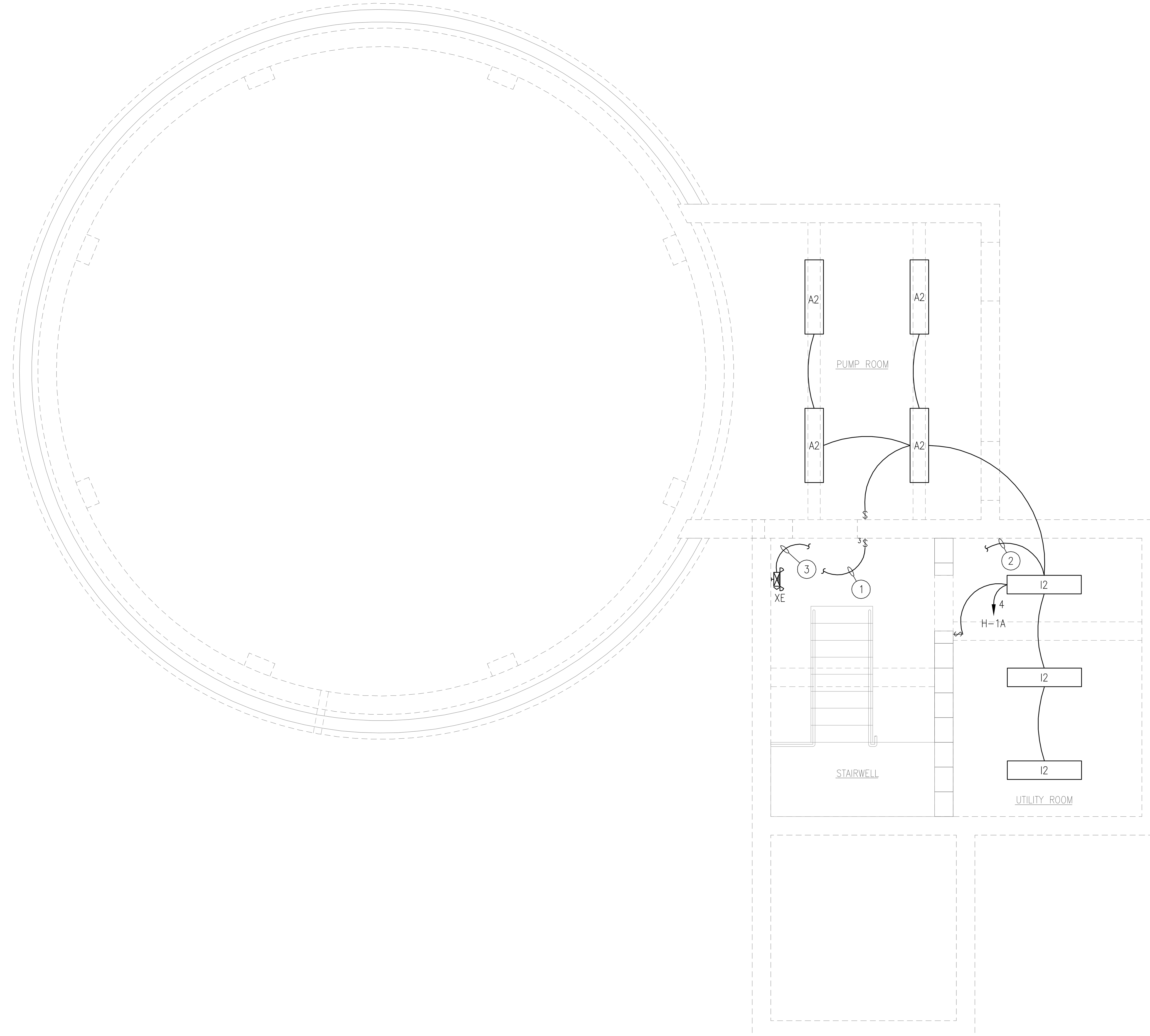

BASEMENT LIGHTING PLAN

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

PLAN NOTES:

1. SWITCH SHALL CONTROL LIGHTING FIXTURE ABOVE. REFER TO 'FIRST FLOOR LIGHTING PLAN' ON DRAWING 'E2'.
2. LIGHTING BRANCH CIRCUIT SHALL CONTINUE TO FIRST FLOOR. REFER TO 'FIRST FLOOR LIGHTING PLAN' ON DRAWING 'E2'.
3. EC SHALL PROVIDE POWER FROM LIGHTING BRANCH CIRCUIT FEEDING STAIRWELL AHEAD OF SWITCHING. REFER TO 'FIRST FLOOR LIGHTING PLAN' ON DRAWING 'E2'.

STATE OF OHIO
TIMOTHY J. NORRIS
E-40336
REGISTERED PROFESSIONAL ENGINEER

REV. NO.	DATE
BID & PERMIT	04\10\14

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WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
BASEMENT LIGHTING PLAN

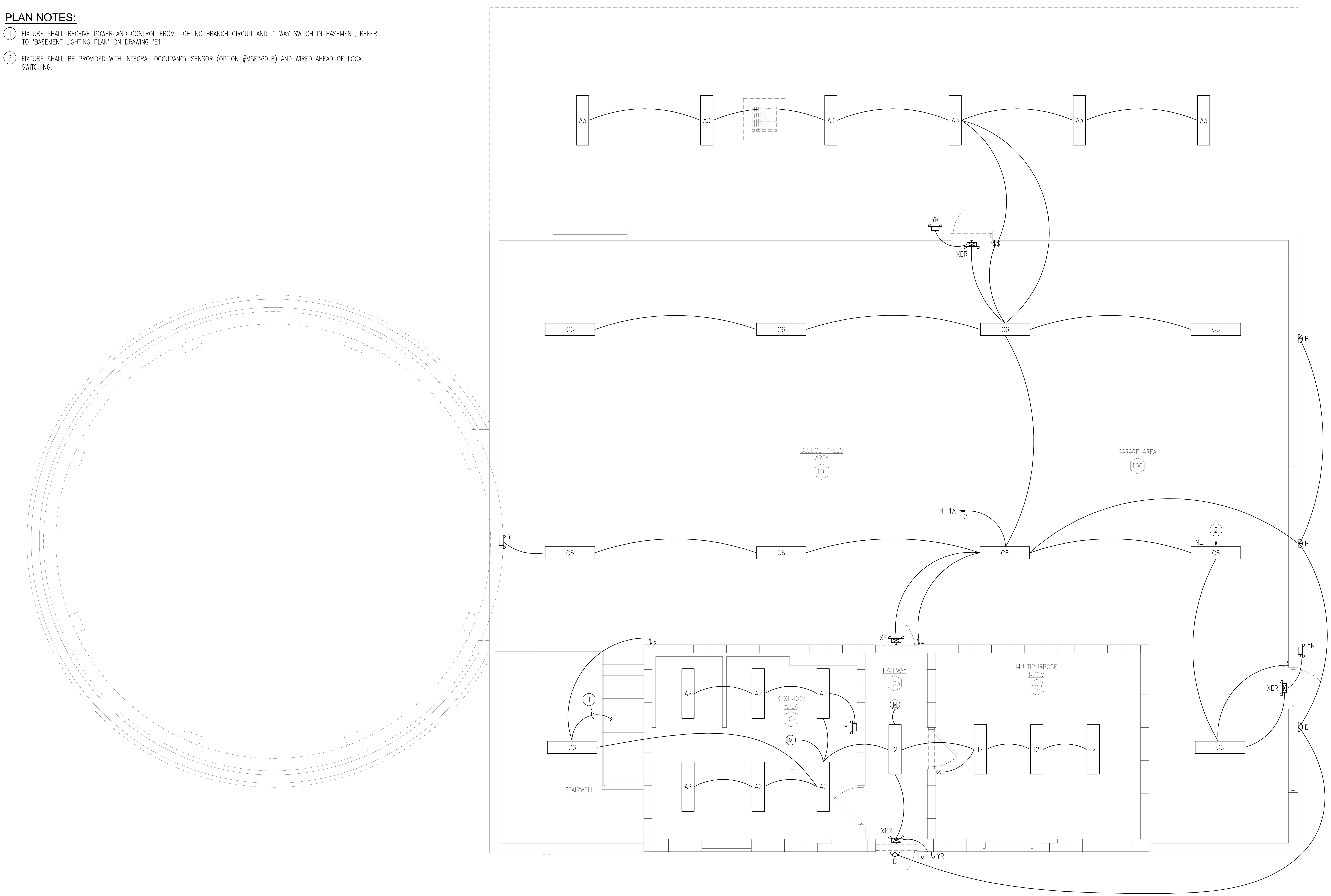
VILLAGE OF CRESTLINE

E1

X

PLAN NOTES:

1. FIXTURE SHALL RECEIVE POWER AND CONTROL FROM LIGHTING BRANCH CIRCUIT AND 3–WAY SWITCH IN BASEMENT, REFER TO 'BASEMENT LIGHTING PLAN' ON DRAWING 'E1'.
2. FIXTURE SHALL BE PROVIDED WITH INTEGRAL OCCUPANCY SENSOR (OPTION #MSE360LB) AND WIRED AHEAD OF LOCAL SWITCHING.



FIRST FLOOR LIGHTING PLAN
SCALE: 1/4" = 1'–0"

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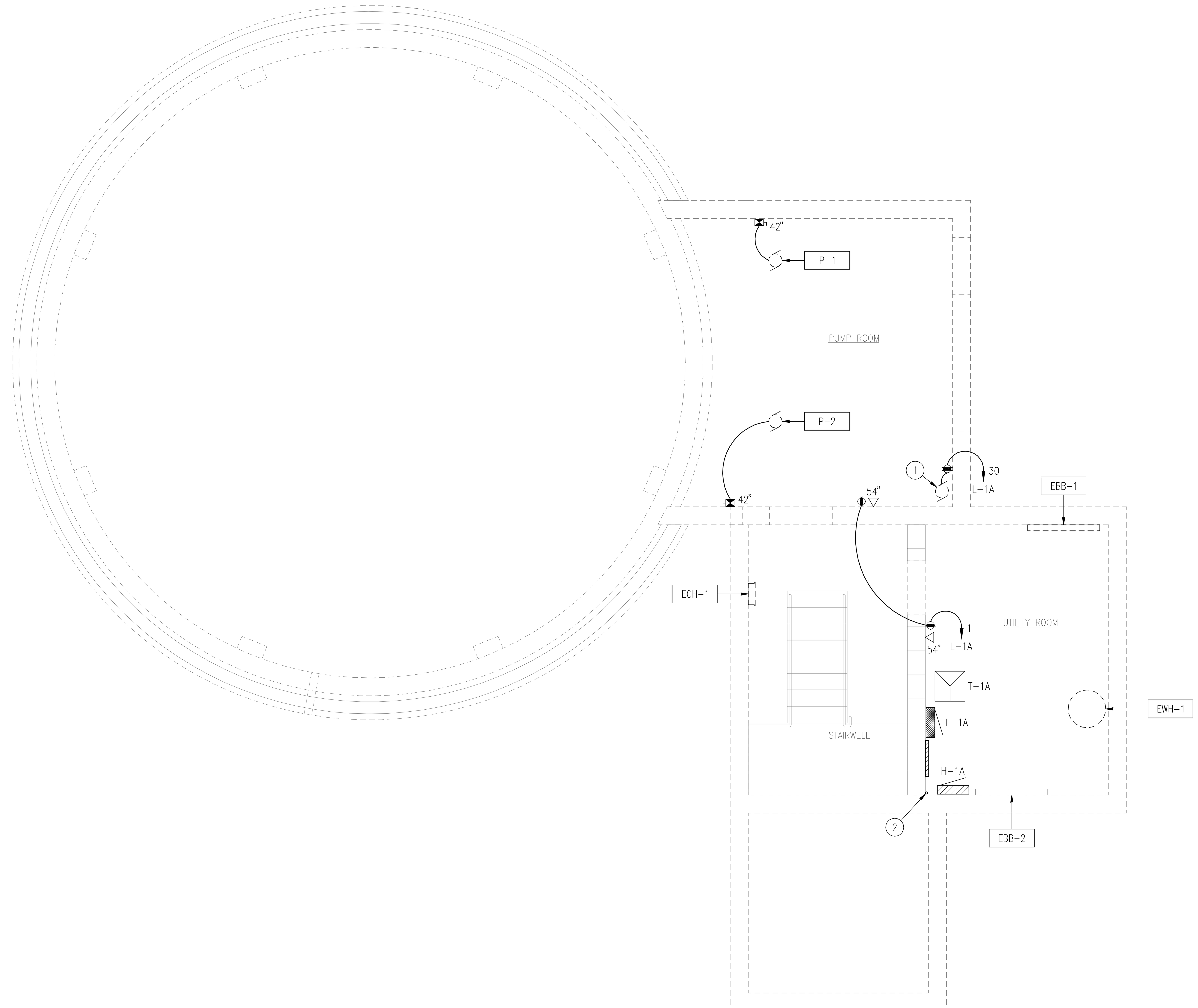
WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
FIRST FLOOR LIGHTING PLAN

VILLAGE OF CRESTLINE

E2
X



BASEMENT POWER & SYSTEMS PLAN

SCALE: 1/4" = 1'–0"

PLAN NOTES:

1. EXISTING SUMP PUMP (120V, ⅓HP) – VERIFY SUMP PUMP PIT LOCATION IN FIELD.
2. TELECOMMUNICATIONS SERVICE ENTRANCE CONDUIT. COORDINATE REQUIREMENTS WITH TELECOMMUNICATIONS SERVICE PROVIDER.

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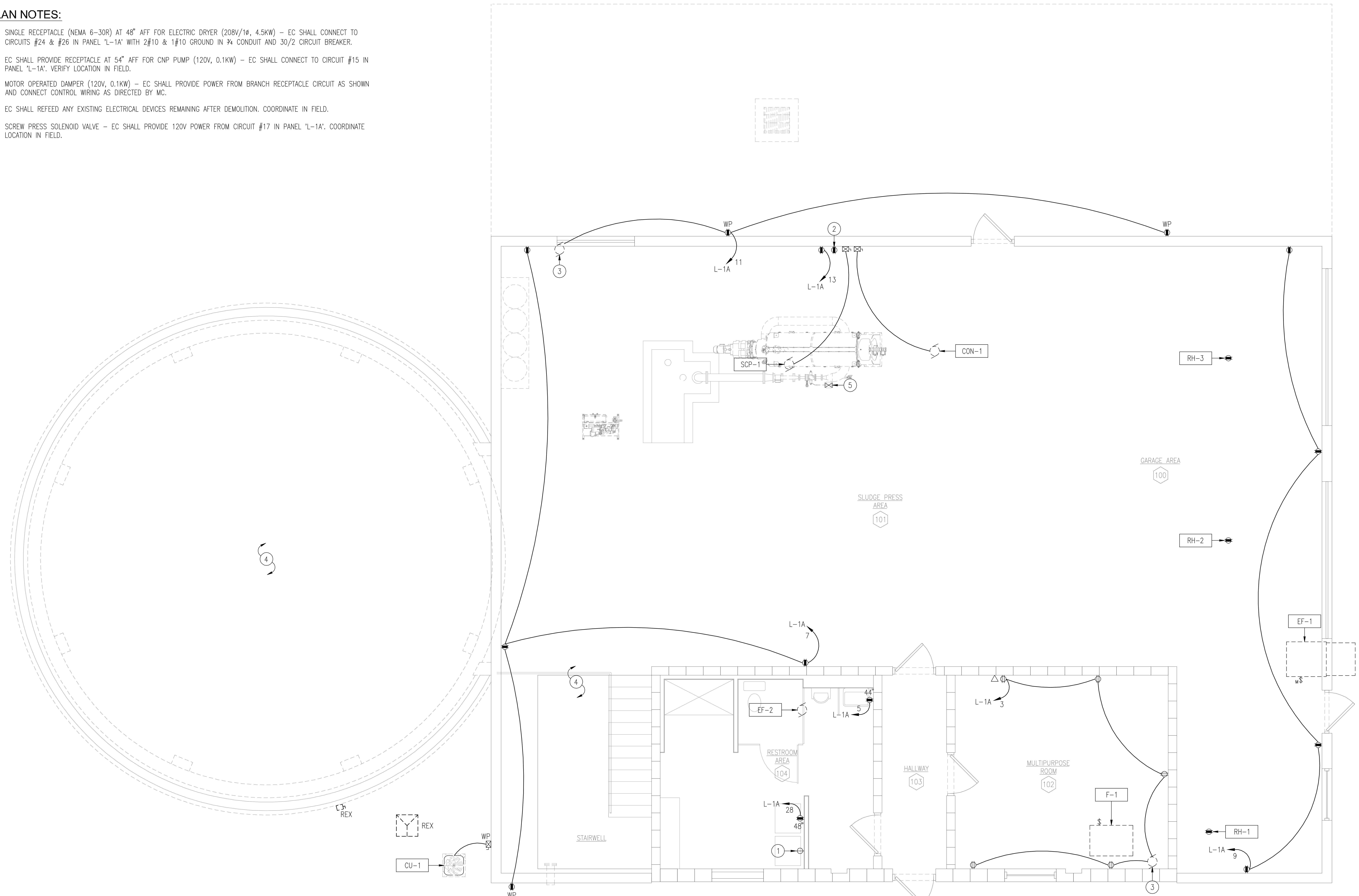
WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
BASEMENT POWER & SYSTEMS PLAN

VILLAGE OF CRESTLINE

E3
X

PLAN NOTES:

1. SINGLE RECEPTACLE (NEMA 6–30R) AT 48" AFF FOR ELECTRIC DRYER (208V/1ø, 4.5KW) – EC SHALL CONNECT TO CIRCUITS #24 & #26 IN PANEL 'L–1A' WITH 2#10 & 1#10 GROUND IN ¾ CONDUIT AND 30/2 CIRCUIT BREAKER.
2. EC SHALL PROVIDE RECEPTACLE AT 54" AFF FOR CNP PUMP (120V, 0.1KW) – EC SHALL CONNECT TO CIRCUIT #15 IN PANEL 'L–1A'. VERIFY LOCATION IN FIELD.
3. MOTOR OPERATED DAMPER (120V, 0.1KW) – EC SHALL PROVIDE POWER FROM BRANCH RECEPTACLE CIRCUIT AS SHOWN AND CONNECT CONTROL WIRING AS DIRECTED BY MC.
4. EC SHALL REFEED ANY EXISTING ELECTRICAL DEVICES REMAINING AFTER DEMOLITION. COORDINATE IN FIELD.
5. SCREW PRESS SOLENOID VALVE – EC SHALL PROVIDE 120V POWER FROM CIRCUIT #17 IN PANEL 'L–1A'. COORDINATE LOCATION IN FIELD.



FIRST FLOOR POWER & SYSTEMS PLAN
SCALE: 1/4" = 1'–0"

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WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
FIRST FLOOR POWER & SYSTEMS PLAN

VILLAGE OF CRESTLINE

E4
X

LIGHTING FIXTURE SCHEDULE

TIMOTHY J. NORRIS & ASSOCIATES

FIXTURE TYPE	LAMP(S)	BALLAST(S)	FIXTURE WATTAGE	FIXTURE VOLTAGE	FIXTURE DESCRIPTION	CATALOG NUMBER	NOTES
A2	(2) 32W T8	(1) E	60	277	FLUORESCENT, 4' LONG, SURFACE MOUNTED FIXTURE WITH HIGH IMPACT FIBERGLASS HOUSING, ACRYLIC DIFFUSER AND WET LOCATION LISTING.	LITHONIA DWM-232-MVOLT-GEB10IS	3
A3	(3) 32W T8	(1) E	90	277	FLUORESCENT, 4' LONG, SURFACE MOUNTED FIXTURE WITH HIGH IMPACT FIBERGLASS HOUSING, ACRYLIC DIFFUSER AND WET LOCATION LISTING.	LITHONIA DWM-332-MVOLT-GEB10IS	3
B	39W LED	NA	40	277	LED, WET LOCATION LISTED, BUILDING MOUNTED FIXTURE WITH DIE-CAST ALUMINUM HOUSING, POLYESTER POWDER FINISH AND INTEGRAL PHOTOCELL.	LITHONIA TWH-LED-10C-T3M-MVOLT-PE	
C6	(6) 32W T8	(2) E	200	277	FLUORESCENT HIGH BAY FIXTURE WITH FORMED STEEL HOUSING, WIDE DISTRIBUTION AND BAKED WHITE ENAMEL FINISH.	LITHONIA IBZ-632-WD	5, 6
I2	(2) 32W T8	(1) E	60	277	FLUORESCENT, 4' LONG INDUSTRIAL FIXTURE WITH DIE-FORMED COLD ROLLED STEEL HOUSING, REFLECTOR AND CHANNEL COVER AND HIGH-GLOSS, BAKED WHITE ENAMEL FINISH.	LITHONIA L232-MV	4
XE	5W LED (2) 5W INC	NA	15	120	COMBINATION INCANDESCENT EMERGENCY LIGHTING UNIT/LED EXIT SIGN WITH FACES, ARROWS AND MOUNTING AS INDICATED ON DRAWINGS, 6" HIGH RED LETTERS, WHITE THERMOPLASTIC HOUSING, LEAD-CADMIUM BATTERY, BATTERY CHARGER, TEST SWITCH, INDICATOR LIGHT AND (2) ADJUSTABLE LAMP HEADS.	LITHONIA LHQM-S-W-3-R	1, 7, 2, 3
XER	5W LED (2) 5W INC	NA	15	120	COMBINATION INCANDESCENT EMERGENCY LIGHTING UNIT/LED EXIT SIGN WITH FACES, ARROWS AND MOUNTING AS INDICATED ON DRAWINGS, 6" HIGH RED LETTERS, WHITE THERMOPLASTIC HOUSING, HIGH OUTPUT LEAD-CALCIUM BATTERY WITH REMOTE COMPACITY, BATTERY CHARGER, TEST SWITCH, INDICATOR LIGHT AND (2) ADJUSTABLE LAMP HEADS.	LITHONIA LHQM-S-W-3-R-HO	1, 7, 2, 3
Y	(2) 6W INC	NA	15	120	INCANDESCENT EMERGENCY LIGHTING UNIT WITH THERMOPLASTIC HOUSING, LEAD-CALCIUM BATTERY, BATTERY CHARGER, TEST SWITCH, INDICATOR LIGHT AND (2) ADJUSTABLE LAMP HEADS.	LITHONIA ELM2	1, 7, 2, 3
YR	(2) 6W HAL	NA	15	120	HALOGEN INCANDESCENT REMOTE EMERGENCY LIGHTING UNIT WITH THERMOPLASTIC HOUSING AND (2) ADJUSTABLE LAMP HEADS.	LITHONIA ELA-W-T-NX-H0606	1, 7, 2, 3

LIGHTING FIXTURE SCHEDULE NOTES:

1. WALL MOUNTED EXIT SIGNS AND EMERGENCY LIGHTING UNITS SHALL BE MOUNTED ABOVE DOORS, CENTERED BETWEEN DOOR AND CEILING WHERE PRACTICAL, OR AT A SIMILAR HEIGHT IF NOT ABOVE DOORS, UON.
2. FIXTURE SHALL BE WIRED AHEAD OF LOCAL SWITCHING.
3. VERIFY FINISH COLOR WITH ARCHITECT PRIOR TO PROCUREMENT.
4. EC SHALL MOUNT FIXTURE TO SURFACE OF CEILING.
5. FIXTURE SHALL BE HUNG NEAR CEILING. COORDINATE WITH OWNER.
6. FIXTURE SHALL PROVIDED WITH (1) 2-LAMP BALLAST & (1) 4-LAMP BALLAST.
7. EC SHALL AIM FIXTURES FOR OPTIMUM COVERAGE OF TASK AS DIRECTED IN FIELD BY ARCHITECT.

LIGHTING FIXTURE SCHEDULE KEY:

LAMP TYPE:
LED = LIGHT EMITTING DIODE
T8 = STANDARD LINEAR FLUORESCENT

BALLAST TYPE:
E = ELECTRICAL
NA = NOT APPLICABLE

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
	HOMERUN TO A 20 AMPERE, SINGLE POLE CIRCUIT BREAKER (PANEL 'A' CIRCUIT NUMBER '1'), UON. PROVIDE QUANTITY OF CONDUCTORS TO ACCOMMODATE CIRCUITING AND CONTROL INDICATED.
	CONDUIT TURNED UP
	CONDUIT INSTALLED BELOW GRADE OR BELOW FINISHED FLOOR
$	SWITCH (20A, 120/277V, SINGLE POLE) AT 48" AFF, UON ('3' = THREE-WAY, '4' = FOUR-WAY, 'M' = MANUAL MOTOR CONTROLLER)
	LIGHTING CONTROL OCCUPANCY SENSOR – CEILING MOUNTED
	DUPLEX RECEPTACLE (20A, 125V) AT 18" AFF, UON
	DUPLEX RECEPTACLE (20A, 125V) GROUND FAULT CIRCUIT INTERRUPTER TYPE AT 18" AFF, UON, IF INDOOR, AND AT 24" AFG, UON, IF OUTDOOR ('WP' = WEATHERPROOF)
	SPECIAL PURPOSE SINGLE RECEPTACLE – NEMA CONFIGURATION AND HEIGHT AS INDICTED ON DRAWINGS.
	JUNCTION BOX – MOUNTING HEIGHT AND SIZE AS REQUIRED BY CODE OR AS NOTED ON DRAWINGS
	PANELBOARD (208Y/120V, 3ø, 4 WIRE)
	PANELBOARD (480Y/227V, 3ø, 4 WIRE)
	NON-FUSED DISCONNECT SWITCH – SIZE AS INDICATED
	COMBINATION MAGNETIC MOTOR STARTER/DISCONNECT SWITCH – FUSING AS INDICATED
	FUSED DISCONNECT SWITCH – SIZE AND FUSING AS INDICATED
	TRANSFORMER
	UTILITY POLE
	UTILITY POLE WITH STREET LIGHT
	SINGLE OR THREE PHASE MOTOR – SEE DRAWINGS FOR DESCRIPTION
M-1	ELECTRICAL CONNECTION TO EQUIPMENT ITEM 'M-1' (LETTER DESIGNATION AS APPLICABLE) – REFER TO 'EQUIPMENT CONNECTION SCHEDULE' ON DRAWING 'E6'
	VOICE/DATA ROUGH-IN OUTLET BOX AT 18" AFF, UON
	TELECOMMUNICATIONS BACKBOARD

ELECTRICAL ABBREVIATIONS

ABBREVIATION	DESCRIPTION
A	AMPERES
AF	AMP FUSED
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AS	AMP SWITCH
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
AWG	AMERICAN WIRE GAUGE
C.	CONDUIT
C/B	CIRCUIT BREAKER
DWG.	DRAWING
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRICAL METALLIC TUBING
ETR	EXISTING ELECTRICAL DEVICE TO REMAIN – MAINTAIN DURING DEMOLITION
EXT	EXTERIOR
FLA	FULL LOAD AMPS
G.	GROUND
GC	GENERAL CONTRACTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER – PERSON PROTECTION
HP	HORSEPOWER
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
KAIC	KILOAMPERES INTERRUPTING CURRENT RATING
KW	KILOWATTS
LTG	LIGHTING
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MOD	MOTOR OPERATOR DAMPER
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NL	NIGHT LIGHT WIRED AHEAD OF LOCAL LIGHTING CONTROL
OBC	OHIO BUILDING CODE
P	POLE
PC	PLUMBING CONTRACTOR
REC	RECEPTACLE
REX	REMOVE EXISTING ELECTRICAL DEVICE ALONG WITH RELATED CONDUIT AND WIRING, UON
TB	TELECOMMUNICATIONS BACKBOARD
UON	UNLESS OTHERWISE NOTED
V	VOLTS
W	WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER
ø	PHASE

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WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
ELECTRICAL SCHEDULES AND LEGENDS

VILLAGE OF CRESTLINE

E5
X

EQUIPMENT CONNECTION SCHEDULE

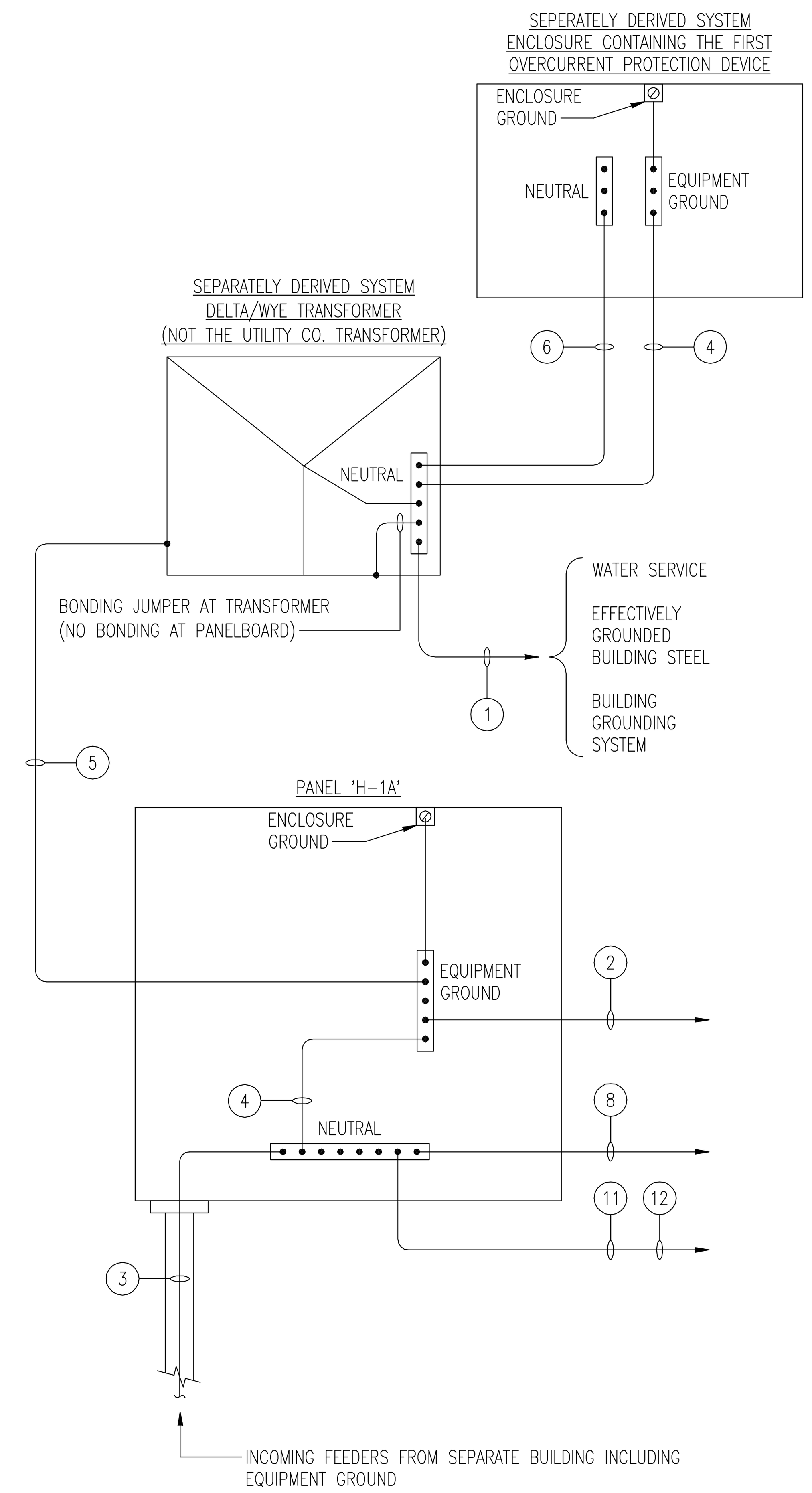
LOCATION	NO.	DESCRIPTION	VOLTAGE	ø	HP	FLA	KW	CONN.	CONDUIT AND WIRE SIZE	PANEL	CKT. NO.	C/B	
EXTERIOR	B-1	BLOWER	480	3	40	52.0	43.2	DC	4#2 & 1#8G., 1½"C.	H-1A	7,9,11	80/3	(5)
EXTERIOR	B-2	BLOWER	480	3	40	52.0	43.2	DC	4#2 & 1#8G., 1½"C.	H-1A	7,9,11	80/3	(5)
SLUDGE AREA 101	CON-1	CONVEYOR	480	3	2	3.4	2.8	FDS	4#12 & 1#12G., ¾"C.	H-1A	13,15 17	15/3	30AS/8AF
EXTERIOR	CU-1	AIR COOLED CONDENSING UNIT	208	1	–	10.0	2.1	FDS	2#12 & 1#12G., ¾"C.	L-1A	2,4	20/2	30AS/20AF
STORAGE	EBB-1	ELECTRIC BASEBOARD HEATER	120	1	–	8.3	1.0	DC	2#12 & 1#12G., ¾"C.	L-1A	8	20/1	(2)
STORAGE	EBB-2	ELECTRIC BASEBOARD HEATER	120	1	–	8.3	1.0	DC	2#12 & 1#12G., ¾"C.	L-1A	10	20/1	(2)
STAIRWELL	ECH-1	ELECTRIC CABINET HEATER	208	1	–	14.4	3.0	DC	2#12 & 1#12G., ¾"C.	L-1A	12,14	20/2	(3)
GARAGE AREA 100	EF-1	EXHAUST FAN	120	1	¼	5.8	0.7	MM	2#12 & 1#12G., ¾"C.	L-1A	20	20/1	
RESTROOM	EF-2	EXHAUST FAN	120	1	–	0.8	0.1	LS	2#12 & 1#12G., ¾"C.	L-1A	22	20/1	(1)
STORAGE	EWH-1	ELECTRIC WATER HEATER	480	3	–	6.0	5.0	DC	3#12 & 1#12G., ¾"C.	H-1A	19,21 23	15/3	
MULTI-PURP 102	F-1	FURNACE	120	1	–	5.0	0.6	TS	2#12 & 1#12G., ¾"C.	L-1A	6	20/1	
PUMP AREA	P-1	PUMP	480	3	2	3.4	2.8	MS	4#12 & 1#12G., ¾"C.	H-1A	25,27 29	15/3	30AS/8AF
PUMP AREA	P-2	PUMP	480	3	2	3.4	2.8	MS	4#12 & 1#12G., ¾"C.	H-1A	31,33 35	15/3	30AS/8AF
GARAGE AREA 100	RH-1	RADIANT HEATER	120	1	–	5.0	0.6	DR	2#12 & 1#12G., ¾"C.	L-1A	16	20/1	(4)
GARAGE AREA 100	RH-2	RADIANT HEATER	120	1	–	5.0	0.6	DR	2#12 & 1#12G., ¾"C.	L-1A	16	20/1	(4)
GARAGE AREA 100	RH-3	RADIANT HEATER	120	1	–	5.0	0.6	DR	2#12 & 1#12G., ¾"C.	L-1A	18	20/1	(4)
SLUDGE AREA 101	SCP-1	SCREW PRESS	480	3	2	3.4	2.8	FDS	4#12 & 1#12G., ¾"C.	H-1A	37,39 41	15/3	30AS/8AF

EQUIPMENT CONNECTION SCHEDULE NOTES:

1. UNIT SHALL RECEIVE CONTROL WITH LIGHTING IN SAME ROOM VIA LIGHTING CONTRACTOR. VERIFY CONTROL WITH ARCHITECT.
2. EC SHALL PROVIDE MARKEL #E2910-048S OR EQUAL WITH INTEGRAL THERMOSTAT OR APPROVED EQUAL SHALL BE FURNISHED AND INSTALLED BY EC.
3. MARKEL #HF3326TD-RP OR EQUAL WITH INTEGRAL THERMOSTAT AND DISCONNECT SWITCH SHALL BE FURNISHED AND INSTALLED BY EC.
4. RECEPTACLE SHALL BE MOUNTED TO STRUCTURAL MEMBER ON CEILING – COORDINATE IN FIELD.
5. NON-SIMULTANEOUS PUMPS SHALL RECEIVE POWER VIA CONTROLLER FURNISHED BY OTHERS. EC SHALL VERIFY SINGLE POINT POWER CONNECTION, LOCAL DISCONNECT AND THERMAL OVERLOAD PROTECTION WITH SYSTEM SUPPLIER.

EQUIPMENT CONNECTION KEY:

DC: DIRECT CONNECTION
DR: DEDICATED RECEPTACLE
FDS: FUSED DISCONNECT SWITCH SIZED IN SCHEDULE NOTES
LS: LIGHT SWITCH
MM: MANUAL MOTOR CONTROLLER
MS: COMBINATION MAGNETIC MOTOR STARTER/DISCONNECT SWITCH
TS: TOGGLE SWITCH



SERVICE GROUNDING ELECTRODE SYSTEM WIRING DIAGRAM

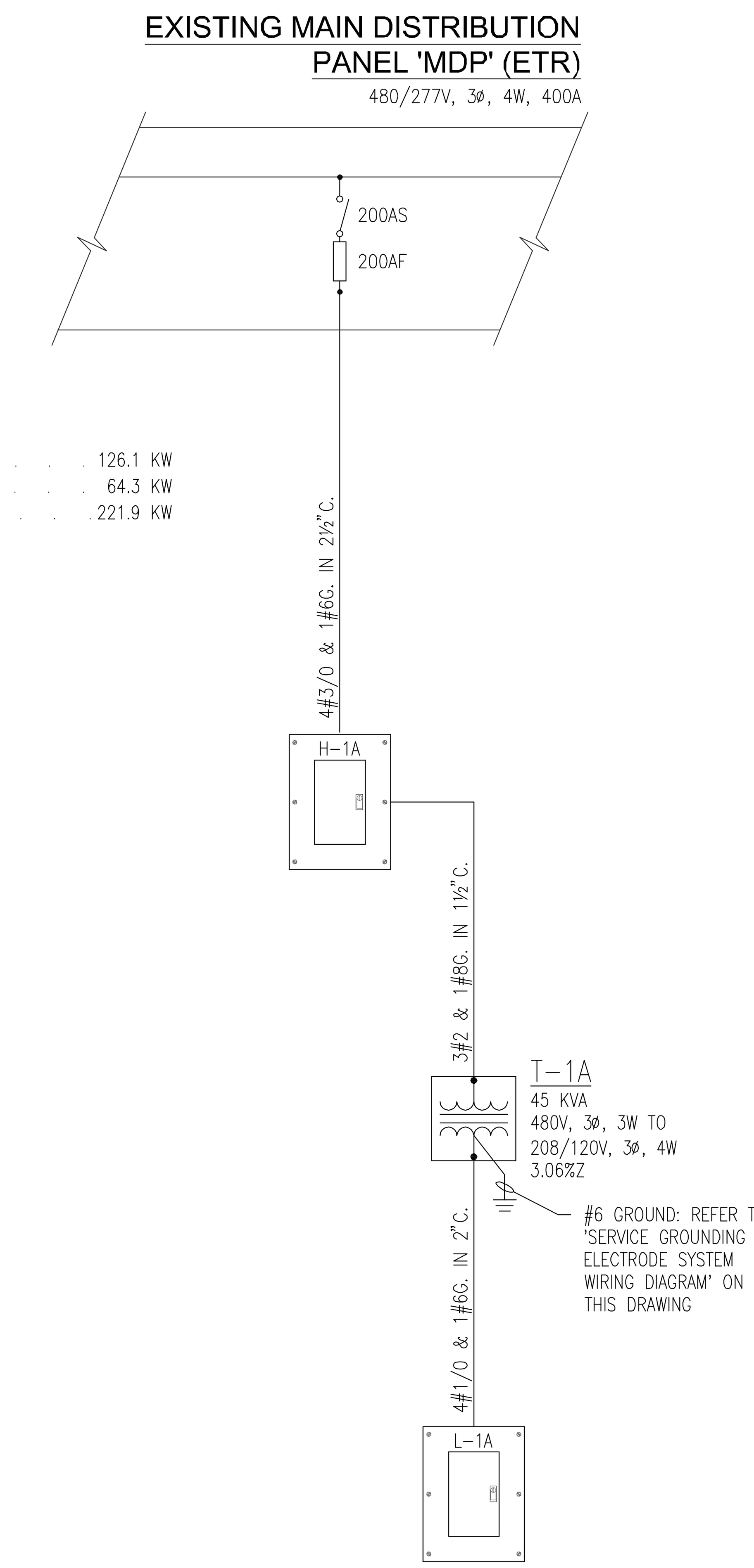
SCALE: NONE

NOTES:

1. THE GROUNDING ELECTRODE CONDUCTORS SHALL BE #6 PER TABLE 250.66 OF THE NEC. THE CONDUCTOR SHALL BE CONNECTED TO AN APPROVED GROUNDING ELECTRODE.
2. GROUND CONDUCTORS TO OTHER POINTS AND EQUIPMENT, AS REQUIRED BY NEC ARTICLE 250 AND SPECIFICATIONS SECTION 16050.
3. SERVICE ENTRANCE PHASE CONDUCTORS WITH GROUNDED (NEUTRAL) CONDUCTOR.
4. MAIN BONDING JUMPER SHALL BE #6 PER TABLE 250.66 OF THE NEC.
5. EQUIPMENT GROUND CONDUCTOR FOR SEPARATELY DERIVED SYSTEM. SIZE PER NEC TABLE 250.122.
6. GROUNDED (NEUTRAL) CONDUCTOR.
7. BONDING CONDUCTOR SHALL BE #6 PER TABLE 250.66 OF THE NEC.
8. GROUND CONDUCTOR TO TELECOMMUNICATIONS MAIN GROUNDING BUSBAR – SIZED PER TECHNOLOGY SYSTEM SUPPLIER REQUIREMENTS, #6 MINIMUM.
9. GROUND ROD ELECTRODE – PROVIDE #6 AWG COPPER GROUNDING ELECTRODE CONDUCTOR, PER NEC 250.66(A).
10. CONNECTION SHALL BE MADE WITHIN 5' OF BUILDING ENTRANCE PER NEC 250.52(A)(1)
11. METAL WATER PIPING AND STRUCTURAL STEEL NOT INTENTIONALLY GROUNDED SHALL BE BONDED PER NEC 250.104 AND NEC TABLE 250.66.
12. OTHER METAL PIPING (GAS, ETC.) SHALL BE BONDED PER NEC 250.104 AND NEC TABLE 250.122.

SERVICE LOAD SUMMARY

EXISTING LOAD (FROM ELECTRIC BILLS)	126.1 KW
NEW LOAD ADDED TO BUILDING	64.3 KW
NEW CALCULATED LOAD 125% OF EXISTING + LOAD ADDED	221.9 KW



ONE LINE POWER DIAGRAM

SCALE: NONE

ONE LINE POWER DIAGRAM SYMBOL LEGEND

SYMBOL	DESCRIPTION
	METER AND CT CABINET
	FUSED DISCONNECT SWITCH
	TRANSFORMER
	BRANCH PANELBOARD
	GROUND

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WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
ELECTRICAL SCHEDULES AND DIAGRAMS

VILLAGE OF CRESTLINE

E6
X

BRANCH CIRCUIT BREAKER PANEL SCHEDULE

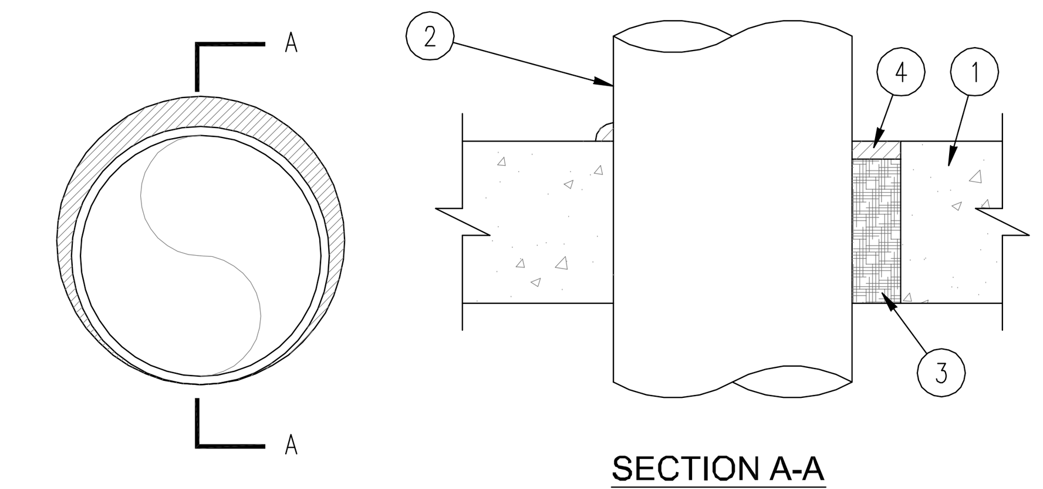
PANEL:	H-1A	BUSSING:	200A
VOLTAGE:	480/277V, 3P, 4W	MAIN DEVICE:	200A MCA
MOUNTING:	SURFACE	CONNECTED LOAD:	84.6 KW
BRACING:	18 KAIC	DEMAND LOAD:	64.3 KW

CKT	DESCRIPTION	LTG	REC	DATA	HVAC	MISC	C/B	PH	C/B	MISC	HVAC	DATA	REC	LTG	DESCRIPTION	CKT
1			1.5		3.6	3.0		A	20/1					2.5	GARAGE,SLUDGE,EXTERIOR	2
3	PANEL 'L-1A'		1.6		3.3	1.1	80/3	B	20/1					1.2	MULTI, RR,HALL,BASEMENT	4
5			0.6		2.7	3.2		C	20/1						SPARE	6
7						14.4		A		0.4						8
9	B-1 & B-2					14.4	80/3	B	15/3	0.4					GATE MOTOR	10
11						14.4		C		0.4						12
13						0.9		A							SPACE	14
15	CON-1					0.9	15/3	B							SPACE	16
17						0.9		C							SPACE	18
19						1.7		A							SPACE	20
21	EWH-1					1.7	15/3	B							SPACE	22
23						1.7		C							SPACE	24
25						0.9		A							SPACE	26
27	P-1					0.9	15/3	B							SPACE	28
29						0.9		C							SPACE	30
31						0.9		A							SPACE	32
33	P-2					0.9	15/3	B							SPACE	34
35						0.9		C							SPACE	36
37						0.9		A							SPACE	38
39	SCP-1					0.9	15/3	B							SPACE	40
41						0.9		C							SPACE	42

BRANCH CIRCUIT BREAKER PANEL SCHEDULE

PANEL:	L-1A	BUSSING:	150A
VOLTAGE:	208/120V, 3P, 4W	MAIN DEVICE:	150A MCB
MOUNTING:	SURFACE	CONNECTED LOAD:	20.6 KW
BRACING:	22 KAIC	DEMAND LOAD:	18.4 KW

CKT	DESCRIPTION	LTG	REC	DATA	HVAC	MISC	C/B	PH	C/B	MISC	HVAC	DATA	REC	LTG	DESCRIPTION	CKT
1	UTILITY, PUMP RM.		0.4				20/1	A	20/2		1.1				CU-1	2
3	MULTI-PURPOSE RM.		0.9			0.1	20/1	B			1.1					4
5	RESTROOM		0.2				20/1	C	20/1		0.6				F-1	6
7	SLDGE PRESS AREA, EXT.		0.7				20/1	A	20/1		1.0				EBB-1	8
9	GARAGE AREA		0.7				20/1	B	20/1		1.0				EBB-2	10
11	SLDGE PRESS AREA		0.4			0.1	20/1	C	20/2		1.5				ECH-1	12
13	CNP PUMP		0.2				20/1	A			1.5					14
15	EXTERIOR					0.1	20/1	B	20/1		1.2				RH-1 &RH-2	16
17	SCREW PRESS SOLENOID					0.1	20/1	C	20/1		0.6				RH-3	18
19	EXTERIOR		0.2				20/1	A	20/1	0.7					EF-1	20
21	SPARE						20/1	B	20/1	0.1					EF-2	22
23	SPARE						20/1	C	30/2	2.3					DRYER	24
25	SPARE						20/1	A		2.3						26
27	SPARE						20/1	B	20/1	0.8					WASHER	28
29	SPARE						20/1	C	20/1	0.7					SUMP PUMP	30
31	SPARE						20/1	A							SPACE	32
33	SPARE						20/1	B							SPACE	34
35	SPARE						20/1	C							SPACE	36
37	SPARE						20/1	A							SPACE	38
39	SPARE						20/1	B							SPACE	40
41	SPARE						20/1	C							SPACE	42



SECTION A-A

FIRESTOP DETAIL - METAL PIPE 2 HOUR CONCRETE FLOOR/WALL SYSTEM NO C-AJ-1435

SCALE: NONE

F-RATING = 2HR.
T-RATING = 0HR.

NOTES:

(1) FLOOR OR WALL ASSEMBLY – MINIMUM 4½" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAXIMUM DIAMETER OF OPENING IS 8".

(2) THROUGH PENETRANTS – ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED CONCENTRICALLY OR ECCENTRICALLY WITHIN FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR ASSEMBLY. THE ANNULAR SPACE BETWEEN PIPE CONDUIT OR TUBING AND THE PERIPHERY OF THE OPENING SHALL BE MINIMUM 0" (POINT OF CONTACT) TO MAXIMUM 1⅞". THE FOLLOWING TYPES OF PIPE, CONDUIT OR TUBING MAY BE USED:

A. STEEL PIPE – NOMINAL 30" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

B. IRON PIPE – NOMINAL 30" DIAMETER (OR SMALLER) CAST OR DUCTILE IRON PIPE.

C. CONDUIT – NOMINAL 6" DIAMETER (OR SMALLER) RIGID STEEL CONDUIT.

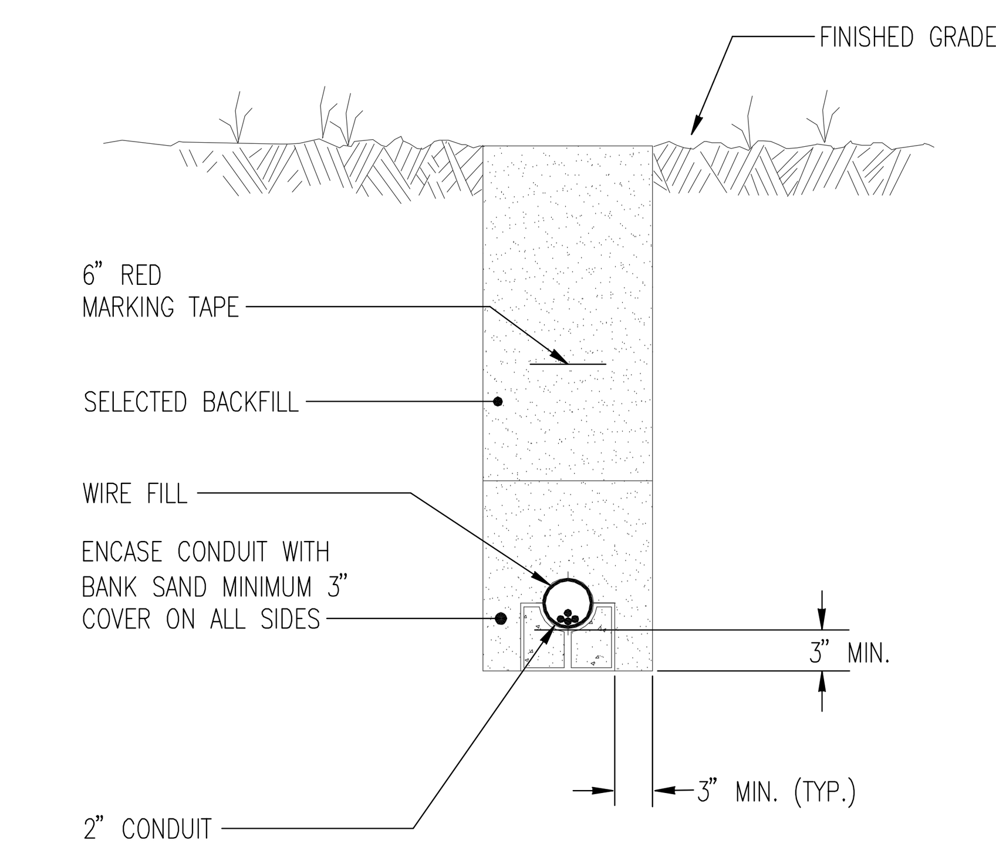
D. CONDUIT – NOMINAL 4" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC CONDUIT.

E. COPPER TUBING – NOMINAL 6" DIAMETER (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.

F. COPPER PIPE – NOMINAL 6" DIAMETER (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

(3) PACKING MATERIAL – MINIMUM 2" THICKNESS OF MINIMUM 4.0 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.

(4) FILL, VOID OR CAVITY MATERIALS – SEALANT SHALL BE MINIMUM 1½" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.

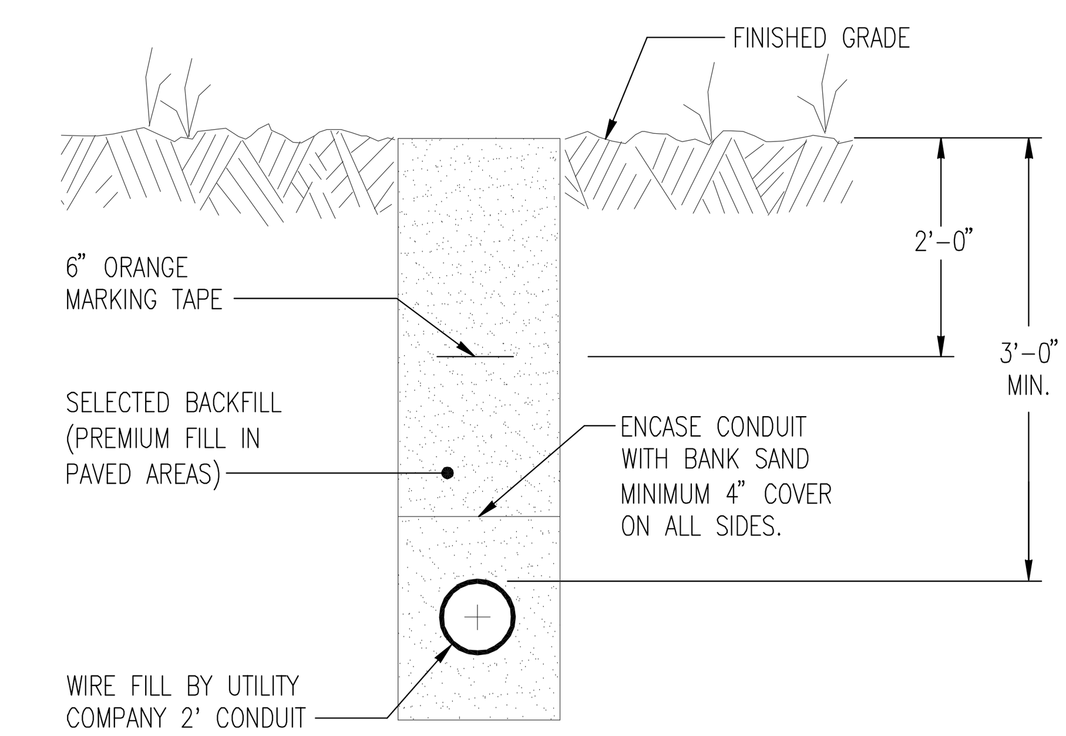


DUCT BANK DETAIL

SCALE: NONE

NOTES:

1) MINIMUM SEPARATION BETWEEN CONDUITS SHALL BE 3".
2) CONCRETE ENCASE CONDUITS UNDER ROADWAYS.
3) REFER TO 'ONE LINE POWER DIAGRAM' ON DRAWING 'E6' FOR WIRE FILL.

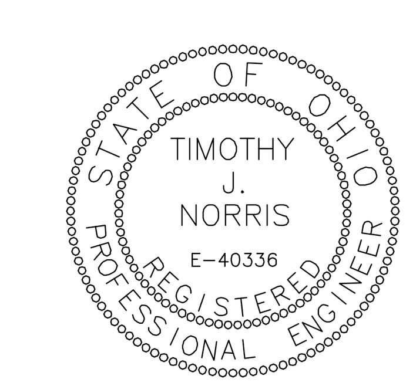


TELECOMMUNICATIONS UNDERGROUND RACEWAY DETAIL

SCALE: NONE

NOTES:

1) MINIMUM SEPARATION BETWEEN CONDUITS SHALL BE 3".
2) CONCRETE ENCASE CONDUITS UNDER ROADWAYS.



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consulting engineers

WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
ELECTRICAL SCHEDULES AND DIAGRAMS

VILLAGE OF CRESTLINE

E7
X

ELECTRICAL SPECIFICATIONS

ELECTRICAL GENERAL PROVISIONS

1. THE PROVISIONS OF THE INSTRUCTIONS TO BIDDERS, GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, ALTERNATES, ADDENDA AND DIVISION 1 ARE A PART OF THIS SPECIFICATION. ELECTRICAL, ARCHITECTURAL, MECHANICAL AND ALL OTHER DRAWINGS AS WELL AS THE SPECIFICATIONS FOR ALL THE DIVISIONS SHALL BE DEFINED AS THE CONTRACT DOCUMENTS. CONTRACTOR SHALL REVIEW ENTIRE SET OF CONTRACT DOCUMENTS PRIOR TO BIDDING.

2. VISIT THE SITE OF THE WORK AND BECOME FAMILIAR WITH THE CONDITIONS AFFECTING THE INSTALLATION. THIS CONTRACTOR SHALL FIELD VERIFY THAT ALL ELECTRICAL WORK CAN BE INSTALLED AS SHOWN ON THE DRAWINGS. ANY DISCREPENCY SHALL BE COMMUNICATED IN WRITING TO THE ARCHITECT OR ENGINEER PRIOR TO SUBMISSION OF A PROPOSAL. SUBMISSION OF A PROPOSAL SHALL PRESUPPOSE KNOWLEDGE OF SUCH CONDITIONS AND NO ADDITIONAL COMPENSATION SHALL BE ALLOWED WHERE EXTRA LABOR OR MATERIALS ARE REQUIRED BECAUSE OF IGNORANCE OF THESE CONDITIONS.

3. "CONTRACTOR" AS USED WITHIN THE CONTEXT OF THE ELECTRICAL CONTRACT DOCUMENTS SHALL EXPLICITLY REFER TO THE "ELECTRICAL CONTRACTOR" AND THE ELECTRICAL CONTRACTOR'S "SUBCONTRACTORS". THE TERM "FURNISH" SHALL MEAN TO SUPPLY AND DELIVER TO THE PROJECT SITE, READY FOR UNLOADING, UNPACKING, ASSEMBLY, INSTALLATION, AND SIMILAR OPERATIONS. THE TERM "INSTALL" SHALL MEAN WORK WHICH INCLUDES THE ACTUAL UNLOADING, UNPACKING, ASSEMBLY, ERECTING, PLACING, ANCHORING, APPLYING, WORKING TO DIMENSION, FINISHING, CURING, PROTECTING, CLEANING, AND SIMILAR OPERATIONS. THE TERM "PROVIDE" SHALL MEAN TO FURNISH AND INSTALL, COMPLETE AND READY FOR THE INTENDED USE. THE TERM "EQUAL" SHALL MEAN TO MEET OR EXCEED THE STANDARDS OF THE SPECIFIED PRODUCTS OR LISTED MANUFACTURERS.

4. INCLUDE ALL LABOR, MATERIAL, EQUIPMENT, SERVICES AND PERMITS NECESSARY FOR THE PROPER COMPLETION OF ALL ELECTRICAL WORK SHOWN. ITEMS OMITTED, BUT NECESSARY TO MAKE THE ELECTRICAL SYSTEM COMPLETE AND WORKABLE, SHALL BE UNDERSTOOD TO FORM PART OF THE WORK. SECURE AND PAY FOR PERMITS AND INSPECTIONS REQUIRED FOR ELECTRICAL WORK.

5. IT IS THE PURPOSE OF THE ELECTRICAL DRAWINGS TO INDICATE THE APPROXIMATE LOCATION OF ALL EQUIPMENT, DEVICES, ETC. ASCERTAIN EXACT LOCATIONS AND ARRANGE WORK ACCORDINGLY. THE RIGHT IS RESERVED TO EFFECT REASONABLE CHANGES IN THE LOCATION OF DEVICES UP TO THE TIME OF ROUGHING-IN, WITHOUT ADDITIONAL COST TO THE OWNER. CHANGES IN LOCATION OF DEVICES RESULTING FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THE CONTRACT DRAWING OR SPECIFICATION REQUIREMENTS SHALL BE MADE AT NO ADDITIONAL COST TO THE OWNER.

6. TEMPERATURE AND INTERLOCK CONTROLS SHALL BE PROVIDED AND WIRED BY A CONTROLS CONTRACTOR UNDER DIVISION 15. DIVISION 16 CONTRACTOR SHALL PROVIDE NECESSARY 120 VOLT POWER, TERMINATED AT JUNCTION BOXES, AS DIRECTED BY DIVISION 15 CONTRACTOR. LINE VOLTAGE (120 VOLT OR HIGHER) CONTROL DEVICES, SUCH AS THERMOSTATS AND AQUASTATS, WHICH CONTROL FRACTIONAL HORSEPOWER, 120 VOLT MOTORS, SHALL BE PROVIDED BY THE DIVISION 15 CONTRACTOR, AND SHALL BE WIRED BY THE DIVISION 16 CONTRACTOR.

7. RACEWAY SYSTEMS, CONDUIT, BOXES, GROUNDING, BUSBARS, HARDWARE, ETC. REQUIRED FOR TECHNOLOGY SYSTEMS, CABLING AND DEVICES SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL FULLY COORDINATE ALL REQUIREMENTS WITH THE TECHNOLOGY SYSTEMS CONTRACTOR.

8. WORK SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF LOCAL AND STATE CODES, AS WELL AS THE NATIONAL ELECTRICAL CODE (NEC), AS INTERPRETED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

9. CONSULT THE DRAWINGS, PRODUCT DATA, WIRING DIAGRAMS AND SHOP DRAWINGS COVERING THE WORK FOR VARIOUS OTHER TRADES, THE FIELD LAYOUTS OF THE CONTRACTORS FOR THE TRADE AND MAKE ADJUSTMENTS ACCORDINGLY IN LAYING OUT THE ELECTRICAL WORK.

10. WARRANT THAT EQUIPMENT AND ALL WORK IS INSTALLED IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE AND THAT ALL EQUIPMENT WILL MEET THE REQUIREMENTS SPECIFIED. GUARANTEE AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS; REPAIR OR REPLACE ANY DEFECTIVE WORK, MATERIAL OR EQUIPMENT WITHIN ONE YEAR FROM DATE OF FORMAL WRITTEN ACCEPTANCE BY THE OWNER.

11. THE EXISTING ELECTRICAL AND TELECOMMUNICATIONS SERVICES, AND ALL EXISTING LOW VOLTAGE COMMUNICATION SYSTEMS WITHIN THE CAMPUS SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. ANY SERVICE SHUTDOWNS THAT MAY BE REQUIRED SHALL BE SCHEDULED THROUGH THE OWNER AND SHALL BE DONE AT A TIME AS DIRECTED BY THE OWNER. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE SHUTDOWN PERIODS EVEN THOUGH PREMIUM TIME WORK MAY BE REQUIRED. PROVIDE TEMPORARY SERVICE TO EQUIPMENT OR SYSTEMS THAT CANNOT BE SHUT DOWN, AS DETERMINED BY OWNER, AND AS DESCRIBED ELSEWHERE IN THESE SPECIFICATIONS.

12. BIDS SHALL BE BASED UPON THE SPECIFIED PRODUCTS OR LISTED ALTERNATIVES. WHERE ONLY ONE MAKE IS NAMED, IT SHALL BE PROVIDED. VERBAL REQUESTS OR APPROVALS SHALL NOT BE BINDING ON THE ARCHITECT, ENGINEER OR OWNER.

13. EQUIPMENT AND MATERIALS USED ON THIS PROJECT SHALL BE NEW AND U.L. LABELED FOR THE APPLICATION.

14. PREPARE SHOP DRAWINGS AND PRODUCT DATA FOR LIGHTING FIXTURES, PANELBOARDS, MOTOR STARTERS AND ALL OTHER SPECIFIED SYSTEMS AND COMPONENTS. THE SUBMITTALS THAT ARE RETURNED SHALL BE USED FOR PROCUREMENT. WHERE ADDITIONAL INSTALLATION DRAWINGS, WIRING DIAGRAMS OR OTHER DRAWINGS ARE SPECIFIED AS A PART OF THE SUBMITTAL, THEY SHALL BE SUBMITTED AT THE SAME TIME WITH SHOP DRAWINGS AND PRODUCT DATA.

15. THE CONTRACTOR SHALL KEEP ONE COMPLETE SET OF THE CONTRACT DRAWINGS ON THE PROJECT SITE ON WHICH SHALL BE RECORDED ANY DEVIATIONS OR CHANGES FROM SUCH CONTRACT DRAWINGS MADE DURING CONSTRUCTION. THE UPDATED CONTRACT DRAWINGS SHALL BECOME "RECORD DRAWINGS" OF THE COMPLETED CONSTRUCTION. AFTER THE PROJECT IS COMPLETED, THE RECORD DRAWINGS SHALL BE DELIVERED TO THE ARCHITECT IN GOOD CONDITION, AS A PERMANENT RECORD OF THE INSTALLATION AS CONSTRUCTED.

16. PROVIDE NAMEPLATES ON PANELBOARDS, SAFETY SWITCHES, MOTOR STARTERS, SYSTEM DISTRIBUTION JUNCTION BOXES AND PULLBOXES, CONTROL PANELS, INDIVIDUAL OVERCURRENT PROTECTION DEVICES IN DISTRIBUTION TYPE PANELBOARDS AND RECEPTACLE COVERPLATES. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, LETTERING SHALL INCLUDE THE NAME OR DESIGNATION OF EQUIPMENT, HORSEPOWER, VOLTAGE RATING AND SERVICE DESIGNATION. NAMEPLATES SHALL BE LAMINATED PHENOLIC WITH A BLACK SURFACE AND WHITE CORE. IDENTIFICATION WITH A DYMO TYPE INSTRUMENT IS NOT PERMISSIBLE. THE INSIDE COVER OF ALL RECEPTACLE COVERPLATES SHALL BE PERMANENTLY MARKED TO INDICATE THE PANEL AND CIRCUIT NUMBER OF THE RECEPTACLE. THE OUTSIDE OF THE COVERPLATES FOR ALL JUNCTION BOXES SHALL BE PERMANENTLY MARKED TO INDICATE THE SYSTEM. IDENTIFICATION SHALL BE ON THE INSIDE OF COVERPLATES FOR ALL JUNCTION BOXES IF THEY ARE LOCATED IN FINISHED AREAS. IDENTIFICATION OF BRANCH CIRCUITS SHALL BE TYPEWRITTEN ON DIRECTORY CARDS FURNISHED WITH ALL PANELS AND PLACED IN THE CARD HOLDER ON THE DOOR.

17. IDENTIFY SPARE CONDUITS AND CONDUIT STUBS AS FOLLOWS: IDENTIFY SYSTEM AND/OR PURPOSE AT SOURCE, IF POSSIBLE, AND AT TERMINATION END. ALSO, AT TERMINATION END, INDICATE LOCATION OF CONDUIT ORIGINATION.

18. AFTER INSTALLATION, TEST FOR GROUNDS, SHORT CIRCUITS AND PROPER FUNCTION OF EACH NEW SYSTEM AND RELATED WIRING. FAULTS IN THE INSTALLATION SHALL BE CORRECTED.

19. AFTER ALL TESTS AND ADJUSTMENTS HAVE BEEN COMPLETED, CLEAN ALL EQUIPMENT LEAVING EVERYTHING IN WORKING ORDER AT THE COMPLETION OF THIS WORK.

20. PROVIDE A TEMPORARY ELECTRICAL SERVICE ADEQUATE IN SIZE FOR HEATING, FOR THE USE OF ALL TRADES AND FOR THE LIGHTING OF EACH ROOM DURING CONSTRUCTION. TEMPORARY SERVICE SHALL BE EXTENDED FROM THE OWNER'S EXISTING POWER DISTRIBUTION SYSTEM. THE OWNER MUST APPROVE OF THE POINT OF SUPPLY, THE METHOD OF EXTENSION AND THE ROUTING OF NECESSARY TEMPORARY FEEDERS. INSTALLATION SHALL CONFORM TO ARTICLE 590 OF THE NEC.

21. ALL CUTTING AND PATCHING IN CONSTRUCTION AS NECESSARY FOR INSTALLATION OF THIS WORK SHALL BE THE RESPONSIBILITY OF THIS DIVISION. HAVE CUTTING DONE BY SKILLED MECHANICS AS CAREFULLY AS POSSIBLE AND WITH AS LITTLE DAMAGE AS POSSIBLE. PROVIDE CUTTING AND PATCHING FOR INSTALLATION OF NEW AND/OR RELOCATED DEVICES AND ASSOCIATED CONDUITS IN EXISTING WALLS TO REMAIN.

22. DEMOLITION OF EXISTING ELECTRICAL EQUIPMENT IS A PART OF THE ELECTRICAL WORK. ALL CUTTING, PATCHING, FINISHING, ETC., FOR REMOVED AND RELOCATED ELECTRICAL EQUIPMENT AND DEVICES SHALL BE INCLUDED AS PART OF THE ELECTRICAL WORK. REFER TO THE CONTRACT DRAWINGS FOR EXACT REQUIREMENTS. PROPERLY DISPOSE OF ALL FLUORESCENT AND HID LAMPS, BALLASTS, IONIZATION TYPE SMOKE DETECTORS, BATTERIES AND PCB CONTAMINATED MATERIALS DURING DEMOLITION WORK AS REQUIRED BY LOCAL, STATE, AND REGIONAL CODES. IF ADDITIONAL INTERPRETATION IS REQUIRED REGARDING THE SCOPE OF DEMOLITION INTENT, CONTACT THE ENGINEER PRIOR TO BID.

BASIC MATERIALS AND METHODS

1. ALL BOXES AND COVERPLATES SHALL BE SUITABLE FOR THE APPLICATIONS, RIGIDLY SUPPORTED FROM THE BUILDING STRUCTURE INDEPENDENT OF THE CONDUIT SYSTEM. ALL BOXES SHALL BE 4"x4"x2" DEEP MINIMUM WITH COVERPLATES SUITABLE FOR THEIR INTENDED USE. BOX STABILIZERS SHALL BE UTILIZED TO PROPERLY SUPPORT BOXES IN METAL STUD CONSTRUCTION.

2. EXTERIOR UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC, ENCASED IN CONCRETE UNDER DRIVES AND ROADWAYS WITH A MINIMUM 3" ENVELOPE. CONDUITS IN CONCRETE FLOORS, DAMP OR WET LOCATIONS, OR EXPOSED HIGH TRAFFIC AREAS WHERE SUBJECT TO PHYSICAL ABUSE SHALL BE HEAVY WALL RIGID GALVANIZED STEEL. ALL OTHER INTERIOR CONDUITS SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED ON THE DRAWINGS OR WITHIN THESE SPECIFICATIONS. CONDUITS SHALL BE 3/4" TRADE SIZE, MINIMUM, UNLESS OTHERWISE NOTED ON THE DRAWINGS OR WITHIN THESE SPECIFICATIONS. ALL EMT CONDUITS SHALL HAVE COLD-ROLLED STEEL DOUBLE SET SCREW FITTINGS.

3. CONDUITS THAT PASS FROM THE INTERIOR TO THE EXTERIOR OF THE BUILDING, OR ARE SUBJECT TO DIFFERENT TEMPERATURES, SHALL BE SEALED WITH AN APPROVED MATERIAL SUCH AS DUCT-SEAL TO PREVENT THE CIRCULATION OF COLD AIR TO A WARMER SECTION OF THE CONDUIT.

   A. CONDUITS THAT STUB THROUGH THE FOUNDATION WALLS SHALL BE SUPPLIED WITH PIPE SEALS AS MANUFACTURED BY LINK-SEAL, OR BY EQUIVALENT METHOD AS APPROVED BY THE ARCHITECT. PIPE SEALS SHALL BE EPDM (BLACK) WITH STAINLESS STEEL HARDWARE. THE ELECTRICAL CONTRACTOR SHALL COORDINATE AND VERIFY EXACT REQUIREMENTS WITH THE ARCHITECT BEFORE PROCUREMENT AND INSTALLATION OF THE PIPE SEALS.

4. ALL BRANCH CIRCUIT CONDUITS SHALL BE EMT CONDUIT. A GREEN EQUIPMENT GROUNDING CONDUCTOR SHALL BE PROVIDED IN ALL EMT CONDUIT. THE CONDUIT SHALL ITSELF QUALIFY AS AN EQUIPMENT GROUNDING RETURN PATH IN ACCORDANCE WITH NEC 250.118. WIRING SHALL BE AS SPECIFIED ELSEWHERE IN THIS SECTION.

5. CONDUIT CONNECTIONS TO MOTORS, TRANSFORMERS, AND OTHER VIBRATING EQUIPMENT SHALL BE FLEXIBLE METAL "SEAL-TITE" TYPE "UA" CONDUIT AS MANUFACTURED BY THE AMERICAN BRASS COMPANY OR EQUIVALENT AND SHALL BE OF THE SAME SIZE AS THE FEEDER CONDUIT.

6. LOCAL LIGHT SWITCHES SHALL BE 20 AMPERE, 120/277 VOLTS, AC SPECIFICATION GRADE, WITH GROUNDING TERMINAL - HUBBELL #HBL-122 SERIES, PASS AND SEYMOUR #PS20AC SERIES, OR LEVITON #122 SERIES.

7. CEILING MOUNTED OCCUPANCY SENSORS SHALL BE 1000 SQUARE FOOT COVERAGE, ADAPTIVE TECHNOLOGY OCCUPANCY SENSORS - HUBBELL #ATD1000C OR EQUAL BY PASS & SEYMOUR OR LEVITON.

8. DUPLEX RECEPTACLES SHALL BE 20A, 125V, 2 POLE, 3 WIRE GROUNDING.

   A. GENERAL PURPOSE "SPECIFICATION GRADE" DUPLEX RECEPTACLES: HUBBELL #5352, LEVITON #5362 OR PASS & SEYMOUR #5362.

9. DUPLEX RECEPTACLES, WHERE INDICATED ON THE DRAWINGS OR WHERE REQUIRED BY CODE, SHALL HAVE INTEGRAL GROUND FAULT CIRCUIT INTERRUPTER (GFCI) PROTECTION AND SHALL BE 20A, 125V, 2 POLE, 3 WIRE GROUNDING: HUBBELL #GF5352, PASS & SEYMOUR #2091 OR LEVITON #8899. GFCI RECEPTACLES SHALL NOT BE THROUGH-WIRED. PROVIDE INDIVIDUAL DUPLEX GFCI RECEPTACLES AS SHOWN ON THE DRAWINGS.

10. ALL RECEPTACLES SHALL BE PROVIDED WITH A SELF-GROUNDING CLIP AT THE MOUNTING SCREW.

11. ALL SWITCHES AND RECEPTACLES SHALL BE IVORY UNLESS OTHERWISE INDICATED WITHIN THESE SPECIFICATIONS. VERIFY COLOR WITH THE ARCHITECT PRIOR TO PROCUREMENT OF THE DEVICES. ALL COVERPLATES SHALL BE SMOOTH HIGH IMPACT COMMERCIAL GRADE THERMOPLASTIC OR SMOOTH NYLON FINISH WITH COLOR TO MATCH THE DEVICES. IN UNFINISHED AREAS, USE CADMIUM PLATED, ROUND CORNER, STEEL COVERPLATES FOR SURFACE MOUNTED OUTLET BOXES. BOTH THE WIRING DEVICES AND THE COVERPLATES SHALL BE BY THE SAME MANUFACTURER.

12. MANUAL MOTOR CONTROLLERS SHALL BE WESTINGHOUSE TYPE "MS" SERIES OR EQUIVALENT, WITH PILOT LIGHT, OVERLOADS AND ON/OFF SWITCH; FLUSH MOUNTED IN FINISHED AREAS. MANUAL MOTOR CONTROLLERS SHALL BE MANUFACTURED BY SQUARE D, GENERAL ELECTRIC, SIEMENS/ITE OR CUTLER HAMMER/WESTINGHOUSE. EACH MANUAL MOTOR CONTROLLER SHALL BE LISTED AS "SUITABLE AS MOTOR DISCONNECT".

13. WIRE AND CABLE FOR BRANCH CIRCUITS AND FOR FEEDERS SHALL BE 90 DEGREES C., 600VOLT, TYPE THHN/THWN, COPPER ONLY, UNLESS OTHERWISE NOTED ON THE DRAWINGS. TYPE XHHW SHALL ALSO BE ACCEPTABLE FOR FEEDERS. MINIMUM SIZE FOR POWER AND LIGHTING BRANCH CIRCUITS SHALL BE #12.

14. SAFETY SWITCHES SHALL BE HEAVY DUTY FUSIBLE OR NONFUSIBLE TYPE AS INDICATED ON THE DRAWINGS, AND SHALL BE SUITABLE FOR THE VOLTAGE AND CURRENT RATINGS AS SHOWN ON THE DRAWINGS.

15. FUSES RATED 600 AMPERES OR LESS, 600 VOLTS OR LESS, SERVING ALL LOADS SHALL BE U.L. CLASS RK-1, BUSSMANN DUAL ELEMENT, TIME DELAY "LOW PEAK", TYPE LPN-RK (250 VOLT) OR TYPE LPS-RK (600 VOLT), OR APPROVED EQUIVALENT. FUSES OF EQUIVALENT OVERLOAD AND SHORT-CIRCUIT INTERRUPTING PERFORMANCE, AS MANUFACTURED BY RELIANCE FUSE, FERRAZ-SHAWMUT, LITTELFUSE, GENERAL ELECTRIC OR S & C ARE ACCEPTABLE. EXACT FUSE TYPE REQUIRED FOR MOTOR PROTECTION SHALL BE PROVIDED AS RECOMMENDED BY THE STARTER MANUFACTURER.

16. ALL MOTOR STARTERS SHALL BE COMBINATION TYPE. VOLTAGE, PHASE, FUSE SIZE, AND HORSEPOWER SHALL BE AS INDICATED ON THE DRAWINGS. STARTERS SHALL BE SIZE 0 MINIMUM. STARTERS SHALL INCLUDE A FUSIBLE SAFETY SWITCH, A STARTER WITH THREE OVERLOAD DEVICES, AND A CONTROL CIRCUIT TRANSFORMER. EACH COMBINATION STARTER SHALL INCLUDE A CONTROL CIRCUIT TRANSFORMER WITH A 120 VOLT SECONDARY CONNECTION UNLESS OTHERWISE INDICATED ON THE DRAWINGS. STARTERS SHALL HAVE A GREEN RUNNING PILOT LIGHT, A HAND-OFF-AUTOMATIC SELECTOR SWITCH AND A MINIMUM OF TWO NORMALLY OPEN AND TWO NORMALLY CLOSED AUXILIARY CONTACTS, READY FOR CONTROL WIRING CONNECTIONS. VERIFY THE EXACT TYPE AND NUMBER OF AUXILIARY CONTACTS WITH THE DIVISION 15 CONTRACTOR. SINGLE PHASE STARTERS SHALL HAVE SIMILAR CHARACTERISTICS AS SPECIFIED FOR THREE PHASE STARTERS, AS APPLICABLE.

17. DISCONNECT SWITCHES AND MOTOR STARTERS SHALL BE MANUFACTURED BY SQUARE 'D', GENERAL ELECTRIC, SIEMENS/ITE, OR CUTLER HAMMER/WESTINGHOUSE.

18. ANY CORE DRILLING OR CUTTING OF FIRE RATED FLOORS, SHAFTS AND WALLS SHALL BE FIRE STOPPED PRIOR TO FINISH PATCHING. ALL PENETRATIONS AND BACK BOXES SHALL BE SEALED IN ACCORDANCE WITH UL FIRE RESISTANCE HANDBOOK VOLUME II AND SHALL BE RATED TO MATCH THE FIRE RATING OF THE FLOORS, SHAFTS OR WALLS PENETRATED.

19. PENETRATIONS THROUGH FIRE RATED FLOORS SHALL NOT EXCEED AN AGGREGATE AREA OF 1 SQUARE FOOT IN ANY 100 SQUARE FEET OF FLOOR AREA, OR AS DICTATED BY LOCAL CODES.

20. CONDUITS SHALL BE CONTINUOUS AND SECURED TO ALL BOXES IN SUCH A MANNER THAT EACH CONDUIT SYSTEM SHALL BE ELECTRICALLY CONTINUOUS FROM THE POINT OF SERVICE TO ALL DEVICE BOXES. RUN CONDUITS CONCEALED UNLESS OTHERWISE INDICATED. THE ACTUAL ROUTING OF CONDUITS SHALL BE INSTALLED TO SUIT THE VARIOUS FIELD CONDITIONS.

21. PERMISSION MUST BE OBTAINED FROM THE ARCHITECT TO RUN SURFACE MOUNTED RACEWAYS OR CONDUIT. THE ROUTING AND ELEVATION MUST BE COORDINATED WITH THE ARCHITECT BEFORE INSTALLATION. EXPOSED RACEWAYS SHALL BE PAINTED TO MATCH ADJACENT FINISHES.

22. INDIVIDUAL BRANCH CIRCUITS ARE SHOWN ON THE DRAWINGS FOR CLARITY. LIGHTING AND RECEPTACLE CIRCUITS LESS THAN OR EQUAL TO 100 AMPERES MAY BE GROUPED FOR HOMERUNS, WITH A MAXIMUM OF THREE (3) CIRCUITS PER HOMERUN. NEUTRAL CONDUCTORS SHALL NOT BE SHARED.

23. WIRING FROM LEGALLY REQUIRED EMERGENCY AND STANDBY POWER GENERATION SOURCES SHALL BE KEPT INDEPENDENT OF EACH OTHER AND INDEPENDENT OF ALL OTHER BRANCH CIRCUIT WIRING, AND SHALL NOT ENTER THE SAME RACEWAY, CABLE, BOX, OR CABINET WITH OTHER WIRING, UNLESS SPECIFICALLY ALLOWED BY THE NATIONAL ELECTRICAL CODE.

24. FOR 120 VOLT BRANCH CIRCUITS WHERE SIZE IS NOT SHOWN, CONDUCTOR SIZE #12 MINIMUM SHALL BE USED FOR CIRCUITS LESS THAN 125 FEET, AND SIZE #10 MINIMUM SHALL BE USED FOR CIRCUITS 125 FEET OR GREATER. FOR 277 VOLT BRANCH CIRCUITS WHERE SIZE IS NOT SHOWN, CONDUCTOR SIZE #12 MINIMUM SHALL BE USED FOR CIRCUITS LESS THAN 250 FEET, AND SIZE #10 MINIMUM SHALL BE USED FOR CIRCUITS 250 FEET OR GREATER. GROUND CONDUCTORS SHALL ALSO BE INCREASED TO #10 ACCORDINGLY.

25. IDENTIFY WIRE AND CABLE FOR BRANCH CIRCUITS AS CALLED FOR IN THE NATIONAL ELECTRICAL CODE. IDENTIFICATION OF FEEDERS SHALL BE BY MEANS OF COLORED TAPE AT TERMINALS.

26. ADJACENT DEVICES OF THE SAME VOLTAGE CLASS SHALL BE MOUNTED IN GANGED BOXES.

27. MOUNTING HEIGHTS TO THE CENTER OF OUTLET BOXES SHALL BE AS INDICATED ON THE DRAWINGS.

28. VERIFY MOUNTING HEIGHTS AND LOCATIONS WITH THE ARCHITECT PRIOR TO ROUGH-IN. REFER TO DETAILS AND INTERIOR WALL ELEVATIONS SHOWN ON THE ARCHITECTURAL DRAWINGS.

29. ALL RECEPTACLES SHALL BE MOUNTED WITH THE GROUND OPENING ABOVE THE PHASE AND NEUTRAL OPENINGS.

30. ARRANGE EQUIPMENT IN ELECTRICAL ROOM TO FACILITATE ADDING EQUIPMENT IN FUTURE.

31. ALL DEVICES SHALL BE SECURED WITH MORE THAN A SINGLE SCREW.

32. ALL HARDWARE, SUPPORTS, HANGERS, BRACKETS, ANGLE IRON, CHANNELS, RODS AND CLAMPS NECESSARY TO INSTALL ELECTRICAL EQUIPMENT SHALL BE PROVIDED TO SUIT THE FIELD CONDITIONS AND THE APPLICATIONS INTENDED AS SHOWN ON THE DRAWINGS. THE USE OF PERFORATED STRAPS IS NOT PERMITTED.

33. ALL EQUIPMENT MOUNTED ON INTERIOR EQUIPMENT ROOM WALLS WHERE ADDITIONAL SUPPORT IS REQUIRED SHALL BE ATTACHED TO 3/4" PAINTED PLYWOOD FIRE RATED BOARDS FURRED OUT 1" FROM WALL. BOARDS SHALL BE PAINTED TO MATCH WALL FINISHES.

POWER DISTRIBUTION

1. THE ELECTRICAL SERVICE TO THE EXISTING BUILDING SHALL REMAIN. THE BUILDING'S EXISTING POWER DISTRIBUTION SYSTEM SHALL BE REPLACED AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. THE BUILDING'S EXISTING GROUNDING ELECTRODE SYSTEM SHALL BE REPLACED AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN.

2. GROUND ALL ELECTRICAL SYSTEM CONDUITS, RACEWAYS, (CABLE TRAYS), MOTORS, PANELS, CABINETS, FIXTURES, METAL BOXES, AND OTHER EXPOSED NON-CURRENT CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ALL PROVISIONS OF THE NEC, STATE BUILDING CODE AND LOCAL OR REGIONAL CODES.

3. GROUNDING OF THE ELECTRICAL SYSTEM SHALL BE BY MEANS OF AN INSULATED GROUNDING CONDUCTOR INSTALLED WITH FEEDER AND BRANCH CIRCUIT CONDUCTORS IN ALL CONDUITS, SIZED IN ACCORDANCE WITH NEC ARTICLE 250.122.

4. INSTALL BONDING JUMPERS ACROSS ALL BUILDING EXPANSION JOINTS, AND ACROSS ALL CONDUIT EXPANSION FITTINGS.

5. WHERE GROUNDING CONDUCTORS ARE SUBJECT TO MECHANICAL DAMAGE PROTECT SUCH CONDUCTORS BY ENCASEMENT IN CONCRETE OR INSTALLATION IN A RIGID METALLIC RACEWAY.

6. ALL TERMINATIONS OF THE GROUNDING CONDUCTORS SHALL BE BY MEANS OF SOLDERLESS CONNECTIONS.

7. GROUND ALL TRANSFORMERS IN ACCORDANCE WITH NEC ARTICLE 250.30. THE BONDING JUMPER SHALL BE DIRECTLY CONNECTED TO A GROUNDING ELECTRODE. THE TRANSFORMER CASE SHALL BE BONDED TO THE GROUNDING ELECTRODE CONDUCTOR, BUT SHALL NOT BE USED AS THE GROUNDING ELECTRODE. THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED WITHIN RIGID METALLIC CONDUIT. NEUTRAL CONDUCTORS SHALL NOT BE USED FOR EQUIPMENT GROUNDING. A BONDING JUMPER SHALL NOT BE PROVIDED IN PANELBOARDS.

8. FURNISH AND INSTALL BRANCH CIRCUIT BREAKER PANELBOARDS EQUIPPED WITH CIRCUIT BREAKERS, WITH FRAME AND TRIP RATINGS LISTED ON THE DRAWINGS. CIRCUIT BREAKERS SHALL BE THERMAL-MAGNETIC, MOLDED CASE BOLT-ON TYPE. PROVIDE SWITCHING "SWD" AND HVAC "HACR" TYPES AS REQUIRED. ALL CURRENT CARRYING PARTS OF THE BUS STRUCTURE SHALL BE TIN-PLATED ALUMINUM. EACH PANEL SHALL CONTAIN A 100% RATED NEUTRAL BUS AND A GROUNDING BUS. PANELS SHALL HAVE "DOOR-WITHIN-DOOR" TRIM, HINGED BOX TO FRONT TYPE WITH LATCH ON OUTER DOOR ALL LOCKS SHALL BE KEYED ALIKE.

9. EACH PANEL, AS A COMPLETE UNIT, SHALL HAVE A MINIMUM SYMMETRICAL SHORT CIRCUIT CURRENT RATING OF 22,000 AMPERES FOR 208Y/120 VOLT RATED PANELS AND 18,000 AMPERES FOR 480Y/277 VOLT RATED PANELS. CIRCUIT BREAKERS SHALL BE FULLY RATED. SERIES RATINGS ARE NOT PERMITTED.

10. EACH PANEL SERVED DIRECTLY BY A TRANSFORMER SECONDARY SHALL HAVE A MAIN CIRCUIT BREAKER OR OTHER MAIN OVERCURRENT PROTECTION.

11. NEW CIRCUIT BREAKERS OR FUSIBLE SWITCHES INSTALLED IN EXISTING PANELS SHALL MATCH THE EXISTING IN TYPE, MANUFACTURER (IF POSSIBLE), AND SHORT CIRCUIT RATINGS.

12. PANELS SHALL BE AS MANUFACTURED BY SQUARE D, SIEMENS/ITE, GENERAL ELECTRIC OR CUTLER HAMMER/WESTINGHOUSE.

13. PANELS SHALL BE MOUNTED SO THAT TOP OF THE CABINET IS AT 6'-0" ABOVE FLOOR. A GLAZED DIRECTORY FRAME SHALL BE PROVIDED INSIDE EACH PANEL DOOR AND SHALL BE OF SUFFICIENT SIZE TO GIVE A COMPLETE DESCRIPTION OF EACH CIRCUIT. TYPED DIRECTORY CARDS SHALL BE PROVIDED LISTING EACH CIRCUIT SERVED.

14. THE BRANCH CIRCUIT NUMBERS USED ON THE DRAWINGS SHALL BE APPLIED FOR THE CONSTRUCTION. HOWEVER, AT THE COMPLETION OF THE WORK, CIRCUIT NUMBER ADJUSTMENTS SHALL BE MADE AS REQUIRED TO PROVIDE BALANCED PHASE LOADING ON EACH PANEL.

15. SPARE CIRCUIT BREAKERS SHALL BE IDENTIFIED AS SUCH ON THE PANEL DIRECTORY CARDS AND SHALL BE LEFT IN THE "OFF" POSITION.

16. TRANSFORMERS SHALL BE 115 DEGREES C. TEMPERATURE RISE ABOVE A 40 DEGREES C. AMBIENT. INSULATION SYSTEM SHALL BE UL RECOGNIZED FOR 220 DEGREES C. TRANSFORMERS SHALL HAVE (4) 2-1/2% ABOVE NORMAL, FULL CAPACITY PRIMARY TAPS.

17. TRANSFORMERS SHALL BE AS MANUFACTURED BY ACME, SQUARE D, SIEMENS/ITE, GENERAL ELECTRIC, OR CUTLER HAMMER/WESTINGHOUSE.

18. PROVIDE WALL MOUNTING PLATFORMS OR STRUCTURE MOUNTED PLATFORMS FOR EACH TRANSFORMER RATED BELOW 112.5 KVA ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

LIGHTING

1. LIGHTING FIXTURES SHALL BE PROVIDED AS SPECIFIED IN THE LIGHTING FIXTURE SCHEDULE ON THE DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROPER MOUNTING ACCESSORIES. CONTRACTOR SHALL REFER TO THIS SPECIFICATION FOR LAMP AND BALLAST REQUIREMENTS. SUBMITTALS SHALL INCLUDE PRODUCT INFORMATION FOR FIXTURES, LAMPS, AND BALLASTS.

2. FLUORESCENT ELECTRONIC BALLASTS SHALL BE ADVANCE "CENTIUM" PARALLEL INSTANT START FOR T8 LAMPS OR EQUAL BY VALMONT, MOTOROLA, OSRAM SYLVANIA, ESI OR MAGNETEK/TRIAD. BALLASTS SHALL HAVE A MINIMUM POWER FACTOR OF 98%, A MINIMUM BALLAST FACTOR OF 85%, A MAXIMUM CREST FACTOR OF 1.7, AND A MAXIMUM TOTAL HARMONIC DISTORTION OF 10%. BALLASTS SHALL OPERATE ABOVE 42 KHZ TO REDUCE POTENTIAL INTERFERENCE WITH INFRARED REMOTE CONTROL SYSTEMS.

3. FLUORESCENT LINEAR LAMPS SHALL BE 800 SERIES, T-8, SPX, 3500 K, LOW MERCURY TYPE.

4. ALL LAMPS SHALL BE MANUFACTURED BY GENERAL ELECTRIC, SYLVANIA OR PHILIPS.

5. SURFACE MOUNTED FIXTURES MOUNTED ON CEILINGS OTHER THAN TO THE BUILDING STRUCTURE, SHALL BE SECURELY SUPPORTED IN A MANNER APPROVED BY THE ARCHITECT.

6. ALL EXPOSED FLUORESCENT LINEAR LAMPS SHALL BE FURNISHED WITH CLEAR, LEXAN LAMP SLEEVES WITH END CAPS TO COORDINATE WITH LAMP TYPE. LAMP SLEEVES SHALL BE LISTED FOR THE TYPE OF LAMPS PROTECTED.

7. SPARE LAMPS AMOUNTING TO 10% (MINIMUM OF 3) OF EACH TYPE AND SIZE OF EACH LAMP USED ON THE PROJECT SHALL BE SUPPLIED BY THE ELECTRICAL CONTRACTOR.

8. LIGHTING FIXTURES SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 410. LOW VOLTAGE LIGHTING FIXTURES AND SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 411.

COMMUNICATIONS

1. NEW TELECOMMUNICATIONS BACKBOARDS SHALL BE 4' WIDE X 8' HIGH X 3/4" THICK AC PLYWOOD, PAINTED WITH (2) COATS OF FIRE RETARDANT WHITE PAINT ON BOTH SIDES PRIOR TO INSTALLATION. BACKBOARDS SHALL BE MOUNTED 6 INCHES ABOVE THE FINISHED FLOOR. THE RECEPTACLES SHOWN ON THE BACKBOARDS SHALL BE MOUNTED AT 18 INCHES ABOVE THE FINISHED FLOOR AND SHALL BE INSTALLED IN SURFACE MOUNTED, SINGLE GANG OUTLET BOXES WITH STAMPED, SHEET METAL COVER PLATES. VERIFY EXACT REQUIREMENTS WITH THE TECHNOLOGY CONTRACTOR PRIOR TO INSTALLATION.

2. COMBINATION VOICE/DATA OUTLET BOXES SHALL BE 4 INCHES SQUARE WITH SINGLE GANG PLASTER RINGS. VOICE-ONLY, DATA-ONLY, FAX AND PAY TELEPHONE OUTLETS SHALL BE SIMILAR. BLANK COVERPLATES SHALL BE PROVIDED FOR ALL UNUSED OUTLETS. VERIFY EXACT REQUIREMENTS WITH THE TECHNOLOGY CONTRACTOR PRIOR TO INSTALLATION.

3. ALL CONDUITS REQUIRED FOR COMBINATION VOICE/DATA OUTLETS AS SHOWN ON THE DRAWINGS SHALL BE INSTALLED COMPLETE WITH PULLWIRES. CONDUITS SHALL BE 1" MINIMUM.

4. PROVIDE CONDUIT FROM EACH OUTLET UP TO THE NEAREST OPEN AREA CEILING SPACE AND PROVIDE AN INSULATED BUSHING AT EACH STUB.

STATE OF OHIO
TIMOTHY J. NORRIS
E-40336
REGISTERED PROFESSIONAL ENGINEER

CALCULATED S.P.K.	CHECKED T.J.N.

REV. NO.	DATE
BID & PERMIT	04\10\14

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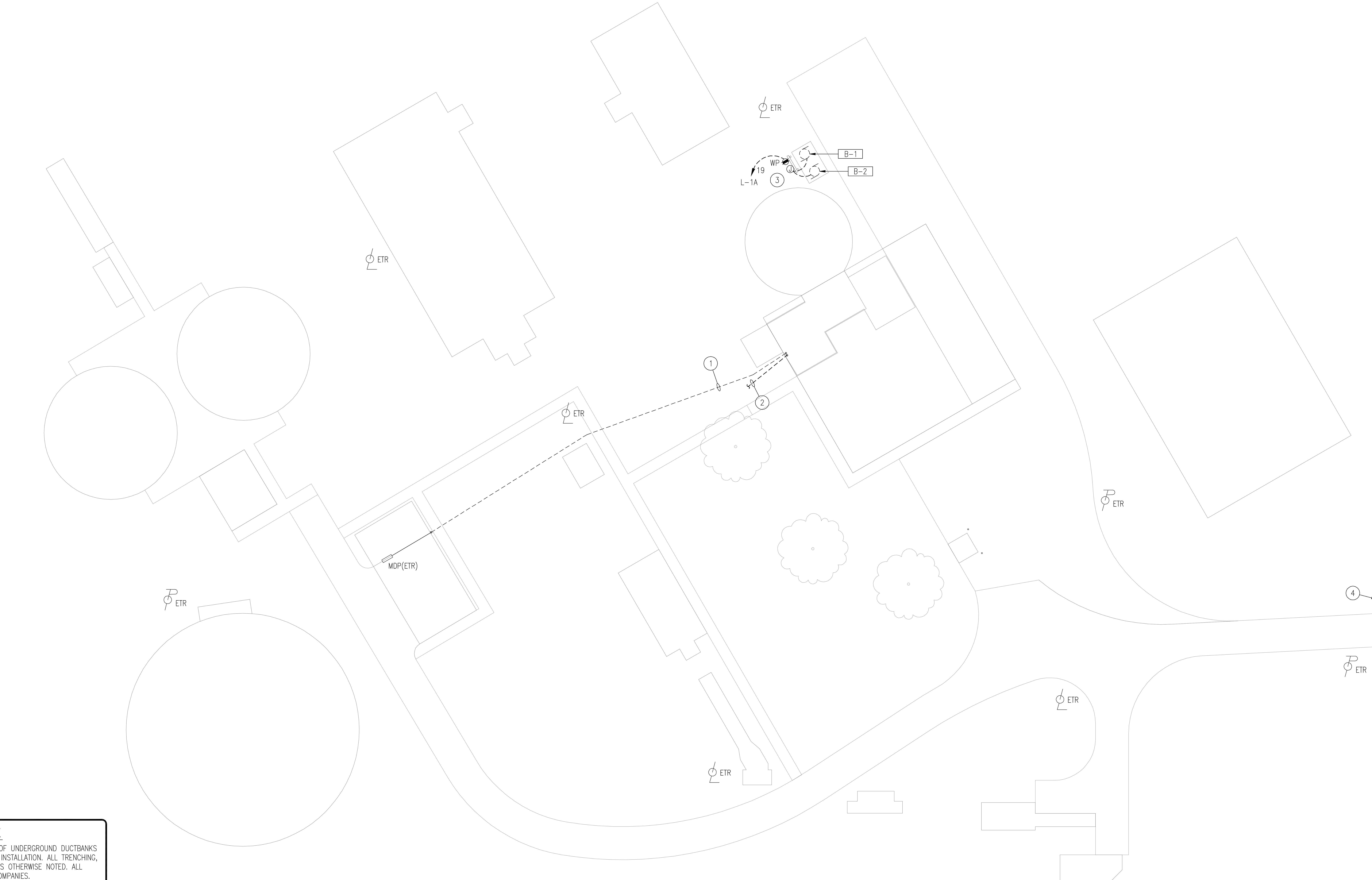
WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
ELECTRICAL SPECIFICATIONS

VILLAGE OF CRESTLINE



COORDINATION OF UNDERGROUND WORK

ELECTRICAL CONTRACTOR SHALL COORDINATE EXACT ROUTING AND ELEVATION OF UNDERGROUND DUCTBANKS AND CONDUITS WITH ALL OTHER TRADES ON SITE PRIOR TO EXCAVATION AND INSTALLATION. ALL TRENCHING, BACKFILL, PATCHING, ETC., SHALL BE BY THE ELECTRICAL CONTRACTOR UNLESS OTHERWISE NOTED. ALL PRIMARY UTILITY CABLING SHALL BE INSTALLED BY THE RESPECTIVE UTILITY COMPANIES.

MANHOLE AND PULLBOX LOCATIONS

CONDUITS RUN OUTSIDE BUILDINGS SHALL BE EQUIPPED WITH MANHOLE (OUTSIDE) OR PULL BOX (INSIDE) AFTER 400', (2) 90° BENDS, OR AN ACCUMULATION OF 120° OF TOTAL PATHWAY DEVIATIONS FROM A STRAIGHT LINE BETWEEN EACH POINT OF ACCESS.

EXCAVATION AND BACKFILL

DO ALL EXCAVATION AND BACKFILLING NECESSARY FOR INSTALLATION OF WORK. PRIOR TO OPENING AN EXCAVATION, EFFORT SHALL BE MADE TO DETERMINE WHETHER UNDERGROUND INSTALLATIONS WILL BE ENCOUNTERED (I.E., TELE-COMMUNICATIONS, SEWER, WATER, FUEL, ELECTRIC LINES, ETC.), AND WHERE SUCH UNDERGROUND INSTALLATIONS ARE LOCATED. WHEN THE EXCAVATION APPROACHES THE ESTIMATED LOCATION OF SUCH INSTALLATIONS, THE EXACT LOCATION SHALL BE DETERMINED. WHEN IT IS UNCOVERED, PROPER SUPPORTS SHALL BE PROVIDED FOR THE EXISTING INSTALLATION. UTILITY COMPANIES SHALL BE CONTACTED AND ADVISED OF THE PROPOSED WORK PRIOR TO THE START OF ACTUAL EXCAVATION. CONTACT THE OHIO UTILITIES PROTECTION SERVICE 48 HOURS PRIOR TO STARTING WORK. TELEPHONE AT 1-800-362-2764.

SITE ELECTRICAL PLAN

SCALE: 1" = 20'-0"

PLAN NOTES:

1. UNDERGROUND FEEDERS FROM EXISTING MAIN DISTRIBUTION PANEL 'MDP' IN CONTROL BUILDING TO PANEL 'H-1A' IN BASEMENT OF NEW DIGESTER BUILDING. REFER TO 'DUCT BANK DETAIL' ON DRAWING 'E7' AND 'ONE LINE POWER DIAGRAM' ON DRAWING 'E6'. COORDINATE ROUTING IN FIELD.
2. UNDERGROUND TELECOMMUNICATIONS SERVICE CONDUIT – REFER TO 'TELECOMMUNICATIONS RACEWAY DETAIL' ON DRAWING 'E7'. COORDINATE ROUTING WITH UTILITY COMPANY.
3. BLOWER CONTROLLER BY OTHERS. EC SHALL PROVIDE WEATHERPROOF RECEPTACLE AND MOUNTING SUPPORT, IF NECESSARY. COORDINATE REQUIREMENTS WITH EQUIPMENT SUPPLIER.
4. 30AS FOR MOTORIZED GATE (480V/3ø, ½HP) AT STREET (APPROXIMATELY 550') – EC SHALL PROVIDE POWER FROM CIRCUITS #8, #10 & #12 IN PANEL 'H-1A' WITH 4#12 & 1#12 GROUND IN 1" CONDUIT. COORDINATE LOCATION WITH ARCHITECT PRIOR TO BID.

STATE OF OHIO
TIMOTHY J. NORRIS
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REGISTERED PROFESSIONAL ENGINEER

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WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
SITE ELECTRICAL PLAN

VILLAGE OF CRESTLINE

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