ELECTRICAL SERVICE LOAD SUMMARY

LOAD	KW CONNECTED	DEMAND FACTOR	KW DEMAND	NOTES
LIGHTING	38.2	1.0	38.2	
CONVENIENCE RECEPTACLES	11.1	NEC	10.6	
MISC. EQUIPMENT	0.2	0.5	0.1	
CAFE	115	1.0	115	
STAGE EQUIPMENT AND SPEAKERS	114	0.8	91.2	
VENDOR EQUIPMENT	133	0.5	66.5	
WATER FEATURE EQUIPMENT	14.4	1.0	14.4	
TOTALS	425.9	-	336	-
SERVICE VOLTAGE: 208Y/120V		DEMAND AMPERES:	933.7	

DIMMER PANEL: CPP

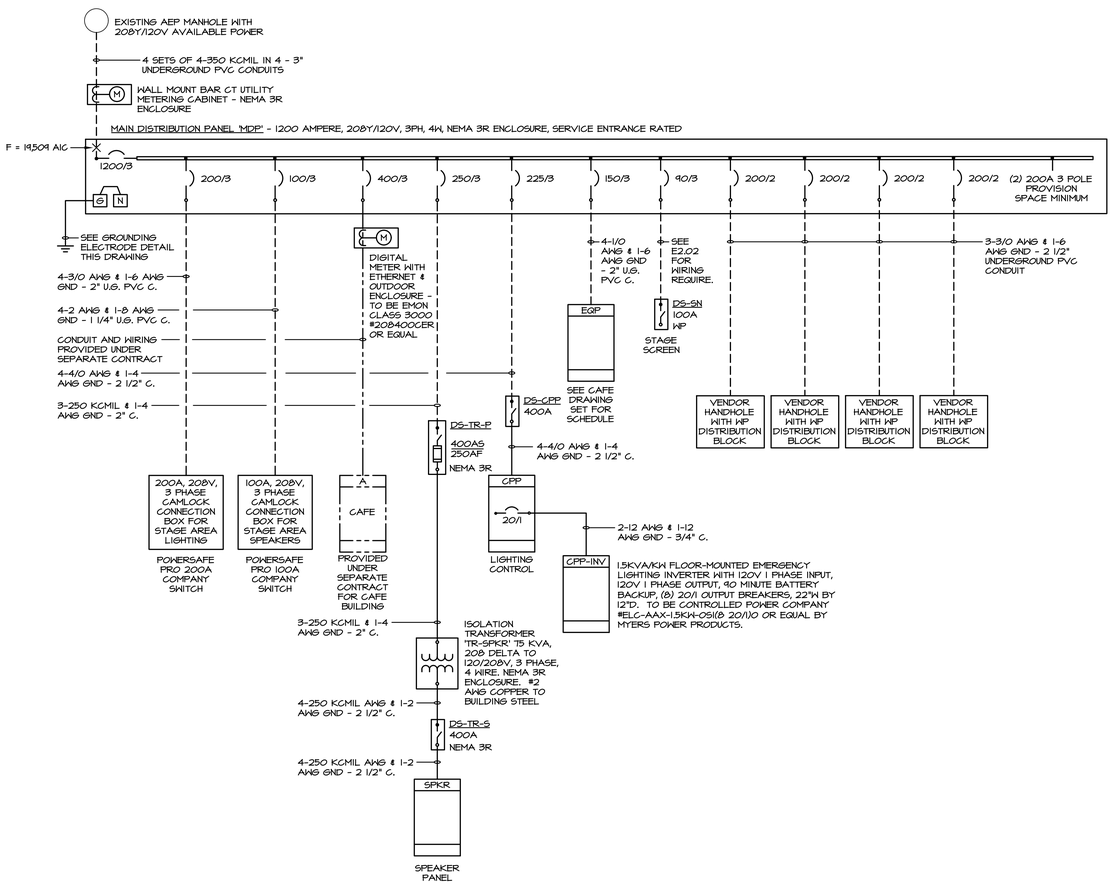
225A RATED — FEED: 120/208V - 3PH-4W+G

LUG #	Module Type	CKT #	DMX 1B	sACN 1	CHANNEL	SPACE	EMG CKT	(QTY)	(FX TYPE)	LOAD TYPE	LOAD (W)	LOAD PHASE A	LOAD PHASE B	LOAD PHASE C
1		1				STAGE LIGHTING					1000	1000		
2		2				STAGE LIGHTING					1000	1000		
3		7				STAGE LIGHTING					1000	1000		
4		8				STAGE LIGHTING					1000	1000		
5		13				PAVILION LIGHTING					1290	1290		
6		14				PAVILION LIGHTING					1360	1360		
7		19				PAVILION LIGHTING					1380	1360		
8		20				PAVILION LIGHTING					1160	1160		
9		25				POLE LIGHTING					84	84		
10		26				POLE LIGHTING					84	84		
11		31				STAGE UPLIGHTS					1000	1000		
12		32				SPARE					0			
13		37				3RD STREET PLANTER RECEPTACLES					1260	1260		
14		38				3RD STREET PLANTER RECEPTACLES					1800	1800		
15		43				DIGITAL KIOSK					1000	1000		
16		44				DIGITAL KIOSK					1000	1000		
17		49				PAVILION SPOTLIGHTS					200	200		
18		50				SPARE					0			
19		55				SPARE					0			
20		56				SPARE					0			
21		61				SPARE					0			
22		62				SPARE					0			
23		67				SPARE					0			
24		68				SPARE					0			
25		73				SPARE					0			
26		74				SPARE					0			
27		79				SPARE					0			
28		80				SPARE					0			
29		85				SPARE					0			
30		86				SPARE					0			
31		91				SPARE					0			
32		92				SPARE					0			
33		3				STAGE LIGHTING					1000		1000	
34		4				STAGE LIGHTING					1000		1000	
35		9				STAGE LIGHTING					1000		1000	
36		10				STAGE LIGHTING					1000		1000	
37		15				PAVILION LIGHTING					1000		1000	
38		16				PAVILION LIGHTING					1220		1220	
39		21				PAVILION LIGHTING					1090		1090	
40		22				PAVILION LIGHTING					1160		1160	
41		27				POLE LIGHTING					84		84	
42		28				POLE LIGHTING					60		60	
43		33				CANTON SIGN					1500		1500	
44		34				SPARE					0			
45		39				PEDESTAL RECEPTACLES					1800		1800	
46		40				COURT AVENUE PLANTER RECEPTACLES					1440		1440	
47		45				PAVILION RECEPTACLES					1620		1620	
48		46				SOUND MIXING RECEPTACLES					360		360	
49		51				LIGHTING CONTROL WALL CABINET					500		500	
50		52				SPARE					0			
51		57				PAVILION LIGHTING					1000		1000	
52		58				PAVILION LIGHTING					1000		1000	
53		63				SPARE					0			
54		64				SPARE					0			
55		69				SPARE					0			
56		70				SPARE					0			
57		75				SPARE					0			
58		76				SPARE					0			
59		81				SPARE					0			
60		82				SPARE					0			
61		87				SPARE					0			
62		88				SPARE					0			
63		93				SPARE					0			
64		94				SPARE					0			
65		5				STAGE LIGHTING					1000			1000
66		6				STAGE LIGHTING					1000			1000
67		11				STAGE LIGHTING					1000			1000
68		12				STAGE LIGHTING					1000			1000
69		17				PAVILION LIGHTING					1360			1360
70		18				PAVILION LIGHTING					1360			1360
71		23				PAVILION LIGHTING					1160			1160
72		24				PAVILION LIGHTING					1160			
73		29				TREE UPLIGHTS					228			228
74		30				TREE UPLIGHTS					228			228
75		35				ARCH UPLIGHTS					1040			1040
76		36				SPARE					0			
77		41				4TH STREET PLANTER RECEPTACLES					1620			1620
78		42				4TH STREET PLANTER RECEPTACLES					1260			1260
79		47				FIRE PITS					200			200
80		48				SPARE					0			
81		53				TRANSIT CENTER					500			500
82		54				SPARE					0			
83		59				DIGITAL KIOSK					1000			1000
84		60				DIGITAL KIOSK					1000			1000
85		65				1.5KW EMERGENCY LIGHTING INVERTER					1500			1500
86		66				120V POWER FOR WIRELESS ACCESS POINTS					500			500
87		71				SPARE					0			
88		72				EQUIPMENT ROOM RECEPTACLES					360			360
89		77				EQUIPMENT ROOM RECEPTACLES					360			360
90		78				EQUIPMENT ROOM RECEPTACLES					360			360
91		83				SPARE					0			
92		84				SPARE					0			
93		89				SPARE					0			
94		90				SPARE					0			
95		95				SPARE					0			
96		96				SPARE					0			
											TOTAL WATTS	15598	17834	18036
											TOTAL AMPS	129.98	148.62	150.30

LOAD LEGEND (INCLUDES TRANSFORMER AND BALLAST LOSSES WHERE APPLICABLE)

INC	LINE VOLTAGE INCANDESCENT (D20)
FL2	2-WIRE FLUORESCENT DIMMING (D20)
FL3	3-WIRE FLUORESCENT DIMMING (D20F)
FLB	FLUORESCENT W/EMG FEED (D20FB)
ND	NON DIM CIRCUIT (CC20)
MLV	MAGNETIC LOW VOLTAGE (D20)
ELV	ELECTRONIC LOW VOLTAGE (ELV10)
FLND	FLUORESCENT NON-DIM
SW	SWITCHED/NON-DIMMING (R20AF)

Notes: Provide GFCI circuit breaker for circuit #46.



ONE LINE DIAGRAM
NO SCALE

EMER. INVERTER OUTPUT BREAKER SCHEDULE

PANEL CPP-INV KVA/KW 3 VOLTAGE 120/208V-1Ø-3W

INTERRUPTING CAPACITY 10,000 SPACES 8 AMPS RMS SYM 10,000 MAIN 20/2 M.C.B. MOUNTING PAD MOUNT

LOAD DESCRIPTION	CONTINUOUS LOAD ØA	CONTINUOUS LOAD ØB	NON-CONTINUOUS LOAD (80%) ØA	NON-CONTINUOUS LOAD (80%) ØB	RECEPTACLE LOAD ØA	RECEPTACLE LOAD ØB	CB FRAME/TRIP	CKT NO.	Ø	CKT NO.	CB FRAME/TRIP	LOAD DESCRIPTION
PAVILION LTG	0.3						20/1	1	A	2	20/1	
N.W. POLE LTG		0.1					20/1	3	B	4	20/1	
SPARE							20/1	5	A	6	20/1	
DMX EMBYPASS		0.1					20/1	7	B	8	20/1	
	0.3	0.2					KW SUB-TOTALS KW					

LOAD DESCRIPTION	CONTINUOUS LOAD ØA	CONTINUOUS LOAD ØB	NON-CONTINUOUS LOAD (80%) ØA	NON-CONTINUOUS LOAD (80%) ØB	RECEPTACLE LOAD ØA	RECEPTACLE LOAD ØB	LOAD DESCRIPTION
HANDRAIL LTG	0.2						
S.E. POLE LTG		0.1					
N.E. POLE LTG	0.2						
CATENARY LTG		0.1					
	0.4	0.2					

CONNECTED LOAD PER PHASE

PHASE A	0.7	KWC
	5.5	AMPS
PHASE B	0.3	KWC
	2.6	AMPS

TOTAL CONNECTED LOAD	1.0	KWC
	4.7	AMPS
TOTAL DEMAND LOAD	1.0	KWD
	4.7	AMPS

SCHEDULE REMARKS

SEE ONE LINE DIAGRAM FOR INVERTER REQUIREMENTS.

CIRCUIT BREAKER PANEL SCHEDULE

PANEL SPKR AMP 400 VOLTAGE 208/120V-3Ø-4W

INTERRUPTING CAPACITY 10,000 SPACES 42 AMPS RMS SYM 10,000 MAIN 250A M.C.B. MOUNTING SURFACE

LOAD DESCRIPTION	CONTINUOUS LOAD ØA	CONTINUOUS LOAD ØB	CONTINUOUS LOAD ØC	NON-CONTINUOUS LOAD (80%) ØA	NON-CONTINUOUS LOAD (80%) ØB	NON-CONTINUOUS LOAD (80%) ØC	RECEPTACLE LOAD ØA	RECEPTACLE LOAD ØB	RECEPTACLE LOAD ØC	CB FRAME/TRIP	CKT NO.	Ø	CKT NO.	CB FRAME/TRIP	RECEPTACLE LOAD ØA	RECEPTACLE LOAD ØB	RECEPTACLE LOAD ØC	NON-CONTINUOUS LOAD (80%) ØA	NON-CONTINUOUS LOAD (80%) ØB	NON-CONTINUOUS LOAD (80%) ØC	CONTINUOUS LOAD ØA	CONTINUOUS LOAD ØB	CONTINUOUS LOAD ØC	LOAD DESCRIPTION
D80 AMPLIFIER	4.0									50/2	1	A	2	50/2							4.0			D80 AMPLIFIER
		4.0									3	B	4									4.0		
D80 AMPLIFIER			4.0							50/2	5	C	6	50/2									4.0	D80 AMPLIFIER
	4.0										7	A	8								4.0			
30D AMPLIFIER		1.6								20/2	9	B	10	20/2								1.6		30D AMPLIFIER
			1.6								11	C	12										1.6	
30D AMPLIFIER	1.6									20/2	13	A	14	20/2							1.6			30D AMPLIFIER
		1.6									15	B	16									1.6		
30D AMPLIFIER			1.6							20/2	17	C	18	20/2									1.6	30D AMPLIFIER
	1.6										19	A	20								1.6			
30D AMPLIFIER		1.6								20/2	21	B	22	20/2								1.6		30D AMPLIFIER
			1.6								23	C	24										1.6	
CROWN AMP 4/1250	2.5									30/2	25	A	26	20/2							1.6			30D AMPLIFIER
		2.5									27	B	28									1.6		
SPARE										20/2	29	C	30	20/1									0.5	AUDIO BRIDGE
SPARE											31	A	32	20/1	0.4									RECEPTACLES
SPARE										20/1	33	B	34	20/1		0.4								RECEPTACLES
SPARE										20/1	35	C	36	20/1										SPARE
SPARE										20/1	37	A	38	20/1										SPARE
SPARE										20/1	39	B	40	20/1										SPARE
SPARE										20/1	41	C	42	20/1										SPARE
	13.7	11.3	8.8							KW SUB-TOTALS KW					0.4	0.4					12.8	10.4	9.3	

CONNECTED LOAD PER PHASE

PHASE A	26.9	KWC
	223.8	AMPS
PHASE B	22.1	KWC
	183.8	AMPS
PHASE C	18.1	KWC
	150.8	AMPS

TOTAL CONNECTED LOAD	67.0	KWC
	186.0	AMPS
TOTAL DEMAND LOAD	67.0	KWD
	186.0	AMPS

SCHEDULE REMARKS:

GENERAL ELECTRICAL NOTES

A. THE ELECTRICAL INSTALLATION MUST MEET OR EXCEED THE MINIMUM REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE AND ANY APPLICABLE STATE OR LOCAL CODES, AS INTERPRETED BY THE LOCAL AUTHORITY HAVING JURISDICTION.

B. REFER TO THE ELECTRICAL SPECIFICATIONS FOR ADDITIONAL MATERIAL AND LABOR, SOME OF WHICH MAY NOT BE DETAILED ON THE FLOOR PLANS.

C. VERIFY THE EXACT LOCATION AND MOUNTING HEIGHTS OF WALL AND GRADE MOUNTED DEVICES AND EQUIPMENT WITH THE ARCHITECTURAL ELEVATIONS, DETAILS, FLOOR AND CEILING PLANS AND WITH THE EXISTING CONDITIONS BEFORE ROUGH-IN OF THE ELECTRICAL WORK. DISCREPANCIES MUST BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE FOR RESOLUTION PRIOR TO ROUGH-IN.

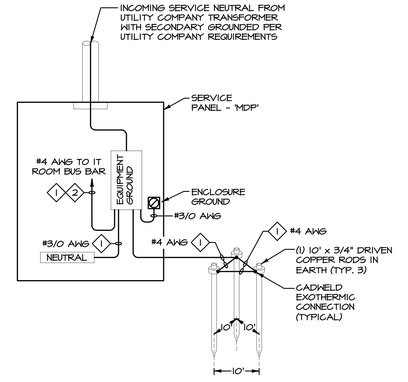
D. COORDINATE THE ELECTRICAL WORK WITH ALL TRADES ON SITE AND WITH THE OWNER'S REPRESENTATIVE. REFER TO THE PLANS AND DETAILS SHOWING THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING AND TECHNOLOGY WORK TO PROPERLY PLAN AND INSTALL THE ELECTRICAL SYSTEMS AND EQUIPMENT.

E. EXACT POLE BASE LOCATIONS AND UNDERGROUND CONDUIT ROUTINGS TO BE DETERMINED IN THE FIELD TO BE COORDINATED WITH ALL OTHER UTILITIES.

F. MINIMUM SITE CONDUIT BURIAL DEPTH IS 24", UNLESS OTHERWISE NOTED. SEE DETAILS ON DRAWING E0.04.

ELECTRICAL SYMBOLS

- A / 3,5 — BRANCH CIRCUIT HOMERUN TO PANEL "A", CIRCUIT #3 AND #5. PROVIDE THE PROPER QUANTITY OF 12 AWG CONDUCTORS FOR THE CIRCUIT(S) INDICATED. A SEPARATE GROUNDING CONDUCTOR IS REQUIRED FOR ALL BRANCH CIRCUITS.
- HEAVY LINE WEIGHT INDICATES THIS EQUIPMENT IS NEW OR RELOCATED EXISTING UNLESS NOTED OTHERWISE
- LIGHT LINE WEIGHT INDICATES THIS EQUIPMENT IS EXISTING UNLESS NOTED OTHERWISE
- HEAVY DASHED LINE WEIGHT INDICATES EXISTING EQUIPMENT IS TO BE REMOVED UNLESS NOTED OTHERWISE
- DUPLEX RECEPTACLE - MOUNTING AT 18" A.F.F. SEE LANDSCAPE PLANS FOR LOCATIONS.
- WP GFCI — GFCI TYPE TAMPER RESISTANT DUPLEX RECEPTACLE IN WEATHERPROOF ENCLOSURE. SEE LANDSCAPE PLANS FOR LOCATIONS.
- J — JUNCTION BOX - MOUNTING HEIGHT AND SIZE AS REQUIRED
- PANELBOARD - 0 TO 150 VOLTS TO GROUND
- TRANSFORMER
- 60 — UNFUSED DISCONNECT SWITCH - 3-POLE U.O.N. REFER TO PLANS FOR RATING
- P — 19.5" PEDESTAL WITH DIRECT BURIAL BASE AND GFCI TYPE TAMPER RESISTANT DUPLEX RECEPTACLE - TO BE ARLINGTON #PDCIR-COLOR. MOUNT TOP OF PEDESTAL AT 6" ABOVE FINISHED GRADE. COLOR TO BE SELECTED BY ARCHITECT. SEE LANDSCAPE PLANS FOR LOCATIONS.
- 4 — PLAN NOTE TAG, REFER TO PLANS FOR DESCRIPTION
- A.F.F. — ABOVE FINISHED FLOOR
- E.C. — ELECTRICAL CONTRACTOR
- WP — WEATHERPROOF
- U.O.N. — UNLESS OTHERWISE NOTED
- ONE-LINE DIAGRAM REPRESENTATION OF A MOLDED CASE CIRCUIT BREAKER. 3 POLE U.O.N. REFER TO DIAGRAM FOR TRIP RATING
- ONE-LINE DIAGRAM REPRESENTATION OF A TRANSFORMER, SIZE AS NOTED
- M — ONE-LINE DIAGRAM REPRESENTATION OF A METER
- CLOSED CIRCUIT TELEVISION CAMERA - PROVIDED BY CITY. SEE PLANS FOR DETAILS.
- S — SPEAKER - SEE PLANS FOR DETAILS
- INDICATES UNDERGROUND CONDUIT DUCTBANK WITH TWO HORIZONTAL ROWS OF (2) CONDUITS, TYPICAL - SEE CONDUIT DUCTBANK DETAILS FOR REQUIREMENTS



SERVICE GROUNDING ELECTRODE SYSTEM WIRING DIAGRAM
NO SCALE

1. THE GROUNDING ELECTRODE CONDUCTORS SHALL BE SIZED PER TABLE 250-66 OF THE NEC, RUN CONCEALED IN AREAS OF FINISHED CONSTRUCTION, EXPOSED IN UN-FINISHED AREAS.
2. GROUND CONDUCTORS TO OTHER POINTS AND EQUIPMENT, AS REQUIRED BY NEC ARTICLE 250.

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seal: STATE OF OHIO — BRANDON M. SARGENT PE. 82305 — PROFESSIONAL ENGINEER — 4/9/19

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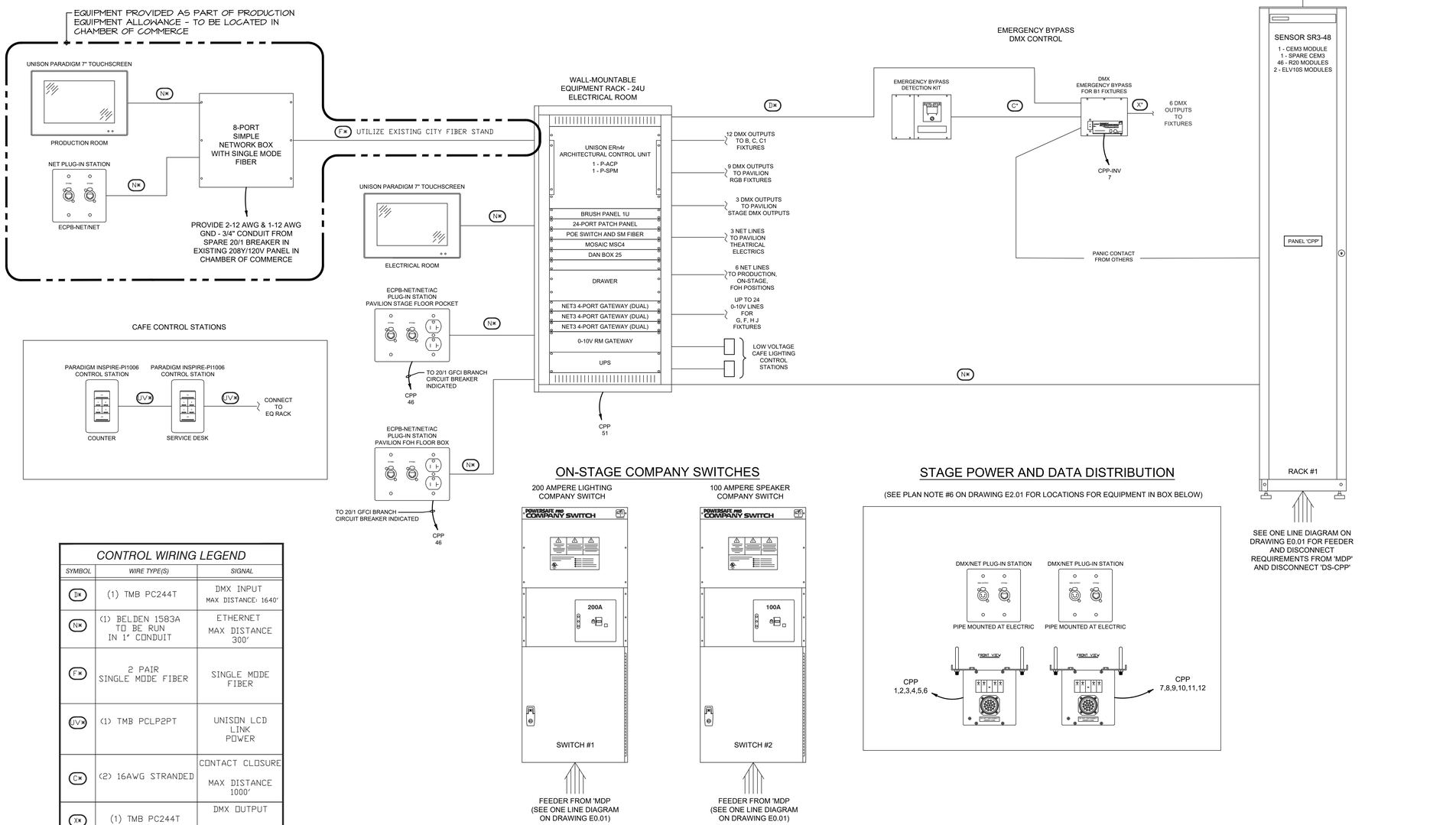
sheet number: E0.01



CONTROL WIRING LEGEND

SYMBOL	WIRE TYPE(S)	SIGNAL
D*	(1) TMB PC244T	DMX INPUT MAX DISTANCE: 1640'
N*	(1) BELDEN 1583A TO BE RUN IN 1" CONDUIT	ETHERNET MAX DISTANCE 300'
F*	2 PAIR SINGLE MODE FIBER	SINGLE MODE FIBER
UV*	(1) TMB PCLP2PT	UNISON LCD LINK POWER
C*	(2) 16AWG STRANDED	CONTACT CLOSURE MAX DISTANCE 1000'
X*	(1) TMB PC244T IN 1" C	DMX OUTPUT MAX DISTANCE 1640'

CONTROLS LAYOUT BY DAN BOGGESS
CONTACT DAN AT 614-600-8880
* = WIRE IDENTIFICATION NUMBER (NOT QUANTITY)

NOTES:

1.) ALL CONTROL WIRING IS PROVIDED BY OTHERS UNLESS NOTED OTHERWISE.

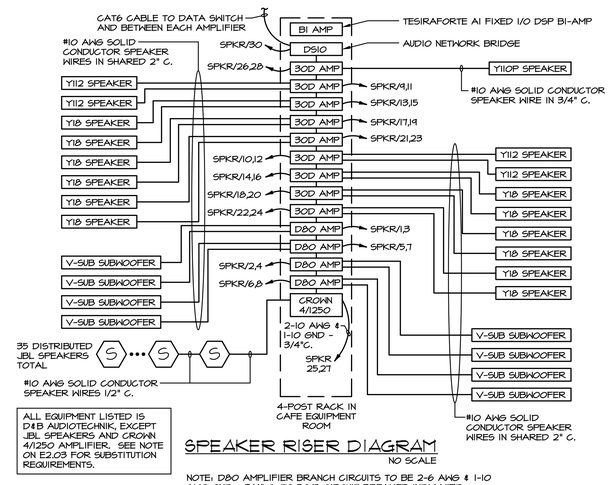
2.) TOTAL COMBINED LENGTH OF UNISON WIRING RUNS CANNOT EXCEED 1640 FEET (500 METERS). UNISON WIRING IS TOPOLOGY FREE - CONTACT CROSS LIGHT INC. FOR ALTERNATE WIRING CONFIGURATIONS.

3.) ALL PARADIGM TOUCHSCREEN STATIONS (P-TS7) REQUIRE (1) #14 AWG. STRANDED GROUND WIRE.

4.) DMX WIRING IS DAISY-CHAIN TOPOLOGY, 32 DEVICES AND 1640' OF CABLE.

LIGHTING CONTROL DIAGRAMS
NO SCALE

PARTS LISTED ARE THE BASIS OF DESIGN AND SUBSTITUTIONS ARE PERMITTED, BUT MUST BE SUBMITTED FOR APPROVAL A MINIMUM OF 10 BUSINESS DAYS PRIOR TO BID.



ALL EQUIPMENT LISTED IS D&B AUDIOTECHNIK, EXCEPT JBL SPEAKERS AND CROWN 4/1250 AMPLIFIER. SEE NOTE ON E2.03 FOR SUBSTITUTION REQUIREMENTS.

SPEAKER RISER DIAGRAM
NO SCALE

NOTE: D80 AMPLIFIER BRANCH CIRCUITS TO BE 2-6 AWG & 1-10 AWG GND - 3/4" C. TO 50/2 CIRCUIT BREAKER INDICATED.

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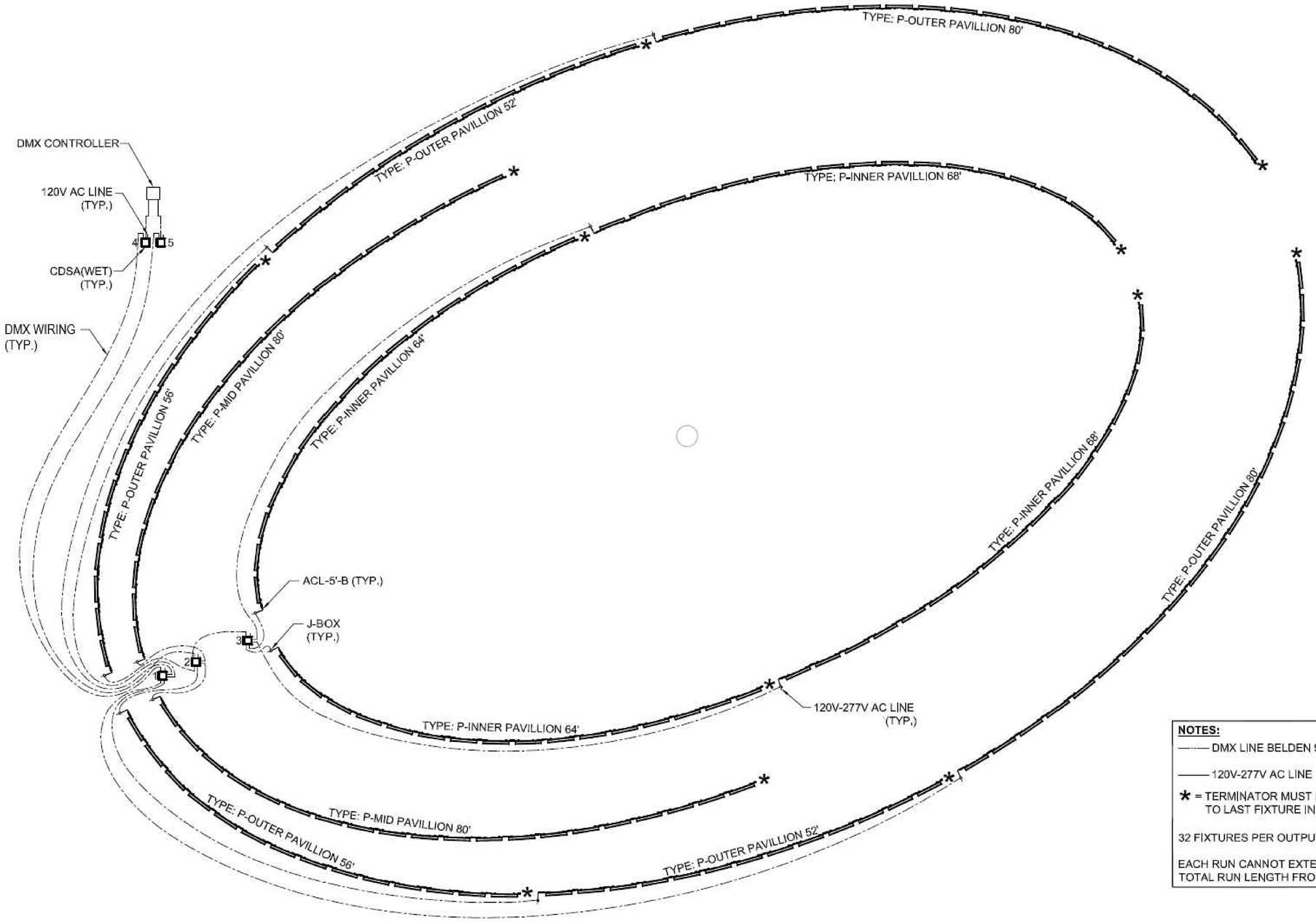


TYPE 'P' DMX WIRING SCHEMATIC DIAGRAM
NO SCALE

NOTE: SEE 'CDS-A WET' WIRING DIAGRAM FOR 120V WIRING REQUIREMENTS.

NOTES:

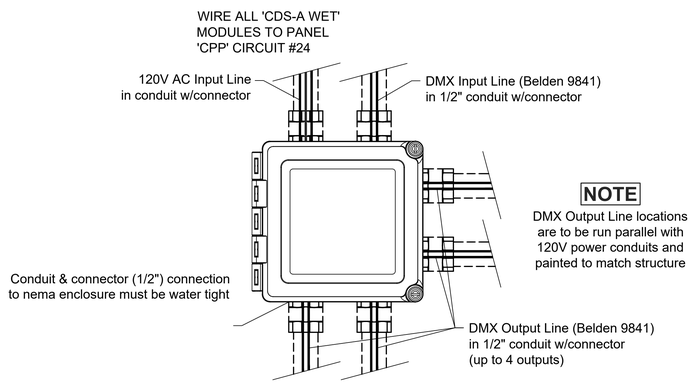
—·—·— DMX LINE BELDEN 9841

——— 120V-277V AC LINE

* = TERMINATOR MUST BE APPLIED TO LAST FIXTURE IN RUN

32 FIXTURES PER OUTPUT ON CDS-A

EACH RUN CANNOT EXTEND 900'
TOTAL RUN LENGTH FROM CDS-A



NOTE
DMX Output Line locations are to be run parallel with 120V power conduits and painted to match structure

INSIGHT 'CDS-A WET' WIRING DIAGRAM
NO SCALE

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STATE OF OHIO
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4/30/19

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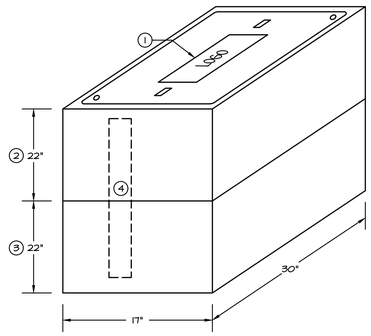
TYPE 'P' & 'P1' DMX WIRING DIAGRAM

sheet number
E0.03



HANDHOLE DETAIL #1 - MIX POSITION

NO SCALE

SPECIFICATIONS:

A. U.L. LISTED ENCLOSURES, BOXES AND COVERS ARE REQUIRED TO CONFORM TO ALL TEST PROVISIONS OF THE MOST CURRENT ANSI/SCTE 77 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY" FOR TIER 8 APPLICATIONS. WHEN MULTIPLE "TIERS" ARE SPECIFIED THE BOXES MUST PHYSICALLY ACCOMMODATE AND STRUCTURALLY SUPPORT COMPATIBLE COVERS WHILE POSSESSING THE HIGHEST TIER RATING. ALL COVERS ARE REQUIRED TO HAVE THE TIER LEVEL RATING EMBOSSED ON THE SURFACE. IN NO ASSEMBLY CAN THE COVER DESIGN LOAD EXCEED THE DESIGN LOAD OF THE BOX. ALL COMPONENTS IN AN ASSEMBLY (BOX & COVER) ARE MANUFACTURED USING MATCHED SURFACE TOOLING. INDEPENDENT THIRD PARTY VERIFICATION OR TEST REPORTS STAMPED BY A REGISTERED PROFESSIONAL ENGINEER CERTIFYING THAT ALL TEST PROVISIONS OF THIS SPECIFICATION HAVE BEEN MET ARE REQUIRED WITH EACH SUBMITTAL.

B. BOX SHALL BE OPEN BOTTOM, MULTIPLE SECTION, PRECAST, POLYMER CONCRETE BY HUBBELL-QUAZITE AS FOLLOWS:

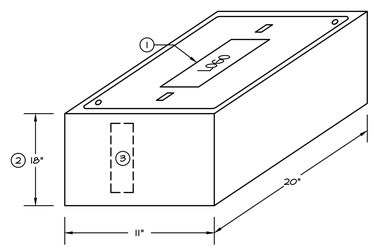
1. GASKETED COVER WITH PULL SLOTS, "CONTROLS" LOGO, (2) STAINLESS STEEL HEX BOLTS WITH WASHERS AND NON-SKID SURFACE - CATALOG NO. PG1730HA0014.
2. GASKETED TOP ENCLOSURE, 2" HIGH - CATALOG NO. PG1730B622.
3. 22" HIGH BOX EXTENSION - CATALOG NO. PG1730B622.
4. BOX UNISTRUT RACK - 1 5/8" X 1 5/8"

C. ACCEPTABLE EQUIVALENT MANUFACTURERS ARE CDR SYSTEMS CORPORATION AND HIGHLINE PRODUCTS INCORPORATED.

D. INSTALLATION REQUIRES THE GASKETED COVER, THE GASKETED 22" TOP ENCLOSURE AND THE 22" EXTENSION BOX.

E. PREPARE THE EXCAVATED CAVITY (17+24" x 30+24" x 44+6" DEEP MINIMUM) AND INSTALL THE BOX IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED INSTALLATION REQUIREMENTS. PROVIDE 6" DEEP PEA GRAVEL BASE AT BOTTOM OF EXCAVATED AREA.

F. INSTALL TOP OF BOX RECESSED TO ACCEPT PAVERS. COORDINATE RECESSED DEPTH WITH LANDSCAPE DRAWINGS. PAVERS TO BE INSTALLED ON TOP OF BOX LID.



HANDHOLE DETAIL #2 - STAGE

NO SCALE

SPECIFICATIONS:

A. U.L. LISTED ENCLOSURES, BOXES AND COVERS ARE REQUIRED TO CONFORM TO ALL TEST PROVISIONS OF THE MOST CURRENT ANSI/SCTE 77 "SPECIFICATION FOR UNDERGROUND ENCLOSURE INTEGRITY" FOR TIER 8 APPLICATIONS. WHEN MULTIPLE "TIERS" ARE SPECIFIED THE BOXES MUST PHYSICALLY ACCOMMODATE AND STRUCTURALLY SUPPORT COMPATIBLE COVERS WHILE POSSESSING THE HIGHEST TIER RATING. ALL COVERS ARE REQUIRED TO HAVE THE TIER LEVEL RATING EMBOSSED ON THE SURFACE. IN NO ASSEMBLY CAN THE COVER DESIGN LOAD EXCEED THE DESIGN LOAD OF THE BOX. ALL COMPONENTS IN AN ASSEMBLY (BOX & COVER) ARE MANUFACTURED USING MATCHED SURFACE TOOLING. INDEPENDENT THIRD PARTY VERIFICATION OR TEST REPORTS STAMPED BY A REGISTERED PROFESSIONAL ENGINEER CERTIFYING THAT ALL TEST PROVISIONS OF THIS SPECIFICATION HAVE BEEN MET ARE REQUIRED WITH EACH SUBMITTAL.

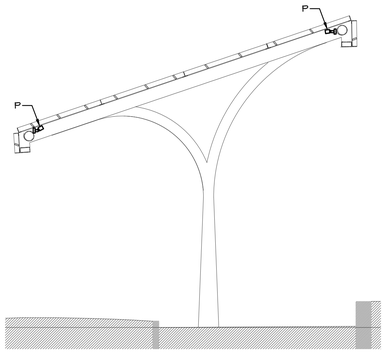
B. BOX SHALL BE OPEN BOTTOM, MULTIPLE SECTION, PRECAST, POLYMER CONCRETE BY HUBBELL-QUAZITE AS FOLLOWS:

1. GASKETED COVER WITH PULL SLOTS, "CONTROLS" LOGO, (2) STAINLESS STEEL HEX BOLTS WITH WASHERS AND NON-SKID SURFACE - CATALOG NO. PG1120HA0014.
2. GASKETED ENCLOSURE, 2" HIGH - CATALOG NO. PG1120B618.
3. BOX UNISTRUT RACK - 1 5/8" X 1 5/8"

C. ACCEPTABLE EQUIVALENT MANUFACTURERS ARE CDR SYSTEMS CORPORATION AND HIGHLINE PRODUCTS INCORPORATED.

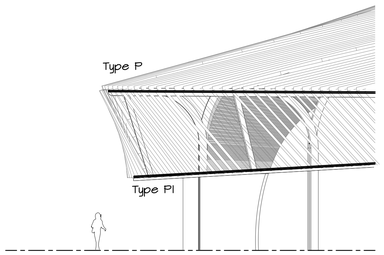
D. INSTALL THE BOX IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED INSTALLATION REQUIREMENTS. PROVIDE 6" DEEP PEA GRAVEL BASE AT BOTTOM OF EXCAVATED AREA.

E. INSTALL TOP OF BOX RECESSED TO ACCEPT PAVERS. COORDINATE RECESSED DEPTH WITH LANDSCAPE DRAWINGS. PAVERS TO BE INSTALLED ON TOP OF BOX LID.



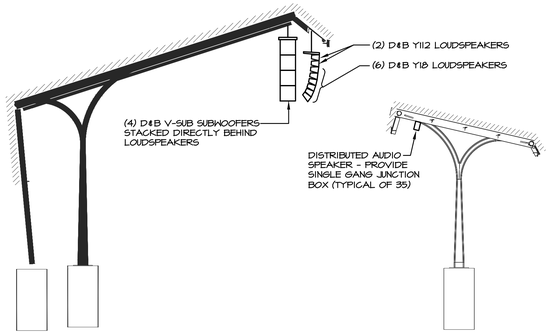
TYPE 'P' FIXTURE MOUNTING DETAIL

NO SCALE



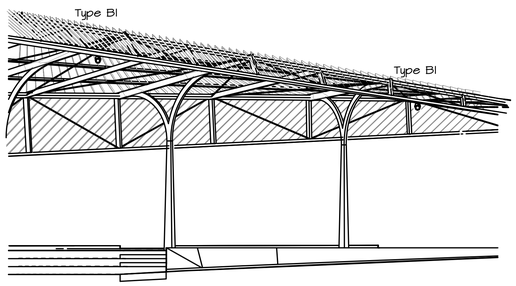
TYPE 'P' & 'P1' FIXTURE MOUNTING DETAIL

NO SCALE



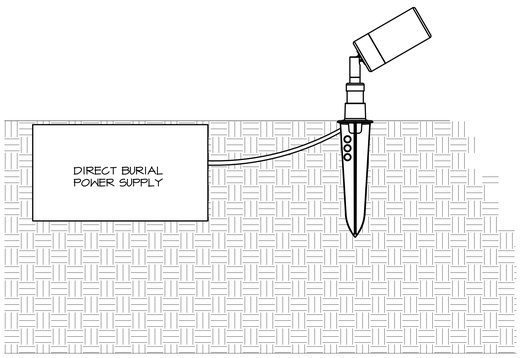
SPEAKER MOUNTING DETAIL

NO SCALE



TYPE 'B1' FIXTURE MOUNTING DETAIL

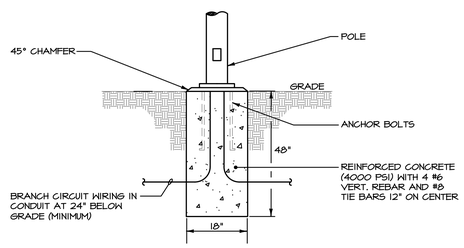
NO SCALE



TYPE 'R' FIXTURE MOUNTING DETAIL

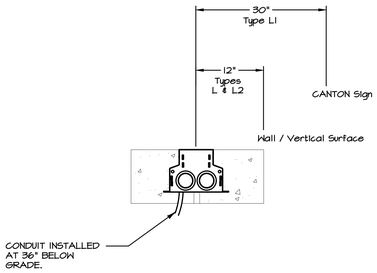
NO SCALE

NOTE: SEE LANDSCAPE PLANS FOR LOCATIONS.



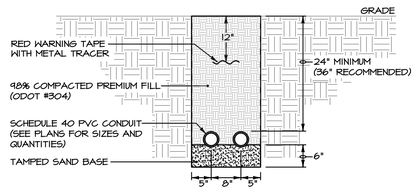
TYPE 'F' CATENARY LIGHTING POLE BASE DETAIL

NO SCALE



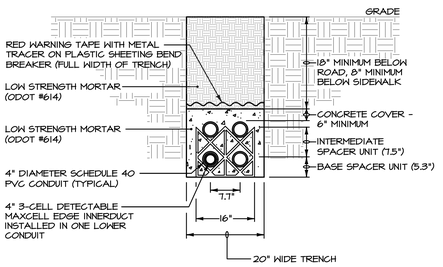
Type 'L' & 'L1' INGRADE BASE DETAIL

NO SCALE



TYPICAL UNDERGROUND CONDUIT DETAIL - NON ENCASED

NO SCALE



TYPICAL UNDERGROUND COMMUNICATIONS CONDUIT DUCTBANK DETAIL - CONCRETE ENCASED

NO SCALE

NOTES:

1. REQUIRES CARLON "SNAP-LOC" SPACER SYSTEM, WITH SPACERS AT 8'-0" ON CENTER, MAXIMUM.
2. PROVIDE SPACER UNITS AND TRENCH WIDTH TO ACCOMMODATE QUANTITY AND ORIENTATION OF CONDUITS AS SHOWN ON THE DRAWINGS.
3. ALL DUCTS COMPLETE TO NEC STANDARDS WITH PULL ROPE TIED OFF IN PULLBOX OR VAULT.
4. MINIMUM 36" SWEEPS ON 90 DEGREE BENDS.
5. ALL RECORDS SHALL BE CREATED BY THE INSTALLATION CONTRACTOR AND TURNED OVER AT THE COMPLETION OF THE WORK TO THE CITY ENGINEER. THE FORMAT SHALL BE COMPUTER BASED AND BOTH SOFT COPIES AND HARD COPIES SHALL BE PART OF THE AS-BUILT PACKAGE.

MKSK

LANDSCAPE ARCHITECTURE + URBAN PLANNING

462 SOUTH LUDLOW ALLEY
COLUMBUS, OHIO 43215
614 6212796 MKSKSTUDIOS.COM

client / owner
City of Canton

project name
CENTENNIAL PLAZA

project address
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Canton, OH 44702

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SoL HARRIS/DAY
6677 FRANK AVENUE NW, NORTH CANTON, OHIO 44720
p 330.493.3722 | SOLHARRISDAY.COM

structural engineer
ARUP
77 WATER STREET
NEW YORK, NY 10005
p 212.896.3000 | ARUP.COM

civil engineer
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7100 E PLEASANT VALLEY ROAD
SUITE 220
INDEPENDENCE, OH 44131
p 440.349.2000 | ATWELL-GROUP.COM

lighting design / electrical engineer
TEC STUDIO / TECH INC.
7510 SLATE RIDGE BOULEVARD
COLUMBUS, OH 43068
p 614.866.2868 | TECSTUDIOINC.COM

water feature
SOUTHERN AQUATICS, INC.
150 HILDEN RD
SUITE 305
PONTE VEDRA BEACH, FL 32081
p 904.824.1110 | SAIFOUNTAINS.COM

Not For Construction

revision	date	issued

seal

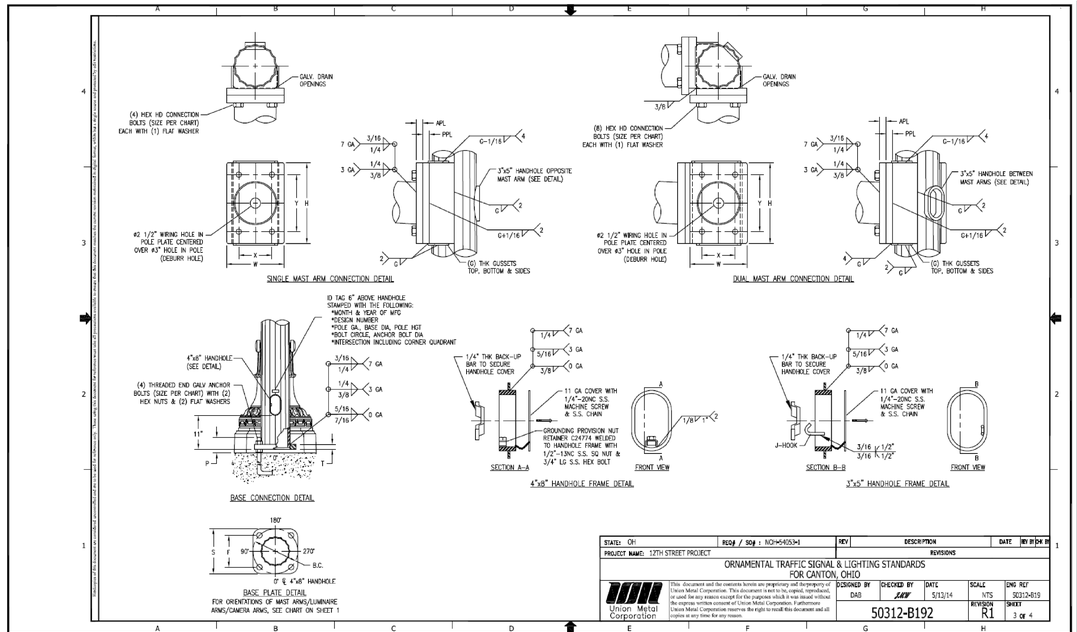
STATE OF OHIO
BRANDON M. SARGENT
PE. 82305
REGISTERED PROFESSIONAL ENGINEER
6/10/19

issue date

project number

sheet name
ELECTRICAL DETAILS

sheet number
E0.04



STATE: OH	REQ# / SO# : NOH54503-1	REV	DESCRIPTION	DATE	BY
PROJECT NAME: 12TH STREET PROJECT			REVISIONS		

ORNAMENTAL TRAFFIC SIGNAL & LIGHTING STANDARDS FOR CANTON, OHIO

Union Metal Corporation

DESIGNED BY	CHECKED BY	DATE	SCALE	DWG REF
DAB	JAW	5/13/14	NTS	50312-B19
		REVISION	SHEET	
50312-B192		R1	3 OF 4	

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th St. NE 44705 : 330-489-3381 : www.cantonohio.gov/engineering

APPROVED DATE: APRIL 2012

APPROVED BY: EEM

DRAWING FILE NAME: ce_61-65_LIGHTPOLES.dwg

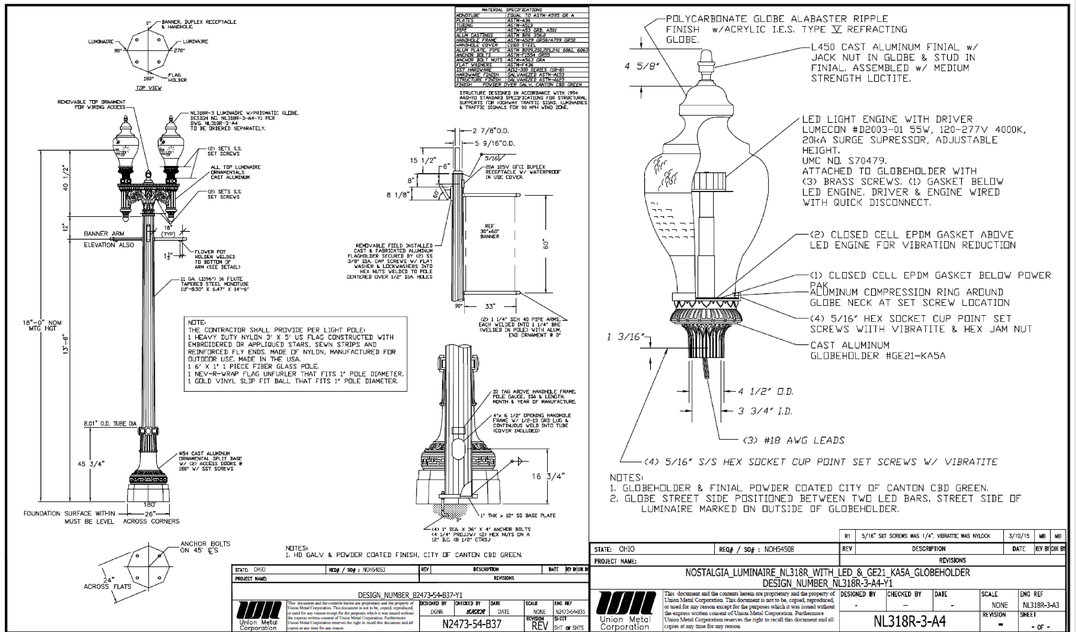
REVISIONS		
DESCRIPTION	DATE	BY
INSERTED UM DRAWING 50312-B192	4/17/15	EGM

STANDARD DRAWING NO. 62

NOSTALGIC POLE FOUNDATION & WIRING DIAGRAM

SHEET 2 OF 5

CITY STANDARD LIGHTING POLE BASE DETAILS
NO SCALE



STATE: OHIO	REQ# / SO# : NOH54503	REV	DESCRIPTION	DATE	BY
PROJECT NAME:			REVISIONS		

DESIGN_NUMBER_B2473-54-B37-Y1

Union Metal Corporation

DESIGNED BY	CHECKED BY	DATE	SCALE	DWG REF
DOM.	JAW	DATE	NONE	NOH544503
		REVISION	SHEET	
N2473-54-B37		REV	Sht. of SHTS	

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th St. NE 44705 : 330-489-3381 : www.cantonohio.gov/engineering

APPROVED DATE: MARCH 2014

APPROVED BY: EEM

DRAWING FILE NAME: ce_61-65_LIGHTPOLES.dwg

REVISIONS		
DESCRIPTION	DATE	BY
INSERTED UM DRAWINGS	4/17/15	EGM
N2473-54-B37 & NL318R-3-A4		
FLOWER POT HOLDERS ADDED	8/23/16	EGM
LED ENGINE UPDATE	7/6/2018	RMB

STANDARD DRAWING NO. 63

NOSTALGIA LIGHT POLE & LUMINAIRE

SHEET 3 OF 5

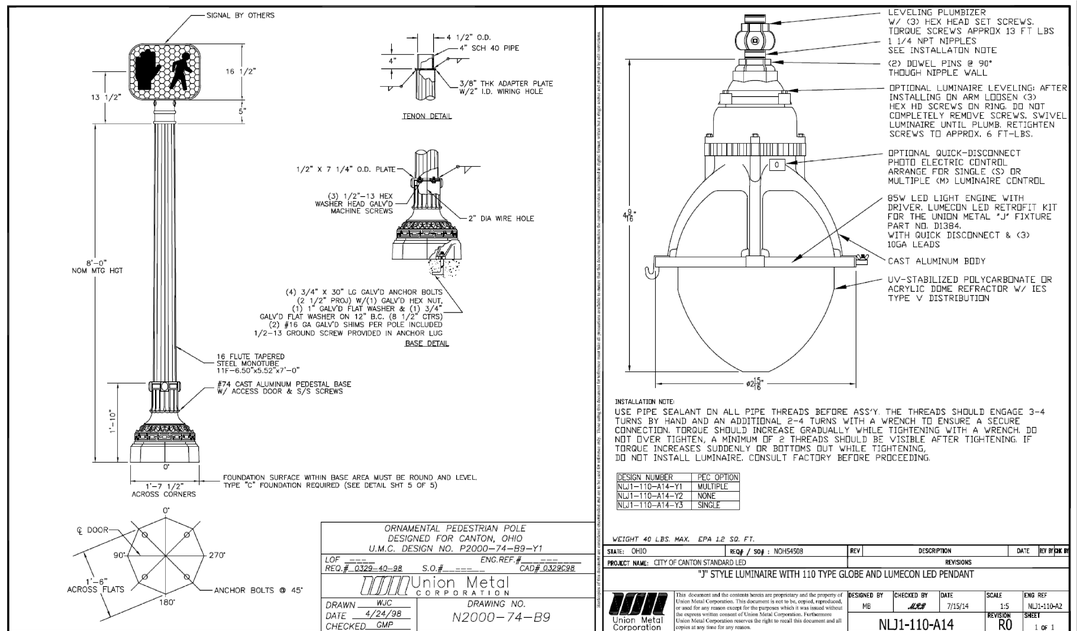
CITY STANDARD LIGHTING POLE DETAILS
NO SCALE

STATE: OHIO	REQ# / SO# : NOH54508	REV	DESCRIPTION	DATE	BY
PROJECT NAME:		R1	5/16" SET SCREWS WAS 1/4". VIBRATITE WAS WILDOX	3/10/15	MB
		REV	REVISIONS		

NOSTALGIA_LUMINAIRE_NL318R_WITH_LED_& _GE21_KASA_GLOBEHOLDER
DESIGN_NUMBER_NL318R-3-A4-Y1

Union Metal Corporation

DESIGNED BY	CHECKED BY	DATE	SCALE	DWG REF
-	-	-	NONE	NL318R-3-A3
		REVISION	SHEET	
NL318R-3-A4		-	- OF -	

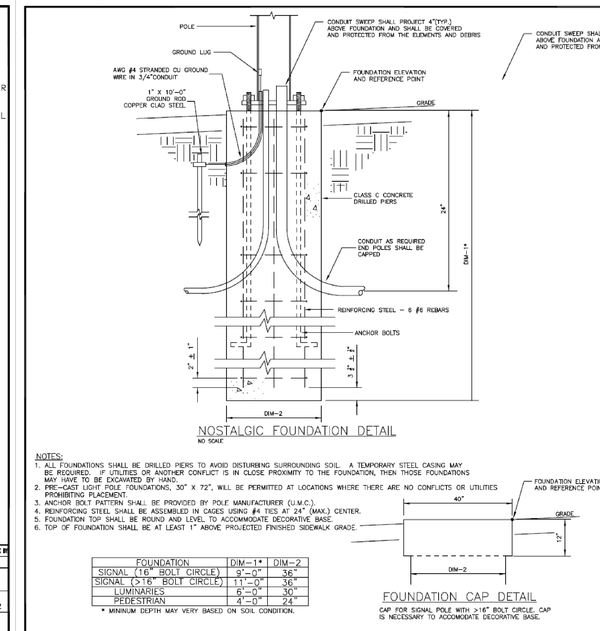


ORNAMENTAL PEDESTRIAN POLE
DESIGNED FOR CANTON, OHIO
U.M.C. DESIGN NO. P2000-74-B9-Y1

LOF ____ ENG.REF.# ____
REQ.# 0329-40-98 S.O.# ____ CAD# 0329C98

Union Metal CORPORATION

DRAWN WJC DRAWING NO.
DATE 4/24/98 N2000-74-B9
CHECKED GMP



INSTALLATION NOTE:
USE PIPE SEALANT ON ALL PIPE THREADS BEFORE ASS'Y. THE THREADS SHOULD ENGAGE 3-4 TURNS BY HAND AND AN ADDITIONAL 2-4 TURNS WITH A WRENCH TO ENSURE A SECURE CONNECTION. TORQUE SHOULD INCREASE GRADUALLY WHILE TIGHTENING WITH A WRENCH. DO NOT OVER TIGHTEN, A MINIMUM OF 2 THREADS SHOULD BE VISIBLE AFTER TIGHTENING IF TORQUE INCREASES SUDDENLY OR BOTTOMS OUT WHILE TIGHTENING. DO NOT INSTALL LUMINAIRE. CONSULT FACTORY BEFORE PROCEEDING.

DESIGN NUMBER	PEC OPTION
NLJ1-110-A14-Y1	MULTIPLE
NLJ1-110-A14-Y2	NONE
NLJ1-110-A14-Y3	SINGLE

WEIGHT 40 LBS. MAX. EPA 1.0 SQ. FT.

STATE: OHIO	REQ# / SO# : NOH54508	REV	DESCRIPTION	DATE	BY
PROJECT NAME: CITY OF CANTON STANDARD LED			REVISIONS		

"J" STYLE LUMINAIRE WITH 110 TYPE GLOBE AND LUMECON LED PENDANT

Union Metal Corporation

DESIGNED BY	CHECKED BY	DATE	SCALE	DWG REF
MB	JAW	7/15/14	1:5	NLJ1-110-A2
		REVISION	SHEET	
NLJ1-110-A14		R0	1 OF 1	

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th St. NE 44705 : 330-489-3381 : www.cantonohio.gov/engineering

APPROVED DATE: APRIL 2012

APPROVED BY: EEM

DRAWING FILE NAME: ce_61-65_LIGHTPOLES.dwg

REVISIONS		
DESCRIPTION	DATE	BY
INSERTED UM DRAWING NLJ1-110-A14	4/17/15	EGM
NEW LED RETROFIT KIT SPEC.	8/26/16	EEM

STANDARD DRAWING NO. 64

NOSTALGIC POLE FOUNDATION & WIRING DIAGRAM

SHEET 4 OF 5

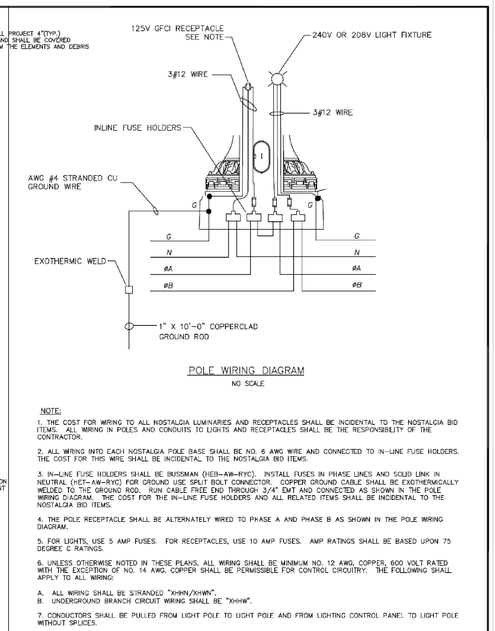
CITY STANDARD PEDESTRIAN SIGNAL DETAILS
NO SCALE

NOTES:
1. ALL FOUNDATIONS SHALL BE DRILLED PIERS TO AVOID DISTURBING SURROUNDING SOIL. A TEMPORARY STEEL CASING MAY BE REQUIRED. IF UTILITIES OR ANOTHER CONFLICT IS IN CLOSE PROXIMITY TO THE FOUNDATION, THEN THOSE FOUNDATIONS MAY HAVE TO BE EXCAVATED BY HAND.
2. PRE-CAST LIGHT POLE FOUNDATIONS, 30" X 72", WILL BE PERMITTED AT LOCATIONS WHERE THERE ARE NO CONFLICTS OR UTILITIES PROHIBITING PLACEMENT.
3. ANCHOR BOLT PATTERN SHALL BE PROVIDED BY POLE MANUFACTURER (U.M.C.).
4. REINFORCING STEEL SHALL BE ASSEMBLED IN CAGES USING #4 TIES AT 24" (MAX.) CENTER.
5. FOUNDATION TOP SHALL BE ROUND AND LEVEL TO ACCOMMODATE DECORATIVE BASE.
6. TOP OF FOUNDATION SHALL BE AT LEAST 1" ABOVE PROJECTED FINISHED SIDEWALK GRADE.

FOUNDATION	DIM-1*	DIM-2
SIGNAL (16" BOLT CIRCLE)	9'-0"	36"
SIGNAL (>16" BOLT CIRCLE)	11'-0"	36"
LUMINARIES	6'-0"	30"
PEDESTRIAN	4'-0"	24"

* MINIMUM DEPTH MAY VERY BASED ON SOIL CONDITION.

FOUNDATION CAP DETAIL
CAP FOR SIGNAL POLE WITH >16" BOLT CIRCLE. CAP IS NECESSARY TO ACCOMODATE DECORATIVE BASE.



POLE WIRING DIAGRAM
NO SCALE

NOTE:
1. THE COST FOR WIRING TO ALL NOSTALGIA LUMINARIES AND RECEPTACLES SHALL BE INCIDENTAL TO THE NOSTALGIA BID ITEMS. ALL WIRING IN POLES AND CONDUITS TO LIGHTS AND RECEPTACLES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. ALL WIRING INTO EACH NOSTALGIA POLE BASE SHALL BE NO. 6 AWG WIRE AND CONNECTED TO IN-LINE FUSE HOLDERS. THE COST FOR THIS WIRE SHALL BE INCIDENTAL TO THE NOSTALGIA BID ITEMS.
3. IN-LINE FUSE HOLDERS SHALL BE BUSSMAN (HEB-AW-RYC). INSTALL FUSES IN PHASE LINES AND SOLID LINK IN NEUTRAL (HET-AW-RYC) FOR GROUND USE SPLIT BOLT CONNECTOR. COPPER GROUND CABLE SHALL BE EXOTHERMICALLY WELDED TO THE GROUND ROD. RUN CABLE FREE END THROUGH 3/4" EMT AND CONNECTED AS SHOWN IN THE POLE WIRING DIAGRAM. THE COST FOR THE IN-LINE FUSE HOLDERS AND ALL RELATED ITEMS SHALL BE INCIDENTAL TO THE NOSTALGIA BID ITEMS.
4. THE POLE RECEPTACLE SHALL BE ALTERNATELY WIRED TO PHASE A AND PHASE B AS SHOWN IN THE POLE WIRING DIAGRAM.
5. FOR LIGHTS, USE 5 AMP FUSES. FOR RECEPTACLES, USE 10 AMP FUSES. AMP RATINGS SHALL BE BASED UPON 75 DEGREE C RATINGS.
6. UNLESS OTHERWISE NOTED IN THESE PLANS, ALL WIRING SHALL BE MINIMUM NO. 12 AWG, COPPER, 600 VOLT RATED WITH THE EXCEPTION OF NO. 14 AWG, COPPER SHALL BE PERMISSIBLE FOR CONTROL CIRCUITRY. THE FOLLOWING SHALL APPLY TO ALL WIRING:
A. ALL WIRING SHALL BE STRANDED "XHHN/XHWN".
B. UNDERGROUND BRANCH CIRCUIT WIRING SHALL BE "XHHW".
7. CONDUCTORS SHALL BE PULLED FROM LIGHT POLE TO LIGHT POLE AND FROM LIGHTING CONTROL PANEL TO LIGHT POLE WITHOUT SPLICES.

OFFICE OF THE CITY ENGINEER
CANTON, OHIO
DANIEL J. MOEGLIN, P.E., CITY ENGINEER
2436 30th St. NE 44705 : 330-489-3381 : www.cantonohio.gov/engineering

APPROVED DATE: MARCH 2014

APPROVED BY: EEM

DRAWING FILE NAME: ce_61-65_LIGHTPOLES.dwg

REVISIONS		
DESCRIPTION	DATE	BY
MODIFIED DIMS AND OTHER CHANGES	4/29/14	NJL
MODIFIED FOUNDATION NOTES	2/21/17	EGM

STANDARD DRAWING NO. 65

NOSTALGIC POLE FOUNDATION & WIRING DIAGRAM

SHEET 5 OF 5

CITY STANDARD LIGHTING POLE BASE DETAILS
NO SCALE

MKSK
LANDSCAPE ARCHITECTURE + URBAN PLANNING
462 SOUTH LUDLOW ALLEY
COLUMBUS, OHIO 43215
614 6212796 MKSKSTUDIOS.COM

client / owner
City of Canton

project name
CENTENNIAL PLAZA

project address
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Canton, OH 44702

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SoL HARRIS/DAY
6677 FRANK AVENUE NW, NORTH CANTON, OHIO 44720
p 330.493.3722 | SOLHARRISDAY.COM

structural engineer
ARUP
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NEW YORK, NY 10005
p 212.896.3000 | ARUP.COM

civil engineer
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SUITE 220
INDEPENDENCE, OH 44131
p 440.349.2000 | ATWELL-GROUP.COM

lighting design / electrical engineer
TEC STUDIO / TECH INC.
7510 SLATE RIDGE BOULEVARD
COLUMBUS, OH 43068
p 614.866.2868 | TECSTUDIOINC.COM

water feature
SOUTHERN AQUATICS, INC.
150 HILDEN RD
SUITE 305
PONTE VEDRA BEACH, FL 32081
p 904.824.1110 | SAIFOUNTAINS.COM

Not For Construction

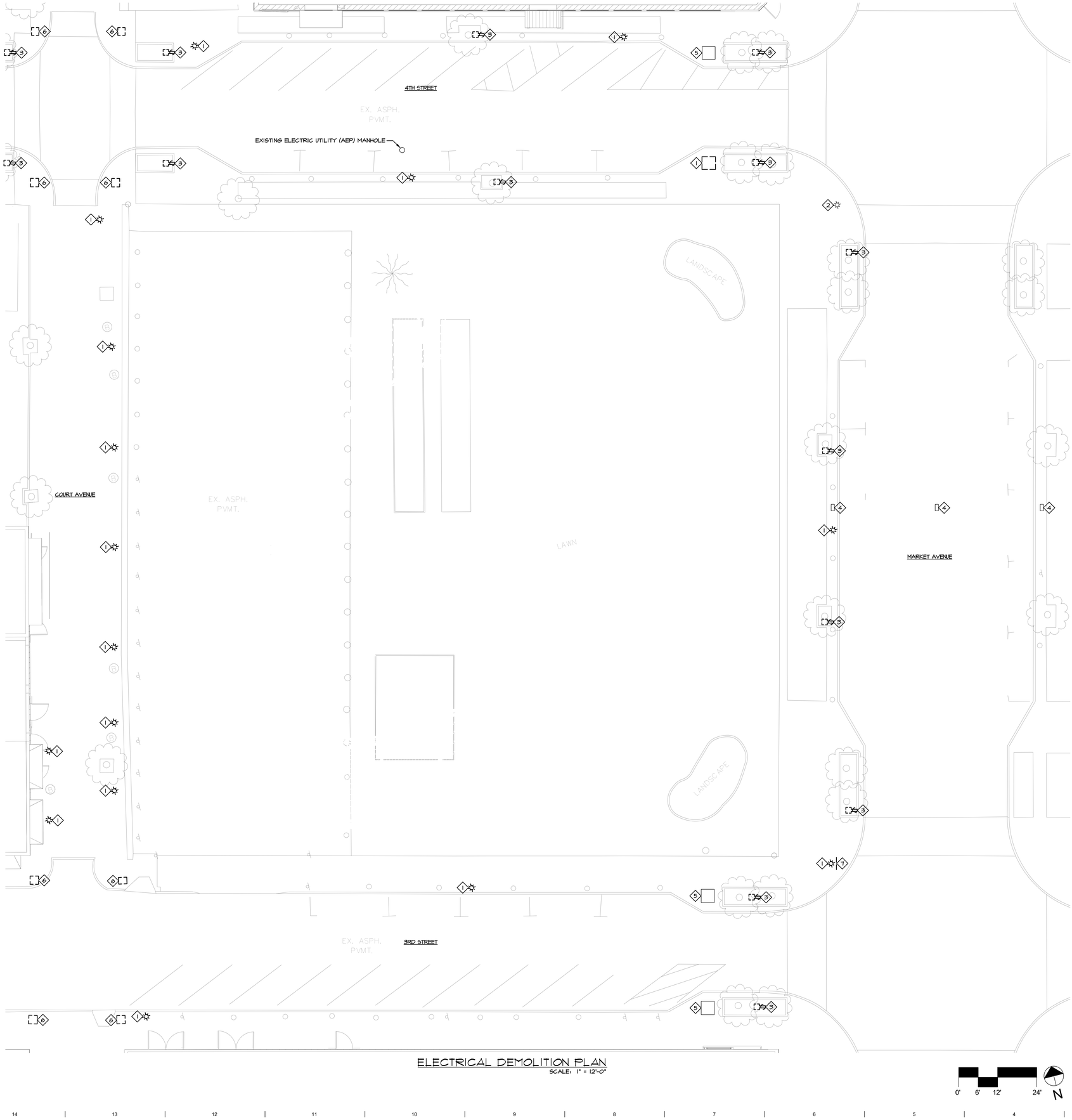
revision	date	issued

seal

issue date | project number

sheet name
ELECTRICAL DETAILS

sheet number
E0.05



ELECTRICAL DEMOLITION PLAN

SCALE: 1" = 12'-0"

PLAN NOTES

1. EXISTING SITE LIGHTING FIXTURE AND POLE/BASE TO BE REMOVED. PROVIDE 12"X12" GRADE BOX AND DEMOLISHED POLE LOCATION AND SPLICE EXISTING WIRING TO MAINTAIN SERVICE TO ALL DOWNSTREAM LIGHTING FIXTURES TO REMAIN. SALVAGED POLES, LIGHT ENGINES AND GLOBES MUST BE DELIVERED TO CANTON CITY ENGINEERING, 2436 30TH ST NE, CANTON, OH 44705.
2. EXISTING SIGNAL LIGHT POLE TO REMAIN. MAINTAIN AND PROTECT DURING CONSTRUCTION.
3. EXISTING PEDESTAL WITH WEATHERPROOF CONVENIENCE RECEPTACLE TO BE REMOVED. REMOVE CONDUIT AND WIRING BACK TO SOURCE.
4. EXISTING 200 AMPERE, 120/240V IN-GRADE SERVICE VAULT TO REMAIN. MAINTAIN AND PROTECT DURING CONSTRUCTION.
5. EXISTING LIGHTING FIXTURE AND MASONRY BRICK BASE TO REMAIN. MAINTAIN AND PROTECT DURING CONSTRUCTION. SEE NEW WORK PLANS FOR NEW CONNECTION REQUIREMENTS.
6. EXISTING BRICK COLUMN WITH TOP MOUNTED LIGHTING FIXTURE TO BE REMOVED. REMOVE CONDUIT AND WIRING BACK TO SOURCE.
7. EXISTING PEDESTRIAN SIGNAL LIGHT TO BE RELOCATED TO NEW POLE LIGHT AT THIS LOCATION. EXTEND CONDUIT AND WIRING TO NEW LOCATION. SEE DRAWING E2.01 FOR ADDITIONAL DETAILS.

0' 6' 12' 24' N

MKSK
LANDSCAPE ARCHITECTURE + URBAN PLANNING

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revision	date	issued

seal

STATE OF OHIO
BRANDON M. SARGENT
PE. 82305
REGISTERED PROFESSIONAL ENGINEER
12/17/19

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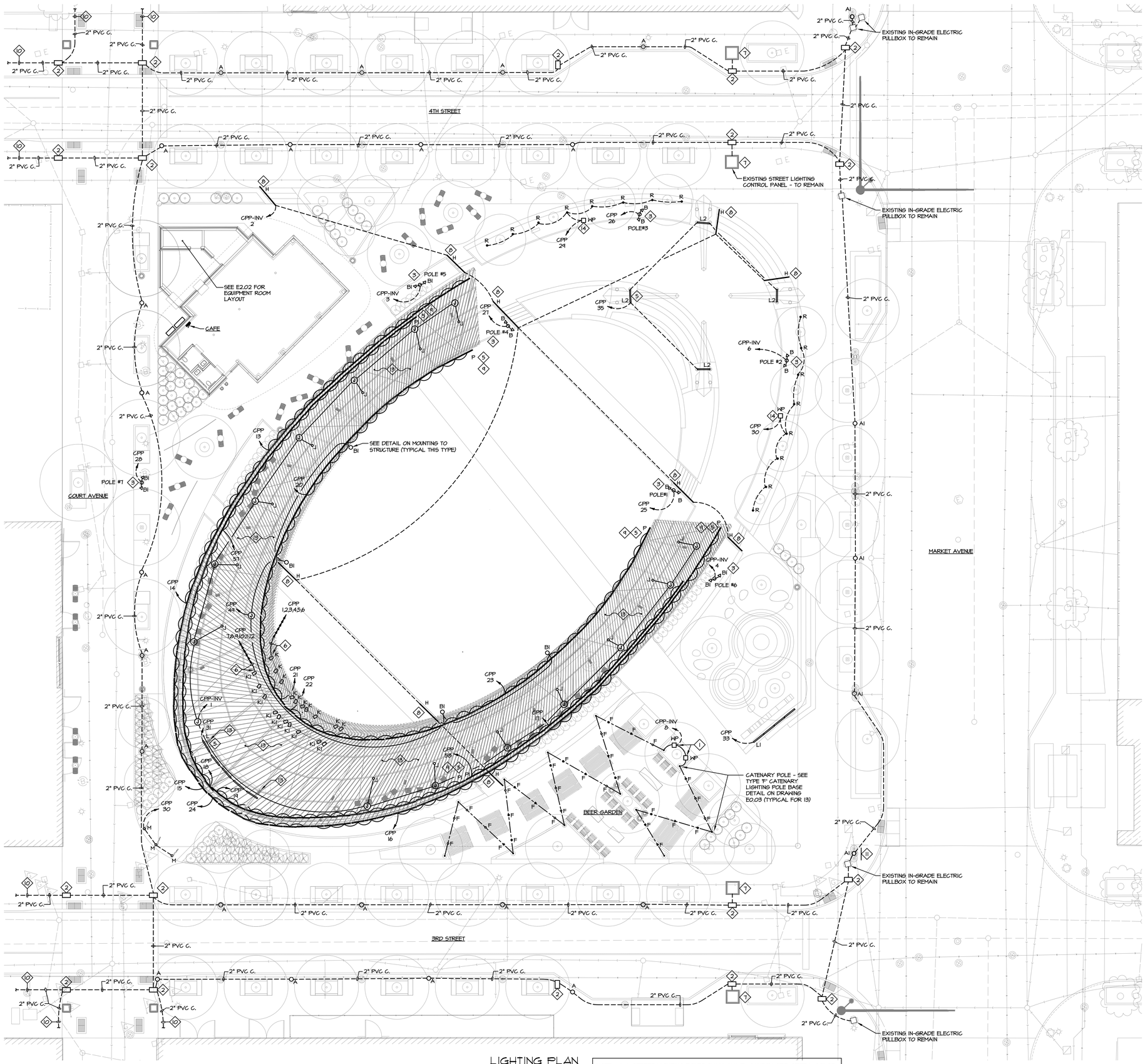
project number

sheet name
ELECTRICAL DEMOLITION PLAN

sheet number
E1.01

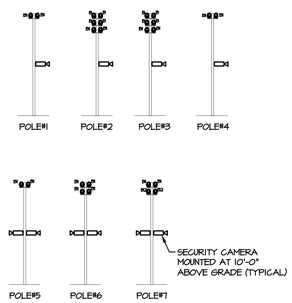


LIGHTING PLAN
SCALE: 1" = 12'-0"

NOTE: ALL STREET LIGHTING POLES SHALL HAVE "CANTON CBD GREEN" COLOR.

PLAN NOTES

1. PROVIDE DIRECT BURIAL POWER SUPPLY FOR TYPE "F".
2. PROVIDE 17" X 30" COMPOSITE PULLBOX WITH TIER 22 LID, LABELED "ELECTRIC."
3. 20' TALL, 6" DIAMETER STAINLESS STEEL SMART UTILITY POLE WITH LIGHTING, SECURITY AND WIFI. 5 YEAR WARRANTY. FINISH TO BE SELECTED BY ARCHITECT. SEE POLE ELEVATIONS FOR DETAILS ON LIGHTING FIXTURE TYPES AND QUANTITIES. PROVIDE (4) FOUR UNIVERSAL YOKES AS SPARE FOR INSTALLATION OF CAMERAS, WIRELESS ACCESS POINTS AND OTHER MISCELLANEOUS EQUIPMENT. TO BE LUMENTECH #FL-T-6-R-20-FINISH-HO / (4)FLTU. PROVIDE ALL PARTS AND ACCESSORIES FOR A COMPLETE SYSTEM.
4. TYPE "H" REQUIRES POWER SUPPLY AND DMX MODULES. COORDINATE DISTANCE AND LENGTH RESTRICTIONS WITH FACTORY ENGINEER.
5. SEE MOUNTING DETAIL. THIS NOTE TYPICAL FOR THIS TYPE.
6. PROVIDE PIPE MOUNTED DMX/NET PLUG-IN STATION WITH IP 65 RATED COVER. PROVIDE REMOVABLE SOCOPEX BREAKOUT WITH 6 CIRCUITS.
7. MAINTAIN EXISTING GLOBE LUMINAIRE MOUNTED TO EXISTING MASONRY COLUMN. CORE EXISTING MASONRY COLUMN AND CONNECT 2" PVC SCHEDULE 40 CONDUIT BELOW GRADE.
8. LIGHT FIXTURE TYPE "H" IS INTEGRATED INTO HANDRAIL. SEE ARCHITECT DRAWINGS FOR CORRECT DIMENSIONS.
9. FIXTURE TYPE "P" AND "P1" REQUIRE ONSITE SINGLE BAY MOCKUP PRIOR TO COMPLETE INSTALLATION TO CONFIRM MOUNTING DETAIL.
10. WIRE NEW STREET POLE LIGHTING TO EXISTING STREET LIGHTING BRANCH CIRCUIT THAT SERVES THE AREA. CONFIRM A MAXIMUM 16 AMPERES LOAD ON 20 AMPERE BRANCH CIRCUIT.
11. RELOCATED PEDESTRIAN SIGNAL LIGHT. SEE CITY STANDARD PEDESTRIAN DETAILS ON DRAWING E0.05 FOR ADDITIONAL REQUIREMENTS.
12. INSIGHT 'CDS-A WET' DMX LIGHTING CONTROL BOX - SEE DRAWING E0.03 FOR DMX WIRING REQUIREMENTS.
13. ALL CONDUITS IN THE PAVILION STRUCTURE SHALL BE ROUTED VERTICALLY UP EITHER OF THE STRUCTURAL COLUMNS BEHIND THE STAGE SCREEN AND THEN DISTRIBUTED HORIZONTALLY ALONG STRUCTURAL ELEMENTS AND CONCEALED BEHIND THE TYPE 'P' LINEAR LIGHT FIXTURES WHERE POSSIBLE. SEE "TYPE 'P' MOUNTING DETAIL" ON DRAWING E0.04 FOR REFERENCE PAVILION CROSS SECTION. ALL CONDUIT ROUTING AND JUNCTION BOX LOCATIONS ALONG STRUCTURE MUST BE APPROVED BY ARCHITECT PRIOR TO ROUGH-IN. ALL CONDUITS AND JUNCTION BOXES MUST BE PAINTED TO MATCH PAVILION STRUCTURE.
14. PROVIDE DIRECT BURIAL POWER SUPPLY FOR TYPE "R".



POLE ELEVATIONS
SCALE: 1" = 12'-0"

NOTE: SEE LIGHTING POLE BASE DETAIL DRAWING E0.03.

0' 6' 12' 24' N

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STATE OF OHIO
BRANDON M. SARGENT
PE. 82305
PROFESSIONAL ENGINEER
4/30/19

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LIGHTING PLAN

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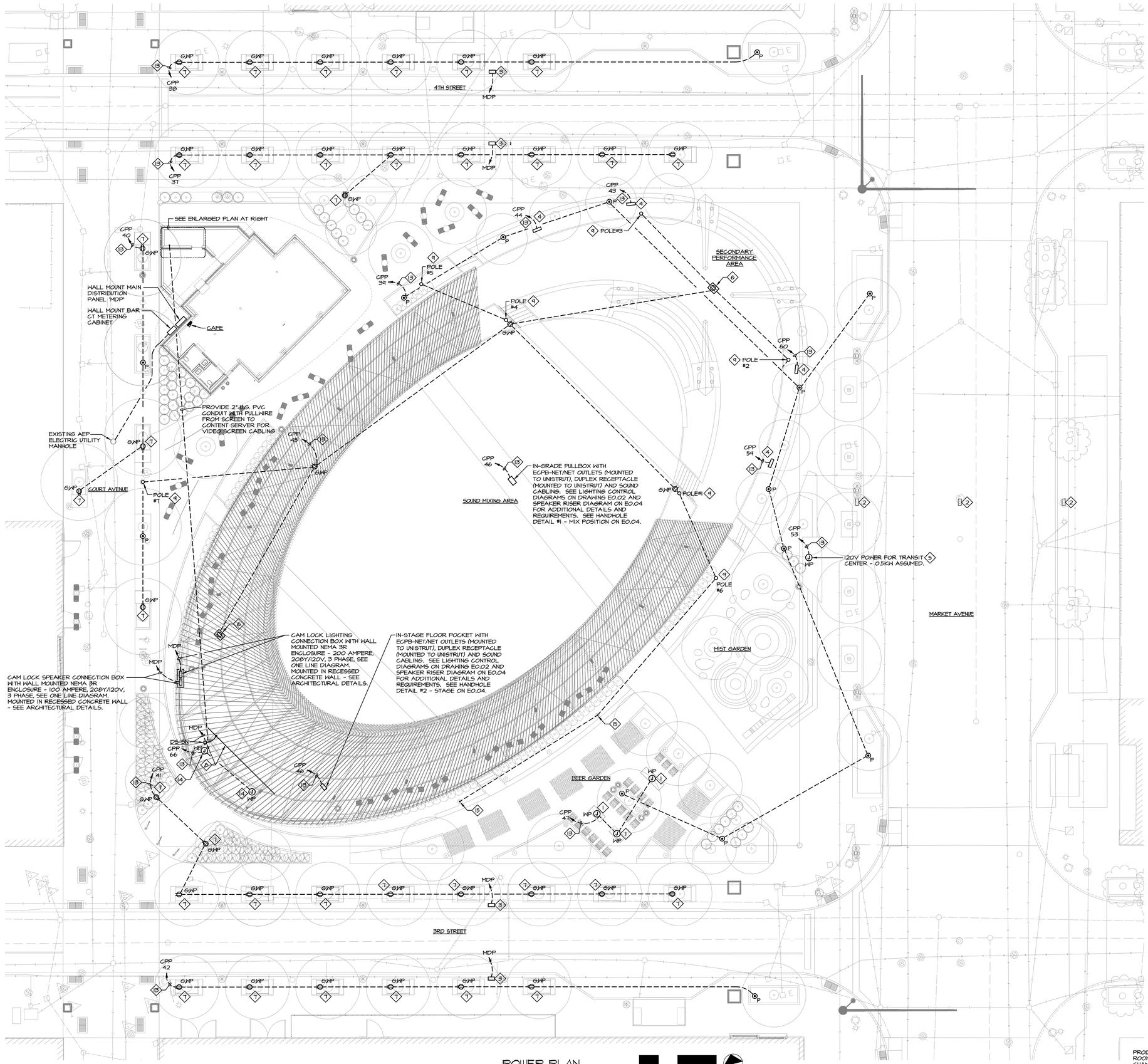
E2.01

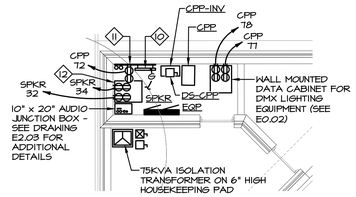


POWER PLAN
SCALE: 1" = 12'-0"

0' 6' 12' 24' N

PLAN NOTES

1. PROVIDE 120V POWER AT FIRE PIT LOCATION - 0.05KW ASSUMED..
2. EXISTING 120/240V IN-GRADE VENDOR SERVICE VAULT TO REMAIN. MAINTAIN AND PROTECT DURING CONSTRUCTION.
3. PROVIDE VENDOR ELECTRIC HANDHOLE WITH 200 AMEPERE, 208/120V, 1 PHASE WEATHERPROOF DISTRIBUTION BLOCK. SEE ONE LINE DIAGRAM FOR ADDITIONAL DETAILS AND WIRING REQUIREMENTS.
4. PROVIDE 120V POWER AS INDICATED AND CAT6A DATA CABLE IN 1" PVC UNDERGROUND CONDUIT BACK TO DATA RACK FOR DIGITAL KIOSK LOCATION - 10KW ASSUMED. KIOSK HAS INTEGRAL DISCONNECT. PROVIDE DIGITAL KIOSKS WITH (2) TWO COLUMNS OF (8) EIGHT 14" X 14" 6MM SCREENS IN CUSTOM ENCLOSURE BY DAKTRONICS. SEE LANDSCAPE DRAWINGS FOR DIGITAL KIOSK DETAILS. EQUAL PRODUCTS MAY BE SUBMITTED FOR CONSIDERATION A MINIMUM OF 7 BUSINESS DAYS PRIOR TO BID DUE DATE.
5. PROVIDE 120V POWER AS INDICATED AND CAT6A DATA CABLE IN 1" PVC UNDERGROUND CONDUIT BACK TO DATA RACK FOR TRANSIT CENTER.
6. PROVIDE OUTDOOR WEATHERPROOF IN-USE GROUND BOX WITH (2) TWO DUPLEX RECEPTACLES AND ULSOE TYPE 6P AND IP68 RATINGS - TO BE WIREMOLD #XB814/XB814C520BK. PROVIDE (3) THREE LOCK NUT TOOLS #XBLNT TO THE CITY.
7. PROVIDE GFCI DUPLEX RECEPTACLE WITH WEATHERPROOF IN-USE COVER MOUNTED RECESSED IN 18" HIGH PRECAST SEATWALL OF TREE PLANTER.
8. 12' HIGH BY 30' WIDE VIDEO WALL - 208V, 3 PHASE, 24.6KW, 68.3 FULL LOAD AMPERES. PROVIDE DAKTRONICS #DVX-6MN-608X1536. EQUAL PRODUCTS MAY BE SUBMITTED FOR CONSIDERATION A MINIMUM OF 7 BUSINESS DAYS PRIOR TO BID DUE DATE. PROVIDE 100 AMPERE NON-FUSED WEATHERPROOF (NEMA 3R) WALL MOUNT DISCONNECT AND 3-2 AWG & 1-8 AWG GND - 1 1/4" CONDUIT TO 90A/3 CIRCUIT BREAKER IN 'MDP.' SEE ONE LINE DIAGRAM FOR DETAILS. PROVIDE 1 1/4" CONDUIT WITH FIBER WIRING BACK TO FIBER PATCH PANEL (PATCH PANEL PROVIDED UNDER PRODUCTION EQUIPMENT ALLOWANCE) IN CAFE ELECTRICAL CLOSET. COORDINATE CONDUIT ROUTING IN PAVILION STRUCTURE WITH ARCHITECT. COORDINATE FINAL CONNECTION REQUIREMENTS WITH EQUIPMENT SUPPLIER. PROVIDE ALL PARTS AND ACCESSORIES FOR A COMPLETE SYSTEM.
9. PROVIDE 120V POWER TO BE CAPPED AND LABELED IN SMART LIGHTING POLE BEHIND ACCESS PLATE FOR FUTURE WIRELESS ACCESS POINTS TO BE MOUNTED TO SMART LIGHTING POLES.
10. 24"x2"x1/4" CU GROUND BAR WITH INSULATED STAND-OFFS. INSTALL #4 AWG WIRE TO BUILDING GROUNDING ELECTRODE SYSTEM.
11. 81"x41"x3/4"D PAINTED TREATED PLYWOOD FOR WALL MOUNTED TELE/DATA EQUIPMENT.
12. 4-POST RACK WITH COMM SWITCHES, AUDIO AMPS/PROCESSORS AND A/V CONTENT SERVER - SEE RACK DETAIL ON DRAWING E2.03.
13. PROVIDE 2-8 AWG & 1-10 AWG GND - 3/4" UNDERGROUND PVC CONDUIT TO BRANCH CIRCUIT BREAKER INDICATED. WIRE IS SIZED TO ACCOMMODATE VOLTAGE DROP.
14. PROVIDE 120V POWER IN WEATHERPROOF JUNCTION BOX MOUNTED BEHIND STAGE SCREEN FOR FUTURE WIRELESS ACCESS POINTS. LABEL JUNCTION BOXES AS "120V POWER FOR WIRELESS ACCESS POINTS."
15. PROVIDE 120V POWER TO BE CAPPED AND LABELED IN CATENARY LIGHTING POLE BASE FOR FUTURE WIRELESS ACCESS POINT TO BE MOUNTED TO POLE.



ENLARGED ELECTRICAL CLOSET PLAN
SCALE: 1" = 6'-0"

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STATE OF OHIO
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10/17/19

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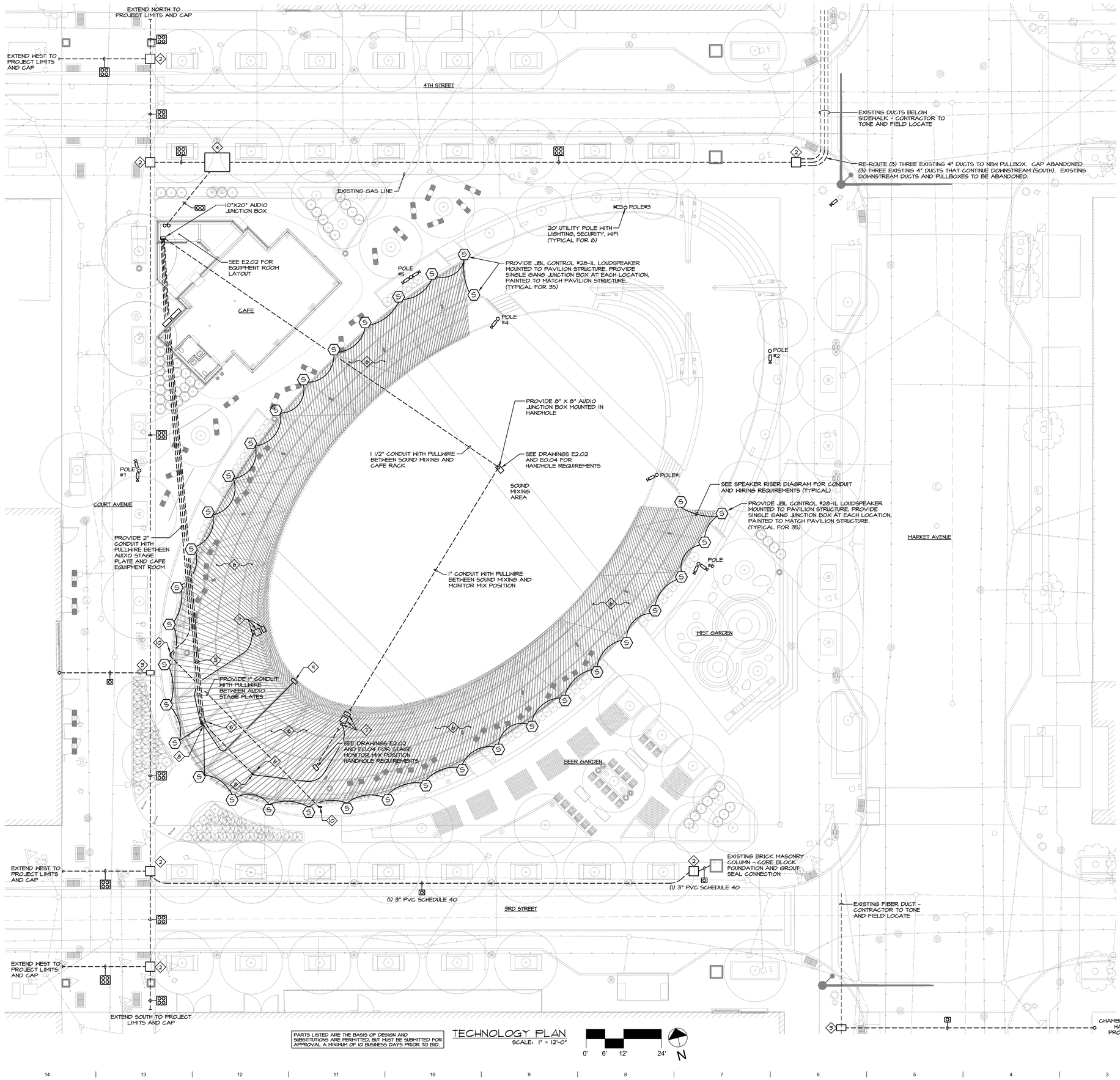
POWER PLAN

sheet number
E2.02



PARTS LISTED ARE THE BASIS OF DESIGN AND SUBSTITUTIONS ARE PERMITTED, BUT MUST BE SUBMITTED FOR APPROVAL A MINIMUM OF 10 BUSINESS DAYS PRIOR TO BID.

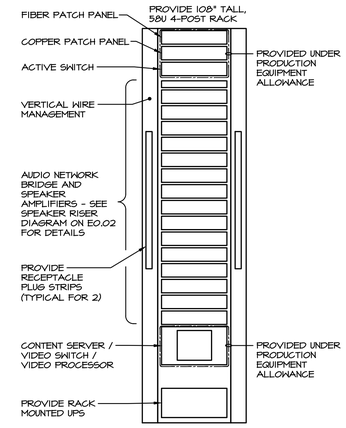
TECHNOLOGY PLAN

SCALE: 1" = 12'-0"

0' 6' 12' 24' N

◇ PLAN NOTES

1. NOT USED.
2. PROVIDE 36" X 36" TIER 22 COMMUNICATIONS PULLBOX. SEE SPECIFICATIONS FOR COMMUNICATIONS PULLBOX REQUIREMENTS.
3. PROVIDE 17" X 30" TIER 22 COMMUNICATIONS PULLBOX. SEE SPECIFICATIONS FOR COMMUNICATIONS PULLBOX REQUIREMENTS.
4. PROVIDE 6' X 8' (5' X 7' INTERIOR DIMENSIONS) COMMUNICATIONS VAULT. SEE SPECIFICATIONS FOR COMMUNICATIONS VAULT REQUIREMENTS.
5. PROVIDE (3) THREE SPARE 2" UNDERGROUND PVC CONDUITS WITH PULLWIRE FOR FUTURE TOV/SPEAKER AND A/V CABLING. STUB UP, CAP AND LABEL AS "SPARE" AT EACH END.
6. ALL CONDUITS IN THE PAVILION STRUCTURE SHALL BE ROUTED VERTICALLY UP EITHER OF THE STRUCTURAL COLUMNS BEHIND THE STAGE SCREEN AND THEN DISTRIBUTED HORIZONTALLY ALONG STRUCTURAL ELEMENTS AND CONCEALED BEHIND THE TYPE 'F' LINEAR LIGHT FIXTURES WHERE POSSIBLE. SEE "TYPE 'F' MOUNTING DETAIL" ON DRAWING E0.04 FOR REFERENCE PAVILION CROSS SECTION. ALL CONDUIT ROUTING AND JUNCTION BOX LOCATIONS ALONG STRUCTURE MUST BE APPROVED BY ARCHITECT PRIOR TO ROUGH-IN. ALL CONDUITS AND JUNCTION BOXES MUST BE PAINTED TO MATCH PAVILION STRUCTURE.
7. PROVIDE SUSPENDED SPEAKER ARRAY WITH (2) TWO D&B AUDIOTECHNIK #Y112 LOUDSPEAKERS AND (6) SIX D&B #Y18 LOUDSPEAKERS IN STACKED CONFIGURATION. PROVIDE (4) FOUR D&B AUDIOTECHNIK #V-SUB SUBWOOFERS IN STACKED CONFIGURATION DIRECTLY BEHIND LOUDSPEAKER STACK. PROVIDE 6" X 6" JUNCTION BOX AND 2" CONDUIT AND WIRE BACK TO CAFE EQUIPMENT ROOM. SEE SPEAKER RISER DIAGRAM.
8. ROUTE SPEAKER CONDUITS BELOW GRADE BEHIND COLUMN AND STUB UP INTO 10"X20" AUDIO JUNCTION BOX IN CAFE EQUIPMENT ROOM.
9. PROVIDE D&B AUDIOTECHNIK #Y110P LOUDSPEAKER MOUNTED TO PAVILION STRUCTURE. PROVIDE SINGLE GANG JUNCTION BOX PAINTED TO MATCH PAVILION STRUCTURE AND 3/4" CONDUIT AND WIRE BACK TO CAFE EQUIPMENT ROOM. SEE SPEAKER RISER DIAGRAM. COORDINATE EXACT SPEAKER MOUNTING LOCATION WITH LIGHTING RIG.
10. PROVIDE 12" X 12" AUDIO JUNCTION BOX STAGE PLATE.



IT/SOUND RACK ELEVATION

NO SCALE

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TECHNOLOGY PLAN

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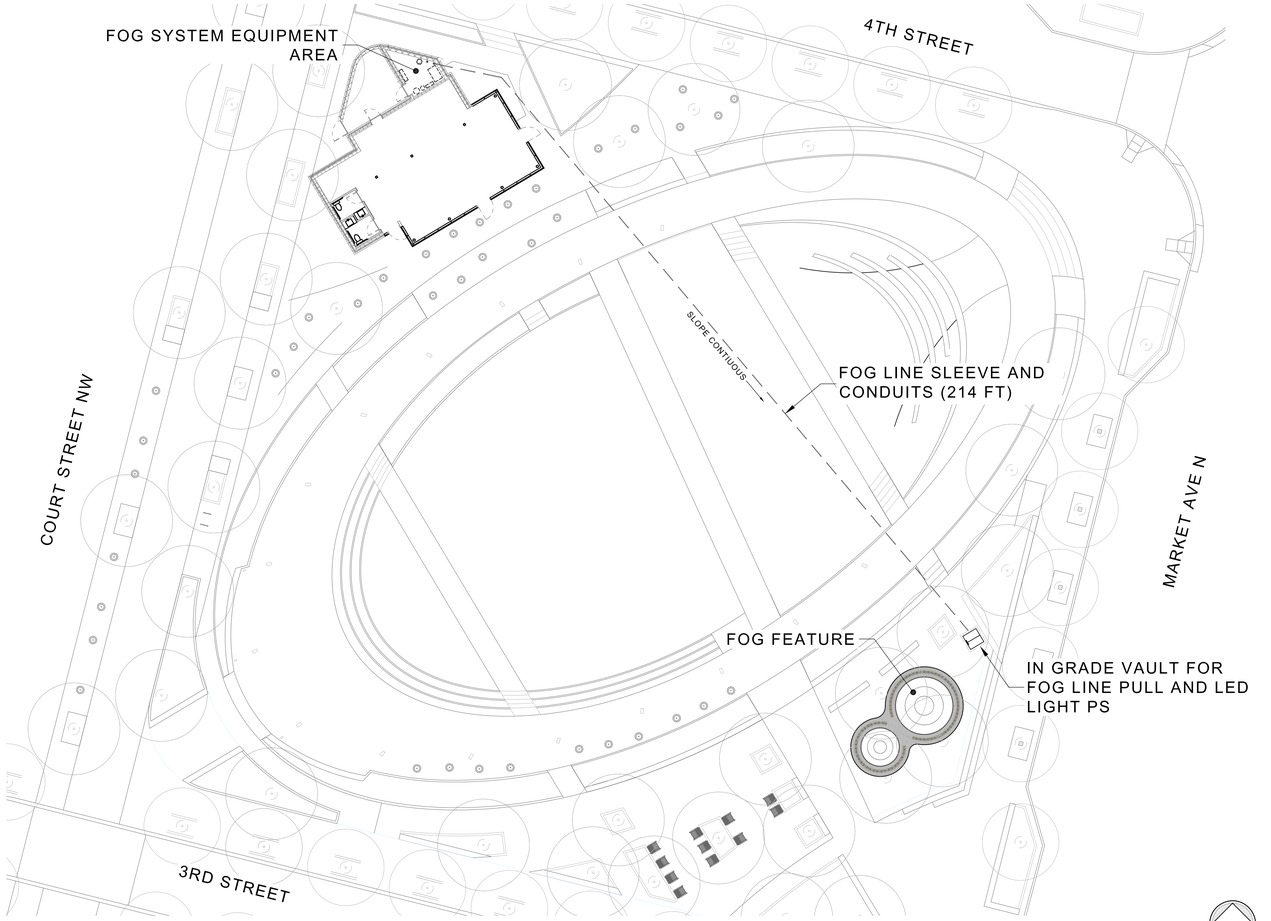

1 PROJECT SITE PLAN

SCALE 1/16" = 1'

GENERAL NOTES

1. THE PROJECT PLANS, SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS SHALL GOVERN THE WORK. THESE PLANS AND SPECIFICATIONS ARE INTENDED TO BE COMPLEMENTARY, TO DESCRIBE AND PROVIDE FOR A COMPLETE PROJECT.
2. BEFORE ENTERING INTO A CONTRACT FOR EXECUTION OF THE WORK, THE CONTRACTOR SHALL VERIFY ALL QUANTITIES, DIMENSIONS AND SHALL, UPON DISCOVERING ANY ERROR OR OMISSION OR DISCREPANCIES BETWEEN THE PLANS, SPECIFICATIONS AND ACTUAL CONDITIONS, IMMEDIATELY CALL IT TO THE ATTENTION OF THE OWNER AND POOLS, SPAS AND WATER FEATURES ENGINEER. NO WORK SHALL BE DONE WHERE THERE IS A DISCREPANCY UNTIL APPROVAL HAS BEEN GIVEN BY THE OWNER AND THE WATER FEATURES ENGINEER.
3. THE OWNER SHALL, AT THE REQUEST OF THE CONTRACTOR, PROVIDE PLANS OR FIELD STAKING LOCATING EXISTING LINES AND UNDERGROUND UTILITIES. BEFORE DEMOLITION, WORK THE CONTRACTOR SHALL VERIFY THE LOCATION OF CABLES, CONDUITS, PIPES, SEWERS AND OTHER UTILITIES AND SHALL TAKE PROPER PRECAUTIONS TO AVOID DAMAGE TO SUCH UTILITIES.
4. THE CONTRACTOR SHALL PROVIDE NECESSARY SAFEGUARDS AND EXERCISE CAUTION AGAINST DAMAGE TO EXISTING SITE IMPROVEMENTS.
5. THE CONTRACTOR SHALL FURNISH AND INSTALL COMPLETE FOG FEATURE AS DESCRIBED IN THE SCOPE OF WORK. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH PLANS, SPECIFICATIONS AND EXISTING CODES AND REGULATIONS.
6. ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL PLANS, AND OTHER DOCUMENTS HAVE BEEN PREPARED FOR THIS PROJECT. BY REFERENCE, THESE PROJECT DOCUMENTS ARE MADE A PART OF THESE SPECIFICATIONS.
7. ALL INFORMATION PROVIDED HEREIN RELATING TO ARCHITECTURAL STRUCTURES HAS BEEN PROVIDED FOR REFERENCE ONLY. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR BUILDING INFORMATION. ALL DISCREPANCIES BETWEEN THESE PLANS AND ARCHITECT SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND WATER FEATURES ENGINEER.
8. ALL PLAN WRITTEN DIMENSIONS SHALL PREVAIL OVER SCALED DIMENSIONS.
9. ALL EQUIPMENT INCLUDING PUMPS, FILTERS, CHEMICAL FEED SYSTEMS, ETC., SHALL BE GOOD QUALITY OR COMMERCIAL GRADE QUALITY USED IN THE INDUSTRY FOR WATER FEATURES.
10. VERIFY ELECTRICAL FEED VOLTAGE AND PHASE PRIOR TO ORDERING ANY ELECTRICAL EQUIPMENT.
11. ALL ELECTRICAL EQUIPMENT SHALL BE GROUNDED PER NEC.
12. BONDING IS REQUIRED ON ALL WATER AND FOG FEATURES. BOND ALL COMPONENTS WITH A #8 BARE SOLID COPPER BONDING WIRE AND APPROVED CONNECTORS PER NEC. ALL METALLIC EQUIPMENT, PIPING AND STEEL REINFORCEMENT SYSTEMS SHALL BE BONDED.

STANDARDS

ALL WORK SHALL BE DONE IN COMPLIANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, ORDINANCES AND REGULATIONS INCLUDING THE FOLLOWING:

A. UNIFORM BUILDING CODE, CURRENT EDITION, AS DIRECTED BY OWNER.
B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) ANSI/ASME B31.1 POWER PIPING CODE.
C. INTERNATIONAL STANDARDS ORGANIZATION (ISO) ISO 261 STANDARDS FOR HIGH PRESSURE COMPRESSION FITTINGS.
D. NATIONAL ELECTRICAL CODE, CURRENT EDITION.
E. MANUAL OF STANDARD PRACTICE, CONCRETE REINFORCING INSTITUTE.
F. THE AMERICAN CONCRETE INSTITUTE PUBLICATIONS ACI 301, ACI 302 AND ACI 318.
G. "GUIDE TO SHOTCRETE", ACI STANDARD 506.
H. "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" OF THE AMERICAN INSTITUTE OF BUILDING CONSTRUCTION.
I. "CODE FOR WELDING IN BUILDING CONSTRUCTION" OF THE AMERICAN WELDING SOCIETY.
J. "SPECIFICATIONS FOR ARCHITECTURALLY EXPOSED STRUCTURAL STEEL" OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.
K. "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", PUBLICATION ACI 315 OF THE AMERICAN CONCRETE INSTITUTE.
L. OSHA CODES.
M. PUBLIC WORKS CODE.
N. APPLICABLE FEDERAL, STATE AND LOCAL SAFETY CODES, ORDINANCES AND ORDERS.
O. ASTM A 312 - SPECIFICATION FOR SEAMLESS AND WELDED AUSTENITIC STAINLESS STEEL PIPE.
P. ASTM B 88 - SPECIFICATION FOR SEAMLESS COPPER WATER TUBE.
Q. "SA-312 SEAMLESS & WELDED AUSTENITIC STAINLESS STEEL PIPE" - AMERICAN SOCIETY OF MECHANICAL ENGINEERS.
R. "PIPING MANUAL FOR STAINLESS STEEL PIPES FOR BUILDINGS" - NO. 12 008 - STAINLESS STEEL ASSOCIATION & NICKEL DEVELOPMENT INSTITUTE.

GRAPHIC SYMBOLS

NORTH ARROW
REVISION CLOUD
FLOW DIRECTION
CENTERLINE
ELEVATION MARK (EL - X.XX')
COMPONENT ID (N)
FINISH ID (E)
SUB TITLE (# XX / SCALE X/X" = X')
SECTION ID (X / W XX)
ELEVATION REFERENCE (X / W XX)
DETAIL ENCLOSURE (X / W XX)
DETAIL REFERENCE (X / W XX)

ABBREVIATIONS

C.F.M.	CUBIC FEET PER MINUTE
CONT.	CONTINUOUS
CU.FT	CUBIC FEET
DIA.	DIAMETER
F.F.E.	FINISH FLOOR ELEVATION
FT.	FEET
G.F.I.	GROUND FAULT CIRCUIT
GAL.	GALLONS U.S. LIQUID
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HT.	HEIGHT
IN.	INCHES
L.F.	LINEAL FEET
MAX.	MAXIMUM
MIN.	MINIMUM
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
O.W.S.	OPERATING WATER SURFACE
PLCS.	PLACES
SCH.	SCHEDULE
S.S.	STAINLESS STEEL
S.W.S.	STATIC WATER SURFACE
SQ. FT	SQUARE FEET
TYP.	TYPICAL
T.O.W.	TOP OF WALL

FOG SYSTEM

OPERATIONAL CRITERIA:

A. THE FOG SYSTEM SHALL BE OF COMMERCIAL GRADE QUALITY EQUIPMENT USED IN THE INDUSTRY OF SHOW EFFECT FOG AND MISTING. THE FOG EFFECT SHALL BE CAPABLE OF VARIABLE CONTROL 1 - 8.9GPM OUTPUT @ 800 - 1200 PSI.

B. THE FOG EFFECT SHALL CREATE LINGERING LOW ZONES OF ENCAPSULATING FOG SURROUNDING THE PERIMETER AREA MOUNDS 4 TO 5 FT IN HEIGHT.

EQUIPMENT:

C. MAIN SYSTEM COMPONENTS INCLUDING BUT NOT LIMITED TO: PUMP/MOTOR CONTROL PANEL WITH VARIABLE FREQUENCY DRIVE SYSTEM, WATER SOFTENING, PRE-FILTER TREATMENT, MAIN FEED HIGH PRESSURE HOSE, CUSTOM SS MANIFOLDS WITH 150 TO 160 IMPINGEMENT TYPE NOZZLES, ALL PIPE SLEEVES , ALL NECESSARY COMPRESSION PIPE AND OR TUBING CONNECTIONS AND SUPPORT CLAMPS.

D. SYSTEM CONTROL/POWER PANEL TO BE MOUNTED WITHIN A IN NEMA 4 ENCLOSURE BUILT TO UL 508A STANDARDS. WILL INCLUDE, MAIN DISCONNECT, MOTOR OVERLOAD, H.O.A. SWITCH CONTROL, LED FAULT AND RUN LIGHTS, RELAYS, CONTACT INPUTS AND LOGIC MONITORING.

E. THE PUMP MOTOR SHALL BE CONTINUOUS AND INVERTER DUTY RATED, HAVE SEALED BEARINGS, CLASS B INSULATION AND ADHERE TO NEMA MG 1, PART 31.

F. HIGH PRESSURE PUMP SHALL BE CONTINUOUS DUTY RATED CAPABLE OF (100 TO 1500 PSI). CRANKCASE AND GEAR CAVITY OIL FILLED, PUMP MANIFOLD SS OR BRASS FITTED WITH CERAMIC PLUNGERS, EPDM SEALS, CORROSION RESISTANT SS VALVES, SPRINGS AND WET END PARTS. PULLEY SYSTEM CONNECTION TO MOTOR TO INCLUDE SAFETY GUARD.

G. WATER INTAKE AND DISTRIBUTION MANIFOLD TO BE SS, BRASS, OR BRONZE FITTED (LOW LEAD). INCLUDING ISOLATION VALVES, THERMAL PROTECTION, INLET/OUTLET PRESSURE SWITCHES, PRESSURE SENSITIVE REGULATOR / UNLOADER VALVE, PRESSURE RELIEF VALVE, BYPASS LOOP, PULSATION DAMPENER, PRESSURE GAUGES INLET AND OUTLET. (ALL MANIFOLD COMPONENTS TO BE RATED FOR 2000 PSI)

H. SYSTEM TO BE MOUNTED AND ANCHORED TO A EPOXY PAINT COATED STEEL BASE AND FRAME. MOTOR AND PUMP MOUNTS TO BE RUBBERIZED VIBRATION TYPE RATED FOR THE COMPONENTS WEIGHT.

I. SOFT WATER SYSTEM TO CAPABLE OF 14.9 GPM @ 15 PSI DROP. TO INCLUDE UNION ISOLATION VALVES, AUTOMATED REGENERATION AND PRE-RINSE WITH CONTROL PANEL, MINERAL AND BRINE TANKS, INTERNAL WATER METER, AND MODEM.

J. WATER PRE-FILTER SYSTEM WITH POLYPROPYLENE (NSF) CARTRIDGE HOUSINGS, 1" PIPE CONNECTION, RATED FOR 10GPM @ 65PSI. FILTERS CARTRIDGES CAPABLE OF 5 MICRON SEDIMENT AND SCALE REMOVAL. INCLUDE POTABLE WATER RATED 150 PSI RATED HOSE CONNECTIONS AND ISOLATION VALVES.

PIPING:

K. ALL PIPING AND FITTINGS WITHIN EQUIPMENT AREA SHALL BE COPPER TYPE K, BRASS, BRONZE OR SS.

L. MAINLINE FOG SYSTEM FEED HOSE TO BE 1/2" ID WITH POLYURETHANE COVER, NYLON CONSTRUCTION WITH REINFORCED POLYESTER BRAID. (RATED FOR 2000 PSI WORKING PRESSURE)

M. FOG MANIFOLDS 1/2" OD SS TUBING WITH WELDED NPT NOZZLE CONNECTIONS AND EXTENSIONS WITH COMPRESSION FITTINGS.

N. ALL PIPING MATERIALS AND SUPPORTS USED SHALL CONFORM TO LOCAL BUILDING CODE REQUIREMENTS.

O. ACCEPTABLE BELOW GRADE PIPE MATERIALS SCH 40 AND 80 PVC WITH LONG RADIUS SWEEP FITTINGS.

P. FOG AND MIST LINE PRESSURE TESTING PER FOG SYSTEM MANUFACTURER'S REQUIREMENTS.

Q. PIPING AND PIPE SLEEVES SHALL BE INSTALLED BELOW FROST LINE DEPTH AND WITH A SLIGHT SLOPE TO PROVIDE POSITIVE DRAINAGE FOR DE-WATERING AND WINTERIZATION.

R. ALL PIPES SHALL BE SUPPORTED TO ELIMINATE MOVEMENT DURING NORMAL OPERATION.

S. PROVIDE DIELECTRIC SEPARATORS ON ALL DISSIMILAR METALS.

TRENCH DRAIN:

T. THE TRENCH DRAIN BODY SHALL BE CAST IN A TRUE RADIUS FOR A SMOOTH, NON-SEGMENTED CURVE, COMPOSED OF POLYESTER FIBER REINFORCED POLYMER CONCRETE WITH A SMOOTH INTERIOR FOR IMPROVED FLOW RATES AND REDUCED DEBRIS BUILD-UP. SECTIONS SHALL BE 96" LONG (TYPICAL) AND HAVE A 2" RECEIVING FLANGE ON THE UPSTREAM END FOR RECEIVING AND SEALING THE TRENCH SECTIONS TOGETHER.

U. THE BODY SHALL BE SUPPLIED WITH A FACTORY FIT TOP FOR RAIL ALIGNMENT AND FASTENING OF THE CHANNELS IN THE FIELD ENSURING THAT THE RAILS ARE CAST IN A COPLANAR MANNER. THE TRENCH BODY SHALL HAVE THE FOLLOWING PROPERTIES: 12,600 PSI MINIMUM TENSILE STRENGTH PER ASTM C307, 12,000 PSI. MINIMUM COMPRESSIVE STRENGTH PER ASTM C579, 26,500 PSI MINIMUM FLEXURAL STRENGTH PER ASTM C580, LESS THAN 0.35% WATER ABSORPTION, SHALL BE FROST PROOF, SALT PROOF, AND BE RESISTANT TO DILUTE ACIDS AND ALKALIS PER ASTM C267.

V. THE FRAME SHALL BE SS MATERIAL HEAVY DUTY LOAD BEARING ROLLED IN A TRUE RADIUS. FRAME IS CONSTRUCTED OF 3/16" THICK T304 OR T316 STAINLESS STEEL TO ACCEPT 1 1/2" THICK GRATES. FRAMES SHALL HAVE 3" X 3/8" DIAMETER HEADED CONCRETE ANCHORS AT 18" O.C. AND SHALL HAVE RIGID METAL INSTALLATION DEVICES SECURELY AFFIXED TO THE FRAME FOR LEVELING AND ALIGNING OF THE TRENCH DRAIN SYSTEM. FRAME SHALL CONFORM TO ASTM A-36/A36M-93A. THE FRAME IS RATED TO SUPPORT GRATES UP TO LOAD CLASS E.

W. GRATING SHALL BE TRUE RADIUS HEAVY DUTY ADA COMPLIANT AND HEEL GUARD LONGITUDINAL SLOTTED GRATE. THE GRATE SHALL BE FABRICATED USING T304 OR T316 STAINLESS STEEL PER ASTM-A240. THE GRATE SHALL RECEIVE A UNIFORM BRUSHED FINISH. THE GRATE SHALL BE 8" WIDE X 24" LONG X 1.5" THICK AND HAVE A MINIMUM LOAD RATING OF DIN CLASS C. GRATING SECTIONS SHALL INDIVIDUAL LOCKING DEVICES.

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FOG SYSTEM SPECIFICATIONS AND PROJECT LOCATION

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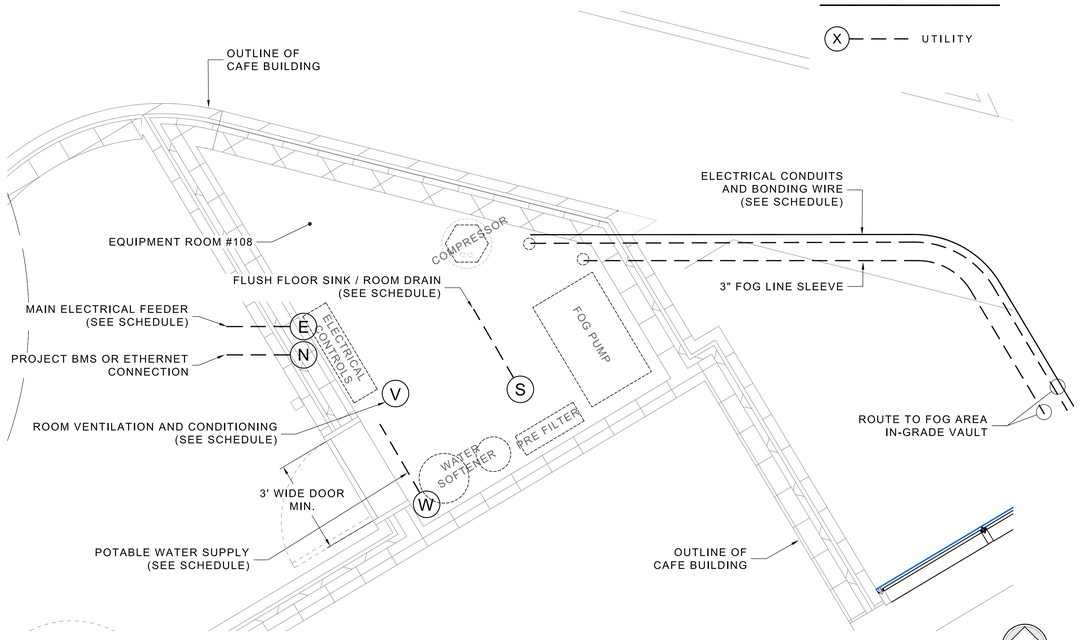


1 EQUIPMENT AREA - UTILITY PLAN

SCALE 1/2" = 1'

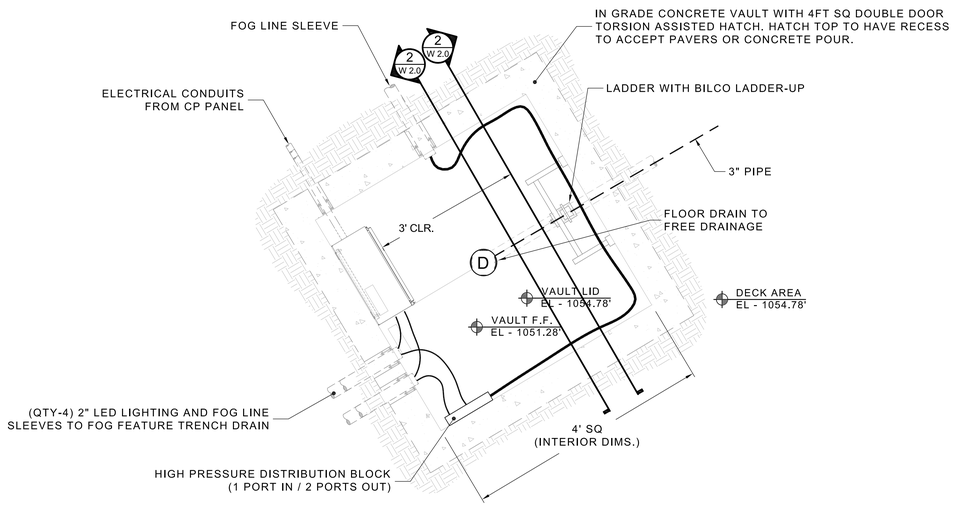
UTILITY REQUIREMENTS AT EQUIPMENT AREA

ID	UTILITY	TYPE	SIZE	COMMENTS
E	ELECTRICAL	120/208YVAC,3 PHASE, 4 WIRE, PLUS GND. (SEE ELECTRICAL SHEETS)	50 AMP	MAIN FEED POWER PROVIDED BY PROJECT (SEE PROJECT ELECTRICAL PLANS)
N	NETWORK	PROJECT NETWORK CONNECTION	CAT 5E WIRE	ETHERNET CON. PROVIDED BY PROJECT (SEE PROJECT NETWORK PLANS)
W	WATER	POTABLE WATER CONNECTION (15 GPM @ 65PSI)	1" PIPE	POTABLE SUPPLY FROM APPROVED ANTI-BACKFLOW DEVICE (SEE PROJECT MEP PLANS)
S	SEWER	SANITARY SEWER (FLUSH FLOOR SINK / DRAIN)	2" PIPE	SEWER CONNECTION EQUIPMENT AREA (SEE PROJECT CIVIL PLANS)
D	DRAIN	DRAIN CONNECTION (AREA DRAIN)	3" PIPE	FREE DRAINAGE AT FOG/LED PS IN-GRADE VAULT (SEE PROJECT CIVIL PLANS)
V	VENTILATION	HEAT OUTPUT - FOG PUMP MOTOR AND EQUIPMENT	22,000 BTU/HR	FOR ROOM COOLING AND OR HEATING (SEE PROJECT MEP PLANS)

EQUIPMENT ROOM NOTES

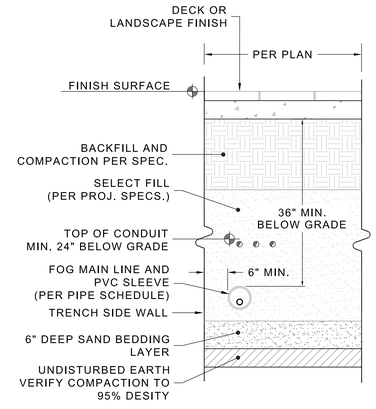
1) ALL FLOOR STANDING MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE INSTALLED ON AND SECURED TO A MIN 4" THICK CONCRETE MAINTENANCE PAD. PUMPS WILL INCLUDE VIBRATION ISOLATION.
2) SEE DETAIL IN PLANS SUPPORT AND SECURE ALL PIPING PER LOCAL BUILDING CODE REQUIREMENTS. ELIMINATE VISIBLE MOVEMENT OR VIBRATION DURING SYSTEM OPERATION.
3) VERIFY VOLTAGE AND PHASE PRIOR TO CONSTRUCTION, INSTALLATION AND PURCHASE OF EQUIPMENT.
4) DIELECTRIC SEPARATORS SHALL BE MADE TO MITIGATE CORROSION BETWEEN DISSIMILAR METALS.
5) ALL PIPING ABOVE GRADE SHALL BE METALLIC, TYPE 316L, SCH 10 SS OR COPPER TYPE K UNLESS OTHERWISE NOTED IN PLANS. SCH 80 CPVC AND OR PVC IS ACCEPTABLE IF APPROVED BY LOCAL BUILDING CODE.
6) ALL METALLIC PARTS OR COMPONENTS SHALL BE BONDED PER NEC USING A CONT. BARE #8 SOLID COPPER BONDING WIRE.
7) EQUIPMENT AREA SHALL BE EQUIPPED WITH LIGHTING AND CONVENIENCE RECEPTACLES. REFER TO PROJECT ELECTRICAL ENGINEER'S DRAWINGS.
8) SLOPE ROOM FLOOR 1% MINIMUM TOWARDS FLOOR DRAINS.
9) EQUIPMENT ROOM FLOOR SHALL HAVE ANTI-SKID, SEALED COATED SURFACE.

NOTE:
COORDINATE AREA FINISH AND VAULT ELEVATIONS WITH LATEST PROJECT CIVIL AND ARCHITECTURAL PLANS.



2 FOG FEATURE AREA - VAULT UTILITY PLAN

SCALE 1" = 1'



PIPE / CONDUIT SCHEDULE

MAIN PIPE CORRIDOR:

QTY	PIPE TYPE	SIZE	DESCRIPTION
1	SCH 40 PVC PIPE WITH SWEEP FITTINGS	3"	FOG LINE SLEEVE
1	HIGH PRESSURE HOSE	1/2"	FOG LINE

ELECTRICAL

QTY	PIPE TYPE	SIZE	DESCRIPTION
1	COND. SCH 40	1"	LED PS POWER AT VAULT
1	COND. SCH 40	1"	DMX CONTROL AT VAULT
1	COND. SCH 40	1"	SPARE OR SYSTEM E-STOP
1	BONDING WIRE	#8 AWG	METALS BONDING

3 PIPE TRENCH DETAIL

SCALE N / A

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FOG SYSTEM UTILITY PLAN

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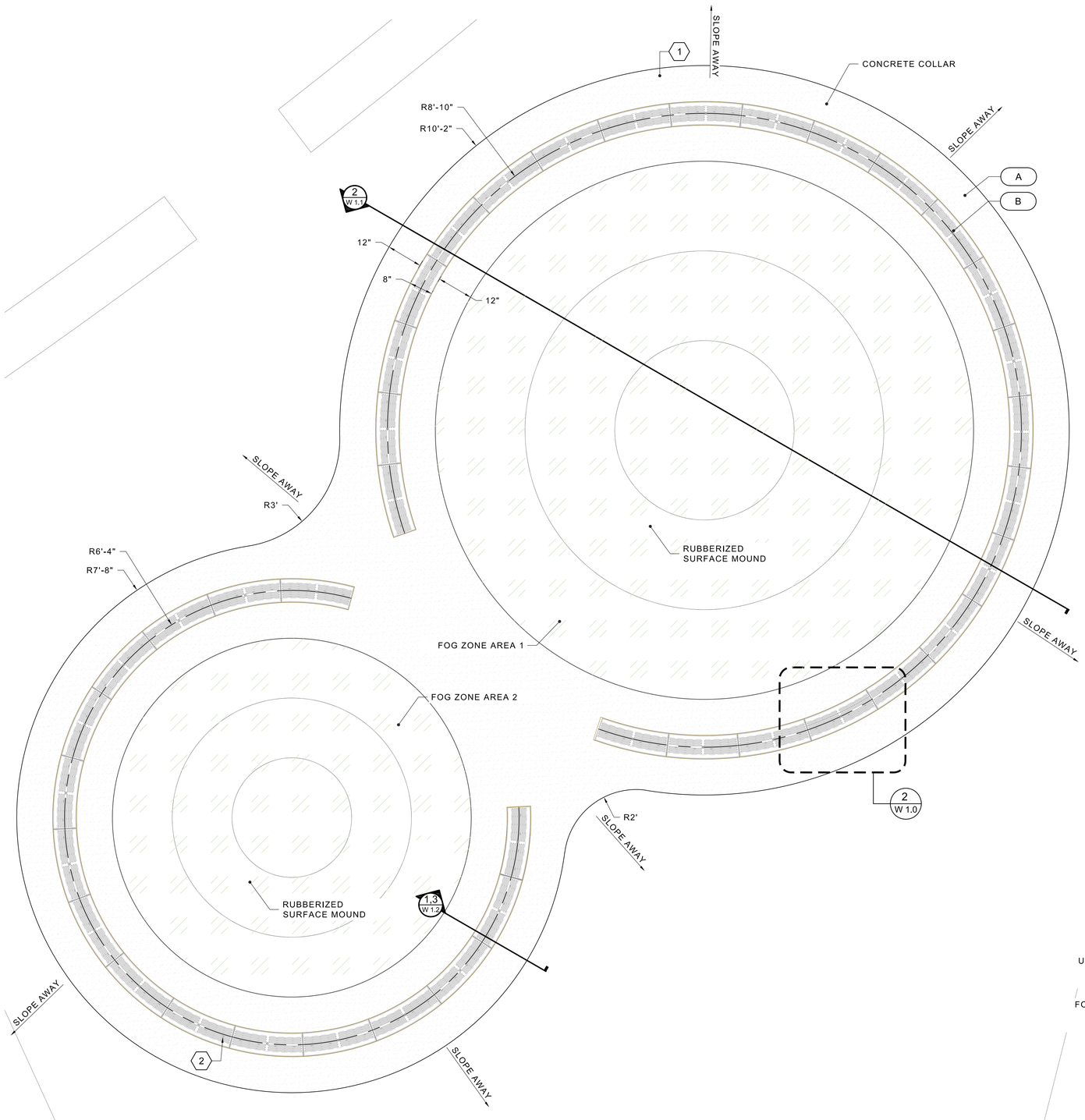


0 1' 5' 10'

NORTH

1 FOG FEATURE CALL OUT PLAN

SCALE 3/4" = 1'

FINISHES:

ID	DESCRIPTION	MATERIAL
A	CONCRETE COLLAR - INTEGRAL MIX WATERPROOFING AND NON-SLIP FINISH	SEE PROJECT ARCHITECTURAL PLANS
B	6" WIDE RADIUS TRENCH DRAIN AND 8" WIDE SS GRATE FRAME AND COVER - ADA COMPLIANT WITH SCREW DOWN CLAMP MECHANISM	PRECAST POLYMER AND SS 316L METAL

COMPONENTS:

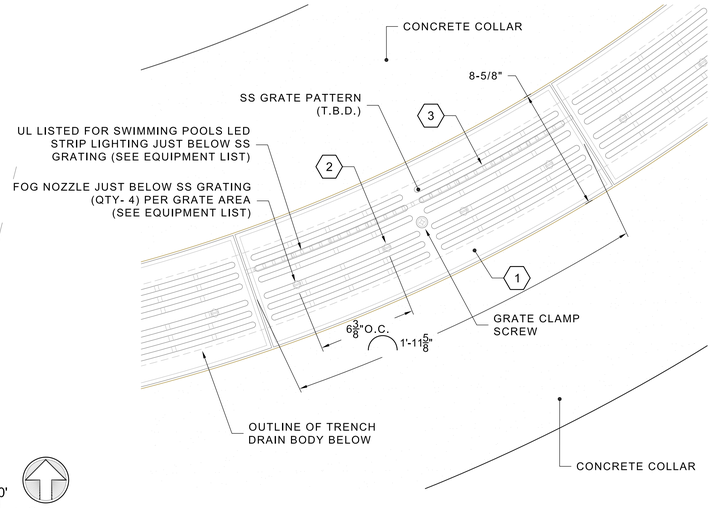
ID	CALLOUT DETAIL	DESCRIPTION	MANUFACTURER
1	DETAIL 2 / W 1.2	POLYMER RADIUS TRENCH DRAIN W/ SS GRATE	ERICSONS DURA-TRENCH
2	DETAILS 2,3 / W 1.2	FOG SS MANIFOLD AND NOZZLE - 1/4" SS MANIFOLD WITH WELDED NOZZLE EXTENSIONS @ 6-3/8" O.C. W/ (QTY-160) J-PIN PLUME IMPINGEMENT TYPE NOZZLES (MODEL KFNP-JHP-316)	KOOLFOG
3	DETAILS 2,3 / W 1.2	LED LIGHTING - (QTY-3 STRIPS) HYDROLUME PLUS, (3500K) 24VDC, 2.04 WATT PER FT, W/ MOUNTING BRACKETS @ 12" O.C. (MODEL DI-24V-HLP35-78-32.6',32.6',15' (PLUS)	DIODE LED UL LISTED SWIMMING POOLS AND FOUNTAINS

SYSTEM STATISTICS:

FOG ZONE AREA 1	-	324.8 SQ FT
FOG ZONE AREA 1 TRENCH ℄ RADIUS	-	47'- 6" LINEAR FEET
AREA 1 TRENCH ℄ RADIUS	-	8' - 10"
FOG NOZZLE COUNT	-	96 SS PLUME TYPE
FOG ZONE AREA 2	-	186 SQ FT
FOG ZONE AREA 2 TRENCH	-	31'- 10" LINEAR FEET
AREA 2 TRENCH ℄ RADIUS	-	6' - 4"
FOG NOZZLE COUNT	-	64 SS PLUME TYPE
WATER SUPPLY	-	POTABLE SOURCE
TOTAL WATER USAGE	-	9 GPM

NOTES

1) FOG FEATURE DRAWINGS SHALL NOT BE USED AS REFERENCE FOR W.F. LOCATION ON PROJECT AND BASIN DIMENSIONS. (SEE PROJECT ARCHITECTS DRAWINGS)
2) VERIFY AND COORDINATE ALL BASIN DIMENSIONS WITH LATEST PROJECT ARCHITECTURAL DRAWINGS AND STRUCTURAL SHEETS.
3) CONFIRM AND COORDINATE ALL REFERENCED ELEVATIONS WITH PROJECT CIVIL, PROJECT ARCHITECTURAL AND LANDSCAPE ARCHITECTURAL PLANS.
4) ALL DIMENSIONS IN THIS SHEET REPRESENT FINISH SURFACE OR CENTERLINE.



2 DRAIN GRATE PLAN

SCALE 3" = 1'

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FOG AREA LAYOUT
AND CALL OUT PLAN

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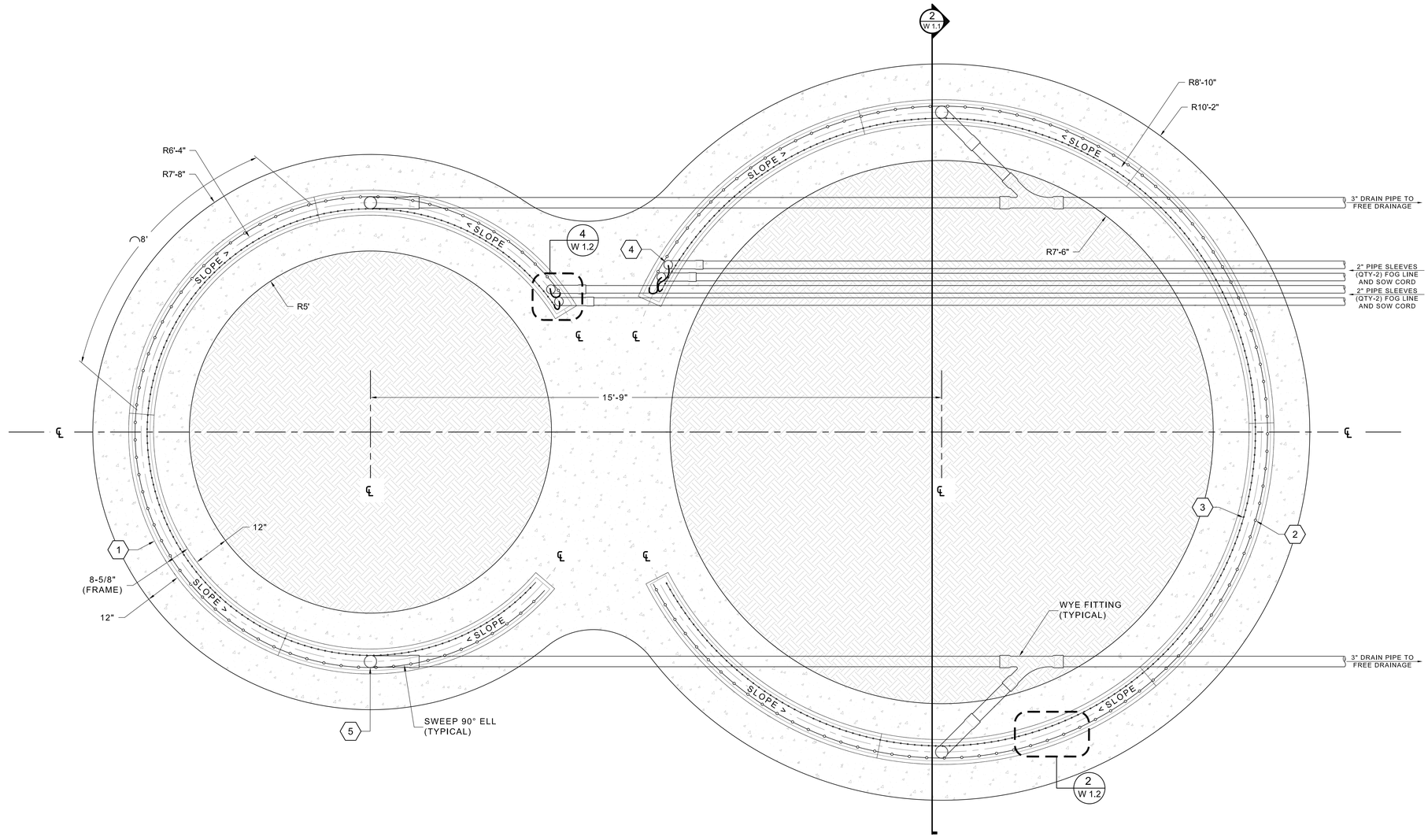
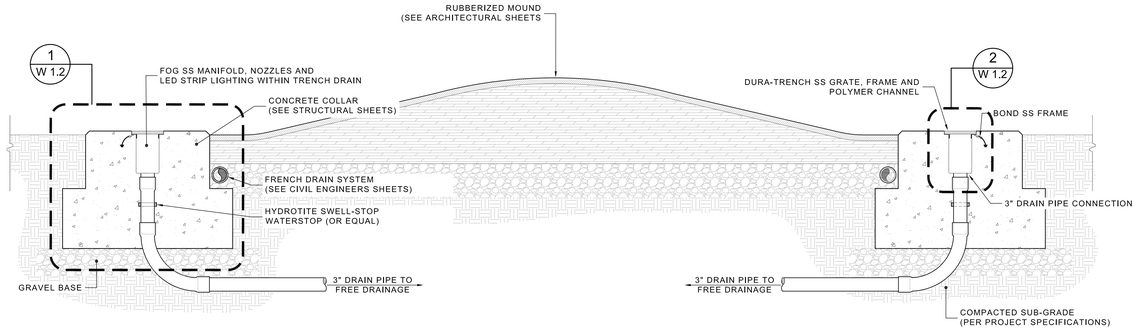


1 FOG FEATURE - PIPING AND COMPONENT IDENTIFICATION

SCALE 3/4" = 1'



2 FOG FEATURE - SECTION

SCALE 3/4" = 1'

COMPONENTS:

ID	CALLOUT DETAIL	DESCRIPTION	MANUFACTURER
1	DETAILS 2,3 W 1.2	6" POLYMER RADIUS TRENCH DRAIN (QTY-10, 8' SECTIONS) 316L SS 8" FRAME AND GRATE (MODEL - DTRPF6-08WRXXSSC-HDSS15BSA-GLSS4-NSR-3B)	ERICSONS DURA-TRENCH
2	DETAILS 2,3 W 1.2	FOG MANIFOLD AND NOZZLES - 1/4" SS 316 W/ WELDED NOZZLE EXTENSION CONNECTIONS AT 6-3/8" O.C. NOZZLE - (QTY-160 TOTAL) SS 316 J-PIN PLUME IMPINGEMENT NOZZLE (MODEL KFNP-JHP-316)	KOOLFOG
3	DETAIL 4 W 1.2	LED LIGHTING - (QTY-3 STRIPS) HYDROLUME PLUS (3500K) W/ MOUNTING BRACKETS @ 12" O.C. 24VDC, 2.04 WATTS PER FT, (MODEL DI-24V-HLP35-78-32.6',32.6',15' (PLUS)	DIODE LED UL LISTED SWIMMING POOLS AND FOUNTAINS
4	DETAIL 4 W 1.2	SLEEVE COUPLING - (QTY-2 PER PLAN 8' SECTION) LOCATED AT BOTTOM OF DRAIN 2" PVC PIPE SOC. CONNECTION	ERICSONS DURA-TRENCH
5	DETAIL 4 W 1.2	SLEEVE COUPLING - (QTY-4, 1 PER PLAN 8' SECTION) LOCATED AT BOTTOM OF DRAIN 3" PVC PIPE SOC. CONNECTION	ERICSONS DURA-TRENCH

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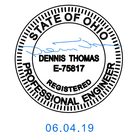

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FOG FEATURE
LAYOUT PLAN

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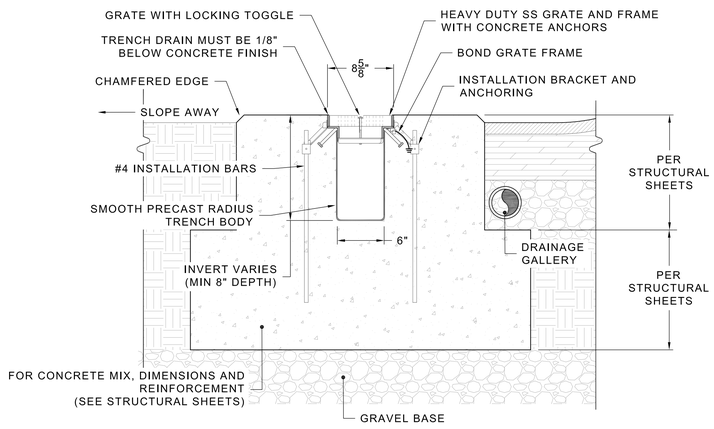
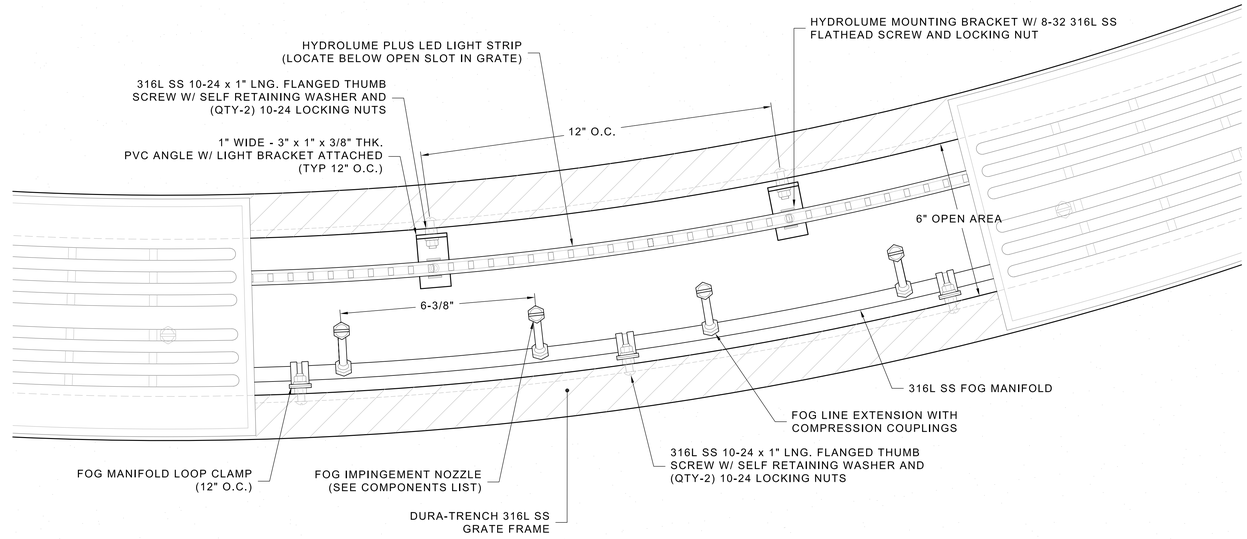
W 1.1



1 CONCRETE COLLAR SECTION

SCALE 3/4" = 1'



2 TRENCH DRAIN DETAIL (PLAN VIEW)

SCALE 6" = 1'

3 TRENCH DRAIN DETAIL

SCALE 6" = 1'

4 SLEEVE CONNECTION DETAIL

SCALE 2" = 1'

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FOG TRENCH DETAILS

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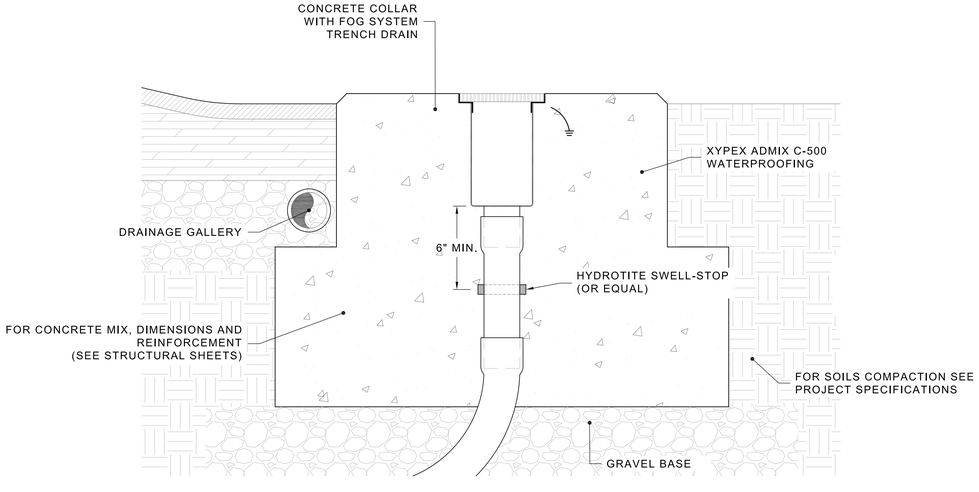

1 COLLAR WATERPROOFING DETAIL

SCALE 2" = 1'

NOTES

1) FOLLOW WATERPROOFING ADMIX MANUFACTURER INSTALLATION REQUIREMENTS.
2) REFER TO PROJECT LANDSCAPE ARCHITECTS PLANS AND SPECIFICATIONS FOR TILE/STONE/PRECAST MATERIAL SIZES, DIMENSIONS, PATTERNS, TYPE, THICKNESS AND SETTING/ATTACHMENT MATERIALS.
3) SUBMIT ALL FINISH MATERIALS COLORS, FINISHES AND TYPES TO PROJECT LANDSCAPE ARCHITECT PRIOR TO INSTALLATION FOR APPROVAL.

XYPEX ADMIX C-500/C-500 NF

CEMENTITIOUS CRYSTALLINE

Concrete Waterproofing

Description

Xypex is a unique chemical treatment for the waterproofing, protection and improvement of concrete. XYPEX ADMIX C-500/C-500 NF is added to the concrete mix at the time of batching. Xypex Admix C-500/C-500 NF consists of Portland cement, silica sand (excluding the NF grade) and various active, proprietary chemicals. These active chemicals react with the moisture in fresh concrete and with the by-products of cement hydration to cause a catalytic reaction. This reaction generates a non-soluble crystalline formation throughout the pores and capillary tracts of the concrete that permanently seals the concrete and prevents the penetration of water and other liquids from any direction.

Xypex Admix C-Series

All variations of the Admix C-Series contain the same amount of reactive chemicals at their prescribed dosage rates and provide the same waterproofing and durability performance characteristics. Xypex Admix C-Series is available in regular or no-fines grades (NF). **Xypex Admix C-500/C-500 NF** is formulated to have minimal or no effect on setting time. **Xypex Admix C-1000/C-1000 NF** is formulated for concrete mix designs where a normal or mildly delayed set is desired. **Xypex Admix C-2000/C-2000 NF** is designed for warmer climates and projects where a slower hydration rate is typically required. See Setting Time and Strength for more details. Consult with a Xypex Technical Services Representative for the most appropriate Xypex Admix for your project.

Recommended for:

- Reservoirs
- Sewage and Water Treatment Plants
- Secondary Containment Structures
- Tunnels and Subway Systems
- Underground Vaults
- Foundations / Basements
- Parking Structures
- Swimming Pools
- Precast Components
- Bridge Structures

Advantages

- Resists extreme hydrostatic pressure
- Becomes an integral part of the substrate
- Highly resistant to aggressive and chemical environments
- Can seal static hairline cracks up to 0.4 mm
- Allows concrete to breathe
- Non-toxic
- Less costly to apply than most other methods
- Permanent
- Added to the concrete at time of batching and therefore is not subject to climatic restraints
- Increases flexibility in construction scheduling

Packaging

Xypex Admix C-500/C-500 NF are packaged in convenient sizes of various types of packaging, including paper bags and soluble bags. Contact your local Xypex Technical Services Representative or dealer for details and availability.

Storage

Xypex products must be stored dry at a minimum temperature of 45ºF (7ºC). Shelf life is one year when stored under proper conditions.

Dosage Rates

Xypex Admix C-500 (Regular Grade):
2 - 3% by weight of cement

Xypex Admix C-500 NF (No Fines Grade):
1 - 1.5% by weight of cement

NOTE:
1. For determining the appropriate dosage rate and for further information regarding concrete mixes containing fly ash / slag, enhanced chemical resistance, optimum concrete performance, or meeting the specific requirements and conditions of your project, consult with the local Xypex Technical Services Representative or Xypex's Technical Services Department.

2. The recommended minimum dosage rate for Admix C-500 (Regular Grade) is 10 lbs. per yd³ (6 kg per m³); the maximum dosage is 20 lbs. per yd³ (12 kg per m³). For Admix C-500 NF (No Fines Grade), the minimum dosage is 5 lbs. per yd³ (3 kg per m³); the maximum dosage is 10 lbs. per yd³ (6 kg per m³).

3. Under certain conditions the dosage rate for the Admix NF (No Fines Grade) may be as low as 0.8% depending on the quantity and type of total cementitious materials.

Material Properties

Visual Appearance	Light grey powder
pH	12.0 - 12.4
Chloride Content	<0.1%
VOC	none

Concrete Waterproofing By Crystallization™

D47-ADMS-NA
REV-11-16

Test Data

PERMEABILITY

U.S. Army Corps of Engineers CRD C48-73, "Permeability of Concrete", Aviles Engineering Corp., Houston, USA

Two concrete samples containing Xypex Admix and an untreated control sample were tested for water permeability. Both the treated and untreated samples were subjected to a pressure of 150 psi / 1.04 MPa (350 ft / 106.7 m water head). Results showed moisture and permeated water throughout the untreated sample after 24 hours. However, the Xypex Admix samples showed no leakage, and water penetration of only 1.5 mm / 0.06 inches after 120 hours (5 days).

U.S. Army Corps of Engineers CRD C48-73, "Permeability of Concrete", Seisco Services, Pte Ltd., Singapore

Six Xypex Admix-treated and six untreated concrete samples were tested for water permeability. Pressure was gradually increased over five days and then maintained at 7 bars (224 ft / 68.3 m water head) for 10 days. While the six reference samples showed water leakage beginning on the fifth day and increasing throughout the test period, the Xypex Admix samples showed no water leakage at any time during the test.

ACCI Water Permeability Test, "Water Permeability of Concrete", Australia Centre of Construction and Innovation, University of New South Wales, Sydney, Australia

Concrete samples containing Xypex Admix NF at a dosage rate of 0.8% and 1.2% were tested for water permeability against control samples. All the samples were subjected to a pressure of 10 bars (100 metres / 328 ft. water head) for 2 weeks. Water permeability coefficients were calculated and the Xypex Admix-treated concrete showed significant reduction in water permeability by up to 93% at a dosage rate of 1.2%.

STN EN 12390-8 "Testing of Hardened Concrete; Depth of Water Penetration Under Pressure", Technical and Testing Construction Institute, Bratislava, Slovakia

Concrete cubes were prepared with Admix C-1000 at 2% and Admix C-1000 NF at 1% along with control cubes. A water pressure of 0.5 MPa was applied for 72 hrs and specimens were subsequently split transversely to measure depth of water penetration. Depth results for C-1000/C-1000 NF were 10.3 mm and 25 mm respectively, whereas penetration on control samples was 113 mm. In using the Valenta equation to calculate the water permeability coefficient, the C-1000/C-1000 NF treated concrete showed a 20 to 120x reduction compared to the control concrete.

COMPRESSIVE STRENGTH

ASTM C 39, "Compressive Strength of Cylindrical Concrete Specimens", Kleinfelder Laboratories, San Francisco, USA

At 28 days, the compressive strength test of the concrete containing Xypex Admix measured 7160 psi / 49.5 MPa as compared to the reference sample at 6460 psi / 44.5 MPa (a 10% increase).

CHEMICAL RESISTANCE

CSN 73 1326 "Measuring Loss of Surface Due to Sulphate Attack of Concrete Treated with Admix C-1000 and Admix C-1000 NF", Betoncentrum, Building Materials Testing Laboratory, Prague, Czech Republic

Concrete specimens treated with Admix C-1000 at 1% and 2%, and Admix C-1000 NF at 0.5% and 1% were cast along with non-treated concrete specimens. The specimens were exposed to a highly concentrated sulfate solution (i.e. 36,000 mg/l) for 4 months and samples were periodically weighed to determine mass loss. The Admix treated samples recorded a mass loss between 5 and 50 g/m² and showed no surface deterioration, while the non-treated specimens measured an average mass loss of 4,860 g/m² with significant surface deterioration.

HB 84-2006 "Durability Assessment of Reinforced Concrete Structure Containing Xypex Admix Exposed to 19 Years of Severe Marine Environment", Sharp and Howells Pty. Ltd., Chemical Laboratories, Victoria, Australia

Lascelles Wharf serves as a bulk chemical and grain dock. In 1995, as part of an extensive maintenance program and to protect new precast concrete panels from the extremely harsh and aggressive marine environment, the concrete was dosed with Xypex Admix C-2000 NF at 1%. Recently tests were conducted to predict "initiation time to corrosion". Extracted cores were tested for chloride content at incremental depths into the concrete. Chloride content profiles, concrete cover (51 mm), surface chloride content, and chloride corrosion threshold were used in a model based on Fick's 2nd law to predict the residual service life of this structure. The average initiation time to corrosion was estimated at 164 years; whereas, the structure had been designed for 58 years of service life.

NT BUILD 443, "Chloride Diffusion by NordTest with 16.6% NaCl Solution of 40 MPa Concrete Containing Admix C-1000 NF", Australia Centre for Construction Innovation, University of New South Wales, Sydney, Australia

The NordTest NT BUILD 443 is a standard accelerated method for evaluation of the chloride diffusion coefficient of concrete. In this test program, concrete mixes with 25% fly ash, 38% slag, and 60% slag were cast (total cementitious content = 435 kg, 0.4 w/c). Xypex Admix C-1000 NF at 0.8% and 1.2% by weight of cementitious materials were compared to control mixes (for each cement system). All specimens were immersed in a 16.5% NaCl solution for 35 days. Chloride diffusion coefficient was calculated based on the chloride profile, utilizing Fick's 2nd law. Admix treated fly ash concrete showed 29% reduced chloride diffusion coefficient for both 0.8% and 1.2% addition. The Admix treated 38% slag concrete recorded a 67% lower chloride diffusion coefficient at 0.8% addition and 75% lower at 1.2% addition. The reduction of chloride diffusion coefficient was 42% and 53% for high slag mixes for 0.8% and 1.2% addition respectively.

"Sulfuric Acid Resistance Test", Aviles Engineering Corporation, Houston, USA

Concrete containing Xypex Admix at different dosage rates including 3% specimens were tested against untreated control samples for sulfuric acid resistance. After immersion in the sulfuric acid, each sample was tested for weight loss on a daily basis until a weight loss of 50% or a definite response trend was obtained. The percentage weight loss of the samples containing Xypex Admix tested significantly lower than the control samples.

"Acid Resistance of Mortar Coated with Xypex Concentrate or Containing Xypex Admix C-1000 NF", Construction and Maintenance Technology Research Center (CONTEC), Srindhorn International Institute of Technology (SIIT) - Thammasat University, Bangkok, Thailand

An acid testing regime was part of an extensive program to determine the benefit of the Xypex Admix C-1000 NF dosed at 1% to improve the durability of concrete. Several comparative mixes were utilized in this evaluation, including: a plain Portland cement and a 30% fly ash mix. Cured samples were exposed to 5% H_2SO_4; the pH value of this acid solution was 0.25 and never greater than 0.54 pH. In this extremely acidic, corrosive environment, at 12 weeks the Admix samples reduced the weight loss by 48% compared to controls of the cement-only mortar, and 53% in the fly ash specimens.

CRACK SEALING

ASTM C1585 and ASTM C1202 "Evaluation of Selfhealing Capability of Self-compacting Concrete made with Blast-furnace Slag Cements Activated by the Xypex Crystalline Catalyst", Instituto Tecnologico de Aeronautica, Sao Jose dos Campos, Brazil

Portland, blast furnace slag and slag-modified Portland concrete samples, treated with 2.5% Admix C-500, were evaluated for self-healing capabilities. Microcracks were induced by loading to 90% of ultimate compressive strength. Cracked samples were then immersed in water to trigger self-healing after 28, 56 and 84 days. Strength and ultrasonic pulse velocity tests were used to determine mechanical recovery; sorptivity and rapid chloride permeability were used to evaluate watertightness recovery. Results substantiated the ability of Xypex Admix to provide self-healing of cracked concrete.

"Testing of Xypex Admix C-1000 NF Crack Healing Capabilities" CH Hanchang (Lao) Company Ltd., Xayaburi Laboratory, Ban Xieng Yeun, Vientiane, Laos

Prior to construction of a Mekong River dam, testing was undertaken to substantiate the ability of Xypex Admix to self-heal static cracks up to 0.4 mm. Three large concrete slabs treated with Admix C-1000 NF at 0.8% were cast along with three control slabs. Following curing, a force was applied at the mid-point of each slab to create cracks; on average measuring 0.4 mm width. Water was ponded above the cracked area. Initially all cracks leaked; at 4 days all dripping had ceased from the cracks of the Xypex treated panels, while leaking continued through the cracks of the control slab until the end of the test period (25 days). SEM photographs showed significant crystalline growth throughout the cracks of the Admix treated slab.

SCANNING ELECTRON MICROSCOPY

SEM "Microscopic Examination of Crystalline Products in Three Xypex Admix Modified Concrete and Mortar", Australian Centre for Construction Innovation, University of New South Wales, Sydney, Australia

Slag and fly ash blended cement samples were treated with Xypex Admix and examined for evidence of crystalline growth at ages ranging from 8 months to 2 years. Samples were sliced and/or split and examined at magnifications between 500x and 5000x. Characteristic Xypex crystalline growth was observable on all Xypex treated samples, providing evidence of Xypex crystalline reactions with fly ash and slag blended cements.

FREEZE/THAW DURABILITY

ASTM C 666, "Freeze/Thaw Durability", Independent Laboratory, Cleveland, USA

After 300 freeze/thaw cycles, the Xypex Admix-treated samples indicated 94% relative durability.

POTABLE WATER EXPOSURE

NSF 61, "Drinking Water System Component-Health Effects", NSF International, Ann Arbor, USA

Exposure testing of potable water in contact with Xypex-treated samples indicated no harmful effects.

Directions for Use

Xypex Admix C-500/C-500 NF is added to the concrete at the time of batching. It is important to obtain a homogeneous mixture of Xypex Admix with the concrete. Do not add dry Admix powder directly to wet mixed concrete as this could cause clumping and thorough dispersion may not occur. The sequence of procedures for addition will vary according to the type of batch plant operation and equipment. The following methods have been used successfully in the past and it is recommended that the local Xypex Technical Services Representative be consulted about the best method to use.

1. ADDITION TO COARSE AGGREGATE BELT Add Xypex Admix powder directly to the coarse aggregate conveyor belt manually or through computer controlled mass batching system. Account for worker health and safety issues with moving belts and wind-blown dust issues.

2. TRUCK ADDITION (AT PLANT) Add Xypex Admix in bulk powder or soluble bag form to the drum of the ready-mix truck immediately prior to driving the truck under the batch plant and adding the balance of the materials or the premixed concrete in accordance with standard concrete batching practices. Measures to ensure soluble bags are dispersed include adding the bags as far forward in the drum as possible, adding a small amount of batch water with the bags, and spinning the drum prior to adding remaining ingredients. Avoid delays in adding other components and utilize high speed mixing to ensure homogeneity of mix. Where there may be insufficient water for thorough dispersion of the bulk powder, a water slurry, can be made with the Admix and added to the truck mixer drum prior to batching. Account for added water in the mix design and slump.

3. ADDITION TO CENTRAL MIXER Load the Admix in bulk powder form or in soluble bags along with the other components. Mix as per standard batching practices to ensure thorough dispersal of the Admix resulting in a homogeneous mixture. Account for worker safety issues when accessing the equipment.

NOTE:

i. Although addition on site in powder form is not normally recommended, it may be necessary. In such a case, add Xypex Admix to truck in slurry form (e.g. 3 parts powder to 2 parts water by volume). Mix concrete for a minimum of 5 minutes on high speed or until thoroughly dispersed. Account for added water in the mix design and slump.

ii. Concrete containing the Xypex Admix does not preclude the requirement for design of crack control, construction joint detailing, proper placement, consolidation and curing of the concrete and measures for repairing defects such as honeycombing, tie holes, cracks beyond specified limits.

iii. Further guidelines are available that address the use of Xypex Admix for a specific situation, (e.g. dry mixes, use of ice in hot ambient conditions, cold-weather concreting, etc.). Consult with a local Xypex Technical Services Representative or Xypex's Technical Services Department for further information.

Setting Time and Strength

The setting time of concrete is affected by the chemical and physical composition of ingredients, temperature of the concrete and climatic conditions. Xypex Admix C-500/C-500 NF is designed to have minimal or no effect on setting time. Concrete containing the Xypex Admix C-500/C-500 NF may develop higher ultimate strengths than plain concrete. Trial mixes should be carried out under project conditions to determine the setting time and strength of the concrete dosed with Xypex Admix C-500/C-500 NF. Consult with a Xypex Technical Services Representative for the most appropriate Xypex Admix for your project.

Limitations

When incorporating Xypex Admix, the temperature of the concrete mix should be above 40°F (4°C).

Technical Services

For more instructions, alternative installation methods, or information concerning the compatibility of the Xypex treatment with other products or technologies, contact the Technical Services Department of Xypex Chemical Corporation or your local Xypex Technical Services Representative.

Safe Handling Information

Xypex is alkaline. As a cementitious powder or mixture, Xypex may cause significant skin and eye irritation. Directions for treating these problems are clearly detailed on all Xypex pails and packaging. The Manufacturer also maintains comprehensive and up-to-date Safety Data Sheets on all its products. Each sheet contains health and safety information for the protection of workers and customers. The Manufacturer recommends you contact Xypex Chemical Corporation or your local Xypex Technical Services Representative to obtain copies of Safety Data Sheets prior to product storage or use.

Warranty

The Manufacturer warrants that the products manufactured by it shall be free from material defects and will be consistent with its normal high quality. Should any of the products be proven defective, the liability to the Manufacturer shall be limited to replacement of the product ex factory. The Manufacturer makes no warranty as to merchantability or fitness for a particular purpose and this warranty is in lieu of all other warranties expressed or implied. The user shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith.

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2 MANUFACTURER CUT SHEETS

SCALE N/A

MKSK
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revision	date	issued

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STATE OF OHIO
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E-75817
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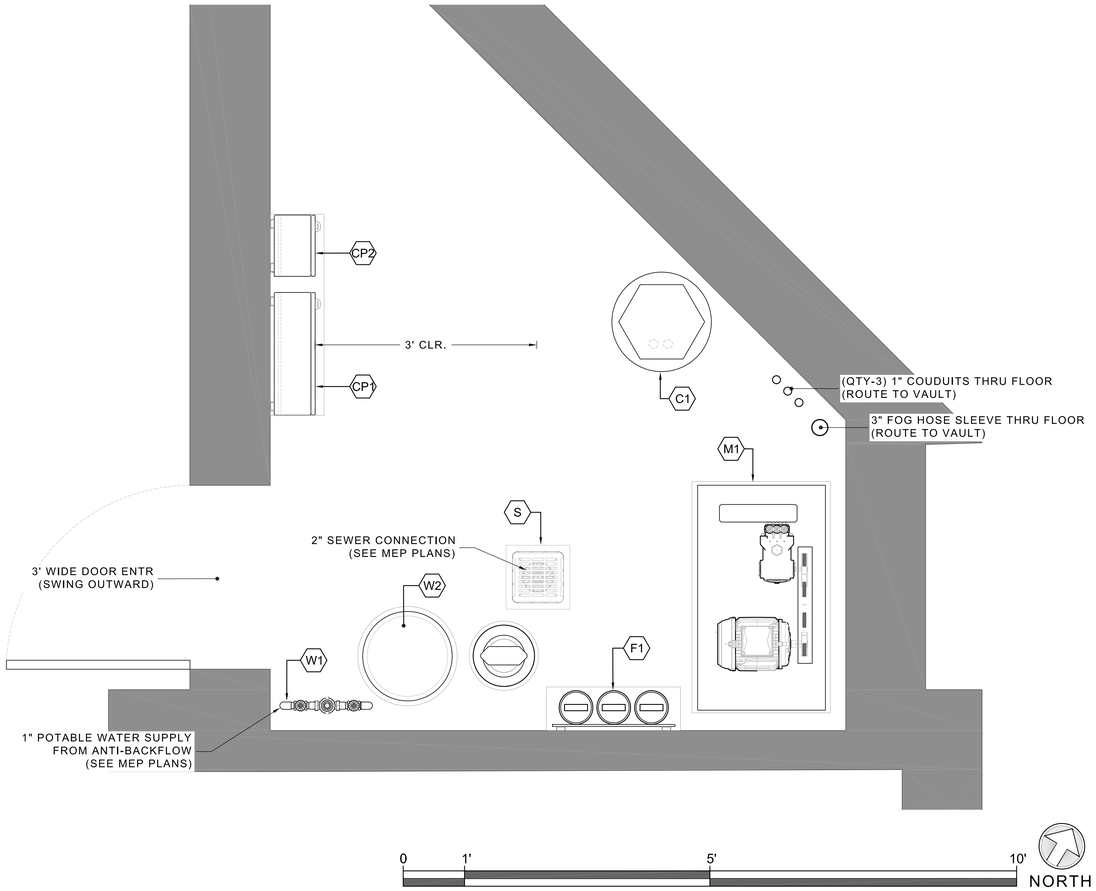
PROFESSIONAL ENGINEER

06.04.19

issue date | project number

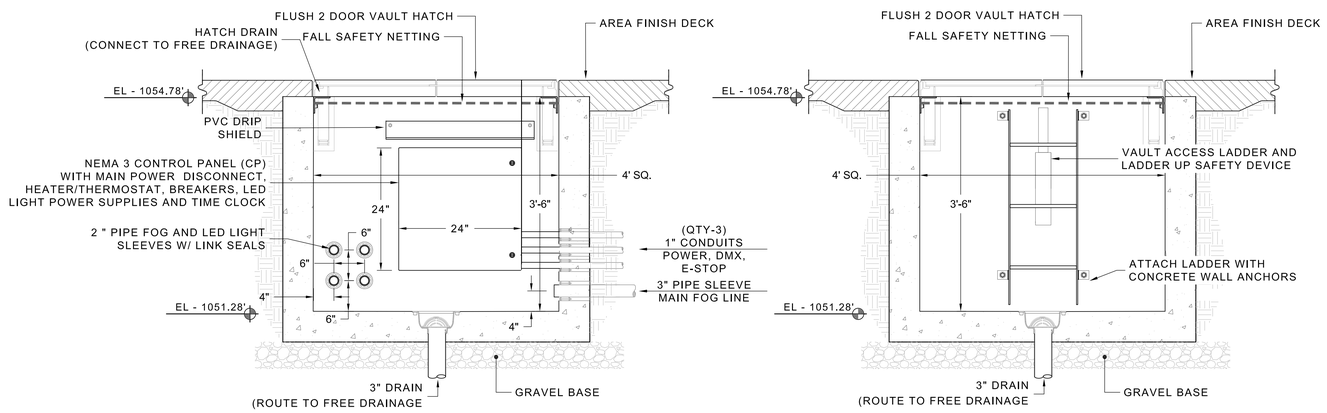
sheet name
CONCRETE COLLAR SECTION AND WATERPROOFING

sheet number
W 1.3



1 FOG SYSTEM EQUIPMENT ROOM LAYOUT PLAN

SCALE 1" = 1'



2 EQUIPMENT VAULT DETAIL

SCALE 1" = 1'

COMPONENTS:

ID	CALLOUT DETAIL	DESCRIPTION	MODEL NO.	MANUFACTURER
W1		POTABLE WATER SUPPLY FROM ANTI-BACKFLOW DEVICE - (1" PIPE @ 65 PSI) INCLD: INCLUDE ISOLATION GATE VALVE, PRESSURE REGULATOR, WATER HAMMER ARRESTER AND HOSE SPIGOT. ALL LEAD FREE	CUSTOM	WATTS INDUSTRIES (OR EQUAL)
W2		WATER SOFTENER - 18.4 GPM W/ 15PSI LOSS, 1-1/4" PIPE CONNECTIONS, ISO AND CHECK VALVES, INCLD: CONTROL PANEL,18" DIAMETER SALT STORGE TANK	HE-1.25 12" MEDIA TANK	CULLIGAN (OR EQUAL)
C1		PORTABLE (WHEELS) AIR COMPRESSOR - 2 HP, 15AMP, 135 PSI, 20 GALLON TANK, WITH 50FT HOSE AND PNEUMATIC FITTINGS (FOR FOG LINE WINTERIZATION)	4TW29	SPEEDAIRE (OR EQUAL)
M1		FOG PUMP - 10 HP HIGH PRESSURE (.93-8.9 GPM) VFD CONTROLLED, 208VAC, 3PH, 30.8 AMPS, INCLD: WATER SUPPLY FILTERS, DISCH. ASSEMBLY MANIFOLD.	ATACAMA SERIES A5.0 VFD/PLC	KOOL-FOG
F1		FOG SYSTEMS SEDIMENT AND CARBON FILTRATION PANEL 1" PIPE CONNECTIONS, 12 GPM RATED, INCLD: ISOLATION VALVES	PER MANUF.	KOOL-FOG
CP1		UL508A ELECTRICAL CONTROL PANEL - FOG PUMP CONTROLS / POWER DISTRIBUTION. (208Y/120VAC, 3PH, 4W, PLUS GND) TO INCLUDE: MOTOR VFD, PRESSURE AND FLOW SENSORS, SOLENOID VALVE POWER AND CONTROLS, LOW VOLTAGE POWER SUPPLIES AND TERMINAL DISTRIBUTION	PER MANUF.	KOOL-FOG
CP2		UL508A LIGHTING AND PUMP FLOW CONTROL PANEL - POWER DISTRIBUTION TO LED LIGHTS, ANALOG CONTROL TO FOG PUMP VFD. (120VAC, 1PH, PLUS GND). TO INCLUDE: LED LIGHT PS PANEL BREAKER, DMX TO ANALOG CONTROL BOARD, LOW VOLTAGE POWER SUPPLIES, TERMINAL DISTRIBUTION AND PROJECT NETWORK CONNECTION		RSD TOTAL CONTROL

PIPE PENETRATION NOTES:

1) ALL DIMENSIONS ARE CENTERLINE OF CORE/SLEEVE.
2) FOAM WRAP PIPE, CONDUIT AND SLEEVES THRU EQUIPMENT ROOM FLOOR.
3) PIPE PENETRATIONS THRU VAULT SHALL INCLUDE A LINK SEAL.
4) VERIFY ALL PENETRATIONS, ELEVATIONS AND DIMENSIONS IN RELATION TO THE INSTALLATION OF THE SPECIFIED EQUIPMENT. ANY DISCREPANCIES AND OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO INSTALLATION.

EQUIPMENT AREA NOTES:

1) ALL FLOOR STANDING EQUIPMENT SHALL BE INSTALLED ANCHORED AND INCLUDE VIBRATION ISOLATION.
2) SUPPORT ALL PIPE TO ELIMINATE VISIBLE MOVEMENT DURING SYSTEM OPERATION.
3) VERIFY VOLTAGE AND PHASE PRIOR TO CONSTRUCTION, INSTALLATION AND PURCHASE OF EQUIPMENT.
4) DIELECTRIC SEPARATORS SHALL BE MADE TO MITIGATE CORROSION BETWEEN DISSIMILAR METALS.
5) ANY FABRICATED MANIFOLD PIPING SHALL BE SS 316L SCH.10 AND PRESSURE TESTED TO 200 PSI.
6) ALL POTABLE WATER SUPPLY PIPING SHALL BE COPPER TYPE K, BRONZE OR SCH 10 SS (316L).

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sheet name
EQUIP. ROOM PLAN
AND VAULT DETAILS

sheet number
W 2.0

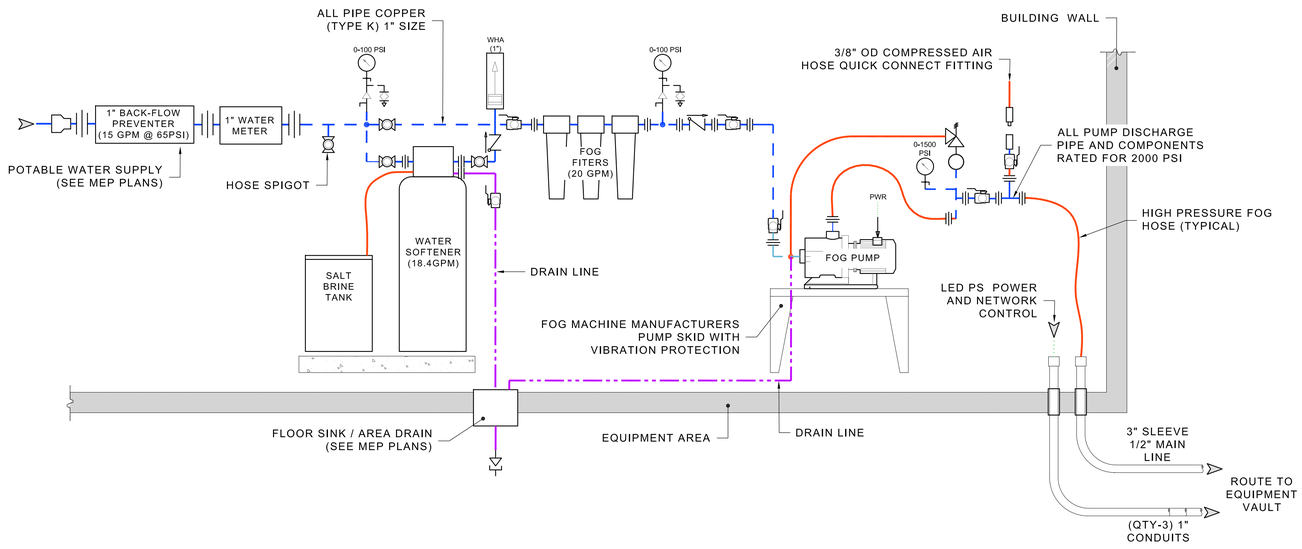
SYMBOL	DESCRIPTION
0-XX PSI,VAC	PRESS TRANS. W ISO VALVE
0-XX ° F	TEMPERATURE SENSOR
FLOW	ELEC. FLOW METER/SWITCH
PWR	ELEC. POWER
A	ELEC. AUTOMATION
S	ELEC. SIGNAL SEND
CO	ELEC. CONTACT OUTPUT
INT	ELECTRICAL INTERLOCK
	ANTI-VORTEX DISCHARGE
	ANTI-VORTEX SUCTION
WHA	WATER HAMMER ARRESTOR
VAC	VACUUM ARRESTOR

SYMBOL	DESCRIPTION
	PRECISION VALVE (GLOBE)
	3 WAY VALVE
	CHECK VALVE
	VALVE / HOSE BIB
0-XX PSI	PRS. REGULATING VALVE
	PRS. RELIEF VALVE
	WYE STRAINER
	DRAIN VALVE
0-XX PSI,VAC	GAUGE WITH ISO VALVE
0-XX GPM	FLOW METER
0-XX°F	THERMOMETER
	MANUAL AIR RELS. VALVE
	SEWER CONN. AIR GAP

SYMBOL	DESCRIPTION
	FLOW DIRECTION
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	FLANGE CONNECTION
	UNION CONNECTION
	WYE FITTING
	FLEXIBLE CONNECTION
	THRU FLANGE
	BLIND FLANGE
	PIPE CAP
	BUTTERFLY VALVE (LUG)
	BALL VALVE (FULL PORT)
	GATE VALVE
	DIAPHRAGM VALVE

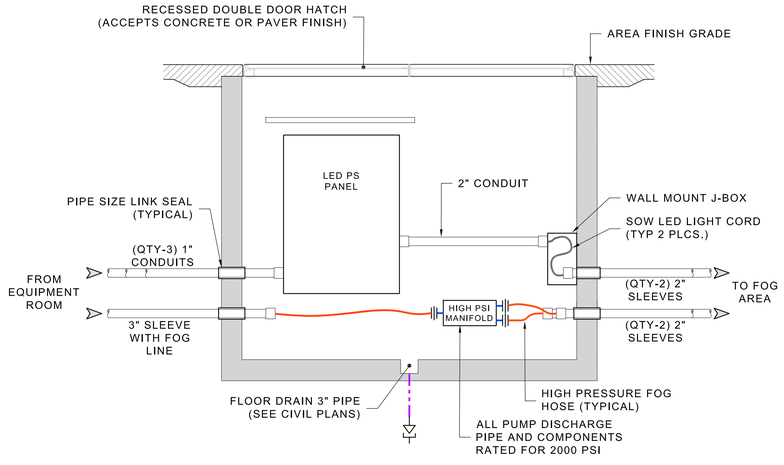
LINE TYPE LEGEND	
	SUCTION PIPING
	DISCHARGE PIPING
	HIGH PRESSURE HOSE
	ELECTRICAL
	EQUALIZER / DRAIN PIPING

ABBREVIATIONS			
SUC	SUCTION LINE	FSS	SUMP OR FLOOR SINK
DIS	DISCHARGE LINE	PD	PRESSURE DROP
HP	HORSEPOWER	SP	STATIC PRESSURE
GPM	GALLONS PER MINUTE	TDH	TOTAL DESIGN HEAD
DRS	DRAIN TO SEWER	CG	CHLORINE GENERATOR
MD	MAIN DRAINS	FR	FILTER RETURNS
VF	VACUUM FITTING	SK	SKIMMERS
SJ	SPA JETS	HF	HARTFORD LOOP

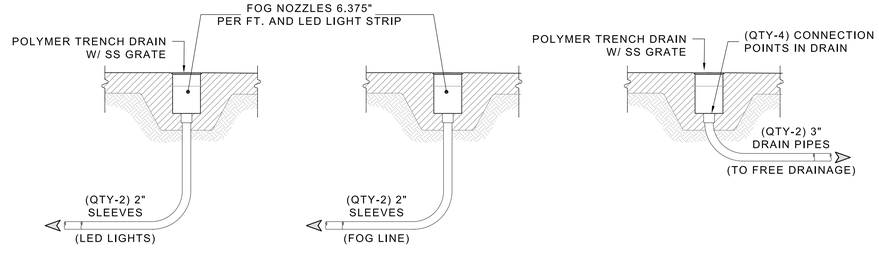


1 MECHANICAL SCHEMATIC (EQUIPMENT ROOM AREA)

SCALE N/A



FOG FEATURE AREA



2 MECHANICAL SCHEMATIC (FOG FEATURE AREA)

SCALE N/A

NOTE:

1. ALL POTABLE WATER PIPING TO BE COPPER (TYPE K)
2. ATTACH AND SUPPORT ALL PIPING IN CONFORMANCE WITH LOCAL BUILDING CODE REQUIREMENTS. FOLLOWING OPERATION / SYSTEM START-UP ADDITIONAL SUPPORTS MAY BE REQUIRED TO ELIMINATE EXCESSIVE PIPE MOVEMENT DURING SYSTEM OPERATION.

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MECHANICAL SCHEMATICS

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W 2.1

ELECTRICAL GENERAL NOTES

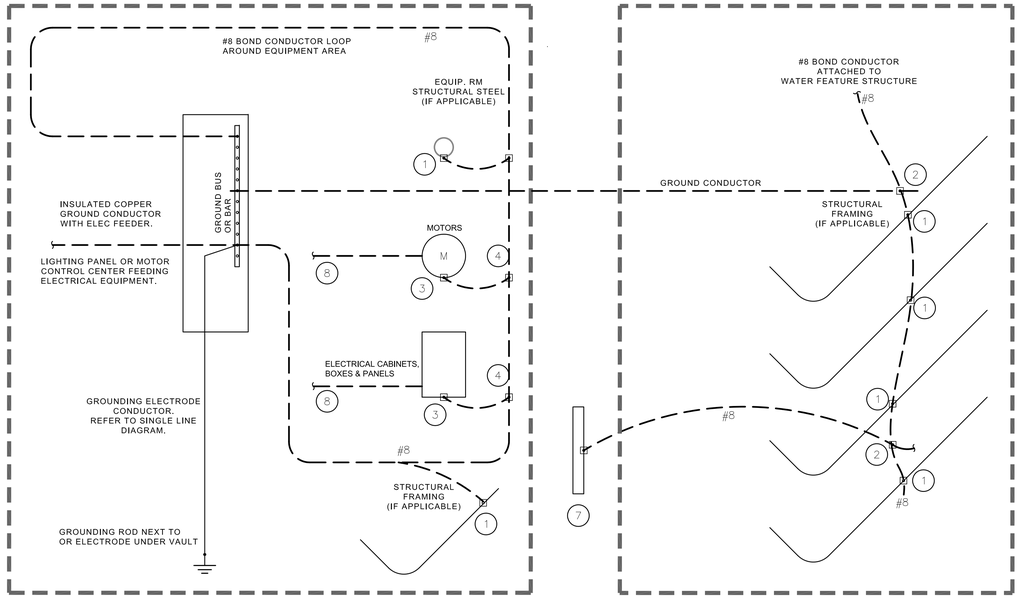
1) THESE DRAWINGS REPRESENT "SYSTEM ELECTRICAL CONFIGURATION ONLY" AND ARE NOT INTENDED AS FIELD ELECTRICAL CONSTRUCTION DRAWINGS. ALL ELECTRICAL WIRING,CONDUIT AND DISTRIBUTION SHALL CONFORM TO NEC.
2) CODES AND STANDARDS:
   ALL WORK AND MATERIAL SHALL BE IN ACCORDANCE WITH ALL APPLICABLE CODES AND GOVERNING AUTHORITIES. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR WORK WHICH IS NOT ACCEPTED BY THE ELECTRICAL INSPECTOR. AS A MINIMUM,CONSTRUCTION SHALL COMPLY WITH THE FOLLOWING CODES:
   (A) ELECTRIC CODE BASED ON 2014 NFPA 70, "NATIONAL ELECTRICAL CODE" (NEC)
   (B) AMENDMENTS BY THE AUTHORITY HAVING JURISDICTION (AHJ).
   (C) NFPA 70E, "STANDARD FOR ELECTRICAL SAFETY REQUIREMENTS..."
3) ALL WATER FEATURE EQUIPMENT, CONTROLS, LIGHTING SYSTEMS, METALLIC PARTS/FIXTURES AND BASIN STEEL REINFORCEMENT SHALL BE GROUNDED AND BONDED PER CURRENT NEC CODE REQUIREMENTS.
4) PRODUCT SAFETY:
   IN ADDITION TO INSTALLING (UL) LABORATORY LISTED EQUIPMENT FOR ASSURANCE OF SAFETY, THE CONTRACTOR AND/OR EQUIPMENT MFR SHALL APPLY WARNING LABELS TO ELECTRICAL EQUIPMENT AS SPECIFIED IN THE CODE OR NECESSARY TO PREVENT A SAFETY HAZARD.
5) WORKMANSHIP:
   FABRICATION AND INSTALLATION SHALL BE IN COMPLIANCE WITH THE STANDARDS OF THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION. ELECTRICAL WORK SHALL BE PERFORMED BY A STATE LICENSED ELECTRICIAN WHO SHALL TAKE RESPONSIBILITY OF PROPER AND SAFE WORKMANSHIP AND CERTIFY TO COMPLIANCE WITH ELECTRICAL SPECIFICATIONS AND APPLICABLE CODES.
6) COMMISSIONING:
   THE ELECTRICAL WATER FEATURE SYSTEMS ON THIS PROJECT SHALL BE TESTED AND DEMONSTRATED FOR COMPLIANCE WITHIN THE OPERATIONAL REQUIREMENTS OF ALL EQUIPMENT. ANY ABNORMAL VARIATIONS OR FAULTY OPERATION SHALL BE THE RESPONSIBILITY OF THE WATER FEATURE CONTRACTOR TO CORRECT.
7) CONDUIT AND WIRE INFRASTRUCTURE:
   ALL CONDUIT AND WIRE SHALL BE IDENTIFIED FOR USE IN A WET LOCATION. EXTERIOR CONDUIT SHALL BE RIGID GALVANIZED STEEL OR EMT AND ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40. ALL WIRING SHALL BE THW INSULATION.
8) ALL ELECTRICAL CORD CONDUIT OR PIPE SLEEVES TO BE SOLVENT WELDED AND HAVE LONG RADIUS SWEEP FITTINGS.
9) WORSE CASE VOLTAGE DROP BELOW 3%.
10) FOR EQUIPMENT ROOM LIGHTING, VENTILATION AND CONVENIENCE RECEPTACLES SEE PROJECT ELECTRICAL PLANS.

PANEL NOTES

1) U.L. 508A LISTED INDUSTRIAL CONTROL PANEL TO BE FABRICATED & LABELED PER U.L. 508A.
2) CONTRACTOR TO SUBMIT PANEL SHOP DRAWINGS FOR REVIEW AND APPROVAL.
3) ENGINEERED GFCI BEAKERS TO BE RATED AT 6MA GROUND FAULT FOR PERSONNEL PROTECTION.
2) DOOR MOUNTED INDICATING LIGHTS TO BE LED TYPE.
4) CONTROL PANELS MANUFACTURE - KOOLFOG OR EQUAL FROM QUALIFIED UL 508A PANEL BUILDER.
5) VARIABLE FREQUENCY DRIVES SHALL BE IN COMPLIANCE WITH CEC ARTICLE 430.122.

1 ELECTRICAL STANDARDS AND GENERAL NOTES

SCALE N/A



REF: NATIONAL ELECTRICAL CODE (NEC)

1) BOND COPPER GROUND WIRE AND RE-BAR. UL LISTED FOR DIRECT BURIAL IN EARTH OR CONCRETE. BURNDY #C-11D (1/2"-3/4" Re-BAR) OR EQUAL. MAKE FOUR RE-BAR CONNECTIONS (MINIMUM) OF THE GROUND WIRE AROUND THE WATER FEATURE. FOR BONDING CONNECTIONS TO METAL SHELL LINED WATER FEATURES, SEE NOTE BELOW.
2) TAP CONNECTOR FOR SOLID TO SOLID GROUND WIRE, UL LISTED FOR DIRECT BURIAL IN EARTH OR CONCRETE. BURNDY #KS17-DB, OR EQUAL.
3) GROUND WIRE LUG CONNECTOR SUITABLE FOR PURPOSE TO CONNECT FRAMES OF MOTORS, METAL ELECTRICAL EQUIPMENT ENCLOSURES, AND METAL PIPING. GREAVES OR EQUAL.
4) GROUNDING CONNECTOR MAY BE THE SAME AS ITEM '2' OR OTHER WET LOCATION UL LISTED.
5) GROUNDING LUGS ON INTERIOR OF LIGHTING JUNCTION BOXES.
6) FLEXIBLE ELECTRICAL LIGHTING CORD WITH INTEGRAL #16 (MIN.) GREEN INSULATED CONDUCTOR IN RIGID CONDUIT. FOR RIGID NON-METALLIC CONDUIT FOR POOLS & SPAS ADD GROUND WIRE TO CONDUIT INFRASTRUCTURE.
7) METALLIC OBJECTS IN OR WITHIN 5 FT (1.5 M) OF THE WATER FEATURE SHALL BE BONDED WITH A GROUND WIRE.
8) BRANCH CIRCUIT WIRING TO MOTORS, ELECTRICAL CABINETS, CONTROLLERS, BOXES AND PANELS SHALL INCLUDE AN INSULATED COPPER GROUNDING CONDUCTOR.

GENERAL
BONDING CONDUCTORS ARE BARE SOLID COPPER, UNLESS NOTED OTHERWISE. SPLICES SHALL BE EITHER WITH HIGH COMPRESSION CONNECTORS, EXOTHERMIC TYPE OR TWO (2) MECHANICAL CONNECTORS, ITEM "2". GROUND CONDUCTORS ACCOMPANYING CIRCUIT CONDUCTORS IN CONDUIT ARE STRANDED OR SOLID GREEN INSULATED COPPER BUILDING WIRE.

BONDING/GROUNDING CONNECTORS SHALL BE UL LISTED FOR THE PURPOSE INTENDED. INSTALL AND TORQUE BOLTS WITH A PROPER TOOL PER MFR. INSTRUCTIONS. CONNECTORS BURIED DIRECTLY IN EARTH OR CONCRETE SHALL BE U.L.-467 LISTED AND VERIFIED BY THE FIELD ELECTRICAL INSPECTOR BEFORE BACKFILL. UL LISTED COMPRESSION OR EXOTHERMIC TYPES OF CONNECTIONS ARE ACCEPTABLE ALTERNATES.

BONDING CONNECTORS TO METAL SHELL LINED WATER FEATURES SHALL BE BURNDY #GB4C (3/8" BOLT) OR EQUAL. (UL-467 LISTED FOR DIRECT BURIAL IN EARTH OR CONCRETE.) BOND A #8 BOND WIRE TO THE EXTERIOR OF THE METAL SHELL FLANGES IN AT LEAST THREE LOCATIONS.

2 BONDING SCHEMATICS

SCALE N/A

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PROFESSIONAL ENGINEER

06.04.19

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ELECTRICAL GENERAL NOTES AND BONDING

sheet number
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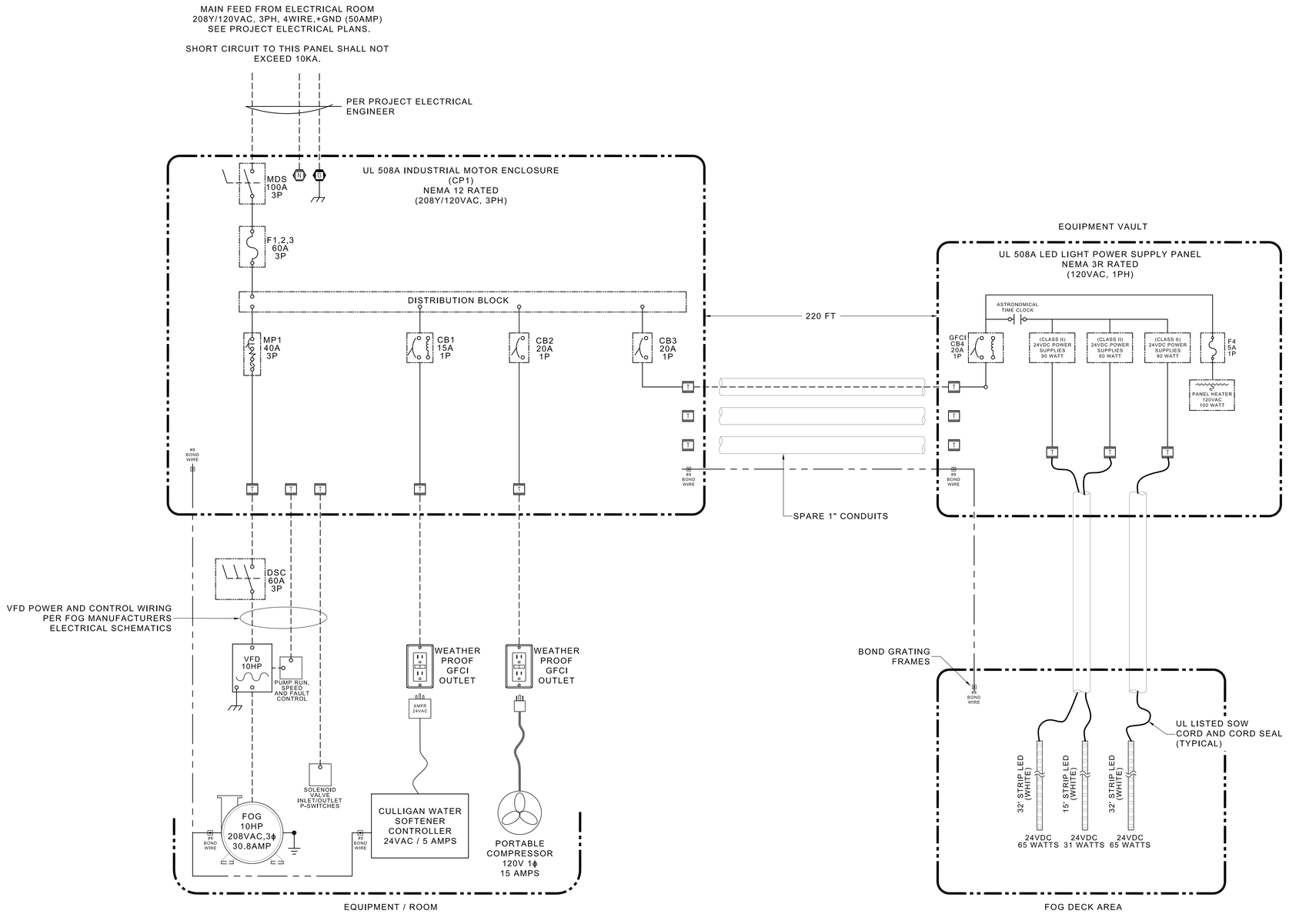

1 ELETRCIAL CONTROL SCHEMATICS

SCALE N/A

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