

ADDENDUM # 02



1. **Response to Bidder Questions**

Project: Title:

Date:

From:

To:

Q. Did addendum 1 make it to this re-bid? Some folks were saying they did not see 1.1. it.

Springfield City Hall Renovation (2021)

Addendum No. 02

PIVOT Architecture

Interested Bidders

October 20, 2023

- A. See Addendum 1 issued 10.18.2023
- 1.2. **Q.** Generator Back up - there was a question about code and the requirement for battery backup lighting? A. City Hall has emergency lighting circuits so batteries not needed unless code required.
- 1.3. **Q.** There is a request for photos of boxes/HVAC and model numbers. **A.** The HVAC control system is a Tracer Summit version 17.00.0228 Service pack 18.
- 1.4. **Q.** Division 27 does not call out a specific product line for your network that is to be used some of the existing is Panduit is this the product that we are going to continue to use this product or is there an approved equal. **A.** New equipment shall match existing manufacturer.
- 1.5. Q. Regarding project: (650183) Library / City Manager's Office Remodel Project -The door schedules do not appear to assign the hardware groups to each opening. Can this please be clarified? A. See revised section 08 7110 – DOOR HARDWARE SCHEDULE. Replace entire section.
- 1.6. Q. Would like you to verify ADD 1 still applies. It does not appear on the new rebid book or the new listing on EBE. A. See Addendum 1 issued 10.18.2023
- 1.7. Q. Div 00 1000 21 B. a. states base bid to be new LED 2x4 lay in fixtures in the circulation desk area. This is not shown on drawings. How Many are we figuring and are they A1 fixture types? Please advise.
 - A. Base bid layout of 2x4 fixtures included in Addendum 2 drawings.

- 1.8. **Q.** Drawing E122 reference notes 2 and 4 states that we are to run conduits down the wall and under the building.
 - It does not give us conduit sizes or how many.
 A. 3/4" for power and 1" for each data outlet
 - Will you allow all Data in one conduit?
 A. Yes, This is acceptable.
 - This area is over the street and the way the concrete columns are under the building makes this installation tough and costly. Can we come down the column at the West end of the circulation desk, channel the slab between the two openings to feed power and data instead? Or we might be able to use some Connectrac system between the Southwest and Southeast openings. Connectrac is about a dime size high with tapered sides. It goes under the carpet and is ADA compliant. I am open to this
 - **A.** Alternate routing is acceptable. No Connectrac system.
- 1.9. Q. Is there a drawing that shows the location of existing switchboard SBE locations?
 I need this to be able to get a feeder length for the new feed to panel "PLA".
 A. See Addendum 2 drawings
- 1.10. Q. Is there a feeder schedule as we are to install a new feeder (100B) to panel "PLA" I cannot find what size conduit and wire is required?
 B. A. See Addendum 1 issued 10.18.2023
- 1.11. Q. The breaker or fuses that supply a new feeder (100B, sheet E621) for panel "PLA" already in switchboard "SBE" or do we need to supply this?
 A. See Addendum 2 drawings
- 1.12. **Q.** Can you tell what fire alarm panel manufacturer that is on the project and where it is located?
 - A. Fire alarm panel is a Notifier and location known

2. <u>Changes to the Drawings</u>

- 2.1. E100 OVERALL PLAN
 - 2.1.1. (New sheet) Added location of fire alarm panel and switchboard SBE.
- 2.2. E103 LIGHTING DEMOLITION PLAN CM OFFICE dated 08.03.2023
 - 2.2.1. (Reissued) Demolition of existing break room lighting controls.
- 2.3. E111 LIGHTING PLAN CM OFFICE dated 08.03.2023
 - 2.3.1. (Reissued) Connected A1 fixtures to backup power for emergency egress, added lighting controls.
- 2.4. E112 LIGHTING PLAN LIBRARY dated 08.03.2023
 - 2.4.1. (Reissued) Display of existing exit signage

- 2.5. E112 LIGHTING PLAN LIBRARY
 - 2.5.1. (Reissued) Provided A1 fixtures and layout for base bid.
- 2.6. E121 FLOOR PLAN CM OFFICE dated 06.22.2023
 - 2.6.1. (Reissued) Revised break room circuits at kitchenette to be fed from panel FAA.
 - 2.6.2. (Reissued) Identified location of panel FAA.
- 2.7. E121 FLOOR PLAN CM OFFICE
 - 2.7.1. (Reissued) Provided scope for ADA door operator connections.

2.8. E621 – WIRING DIAGRAMS

2.8.1. (Reissued) Added language for fuse replacement at switchboard SBE feeding new panel PLA.

3. <u>Attachments</u>

- 08 7110 DOOR HARDWARE SCHEDULE Revised 10.23.23
- 28 31 00 FIRE ALARM SYSTEM Issued.
- E100 OVERALL PLAN
- E103 LIGHTING DEMOLITION PLAN
- E111 LIGHTING PLAN CM OFFICE
- E112 LIGHTING PLAN LIBRARY
- E121 FLOOR PLAN CM OFFICE
- E621 WIRING DIAGRAMS

End of Addendum # 02

SECTION 08 7110

DOOR HARDWARE SCHEDULE

QTY DESCRIPTION	CATALOG NUMBER	FINISH	MFR
HW SET: 01 - 517A, 403A 3EA <u>BUTTS</u> HINGE 1EA PASSAGE SET 1EA WALL STOP 1EA GASKETING 1EA DOOR BOTTOM	5BB1 4.5 X 4.5 NRP ND10S RHO WS406/407CVX 188S-BK 364AA6	652 626 630 S-BK AA	IVE SCH IVE ZER ZER
HW SET:-02 - LIBRARY MEETIN 3EA BUTTS HINGE 1EA PASSAGE SET 1EA WALL STOP 1EA GASKETING 1EA DOOR BOTTOM 1EA SURFACE CLOSER	G ROOMS, CONFERENCE 5BB1 4.5 X 4.5 NRP ND10S RHO WS406/407CVX 188S-BK 364AA6 4040XP	652 626 630 S-BK AA 689	IVE SCH IVE ZER ZER LCN
HW SET 03 - OFFICES		050	
3EA BUTTS HINGE	5BB1 4.5 X 4.5 NRP	652	
1EA PASSAGE SET	ND10S RHO	626	<u>SCH</u>
1EA WALL STOP	WS406/407CVX	<u>630</u>	<u>IVE</u>
1EA GASKETING	188S-BK	S-BK	ZER

HW SET 04 - DOOR 300B, 319B

1EA DOOR BOTTOM

3EA	BUTTS HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1EA	LOCK SET	ND91S RHO	626	SCH
1EA	WALL STOP	WS406/407CVX	630	IVE
1EA	GASKETING	188S-BK	S-BK	ZER
1EA	SURFACE	4040XP	689	LCN
	CLOSER			

364AA6

ZER

AA

HW SET 04 - DOOR 518A, 321B

3EA	BUTTS HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
<u>1EA</u>	LOCK SET	ND91S RHO	626	<u>SCH</u>
<u>1EA</u>	WALL STOP	WS406/407CVX	630	IVE
1EA	GASKETING	188S-BK	S-BK	ZER
1EA	DOOR BOTTOM	364AA6	AA	ZER
<u>1EA</u>	SURFACE	4040XP	689	LCN
	CLOSER			

HW SET 05 - DOOR 501A, 503A

3EA BUTTS HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1EA PASSAGE SET	ND10S RHO	626	SCH
1EA WALL STOP	WS406/407CVX	630	IVE
1EA GASKETING	188S-BK	S-BK	ZER
1 EA RIM CYLINDER (VERIFY T	YPE)	630	SAR
1 EA ELECTRIC STRIKE	960	630	HES
1 EA AUTO-OPERATOR	4642 WMS	ALUM	LCN
2 EA SURFACE ACTUATORS	8310-3856WS	630	LCN
<u>1 EA RECEIVER</u>	8310-865	N/F	LCN
ACCESS CONTROL PROX CARL	D READER, POWER S	UPPLY, WIRIN	IG, AND
INSTALLATION BY DIVISION 28			
VERIFY TYPE AND QUANTITY C	F RECEIVERS TO INT	ERTIE OPER/	ATOR,
ACTUATORS, AND ELECTRIC S	TRIKE FOR SPECIFIE	D OPERATION	<u>1.</u>

HW SET 06 - DOOR 503B

3EA BUTTS HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1EA PASSAGE SET	ND10S RHO	626	<u>SCH</u>
1EA WALL STOP	WS406/407CVX	630	IVE
1EA GASKETING	188S-BK	S-BK	ZER
1 EA RIM CYLINDER (VER	IFY TYPE)	630	SAR
1 EA ELECTRIC STRIKE	960	630	HES
ACCESS CONTROL PROX	CARD READER, POWER SL	<u>IPPLY, WIRI</u>	NG, AND
INSTALLATION BY DIVISIO	<u>N 28</u>		

END OF SECTION

SECTION 28 31 00 FIRE ALARM SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Design, furnish, install, test, certify, and place into service a complete and satisfactory operating addressable automatic fire alarm and detection system. The system shall be complete with all hardware and software necessary for this installation.
- B. System to include control panel, detection devices, notification appliances, manual stations, digital alarm communicating transmitter, remote annunciator, accessories, raceways, wiring, batteries, and any other necessary accessories and installation materials.
- C. Provide plans, specifications, equipment list and calculations for permit review by the Fire Marshal.

1.02 DESCRIPTION OF SYSTEM

- A. This is an existing system. New devices added as part of project shall be compatible with existing fire alarm panel.
- B. System Operation:
 - 1. Alarm Initiation to Cause:
 - a. Audible and visual zone identification at Control Panel and annunciators.
 - b. Lamp to light in base of initiating detector; or if detector is concealed from view, light a remote lamp at nearest visible location.
 - c. Transmission of alarm to remote monitoring station via 2-line automatic telephone dialer.
 - d. All horns to sound selected tone.
 - e. All strobes to flash.
 - 2. Audible alarm may be manually silenced at Control Panel. Alarm signal circuit and zone alarm light shall remain initiated until actuated devices have been restored to normal and Control Panel reset.
 - 3. Trouble Signal Caused By:
 - a. An open or short in detector or signaling loop wiring.
 - b. Removing any initiating or signaling device from system.
 - c. Moving any sprinkler system valve from the full open position.
 - d. Failure of battery charger.
 - 4. Trouble initiation to cause: Audible and visual indication at the Control Panel.
 - 5. Audible trouble indication may be silenced at Control Panel. Trouble circuit and zone light to remain initiated until trouble corrected.
 - 6. Trouble circuit to be self-restoring after correction of problem or have automatic "ringback" if left in silenced condition.
 - 7. Alarm shall override trouble.

1.03 REFERENCE STANDARDS

- A. NFPA 72: National Fire Alarm Code
- B. NFPA 101: Life-Safety Code
- C. Uniform Fire Code
- D. Oregon Structural Specialty Code
- E. UL-STD 864, UL-UOJZ

1.04 PLAN SUBMITTAL AND INSPECTION REQUIREMENTS

A. Plans and Specifications submittal: Three complete plans and specifications for fire alarm systems shall be submitted for review and approval prior to system installation. Plan review fees must be paid before picking up the approved set of plans. Plans and specifications shall

be submitted to the Permit and Information Center. Provide Owner with a copy of the approved plans.

- B. Plans and specifications shall include, at minimum, the following information. Provide additional information as required by Fire Marshal:
 - 1. Floor plan with rooms labeled and occupancy use noted.
 - a. Location of all initiating, notifications devices, control panel, and remote annunciator.
 - b. Mounting heights and ceiling description where detectors are installed.
 - 2. Point to point system wiring diagram
 - a. Devices, controls, and end-of-line location for each circuit.
 - b. Number of conductors and wire gauge for each circuit run
 - c. Zone identification
 - 3. Voltage drop calculation
 - a. Devices, length, resistance of wire, and end-of-line voltage for each circuit
 - 4. Battery calculation.
 - 5. Other information required by the local authority having jurisdiction.
- C. Location and Security: The alarm control unit, remote annunciator panel, and access keys to locked fire alarm equipment shall be installed and maintained in a lock box location approved by the Fire Marshall. Lockbox to be provided by the Contractor. Written operating instructions shall be provided within the alarm control unit. Lock box to meet requirements of Fire Marshal.
- D. Operations and Maintenance Data:
 - 1. Submit operating and instruction manuals prior to testing of the system.
 - 2. Submit one complete hard copy and one complete digital copy set of project specific operating and maintenance instruction manuals upon successful completion of testing. Provide complete, step-by-step testing instructions giving recommended and required testing frequency of all equipment, methods for testing each piece of equipment, and a complete trouble shooting manual explaining how to test the primary internal parts of each piece of equipment. Maintenance instructions shall be complete, easy to read, understandable, and shall provide the following information:
 - a. Provide instructions for replacing any components of the system, including internal parts.
 - b. Provide a list of recommended spare parts.
 - c. Provide instructions for periodic cleaning and adjustment of equipment with a schedule of these functions.
 - d. Provide a complete list of all equipment and components with information as to the address and telephone number of both the manufacturer and local supplier of each item.
 - e. Specific equipment model number and serial number shall be identified for the O&M manual of the equipment or parts installed. Generic O&M manuals is not acceptable.
 - 3. Provide operating instructions prominently displayed on a separate sheet located next to the FAP in accordance with UL Standard 864.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Same as existing.

2.02 COMBINATION HORN/STROBE

- A. Electronic Horn:
 - 1. Selectable horn or temporal (Code 3) tones
 - 2. 3 selectable dBA levels: 90, 95, 99 dBA Anechoic at 10' for both tones
- B. Electronic Strobe:
 - 1. Capable of being synchronized by adding synchronization module
 - 2. 0.2 sec maximum pulse duration with 40% duty cycle
 - 3. Flash rate of 1 Hz to 2 Hz
 - 4. Clear or nominal white light source not to exceed 1000 cd.

COS City Hall HVAC Modifications Design CONSTRUCTION DOCUMENTS SWE# Z005.01

- 5. Minimum intensity: 75 candela. 15/75 candela unit is not acceptable.
- C. Audio and strobe inputs shall be supervised.

2.03 ELECTRONIC HORN

- A. Selectable horn or temporal (Code 3) tones
- B. 3 selectable dBA levels: 90, 95, 99 dBA Anechoic at 10' for both tones
- C. Exterior horns shall be weatherproof and listed for outdoor use.

2.04 ELECTRONIC STROBE

- A. Capable of being synchronized by adding synchronization module
- B. 0.2 sec maximum pulse duration with 40% duty cycle
- C. Flash rate of 1 Hz to 2 Hz
- D. Clear or nominal white light source not to exceed 1000 cd.
- E. Input shall be supervised
- F. Minimum intensity: 75 candela. 15/75 candela unit is not acceptable

2.05 WIRING

- A. Type:
 - 1. UL listed limited energy cable for fire protective signaling
 - 2. Conductors: Minimum size No. 18 AWG, solid, color coded, shielded where required by manufacturer.
 - 3. Overall PVC jacket, red color
 - 4. Belden Fire Alarm Cable or equivalent
- B. Size: The sizes and quantity of the different wires shall be those specified by the manufacturer. Color code shall be used where specified.

PART 3 - EXECUTION

3.01 WIRING

- A. Raceway:
 - 1. Raceway not required where wiring is accessible and concealed above ceiling or in chase. Raceway is required in all other areas.
 - 2. Install surface non-metallic raceway for surface wiring in finished areas. Install conduit in all other areas where raceway is required.
- B. Wire:
 - 1. All wires shall be tagged at all junction points and shall be free from ground or crosses between conductors.
- C. Maintain existing system fully operational until new has been tested and accepted. As new equipment is installed label existing equipment "NOT IN SERVICE UNTIL ACCEPTED".
- D. Ground equipment and conductor and cable shields. For audio circuits, minimize to the greatest extent possible ground loops, common mode returns, noise pickup, cross talk, and other impairments. Provide 5-ohm ground at main equipment location. Measure, record, and report ground resistance.
- E. The Contractor shall provide for a communication line from the fire alarm master to the building security panel for monitoring alarm conditions. The Contractor shall pay all costs associated with connecting to the building security panel.

3.02 FIELD QUALITY CONTROL

- A. Provide services of a factory-authorized service representative to supervise the field assembly and connection of components and the pretesting, testing, and adjustment of the system.
- B. Provide a 10-day minimum notice in writing when the system is ready for final acceptance testing.

- C. Final Acceptance Test: Test the system according to the procedures outlined in NFPA 72. Minimum required tests are as follows:
 - 1. Verify the absence of unwanted voltages between circuit conductors and ground.
 - 2. Megger test all conductors other than those intentionally and permanently grounded with electronic components disconnected. Test for resistance to ground. Report readings less than 1-megaohm for evaluation.
 - 3. Test all conductors for short circuits utilizing an insulation-testing device.
 - 4. With each circuit pair, short circuit at the far end of the circuit and measure the circuit resistance with an ohmmeter. Record the circuit resistance of each circuit on the record drawings.
 - 5. Verify the control unit is in the normal condition as detailed in the manufacturer's operating and maintenance manual.
 - 6. Test initiating and indicating circuits for proper signal transmission under open circuit conditions. One connection each should be opened at not less than 10 percent of the initiating and indicating devices. Observe proper signal transmission according to class of wiring used.
 - 7. Test each initiating and indicating device for alarm operation and proper response at the control unit. Test smoke detectors with actual products of combustion.
 - 8. Test the system for all specified functions according to the manufacturer's operating and maintenance manual. Systematically initiate specified functional performance items at each station including making all possible alarm and monitoring initiations and using all communications options. For each item, observe related performance at all devices required to be affected by the item under all system sequences. Observe indicating lights, displays, signal tones, and annunciator indications. Observe all voice audio for routing, clarity, quality, freedom from noise and distortion, and proper volume level.
 - 9. Test both primary power and secondary power. Verify, by test, the secondary power system is capable of operating the system for the period and in the manner specified.
- D. Retesting: Correct deficiencies indicated by tests and completely retest work affected by such deficiencies. Verify by the system test that the total system meets the Specifications and complies with applicable standards.
- E. Report of Tests and Inspections: Provide a written record of inspections, tests, and detailed test results in the form of a test log. Submit log upon the satisfactory completion of tests.
- F. Tag all equipment, stations, and other components at which tests have been satisfactorily completed.

3.03 VOLTAGE DROP TESTING

- A. Verify voltage drop for each indicating circuit using a calibrated digital Volt-Ohm-Meter calibrated within the past 6-months. Proof of calibration to be provided with test results.
 - 1. Energize each indicating circuit by placing the system into alarm condition.
 - 2. Measure the voltage at the source of each indicating circuit.
 - 3. Measure the voltage at the end-of-line resistor of each indicating circuit.
 - 4. Subtract the end-of-line voltage from the source voltage for each indicating circuit.
 - 5. Divide the difference by the source voltage for each indicating circuit.
 - 6. The value remaining is the percent voltage drop for each indicating circuit.
 - 7. This value shall not exceed the maximum 10% voltage drop as specified above.
 - 8. Provide all documentation to the City Representative.
 - 9. The City Representative reserves the right to verify the voltage measurements with additional measuring instruments of the City's choice.

3.04 CLEANING AND ADJUSTING

A. Remove paint splatters and other spots, dirt, and debris. Touch up scratches and mars of finish to match original finish. Clean unit internally using methods and materials recommended by manufacturer.

3.05 CERTIFICATION

A. The installer shall provide written certification to the Fire Marshal and to the Owner that the system has been installed in accordance with the approved plans and specifications.

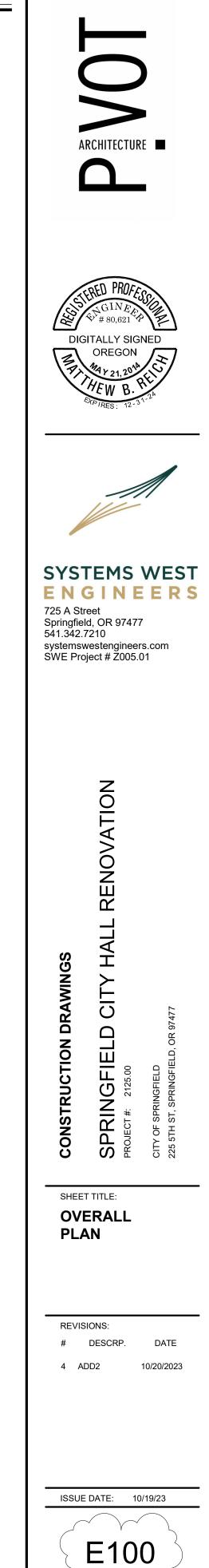
END OF SECTION

ED ON: 10/20/2023 1:04:09 PM FROM FILE: C:\Users\ajv\Documents\Z005.01_COS City Hall_Central_avanderplaat@systemswestengineers.com

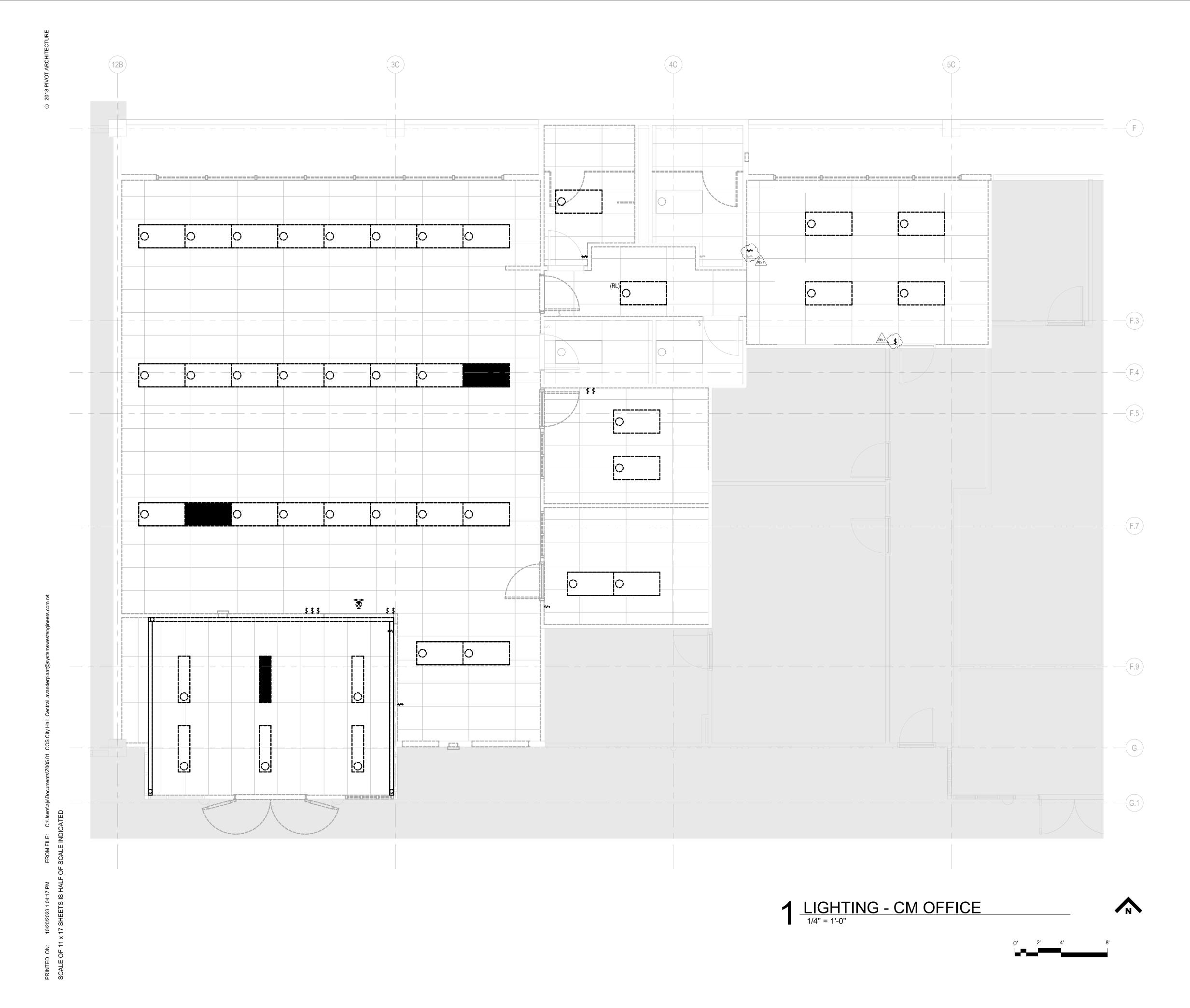
© 2018 PIVOT ARCHITECTURE



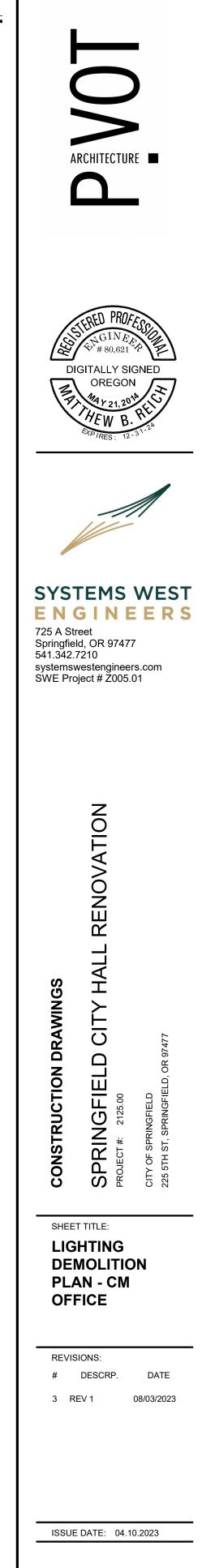
 INFORMATION PRESENTED ON DRAWINGS IS BASED ON LIMITED SITE VISIT OBSERVATIONS AND AS-BUILT DRAWINGS. CONTRACTOR SHALL VERIFY ACTUAL CONDITIONS PRIOR TO COMMENCING WORK.



KEYPLAN

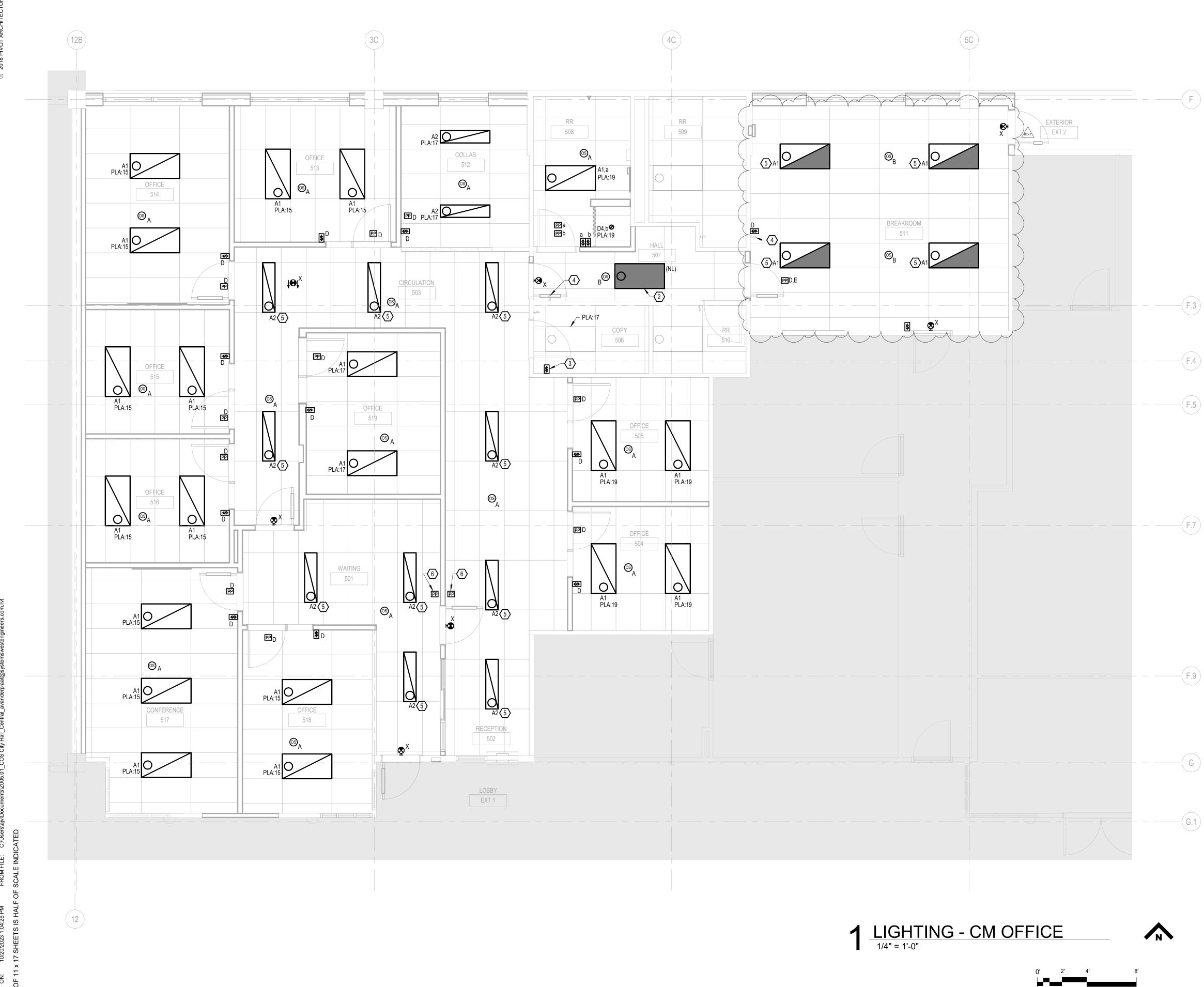


 INFORMATION PRESENTED ON DRAWINGS IS BASED ON LIMITED SITE VISIT OBSERVATIONS AND AS-BUILT DRAWINGS. CONTRACTOR SHALL VERIFY ACTUAL CONDITIONS PRIOR TO COMMENCING WORK.



Ε	1	03
	•	

KEYPLAN	



- INFORMATION PRESENTED ON DRAWINGS IS BASED ON LIMITED SITE VISIT OBSERVATIONS AND AS-BUILT DRAWINGS. CONTRACTOR SHALL VERIFY ACTUAL CONDITIONS PRIOR TO COMMENCING WORK.
- 2. FIXTURES SHOWN AS EXISTING WITH A CIRCUIT TAG WILL NEED TO BE RECONNECTED TO THE INDICATED CIRCUIT AS WELL AS EXISTING CONTROLS, UON.
- 3. EXTEND EMERGENCY CIRCUIT MADE AVAILABLE DURING DEMOLITION TO SERVE NEW EXIT SIGNS SHOWN ON SHEET.

REFERENCE NOTES:

-(F.4)

-(F.9)

G

G.1

- 2 RECONNECT FIXTURE TO EXISTING 3-WAY SWITCHING CONTROLLING HALL 507 AND BREAKROOM 511. UTILIZE EXISTING EMERGENCY CIRCUIT MADE AVAILABLE DURING DEMOLITION TO SERVE FIXTURE.
- 3 NLIGHT NDTC CONTROLLER
- 4 RECONNECT CONTROLS TO RELOCATED FIXTURE IN HALL 507.
- 5 UTILIZE EXISTING EMERGENCY CIRCUIT MADE AVAILABLE DURING DEMOLITION TO SERVE FIXTURE.
- 6 CONNECT POWER PACK BACK TO NDTC CONTROLLER TO PROVIDE TIMECLOCK CONTROL OF FIXTURES IN THIS SPACE.

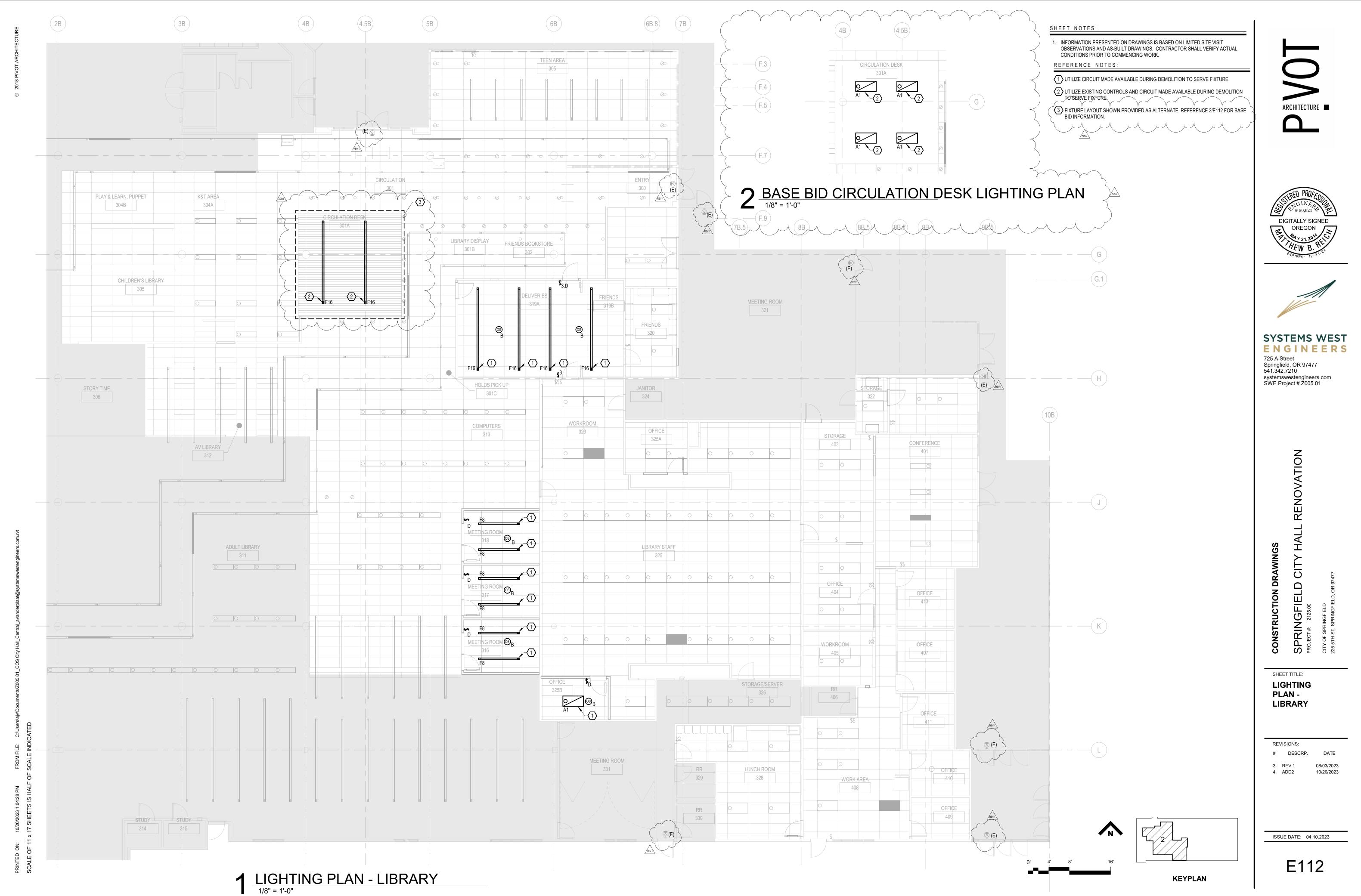
AI	RCHITECTUR	
DIG	GINE GINE # 80,621 GITALLY SIG OREGON HEW B. EXPIRES: 12-	
ENC 725 A Stringfiel 541.342.7 systemsw	GINE eet d, OR 97477	rs.com
CONSTRUCTION DRAWINGS	SPRINGFIELD CITY HALL RENOVATION PROJECT #: 2125.00	CITY OF SPRINGFIELD 225 5TH ST, SPRINGFIELD, OR 97477
LIG PLA OFF		
		DATE 08/03/2023 0.2023

1	1	

KEYPLAN	

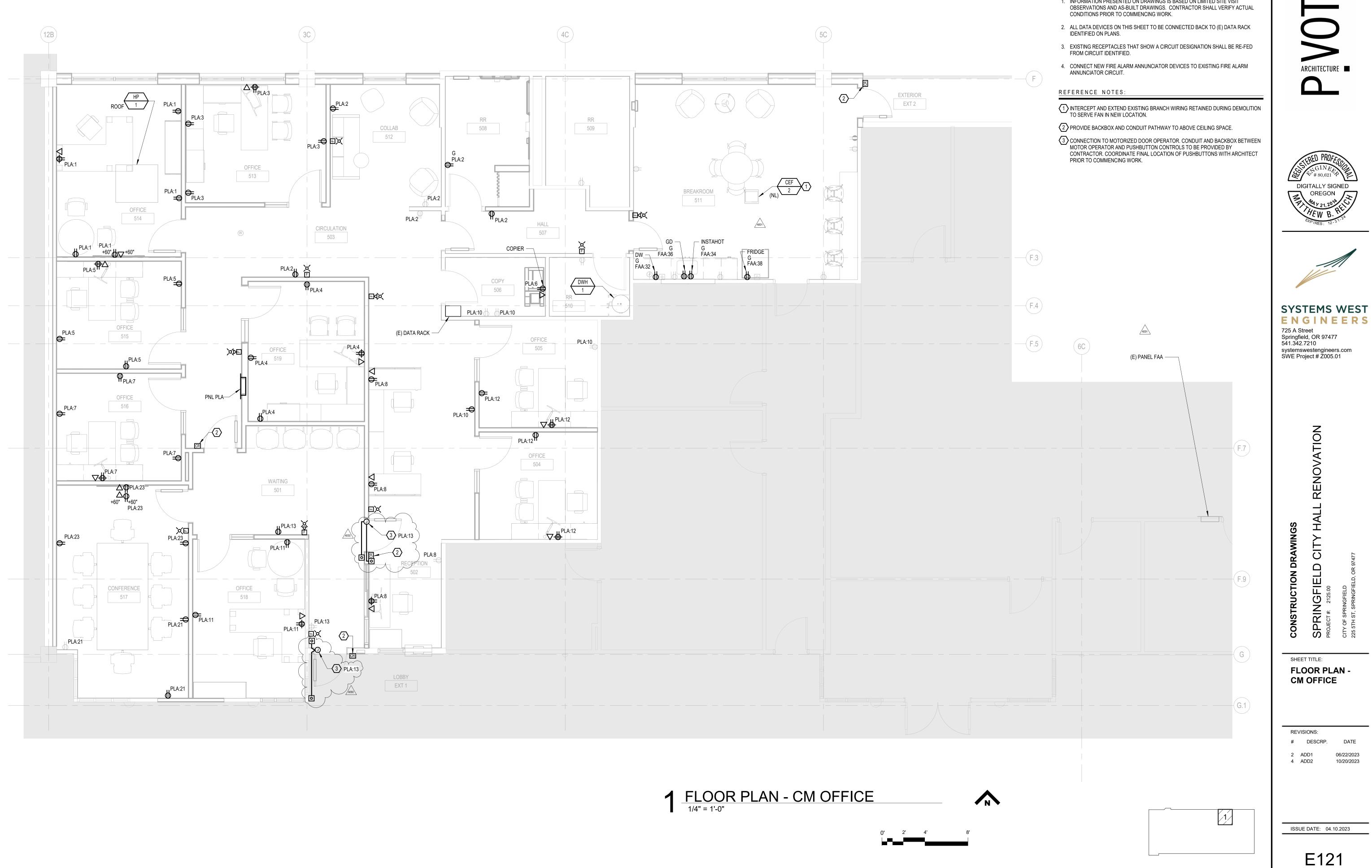
/1/

© Systems West Engineers, Inc. 2023. The signature in this document is encrypted. Editing this document is prohibited. (OAR 820)



© Systems West Engineers, Inc. 2023. The signature in this document is encrypted. Editing this document is prohibited. (OAR 820)







- 1. INFORMATION PRESENTED ON DRAWINGS IS BASED ON LIMITED SITE VISIT





KEYPLAN

© Systems West Engineers, Inc. 2023. The signature in this document is encrypted. Editing this document is prohibited. (OAR 820)

		CODDET					
COPPER, 3-PHASE, 3-WIRE PLUS GROUND CONDUIT PHASE CONDUCTORS GR					GROUND CO	NDUCTORS	
FEEDER TAG	NOMINAL RATING (A)	TOTAL QTY	NOMINAL DIAMETER (INCHES)	TOTAL QTY	AWG OR KCMIL	TOTAL QTY	AWG OR KCMIL
20A	20	1	0.75	3	12	1	12
25A	25	1	0.75	3	10	1	10
30A	30	1	0.75	3	10	1	10
35A	35	1	1	3	8	1	10
40A	40	1	1	3	8	1	10
50A	50	1	1	3	6	1	10
60A	60	1	1	3	6	1	10
70A	70	1	1	3	4	1	8
80A	80	1	1.25	3	3	1	8
90A	90	1	1.25	3	3	1	8
100A	100	1	1.25	3	3	1	8
110A	110	1	1.5	3	2	1	8
125A	125	1	1.5	3	1	1	6
150A	150	1	1.5	3	1/0	1	6
175A	175	1	2	3	2/0	1	6
200A	200	1	2	3	3/0	1	6
225A	225	1	2	3	4/0	1	4
250A	250	1	2.5	3	250	1	4
300A	300	1	3	3	350	1	4
350A	350	1	3	3	400	1	3
400A	400	2	2.5	6	3/0	2	3
450A	450	2	2.5	6	4/0	2	2
500A	500	2	3	6	250	2	2
600A	600	2	3	6	350	2	1
800A	800	3	3	9	300	3	1/0
1000A	1000	3	3.5	9	400	3	2/0
1200A	1200	4	3	12	350	4	3/0
1600A	1600	5	3.5	15	400	5	4/0
2000A	2000	6	3.5	18	400	6	250
2500A	2500	7	3.5	21	500	7	350
3000A	3000	8	3.5	24	500	8	400

		COPPER		CHEDULE -WIRE PLUS G	GROUND		
FEEDER TAG	NOMINAL RATING (A)	CONDUIT		PHASE & NEUTRAL CONDUCTORS		GROUND CONDUCTORS	
		TOTAL QTY	NOMINAL DIAMETER (INCHES)	TOTAL QTY	AWG OR KCMIL	TOTAL QTY	AWG OR KCMIL
20B	20	1	0.75	4	12	1	12
25B	25	1	0.75	4	10	1	10
30B	30	1	0.75	4	10	1	10
35B	35	1	1	4	8	1	10
40B	40	1	1	4	8	1	10
50B	50	1	1.25	4	6	1	8
60B	60	1	1.25	4	6	1	8
70B	70	1	1.25	4	4	1	8
80B	80	1	1.25	4	3	1	8
90B	90	1	1.5	4	3	1	8
100B	100	1	1.5	4	3	1	8
110B	110	1	1.5	4	2	1	6
125B	125	1	1.5	4	1	1	6
150B	150	1	2	4	1/0	1	6
175B	175	1	2	4	2/0	1	6
200B	200	1	25	4	3/0	1	6
225B	225	1	2.5	4	4/0	1	4
250B	250	1	3	4	250	1	4
300B	300	1	3.5	4	350	1	2
350B	350	1	3.5	4	500	1	1
400B	400	2	2.5	8	3/0	2	2
450B	450	2	2.5	8	4/0	2	2
500B	500	2	3	8	250	2	1
600B	600	2	3.5	8	350	2	1
800B	800	3	3.5	12	300	3	1/0
1000B	1000	3	4	12	500	3	2/0
1200B	1200	4	4	16	400	4	3/0
1600B	1600	5	4	20	500	5	4/0
2000B	2000	6	4	24	500	6	250
2500B	2500	8	4	32	500	8	350
3000B	3000	9	4	36	500	9	400

CEA



_____LEVEL 2 _____LEVEL 1 #1 #2 #3 #4 #5 #6 #7 T T T T T T TO MECHANICAL EQUIPMENT PANELBOARDS ON ROOF (100B) <100A 3F 100AF \$\$ 200A 2 100A 3P 100AF ^o1200A _3P (M) Т (E) SWITCHBOARD SBE 208/120V, 1200A 3-PHASE, 4-WIRE TO (E) UTILITY – – **ONE-LINE DIAGRAM** 1 NOT TO SCALE

