

\\s01\oneo2\projects\1_Shell_Products - Former Kast_Properly\WAP_Implementation\CADD\070_Electrical\07 E-0.1.dwg Plotted on Oct 15, 2015 3:29pm by Luke_Ferry

ELECTRICAL SYMBOLS - PLANS	
SYMBOL	DESCRIPTION
(XXXX)	CONDUIT DESIGNATION SEE CONDUIT SCHEDULE
-----	CONDUIT IN SLAB OR UNDERGROUND
_____	CONDUIT EXPOSED
---///---	QUANTITY #12 CURRENT CARRYING WIRES. (EQUIPMENT GND NOT INCLUDED IN THE COUNT)
---///#10---	WIRE SIZE OTHER THAN #12
---G---	GROUNDING CONDUCTOR 12" IN BUILDING FOOTING
---A-1,3---	HOMERUN TO PANEL A, CIRCUITS 1 AND 3
---○---	CONDUIT BENDS TOWARD OBSERVER
---●---	CONDUIT BENDS AWAY FROM OBSERVER
---└---	CONDUIT STUB-OUT AND CAPPED
Ⓢ	FLEXIBLE CONDUIT CONNECTION
Ⓞ	MOTOR CONNECTION
Ⓢ	SOLENOID VALVE
Ⓞ	GROUND ROD, 3/4" x 10'-0" COPPERCLAD
■	PANELBOARD
F	FUSED DISCONNECT SWITCH
Ⓢ GFI	DUPLEX RECEPTACLE, GFI TYPE WHERE INDICATED *
Ⓢ	SINGLE POLE SWITCH **
Ⓢ3	3 WAY SWITCH **
ⓈM	MOTOR RATED SWITCH
Ⓢ	JUNCTION BOX, CEILING
Ⓢ	JUNCTION BOX, WALL
Ⓢ	SEE NOTE INDICATED
+12"	INDICATES HEIGHT FROM FINISHED FLOOR GRADE TO CENTERLINE OF DEVICE
*	+ 12" UON
**	+ 48" UON

ELECTRICAL SYMBOLS - SCHEMATIC DIAGRAM		
NORMALLY OPEN	NORMALLY CLOSED	DEVICE
— —	— —	CONTACT
Ⓢ	Ⓢ	TIMED CONTACT CONTACT ACTION RETARDED ON ENERGIZATION
Ⓢ	Ⓢ	TIMED CONTACT CONTACT ACTION RETARDED ON DE-ENERGIZATION
Ⓢ	Ⓢ	PUSH BUTTON SINGLE CIRCUIT MOMENTARY CONTACT
Ⓢ	Ⓢ	PUSH BUTTON SINGLE CIRCUIT LOCK-OUT
Ⓢ	Ⓢ	LIMIT SWITCH
Ⓢ	Ⓢ	PRESSURE OR VACUUM SWITCH
Ⓢ	Ⓢ	TEMPERATURE SWITCH
Ⓢ		SELECTOR SWITCH
— —		MANUAL MOTOR STARTER
O/L'S		MOTOR OVERLOAD HEATER CONTACTS
— —		MOTOR OVERLOAD HEATER
Ⓢ		PILOT LIGHT: R= RED, W= WHITE, G= GREEN, A= AMBER
Ⓢ		PILOT LIGHT - PUSH TO TEST
Ⓢ		RELAY
Ⓢ		TIME DELAY RELAY
Ⓢ		STARTER COIL
ETM		ELAPSED TIME METER
— —		FUSE
Ⓢ		CONTROL POWER TRANSFORMER
Ⓢ		GROUND
— —		WIRING IN MOTOR STARTER
-----		FIELD WIRING
--- ---		WIRE TERMINAL IN MTR. STARTER

ELECTRICAL SYMBOLS - SINGLE LINE DIAGRAM	
Ⓢ	UTILITY METERING
Ⓢ	CURRENT TRANSFORMER, QUANTITY AS REQUIRED
Ⓢ	POTENTIAL TRANSFORMER, QUANTITY AS REQUIRED
Ⓢ	DRY TYPE TRANSFORMER
Ⓢ 30A MCP	CIRCUIT BREAKER, 3P - 3 POLE MCP INDICATES MOTOR CIRCUIT PROTECTOR
Ⓢ 4	MAGNETIC MOTOR STARTER, NEMA SIZE INDICATED FVNR = FULL-VOLTAGE NON-REVERSING BC = BYPASS CONTACTOR
Ⓢ	GROUND
Ⓢ	MOTOR, 10 HORSEPOWER

ELECTRICAL SYMBOLS			
A	AMPERES	MCC	MOTOR CONTROL CENTER
AC	ALTERNATING CURRENT	MIN	MINIMUM
AF	AMPERE FRAME	MT	MOUNT
AF	ABOVE FINISHED FLOOR	MTD	MOUNTED
AFG	ABOVE FINISHED GRADE	N	NEUTRAL
AICS	AMPERES INTERRUPTING CAPACITY, SYMMETRICAL	NA	NONAUTOMATIC
AT	AMPERE TRIP	NC	NORMALLY CLOSED
AWG	AMERICAN WIRE GAUGE	NL	NIGHT LIGHT
BC	BARE COPPER	NO	NORMALLY OPEN
C	CONDUIT	NO	NUMBER
CB	CIRCUIT BREAKER	NTS	NOT TO SCALE
CKT	CIRCUIT	OL'S	MOTOR OVERLOAD CONTACTS
CO	CONDUIT ONLY	P	POLE
CP	CONTROL PANEL	PB	PUSHBUTTON, PULLBOX
CPT	CONTROL POWER TRANSFORMER	PH	PHASE
CT	CURRENT TRANSFORMER	PSHL	PRESSURE SWITCH, HIGH/LOW
DC	DIRECT CURRENT	PS	PRESSURE SWITCH
DWG	DRAWING	PT	POTENTIAL TRANSFORMER
ELEV	ELEVATION	PVC	POLYVINYL CHLORIDE
ENCL	ENCLOSED	REC	RECEPTACLE
ETM	ELAPSED TIME METER	REF	REFERENCE
EXIST	EXISTING	SCE	SOUTHERN CALIFORNIA EDISON
FLEX	FLEXIBLE	SHT	SHEET
FLUOR	FLUORESCENT	STD	STANDARD
G, GND	GROUND	SW	SWITCH
GFI	GROUND FAULT INTERRUPTER	TEL	TELEPHONE
HH	HANDHOLE	TEMP	TEMPERATURE
HOA	HAND OFF AUTOMATIC	TRANSF	TRANSFORMER
HP	HORSEPOWER	TSP	TWISTED SHIELDED PAIR
HZ	HERTZ	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
JB	JUNCTION BOX	TYP	TYPICAL
KCMIL	THOUSAND CIRCULAR MILS	UG	UNDERGROUND
KVA	KILOVOLT-AMPERE	UL	UNDERWRITERS LABORATORY
KW	KILOWATT	UON	UNLESS OTHERWISE NOTED
LA	LIGHTNING ARRESTOR	V	VOLT
LCL	LONG CONTINUOUS LOAD	VFD	VARIABLE FREQUENCY DRIVE
LIT	LEVEL INDICATOR TRANSMITTER	W	WATT, WIRE
LSH	LEVEL SWITCH HIGH	WP	WEATHERPROOF
LT	LEVEL TRANSMITTER	W/	WITH
LOS	LOCKOUT STOP PUSHBUTTON	XFMR	TRANSFORMER
MAX	MAXIMUM		

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 N.UBARIO
 DRAWN BY:
 M.GONZALEZ
 CHECKED BY:
 A.RANDALL

STAMP

PLANS PREPARED BY:
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 999 W. TOWN & COUNTRY ROAD
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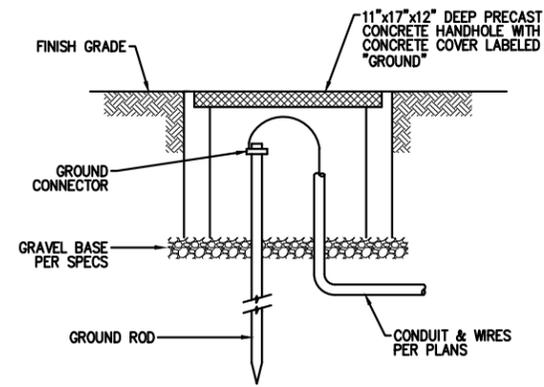
BENCHMARK:
 SEE DRAWING C-002

REVISIONS			
NO	DESCRIPTION	APPROVE	DATE

SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/BIOVENTING SYSTEM
CAROUSEL TRACT
ELECTRICAL LEGEND AND
ABBREVIATIONS

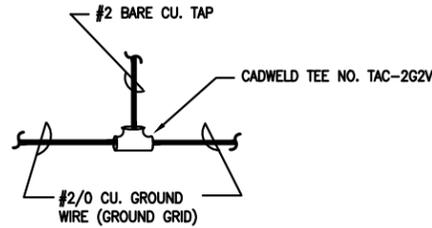
PROJECT NO. XXX	SHEET 74 of 87	PLAN NO. E-0.1
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90% SUBMITTAL



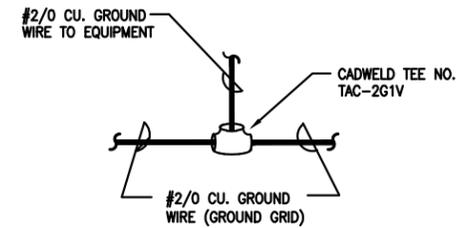
GROUND WELL DETAIL
NOT TO SCALE

1



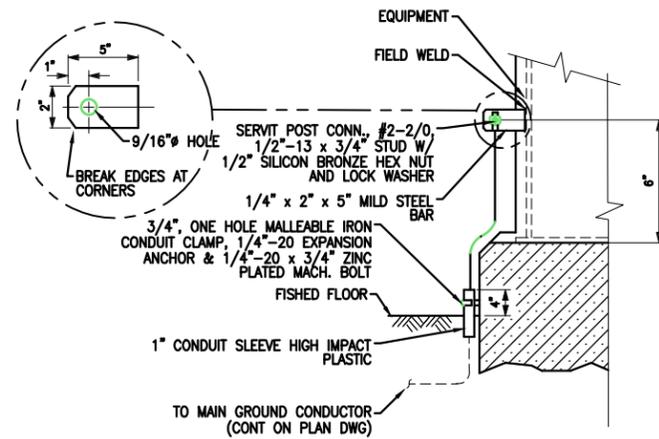
GRID TO TAP
NOT TO SCALE

2



GRID TO GRID
NOT TO SCALE

3



TAP TO EQUIPMENT
NOT TO SCALE

4

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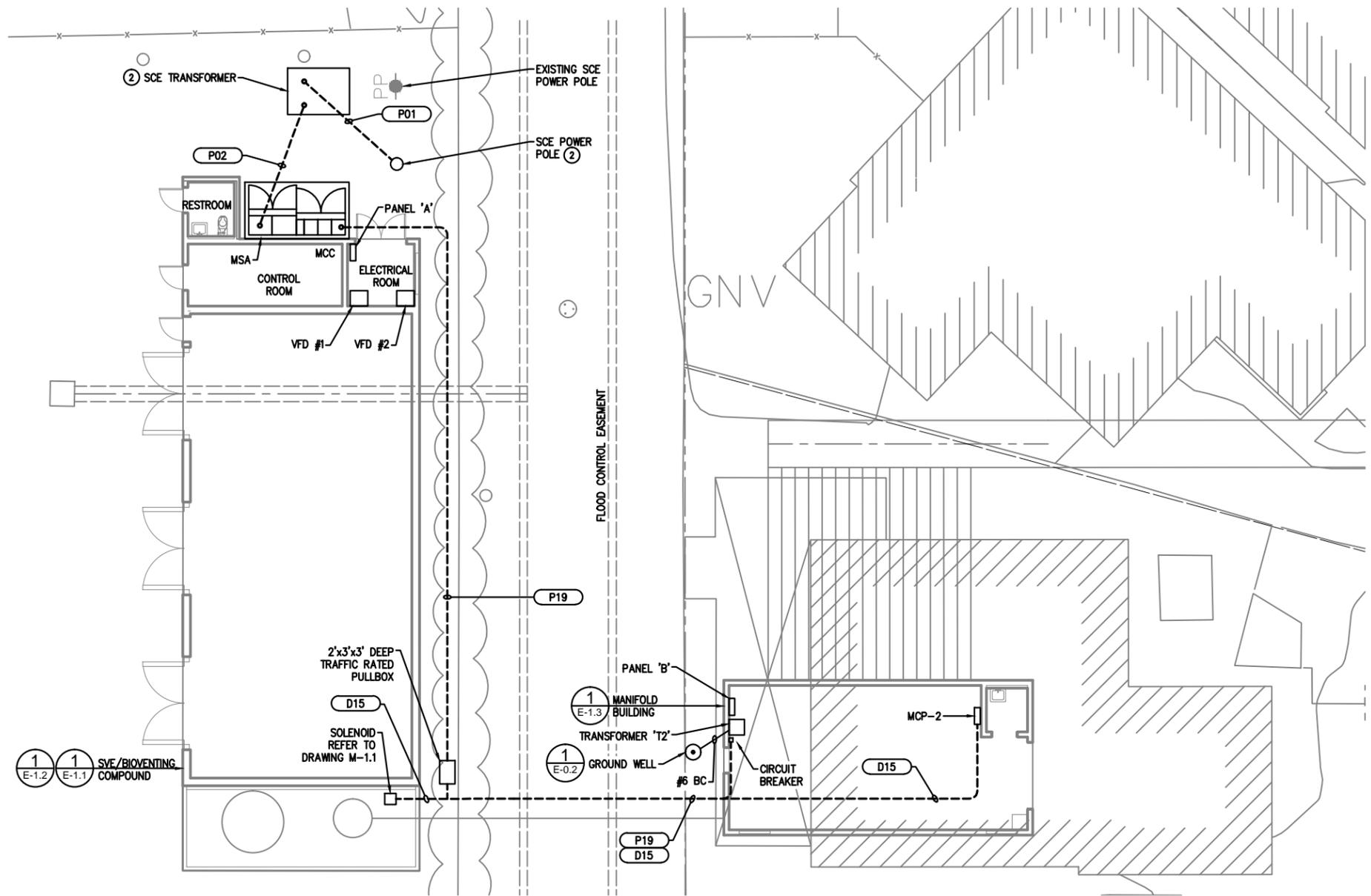
CITY OF CARSON

SVE/BIOVENTING SYSTEM
CAROUSEL TRACT

ELECTRICAL DETAILS

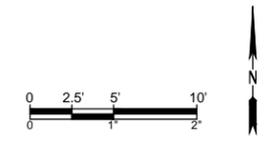
PROJECT NO. XXX	SHEET 75 of 87	PLAN NO. E-0.2
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- NOTES:
- ① PROVIDE PRECAST CONCRETE PAD, BOLLARDS AND GROUNDING PER SCE REQUIREMENTS.
 - ② PROVIDE POLE RISER PER SCE REQUIREMENTS

ELECTRICAL SITE PLAN
SCALE: 1" = 8'



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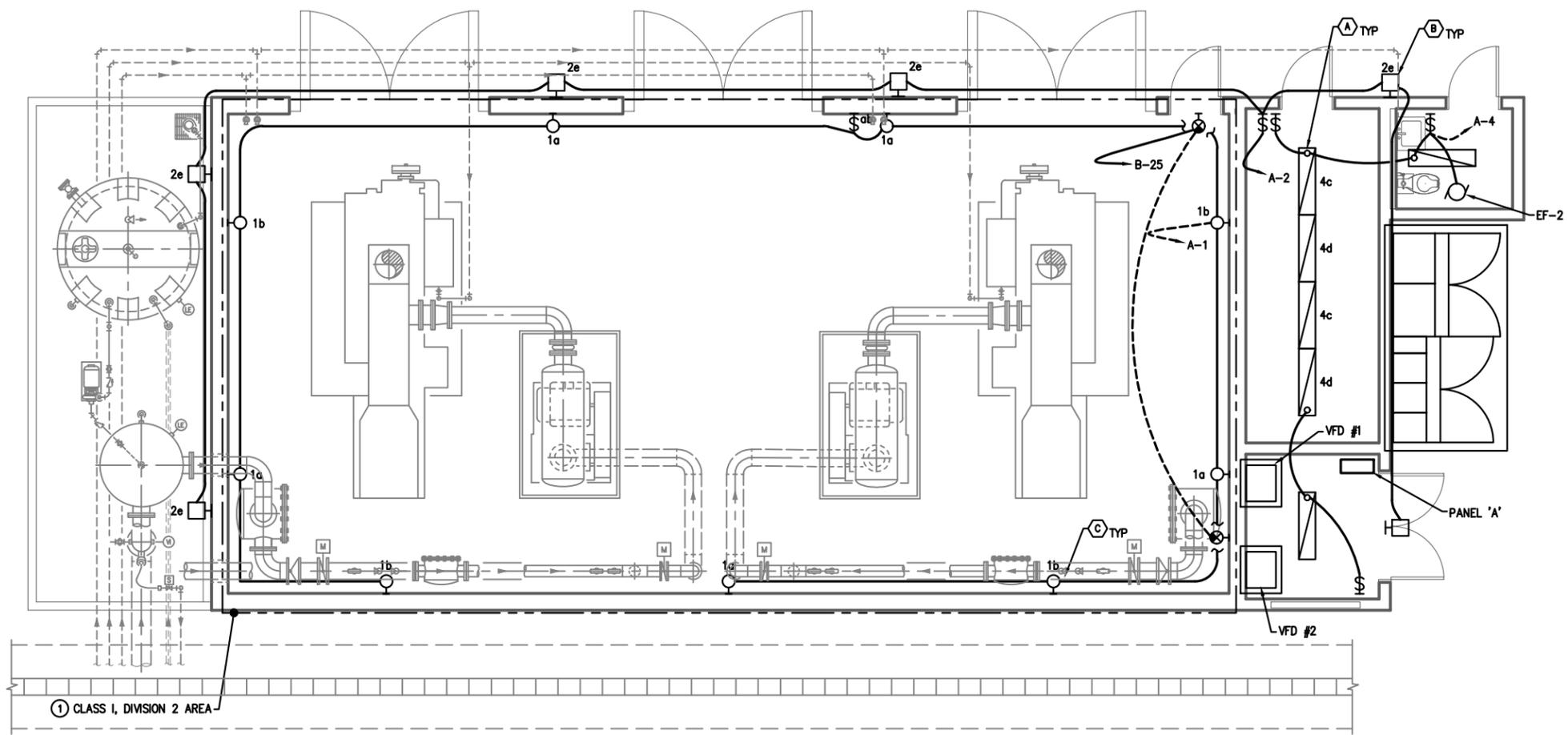
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SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/BIOVENTING SYSTEM
CAROUSEL TRACT
ELECTRICAL SITE PLAN

PROJECT NO. XXX	SHEET 76 of 87	PLAN NO. E-1.0
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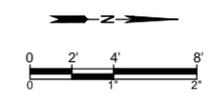


① CLASS 1, DIVISION 2 AREA

LIGHTING PLAN
SCALE: 1/4" = 1'

NOTES

- ① PROVIDE EXPLOSION PROOF SEALS FOR ALL CONDUITS ENTERING OR LEAVING AREA.



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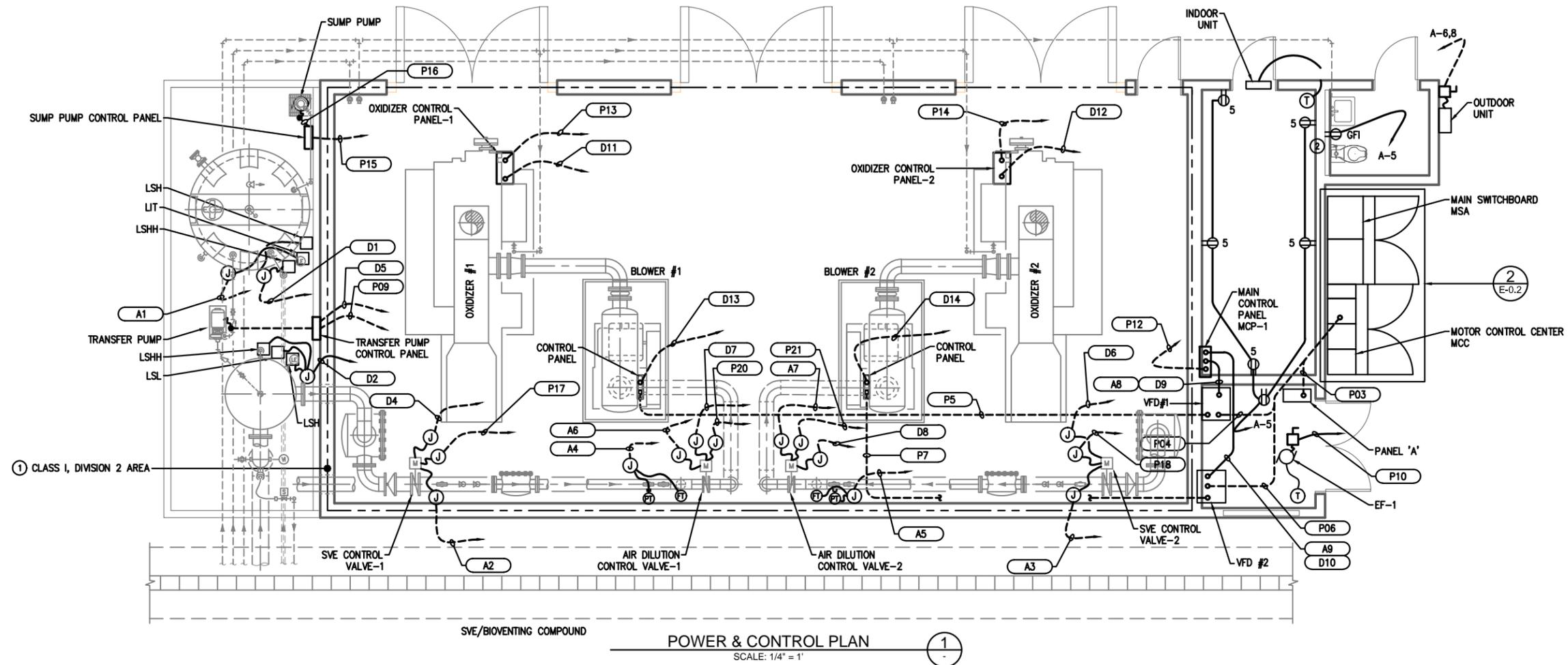
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SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/BIOVENTING SYSTEM
CAROUSEL TRACT
SVE/BIOVENTING COMPOUND
LIGHTING PLAN

PROJECT NO. XXX	SHEET 77 of 87	PLAN NO. E-1.1
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- NOTES:
- ① PROVIDE EXPLOSIVE PROOF SEALS FOR ALL CONDUITS ENTERING OR LEAVING AREA.
 - ② MOUNT 48" ABOVE FINISH FLOOR.



POWER & CONTROL PLAN
SCALE: 1/4" = 1'

1

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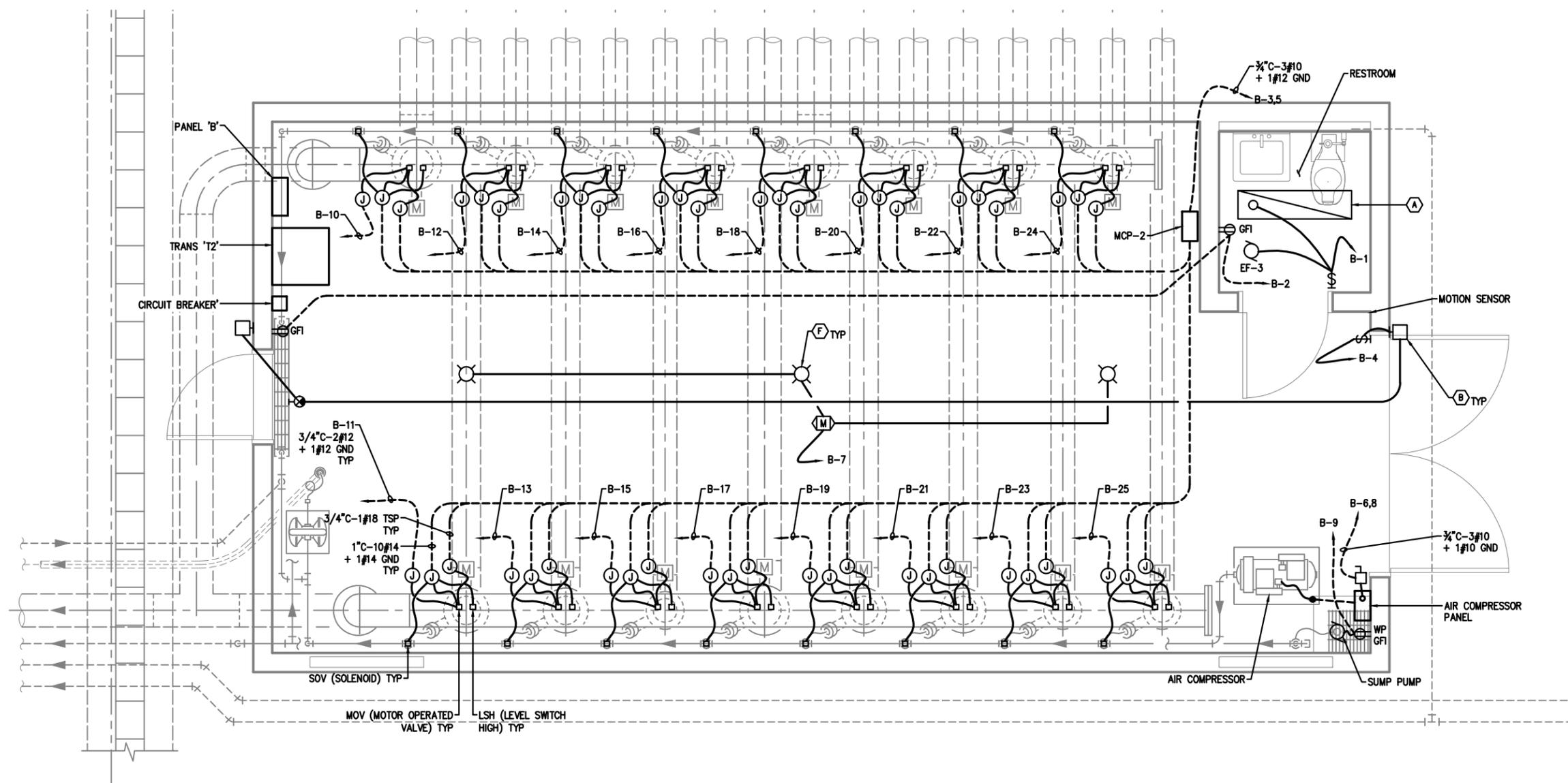
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SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/BIOVENTING SYSTEM
CAROUSEL TRACT
SVE/BIOVENTING COMPOUND
POWER & CONTROL PLAN

PROJECT NO. XXX	SHEET 78 of 87	PLAN NO. E-1.2
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MANIFOLD BUILDING LIGHTING, POWER & CONTROL PLAN
SCALE: 1" = 2'



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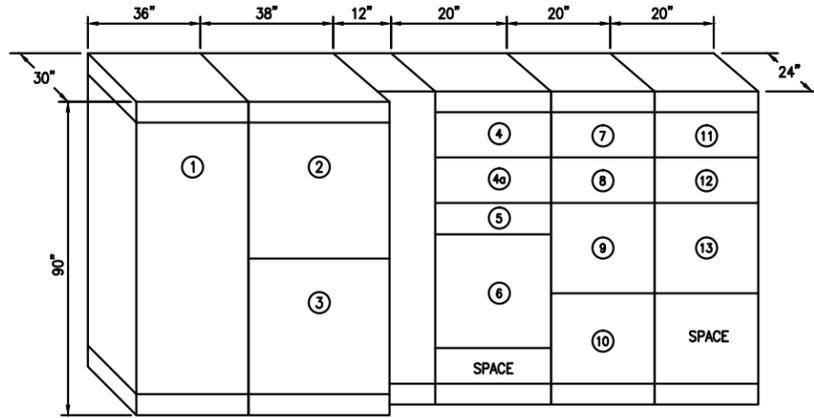
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SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/BIOVENTING SYSTEM
CAROUSEL TRACT
MANIFOLD BUILDING
LIGHTING, POWER & CONTROL PLAN

PROJECT NO. XXX	SHEET 79 of 87	PLAN NO. E-1.3
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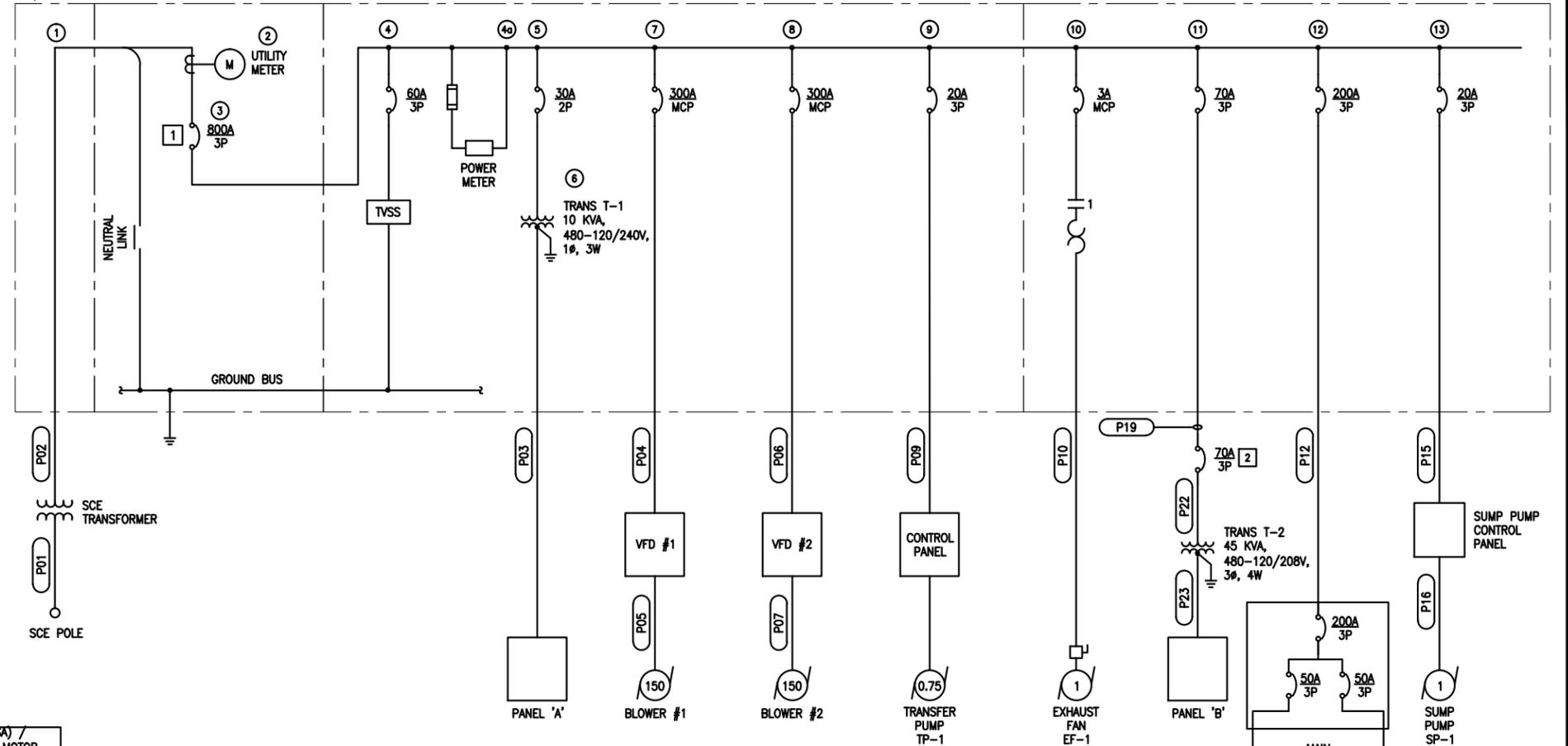
MAIN SWITCHBOARD (MSA) AND MOTOR CONTROL CENTER (MCC) ELEVATION

NOT TO SCALE
NEMA 3R ENCLOSURE NOT SHOWN FOR CLARITY

1

MAIN SWITCHBOARD, "MSA", 800A, 3Ø, 4W, 480/277V, 42,000 AICS

MOTOR CONTROL CENTER (MCC) 480V, 800A, 3Ø, 3W 42,000 AICS



SVE/BIOVENTING COMPOUND SINGLE LINE DIAGRAM

1

SVE/VENTING COMPOUND MAIN SWITCHBOARD 'MSA' LOAD SUMMARY					
LOAD	VOLTS	PHASE	CONNECTED		
			HP	KVA	AMPS
BLOWER-1	460	3	150	144	-
BLOWER-2	460	3	150	144	-
TRANSFORMER T-1	460	1		10	-
TRANSFER PUMP	460	3	0.75	1.1	-
EXHAUST FAN EF-1	460	3	1.0	1.4	-
MCP-1	460	3	15	110	-
SUMP PUMP	460	3	1	1.4	-
TRANSFORMER 'T2'				45	
LCL 25% LARGEST MOTOR (150 HP)	460	3		36	
TOTAL:				490	590

MAIN SWITCHBOARD (MSA) / SVE/VENTING COMPOUND MOTOR CONTROL CENTER (MCC) NAMEPLATE SCHEDULE	
1	UTILITY PULL SECTION
2	UTILITY METER
3	MAIN C/B
4	TVSS
4Ø	POWER METER
5	TRANSFORMER 'T1' C/B
6	TRANSFORMER 'T1'
7	VFD #1
8	VFD #2
9	TRANSFER PUMP
10	EXHAUST FAN EF-1
11	TRANSFORMER 'T2'
12	MAIN CONTROL PANEL (MCP-1)
13	SUMP PUMP

NOTES

- 1 PROVIDE 100% RATED CIRCUIT BREAKER
- 2 MOUNT CIRCUIT BREAKER IN NEMA 1 ENCLOSURE.

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SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/BIOVENTING SYSTEM
CAROUSEL TRACT
SINGLE-LINE DIAGRAM

PROJECT NO. XXX	SHEET 80 of 87	PLAN NO. E-2.0
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CONDUIT & WIRE SCHEDULE										
CONDUIT NUMBER	CONDUIT SIZE	CONDUCTORS				FROM	TO	REMARKS		
		POWER WIRING		CONTROL WIRING					GROUND WIRING	
		No.	SIZE	No.	SIZE				No.	SIZE
P01	4"					SCE	SCE XFMR	CONDUIT ONLY		
P02	(2) 4"					SCE XFMR	MSA	CONDUIT ONLY		
P03	1"	3	#8			MCC	PANEL 'A'			
P04	2-1/2"	3	4/0			MCC	VFD #1			
P05	2-1/2"	3	4/0			VFD #1	BLOWER #1	VFD CABLE		
P06	2-1/2"	3	4/0			MCC	VFD #2			
P07	2-1/2"	3	4/0			VFD #2	BLOWER #2	VFD CABLE		
P08	3/4"	3	#12			MCC	TRANSFER PUMP			
P10	3/4"	3	#12			MCC	EXHAUST FAN EF-1			
P12	2"	3	3/0			MCC	MCP-1			
P13	1"	3	#8			MCP-1	OXIDIZER CONTROL PANEL-1			
P14	1"	3	#8			MCP-1	OXIDIZER CONTROL PANEL-2			
P15	3/4"	3	#12			MCC	SUMP PUMP CONTROL PANEL			
P16	3/4"	3	#12			SUMP PUMP CONTROL PANEL	SUMP PUMP SP-1			
P17	3/4"	2	#12			MCP-1	SVE CONTROL VALVE-1			
P18	3/4"	2	#12			MCP-1	SVE CONTROL VALVE-2			
P19	1-1/4"	3	#4			MCC	TRANSFORMER 'T2' C/B			
P20	3/4"	2	#12			MCP-1	AIR DILUTION CONTROL VALVE-1			
P21	3/4"	2	#12			MCP-1	AIR DILUTION CONTROL VALVE-2			
P22	1-1/4"	3	#4			TRANS 'T1' C/B	TRANS 'T2'			
P23	2"	4	1/0			TRANS 'T2'	PANEL B			
A1	3/4"			1	#18 TSP	MCP-1	LIT			
A2	3/4"			1	#18 TSP	MCP-1	SVE CONTROL VALVE-1			
A3	3/4"			1	#18 TSP	MCP-1	SVE CONTROL VALVE-2			
A4	3/4"			2	#18 TSP	MCP-1	PT, FT			
A5	3/4"			2	#18 TSP	MCP-1	PT, FT			
A6	3/4"			1	#18 TSP	MCP-1	AIR DILUTION CONTROL VALVE-1			
A7	3/4"			1	#18 TSP	MCP-1	AIR DILUTION CONTROL VALVE-2			
A8	1"			2	#18 TSP	MCP-1	VFD-1			
A9	1"			2	#18 TSP	MCP-1	VFD-2			
D1	3/4"			4	#14	MCP-1	LSH, LSHH			
D2	3/4"			6	#14	MCP-1	LSL, LSH, LSHH			
D4	3/4"			6	#14	MCP-1	SVE CONTROL VALVE-1			
D5	3/4"			6	#14	MCP-1	TRANSFER PUMP CONTROL PANEL			
D6	3/4"			6	#14	MCP-1	SVE CONTROL VALVE-2			
D7	3/4"			2	#14	MCP-1	AIR DILUTION CONTROL VALVE-1			
D8	3/4"			2	#14	MCP-1	AIR DILUTION CONTROL VALVE-2			
D9	1"			10	#14	MCP-1	VFD-1			
D10	1"			10	#14	MCP-1	VFD-2			
D11	1"			10	#14	MCP-1	OXIDIZER CONTROL PANEL-1			
D12	1"			10	#14	MCP-1	OXIDIZER CONTROL PANEL-2			
D13	1"			10	#14	MCP-1	BLOWER 1 CONTROL PANEL			
D14	1"			10	#14	MCP-1	BLOWER 2 CONTROL PANEL			
D15	1"			2	#14	MCP-2	SOLENOID			

NAMEPLATE		PANEL "A"		MTG.		SURFACE		MAIN		50A/2P			
BUS: AMPS		100		VOLTS:		120/240V, 1φ, 3W							
	WATTAGE	OUTLETS			10,000 ACS 20A-1P U.O.N.			OUTLETS			WATTAGE		
		A	B	LTG REC MISC	LTG REC MISC	A	B	LTG REC MISC	A	B			
SVE/BIOVENTING LIGHTS	675			9			1			2	6	114	WALL PACKS
CONTROL ROOM RECEPTACLES		1080					3			4	6	1280	ELECTRICAL & CONTROL ROOM LIGHTS & EF-2
RESTROOM GFI	180						5			20A	8	1000	OUTDOOR UNIT
SPARE							7			8		1000	
							9			10			
							11			12			
							13			14			
							15			16			
SPACE							17			18			
							19			20			
							21			22			
							23			24			
							25			26			
							27			28			
							29			30			
							31			32			
TOTAL LOAD	855	1080									1114	2280	TOTAL LOAD
5.3 KW + LCL		1.0 KW		6.3 KW AT		240 VOLTS		1PH		28.4 AMPS			

REF.	VOLTS	LAMPS					MOUNTING	DESCRIPTION	MANUFACTURERS CATALOG REF.
		NO.	TYPE	WATTS	TUBE TYPE	TOTAL WATTS			
A	120	2	F	32	T8	75	SURFACE OR PENDANT WHERE INDICATED	FLUORESCENT FIXTURE. WRAP AROUND ENCLOSURE. HOUSING FORMED FROM DIE FORMED PRIME QUALITY STEEL. PRISMATIC ACRYLIC LENS. SUITABLE FOR INDOOR LOCATIONS. UL LISTED	LITHONIA AW OR EQUAL
B	120	1	LED	19		19	WALL	HOUSING - RUGGED, DIE-CAST ALUMINUM BACK HOUSING AND HINGED DOOR FRAME. CASINGS SEALED WITH A ONE-PIECE GASKET TO INHIBIT THE ENTRANCE OF EXTERNAL CONTAMINANTS. BRONZE FINISH POLYESTER POWDER PAINTED. UL LISTED IN THE U.S. FOR WET LOCATIONS. WITH PHOTOCCELL	LITHONIA TWS LED OR EQUAL
C	120	1	MH	70		75	WALL	METAL HALIDE, WALL MOUNTED AT 10' CLASS 1 DIVISION 2 WITH BOROSILICATE GLASS GLOBE AND PROTECTION GUARD	APPLETON NE250C OR EQUAL
D	120	1	LED	70		70	CEILING	COPPERFREE ALUMINUM HOOD WITH STAINLESS STEEL CATCH ASSEMBLIES. CEILING MOUNTED. CLASS 1, DIVISION 2 EXPLOSION PROOF GLASS GLOBE.	CODE MASTER CMLEDCT70265 OR EQUAL
E	120	2	H	5.4		11	WALL	SELF CONTAINED EXIT SIGN AND EMERGENCY LIGHT. HOUSING CONSTRUCTED OF IMPACT RESISTANT, UV STABLE, INJECTION MOLDED FLAME RETARDANT THERMOPLASTIC. 6" HIGH, 3/4" STROKE LETTERING. LED LAMPS FOR THE EXIT SIGN. (2) 5.4 WATT HALOGEN LAMPS FOR THE EMERGENCY.	RUUD EXPC, LITHONIA LHOM
F	120	1	LED	62		62	PENDANT	LED FIXTURE, PRISMATIC BOROSILICATE ENDURANCE GLASS BOTTOM WITH SAFETY HOOK, WIREGUARD OPTION	HOLOPHANE BALED FL 4K P A CDP-L5-PF105 OR EQUAL

NAMEPLATE		PANEL "B"		MTG.		SURFACE		MAIN		150A/3P			
BUS: AMPS		225		VOLTS:		208/240V, 3φ, 4W							
	WATTAGE	OUTLETS			10,000 ACS 20A-1P U.O.N.			OUTLETS			WATTAGE		
		A	B	C	LTG REC MISC	LTG REC MISC	A	B	C	LTG REC MISC	A	B	C
RESTROOM LIGHT + EF3	905				1		1			2		380	BUILDING RECEPTACLES
MCP-2		2500					3			2		38	WALL PACKS
			2500				5			1		1950	AIR COMPRESSOR
BUILDING LIGHTS	210				3		1						
SUMP PUMP		1130					9			1		1130	MOV-9
MOV-1			1130				11			1		1130	MOV-10
MOV-2	1130						13			1	1130	MOV-11	
MOV-3		1130					15			1	1130	MOV-12	
MOV-4			1130				17			1	1130	MOV-13	
MOV-5	1130						19			1	1130	MOV-14	
MOV-6		1130					21			1	1130	MOV-15	
MOV-7			1130				23			1	1130	MOV-16	
MOV-8	1130						25			1	1130	MOV-18	
EXIT LIGHTS		22			2								SPARE
							27						
							29						
							31						
TOTAL LOAD	9055	2252									8830	8508	TOTAL LOAD
29.8 KW + LCL		0 KW		29.8 KW AT		208 VOLTS		3PH		83 AMPS			

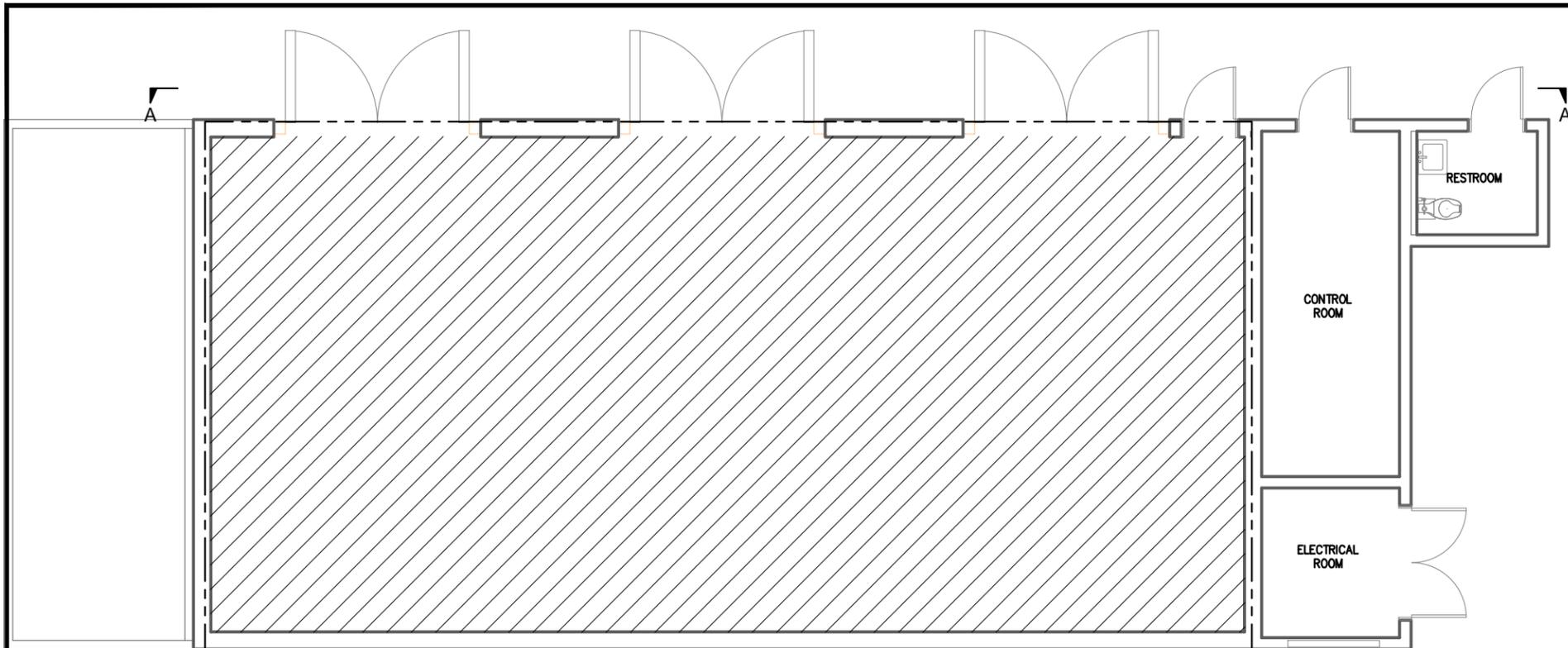
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DRAWN BY: M.GONZALEZ		AECOM	
CHECKED BY: A.RANDALL		999 W. TOWN & COUNTRY ROAD ORANGE, CA 92868-4713	

REVISIONS		
NO.	DESCRIPTION	APPROVAL DATE

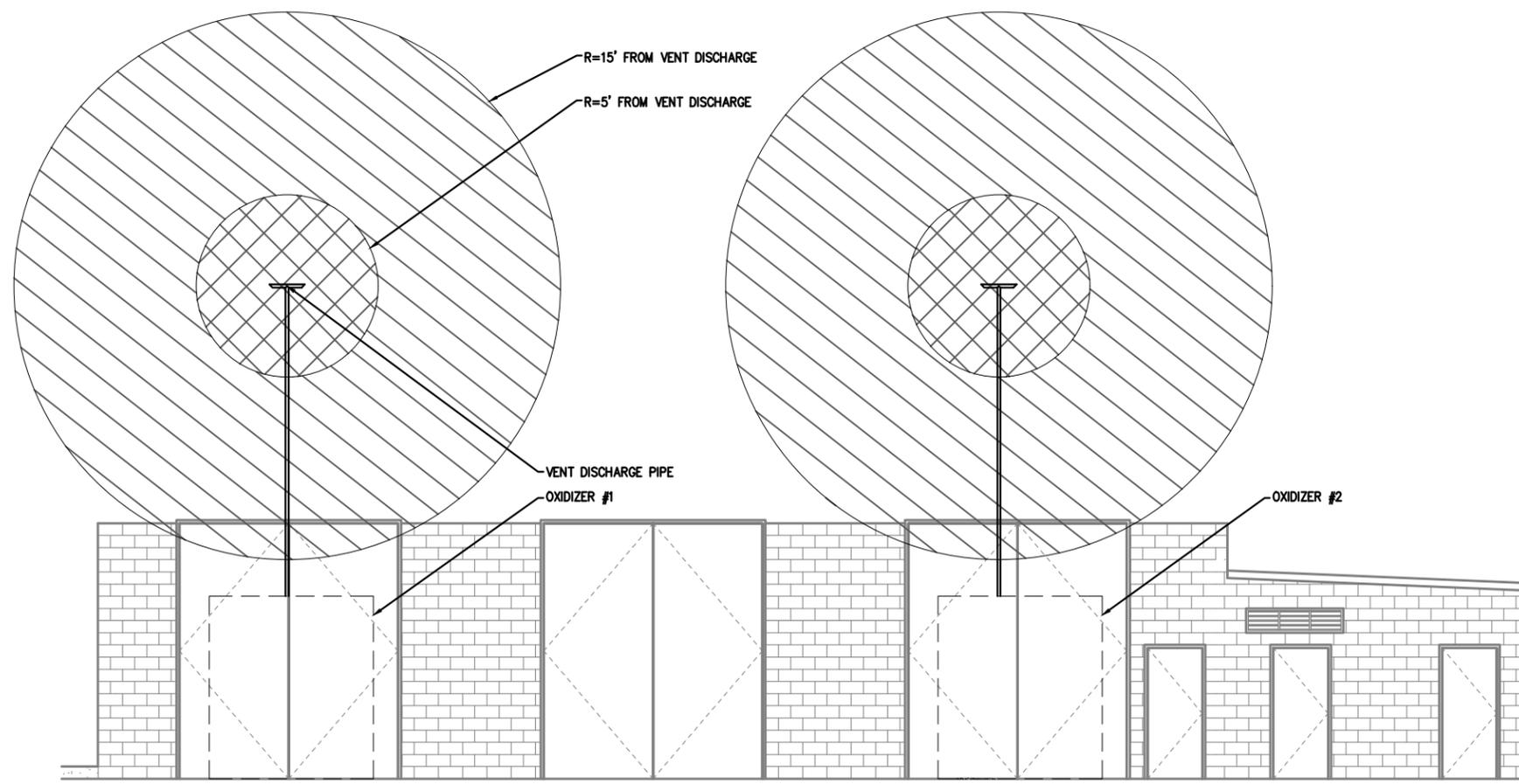
SHELL OIL PRODUCTS US		
CITY OF CARSON		
SVE/BIOVENTING SYSTEM		
CAROUSEL TRACT		
CONDUIT SCHEDULE		
PROJECT NO. XXX	SHEET 81 of 87	PLAN NO. E-2.1

\\c01\oned2\projects\1_Shell_Products - Former Kost_Program\Map_Implementation\CADD\070_Electrical\07_E-2.1.dwg Plotted on: Oct 15, 2015 10:28am by: wilson_jam

90% SUBMITTAL



AREA CLASSIFICATION
SCALE: 1/4" = 1'



LEGEND	
HAZARDOUS AREA CLASSIFICATIONS:	
	CLASS I, DIV. 1 LOCATION
	CLASS I, DIV. 2 LOCATION
	UNCLASSIFIED LOCATION



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

DESIGN BY:
N.UBARIO
DRAWN BY:
M.GONZALEZ
CHECKED BY:
A.RANDALL

STAMP

PLANS PREPARED BY:
AECOM
999 W. TOWN & COUNTRY ROAD
ORANGE, CA 92868-4713

BENCHMARK:
SEE DRAWING C-002

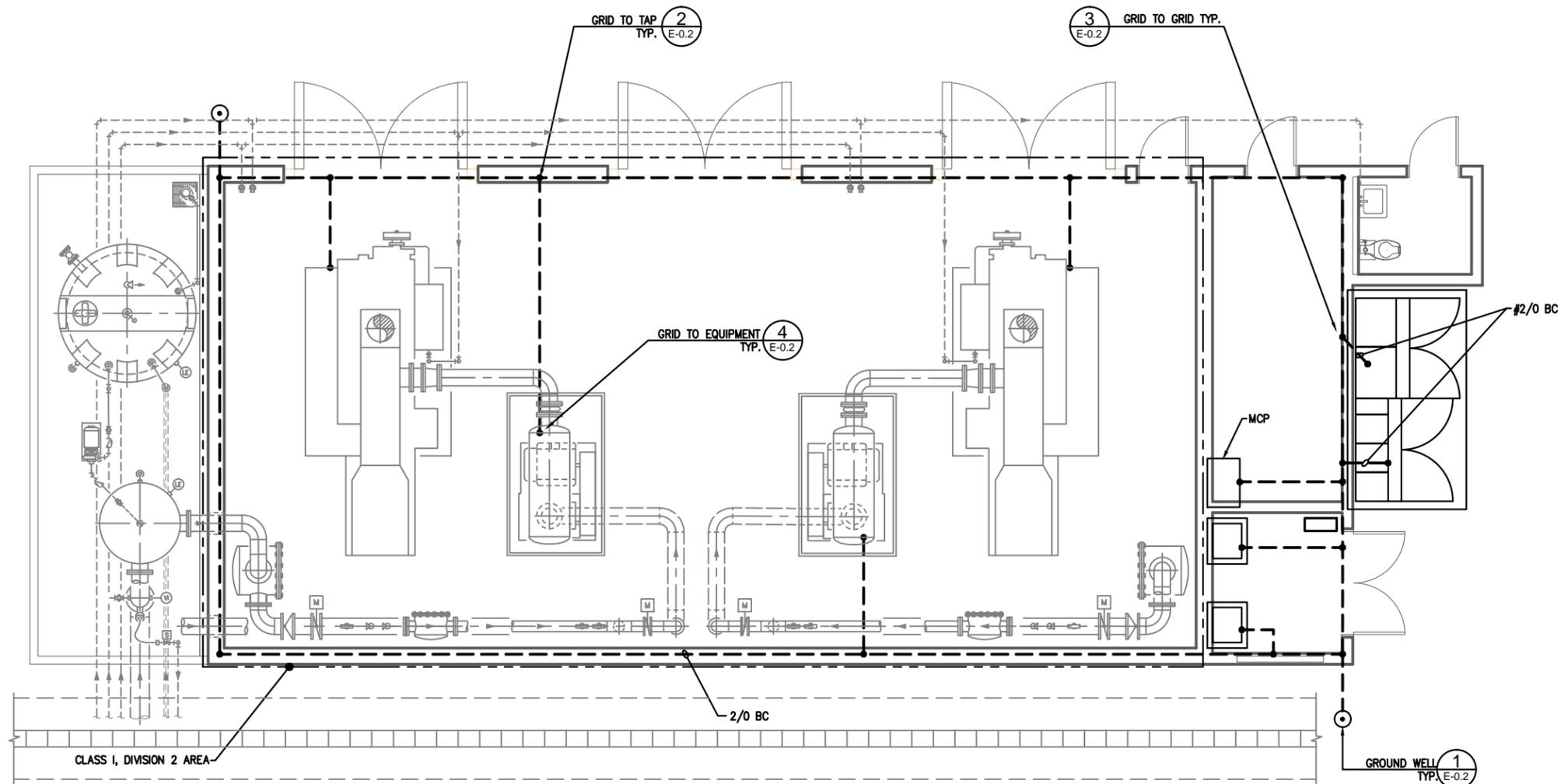
REVISIONS			
NO.	DESCRIPTION	APPROVE	DATE

SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/BIOVENTING SYSTEM
CAROUSEL TRACT
SVE/BIOVENTING COMPOUND
AREA CLASSIFICATION PLAN

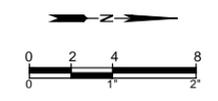
PROJECT NO. XXX	SHEET 108 of 87	PLAN NO. E-3.0
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\\s01\onead02\projects\1_Shell_Products - Former Kast Property\WAP Implementation\CADD\070_Electrical\07 E-3.0.dwg Plotted on Oct 15, 2015 - 10:29am by wilson_lee

90% SUBMITTAL



GROUNDING PLAN (1)
SCALE: 1/4" = 1'-0"



DESIGN BY:
N.UBARIO
DRAWN BY:
M.GONZALEZ
CHECKED BY:
A.RANDALL

STAMP

PLANS PREPARED BY:
AECOM
999 W. TOWN & COUNTRY ROAD
ORANGE, CA 92868-4713

BENCHMARK:
SEE DRAWING C-002

REVISIONS			
NO.	DESCRIPTION	APPROVE	DATE

SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/BIOVENTING SYSTEM
CAROUSEL TRACT
SVE/BIOVENTING COMPOUND
GROUNDING PLAN

PROJECT NO. XXX	SHEET 109 of 87	PLAN NO. E-3.1
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\\s01\one02\projects\1_Shell_Products - Former Kast_Property\WIP_Implementation\CADD\070_Electrical\07 E-3.1.dwg Plotted on Oct 15, 2015-10:29am by wison_lee

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GENERAL NOTES

- PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE PLUMBING SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED, PER MANUFACTURER'S RECOMMENDATIONS, AND IN ACCORDANCE WITH ALL APPLICABLE CODES, ORDINANCES, LAWS, AND PERMITS. SUCH ITEMS INCLUDE BUT ARE NOT LIMITED TO THE 2013 CALIFORNIA PLUMBING CODE (CPC), 2013 CALIFORNIA BUILDING CODE (CBC), 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE (CGBSC), 2013 CALIFORNIA ELECTRICAL CODE (CEC), 2013 CALIFORNIA MECHANICAL CODE (CMC), 2013 CALIFORNIA REFERENCED STANDARDS, PART 12, TITLE 24 C.C.R., TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS, AND THE OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT (OSHPD) REQUIREMENTS.
- WHERE THERE IS A CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCURATE PLACEMENT OF ALL NEW CONSTRUCTION ON THE SITE.
- VERIFY ALL SITE CONDITIONS AND DIMENSIONS, AND EXACT LOCATIONS AND ELEVATIONS OF PIPING BEFORE STARTING WORK. SHOULD A DISCREPANCY APPEAR IN THE CONTRACT DOCUMENTS, OR BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONDITIONS, NOTIFY THE OWNER'S REPRESENTATIVE AT ONCE FOR INSTRUCTION ON HOW TO PROCEED.
- ALL EXCAVATION AND TRENCHING SHALL BE PERFORMED IN STRICT COMPLIANCE WITH THE REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
- ALL PIPING SHALL BE KEPT CLEARED FROM LOAD BEARING FOOTINGS. SEE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- REFER TO ARCHITECTURAL DRAWINGS FOR CONSTRUCTION PHASING BOUNDARIES.
- SEWER, WATER, AND STORM DRAIN SYSTEMS INDICATED IN THESE DRAWINGS SHALL EXTEND TO PLUMBING/CIVIL POINTS OF CONNECTION AT 5'-0" OUTSIDE OF THE BUILDING(S) UNLESS OTHERWISE INDICATED. CONTINUATION OF SUCH PIPING SYSTEMS ARE INDICATED ON THE CIVIL DRAWINGS WITH CORRESPONDING ASSOCIATED MATERIALS SPECIFIED UNDER A SEPARATE SECTION OF THE PROJECT SPECIFICATIONS. ALL SUCH PIPING SHALL BE INSTALLED IN A MANNER TO PROVIDE PROPER CONNECTION TO INVERT ELEVATIONS INDICATED ON CIVIL DRAWINGS. WHERE SIZES DIFFER BETWEEN PLUMBING AND CIVIL DRAWINGS, CONTRACTOR SHALL PROVIDE TRANSITION FITTINGS AS NECESSARY TO ALLOW FOR PROPER CONNECTION.
- NATURAL GAS PIPING SYSTEMS INDICATED IN THESE DRAWINGS INCLUDE ALL BUILDING AND SITE GAS PIPING EXTENDING AND CONNECTING TO THE OUTLET OF THE GAS METER.
- CONTRACTOR SHALL INITIATE CONTACT WITH THE SERVING GAS UTILITY COMPANY AND MAKE ARRANGEMENTS FOR THE INSTALLATION OF NEW GAS SERVICE AND GAS METER OF THE CAPACITY AND LOCATION INDICATED ON THE DRAWINGS. OPERATE ALL ITEMS SERVED WITH GAS AT FULL FIRE AND MAKE REQUIRED ADJUSTMENTS AS NECESSARY FOR PROPER CALIBRATION OF GAS METER PRESSURE REGULATORS IN COOPERATION WITH GAS UTILITY AND IN ACCORDANCE WITH GAS UTILITY START UP REQUIREMENTS. ALL REQUIRED GAS UTILITY FEES SHALL BE PAID BY OWNER.
- CONTRACTOR SHALL INITIATE CONTACT WITH THE SERVING GAS UTILITY COMPANY, AND CONFIRM THAT THE EXISTING GAS SERVICE AND METER ARE OF ADEQUATE SIZE AND CAPACITY TO ACCOMMODATE THE COMBINED EXISTING AND NEW GAS BTUH LOADS RESULTING FROM THE WORK DESCRIBED IN THESE DRAWINGS. FIELD VERIFY ALL EXISTING AND NEW GAS BTUH LOAD DEMANDS AS NECESSARY TO ACCOMMODATE GAS UTILITY SERVICE PLANNING REQUIREMENTS. SHOULD THE EXISTING GAS SERVICE OR METER BE DETERMINED TO BE OF INADEQUATE SIZE OR CAPACITY, NOTIFY THE OWNER'S REPRESENTATIVE AT ONCE FOR INSTRUCTION ON HOW TO PROCEED.
- NATURAL GAS PIPE SIZING CALCULATIONS ARE BASED ON A CALORIC CONTENT OF 1,000 BTU'S PER CUBIC FOOT.
- REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS, ROUGH IN DIMENSIONS, AND MOUNTING HEIGHTS OF ALL EXPOSED ELEMENTS. SUCH ITEMS INCLUDE, BUT ARE NOT LIMITED TO PLUMBING FIXTURES AND EQUIPMENT, ACCESS PANELS, MEDICAL GAS AND VACUUM OUTLETS, MEDICAL GAS AND VACUUM ZONE CONTROL VALVE PANELS, HOSE BIBBS, RECESSED HOSE BIBBS, AND OVERFLOW DRAIN TERMINATION POINTS. WHERE DIMENSIONS ARE NOT INDICATED, SEEK ARCHITECT'S DIRECTION AND/OR APPROVAL PRIOR TO INSTALLATION.
- PROVIDE ACCESS PANELS IN WALLS AND HARD SUSPENDED CEILINGS WHERE REQUIRED TO SERVICE TRAPS, CLEANOUTS, VALVES, MIXING VALVES, TRAP PRIMERS, WATER HAMMER ARRESTORS AND OTHER CONCEALED PLUMBING APPURTENANCES. WHERE POSSIBLE, USE SAME ACCESS PANEL TO SERVICE MORE THAN ONE ITEM WHEN LOCATED DIRECTLY ADJACENT IN SAME IMMEDIATE VICINITY. REFER TO SPECIFICATIONS FOR ACCESS PANEL REQUIREMENTS.
- REFER TO DETAILS FOR ADDITIONAL COORDINATION, SHOP DRAWING, AND INSTALLATION REQUIREMENTS FOR TYPICAL EXPOSED PLUMBING ELEMENTS IN RESTROOMS.
- WATER HAMMER ARRESTOR SIZES SHALL CORRESPOND TO PLUMBING & DRAINAGE INSTITUTE (PDI) WATER HAMMER ARRESTORS STANDARD PDI-WH 201 CURRENT EDITION SIZING RECOMMENDATIONS.
- HOSE BIBBS SHALL BE EQUIPPED WITH AN APPROVED NON REMOVABLE VACUUM BREAKER.
- ACCESS PANELS, DRAIN GRATES, CLEANOUT COVERS, AND OTHER FINISH-EXPOSED COMPONENTS SHALL BE PROTECTED FROM DAMAGE. DAMAGED COMPONENTS SHALL BE REPLACED BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
- WHERE POSSIBLE, CLEANOUTS SHALL BE LOCATED IN UNFINISHED AREAS SUCH AS STORAGE ROOMS, CLOSETS, AND JANITORS CLOSETS, ETC.
- COORDINATE CONSTRUCTION OF ALL PLUMBING WORK WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL, AND OTHER DISCIPLINES' WORK SHOWN ON OTHER CONTRACT DOCUMENTS.
- DRAWINGS ARE DIAGRAMATIC AND MAY NOT INDICATE ALL REQUIRED OFFSETS, TRANSITIONS AND FITTINGS. PROVIDE ADDITIONAL OFFSETS, TRANSITIONS AND FITTINGS AS REQUIRED IN COORDINATION WITH OTHER TRADES.
- CAREFULLY COORDINATE ALL WORK WITH THE WORK OF OTHER CONTRACTORS AND TRADES PRIOR TO ORDERING OF MATERIALS AND/OR INSTALLATION. IF CONTRACTOR IS IN THE PROCESS OF INSTALLING NEW WORK, AND CONFLICTS WITH EXISTING CONDITIONS OR OTHER TRADES ARISE, NOTIFY THE OWNER'S REPRESENTATIVE AT ONCE FOR INSTRUCTION ON HOW TO PROCEED.
- LOCATIONS SHOWN FOR POINTS OF CONNECTION TO MECHANICAL UNITS AND EQUIPMENT INSTALLED BY OTHER TRADES ARE APPROXIMATE. USING MANUFACTURER'S CERTIFIED DRAWINGS, VERIFY WITH THE INSTALLING CONTRACTOR EXACT PLUMBING REQUIREMENTS, ROUGH-IN LOCATIONS AND CONNECTION POINTS OF ALL EQUIPMENT REQUIRING PLUMBING CONNECTIONS. WHERE PLANS INDICATE ASSOCIATED PLUMBING SERVICE PIPING PENETRATING THROUGH ADJACENT ROOF OR STRUCTURE, MAKE ADJUSTMENT TO PENETRATION LOCATIONS AS NECESSARY TO LIMIT EXPOSED HORIZONTAL PIPING DISTANCE TO MAXIMUM 3'-0" BETWEEN THE PENETRATION LOCATION AND POINT OF CONNECTION TO THE EQUIPMENT.
- ALL VALVES AND STRAINERS SHALL BE FULL SIZE OF PIPE BEFORE REDUCING SIZE TO MAKE CONNECTIONS TO EQUIPMENT. COORDINATE AND PROVIDE ALL PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT.
- REFER TO ARCHITECTURAL DRAWINGS FOR LOCATIONS OF ALL FIRE RATED ASSEMBLIES. PROVIDE FIRESTOPPING AT ALL PENETRATIONS THROUGH FIRE RETARDANT CONSTRUCTION IN ACCORDANCE WITH SPECIFICATIONS.
- HORIZONTAL SANITARY DRAINAGE PIPING SHALL SLOPE AT 1/4" PER FOOT UNLESS OTHERWISE INDICATED. WHERE IT IS IMPRACTICAL TO SLOPE AT 1/4" PER FOOT, PIPING 4" AND GREATER IN SIZE MAY BE INSTALLED AT 1/8" PER FOOT WHEN FIRST APPROVED BY THE ADMINISTRATIVE AUTHORITY.
- HORIZONTAL SANITARY VENT PIPING SHALL BE GRADED TO DRIP BACK BY GRAVITY TO THE SOIL OR WASTE PIPE WHICH IT SERVES.

GENERAL NOTES

- HORIZONTAL STORM DRAIN AND OVERFLOW PIPING SHALL SLOPE AT 1/8" PER FOOT UNLESS OTHERWISE INDICATED.
- HORIZONTAL CONDENSATE PIPING SHALL SLOPE AT 1/8" PER FOOT UNLESS OTHERWISE INDICATED.
- INSTALL CAST-IRON SOIL PIPING ACCORDING TO THE CAST IRON SOIL PIPE INSTITUTE (CISPI) STANDARD PUBLICATION "CISPI DESIGNATION 301-09".
- PLUMBING VENT TERMINATIONS SHALL MAINTAIN MINIMUM CLEARANCES OF 10'-0" HORIZONTALLY FROM OR 3'-0" VERTICALLY ABOVE ANY WINDOW, DOOR, OPENING, AIR INTAKE OR VENT SHAFT. CONTRACTOR SHALL FIELD COORDINATE LOCATIONS OF PLUMBING VENT TERMINATIONS RELATIVE TO SUCH BUILDING ELEMENTS, AND MAKE ADJUSTMENTS AS NECESSARY TO MAINTAIN CLEARANCES.
- DOMESTIC WATER PIPING AND COMPONENTS SHALL BE PROVIDED AND INSTALLED IN COMPLIANCE WITH CALIFORNIA AB 1953 LEGISLATION (EFFECTIVE JANUARY 1, 2010), WHICH LIMITS THE ALLOWABLE LEAD CONTENT IN CERTAIN DOMESTIC WATER SYSTEM COMPONENTS.
- DRAWING PLANS, SCHEMATICS, AND DIAGRAMS INDICATE GENERAL LOCATION AND ARRANGEMENT OF PIPING. INDICATED LOCATIONS AND ARRANGEMENTS ARE USED TO SIZE PIPE AND CALCULATE FRICTION LOSS, EXPANSION, AND OTHER DESIGN CONSIDERATIONS. INSTALL PIPING AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE APPROVED ON COORDINATION DRAWINGS.
- PIPING BETWEEN EACH PLUMBING FIXTURE AND THE NEAREST BRANCH OR MAIN PIPING RUN SHALL BE SIZED TO MATCH THE CORRESPONDING FIXTURE SCHEDULE CONNECTION SIZE AT A MINIMUM UNLESS NOTED AS A LARGER SIZE ON PLANS. PIPE HEADERS IN WALLS SERVING BANKS OF FIXTURES SHALL BE FULL LINE SIZE FROM THE UPSTREAM END OF THE BRANCH LINE TO THE END TERMINAL UNLESS OTHERWISE INDICATED.
- ALL EXPOSED PIPING AT WATER HEATING EQUIPMENT (INCLUDING SUPPLIES) SHALL BE INSULATED.
- SHUTOFF VALVES, SHUT-OFF COCKS, WATER CONTROL DEVICES, CLEANOUTS, AND OTHER PIPING APPURTENANCES SHALL BE THE SAME SIZE AS PIPING SERVED UNLESS OTHERWISE INDICATED.
- PLUMBING PIPING SHALL NOT BE RUN THROUGH OR WITHIN CEILING SPACE ABOVE ELECTRICAL ROOMS, TELECOMMUNICATIONS ROOMS, OR ELEVATOR MACHINE ROOMS, EXCEPT FOR BRANCH PIPING SERVING EQUIPMENT IN THESE ROOMS.
- INSTALL PIPING IN A NEAT ORGANIZED LAYOUT COORDINATING WITH OTHER TRADES.
- PROVIDE HANGERS, CLAMPS, ANCHORS AND GUIDES ACCORDING TO SPECIFICATIONS TO PREVENT STRESS ON PIPING.
- INSTALL PIPING SO THAT ALL VALVES, STRAINERS, UNIONS, TRAPS, FLANGES, AND OTHER APPURTENANCES REQUIRING ACCESS ARE ACCESSIBLE.
- UNIONS OR FLANGES SHALL BE INSTALLED AT EACH PIECE OF EQUIPMENT, IN BYPASSES, AND IN LONG PIPING RUNS (100 FEET OR MORE) TO PERMIT DISASSEMBLY FOR ALTERATION AND REPAIRS.
- PROVIDE FLEXIBLE CONNECTORS IN ALL PIPING SYSTEMS WHICH CONNECT TO PUMPS OR OTHER EQUIPMENT WHICH REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AS CLOSE TO THE EQUIPMENT AS POSSIBLE.
- PROVIDE SLEEVES FOR PIPING PENETRATIONS THROUGH CONCRETE OR MASONRY WALLS, FOOTINGS, GRADE BEAMS OR OTHER SIMILAR STRUCTURAL ELEMENTS. SLEEVES SHALL BE MINIMUM 2 INCHES DIAMETER LARGER THAN THE PIPING SERVED.
- ALL OUTLETS FOR FUTURE CONNECTIONS SHALL BE INSTALLED SO AS TO PERMIT EASY CONNECTION. ALL PLUGGED OR CAPPED WASTE OUTLETS FOR FUTURE CONNECTIONS SHALL BE INSTALLED AS LOW AS POSSIBLE IN CEILING SPACES. ALL PLUGGED OR CAPPED VENT OUTLETS FOR FUTURE CONNECTIONS SHALL BE INSTALLED AS HIGH AS POSSIBLE IN CEILING SPACES.
- PROVIDE ALL NECESSARY TEMPORARY OR PERMANENT CAPS OR PLUGS FOR PIPING. DO NOT LEAVE PIPING OPEN ENDED.
- NEW POTABLE WATER SYSTEMS SHALL BE DISINFECTED PRIOR TO USE IN ACCORDANCE WITH SECTION 609.9 OF THE 2013 CALIFORNIA PLUMBING CODE AND SPECIFICATIONS.
- ALL SINK FAUCETS SHALL BE PROVIDED WITH LAMINAR FLOW STREAM SPOUTS (NON-AERATING TYPE).
- ADA LAVATORIES AND SINKS SHALL BE PROVIDED WITH ADA INSULATED TRAP AND SUPPLY COVERS AS SPECIFIED.
- MEDICAL GAS PIPING AND FUEL GAS PIPING SHALL NOT BE USED AS AN ELECTRODE FOR GROUNDING ELECTRICAL SYSTEMS.
- EXCEPT FOR DESIGNATED MEDICAL GAS ZONE VALVES, ALL MEDICAL GAS IN-LINE SHUT-OFF VALVES SHALL BE LOCKED OPEN, (INDICATING HANDLE TYPE) AND PROVIDED WITH LABEL OF ADEQUATE SIZE TO INDICATE NAME OF MEDICAL GAS AND AREA(S) SERVED AS REQUIRED BY NFPA 99.
- ALL MATERIALS, DEVICES, FIXTURES, AND EQUIPMENT SHALL BE CITY OF LOS ANGELES APPROVED.

EQUIPMENT ANCHORAGE NOTES

- SEISMIC ANCHORAGE OF EQUIPMENT SHALL MEET 2013 CALIFORNIA BUILDING CODE REQUIREMENTS IN ACCORDANCE WITH THE AMERICAN SOCIETY OF CIVIL ENGINEERS - ASCE 7-05, SECTION 13.6 AND TABLE 13.6-1.
- PROVIDE COMPLETE SHOP DRAWINGS INCLUDING LOCATIONS OF ALL BRACING AND ASSOCIATED CALCULATIONS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN CALIFORNIA.

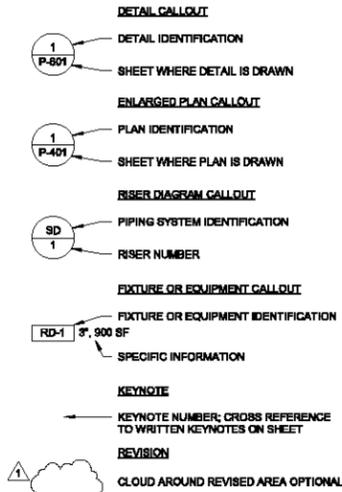
ABBREVIATIONS

A	AND
AT	AT
ABV	ABOVE
ARCH	ARCHITECTURAL
AVC	AIR CONDITIONING
ADA	AMERICANS WITH DISABILITIES ACT
AFF	ABOVE FINISH FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AP	ACCESS PANEL
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVTR	ACID VENT THROUGH ROOF
BEL	BELOW
BFF	BELOW FINISH FLOOR
BFP	BACKFLOW PREVENTER
BLDG	BUILDING
BOD	BASIS OF DESIGN
BTU	BRITISH THERMAL UNITS
BTUH	BRITISH THERMAL UNITS PER HOUR
CAC	CALIFORNIA ADMINISTRATIVE CODE, CURRENT EDITION
CBC	CALIFORNIA BUILDING CODE, CURRENT EDITION
CD	CONSTRUCTION DOCUMENTS
CEC	CALIFORNIA ELECTRICAL CODE, CURRENT EDITION
CFC	CALIFORNIA FIRE CODE, CURRENT EDITION
CFM	CUBIC FEET PER MINUTE
CFH	CUBIC FEET PER HOUR
CLG	CEILING
CMC	CALIFORNIA MECHANICAL CODE, CURRENT EDITION
CO	CLEANOUT
CONT	CONTINUATION
CONTR	CONTRACTOR
CPC	CALIFORNIA PLUMBING CODE, CURRENT EDITION
CU FT	CUBIC FEET
DFU	DRAINAGE FIXTURE UNIT
DEMOL	DEMOLISH / DEMOLITION
DET	DETAIL
DEPT	DEPARTMENT
DA	DIAMETER
DISCH	DISCHARGE
DN	DOWN
DWG	DRAWING
(E)	EXISTING TO REMAIN
E	EAST
EL	ELEVATION
ELEC	ELECTRICAL
ENGR	ENGINEER
(F)	FUTURE
F	DEGREES FAHRENHEIT
FCC	FLOOR CLEANOUT
FF	FINISH FLOOR
FPE	FINISH FLOOR ELEVATION
FG	FINISH GRADE
FM	FACTORY MUTUAL
FPS	FEET PER SECOND
FT	FOOT / FEET
GAL	GALLON / GALLONS
GCO	GRADE CLEANOUT
GPF	GALLONS PER FLUSH
GPH	GALLONS PER HOUR
GPM	GALLON PER MINUTE
GVTR	GAS VENT THROUGH ROOF
HB	HOSE BIBB
HP	HORSEPOWER
HVAC	HEATING, VENTILATION & AIR CONDITIONING
HZ	HERTZ
IE	INVERT ELEVATION
ID	INSIDE DIAMETER
IN	INCH
INT	INTEGRAL
LBS	POUND / POUNDS
MAX	MAXIMUM
MBTUH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
MCO	MEDICAL CEILING OUTLET
MECH	MECHANICAL
MFR	MANUFACTURER
MHW	MEDICAL HEAD WALL
MIN	MINIMUM
MWO	MEDICAL WALL OUTLET
N	NORTH
NC	NORMALLY CLOSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN / NUMBER
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
PG	PRESSURE GAUGE
PH	PHASE
PLBG	PLUMBING
POC	POINT OF CONNECTION
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIG	PSI GAUGE
(R)	REMOVE
RPM	REVOLUTIONS PER MINUTE
S	SOUTH
SAN	SANITARY
SQ FT	SQUARE FEET
SS	SANITARY SEWER
STD	STANDARD
STRUC	STRUCTURAL

ABBREVIATIONS

TDH	TOTAL DYNAMIC HEAD
THRU	THROUGH
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE
V	VOLT
VAC	VOLTS AC
VB	VACUUM BREAKER
VTR	SANITARY VENT THRU ROOF
W	WEST
W	WITH
W/O	WITHOUT
WC	WATER COLUMN
WCO	WALL CLEANOUT
WT	WEIGHT
WBFU	WATER SUPPLY FIXTURE UNIT
YS	YARD BOX

PLUMBING ANNOTATION SYMBOLS



PLUMBING PIPING SYMBOLS

SINGLE LINE SYMBOL	ABBR.	DESCRIPTION
---	CW	DOMESTIC COLD WATER PIPING
---	HW	DOMESTIC HOT WATER PIPING
---	SS	SANITARY SOIL OR WASTE PIPING ABV SLAB/GRADE
---	SS	SANITARY SOIL OR WASTE PIPING BEL SLAB/GRADE
---	V	SANITARY VENT PIPING
---		ELBOW
---		PIPE RISER UP (ELBOW)
---		PIPE RISER DOWN (ELBOW)
---		TEE
---		PIPE RISER UP (TEE)
---		PIPE RISER DOWN (TEE)
---		BRANCH LINE CONNECTION (TOP)
---		BRANCH LINE CONNECTION (BOTTOM)
---		SHUTOFF VALVE OR SHUTOFF COCK
---		REDUCER
---		WYE

REVISIONS			
NO	DESCRIPTION	APPROVE	DATE
1	DRAFT PROGRESS SET (90%)		10-15-2015

SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/ BIOVENTING SYSTEM
CAROUSEL TRACT
PLUMBING GENERAL NOTES,
SYMBOLS, & ABBREVIATIONS

PROJECT NO. **XXX** SHEET **84 of 87** PLAN NO. **P001**

DESIGN BY: Designer
 DRAWN BY: Author
 CHECKED BY: Checker

STAMP

PLANS PREPARED BY:
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 999 W. TOWN & COUNTRY ROAD
 ORANGE, CA 92668-4713

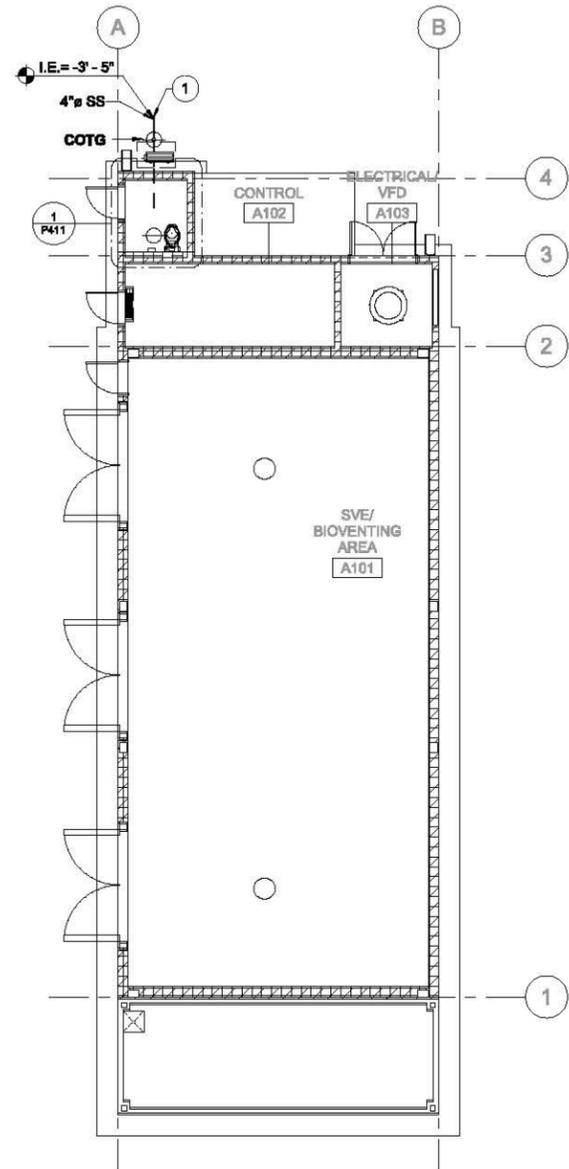
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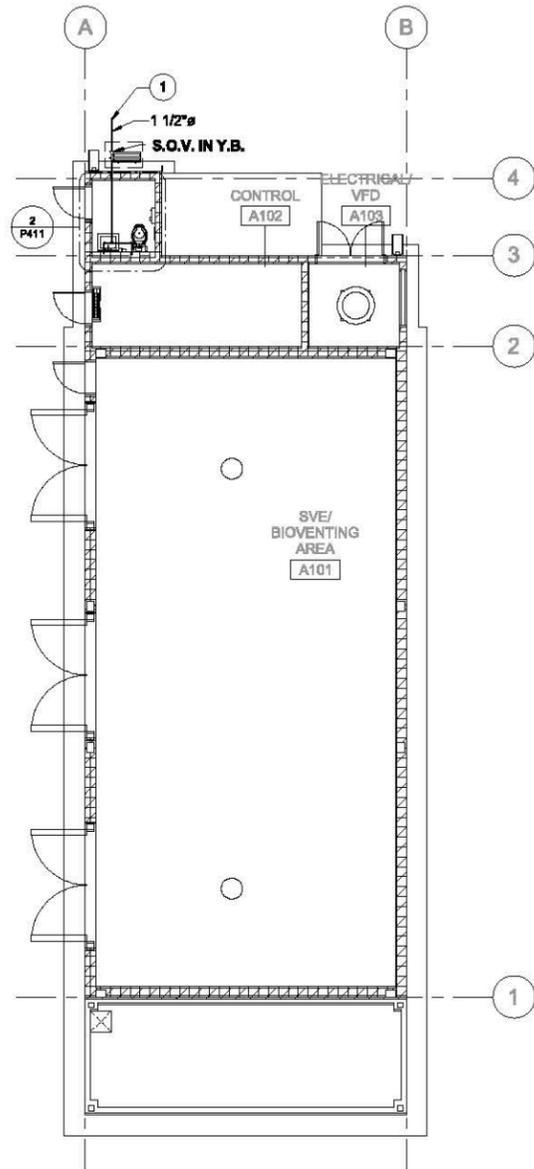
KEYNOTES

1 POC BUILDING PIPING TO SITE UTILITY PIPING AT 5'-0" FROM BUILDING. SEE CIVIL DRAWINGS FOR CONTINUATION.



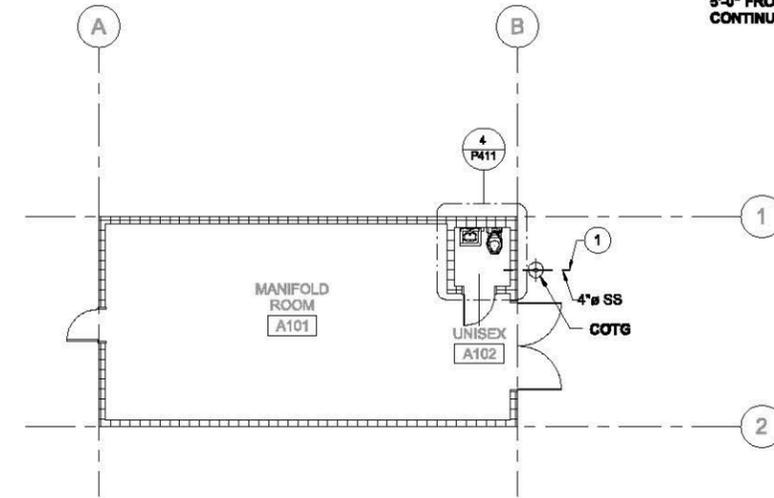
SVE BUILDING - DRAINAGE
SCALE: 1/8" = 1'-0"

4
P211



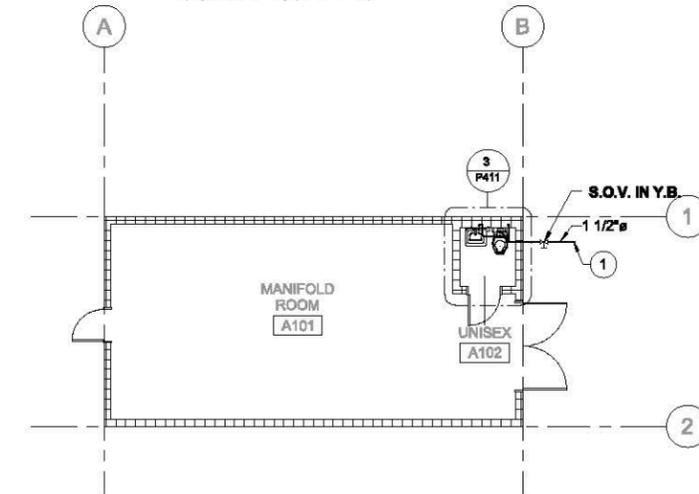
SVE BUILDING - WATER & GAS
SCALE: 1/8" = 1'-0"

3
P211



MANIFOLD BUILDING - DRAINAGE
SCALE: 1/8" = 1'-0"

2
P211



MANIFOLD BUILDING - WATER & GAS
SCALE: 1/8" = 1'-0"

1
P211

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DESIGN BY:	Designer
DRAWN BY:	Author
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PLANS PREPARED BY:

AECOM

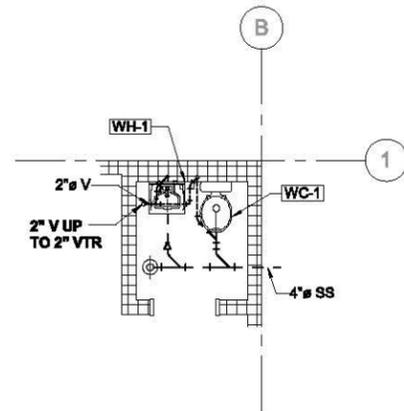
999 W. TOWN & COUNTRY ROAD
ORANGE, CA 92868-4713

BENCHMARK:

REVISIONS			
NO	DESCRIPTION	APPROVE	DATE
1	DRAFT PROGRESS SET (90%)		10-15-2015

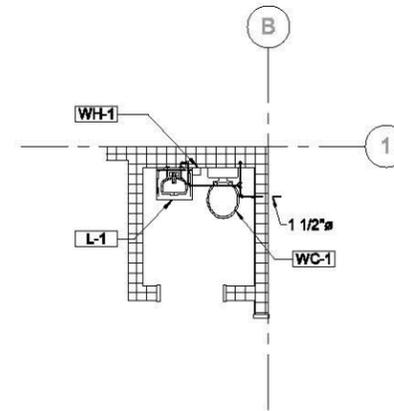
SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/ BIOVENTING SYSTEM
CAROUSEL TRACT
PLUMBING FIRST FLOOR PLAN -
DRAINAGE & WATER

PROJECT NO.	SHEET	PLAN NO.
XXX	85 of 87	P211



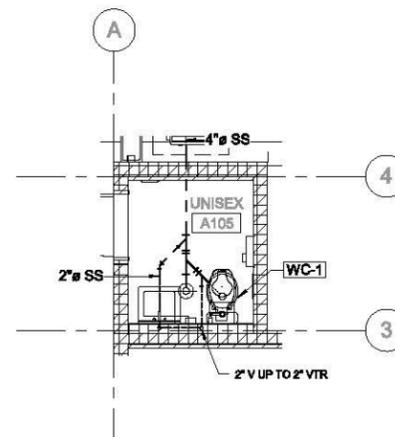
MANIFOLD BUILDING - ENLARGED DRAINAGE PLAN
SCALE: 1/4" = 1'-0"

4
P411



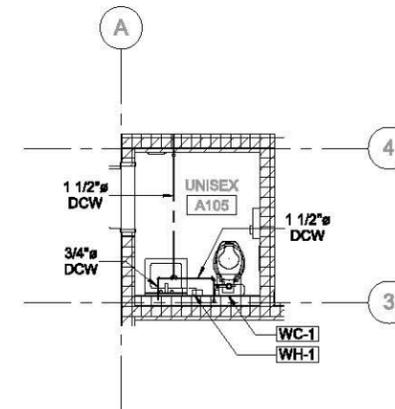
MANIFOLD BUILDING - ENLARGED WATER PLAN
SCALE: 1/4" = 1'-0"

3
P411



SVE BUILDING - ENLARGED DRAINAGE PLAN
SCALE: 1/4" = 1'-0"

2
P411



SVE BUILDING - ENLARGED WATER PLAN
SCALE: 1/4" = 1'-0"

1
P411

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SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/ BIOVENTING SYSTEM
CAROUSEL TRACT
ENLARGED PARTIAL FLOOR PLAN -
DRAINAGE & WATER

PROJECT NO. XXX	SHEET 86 of 87	PLAN NO. P411
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DOMESTIC CW & HW BRANCH	
PRESSURE @ POINT-OF-CONNECTION SYSTEM DESIGN PRESSURE (PRESSURE REDUCING VALVE SET PRESSURE)	00 PSI
HEIGHT OF GOVERNING FIXTURE (INC. PIPE RISER)	5 FT
PRESSURE LOSSES:	
STATIC (5 R.X 0.43)	2.15 PSI
2" RED. PRES. BACKFLOW PREVENTER	13 PSI
RESIDUAL PRES. @ GOVERNING FIXT.	15 PSI
1" WATER METER @ 13 GPM	3 PSI
	TOTAL = 33.15 PSI
PRESSURE AVAILABLE FOR FRICTION: 66 - 33.15 =	34.85 PSI
TOTAL DEVELOPED LENGTH 250 FT (LENGTH) X 1.3 (FITTINGS) =	325 FT
FRICTION LOSS PER 100 FT: (100 X 34.85) 250 =	10.7 PSI/100 FT
MATERIAL: COPPER LK COLD WATER MAXIMUM VELOCITY = 8 FEET PER SECOND HOT WATER MAXIMUM VELOCITY = 6 FEET PER SECOND WATER DISTRIBUTION SIZED PER 3.0 PSI/100 FEET PRESSURE LOSS	

WATER PIPE SIZING CHART					
PIPE SIZE INCHES	COLD WATER			HOT WATER	
	FLOW GPM	FL. TANK (FIXTURE UNITS)	FL. VALVE (FIXTURE UNITS)	FLOW GPM	FL. TANK (FIXTURE UNITS)
1/2	2	1	-	2	1
3/4	5	6	-	5	6
1	10	13	-	10	13
1 1/4	17	24	-	17	24
1 1/2	28	47	10	28	47
2	57	158	64	48	120
2 1/2	100	390	245	74	248

INSTANT - WATER HEATER										
SYMBOL	MANUFACTURER AND MODEL	MINIMUM OPERATING FLOW RATE (GPM)	INPUT (KW)	WATER CONN. (INCHES)	TEMPERATURE RISE AT 0.80 GPM (°F)	ELEMENT DATA				REMARKS
						V	WATTS	HZ	AMPS	
WH-1	CHROMITE M-30L277	0.35	6.3	1/2	N.A.	277	6.8	60	30	WITH WALL MOUNTED BRACKET.

PLUMBING FIXTURE SCHEDULE									
NOTE: ALL PLUMBING FIXTURES AND FIXTURE FITTINGS SHALL MEET THE STANDARDS REFERENCED IN TABLE 5.303.6 OF CALIFORNIA GREEN BUILDING CODE.									
SYMBOL	FIXTURE	DESCRIPTION	PIPE ROUGH-IN CONN (IN)					NOTES	
			S OR W	MIN TRAP ARM	V	CW	HW		
WC-1	WATER CLOSET	AMERICAN STANDARD, "CHAMPION PRO RIGHT HEIGHT" MODEL NO. 211AA, 104, 1.28 GPF, FLUSH TANK, FLOOR MOUNTED, ELONGATED BOWL VITREOUS CHINA, AIS ELONGATED OPEN FRONT SEAT.	3	INT.	2	1"	-	1.28 GALLONS PER FLUSH	
L-1	LAVATORY	AMERICAN STANDARD, "LUCERNE" 0355.012, VITREOUS CHINA 20"x18" WALL MOUNTED SINGLE BOWL, COMPLETE WITH CHICAGO FAUCET 2200-4E38VP/BCP 0.35 GPM MANUAL FAUCET, CHICAGO 1017-ABCP ANGLE STOP WITH RIGID SUPPLIES, MCGUIRE PWS068NCO P-TRAP WITH SUPPLY COVERS, JAY-R SMITH LAVATORY CARRIER.	2	1-1/2	1-1/2	1/2	1/2	FAUCET WITH STOP, ADA COMPLIANT	
HB-1	HOSE BIBB	J.R. SMITH MODEL 3670-H WITH APPROVED NON-REMOVABLE VACUUM BREAKER.	-	-	-	3/4	-	BENT NOSE WITH FLANGE.	

WATER FIXTURE UNIT CALCULATION			
FIXTURE	QTY	WSFU	TOTAL WSFU
WATER CLOSET	1	2.5	2.5
HOSE BIBB	1	2.5	2.5
LAVATORY	1	1	1
TOTAL WSFU			6
TOTAL DEMAND (GPM)			6

WASTE AND VENT PIPE SIZING CHART				
WASTE SIZE	MAXIMUM WASTE FU 1/4"FT.	MAXIMUM WASTE FU 1/8"FT.	VENT SIZE	MAXIMUM VENT FU
1-1/2"	1	-	1-1/2"	8
2"	8	-	2"	24
2-1/2"	14	-	2-1/2"	48
3"	36	-	3"	84
4"	216	172	4"	256
5"	428	342	5"	600
6"	720	676	6"	1380
8"	2640	2112	8"	3800

PIPE MATERIAL SCHEDULE		
SERVICE	LOCATION	MATERIAL
DOMESTIC COLD WATER	ABOVE GRADE	TYPE 'L' COPPER ASTM B88 WITH WROUGHT COPPER SWEAT FITTINGS ANSI B16.2
DOMESTIC COLD WATER	BELOW GRADE	TYPE 'K' COPPER ASTM B88 WITH WROUGHT COPPER SWEAT FITTINGS ANSI B16.22
DOMESTIC HOT WATER	ABOVE GRADE	TYPE 'L' COPPER ASTM B88 WITH WROUGHT COPPER SWEAT FITTINGS ANSI B16.22 COMPLETE WITH 1-INCH THICK MANNVILLE MICRO-LOCK INSULATION.
SANITARY WASTE	ABOVE & BELOW GRADE	NO HUB CAST IRON PIPE AND FITTINGS, ASPHALTUM COATED, ASTM A-888 OR ASTM A-74 WITH HUSKY 8D-4000 OR MISSION HEAVY DUTY STAINLESS STEEL FOUR-BAND COUPLINGS.
SANITARY VENT	ABOVE GRADE	NO HUB CAST IRON PIPE AND FITTINGS, ASPHALTUM COATED, ASTM A-888 OR ASTM A-74 WITH ANACD OR OR MISSION STAINLESS STEEL TWO-BAND COUPLINGS.
SANITARY VENT	BELOW GRADE	NO HUB CAST IRON PIPE AND FITTINGS, ASPHALTUM COATED, ASTM A-888 OR ASTM A-74 WITH HUSKY 8D-4000 OR MISSION HEAVY DUTY STAINLESS STEEL FOUR-BAND COUPLINGS.

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SHELL OIL PRODUCTS US
CITY OF CARSON
SVE/ BIOVENTING SYSTEM
CAROUSEL TRACT
PLUMBING SCHEDULES & CALCULATIONS

PROJECT NO. **XXX** SHEET **87 of 87** PLAN NO. **P801**

DESIGN BY: Designer	STAMP	PLANS PREPARED BY: AECOM	BENCHMARK:
DRAWN BY: Author		999 W. TOWN & COUNTRY ROAD ORANGE, CA 92668-4713	
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