	VICON
28	1	POWER SUPPLY	1789-PA2	ALLEN-BRADLEY
29	2	ANALOG INPUT MODULE	1789-IF4I	ALLEN-BRADLEY
30	1	ANALOG OUTPUT MODULE	1789-OF4CI	ALLEN-BRADLEY
31	1	COMPACT I/O RIGHT END CAP	1789-ECR	ALLEN-BRADLEY
32	1	COLOR OPERATORS INTERFACE	2711F-T12C SERIES	ALLEN-BRADLEY
33	AR	CATEGORY CAT6 PATCH CABLE	-	-
34	2	SINGLE MODE FIBER PATCH CABLE	VF-1400R #	VICON
35	2	FIBER DATA RECEIVER	VN-301TVS #	VICON
36	2	VIDEO ENCODER, ANALOG VIDEO TO TCP/IP	824WPS-1 #	VICON
37	1	FIBER NETWORK INTERFACE	NDS62ACAY	LEVITON
38	AR	"BT" FIBER JUMPER	-	-
39	1	DIGITAL OUTPUT MODULE	1789-OWW	ALLEN-BRADLEY

SUPPLIED UNDER SPECIFICATION 18810 AND SUPPLIED LOOSE. CONTROL PANEL MANUFACTURER SHALL INSTALL.



**NETWORK
DETAIL DAE6-C**
NOT TO SCALE

- NOTES:
1. PROVIDE SIX (6) CATEGORY 6 MODULAR PATCH CORDS. THE LENGTH OF THE CORDS SHALL BE AS SHORT AS PRACTICAL TO REDUCE THE AMOUNT OF EXCESS WIRE INSIDE THE PANEL.
 2. PROVIDE A MOUNTING BRACKET FOR THE CABLE MODER.

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
DIGESTER AIR BUILDING SCADA CONTROL PANEL (DA-CP-101) LAYOUT AND DETAILS

Scale: As Shown
Date: DEC. 2010
Drawn By: DCW
Checked By: MJM
Approved By: SBC

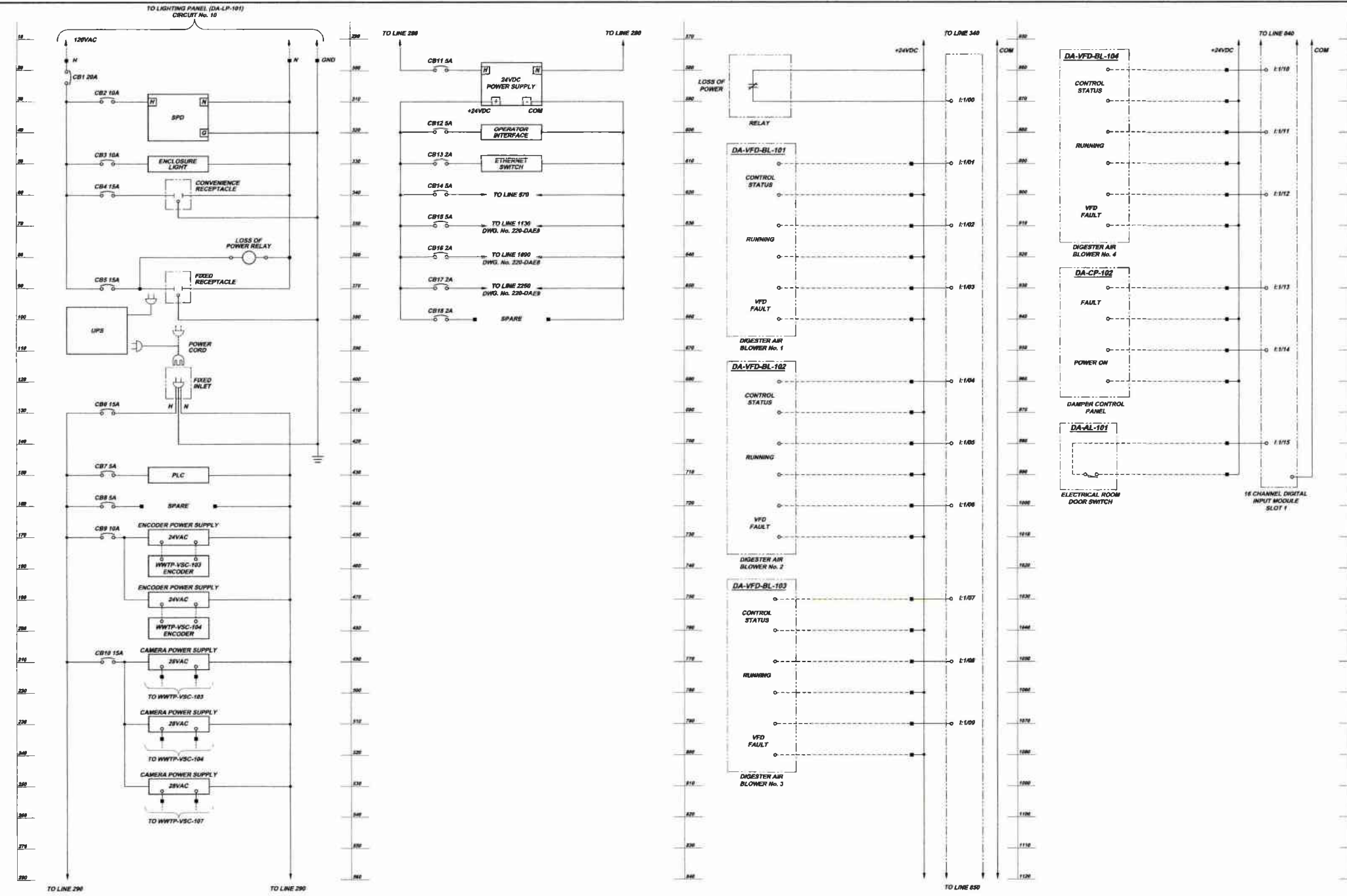
Sheet No. 6

Drawing No. 220-DAE6

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info@klh-engineers.com

KLH ENGINEERS, INC.

Revisions
Date
Description
1-2011 RELEASE FOR BID



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (DA-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

SCADA CONTROL PANEL SCHEMATICS
NOT TO SCALE

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DCW
Checked By:	MMJ
Approved By:	BHG

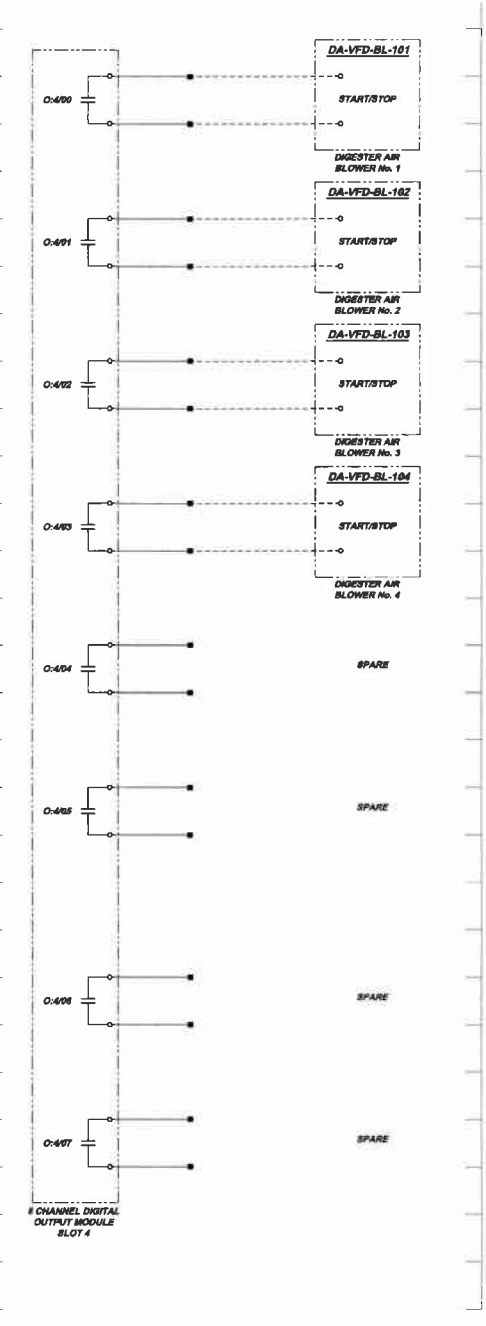
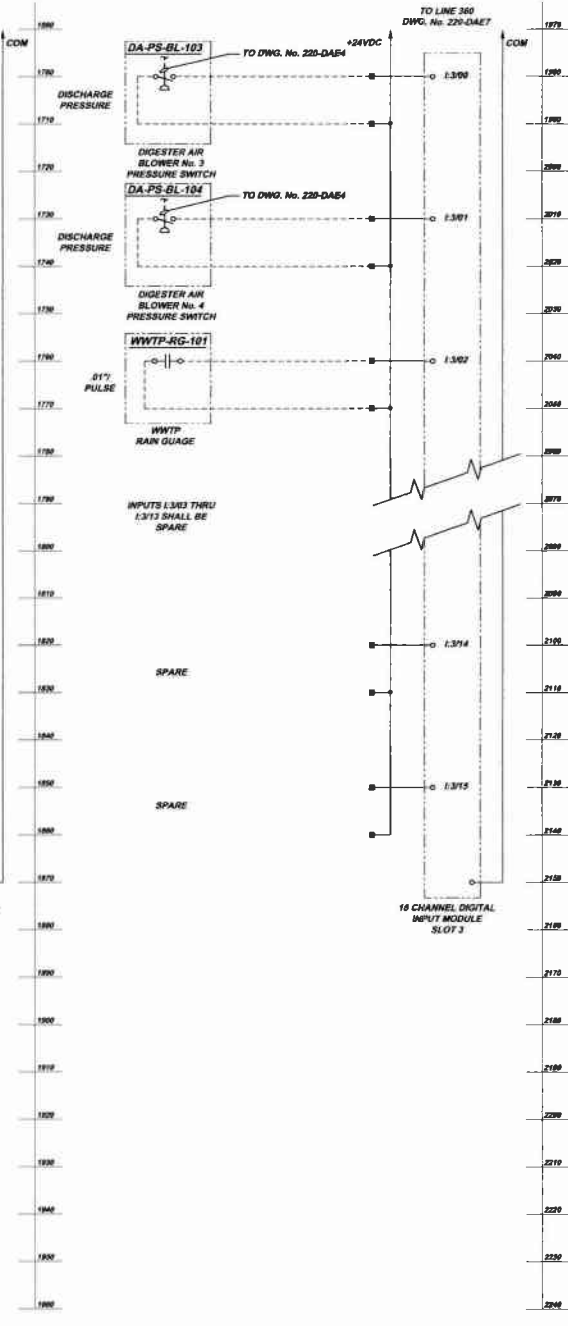
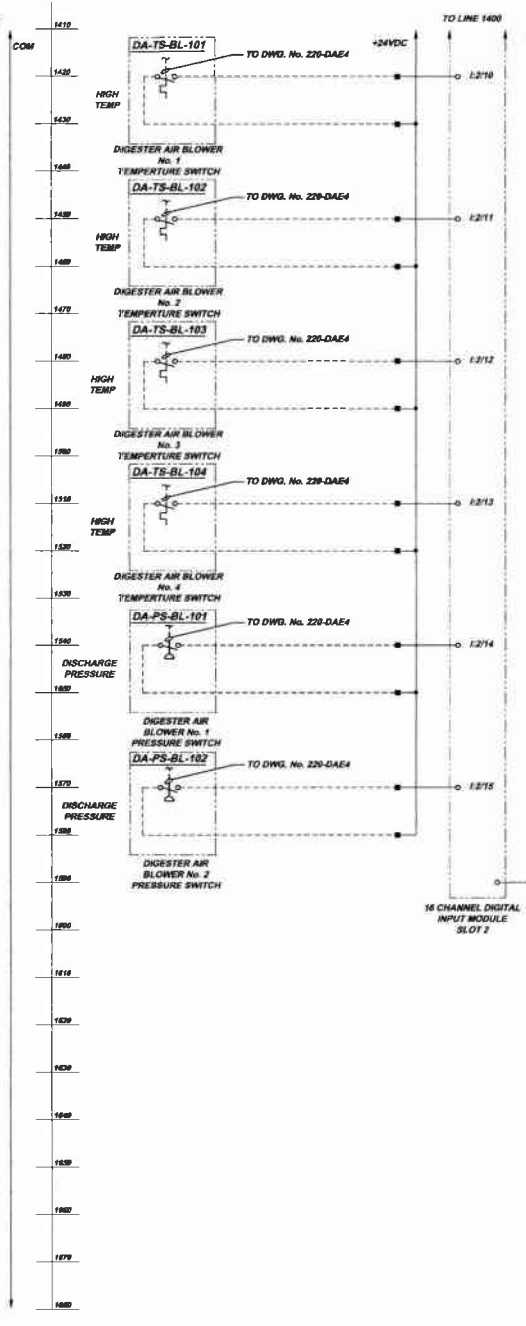
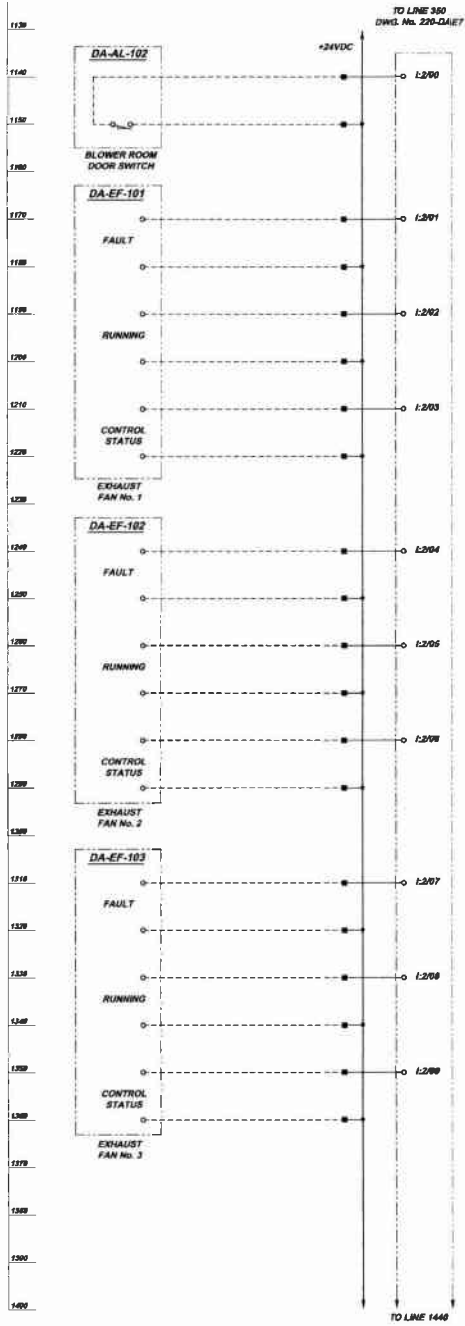
MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2010-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 DIGESTER AIR BUILDING SCADA CONTROL PANEL (DA-CP-101) SCHEMATICS SHEET 1 OF 3

KLH ENGINEERS, INC.

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Revision	Date	By	Reason
1	1-2011		RELEASE FOR BID

Sheet No. **7**
 Drawing No. **220-DAE7**



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (DA-CP-101)
---	LOCAL WIRING
---	FIELD WIRING

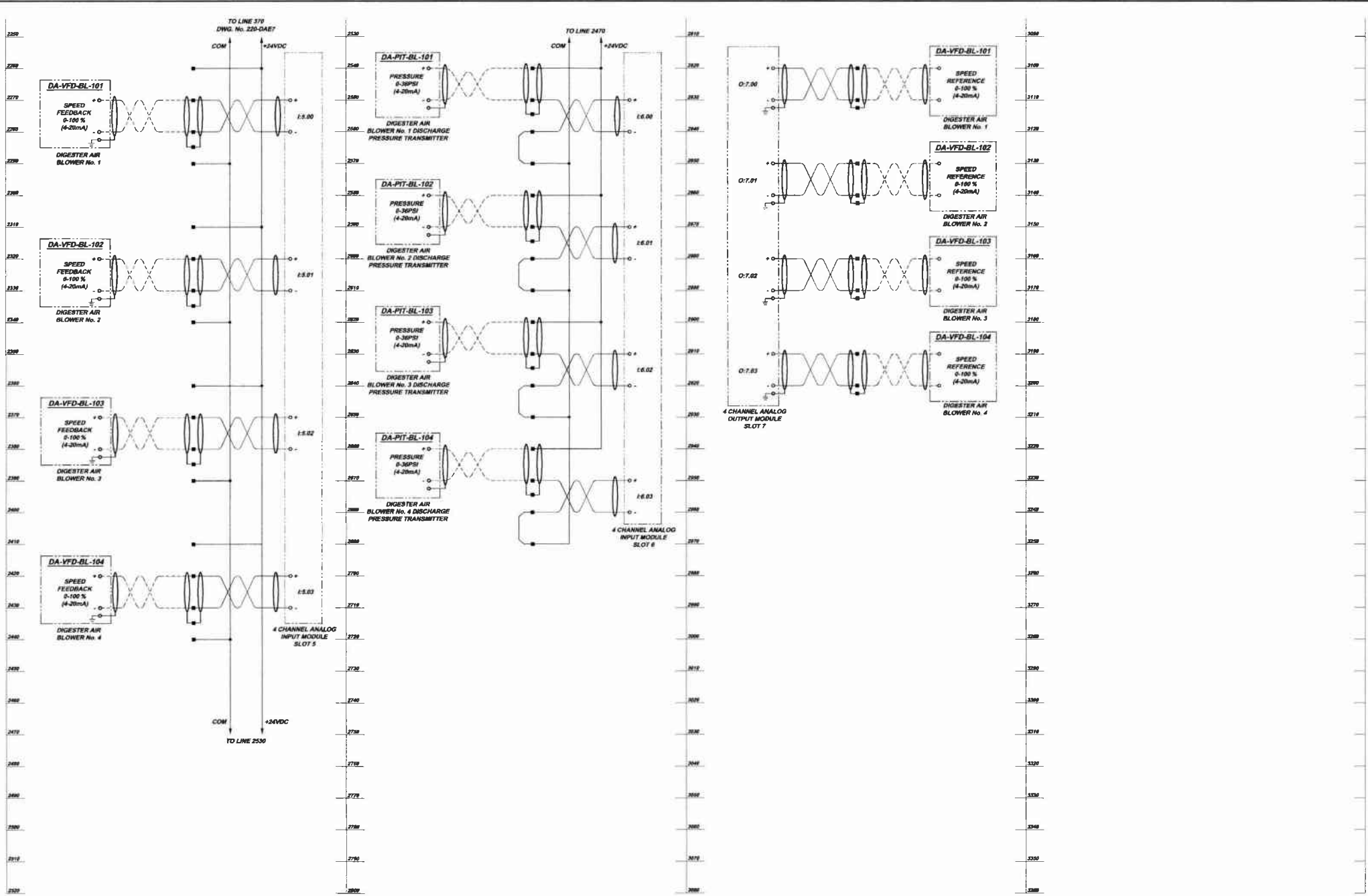
SCADA CONTROL PANEL SCHEMATICS
NOT TO SCALE

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DOV
Checked By:	MMJ
Approved By:	SHG
Sheet No.:	8
Drawing No.:	220-DAE8

MUNICIPAL AUTHORITY OF THE CITY OF MCKEESPORT
 ALLEGHENY COUNTY, PENNSYLVANIA
 CONTRACT NUMBER 2510-01 AND 2010-02
 WASTEWATER TREATMENT PLANT EXPANSION
 DIGESTER AIR BUILDING SCADA CONTROL PANEL (DA-CP-101) SCHEMATICS SHEET 2 OF 3

KLH ENGINEERS, INC.
 5175 DANFELLE RUN ROAD
 PITTSBURGH, PA 15206
 Phone: 412-424-0110
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 info@klh-engineers.com

Revisions	Date	By



SCHEMATICS SYMBOL LEGEND

■	TERMINAL LOCATED IN SCADA CONTROL PANEL (DA-CP-101)
—	LOCAL WIRING
- - -	FIELD WIRING

SCADA CONTROL PANEL SCHEMATICS
NOT TO SCALE

	 KLH ENGINEERS, INC.	5175 CAMPBELL RUN ROAD ALLEGHENY COUNTY, PENNSYLVANIA CONTRACT NUMBER 2010-01 AND 2010-02 WASTEWATER TREATMENT PLANT EXPANSION DIGESTER AIR BUILDING SCADA CONTROL PANEL (DA-CP-101) SCHEMATICS SHEET 3 OF 3	Date: 1-29-11 Revision: RELEASE FOR BID	Date: 1-29-11 Revision:
Scale: Date: DEC. 2010 Drawn By: DCW Checked By: MJM Approved By: SHG	Street No. 9	Drawing No. 220-DAE9		

NOTES:

1. THE CONTRACTOR SHALL REPLACE THE EXISTING MAIN AND NOTED FEEDER CIRCUIT BREAKERS WITHIN THE EXISTING C&I BUILDING MAIN DISTRIBUTION PANEL AS SHOWN BELOW AND ON THE DRAWINGS. THE CIRCUIT BREAKERS NOTED AS "REMOVE" SHALL BE REMOVED AND A FILLER PLATE SHALL BE INSTALLED. THE 1,000A DIGESTER AIR BLOWER BUILDING FEEDER CIRCUIT BREAKER SHALL BE COMPLETELY NEW, NOT A REPLACEMENT. ALL OTHERS SHALL BE REPLACED WITH NEW. THE MAIN CIRCUIT BREAKER SHALL BE A NEW 1,200A. THE NEW CIRCUIT BREAKERS SHALL BE STANDARD THERMAL-MAGNETIC TRIP BREAKERS, NOT SOLID-STATE TRIP. ALL CIRCUIT BREAKERS SHALL BE FULLY FIELD TESTED BY A FACTORY AUTHORIZED SERVICE ENGINEER, IN ACCORDANCE WITH THE LATEST EDITION OF NETA "ACCEPTANCE TESTING SPECIFICATIONS FOR ELECTRICAL POWER DISTRIBUTION EQUIPMENT AND SYSTEMS". A WRITTEN REPORT MUST BE PROVIDED FOR ALL CIRCUIT BREAKERS. ANY AND ALL NECESSARY MODIFICATIONS SHALL BE PERFORMED BY THE CONTRACTOR.

SWITCHBOARD

SQUARE D
OED POWER STYLE SWITCHBOARD
VOLTAGE: 480Y/277
ENCLOSURE TYPE: 1
MAXIMUM SUPPLY RATING: 2,000A, 3P4W
MAXIMUM SECTION RATING: 2,000A, 3P4W
CATALOG NO.: 14844191-004

MAIN CIRCUIT BREAKER

SQUARE D
AMPERE RATING: 2,500
RATING PLUG: 2,500
CATALOG NO.: PXP3625000

FEEDER CIRCUIT BREAKERS

1. SQUARE D MICROLOGIC,
STANDARD SERIES B (REMOVE)
AMPERE RATING: 800A
RATING PLUG: ARP100
CATALOG NO.: 4000901021

2. SQUARE D MICROLOGIC,
STANDARD SERIES B
AMPERE RATING: 250A
RATING PLUG: ARP100
CATALOG NO.: L136250

3. SQUARE D MICROLOGIC,
STANDARD SERIES B (REMOVE)
AMPERE RATING: 250A
RATING PLUG: ARP100
CATALOG NO.: L136250

5. SQUARE D MICROLOGIC,
STANDARD SERIES B (REMOVE)
AMPERE RATING: 250A
RATING PLUG: ARP100
CATALOG NO.: L136250

6. SQUARE D MICROLOGIC,
STANDARD SERIES B
AMPERE RATING: 250A
RATING PLUG: ARP100
CATALOG NO.: L136250

4. SQUARE D POWERPACT
(REMOVE)
AMPERE RATING: 150A
CATALOG NO.: HJAS9150

8. SQUARE D MICROLOGIC,
STANDARD SERIES B
AMPERE RATING: 250A
RATING PLUG: ARP100
CATALOG NO.: L136250

9. SQUARE D MICROLOGIC,
STANDARD SERIES B
AMPERE RATING: 250A
RATING PLUG: ARP100
CATALOG NO.: L136250

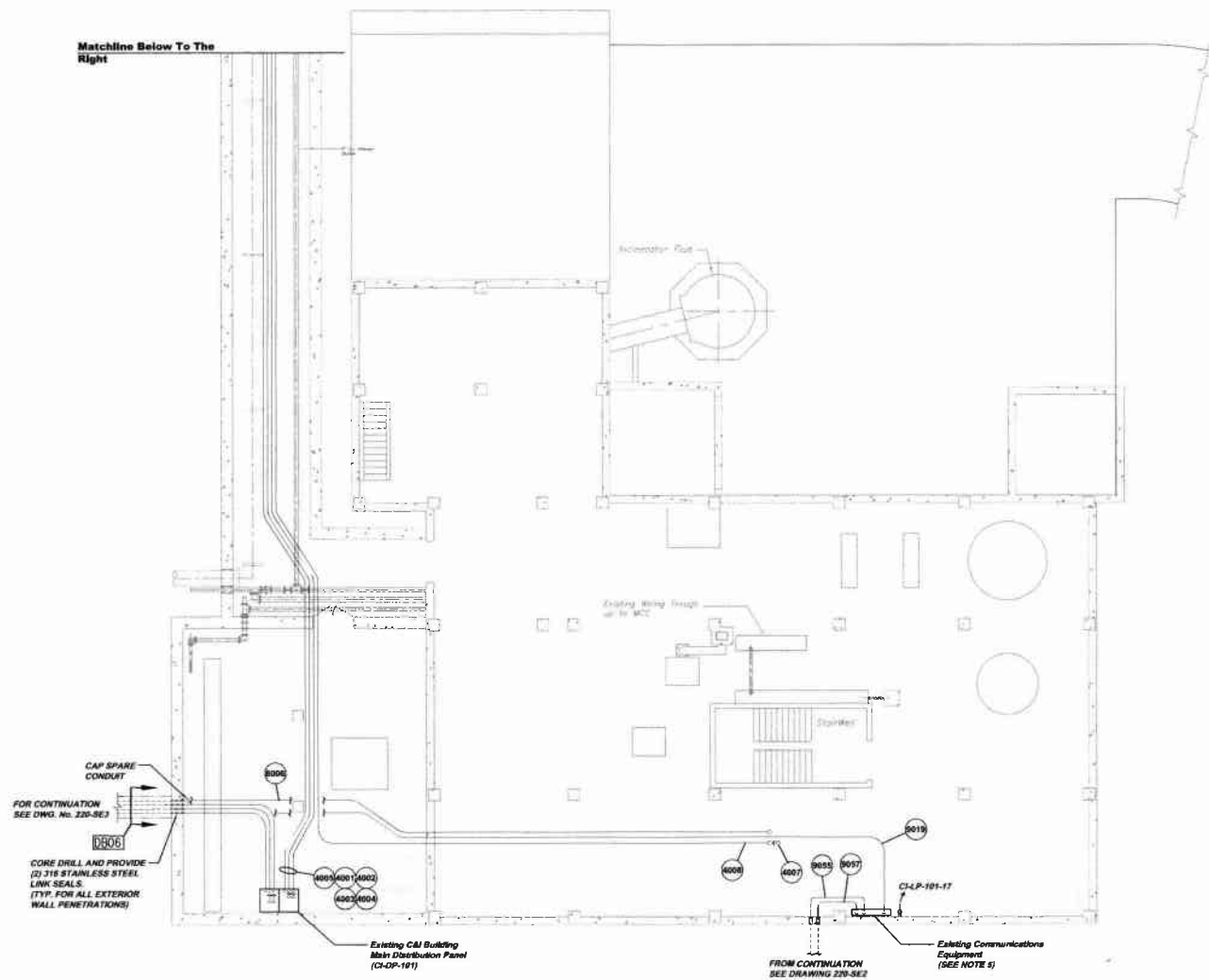
7. SQUARE D MICROLOGIC,
STANDARD SERIES B (REMOVE)
AMPERE RATING: 250A
RATING PLUG: ARP100
CATALOG NO.: L136250

2. THE CONTRACTOR SHALL REPLACE THE EXISTING SURGE PROTECTIVE DEVICE AND DIGITAL POWER METER ON THE EXISTING C&I BUILDING MAIN DISTRIBUTION PANEL. THE CONTRACTOR SHALL INTERROGATE THE EXISTING UNITS AND PROVIDE NEW UNITS WITH THE SAME RATINGS TO FIT IN THE SAME LOCATIONS. ANY AND ALL NECESSARY MODIFICATIONS SHALL BE PERFORMED BY THE CONTRACTOR.

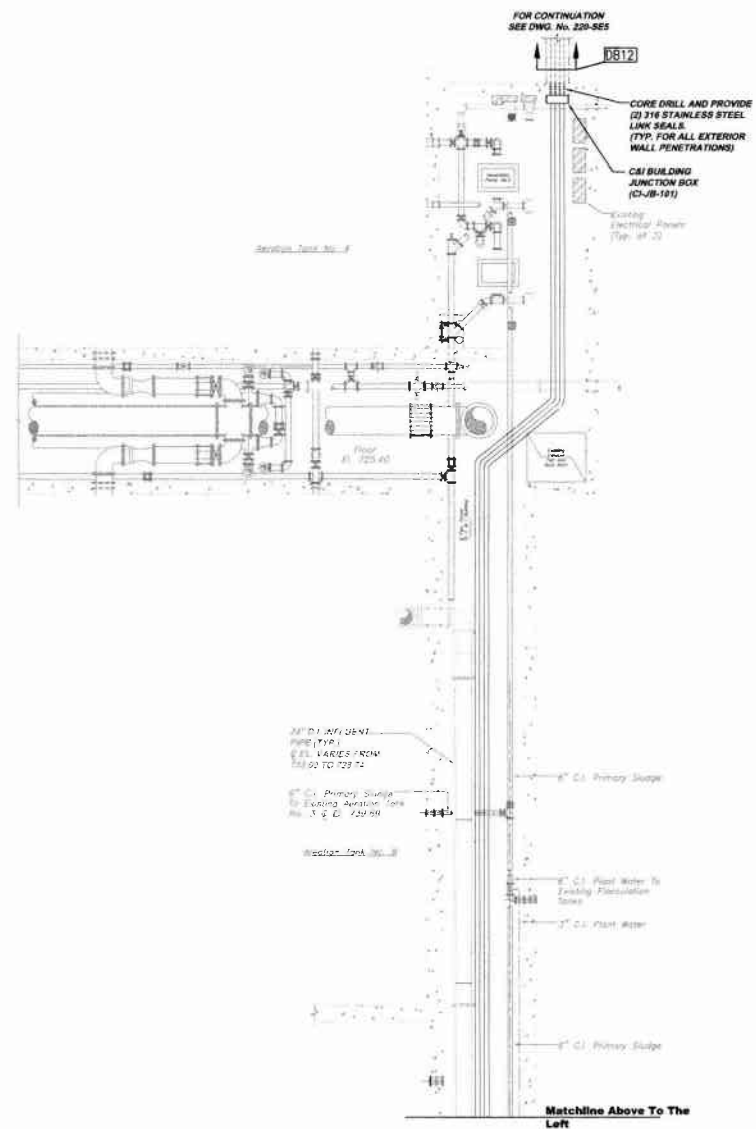
3. CONDUIT NO. 062 SHALL BE A NEW 2" RGS CONDUIT ROUTED BETWEEN THE COMMUNICATIONS EQUIPMENT LOCATED IN THE BASEMENT OF THE C&I BUILDING AND THE NEW SCADA NETWORK RACK IN THE NEW SCADA CONTROL ROOM.

4. MOUNT 1,000 VA UPS AND CABLE MODEM ON CUSTOM WALL BRACKETS. PLUG UPS INTO NEW RECEPTACLE (CIRCUIT, C&I-P-101-17). PLUG CABLE MODEM INTO NEW UPS.

5. ALL NEW TELEPHONE CIRCUITS IN THE C&I BUILDING SHALL BE ROUTED TO THIS AREA. LEAVE APPROXIMATELY 6 FT OF EXCESS CABLED COILED. WIRING WILL BE TERMINATED BY THE OWNER'S TELECOMMUNICATIONS SUPPLIER.



**CONTROL AND INCINERATOR BUILDING
BASEMENT ELECTRICAL PLAN CIE1-A**
SCALE: 1/8" = 1'-0"



Revisions	Date	By	Appr.
RELEASE FOR BID	1-2011		

Scale:	As Shown
Date:	DEC. 2010
Drawn By:	DCW
Checked By:	MM
Approved By:	SLG

Sheet No.	1
Drawing No.	220-CIE1

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KLH ENGINEERS, INC.

**MUNICIPAL AUTHORITY OF THE CITY OF MCKESPORT
ALLEGHENY COUNTY, PENNSYLVANIA
CONTRACT NUMBER 2010-01 AND 2010-02
WASTEWATER TREATMENT PLANT EXPANSION
CONTROL AND INCINERATOR BUILDING BASEMENT ELECTRICAL PLAN**