

ELECTRICAL SYMBOLS & ABBREVIATIONS

[SOME SYMBOLS MAY NOT BE USED ON THIS PROJECT]

SYMBOL

DESCRIPTION

GENERAL

	MOTOR, HP AS INDICATED
	DISCONNECT SWITCH
	MOTOR CONTROLLER
	COMBINATION MOTOR CONTROLLER/DISCONNECT UNIT
	VARIABLE FREQUENCY DRIVE
	CONTACTOR
	INTERCOM J BOX WALL MOUNTED AT HEIGHT INDICATED ON DRAWINGS
	JUNCTION BOX, CEILING MOUNTED
	JUNCTION BOX, WALL MOUNTED
	PHOTOCELL
	RELAY
	SPEAKER, CEILING MOUNTED
	SPEAKER, WALL MOUNTED
	TIME CLOCK
	VOLUME CONTROL
	BELL
	BUZZER
	PUSHBUTTON
	CEILING MOUNTED CLOCK
	WALL MOUNTED CLOCK - SINGLE OR DOUBLE FACE
	HORN
	TRANSFORMER
	AUTOMATIC TRANSFER SWITCH
	EQUIPMENT CONNECTION, HARD WIRED
	DURESS ALARM BUTTON
	CARD READER

LIGHTING

	INCANDESCENT OR HID FIXTURE, CEILING MOUNTED
	INCANDESCENT OR HID FIXTURE, WALL MOUNTED
	INCANDESCENT OR HID WALL WASH FIXTURE, CEILING MOUNTED CLEAR SIDE INDICATES DIRECTION OF WASH
	FLUORESCENT FIXTURE, CEILING OR WALL MOUNTED, SUBSCRIPT INDICATES ASSOCIATED SWITCHING
	FIXTURE CONNECTED TO EMERGENCY SYSTEM
	FIXTURE WITH ONE BALLAST CONNECTED TO EMERGENCY SYSTEM OR TO BATTERY BACK UP
	EXIT LIGHT, SINGLE/DOUBLE FACE CEILING MOUNTED WITH ARROWS AS INDICATED IN DRAWINGS
	EXIT LIGHT, WALL MOUNTED, SINGLE/DOUBLE FACE WITH ARROWS AS INDICATED IN DRAWINGS
	EMERGENCY LIGHT, BATTERY TYPE WITH CHARGER
	SYMBOL IDENTIFYING FIXTURE TYPE. ALL FIXTURES THIS ROOM ARE FIXTURE TYPE INDICATED UNLESS INDIVIDUALLY MARKED
	POLE MOUNTED LUMINAIRE, QUANTITY AS INDICATED
	EXTERIOR FLOOD LIGHT
	TRACK LIGHT - TYPE, LENGTH AND QUANTITY OF FIXTURES AS SCHEDULED.
	OCCUPANCY SENSOR - WALL AND CEILING MOUNT RESPECTIVELY

PANELS AND RELATED ITEMS

	PANELBOARD (SEE SCHEDULE)
	SWITCHBOARD OR DISTRIBUTION BOARD
	MOTOR CONTROL CENTER
	PULL BOX
	PLYWOOD TELEPHONE BACKBOARD

SYMBOL

DESCRIPTION

RACEWAYS

	CONDUIT CONCEALED IN WALL OR CEILING WITH ONE PHASE, NEUTRAL AND GROUND CONDUCTOR UNLESS OTHERWISE NOTED
	CONDUIT UNDER FLOOR OR CAST IN STRUCTURE WITH ONE PHASE, NEUTRAL AND GROUND CONDUCTOR UNLESS OTHERWISE NOTED
	CONDUIT EXPOSED WITH ONE PHASE, NEUTRAL AND GROUND CONDUCTOR UNLESS OTHERWISE NOTED
	SWITCH LEG
	BRANCH CIRCUIT HOMERUN SUBSCRIPT INDICATES PANEL AND BREAKER POSITION
	MULTI-OUTLET ASSEMBLY
	TELEPHONE
	BUS DUCT WITH TAKE OFF DEVICE

OUTLET DEVICES

	SIMPLEX TWIST-LOCK RECEPTACLE NEMA L5-20
	SIMPLEX RECEPTACLE - 20A, 120V 3W NEMA 5-20
	DUPLEX RECEPTACLE - 20A, 120V 3W NEMA 5-20
	DUPLEX RECEPTACLE WITH USB CHARGE PORT(S) - 20A, 120V 3W
	DUPLEX RECEPTACLE - 20A, 120V 3W NEMA 5-20 INSTALLED AT 48" AFF OR 4" ABOVE COUNTER TOP
	ISOLATED GROUND, DUPLEX RECEPTACLE - 20A, 120V 3W NEMA 5-20
	DUPLEX RECEPTACLE GFI=GROUND FAULT INTERRUPTING 20A 125V 3 W NEMA 5-20 WP = NEMA 3R WHILE IN USE
	QUADRAPLEX RECEPTACLE - 20A, 120V 3W NEMA 5-20
	QUADRAPLEX RECEPTACLE - 20A, 120V 3W NEMA 5-20 INSTALLED AT 48" AFF OR 4" ABOVE COUNTER TOP
	RECEPTACLE - SUBSCRIPT INDICATES NEMA CONFIGURATION SEE SPECIFICATION SECTION 16150 FOR COMPLETE LISTING
	FLOOR OUTLET DEVICE, SINGLE SERVICE, POWER, SUBSCRIPT INDICATES TYPE. SEE SCHEDULES AND SPECIFICATIONS.
	FLOOR OUTLET DEVICE, MULTIPLE SERVICE, POWER AND INFORMATION SYSTEM, SUBSCRIPT INDICATES TYPE. SEE SCHEDULES AND SPECIFICATIONS.
	FLOOR OUTLET DEVICE, INFORMATION SYSTEM SUBSCRIPT INDICATES TYPE. SEE SCHEDULES AND SPECIFICATIONS.
	TELEPHONE OUTLET 15" AFF (SUBSCRIPT W=WALL PHONE AT 54" AFF)
	INFORMATION SYSTEM OULET. SEE SPECIFICATIONS
	COMBINATION TELEPHONE AND DATA OUTLET - 15" AFF UON
	TELEVISION OUTLET - 15" AFF UON

SWITCH DEVICES

	SINGLE POLE SWITCH
	SWITCH - DOUBLE POLE, 3-WAY OR 4 WAY
	KEY OPERATED SWITCH
	SWITCH WITH PILOT LIGHT IN HANDLE (ON LIGHTED UNLESS OTHERWISE NOTED)
	WEATHERPROOF SWITCH
	MANUAL MOTOR STARTER (T=THERMAL OVERLOAD SIZED FOR MOTOR)
	INCANDESCENT DIMMER SWITCH WATTAGE RATING AS SHOWN IN () 6=600, 1=1000, 5=1500, 2=2000
	FLUORESCENT DIMMER SWITCH, NUMBER OF LAMPS AS SHOWN IN ()
	COMBINATION SWITCH AND OCCUPANCY SENSOR
	EXPLOSION PROOF SWITCH
	DOOR SWITCH
	TIMER SWITCH

FIRE ALARM

	FIRE ALARM CONTROL PANEL
	REMOTE COMMAND CENTER
	MANUAL PULL STATION 48" AFF
	SMOKE DETECTOR
	SMOKE DETECTOR, DUCT MOUNTED
	TEST SWITCH/REMOTE INDICATOR
	FIRE SPRINKLER PRESSURE SWITCH

SYMBOL

DESCRIPTION

FIRE ALARM (CONT)

	HEAT DETECTOR
	FLOW SWITCH
	TAMPER SWITCH
	AUDIO/VISUAL NOTIFICATION APPLIANCE WALL/CEILING MOUNT. SUBSCRIPT INDICATES CANDELA RATING
	VISUAL NOTIFICATION APPLIANCE WALL/CEILING MOUNT. SUBSCRIPT INDICATES CANDELA RATING
	MAGNETIC DOOR HOLDER
	RELAY
	FIRE FIGHTERS PHONE JACK
	FIRE FIGHTERS TELEPHONE
	DOOR CONTACT

ABBREVIATION DESCRIPTION

A	AMPERE(S)
ABV	ABOVE
AC	ABOVE COUNTER
A/C	AIR CONDITIONING
AIC	AMPERE INTERRUPTING CAPACITY
AFB	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
ATS	AUTOMATIC TRANSFER SWITCH
BFF	BELOW FINISHED FLOOR
BFG	BELOW FINISHED GRADE
BLDG	BUILDING
C	CONDUIT
CB	CIRCUIT BREAKER
CCTV	CLOSE CIRCUIT TELEVISION
CKT	CIRCUIT
COND	CONDUCTOR
CPU	CENTRAL PROCESSING UNIT
DIA	DIAMETER
DIST	DISTRIBUTION
DN	DOWN
DWGS	DRAWINGS
EC	EMPTY CONDUIT
EDF	ELECTRIC DRINKING FOUNTAIN
EF	EXHAUST FAN
EMT	ELEC. METALLIC TUBING
EQMT	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EXP	EXPLOSION PROOF
EXTG	EXISTING
F/A	FIRE ALARM
FC	FOOTCANDLES
FCU	FAN COIL UNIT
FLEX	FLEXIBLE METAL CONDUIT
FLUOR	FLUORESCENT
FN	FULL NEUTRAL
FT	FEET, FOOT
GALV	GALVANIZED
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HOA	HAND OFF AUTOMATIC
HPS	HIGH PRESSURE SODIUM
HVAC	HEATING/VENTILATING/AIR CONDITIONING
HZ	HERTZ

ABBREVIATION DESCRIPTION

IC	INTERCOM
ID	INSIDE DIAMETER
IMC	INTERMEDIATE STEEL CONDUIT
IN	INCHES
INC	INCANDESCENT
IG	ISOLATED GROUND
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAC	KILOVOLT AMPERE CAPACITIVE
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
LB	POUND
LPS	LOW PRESSURE SODIUM
M	MANHOLE
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MH	MOUNTING HEIGHT
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTG	MOUNTING
MV	MERCURY VAPOR
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NF	NON FUSED
NO	NORMALLY OPEN
OS	OCCUPANCY SENSOR
OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
OH	OVERHEAD
P	POLE
PA	PUBLIC ADDRESS
PB	PUSHBUTTON
PBX	PRIVATE BUILDING EXCHANGE
PC	PULL CHAIN
PEC	PHOTO CELL
PNL	PANELBOARD
PSI	POUNDS PER SQUARE INCH
PVC	POLY VINYL CHLORIDE CONDUIT
PWR	POWER
RMC	RIGID METAL CONDUIT
SC	SPLIT CIRCUIT
SN	SOLID NEUTRAL
SQFT,	SQUARE FOOT
SW	SWITCH
SWBD	SWITCHBOARD
TC	TIME CLOCK
TELE	TELEPHONE
TSTAT	THERMOSTAT
TV	TELEVISION
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
V	VOLT(S)
VP	VAPOR PROOF
W	WIRE
WP	WEATHERPROOF W/METAL RECEPT COVER
XFMR	TRANSFORMER
XPD	TRANSPONDER
Z	IMPEDANCE
1P	ONE POLE
2P	TWO POLE
3P	THREE POLE
Ø	PHASE

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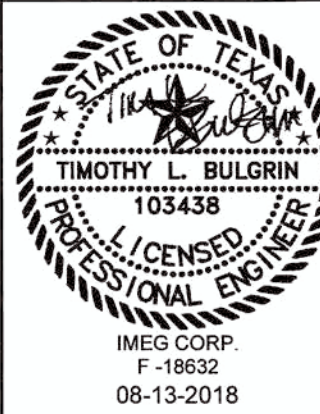
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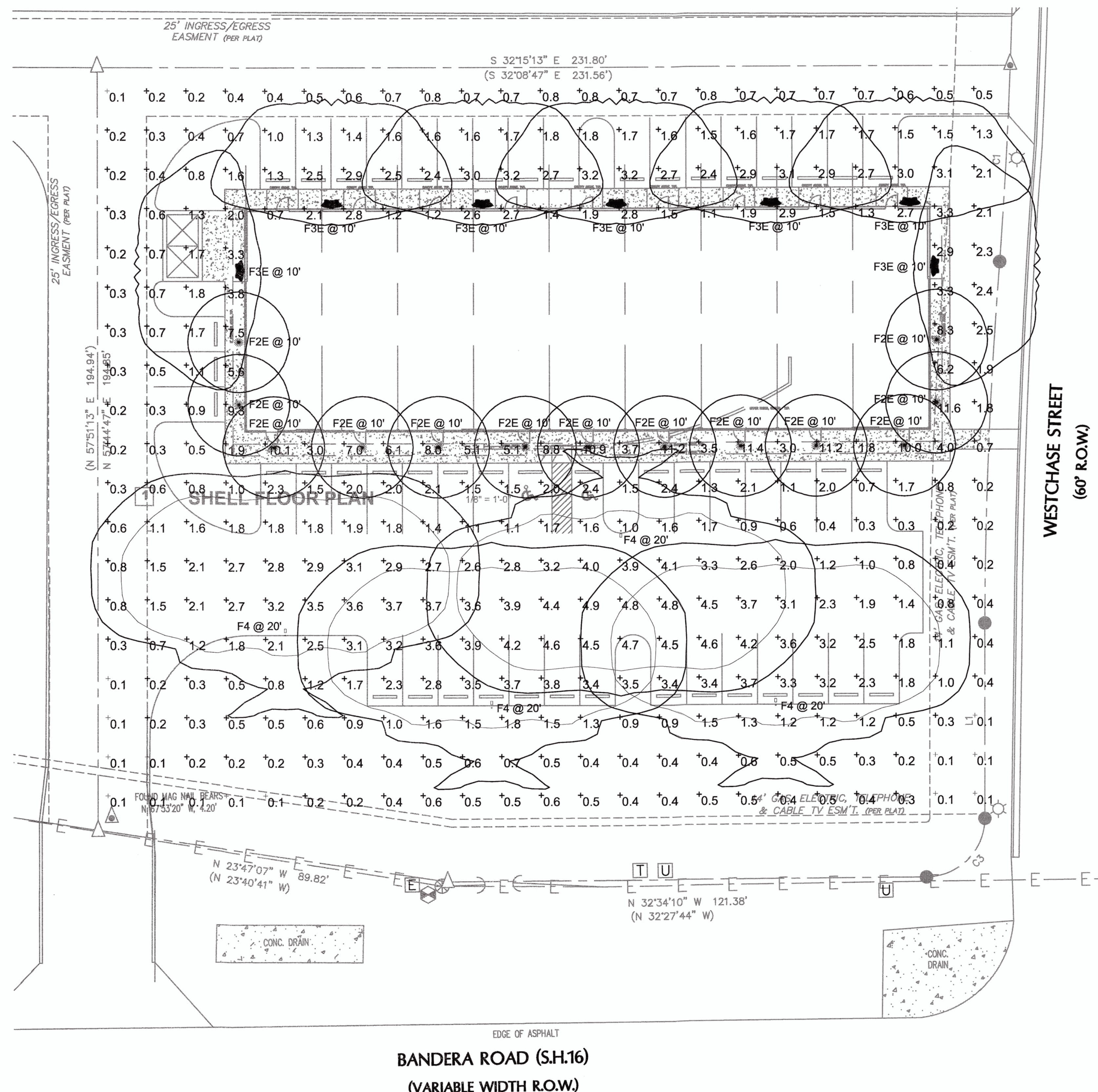
PROJECT NAME
BANDERA RETAIL CENTER
PROJECT ADDRESS
7800 BANDERA ROAD
SAN ANTONIO, TEXAS
SHEET TITLE
ELECTRICAL SYMBOLS & ABBREVIATIONS

SHEET NUMBER



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IMEG PROJECT #: 18003226



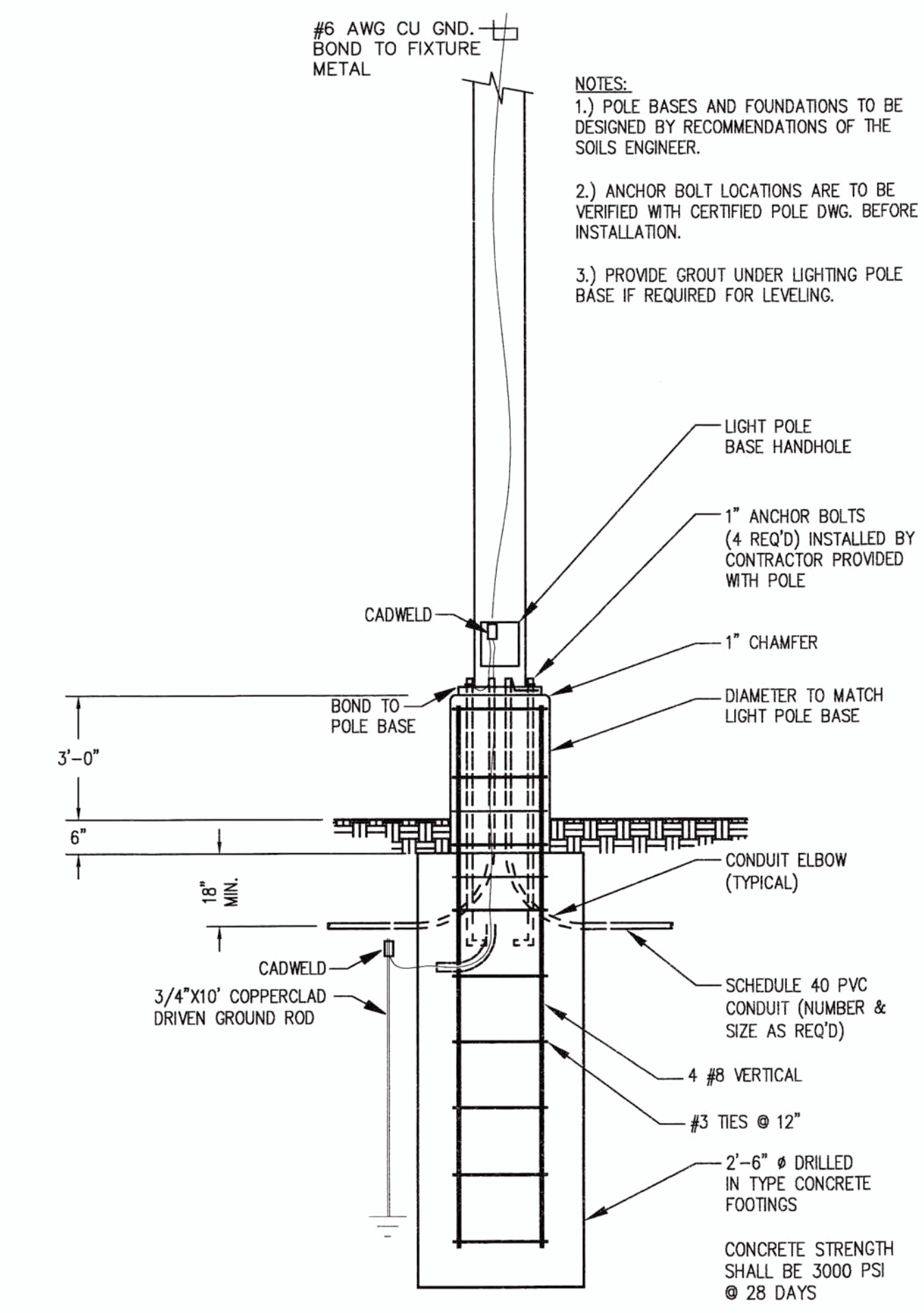
BANDERA ROAD (S.H.16)
(VARIABLE WIDTH R.O.W.)

1 PHOTOMETRIC SITE PLAN
SCALE: 1/16"=1'-0"

LUMINAIRE SCHEDULE									
Symbol	Label	Qty	Catalog Number	Description	# Lamps	Lamp	Lumens	LLF	Watts
○	F2E	13	LGFLP 142TRT 6RW SOL MVOLT	LOW PROFILE 6-IN DOWN LIGHT WHITE DOOR, SOL LENS, AND ONE 42W TRI LAMP.	1	ONE 42-WATT COMPACT FLUORESCENT TRI, HORIZONTAL POSITION	3200	1.00	48
□	F3E	7	TWH LED 10C 1000-40K TSM MVOLT	TWH LED WITH 10 LEDS @ 1000mA, 4000K AND TYPE 3 MEDIUM OPTICS	1	LED	3377	1.00	39
□	F4	4	DSX1 LED 40C 530 40K T3S MVOLT	DSX1 LED WITH 40 LEDS @ 530 Ma, 4000K, TYPE 3 SHORT OPTICS	1	LED	6493	1.00	68

NOTE:
POLE MOUNTED LUMINAIRES ARE INDICATED AT 25' AFG, ASSUMING A 20' POLE
MOUNTED ON A 3" CONCRETE BASE.

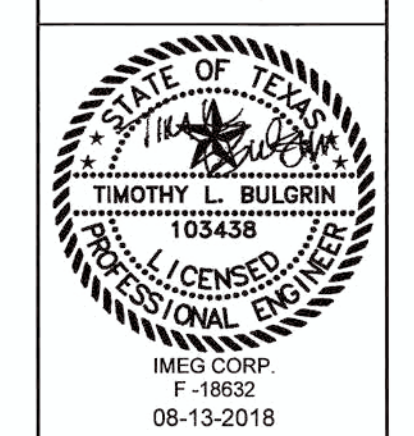
STATISTICS						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
PARKING	+	2.0 fc	11.6 fc	0.1 fc	116.0:1	20.0:1



2 SITE LIGHTING BASE DETAIL
SCALE: N.T.S.

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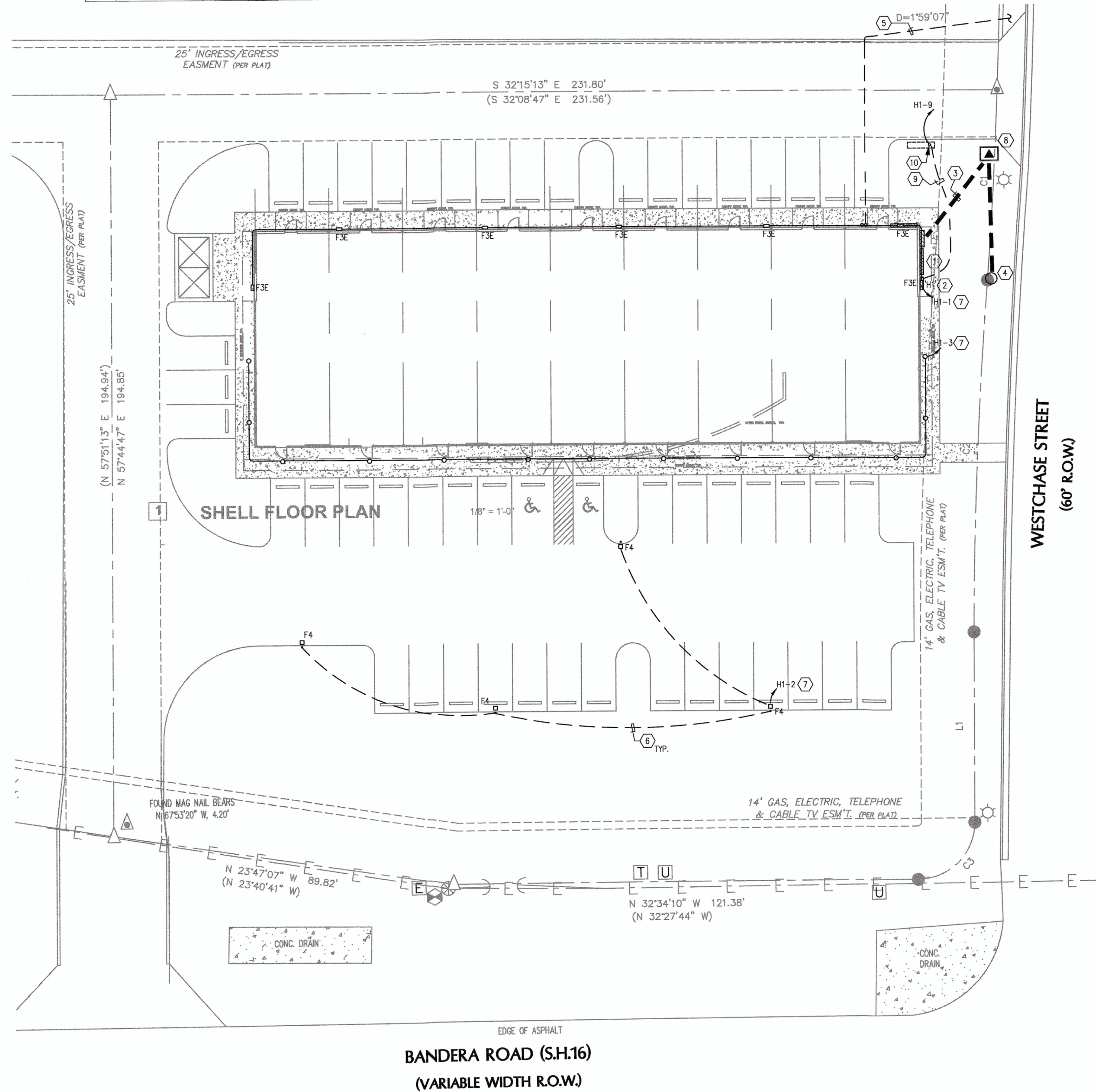
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EXP. DATE:

PROJECT NAME
BANDERA RETAIL CENTER
PROJECT ADDRESS
7800 BANDERA ROAD
SAN ANTONIO, TEXAS
SHEET TITLE
PHOTOMETRIC SITE PLAN

SHEET NUMBER
E1

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LIGHT FIXTURE SCHEDULE									
TYPE	MANUFACTURER	CAT. #	LAMPS		WATTS	MOUNTING	VOLT.	FINISH	DESCRIPTION
F2E	GOHAM	LGFLP 42TRT 6 RW MVOLT EL	TYPE	QTY PER FIXTURE	42	CANOPY	120	PER ARCHITECT	6" WET LOCATION LISTED RECESSED FIXTURE WITH 90 MIN. EMERG. BACKUP
F3E	LITHONIA	TWH LED 10C 1000 40K T3M MVOLT	LED	1	39	WALL	120	PER ARCHITECT	WALL PACK WET LOCATION LISTED RECESSED FIXTURE WITH 90 MIN. EMERG. BACKUP
F4	LITHONIA	DSX1 LED 40C 530 40K T3S MVOLT	LED	1	68	POLE	120	PER ARCHITECT	POLE MOUNTED LIGHT FIXTURE, 20 FT., SQUARE POLE #SSS 17 SC



KEYED NOTES (THIS SHEET ONLY)

- ELECTRICAL SERVICE EQUIPMENT. REFER TO SHEET E3.01 ELECTRICAL RISER DIAGRAM.
- HOUSE PANEL. REFER TO ELECTRICAL RISER DIAGRAM, SHEET E3.01.
- UNDERGROUND SECONDARY DUCTBANK. REFER TO ELECTRICAL RISER DIAGRAM, SHEET E3.01, FOR CONDUIT & CONDUCTOR SIZES.
- NEW OPS ENERGY POLE. LOCATION SHOWN IS FOR SCHEMATIC DESIGN PURPOSES ONLY. COORDINATE ACTUAL LOCATION WITH OPS ENERGY.
- (2) 4" SCH. 80 PVC CONDUITS FROM LOCATION OF TELECOM DEMARCATION PANEL ON BACK WALL. COORDINATE ROUTING WITH COMMUNICATION PROVIDERS.
- 1" SCH. 80 PVC CONDUIT W/ 2-#6, 1-#6G. FOR SITE LIGHTING. COORDINATE WITH LANDSCAPING AND OWNER FOR EXACT LOCATION IN THE FIELD.
- ROUTE EXTERIOR AND SITE LIGHTING FIXTURES THRU LIGHTING CONTACTOR 'LC1' ADJACENT TO ELECTRICAL PANEL. REFER TO E3.01 ELECTRICAL RISER DIAGRAM.
- NEW PAD MOUNT TRANSFORMER. COORDINATE WITH OPS ENERGY.
- 1" SCH. 80 PVC CONDUIT WITH 2-#10, #10G. CONNECT CIRCUIT THRU LIGHTING CONTACTOR 'LC1'.
- STUB UP CONDUIT & W.P. J-BOX WITH WIRES AT LOCATION OF FUTURE MONUMENT SIGN. COORDINATE LOCATION WITH OWNER.

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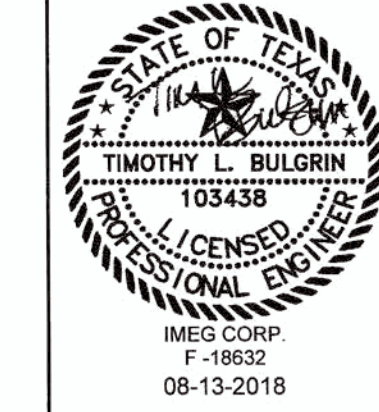
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LICENSE NUMBER

EXP. DATE

BANDERA RETAIL CENTER
7800 BANDERA ROAD
SAN ANTONIO, TEXAS
ELECTRICAL SITE PLAN

PROJECT NAME
PROJECT ADDRESS
SHEET TITLE

SHEET NUMBER



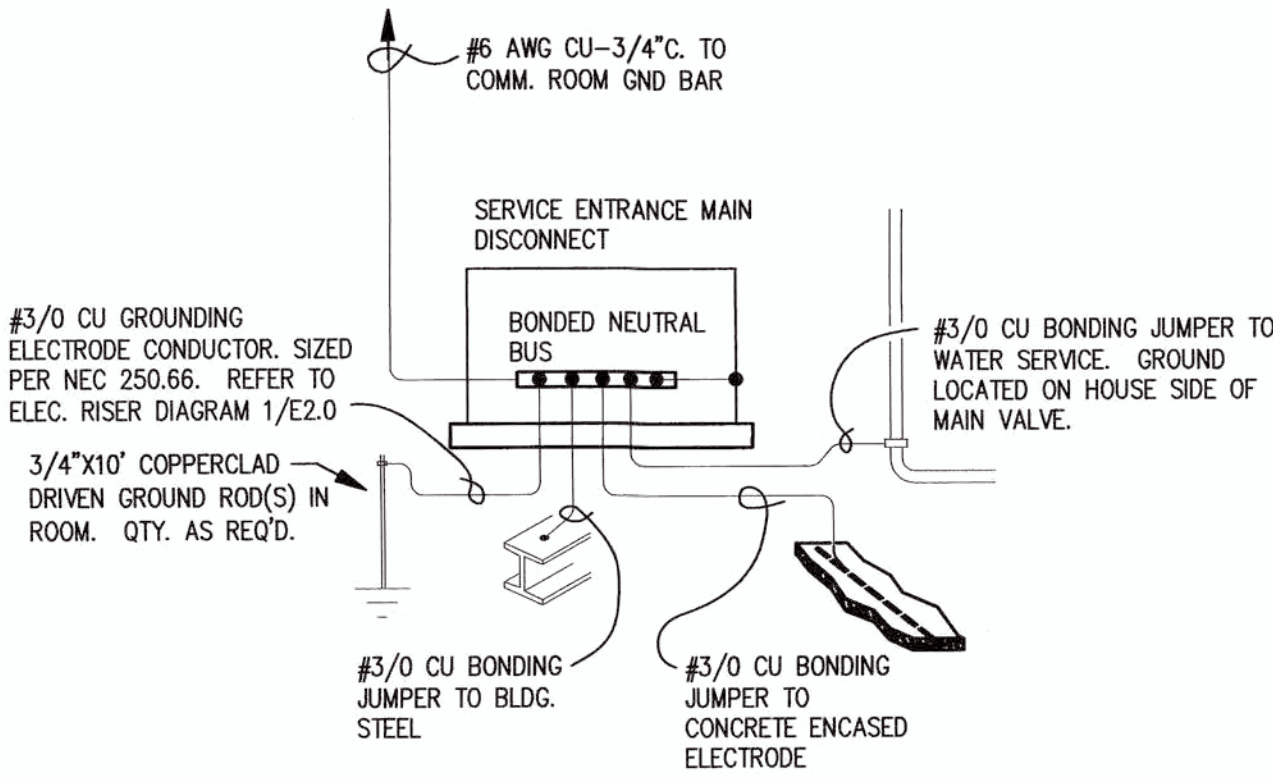
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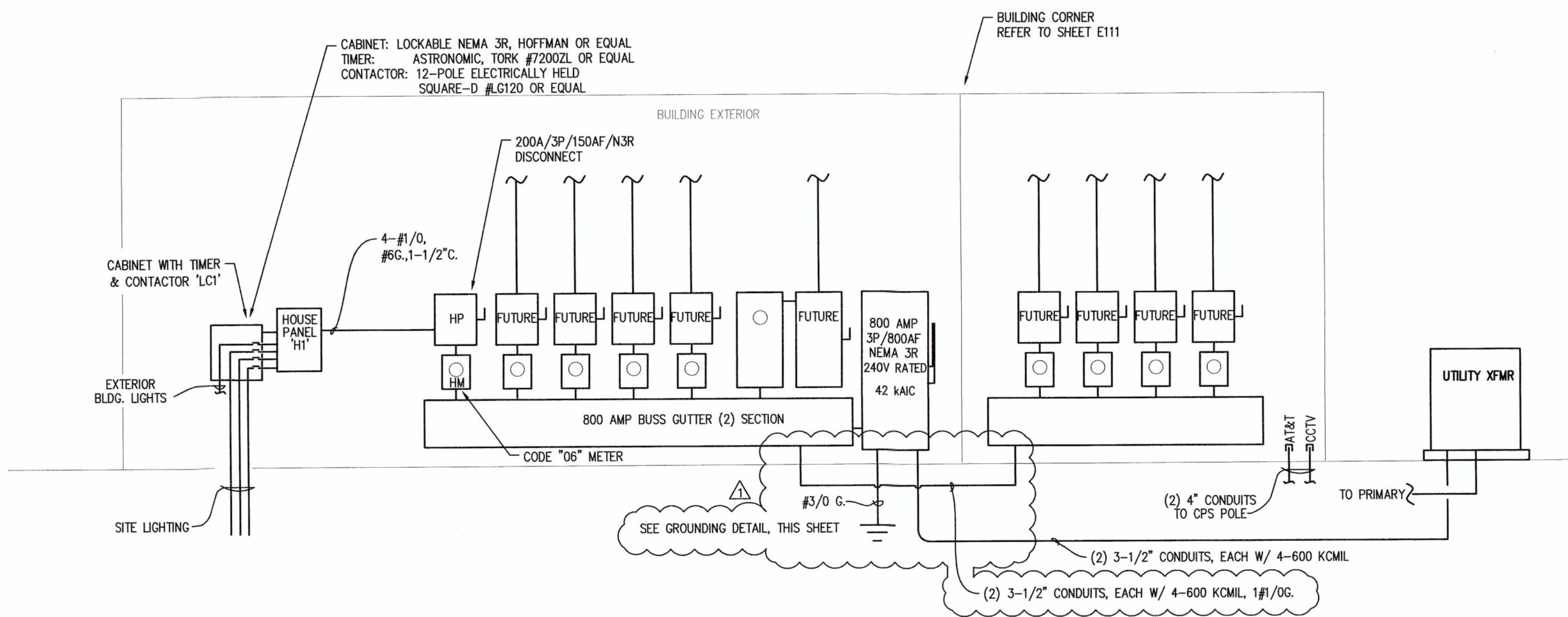
1 ELECTRICAL SITE PLAN
SCALE: 1/16"=1'-0"

ELECTRICAL LOAD ANALYSIS							
BANDERA RETAIL - BASED ON 9,918 TOTAL BLDG SQ FT							
SYSTEM VOLTAGE - 120Y/208V, 3 PHASE, 4 WIRE + GND.							
LOAD DESCRIPTION		V.A. PER S.F.	CONNECTED LOAD - KVA	DEMAND FACTOR	DEMAND LOAD		
					KVA	AMPERES	
NEC LIGHTING		3.0	9.0	1.25	11.3	31	
EXTERIOR LIGHTING - SIGNAGE			1.0	1.25	1.3	3	
GENERAL POWER - EST.		6.0	36.0	1.00	36.0	100	
O.A. UNIT - EST.			60.0	1.00	60.0	167	
AIR CONDITIONING - EST.		5.0	40.0	Larger of Non-Coincident Loads		0	
HEAT - EST.		8.0	70.0		1.00	70.0	194
FANS - EST.		1.0	6.0		1.25	7.5	21
WATER HEATERS - EST.			24.0		1.00	24.0	67
N.E.C. DEMAND LOAD - RETAIL:					210.0	583	
HOUSE PANEL LOAD - LANDLORD							
EXTERIOR LIGHTING:			3.0	1.25	3.8	10	
RECEPTACLES:			1.0	1.00	1.0	3	
N.E.C. DEMAND LOAD - HOUSE PANEL:					4.8	13	
TOTAL SERVICE ELECTRICAL LOAD:					214.8	597	
SERVICE ENTRANCE RATING:						800	
SPARE CAPACITY					25.4 %	217	

HOUSE PANEL - H1															
PROJECT: PAT BOOKER RETAIL		MAIN CIRCUIT BREAKER: NA				ENCLOSURE: NEMA 3R				0	RECP	5	HEAT		
PROJECT #: 17001573		MAIN LUGS ONLY: 225A				MOUNTING: SURFACE				1	LTG	6	A/C		
LOCATION: BLDG. EXTERIOR		BUSSING: 225A				CB TYPE: BOLT-ON				2	EQUIP	7	KITCH		
NOTES:		VOLTAGE: 120/208V 3-PH				PROVIDE: NEUTRAL BUS				3	MTR	8	ELEV		
		INTERRUPTING: 10 kAIC RMS SYM								4	COMP	9	125%		
CKT	AMPS	POLE	CIRCUIT DESCRIPTION				LOAD	TYPE	PH	TYPE	LOAD	CIRCUIT DESCRIPTION	AMPS	POLE	CKT
1	20	1	BUILDING EXTERIOR LIGHTS				273	1	A	1	384	SITE LIGHTING	20	2	2
3	20	1	BUILDING EXTERIOR LIGHTS				598	1	B			SPARE	20	1	4
5	20	1	INTERIOR LIGHTS				864	1	C			SPARE	20	1	6
7	20	1	EXTERIOR RECEPTACLES				900	0	A			SPARE	20	1	8
9	20	1	MONUMENT SIGN				800	1	B			SPARE	20	1	10
11	20	1	SPARE									SPARE	20	1	12
13			BUSSED SPACE						A			SPARE	20	1	14
15			BUSSED SPACE						B			BUSSED SPACE			16
17			BUSSED SPACE						C			BUSSED SPACE			18
19	20	1	BU						A			BUSSED SPACE			20
21	30	3	EUH-1				2,500	5	B	5	2,500	EUH-3	30	3	22
23	-	-					2,500	5	C	5	2,500	-	-	-	24
25	-	-					2,500	5	A	5	2,500	-	-	-	26
27	30	3	EUH-2				2,500	5	B	5	2,500	EUH-4	30	3	28
29	-	-					2,500	5	C	5	2,500	-	-	-	30
31	-	-					2,500	5	A	5	2,500	-	-	-	32
33			BUSSED SPACE						B			BUSSED SPACE			34
35			BUSSED SPACE						C			BUSSED SPACE			36
37			BUSSED SPACE						A			BUSSED SPACE			38
39			BUSSED SPACE						B			BUSSED SPACE			40
41			BUSSED SPACE						C			BUSSED SPACE			42
			PANEL VA	SUB FEED	FEED THRU	TOTAL CONN	TOTAL DEMAND		NOTES:						
							VA	AMPS							
PHASE A			11,557	-	-	11,557	11,806	98	*PROVIDE HACR RATED BREAKER						
PHASE B			11,398	-	-	11,398	11,644	97							
PHASE C			10,864	-	-	10,864	11,098	92							
TOTAL			33,819	-	-	33,819	34,549	96	REVISIONS:						
														IMEG CORP. R1.0	



2 SYSTEM GROUNDING DETAIL
NOT TO SCALE



1 ELECTRICAL RISER DIAGRAM
SCALE: N.T.S.

- GENERAL NOTES
- ALL EQUIPMENT IS NEW UNLESS NOTED OTHERWISE.
 - ELECTRICAL SERVICE IS 120/208V 3-PHASE, 4-WIRE + GROUND.
 - PERFORM GROUND RESISTANCE TEST, FALL OF POTENTIAL METHOD, OF THE SYSTEM GROUNDS. THE RESISTANCE FROM GROUNDING ELECTRODE CONDUCTOR TO EARTH GROUND SHALL NOT EXCEED 25 OHMS. GROUND RESISTANCE MEASUREMENTS SHALL BE PERMITTED, RECORDED AND SUBMITTED TO THE ARCHITECT/ENGINEER. PERFORM TEST IN NORMALLY DRY WEATHER OR NOT LESS THAN 24 HOURS AFTER RAINFALL. PROVIDE A REPORT CONTAINING THE DATE THAT THE TEST RESULTS AND PREVAILING WEATHER CONDITIONS AT THE TIME OF THE TEST. IF RESISTANCE EXCEEDS 25 OHMS, REPORT RESULTS DIRECTLY AND IMMEDIATELY TO THE ENGINEER.

10-2-18 REVISIONS



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QTY COMMENTS 9/28/2018

STATE OF TEXAS
TIMOTHY L. BULGRIN
103438
LICENSED PROFESSIONAL ENGINEER
IMEG CORP.
F-18632
09-28-2018

LICENSE NUMBER:

EXP. DATE:

BANDERA RETAIL CENTER

7800 BANDERA ROAD

SAN ANTONIO, TEXAS

ELECTRICAL RISER DIAGRAM

PROJECT NAME

PROJECT ADDRESS

SHEET TITLE

SHEET NUMBER

501

DEVELOPMENT SERVICES

ISSUE DATE 08.13.2018

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LICENSE NUMBER:

EXP. DATE:

PROJECT NAME
BANDERA RETAIL CENTER
PROJECT ADDRESS
7800 BANDERA ROAD
SAN ANTONIO, TEXAS
SHEET TITLE
MECHANICAL AND ELECTRICAL PLAN

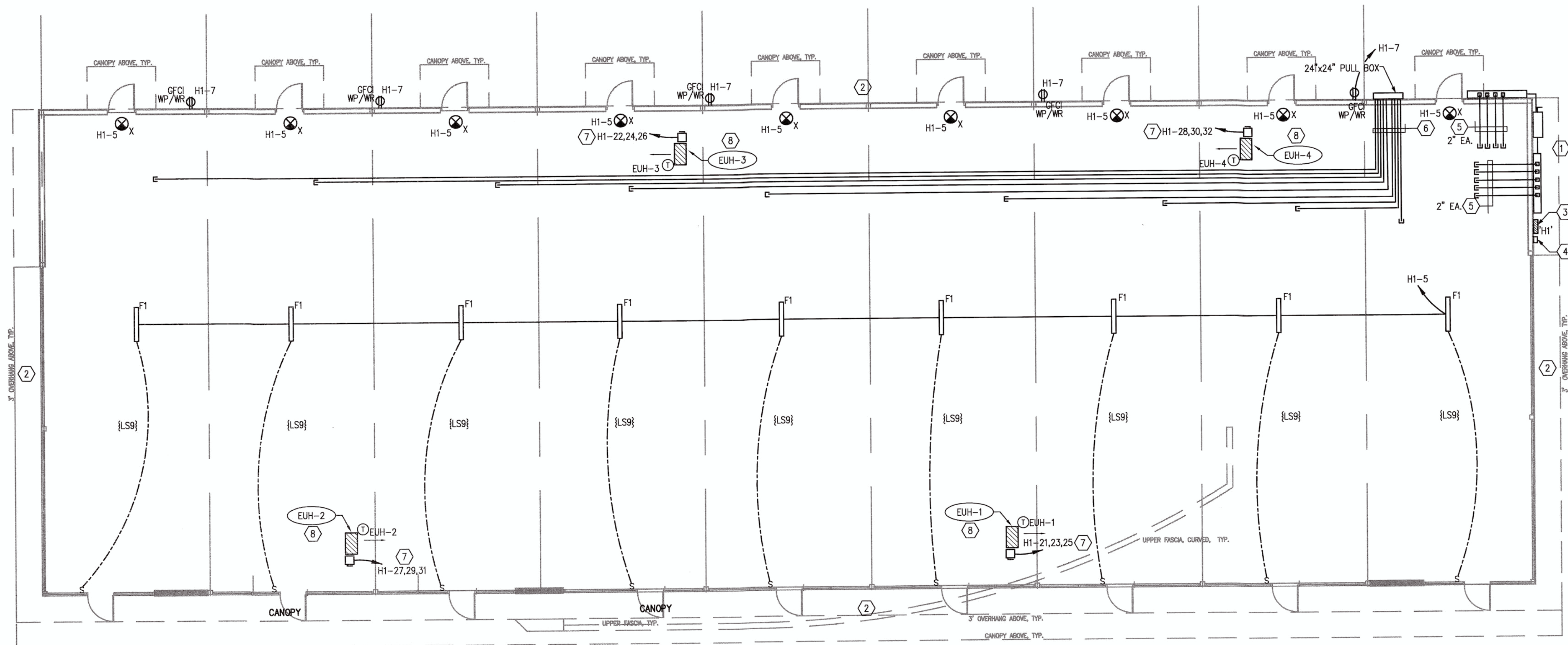
SHEET NUMBER

ME 11

IMEG PROJECT #: 18003226

KEYED NOTES:

- 1 ELECTRICAL SERVICE ENTRANCE EQUIPMENT.
- 2 REFER TO SHEETS E110 AND E111 FOR EXTERIOR BUILDING AND SITE LIGHTING.
- 3 HOUSE PANEL. REFER TO ELEC. RISER DIAGRAM.
- 4 LIGHTING TIMER & CONTACTOR. REFER TO ELECTRICAL RISER DIAGRAM ON SHEET E301.
- 5 CONDUIT FOR TENANT ELEC SERVICE STUBBED INTO SPACE. PROVIDE LB AT EXTERIOR AND PULL STRING. SIZE AS SHOWN. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
- 6 2" CONDUIT FOR TENANT COMM. CABLES STUBBED INTO SPACE. PROVIDE PULL STRING. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN.
- 7 30A/3P/NF/N1 250V RATED DISCONNECT. WIRE WITH 3-#10, #10G, 3/4" C. MOUNT ON UNIT IF ALLOWED BY MANUFACTURER, OTHERWISE PROVIDE SUSPENDED UNISTRUT FROM STRUCTURE.
- 8 SUSPEND 'EUH' FROM STRUCTURE WITH ALL THREAD AND VIBRATION ISOLATORS. ARROW INDICATES DIRECTION OF FLOW. REFER TO DETAIL ON THIS SHEET.



1 MECHANICAL AND ELECTRICAL PLAN

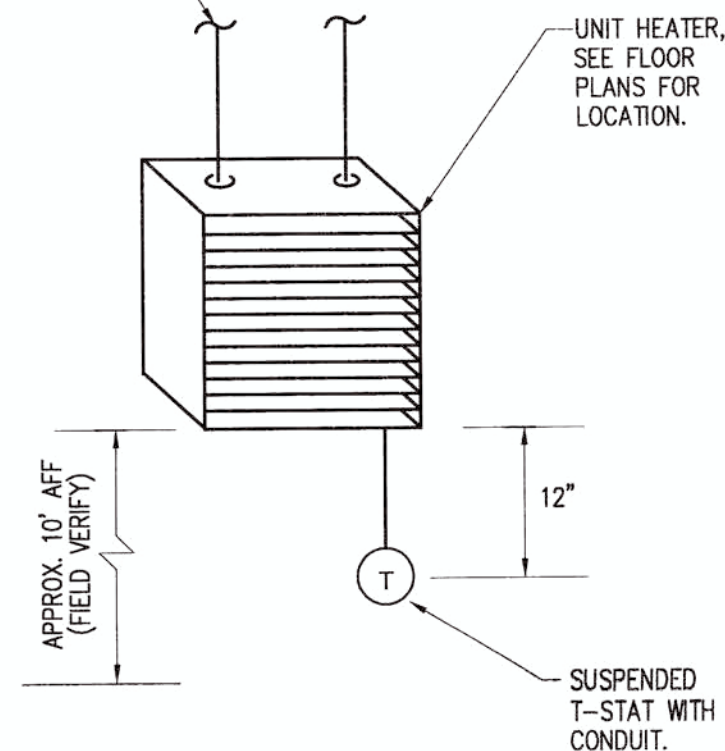
SCALE: 1/8" = 1'-0"

PLAN ID	LIGHTING CONTROL SEQUENCE DESCRIPTION:
{LS9}	Sequence: Switched lights are controlled in this space. ON: The lights turned on using switches. OFF: After the space has been vacant for [15] minutes, the lights will automatically turn off.

LIGHT FIXTURE SCHEDULE									
TYPE	MANUFACTURER	CAT. #	LAMPS			WATTS	MOUNTING	VOLT.	FINISH
			TYPE	QTY PER FIXTURE					
F1	LITHONIA	EJ 332 MVOLT GEB10IS	F32T8 4100K	3		96	SUSPENDED	120	WHITE
X	LITHONIA	LQM S W3 R 120/277 EL N	LED	1		2	WALL	120	WHITE

ELECTRIC UNIT HEATER SCHEDULE											
TAG	SERVICE	TYPE	AIR FLOW (CFM)	VOLTS/ PHASE	MIN. TOTAL CAPACITY (MBH)	ELECTRIC HEAT INPUT (KW)	AIR THROW	APPROX. WEIGHT (LB.)	MANUFACTURER	MODEL	NOTES
EUH-1	SEE FLOOR PLAN	FAN FORCED	400	208/3	25.6	7.5	36	45	MARKEL	UH SERIES	1-5
EUH-2	SEE FLOOR PLAN	FAN FORCED	400	208/3	25.6	7.5	36	45	MARKEL	UH SERIES	1-5
EUH-3	SEE FLOOR PLAN	FAN FORCED	400	208/3	25.6	7.5	36	45	MARKEL	UH SERIES	1-5
EUH-4	SEE FLOOR PLAN	FAN FORCED	400	208/3	25.6	7.5	36	45	MARKEL	UH SERIES	1-5
NOTES:											
1. HEAVY GAUGE WELDED STEEL CABINET WITH POWDER COATED FINISH AND CONTROL COMPARTMENT WITH A HINGED AND LATCHED ACCESS DOOR.											
2. PROVIDE WITH OVERHEAT PROTECTION CONTROL.											
3. PROVIDE WITH LOUVER ASSEMBLY, TEMPERATURE CONTROL, AND FACTORY INSTALLED 24 VOLT TRANSFORMER.											
4. PROVIDE WITH SUMMER FAN SWITCH TO OPERATE THE FAN ONLY.											
5. PROVIDE WITH WALL BRACKET AND DISCONNECT SWITCH.											

HANGER RODS, (PROVIDE STRUCTURAL STEEL ANGLE BETWEEN JOISTS FOR SUPPORT OF UNIT HEATER).



1 ELECTRIC UNIT HEATER DETAIL

SCALE: NOT TO SCALE

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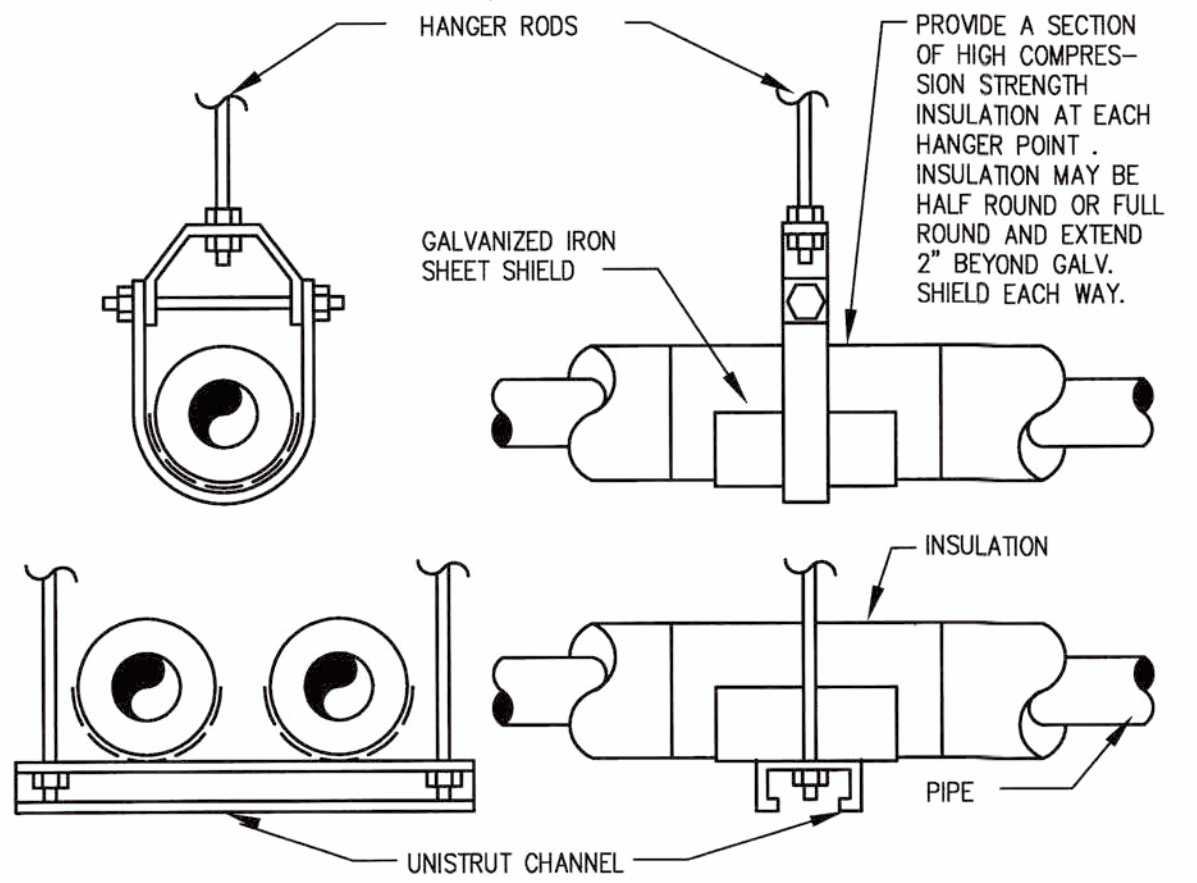
PLUMBING GENERAL NOTES:	
1.	ADHERE TO ALL STATE CODES AND LOCAL CODES THAT HAVE AUTHORITY OF JURISDICTION OVER THIS PROJECT.
2.	CONTRACTORS SHALL BE SOLELY RESPONSIBLE FOR VERIFYING ACTUAL CONDITIONS AT THE SITE AND NOTING ALL DISCREPANCIES TO THE OWNER PRIOR TO WORK COMMENCEMENT; THEREAFTER, THE CONTRACTOR ACCEPTS FULL RESPONSIBILITY FOR ALL EXISTING CONDITIONS AND SHALL BE SOLELY RESPONSIBLE FOR MAKING ALL SUITABLE ADJUSTMENTS NECESSARY TO ACCOMMODATE NEW WORK AT NO ADDITIONAL COST TO THE OWNER; ANY SUCH ADJUSTMENTS SHALL BE COORDINATED WITH THE OWNER AND ENGINEER.
3.	ALL EXISTING LAYOUTS INDICATED ON THESE DOCUMENTS ARE BASED ON INFORMATION AVAILABLE AND MAY INCLUDE INACCURACIES AND BE INCOMPLETE. FIELD VERIFY LOCATION, SIZE AND INVERT OF EXISTING PLUMBING UTILITIES PRIOR TO BEGINNING WORK. (I.E. SANITARY WASTE, VENT, DOMESTIC WATER AND STORM DRAIN).
4.	INSTALL 2" WALL CLEANOUT AT ALL SINKS.
5.	PROVIDE CROSS CONNECTION CONTROL FOR DOMESTIC WATER SUPPLY AS REQUIRED BY LOCAL CODES WHERE NOT PROVIDED BY EQUIPMENT MANUFACTURER.
6.	SANITARY AND VENT PIPING SHALL BE INSTALLED WITH A SLOPE OF NO LESS THAN 1/4" PER FOOT UNLESS NOTED OTHERWISE.
7.	REFERENCE ARCHITECTURAL FOR FINISHED FLOOR ELEVATIONS.
8.	EACH TRADE SHALL COORDINATE THE ROUTING AND INSTALLATION OF HIS WORK WITH THAT OF ALL OTHER TRADES THROUGH THE GENERAL CONTRACTOR. IN ANY INSTANCES OF CONFLICT, SYSTEMS REQUIRING "GRADE" OR "SLOPE" FOR DRAINAGE (SANITARY SEWER, SANITARY VENT, EQUIPMENT DRAINS, ETC...) SHALL HAVE PRIORITY.
9.	PIPING PENETRATIONS THRU PERIMETER BEAMS, FOUNDATION ON GRADE, AND STRUCTURAL FLOORS SHALL BE SLEEVED. COORDINATE SLEEVE LOCATIONS WITH STRUCTURAL PRIOR TO INSTALLATION.
10.	MAKE FINAL CONNECTIONS TO TENANT EQUIPMENT REQUIRING WASTE, VENT AND DOMESTIC WATER SUPPLY, AND CROSS CONNECTION CONTROL. COORDINATE WITH ARCHITECTURAL EQUIPMENT DRAWINGS.
11.	SAW-CUT FLOOR AS REQUIRED TO INSTALL NEW SANITARY WASTE PIPING. DO NOT CUT STRUCTURAL BEAMS. COORDINATE WITH STRUCTURAL FOR ROUTING THROUGH EXISTING STRUCTURAL BEAMS. REPAIR FLOOR TO MATCH EXISTING.
12.	THREADED HOSE BIBBS, WALL HYDRANTS OR FAUCET CONNECTIONS SHALL BE PROVIDED WITH INTEGRAL ATMOSPHERIC VACUUM BREAKER OR AN APPROVED BACKFLOW PREVENTION DEVICE.
13.	PROVIDE PIPE LABELS WITH DIRECTIONAL ARROWS FOR COLD WATER, HOT WATER, AND HOT WATER RETURN PIPING. INSTALL AT 10 FEET INTERVALS.
14.	PROVIDE VALVE TAGS WITH 1/4-INCH LETTERS AND 1/2-INCH NUMBERS. PROVIDE VALVE TAG SCHEDULE INDICATING THE BRANCH BEING SERVED.
15.	ALL RECESSED EQUIPMENT REQUIRING ACCESS SHALL BE PROVIDED WITH PERMANENT ACCESS.
16.	MAINTAIN 15' MINIMUM CLEARANCE FROM VENTS THROUGH ROOF TO OUTSIDE AIR INTAKES AND OPENINGS TO BUILDINGS.
17.	REFER TO RISER DIAGRAMS AND DETAILS FOR ADDITIONAL SIZES AND INFORMATION.
18.	SALVAGE ITEMS AND MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH AN APPROVED WASTE MANAGEMENT PLAN.
19.	PIPING AND RELATED EQUIPMENT SHALL BE RATED FOR USE IN RETURN AIR PLENUM CONSTRUCTION. PVC PIPING IN PLENUM SHALL BE WRAPPED IN 3M FIRE BARRIER PLENUM WRAP OR APPROVED EQUAL.
20.	INSULATE COPPER LINES FROM CONTACT WITH CONCRETE, REINFORCING STEEL, OR OTHER PIPING AND CONDUIT.
21.	PROVIDE ESCUTCHEON PLATES AT ALL PIPING PENETRATIONS THRU FINISHED WALLS OR CEILINGS.
22.	PROVIDE ALL EQUIPMENT, MATERIAL, LABOR, SUPERVISION, COSTS AND SERVICES REQUIRED TO COMPLETELY INSTALL, COMPLETE AND WORKING SYSTEMS INCLUDING ALL ITEMS AND APPURTENANCES NECESSARY, REASONABLE INCIDENTAL OR CUSTOMARILY INCLUDED, EVEN THOUGH EACH AND EVERY ITEM IS NOT SPECIFIED OR SHOWN.
23.	THESE PLANS ARE DIAGRAMMATIC IN NATURE, CONTRACTORS SHALL INCLUDE APPROPRIATE ALLOWANCES FOR OFFSETS AS REQUIRED TO ACCOMMODATE VERTICAL AND HORIZONTAL VARIATIONS IN THE LOCATIONS AND ELEVATIONS OF DUCTWORK, PIPING AND EXISTING CONDITIONS.
24.	PENETRATIONS OF WALLS OR FLOORS FOR THE PASSAGE OF PIPING, DUCTWORK OR OTHER EQUIPMENT SHALL BE PROPERLY SEALED AFTER INSTALLATION OF EQUIPMENT. FIELD VERIFY EXISTING WALL PENETRATIONS AND PROPERLY SEAL AS REQUIRED TO MAINTAIN WALL OR FLOOR RATING.
25.	WHERE PIPES PASS THROUGH FIRE PARTITIONS, FIRE WALLS, SMOKE PARTITIONS, OR FLOORS, INSTALL A FIRE STOP THAT PROVIDES AN EFFECTIVE BARRIER AGAINST THE SPREAD OF FIRE, SMOKE AND GASES.
26.	PROVIDE DIELECTRIC UNIONS AT DISSIMILAR MATERIALS.
27.	ALL PIPING SHALL BE INSTALLED FREE OF SAGS AND BENDS. NON-METALLIC COATED HANGERS SHALL BE USED WHERE IN DIRECT CONTACT WITH COPPER PIPING.
28.	CONTRACTOR SHALL CLEAN, FLUSH, AND DISINFECT ALL DOMESTIC WATER PIPING AND FIXTURES PRIOR TO COMPLETION OF WORK.
29.	DRAWINGS ARE BASED UPON EXISTING DOCUMENTS PROVIDED BY OWNER. REPORT ANY UNCOVERED UTILITIES, SERVICES, DUCTWORK, PIPING, ETC. TO ARCHITECT AND ENGINEER BEFORE DISTURBING EXISTING INSTALLATION. VERIFY THAT ABANDONED PIPING AND DUCTWORK SERVE ONLY ABANDONED FACILITIES.
30.	SHOULD ANY CHANGES OCCUR DUE TO COORDINATION WITH OTHER BUILDING TRADES AND CONFLICTS WITH THE PLANS, THE CONTRACTOR SHALL SUBMIT FOR THE ARCHITECTS APPROVAL AN ALTERNATIVE METHOD OF COMPLETING HIS WORK ACCORDING TO THE INTENT OF THE PLUMBING DOCUMENTS.
31.	CONTRACTOR SHALL PROVIDE AS-BUILT SHOP DRAWINGS FOR ALL PLUMBING SYSTEM CHANGES AND DEVIATIONS TO THESE PLANS.
32.	WHERE INVERTS (ELEVATION OF THE BOTTOM OF THE INSIDE OF THE PIPE) ARE PROVIDED ON THE DRAWINGS FOR DRAINAGE SYSTEMS, SUCH INVERTS ARE APPROXIMATE AND ARE PROVIDED FOR COORDINATION ONLY. AS A FIRST STEP IN THE CONSTRUCTION PROCESS, CONTRACTOR IS TO DETERMINE ACTUAL INVERTS REQUIRED AND TO VERIFY THAT INVERTS PROVIDED ARE APPROPRIATE FOR COORDINATION WITH OTHER TRADES AND FOR ACCOMPLISHING THE INTENT OF THE DRAWINGS. APPROXIMATE INVERTS ARE BASED UPON USING HUBBED CAST IRON. IF OTHER TYPES OF MATERIALS ARE USED, CONTRACTOR IS TO CONFIRM OR DETERMINE INVERTS AND IS TO COORDINATE WITH OTHER TRADES. ANY ADDITIONAL COST ASSOCIATED WITH USING DIFFERENT TYPES OF PIPING MATERIALS SHALL BE AT THE CONTRACTORS EXPENSE. INVERTS FOR SANITARY PIPING ARE BASED UPON A MINIMUM SLOPE OF 1/4" PER FOOT FOR 2" AND 3" PIPE, 1/8" PER FOOT FOR 4" PIPE AND A MAXIMUM SLOPE OF 1/2" PER FOOT.
33.	INSTALLATION OF PLUMBING SYSTEM SHALL ADHERE TO BUILDING STANDARDS AND SPECIFICATIONS.

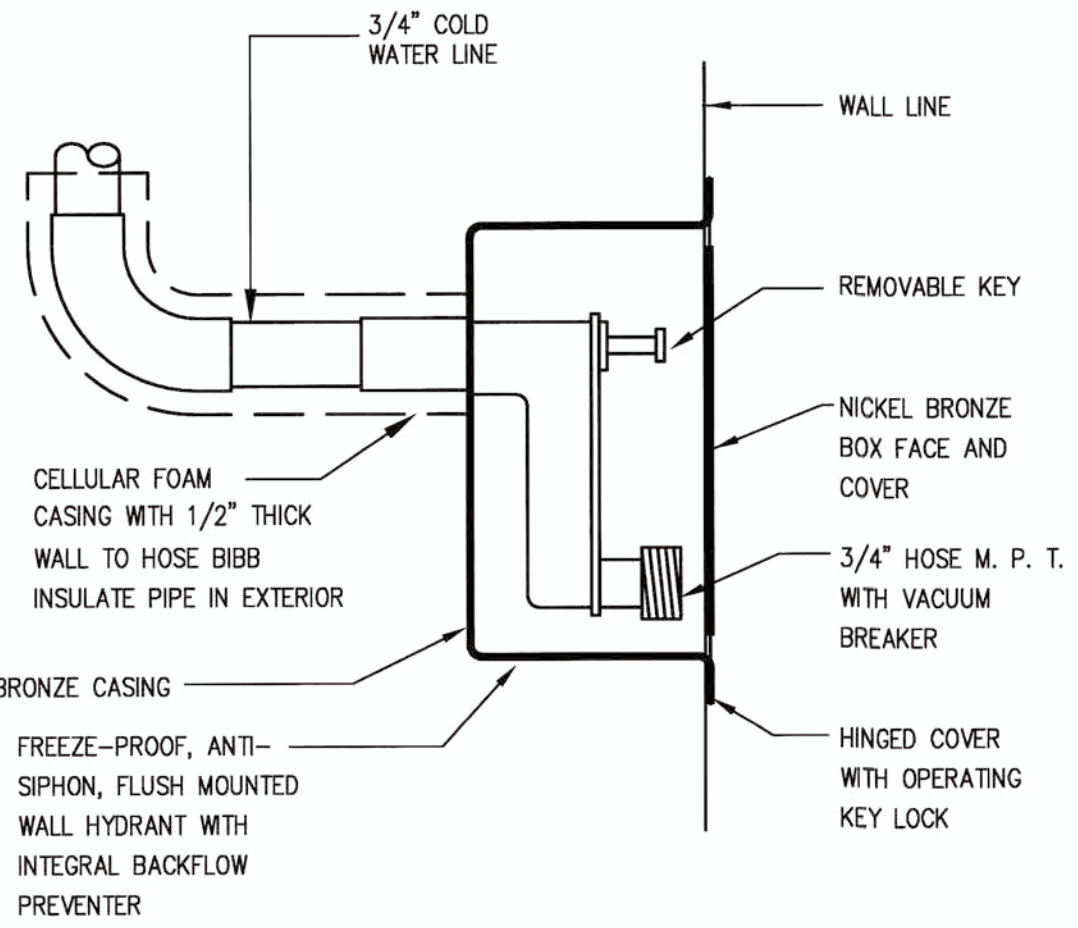
CITY OF SAN ANTONIO CODE COMPLIANCE	
1.	2015 INTERNATIONAL BUILDING CODE WITH LOCAL AMENDMENTS.
2.	2015 INTERNATIONAL ENERGY CONSERVATION CODE WITH LOCAL AMENDMENTS.
3.	2014 NATIONAL ELECTRIC CODE WITH LOCAL AMENDMENTS.
4.	2015 INTERNATIONAL FIRE CODE WITH LOCAL AMENDMENTS.
5.	2015 INTERNATIONAL MECHANICAL CODE WITH LOCAL AMENDMENTS.
6.	2015 INTERNATIONAL PLUMBING CODE WITH LOCAL AMENDMENTS.
* INSTALLATION SHALL ADHERE TO ALL STATE CODES AND LOCAL CODES THAT HAVE AUTHORITY OF JURISDICTION OVER THIS PROJECT. *	

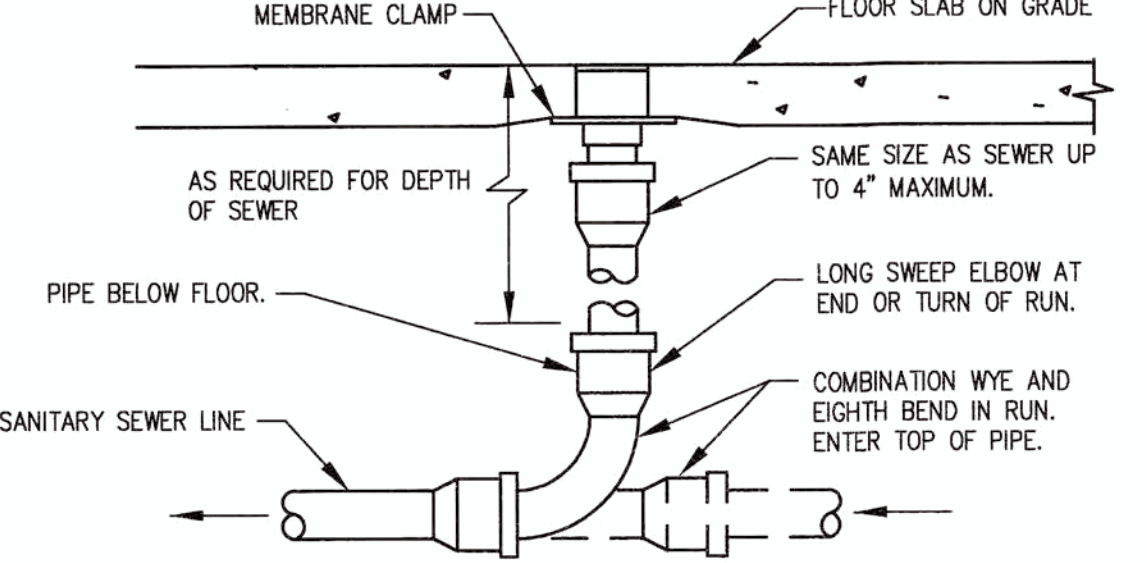
SYMBOL / ABBREVIATION LEGEND	
P.O.C	POINT OF CONNECTION TO EXISTING
Ø	CLEANOUT
⊕	BALL VALVE
⏏	GAS SHUT-OFF VALVE
G-H	WALL CLEANOUT
G	PIPE DROP
⊕	TEE-FITTING DOWN
⊕	PIPE RISER
⊕	UNION
⊕	CAP
BFP	BACKFLOW PREVENTER
(BF)	BELOW FLOOR
CA	COMPRESSED AIR
CW	COLD WATER
(E)	EXISTING
EXT CO	FLUSH EXTERIOR CLEANOUT
EX	EXISTING
FCO	FLOOR CLEANOUT
FD-1	FLOOR DRAIN
FW	FILTERED WATER
FS-1	FLOOR SINK
G	GAS
GW	GREASE WASTE
HW	HOT WATER
HWR	HOT WATER RETURN
(OH)	OVERHEAD
OD	OVERFLOW DRAIN
RD	ROOF DRAIN
SCW	SOFT COLD WATER
SD	STORM DRAIN
SS	SANITARY SEWER
SS/V	COMBINATION SEWER AND VENT
TW	TEMPERED WATER 105°F
V	VENT
VTR	VENT TO ROOF
WCO	WALL CLEANOUT
YCO	YARD CLEANOUT
COTG	CLEANOUT TO GRADE
SS	SANITARY SEWER
V	VENT
CW	COLD WATER
HW	HOT WATER
HW	HOT WATER RETURN
G	GAS PIPING
NOT ALL SYMBOLS & ABBREVIATIONS MAY BE USED	

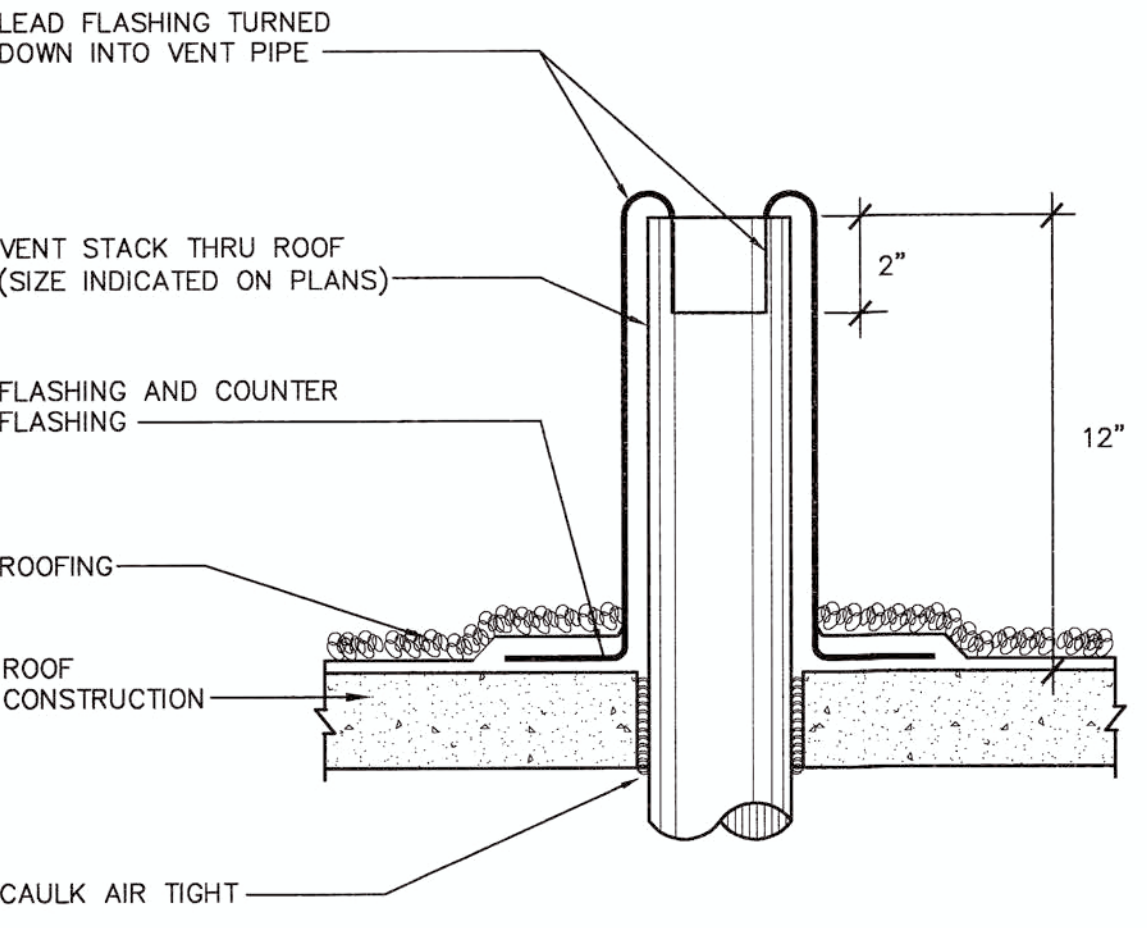
PIPING MATERIALS	
1.	SANITARY/VENT: CAST IRON SOIL PIPING - HUBLESS PIPE AND 300 SERIES STAINLESS FITTINGS. COMPLY WITH ASTM A 888 OR CSPI 301. ALL CAST IRON SOIL PIPE AND FITTINGS SHALL BE MARKED WITH THE COLLECTIVE TRADEMARK OF THE CAST IRON SOIL PIPE INSTITUTE (CISPI) AND BE LISTED BY NSF INTERNATIONAL.
2.	DOMESTIC WATER PIPING BELOW SLAB: TYPE 'K' SOFT DRAWN COPPER WITH NO FITTINGS BELOW SLAB. ASTM B88-03
3.	DOMESTIC WATER PIPING ABOVE SLAB: TYPE 'L' COPPER TUBING WITH 1" THICK INSULATION AND WROUGHT COPPER FITTINGS WITH LEAD-FREE SOLDERED CONNECTIONS. ASTM B88-03
4.	DOMESTIC WATER VALVES: NO GATE VALVES TO BE USED. ALL INLINE VALVES SHALL BE BALL VALVES. LEAD FREE.

DOMESTIC WATER PIPING INSULATION NOTE	
ALL DOMESTIC WATER PIPING THAT IS ABOVE GRADE IN UNCONDITIONED AREAS AND ALL DOMESTIC HOT WATER PIPING SHALL BE INSULATED WITH FIBERGLASS INSULATION WITH AN ALL-SERVICE JACKET OR ARMAFLEX FLEXIBLE ELASTOMETRIC PIPE INSULATION WITH AN ALL-SERVICE JACKET. ELBOWS AND FITTINGS SHALL BE INSULATED AND COVERED WITH ZESTON 2000 25/50 FIRE/SMOKE RATED PVC JACKETS.	

	
NOTES: 1. SUPPORTS SHALL BE ARRANGED SO AS TO BE NEAR THE WEAKEST POINT OF THE SPAN SUCH AS JOINTS, TURNS, AND AT THE BASE OF ALL VERTICAL TO HORIZONTAL OFFSETS AND AT ALL WASTE TRAPS.	
1	PIPE SUPPORT HANGER DETAIL
NONE	

	
3	WALL HYDRANT DETAIL
NONE	

	
2	FLOOR CLEANOUT DETAIL
NONE	

	
4	VENT STACK THRU ROOF DETAIL
NONE	

PLUMBING FIXTURE CONNECTION SCHEDULE											
MARK	FIXTURE/EQUIPMENT	MOUNTING	MANUFACTURER MODEL	DOMESTIC COLD WATER	DOMESTIC HOT WATER 120°F	TEMPERED WATER 105°F	INDIRECT WASTE CONNECTION	SANITARY SEWER	VENT	GAS CONNECTION	REMARKS
HB-1	WALL HYDRANT	WALL	WOODFORD MODEL B65	3/4"	-	-	-	-	-	-	AUTOMATIC DRAINING, FREEZELESS WALL HYDRANT IN WALL BOX WITH HOSE CONNECTION ANTI-SIPHON VACUUM BREAKER, LOOSE KEY OPERATION, WALL CLAMP. COORDINATE WALL THICKNESS WITH ARCHITECTURAL DRAWINGS.

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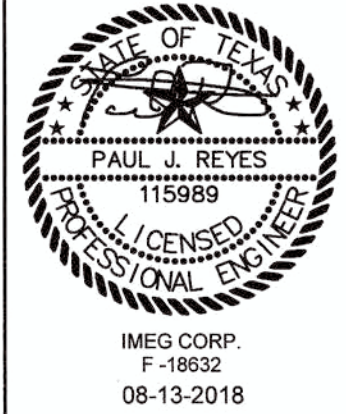
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SAN ANTONIO, TEXAS
PROJECT ADDRESS
PROJECT NAME
SHEET TITLE
PLUMBING SYMBOLS AND ABBREVIATIONS

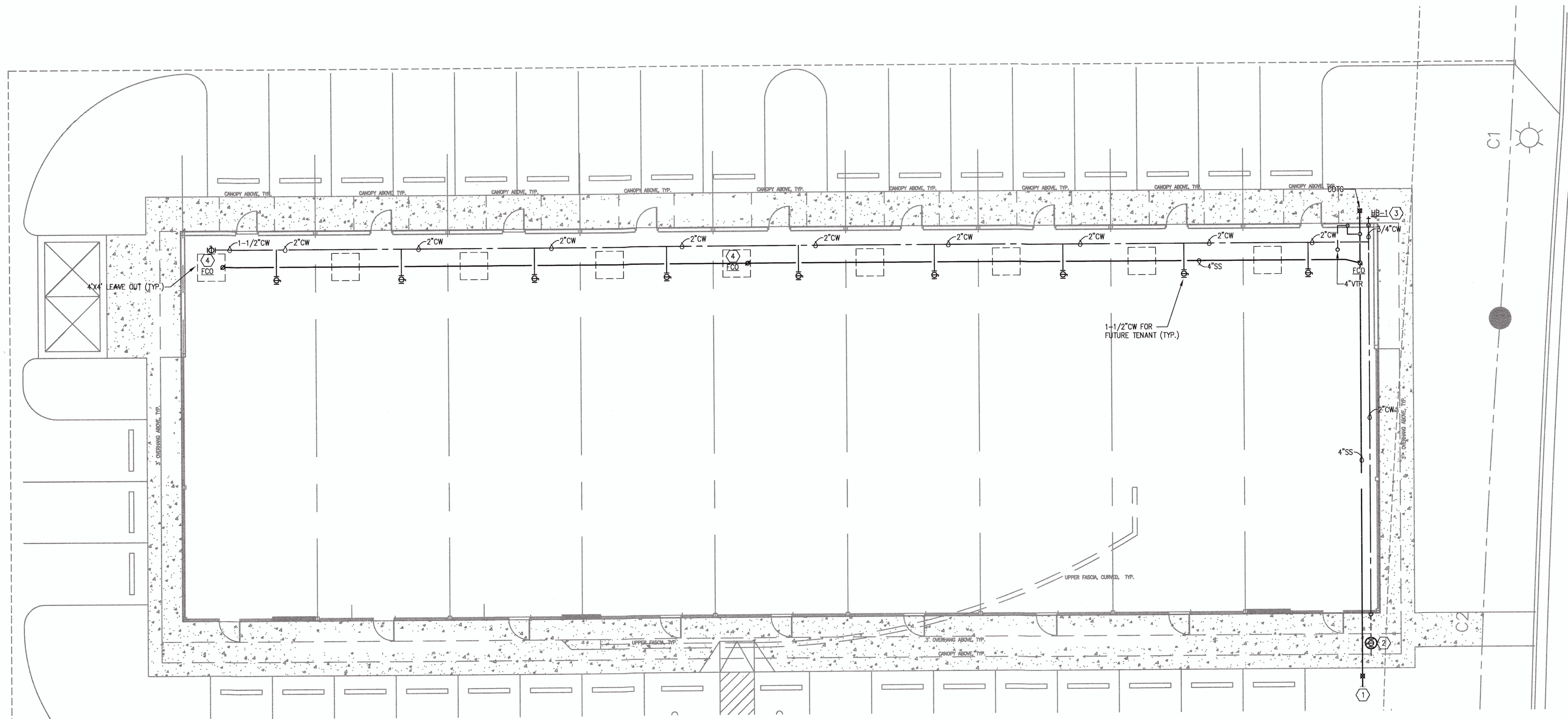
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IMEG PROJECT #: 18003226





1 PLUMBING PLAN
SCALE: 1/8"=1'-0"

KEYED NOTES:

- ① REFER TO CIVIL FOR CONTINUATION.
- ② NEW 2" COLD WATER SUPPLY WITH SHUT-OFF VALVE IN VALVE BOX. CONNECT TO WATER SUPPLY CONNECTION PROVIDED BY SITE UTILITY CONTRACTOR. COORDINATE SIZE AND LOCATION WITH SITE UTILITY CONTRACTOR.
- ③ ROUTE 3/4" WATER LINE TO LOCKABLE FREEZE-PROOF WALL HYDRANT WITH NON-REMOVABLE VACUUM BREAKER.
- ④ EXTEND FLOOR CLEANOUT PIPING TO 24" ABOVE FINISHED FLOOR LEVEL AND CAP. FLOOR CLEANOUT WITH TRAFFIC RATED COVER TO BE INSTALLED DURING TENANT FINISHOUT.



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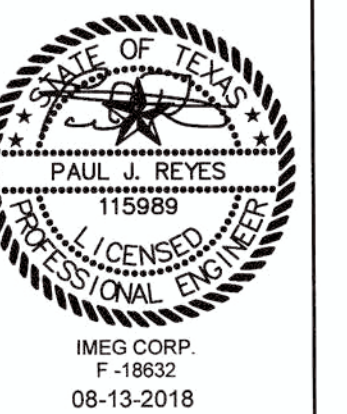
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