

DIRECTOR REPORT

STAFF RECOMMENDATION

Staff recommends the Zoning Administrator approve, with conditions, a Conditional Use Permit Major Modification, for the project known as **Z24-105**. Draft Conditions of Approval and Findings of Fact for the project are included below.

REQUESTED ENTITLEMENTS

Conditional Use Permit Modification of Z18-045, to amend Planning condition of approval #14 regarding the prohibition of generators for cannabis production, on 9.69 acres in the Heavy Industrial zone (M-2S).

PROJECT INFORMATION

Location:	8151 Fruitridge Road
Parcel Number:	061-0010-046-0000
Council District:	6 (Eric Guerra)
Applicant:	Heidi Vermillion, Presidential Project Management 8151 Fruitridge Road, Sacramento, CA 95828
Property Owner:	Todd Sperber, STS Fruitridge LLC 2264 Fair Oaks Blvd, Ste 203, Sacramento, CA 95825
Project Planner:	Robert W. Williams, Associate Planner

Land Use Information

2040 General Plan:	Industrial Mixed Use
Community Plan Area:	Fruitridge/Broadway
Specific Plan:	n/a
Zoning:	Heavy Industrial Zone (M-2S)
Special Planning District:	n/a
Planned Unit Development:	n/a
Design Review Area:	Citywide
Parking District:	Suburban
Historic Landmark:	n/a
Historic District:	n/a

Surrounding Land Use and Zoning

North:	M-2S	Industrial
South:	A-OS-SPD	Industrial
East:	M-2S	Industrial
West:	M-2S	Industrial

Site Characteristics

Existing Property Area:	±422,096 square feet / ±9.69 acres
Property Dimensions:	Irregular, ±591'W x ±780'L
Existing Building Info:	±225,209 SF – 2-story – Built 1961 to 1973
Topography:	Flat
Street Improvements:	Existing
Utilities:	Existing
Existing Land Use:	Industrial/Warehouses

Other Information

Concurrent Files:	n/a
Previous Files:	Z18-045, Z19-102, Z23-007

ATTACHMENTS: Project Plans and Generator Specifications

Background*Existing Site*

The project site is located on the north side of Fruitridge Road, approximately 1,000 feet east of Power Inn Road, in the SE industrial area of the City. The project area is part of the original 153.5-acre Proctor and Gamble Manufacturing Company (P&G) site, which was developed in the early 1950's. Much of the original P&G site was vacant until recent decades and has been subdivided and developed for other industrial uses. The P&G plant remains in operation on the adjacent property to the east. There is a small

parking lot in front of the buildings, with additional parking located on the adjacent lot. Sacramento County Assessor data indicates the existing buildings onsite total 225,209 square feet with a ground floor area of 169,160 square feet, constructed in 1961. Aerial records indicate that most of the structures were present in 1953, with an addition that was constructed prior to 1968.

Figure #1: Aerial Site Plan



Prior Entitlements and information

- Z18-045: On September 05, 2018, the Zoning Administrator approved a CUP for 190,000 square feet of cannabis production, in what was then stated as a total of 190,000 square feet in two of the three buildings. The 190,000 square feet of cannabis production was entirely approved for cultivation, without any manufacturing or distribution proposed. However, the 190,000-square foot size calculation was not correct, and did not accurately reflect building dimensions. This CUP approval also included a special condition (#16) that the applicant shall obtain building permits and commence construction no later than September 5, 2019, or the CUP would expire.
- Z19-102: On November 07, 2019, the Zoning Administrator approved a Minor Modification of the CUP to remove this one-year deadline (Z19-102), thereby allowing the CUP to be valid for the standard three-year period, until September 05, 2021. On March 17, 2020, the City Council passed an emergency interim ordinance for all approved land use entitlements, which waived expiration deadlines for up to one year (OR2020-0014). Therefore, the original CUP (Z18-045) remained valid for

an additional year, until September 05, 2022.

- **Z23-007:** On June 23, 2023, the Zoning Administrator approved a Minor Modification of the previous CUP to decrease the previously approved square footage of the cannabis cultivation areas, and to add new cannabis distribution areas.

After the approval of Z23-007, building permits were obtained to modify the site, and according to City records, an active cultivation and distribution license has been secured.

Southeast Area Cannabis Production Cap

On June 22, 2018, Ordinance 2018-0022 amending Title 17 of the Sacramento City Code became effective, defining the undue concentration of cannabis production establishments in the southeast area of the City. The ordinance states that an undue concentration of cannabis production establishments will exist if more than 2.5 million square feet of building floor space is approved by CUP for cannabis cultivation and cannabis distribution use in this area. The boundaries of the southeast area are Power Inn Road to the west, Folsom Boulevard to the north, and the City limits to the east and south. Building floor space designated for a cannabis manufacturing use in a conditional use permit is excluded from the 2.5 million square footage calculation.

The table below shows the proposed square footage of each type of previously proposed cannabis use as provided by the applicant.

Table 1: Proposed Cannabis Production Uses in Square Feet for Z23-007

Production Type	Z23-007
<i>Building Sizes:</i>	182,622
Cultivation:	180,322
Distribution:	2,300
SE area cap use:	182,622
Manufacturing:	0
Production Total:	182,622

Proposed Project and Analysis

Conditional Use Permit modification to amend Condition #14 of Z18-045

Condition #14 of the original CUP of Z18-045 for cannabis production states: “All cannabis project facilities shall be connected to SMUD or PG&E facilities for the supply of all electrical power. Generators shall be used for emergency electrical service for the duration of any power outage.”

Cultivation sites use a substantial amount of electrical power, and many existing sites require significant electrical service upgrades to provide electrical power. Some sites in the past attempted to operate generators almost exclusively rather than upgrading their electrical systems.

The site plan illustrates the proposed project area, including existing and proposed buildings, parking, and other features. Key elements include:

- (E) BUILDING C ADJ. TENANT SPACE**: 1 STORY - 42,617 G.S.F. (NOT PART OF PROJECT)
- (E) BUILDING A**: 1 STORY - 60,949 G.S.F.
- (E) BUILDING B**: 2 STORY - 121,673 G.S.F.
- (E) TRUCK LOT**: Located at the top right of the site.
- (E) LOADING DOCK**: Located on the left side of the site.
- (E) TRASH ENCLOSURE**: Located on the left side of the site.
- (E) FENCE**: Located along the bottom left boundary.
- (E) DRIVEWAY**: Located at the bottom left corner.
- (E) ROW OF PARKING**: Located along the bottom boundary.
- (E) CONC. WALK, TYP.**: Located along the bottom boundary.
- (E) WATER VALVE**: Located near the bottom center.
- (E) FIRE HYDRANT**: Located near the bottom center.
- (E) ACCESSIBLE PARKING**: Located near the bottom center.
- (E) LONG-TERM BICYCLE PARKING**: Located near the bottom right corner.
- EXISTING FULL-HEIGHT DEMISING WALL**: Located between Building A and Building B.
- PROJECT PARCEL PROPERTY LINE @ WALL SHOWN OFFSET FOR GRAPHICAL CLARITY**: Indicated by a dashed line at the top.
- EXISTING RATED WALL @ PROPERTY LINE**: Indicated by a solid line at the top.
- AREA OF HATCH**: Located at the top right corner.
- PROPOSED**: Indicated by a dashed line at the top right corner.
- Dimensions and Bearings**: Various dimensions and bearings are provided for the site boundaries and building footprints, including:
 - N89°05'54"E 657.35
 - N00°24'43"W 6.81
 - S89°35'17"W 16.82
 - S00°52'00"E 63.77
 - S00°52'00"E 460.82
 - S89°08'00"W 52.00
 - S00°52'00"E 166.91
 - N89°08'00"E 11.00
 - R 50' - 0"
 - 15SP @ 9'-0" EA = 135' - 0"
 - 13SP @ 9'-0" EA = 117' - 0"
 - 8SP @ 9'-0" EA = 72' - 0"
 - 19' - 0"
 - 20' - 0"
 - 302'-9"
 - 200'-9"
 - 207'-8"

Neighborhood Context

The subject property is in the Heavy Industrial zone (M-2S). The surrounding area is mostly used for industrial purposes. There are no residential zones in the immediate vicinity. A 600-foot radius map of surrounding uses, provided by the applicant, has been reviewed by staff, and the property is not within 600 feet of a K-12 school, or a neighborhood park or community park as required by City Code Section 17.228.900.

Agency Comments

The project has been reviewed by the City Police Department, and the Fire Department (Fire). Additionally, the Sacramento Municipal Utility District (SMUD), and the Sacramento Area Sewer District (SASD) have reviewed the project. The comments that were received pertaining to the project have been included as conditions of approval. The Police Department will provide their specific security conditions within the Business Operations Permit, which is updated annually.

Environmental Determination

This project will not have a significant effect on the environment and is exempt from environmental review pursuant to California Environmental Quality Act Guidelines, Class 1, Section Number 15301, Existing Facilities.

Flood Hazard Zone

State Law (SB 5) and Planning and Development Code chapter 17.810 require that the City must make specific findings prior to approving certain entitlements for projects within a flood hazard zone. The project site is within a flood hazard zone and is an area covered by SAFCA's Improvements to the State Plan of Flood Control System, and specific findings related to the level of protection have been incorporated as part of this project. Even though the project site is within a flood hazard zone, the facilities of the State Plan of Flood Control or other flood management facilities protect the project to the urban level of flood protection. This is based on the SAFCA Urban Level of Flood Protection Engineer's Reports accepted by the City Council on October 21, 2025 (Resolution No. 2025-0283).

Community/Neighborhood Contact

On October 15, 2025, the project was routed by email to community groups, including the Power Inn Alliance and Preservation Sacramento. On November 26, 2025, a notice of public hearing for the proposed project was mailed. At the time of this report, staff has not received any comments about the project.

Director Hearing

The public hearing is scheduled for December 18, 2025. Staff recommends that the Zoning Administrator approve the project per the proposed findings of fact and with the draft conditions listed below. Staff recommends a condition to require a connection to SMUD for primary power, using the maximum amount of SMUD provided power possible, while using supplemental generator power only for the energy needed for full realization of entitled cannabis cultivation activities.

Staff finds the proposed modification to the existing cannabis production facility to be

appropriate for this location as the generator operations will have a minimal impact on the adjacent industrially zoned neighborhood.

Findings of Fact – Conditional Use Permit Modification – Cannabis Production

1. The proposed use and its operating characteristics are consistent with the 2040 General Plan designation, Industrial Mixed Use. Industrial designated areas represent the built form typically associated with manufacturing, warehousing, and other industrial activities. There is no applicable specific plan or transit village plan for this property.
2. The proposed use and its operating characteristics are consistent with the applicable standards, requirements, and regulations of the zoning district in which it is located, and of all other provisions of this title and this code, in that the site is zoned Heavy Industrial (M-2S), which allows for the manufacture or treatment of goods. The production of cannabis is an allowed use in the M-2S zone subject to obtaining a CUP.
3. The proposed use is situated on a parcel that is physically suitable in terms of location, size, topography, and access, and is adequately served by public and private services and utilities, in that the site will have vehicular access from Power Ridge Road and Fruitridge Road. The site will have internal loading areas. Furthermore, the site will be served by the necessary public and private utilities to ensure proper operation of the use.
4. The proposed use and its operating characteristics are not detrimental to the public health, safety, convenience, or welfare of persons residing, working, visiting, or recreating in the surrounding neighborhood and will not result in the creation of a nuisance. The proposed cannabis production use will not create a nuisance because the buildings have internal loading areas for the transfer of cannabis products. Additionally, the distribution of cannabis will be provided for by smaller vehicles, rather than large trucks, which are less noticeable in their impacts to surrounding uses.
5. The proposed cannabis production does not include cannabis manufacturing with a volatile solvent.
6. The proposed cannabis production will not result in undue concentration of cannabis production establishments. An undue concentration of cannabis production establishments results when the production use is located within the area bounded by Power Inn Road to the west, Folsom Boulevard to the north, and the city limits to the east and south; and results in more than 2.5 million square feet of building floor space approved by a conditional use permit for cannabis production use in that area. Building floor space designated for a cannabis manufacturing use in a conditional use permit is excluded from the 2.5 million square footage calculation.

This Conditional Use Permit modification does not propose any changes to the most recently approved cannabis production modification on this site (Z23-007) which proposed a total of 182,622 square feet of cannabis production consisting

of 180,322 square feet of cultivation, 2,300 square feet of distribution, and 0 square feet of manufacturing. The combined cultivation/distribution area of the property (SE area cap use) **remains at 182,622 square feet**. With the approval of this conditional use permit modification, the square footage of cannabis cultivation and distribution in this area will not exceed 2.5 million square feet.

Findings of Fact – 200-Year Flood Protection

1. The project site is within an area for which the facilities of the State Plan of Flood Control or other flood management facilities protect the project to the urban level of flood protection, as demonstrated by the SAFCA Urban Level of Flood Protection Engineer's Reports accepted by the City Council on October 21, 2025 (Resolution No. 2025-0283).

Draft Conditions of Approval – CUP and associated SPDR.

Planning

1. The project shall conform to the approved plans as shown on the attached exhibits. The floor plans are approved per the cannabis production uses as approved per Z23-007. No additional floor space is allowed without additional approval.
2. The project site has previously been approved per Z23-007 for a total of 182,622 square feet of cannabis production consisting of 180,322 square feet of cultivation and 2,300 square feet of distribution, and no manufacturing area. (Offices and common areas are included in the cultivation total). This shall remain unchanged.
3. The approved cannabis use shall comply with all applicable requirements of Sacramento City Code Chapter 5.510, including, but not limited to, the security plan requirements of Section 5.150.110.
4. Only one non-illuminated sign is permitted for the use. If a sign is proposed in the future the maximum size permitted is six square feet in area. The sign may be attached or detached. If the sign is detached it shall be a monument sign. A sign permit from the Building Division is required.
5. The site shall be inspected and maintained daily to be clear of litter. A maintenance plan must be implemented to control litter and debris.
6. Landscaping shall be maintained per Crime Prevention Through Environmental Design (CPTED) principles. Landscaping shall be provided in compliance with City Code requirements for the M-2S zone.
7. The cannabis operator permit holder(s) and/or property owner shall provide regular landscape maintenance for the site. The cannabis business permit holder or property owner shall provide a plan that demonstrates meeting this requirement.
8. All cannabis related activities, including but not limited to cannabis loading, shall be performed indoors. No outdoor storage is allowed.
9. No unpermitted cannabis events on the premises hosted by the property owner,

tenants, subtenants or guests.

10. Storage containers are not allowed on the property.
11. All dumpsters shall be locked. Refuse containers for cannabis products shall be stored within the building.
12. Outdoor areas shall not be used for any other commercial use unrelated to cannabis production operations.
13. All cannabis project facilities shall be connected to Sacramento Municipal Utility District (SMUD) facilities for the supply of primary electrical power. Generators shall be used only for power service that cannot be provided by current SMUD and utility infrastructure, including electrical panels.
14. The project will obtain all required building permits from the City of Sacramento Building Division prior to installation of the generators.
15. The proposed generator equipment for this facility shall be a stationary, CARB-certified Distributed Generation (DG) Combined Heat and Power (CHP) system fueled by PG&E-supplied natural gas.
16. Trees on the cannabis project site shall be trimmed to avoid interference with security cameras operated as part of the project.
17. No storage of motor vehicles and boats and trailers is allowed on the property, except as registered to onsite cannabis business operations. No tire storage is allowed.
18. Mechanical Equipment: All newly installed ground-mounted and roof-mounted mechanical equipment must be completely concealed from all adjacent and approaching right-of-way views. Construction documents shall clearly illustrate compliance. Placement of all exterior mechanical equipment, along with any necessary screening and details, must be shown on site plans, roof plans, and exterior elevations. Permanently supported solid, slatted, or louvered metal panel material only may be used. Openings in slatted material shall be less than 10%. Louvered material shall be positioned so spacing does not align with line of sight views. All material shall be painted to match elements of building exterior finish.
19. Electrical Service Equipment: All newly installed exterior wall-mounted and ground-mounted electrical service equipment, excluding transformers, must be completely concealed from all adjacent and approaching right-of-way views. Construction documents shall clearly illustrate compliance. Placement of all exterior electrical equipment, along with any necessary screening and details, must be shown on site plans, floor plans, and exterior elevations, while maintaining all service clearance requirements. Permanently supported solid, slatted, or louvered metal panel material only may be used. Openings in slatted material shall be less than 10%. All material shall be painted to match elements of building exterior finish.
20. Any additional modification to the project proposed in the future shall be subject to review and approval by Planning staff and may require additional entitlement(s).

Building Division

21. A building permit is required to verify occupancy for a cannabis facility, even if no improvements to the property are proposed. The building permit applications must meet the City's general building permit submittal requirements.

Fire Department

22. Any modifications to the facility must be made under permit by way of plan review for compliance to the Fire and Building Codes.
23. Obtain a Fire Clearance by requesting a fire and life safety inspection from the Sacramento City Fire Prevention Division. Contact # 916-808-1300.
24. Obtain any required operational permits from the Sacramento City Fire Prevention Division. Contact # 916-808-1300.
25. Provide documentation to verify that any fire and life safety systems such as fire suppression and fire alarm systems have been serviced, maintained and certified in accordance with the required maintenance schedules as may be applicable (quarterly, annual and 5-year service).
26. Primary power for the fire alarm control panel and fire pump (if existing) shall be provided by SMUD and not dependent on the proposed generator system for the primary source of power.

Solid Waste

27. Project must meet the requirements outlined in City Code Chapter 13.24 and 17.616.
28. The property must have sufficient space to store bins for trash, recycling, organics, and cannabis waste. Service level minimums for recycling and organics can be found in Chapter 13.24.600. Trash and organics must be collected at least weekly. Recycling must be collected at least monthly.
29. Solid waste trucks must be able to safely move about the project, with minimum backing, and able to empty the containers safely.

Advisory Notes

- AV1. *PLANNING*: The M-2S zone requires a 25-foot landscape setback along all street frontages. Per City Code section 17.612.010, All minimum required front-yard and street side-yard setbacks shall be landscaped and maintained. The landscape shall primarily consist of grass, annuals, perennials, groundcover, shrubs, trees, or other living vegetation, provided that artificial turf may be used if it and its substrate is permeable, has a minimum pile height of 1.25 inches, and is not located within the dripline of any trees. Design elements like planters, rocks, mulch, wood chips, bark, or similar elements are permitted when integrated as part of the landscape.
- AV2. *PLANNING*: Any changes to the approved square footages of the specific sub types of cannabis production (cultivation, manufacturing, distribution), are subject

to CUP modification review and approval.

- AV3. *PLANNING*: This site has not been approved for a cannabis dispensary, either storefront or delivery only, which requires the approval of a separate CUP.
- AV4. *PLANNING*: Proposed City Code amendments in process include a proposal to remove cannabis distribution from the SE area cap square footage maximums.
- AV5. *PLANNING*: The approval of this project does not authorize any previous unpermitted work. Any existing unpermitted exterior building or site work is subject to SPDR approval.
- AV6. *BUILDING*: The plans are required to comply with the applicable sections of the California Building Standards Code (California Code of Regulations Title 24 Volumes 1-12).
- AV7. *SACRAMENTO AREA SEWER DISTRICT (SASD)* Prior to the issuance of a building permit, the owner must contact Permit Services Unit at PermitServices@sacsewer.com or by phone at 916-876-6100 to determine if SacSewer impact fees are due. Fees are to be paid prior to the issuance of building permits. Programs are available that support the economic vitality and job growth in the region by reducing sewer impact fees for eligible commercial and industrial customers. Please visit www.sacsewer.com/confluence-regional-partnership-program to learn more.

Respectfully Submitted:



Robert W. Williams
Associate Planner



Approved:

Thomas Vogt (Dec 11, 2025 14:28:25 PST)

Thomas Vogt
Senior Planner

The decisions of the Zoning Administrator and Design Director may be appealed to the Planning and Design Commission. An appeal must be filed within 10 days of the decision. If an appeal is not filed, the action of the Zoning Administrator and Design Director is final.

A discretionary permit expires and is thereafter void if the use or development project for which the discretionary permit has been granted is not established within the applicable time period. The applicable time period is either **three years** from the effective date of approval of the discretionary permit; **or the time specified by the decision-maker**, if so stated in a condition of approval of the discretionary permit. A use or development project that requires a building permit is established when the building permit is secured for the entire development project and construction is physically commenced.

Z24-105 – 8151 Fruitridge Road – CUP Production Modification

June 2, 2025

**City of Sacramento
Community Development Department**

Dear Robert W. Williams,

We are writing as the electrical consultant for the **JSPE Inc.** regarding the project located at 8151 Fruitridge Road, Sacramento, CA, to formally request an approval to utilize California Air Resources Board (CARB) Distributed Generation (DG) certified generators as an alternative to the standard electrical service from Sacramento Municipal Utility District (SMUD).

Our client's existing facility is currently served by a 3000A/480V SMUD electrical service. The proposed new project will introduce an additional 4000A/480V electrical load. We have engaged with SMUD few times regarding the additional power needs for this project; however, they have informed us that they are unable to supply the required capacity due to limitations in the existing main feeder infrastructure serving the area. SMUD has indicated they can only provide an additional 1000A/480V power if requested, but this is significantly short of the 4000A/480V additional load required to support the new project. As a result, the current utility infrastructure cannot accommodate the project's additional power demands within the necessary construction and commissioning timeline.

After a detailed feasibility study, to address the SMUD power limitation in a sustainable and compliant manner, our team has identified the use of CARB DG certified generators as the technically viable and environmentally compliant solution to meet the facility's demand without compromising service reliability or sustainability goals. These generators meet all applicable emission standards and regulatory guidelines, ensuring minimal environmental impact. Given these constraints, we respectfully request approval to proceed with CARB-certified DG generators as an essential solution to meet the project's critical electrical requirements

Furthermore, our design would incorporate a **Combined Heat and Power (CHP) system** that captures the exhaust heat from the generators. This recovered thermal energy will be used for HVAC applications within this facility, resulting in an estimated 30% overall energy savings compared to traditional utility-supplied power and separate heating systems.

We understand the City's commitment to clean energy and air quality standards, which is why we have selected generators that comply with CARB DG certification, ensuring minimal emissions and full compliance with California's strict environmental regulations and meet local air quality management district requirements.

We respectfully request the City's review and approval of this approach, allowing us to proceed with the proposed power generation plan that aligns with both engineering constraints and environmental responsibility.

Please feel free to contact me at 916-293-6553 or via email at isaeed@calicoemi.com if you have any questions or require additional information.

Thank you for your consideration.

Sincerely



Imran Saeed, PE
Director
Calico EMI Inc.

NEXGEN

NEXGEN - 1380-UC-S5X ULTRA CLEAN EMISSIONS



Engine	1380-UC-S5X
Cylinders	V12
Piston displacement	7,040 cu. in. (115 L)
Compression ratio	9.7:1
Bore & stroke	9.375" x 8.5" (238 x 216 mm)
Jacket water system capacity	100 gal. (379 L)
Lube oil capacity	190 gal. (719 L)
Starting system	24V electric

Dimensions l x w x h inch (mm)

Water connection

205 (5,208) x 85 (2,160) x 103 (2,620)

Weights lb (kg)

Water connection 38,000 (17,230)

Calico Next Generation's ULTRA-CLEAN Series Five X, rich-burn engines combine the most advanced technology available with the history and experience of the UCplatform, resulting in an engine with 13% more power, better fuel flexibility, 10% lower fuel consumption, up to 20% lower lifecycle costs, and over 30% longer service intervals.

Although Series Five engines are capable of higher power levels than previous versions, the stresses on the components have not increased. This is made possible by enhanced rich-burn combustion through the Miller Cycle, an improved cylinder head design that reduces temperatures in key regions, and an optimized piston design.

Used previously on the P9394 engine, the Miller Cycle moves work from the piston to the turbocharger, reducing combustion and exhaust temperatures and making the 1380-UC-S5X the most fuel efficient NEXGEN engine ever.

The improved cylinder head design reduces key internal temperatures by up to 40%, increasing reliability and extending the life of the head.

The Series 5X piston design has been optimized to reduce unburned hydrocarbons, which improves emissions and fuel consumption while lowering the temperature of the piston itself, improving fuel flexibility even at a higher power rating. Improvements to the ignition system allow for 4,000-hour spark plug intervals with low-cost, non-precious metal plugs. Matching 4,000 oil change intervals reduce operating costs and trips to site. Series 5X engines come standard with ESM2, the next-generation engine controller. ESM2 uses a 12" full color customer interface panel, allowing users to see all engine parameters, trend data, view manuals, and walk through troubleshooting steps, eliminating the need for a laptop computer.

Calico Next Generation's Emission Control System is the option of choice for reducing emissions. emPact optimizes the interaction between the Series 5X engine, AFR2 air/fuel ratio control, and factory-supplied 3-way NSCR catalyst to maintain emissions compliance even as engine speed, load, fuel, and environmental conditions change.

Z24-105 - Generator Specifications



Calico Next Generation, Inc.

1380-UC-S5X

Power Generation

ENGINE SPEED (rpm):	1200	NOx SELECTION (g/bhp-hr):	Customer Catalyst
DISPLACEMENT (in3):	7040	COOLING SYSTEM:	JW, IC + OC
COMPRESSION RATIO:	9.7:1	INTERCOOLER WATER INLET (°F):	130
IGNITION SYSTEM:	ESM2	JACKET WATER OUTLET (°F):	180
EXHAUST MANIFOLD:	Water Cooled	JACKET WATER CAPACITY (gal):	100
COMBUSTION:	Rich Burn, Turbocharged	AUXILIARY WATER CAPACITY (gal):	11
ENGINE DRY WEIGHT (lbs):	24250	LUBE OIL CAPACITY (gal):	190
AIR/FUEL RATIO SETTING:	0.38% CO	MAX. EXHAUST BACKPRESSURE (in. H2O):	20
ENGINE SOUND LEVEL (dBA)	105	MAX. AIR INLET RESTRICTION (in. H2O):	15
IGNITION TIMING:	ESM2 Controlled	EXHAUST SOUND LEVEL (dBA)	113
FREQUENCY (Hz):	60	PHASE:	3
GENERATOR TYPE:	Synchronous	PHASE ROTATION:	T1-T2-T3

SITE CONDITIONS:

FUEL:	Natural Gas	ALTITUDE (ft)	100
FUEL PRESSURE RANGE (psig):	40 - 60	MAXIMUM INLET AIR TEMPERATURE (°F):	120
FUEL HHV (BTU/ft3):	1,035.2	FUEL WKI:	91.8
FUEL LHV (BTU/ft3):	935.8		

SITE SPECIFIC TECHNICAL DATA

POWER RATING	UNITS		MAX RATING AT 100 °F AIR TEMP	SITE RATING AT MAXIMUM INLET AIR TEMPERATURE OF 120 °F		
				100%	75%	50%
CONTINUOUS ENGINE POWER	BHP		1900	1900	1425	950
OVERLOAD	% 2/24 hr		0	0	-	-
ELECTRICAL EFFICIENCY (LHV)	%		33.9	33.7	33.1	31.3
GENERATOR OUTPUT	kWe		1380	1380	1035	690
GENERATOR KVA	kVA		1725	1725	1294	863
<i>based on 95.3% generator efficiency at 0.8 PF, no auxiliary engine driven equipment</i>						

FUEL CONSUMPTION						
FUEL CONSUMPTION (LHV)	BTU/kWe-hr		10071	10136	10323	10918
FUEL CONSUMPTION (HHV)	BTU/kWe-hr		11141	11213	11419	12077
FUEL FLOW	SCFM		242	244	186	131
<i>based on fuel analysis LHV</i>						

HEAT REJECTION						
JACKET WATER (JW)	BTU/hr x 1000		3714	3837	3018	2211
LUBE OIL (OC)	BTU/hr x 1000		479	453	428	390
INTERCOOLER (IC)	BTU/hr x 1000		669	785	455	202
EXHAUST	BTU/hr x 1000		3594	3533	2648	1831
RADIATION	BTU/hr x 1000		567	505	484	463

EMISSIONS (ENGINE OUT):						
NOx (NO + NO2)	g/bhp-hr		11.2	11.0	12.2	12.5
CO	g/bhp-hr		9.0	9.0	9.1	9.5
THC	g/bhp-hr		0.5	0.6	0.7	1.0
NMHC	g/bhp-hr		0.053	0.056	0.074	0.095
NM,NEHC (VOC)	g/bhp-hr		0.014	0.015	0.020	0.025
CO2	g/bhp-hr		443	446	454	480
CO2e (Methane GWP: 25)	g/bhp-hr		455	459	471	502
CH2O	g/bhp-hr		0.050	0.050	0.050	0.050
CH4	g/bhp-hr		0.48	0.51	0.67	0.86

AIR INTAKE / EXHAUST GAS						
INDUCTION AIR FLOW	SCFM		2544	2561	1957	1380
EXHAUST GAS MASS FLOW	lb/hr		11829	11905	9098	6416
EXHAUST GAS FLOW	ACFM		8207	8228	6195	4306
EXHAUST TEMPERATURE	°F		1101	1095	1072	1050
<i>at exhaust temp, 14.5 psia</i>						

HEAT EXCHANGER SIZING ¹²			
TOTAL JACKET WATER CIRCUIT (JW)	BTU/hr x 1000		4351
TOTAL AUXILIARY WATER CIRCUIT (IC + OC)	BTU/hr x 1000		1433

COOLING SYSTEM WITH ENGINE MOUNTED WATER PUMPS		
JACKET WATER PUMP MIN. DESIGN FLOW	GPM	450
JACKET WATER PUMP MAX. EXTERNAL RESTRICTION	psig	16
AUX WATER PUMP MIN. DESIGN FLOW	GPM	79
AUX WATER PUMP MAX. EXTERNAL RESTRICTION	psig	36

Z24-105 - Generator Specifications



Calico Next Generation, Inc.

1380-UC-S5X

Power Generation

FUEL COMPOSITION

HYDROCARBONS:		Mole or Volume %	FUEL:	Natural Gas
Methane	CH4	93	FUEL PRESSURE RANGE (psig):	40 - 60
Ethane	C2H6	4	FUEL WKI:	91.8
Propane	C3H8	1		
Iso-Butane	I-C4H10	0	FUEL SLHV (BTU/ft3):	919.50
Normal Butane	N-C4H10	0	FUEL SLHV (MJ/Nm3):	36.16
Iso-Pentane	I-C5H12	0		
Normal Pentane	N-C5H12	0	FUEL LHV (BTU/ft3):	935.78
Hexane	C6H14	0	FUEL LHV (MJ/Nm3):	36.80
Heptane	C7H16	0		
Ethene	C2H4	0	FUEL HHV (BTU/ft3):	1035.15
Propene	C3H6	0	FUEL HHV (MJ/Nm3):	40.71
	SUM HYDROCARBONS	98	FUEL DENSITY (SG):	0.60
NON-HYDROCARBONS:			<p>Standard Conditions per ASTM D3588-91 [60°F and 14.696psia] and ISO 6976:1996-02-01[25, V(0;101.325)].</p> <p>Based on the fuel composition, supply pressure and temperature, liquid hydrocarbons may be present in the fuel. No liquid hydrocarbons are allowed in the fuel. The fuel must not contain any liquid water. NEXGEN recommends both of the following:</p> <p>1) Dew point of the fuel gas to be at least 20°F (11°C) below the measured temperature of the gas at the inlet of the engine fuel regulator.</p> <p>2) A fuel filter separator to be used on all fuels except commercial quality natural gas.</p> <p>Refer to the 'Fuel and Lubrication' section of 'Technical Data' or contact the NEXGEN Application Engineering Department for additional information on fuels, or LHV and WKI* calculations.</p> <p>* Trademark of Calico Next Generation, Inc.</p>	
Nitrogen	N2	0		
Oxygen	O2	0		
Helium	He	0		
Carbon Dioxide	CO2	2		
Carbon Monoxide	CO	0		
Hydrogen	H2	0		
Water Vapor	H2O	0		
	TOTAL FUEL	100		

FUEL CONTAMINANTS

Total Sulfur Compounds	0	% volume	Total Sulfur Compounds	0	µg/BTU
Total Halogen as Chloride	0	% volume	Total Halogen as Chloric	0	µg/BTU
Total Ammonia	0	% volume	Total Ammonia	0	µg/BTU
<u>Siloxanes</u>			Total Siloxanes (as Si)	0	µg/BTU
Tetramethyl silane	0	% volume			
Trimethyl silanol	0	% volume			
Hexamethyldisiloxane (L2)	0	% volume			
Hexamethylcyclotrisiloxane (D3)	0	% volume			
Octamethyltrisiloxane (L3)	0	% volume			
Octamethylcyclotetrasiloxane (D4)	0	% volume			
Decamethyltetrasiloxane (L4)	0	% volume			
Decamethylcyclopentasiloxane (D5)	0	% volume			
Dodecamethylpentasiloxane (L5)	0	% volume			
Dodecamethylcyclohexasiloxane (D6)	0	% volume			
Others	0	% volume			

Calculated fuel contaminant analysis will depend on the entered fuel composition and selected engine model.



Calico Equipment CHP Application

Site Address: 8151 Fruitridge Road, Sacramento, CA,
Permit: Z24-105 / CUP Modification of Z18-045.

For Model: EMI-1350-C5X

Prepared For: City Of Sacramento Planning Dept.

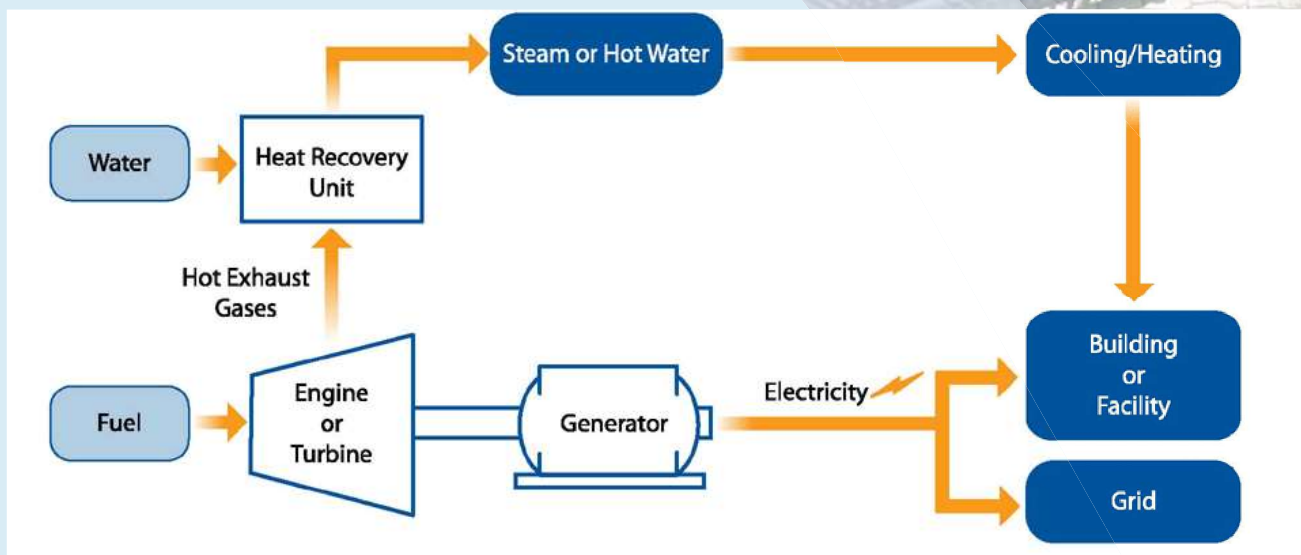


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6. CHP Equipment Operation Description 5

7. Conclusion: 6

APPENDICES

- Appendix A – CALICO MODEL EMI-1350-C5X CARB DG CERTIFICATE
- Appendix B – CALICO EQUIPMENT MODEL EMI-1350-C5X TECHNICAL SPECIFICATIONS

1. Background:

The Calico EMI engineering team has developed a Combined Heat and Power (CHP), application for our client's project site located at 8151 Fruitridge Road, Sacramento, CA, under permit Z24-105 / CUP Modification of Z18-045. This CUP modification is initiated due to SMUD's inability to meet the increased power demands at the location.

This facility currently has a 3000A/480V SMUD service. The project introduces a 4000A/480V additional load. SMUD has confirmed they cannot fulfill this capacity due to infrastructure limitations, and only 1000A is potentially available. However, due to SMUD's current limitations in meeting the specific power demands of our client's project, our engineering team has designed an on-site Combined Heat and Power (CHP) solution utilizing our CARB DG-certified equipment. This system ensures an environmentally complainant and reliable source of power as well as heating and cooling for the customer.

2. Purpose:

The purpose of this document is to clarify the City Planning Department's understanding regarding the proposed use of Combined Heat and Power (CHP) technology for our client's project. This document also includes technical details of the proposed equipment and references to similar implementations of this technology within California.

We are proposing the use of the Calico EMI model EMI-1350-C5X in conjunction with a CHP application. This equipment is compliant with all current emission standards and holds (CA Air Resource Board) CARB Distributed Generation (DG) certification for use in stationary power applications within the state of California.

See Appendix A for CARB DG certificate for our equipment.

We understand that the Sacramento Planning Department implemented the condition in 2018 to prohibit the use of standard generators due to concerns over the unauthorized use of non-CARB certified diesel generators by some customers. At that time, there were no CARB certified generators were available in the market.

However, this restriction should not be applied to our CARB-certified, natural gas-powered unit. Similar CHP units from Capstone corp. are legally permitted in Sacramento for on-site power generation under the CARB DG certification standards. Since the CHP system from Calico EMI Inc. is also CARB-certified, we respectfully request that the Planning Department apply the same permitting guidelines used for Capstone units in our case.

The Calico equipment model CALICO-EMI-1350-C5X, is a CARB-certified, natural gas-powered system that operates on similar scientific principles as Capstone natural gas turbines. Capstone turbines are currently deployed at multiple locations throughout Sacramento.

Below is a list of CARB-certified units that are legally approved for on-site power generation in California. Calico EMI's power generation equipment is listed alongside Capstone gas turbines on the CARB website, which can be accessed at the following link:

<https://ww2.arb.ca.gov/our-work/programs/dgcert/exec-orders>

3. Combined Heat and Power (CHP) Technology Overview

Combined Heat and Power (CHP), also known as cogeneration, is an integrated energy system that simultaneously generates electricity and useful thermal energy from a single fuel source. CHP systems vary in scale, ranging from just a few kilowatts to several hundred megawatts, and can utilize a range of technologies, including reciprocating engines, gas turbines, microturbines, and fuel cells. By combining the production of electricity and thermal energy into a single, efficient process, CHP can reduce energy consumption by up to 35% compared to conventional methods that generate power and heat separately.

4. Existing CHP Systems in California

California represents approximately 10% of the United States' installed Combined Heat and Power (CHP) capacity, with 8,500 megawatts (MW) of operational systems. According to the U.S. Department of Energy, the majority of this capacity comes from large industrial and institutional installations, driven by favorable economics and readily available technologies. Smaller CHP systems, those under 5 MW, make up about 8% of the total capacity, or 663 MW.

A report by the California Energy Commission estimates that the technical potential for new CHP installations in the state is approximately 8,000 MW, specifically for applications ranging between 50 kilowatts (kW) and 5 MW.

California is home to more than 700 reciprocating engine CHP installations, accounting for 68% of all CHP systems in the 1 kW to 5 MW size range. Collectively, these systems provide nearly 381 megawatts (MW) of capacity. The vast majority are fueled by natural gas and other gaseous fuels. Reciprocating engine CHP systems are commonly used in a variety of applications, including universities, hospitals, water treatment plants, industrial facilities, and commercial buildings, where reliable on-site power and heat are essential.

SMUD also utilizes Natural Gas-powered generators in California for power generation at following locations:

Cosumnes, Campbell, Procter, Carson and McClellan power plants have a combined capacity of 1000 megawatts. See the below link for more details.

<https://www.smud.org/Corporate/Environmental-Leadership/Power-Sources>

5. CARB DG System Emission Standards

California Air Resources Board (CARB) has implemented a Distributed Generation (DG) Certification requirement for natural gas-fueled DG systems. CARB-certified DG technologies are exempt from local permitting, which helps streamline project development, reduce permitting costs, and encourage broader adoption. Notably, CARB's standards for carbon monoxide (CO) and volatile organic compounds (VOCs) are more stringent than those set by any air quality districts.

6. CHP Equipment Operation Description

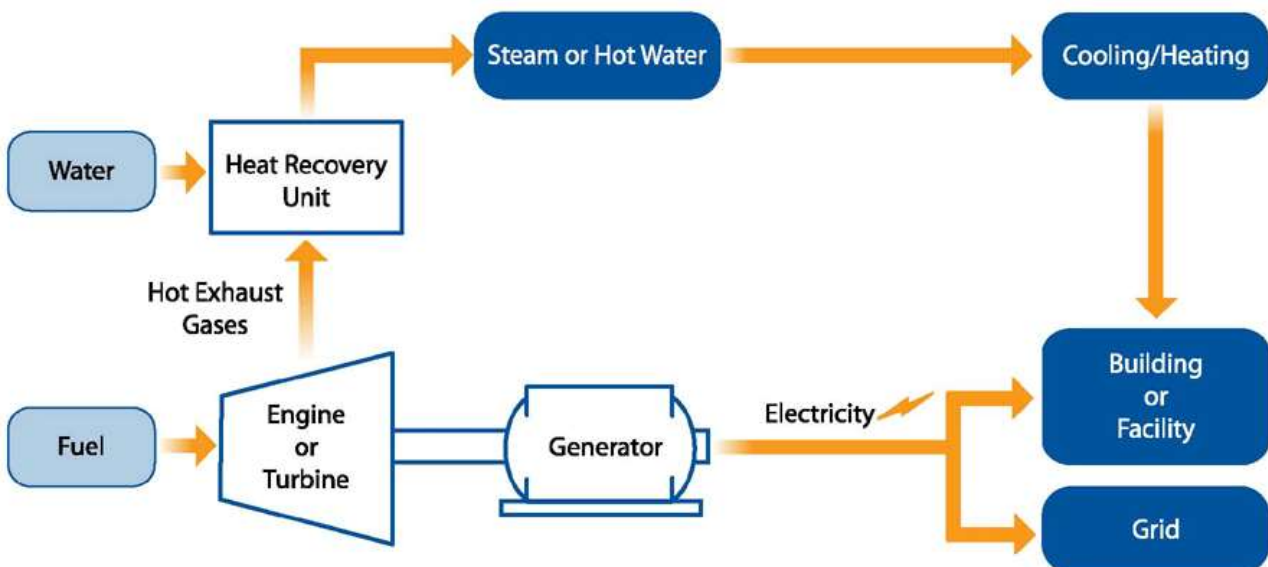
Our proposed CHP system is a highly efficient energy solution that simultaneously generates electricity and provide heating/cooling for building loads. By producing on-site power, CHP systems significantly reduce energy losses and make use of the heat that would otherwise be wasted, delivering it as process heat, hot water, or even chilled water for facility use.

CHP systems can be installed at individual buildings or facilities, or integrated into district energy systems, microgrids, or utility networks to serve multiple users. They also enhance energy resilience, providing reliable 24/7 power during grid outages. CHP can be integrated with other distributed energy resources, such as solar photovoltaics (PV) and energy storage systems, for even greater flexibility and reliability.

Traditional methods of generating power and heat separately result in the loss of nearly two-thirds of the energy input, primarily as waste heat during generation, transmission, and distribution. In contrast, Combined Heat and Power (CHP) systems capture and repurpose this otherwise wasted heat, while also avoiding transmission losses through on-site generation. This enables CHP systems to achieve overall efficiencies of over 80%, compared to approximately 50% for conventional systems that rely on separate electricity production and on-site boilers. The higher efficiency of CHP systems also leads to lower carbon emissions, making them a cleaner and more sustainable energy solution.

Below is a typical block diagram of a Combined Heat and Power (CHP) system

Fig-1: Combustion Turbine, or Reciprocating Engine, with Heat Recovery Unit



7. Conclusion:

We respectfully request that the City Planning Department to evaluate our DG-certified CHP power generation system alongside comparable technologies, such as those provided by Capstone Corporation, and apply the same permitting standards that have been used for similar natural gas-powered generation projects.

Given the lack of feasible SMUD infrastructure support, and the clean energy profile of the proposed system powered by PG&E's natural gas, the use of Calico DG certified power generation system should be approved as a necessary and environmentally responsible solution.

Similar CHP systems are already operational at several sites throughout California. As previously mentioned, SMUD also utilizes natural gas-powered generation facilities to supply electricity within Sacramento.

We would like to mention that both SMUD and Capstone Corp. have operational sites with natural gas-based power generation system within the Sacramento area. Accordingly, we expect that our project be reviewed and approved using the same CARB DG certification criteria and guidelines that were applied to those previously permitted systems.

References Used:

The information in this document was collected from the following resources and the website.

California Air Resource Board:

<https://ww2.arb.ca.gov/our-work/programs/dgcert/exec-orders>

California Energy Commission:

[*A Comprehensive Assessment of Small Combined Heat and Power Technical and Market Potential in California*](#)

Environmental Protection Agency:

[*U.S. Environmental Protection Agency | US EPA*](#)

SMUD CHP Power Plants in California:

<https://www.smud.org/Corporate/Environmental-Leadership/Power-Sources>

APPENDIX A
CALICO MODEL “EMI-1350-C5X”
CARB DG CERTIFICATE

**State of California
Air Resources Board
Executive Order DG-059
Distributed Generation Certification of
Calico EMI, Inc.
1350 kW, EMI-1350-C5X, Natural Gas Genset**

Whereas, the California Air Resources Board (CARB) was given authority under California Health and Safety Code section 41514.9 to establish a statewide Distributed Generation (DG) Certification Program to certify electrical generation technologies that are exempt from the permit requirements of air pollution control or air quality management districts;

Whereas, CARB adopted the DG Certification Regulation in the California Code of Regulations (CCR), title 17, article 3, sections 94200 to 94214;

Whereas, this DG Certification does not constitute an air pollution permit or eliminate the responsibility of the end user to comply with all federal, state, and local laws, rules, and regulations;

Whereas, on May 29, 2025, Calico EMI, Inc. applied for a DG Certification of its 1350 kW, EMI-1350-C5X and whose application was deemed complete on June 20, 2025;

Whereas, on May 29, 2025, Calico EMI, Inc. indicated that the company name had changed from Calico Next Generation to Calico EMI, Inc.;

Whereas, Calico EMI, Inc. has demonstrated, according to the test methods specified in Title 17, CCR, section 94207, that its natural gas fueled 1350 kW, EMI-1350-C5X has complied with the following DG Certification Regulation 2007 fossil fuel emission standards:

1. Emissions of oxides of nitrogen no greater than 0.07 pounds per megawatt-hour;
2. Emissions of carbon monoxide no greater than 0.10 pounds per megawatt-hour; and
3. Emissions of volatile organic compounds no greater than 0.02 pounds per megawatt-hour.

Whereas, title 17, CCR, section 94207(c) requires the unit to be tested in the configuration as it will be marketed, including any additional control equipment or other devices that affect emissions;

Whereas, Calico EMI, Inc. has configured, operated, and tested its 1350 kW, EMI-1350-C5X with a minimum back pressure of 13.5 inch of water column, and a maximum back pressure of 20 inch of water column;

Z24-105 - Generator Specifications

Whereas, Calico EMI, Inc. has demonstrated that its 1350 kW, EMI-1350-C5X complies with the emission durability requirements in title 17, CCR, section 94203(d);

Whereas, the Executive Officer finds that the applicant, Calico EMI, Inc., has met the requirements specified in article 3, title 17, CCR, and has satisfactorily demonstrated that the natural gas 1350 kW, EMI-1350-C5X, while operated within the back pressure range of 13.5 inch of water column and 20 inch of water column, meets the DG Certification Regulation 2007 fossil fuel emission standards;

Now, therefore, it is hereby ordered that a DG certification, Executive Order DG-059, is granted.

This DG certification:

1. Is subject to all conditions and requirements of CARB's DG Certification Program, article 3, title 17, CCR, including the provisions relating to inspection, denial, suspension, and revocation.
2. Shall be void if any manufacturer's modifications result in an increase in emissions or change the efficiency or operating conditions of a model, such that the model no longer meets the DG Certification Regulation 2007 fossil fuel emission standards .
3. Shall expire on the 6th day of August, 2030

Executed at Sacramento, California, this 6th day of August, 2025



Heather Quiros, Chief
Enforcement Division

APPENDIX B

CALICO MODEL “EMI-1350-C5X”

EQUIPMENT SPECIFICATIONS

Z24-105 - Generator Specifications

Manufacturer: Calico EMI Inc.

Sacramento, CA

Model: EMI-1350-C5X

Data Sheet

Power Generation System

ENGINE SPEED (rpm):	1200	NOx SELECTION (g/bhp-hr):	Three Way Catalyst
DISPLACEMENT (in3):	7040	COOLING SYSTEM:	JW, IC + OC
COMPRESSION RATIO:	9.7:1	INTERCOOLER WATER INLET (°F):	130
IGNITION SYSTEM:	ESM2	JACKET WATER OUTLET (°F):	180
EXHAUST MANIFOLD:	Water Cooled	JACKET WATER CAPACITY (gal):	100
COMBUSTION:	Rich Burn, Turbocharged	AUXILIARY WATER CAPACITY (gal):	11
ENGINE DRY WEIGHT (lbs):	24250	LUBE OIL CAPACITY (gal):	190
AIR/FUEL RATIO SETTING:	0.38% CO	MAX. EXHAUST BACKPRESSURE (in. H2O):	20
ENGINE SOUND LEVEL (dBA):	105.00	MAX. AIR INLET RESTRICTION (in. H2O):	15
		EXHAUST SOUND LEVEL (dBA)	113
FREQUENCY (Hz):	60	PHASE:	3
GENERATOR TYPE:	Synchronous	PHASE ROTATION:	T1-T2-T3
VOLTAGE:			

SITE CONDITIONS:

FUEL:	Natural Gas	ALTITUDE (ft):	30
FUEL PRESSURE RANGE (psig):	40 - 60	MAXIMUM INLET AIR TEMPERATURE (°F):	110
FUEL HHV (BTU/ft3):	1035.15	FUEL WKT:	91.8
FUEL LHV (BTU/ft3):	935.8		

SITE SPECIFIC TECHNICAL DATA

POWER RATING	UNITS		MAXIMUM CONTINUOUS RATING AT 100°F INLET AIR	SITE RATING AT INLET AIR TEMPERATURE OF 110°F		
				100 %	75 %	50 %
CONTINUOUS ENGINE POWER	BHP		1900	1900	1425	950
OVERLOAD	% 2/24 hr		0	0		
ELECTRICAL EFFICIENCY (LHV)	%		33.9	33.8	33.2	31.3
GENERATOR OUTPUT	kWe		1350	1350	1013	675
GENERATOR KVA	kVA		1688	1688	1266	844
<i>based on 95.3% generator efficiency at 0.8 PF, no auxiliary engine driven equipment</i>						

FUEL CONSUMPTION

FUEL CONSUMPTION (LHV)	BTU/kWe-hr		10071	10098	10291	10900
FUEL CONSUMPTION (HHV)	BTU/kWe-hr		11141	11170	11384	12057
FUEL FLOW <i>based on fuel analysis LHV</i>	SCFM		242	243	186	131

HEAT REJECTION

JACKET WATER (JW)	BTU/hr x 1000		3714	3772	2967	2174
LUBE OIL (OC)	BTU/hr x 1000		478	466	436	392
INTERCOOLER (IC)	BTU/hr x 1000		669	722	410	173
EXHAUST	BTU/hr x 1000		3595	3563	2672	1849
RADIATION	BTU/hr x 1000		568	536	514	493

EMISSIONS (ENGINE + CATALYST OUT):

NOx (NO + NO2):	Less than 0.07 lb/MW-hr					
CO:	Less than 0.10 lb/MW-hr					
VOC:	Less than 0.02 lb/MW-hr					

AIR INTAKE / EXHAUST GAS

INDUCTION AIR FLOW	SCFM		2544	2551	1951	1377
EXHAUST GAS MASS FLOW	lb/hr		11829	11860	9070	6402
EXHAUST GAS FLOW <i>at exhaust temp., 14.5 psia</i>	ACFM		8207	8212	6188	4305
EXHAUST TEMPERATURE	°F		1101	1098	1075	1053

HEAT EXCHANGER SIZING¹²

TOTAL JACKET WATER CIRCUIT (JW)	BTU/hr x 1000		4277
TOTAL AUXILIARY WATER CIRCUIT (IC + OC)	BTU/hr x 1000		1361

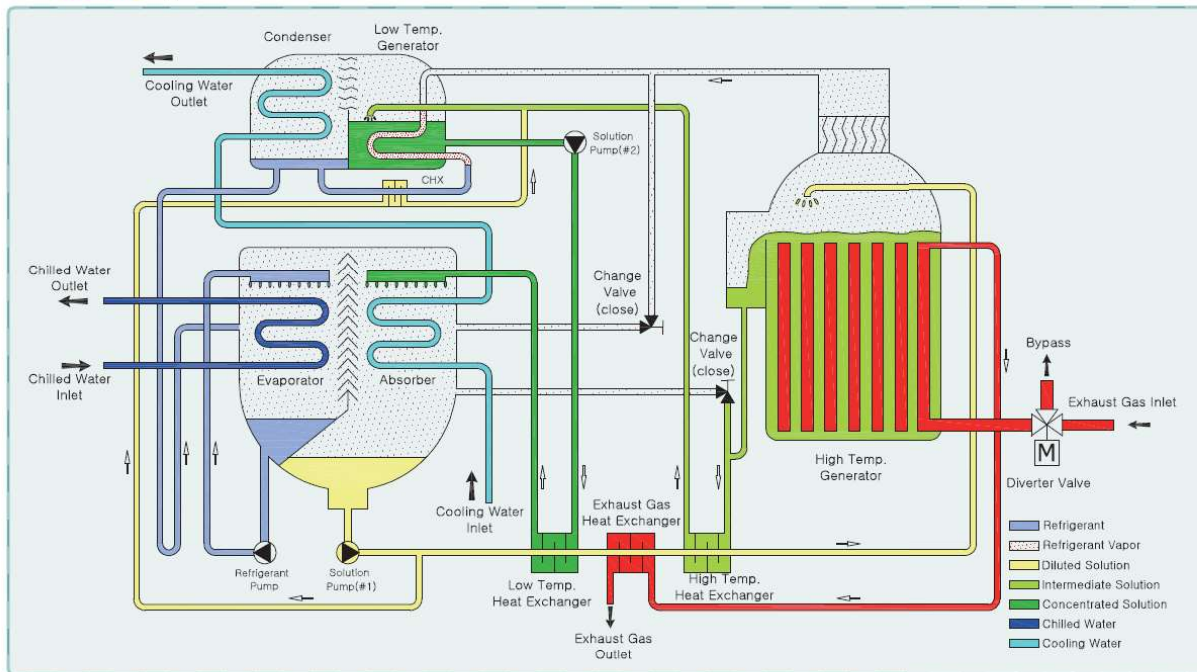
COOLING SYSTEM WITH ENGINE MOUNTED WATER PUMPS

JACKET WATER PUMP MIN.DESIGN FLOW	GPM	450
JACKET WATER PUMP MAX.EXTERNAL RESTRICTION	psig	15.80
AUX WATER PUMP MIN. DESIGN FLOW	GPM	79
AUX WATER PUMP MAX. EXTERNAL RESTRICTION	psig	36.00

Manufacturer's Proprietary and Confidential Information
Calico EMI Inc., Sacramento, CA

CHPH Series

• Cooling Cycle



The double-effect, exhaust-gas driven absorption machine is consisted of an evaporator, absorber, condenser, high/low temperature generators, solution heat exchangers, refrigerant & solution pumps, purge system, controls and accessories.

When the chiller is under cooling mode, water boils at a low temperature approximately at 4.4°C (40°F) because it is under vacuum condition. Thereby chilled water is cooled down through the tubes in evaporator by the evaporative latent heat. The process of this cycle is like below. A refrigerant pump is used to spray the refrigerant (distilled water) over the evaporator tubes to improve heat transfer.

To make the cooling process continuous, the refrigerant (water) vapor flows into the absorber and it is absorbed in lithium bromide solution (which has a high affinity for water). As this process continues, the lithium bromide becomes diluted solution and reduce its absorption capacity. A solution pump then transfers this diluted solution to the generators where it is re-concentrated in two stages (double-effect) to boil off the previously absorbed water.

The diluted solution is pumped to the high-temperature generator where it is heated and re-concentrated to a medium concentration solution by the exhaust heat from the gas turbine or reciprocating engine exhaust gas. The intermediate solution from the high-temperature generator flows to the low-temperature generator where it is heated to become a

concentrated solution by the high temperature water vapor released from the solution in the high temperature generator.

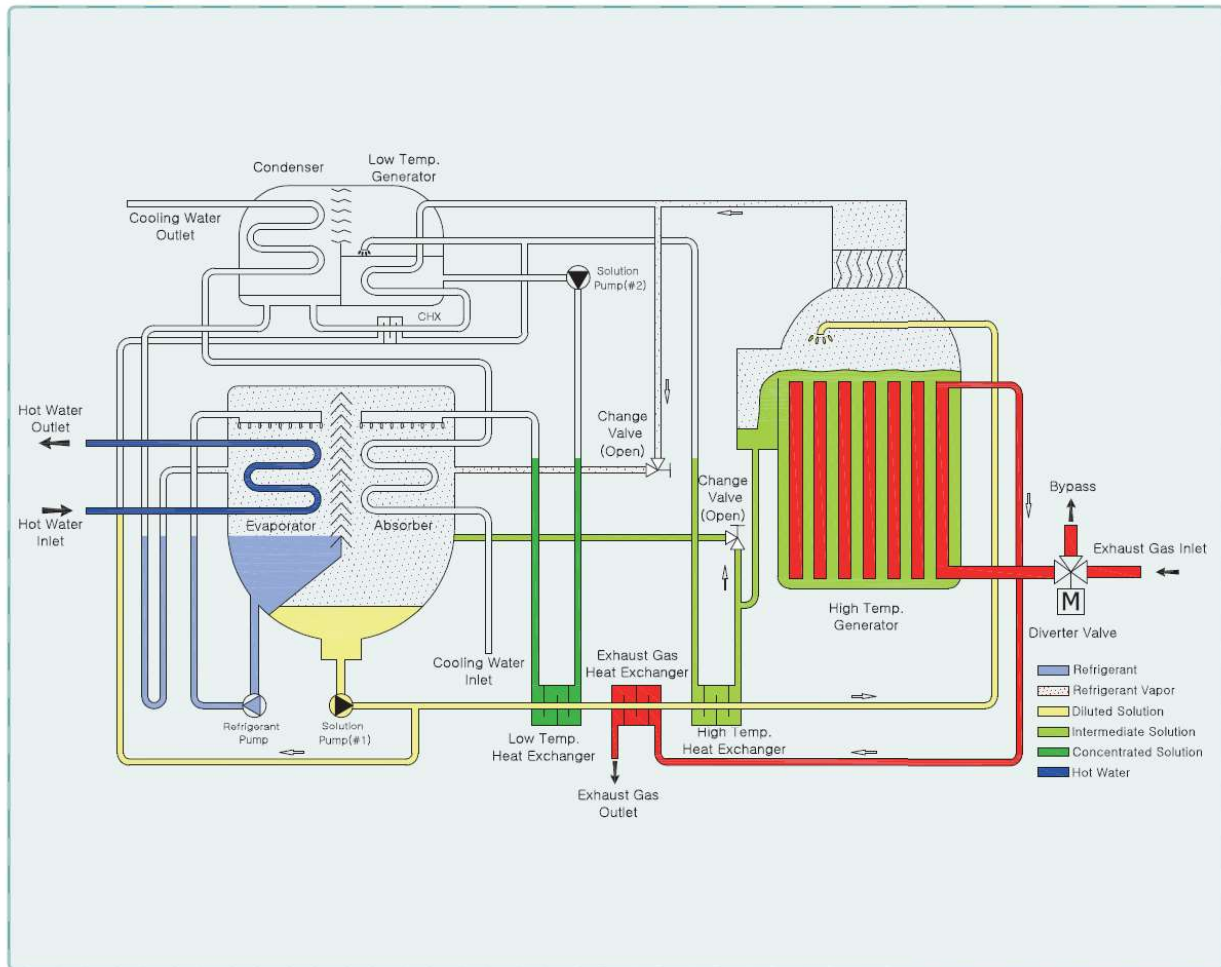
Since the low-stage generator acts as the condenser for the high-stage generator, the heat energy firstly applied in the high-stage generator is used again in the low-stage generator, thus reduced heat input is approximately 45% compared to an single-stage chiller.

Vapor released in the shell side of the low-stage generator enters the condenser to be cooled and return to a liquid state. The refrigerant water then returns to the evaporator to begin a new cycle.

To remove heat from the machine, cooling water from a cooling tower is firstly circulated through the tubes of the absorber to remove the heat of vaporization. The water is then circulated through the tubes of the condenser. The re-concentrated (strong) solution from the low temp. generator flows back to the absorber to begin a new cycle.

For efficiency purposes, the medium concentration solution from the high-temp. generator passes through the high-temperature solution heat exchanger to pre-heat the diluted (weak) solution, while pre-cooling the medium concentration solution. The re-concentrated (strong) solution from the low-temp. generator passes through the low temperature solution heat exchanger to pre-heat/cool the solution before being returned to the absorber.

• Heating Cycle



During heating mode, the absorber-condenser cooling water circuit is different from typical absorption process.

High temperature water vapor produced in the high-temperature generator section passes directly to the evaporator via the absorber and transfers its heat to the tube bundles and hot water is heated from 55°C to 60°C.

The Condensed water in evaporator flows to the absorber section and be mixed with the concentrated solution returning from the ighttemperature generator.

The diluted solution is pumped back to the high temperature generator to repeat the vapor generation phase for the heating function.

To changeover the chiller mode from cooling to heating is simple.

Change the position of chiller mode in the control panel first and drain the absorber-condenser water circuit and put the machine into heating mode by switching the positions of change valve.

The hot water inlet temperatures is 60°C (140°F) as a standard and 80°C (176°F) as an option with the additional heat exchanger.

Z24-105 - Generator Specifications

Performance Data

Model		Unit	CHP005H	CHP006H	CHP007H	CHP008H	CHP010H	CHP012H	CHP015H	CHP018H	CHP021H	CHP024H	CHP028H	CHP032H	CHP036H	CHP040H		
Cooling Capacity		usRT	50	60	70	80	100	120	150	180	210	240	280	320	360	400		
		kW	176	211	246	281	352	422	527	633	738	844	985	1,125	1,266	1,407		
Chilled Water	Inlet/Outlet Temp.	°C	12 / 7															
	Flow rate	ton/h	30.2	36.3	42.3	48.4	60.5	72.6	90.7	108.9	127.0	145.2	169.3	193.5	217.7	241.9		
	Pressure Drop	mH ₂ O	7.5	6.9	6.3	6.9	5.9	6.1	8.0	8.2	7.6	7.5	5.4	5.3	5.7	5.8		
	Connection	mm	80				100				125		150					
Cooling Water	Inlet/Outlet Temp	°C	32 / 37.1															
	Flow rate	m³/h	50	60	70	80	100	120	150	180	210	240	280	320	360	400		
	Pressure Drop	mH ₂ O	7.3	6.1	8.0	7.6	7.3	7.7	9.9	10.4	11.5	10.2	8.3	7.9	8.1	8.2		
	Connection	mm	100				125		150				200					
Heating Capacity		Mcal/h	103	123	144	165	206	247	309	370	432	494	576	658	741	823		
		kW	120	143	167	191	239	287	359	430	502	574	669	765	861	956		
Hot Water	Inlet/Outlet Temp	°C	56.6 / 60															
	Flow rate	ton/h	30.2	36.3	42.3	48.4	60.5	72.6	90.7	108.9	127.0	145.2	169.3	193.5	217.7	241.9		
	Pressure Drop	mH ₂ O	7.5	6.9	6.3	6.9	5.9	6.1	8.0	8.2	7.6	7.5	5.4	5.3	5.7	5.8		
	Connection	mm	80				100				125		150					
Exhaust Gas	Gas Flow rate	kg/sec	0.305	0.366	0.427	0.488	0.610	0.732	0.915	1.098	1.281	1.464	1.708	1.952	2.195	2.439		
	Inlet/Outlet Temp @ Cooling	°C	450 / 120															
	Inlet/Outlet Temp @ Heating	°C	450 / 125															
	Pressure Drop	mmH ₂ O	48	53	66	69	58	99	69	95	88	109	117	145	101	129		
	Inlet Connection	mm-mm	782×291	782×330	782×369	782×408	922×408	922×486	922×603	922×642	922×681	922×681	922×798	922×876	1376×720	1376×759		
	Outlet Connection	mm	300				400				500				600			
	Diverter Valve	mm	300				400				500				600			
	Electric	Power source	-	3PH, 400V, 50Hz														
Absorbent Pump		kW	1.2(3.8)				1.5(4.8)				2.0(5.7)				2.4(6.7)			
Refrigerant Pump		kW	0.2 (1.2)								0.3 (1.4)							
Purge Pump		kW	0.4 (1.4)															
Sealing Blower		kW	0.75(2.4)				1.5(3.4)											
Control Panel		kW	0.2 (0.5)															
Total kW		kW	2.8				3.8				4.4				4.8			
Total Ampere @ 400V		A	9.3				11.3				12.4				13.4			
External Dimension	Length (L)	mm	2,110		2,610		2,658		3,678		3,728		4,748		4,854			
	Width (W)	mm	1,683	1,722	1,761	1,800	1,857	1,935	1,965	1,984	2,194		2,310		2,349			
	Height (H)	mm	2,017				2,202				2,460				2,557			
Weight	Rigging	ton	3.0	3.2	3.7	3.9	5.0	5.3	6.4	6.8	7.9	8.5	9.8	10.3	12.8	13.2		
	Operation	ton	3.2	3.5	4.0	4.3	5.4	5.8	7.0	7.4	8.6	9.3	10.7	11.3	14.0	14.6		
Space tube Replacement		mm	1,900		2,400	2,400	2,400	2,400	3,400			4,600						

Note

1. Working pressure of each water side is based on 1.0MPa (150psig)
2. Fouling factor 0.0001 m².hr.°C/Kcal for Absorber, Condenser and Evaporator.
3. Min. outlet temp. of chilled water: 5°C
4. Min. allowable inlet temp. of cooling water: 20°C.
5. Controllable range shall be 0~100%.
6. Standard Power source is 3ph, 400V, 50Hz and available 220, 380, 440V and 460V power source.
7. Each water flow can be adjusted within 50~120%.

Z24-105 Project Exhibits

The site plan illustrates the layout of the Z24-105 Project Exhibits. It features several buildings labeled (E) BUILDING A, (E) BUILDING B, (E) BUILDING C, and (E) BUILDING D. Building A is a 1-story structure with 42,817 G.S.F. Building B is a 2-story structure with 121,873 G.S.F. Building C is a 1-story structure with 42,817 G.S.F. Building D is a 1-story structure with 42,817 G.S.F. The plan also shows various parking areas, including (E) TRUCK LOT, (E) PARKING, and (E) ROW OF PARKING. Other features include (E) TRASH ENCLOSURE, (E) LOADING DOCK, (E) MANHOLE, (E) INLET, (E) FENCE, (E) WATER VALVE, (E) FIRE HYDRANT, (E) ACCESSIBLE PARKING, (E) CONC. WALK, TYP., and (E) DRIVEWAY. The site is bounded by POWER RIDGE ROAD to the north and PROCTER AND GAMBLE DRIVE to the east. A dashed line indicates the PROJECT PARCEL WALL SHOWN OFFSET @ PROPERTY LINE. A brown hatched area is labeled AREA OF SCOPE OF WORK (BROWN HATCHED). A proposed location for generators is also indicated. The plan includes numerous dimensions and labels for various features and setbacks.

Preliminary Design For:

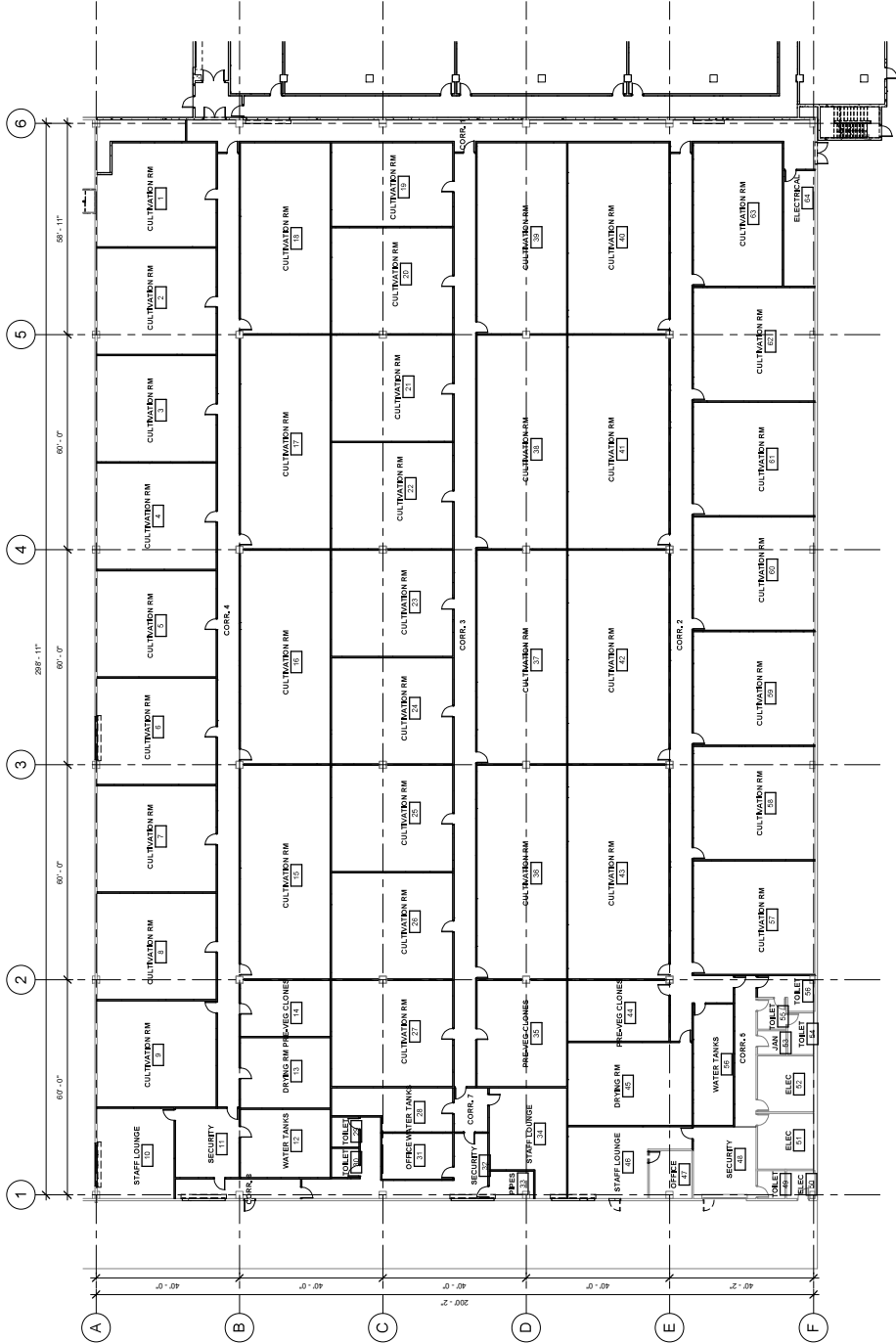
IC. 10850 GOLD
916.362.6303(P)



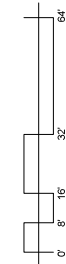
COMSTOCK JOHNSON ARCHITECTS, INC.
10850 GOLD CENTER DRIVE #250
RANCHO CORDOVA, CA 95670
ATTN: NAVID SHIROOJI
PHONE: (916) 362-6303
EMAIL: navid@cj-architects.com

ASSASSIN'S PARCEL	0940101546
JOB SITE ADDRESS	3101 PRINCE ROAD N. COVINGTON, LA 70459
USE ZONE	W25 - HEAVY INDUSTRIAL
LOT SIZE	422,566 S.F. (9.69 ACRES)
(B) 1 STORY BUILDING AREA	39,718 S.F.
(B) 2 STORY BUILDING AREA	121,173 S.F.
(B) 1 STORY ADJACENT TENANT SPACE IN BUILDING C	4,617 S.F.
TOTAL PARKING PROVIDED	226 STALLS (1 SPACE PER 1,000 S.F.)
TOTAL LONG-TERM CYCLE PARKING PROVIDED	13 SPACES (1 SPACE PER 3,000 S.F.)
TOTAL SHORT-TERM CYCLE PARKING PROVIDED	2 SPACES

Z24-105 - Project Exhibits



1 BUILDING A FLOOR PLAN

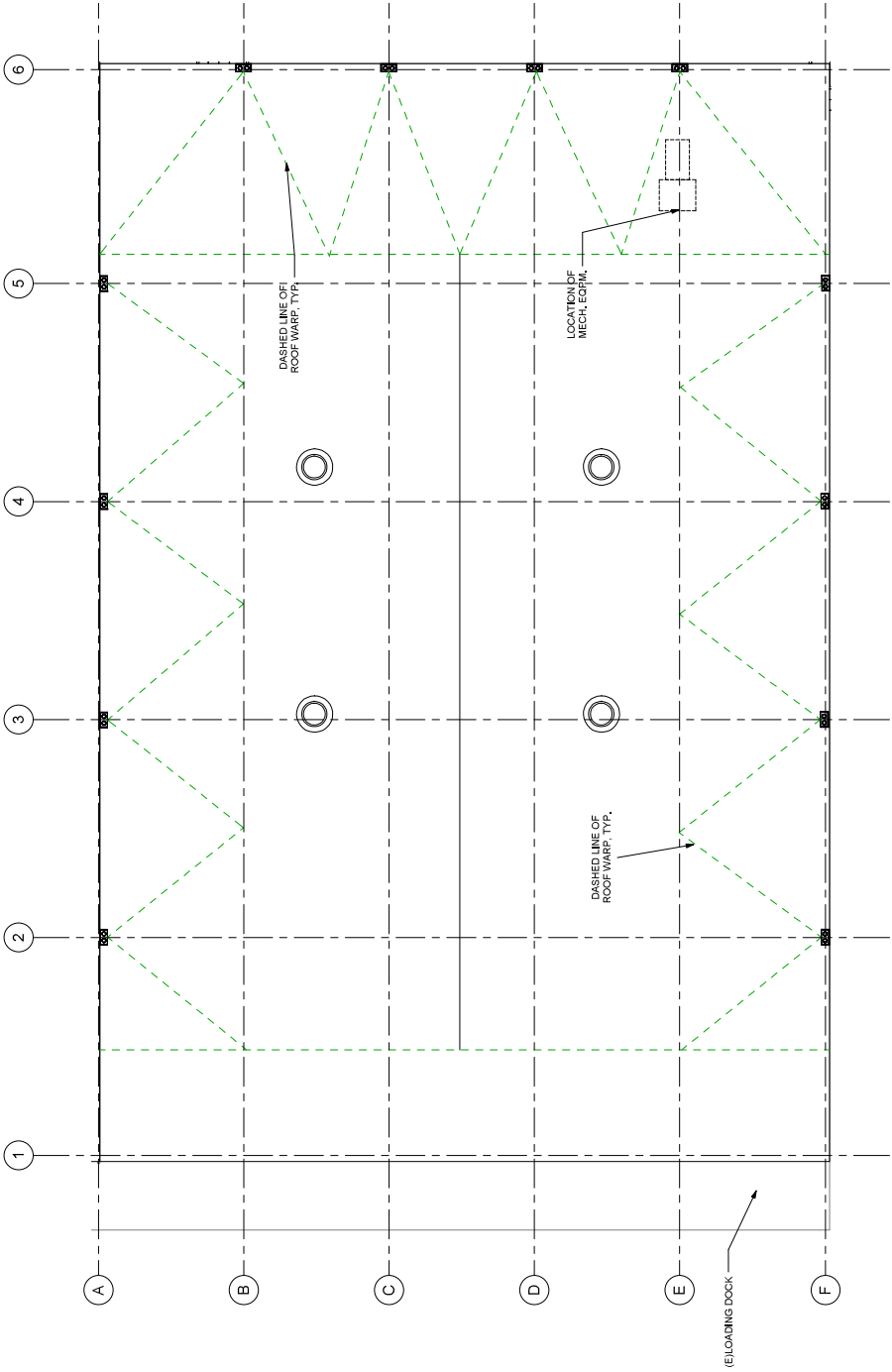


Preliminary Design For:
8151 FRUITRIDGE RD
8151 FRUITRIDGE RD,
SACRAMENTO, CA

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915.362.8303 (P)

KW/MS 2017146200 01/30/25





2 BUILDING A - ROOF PLAN
SCALE: 1/8" = 1'-0" (EXISTING - SHOWN FOR REFERENCE ONLY)



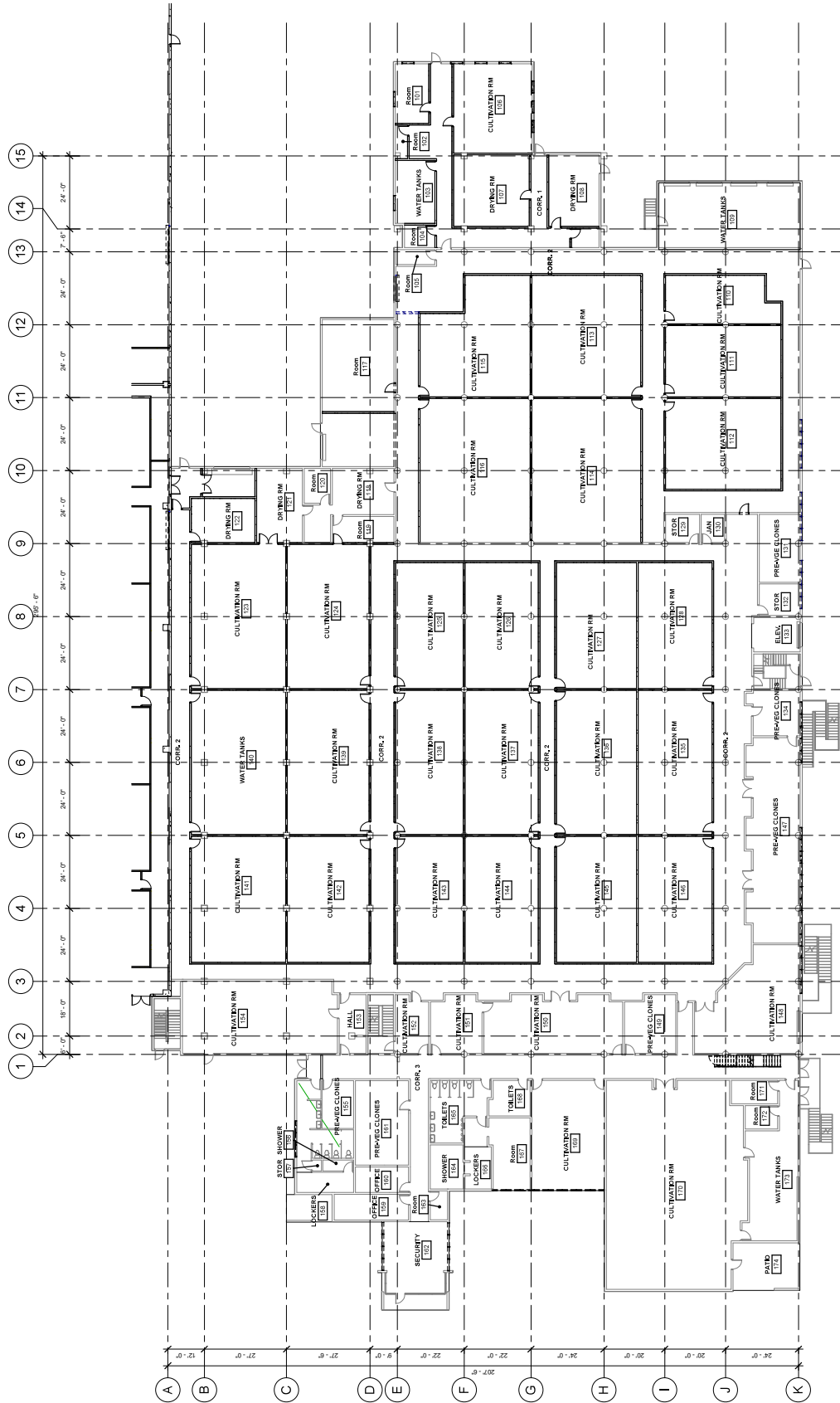
Preliminary Design For:
8151 FRUITRIDGE RD
8151 FRUITRIDGE RD,
SACRAMENTO, CA

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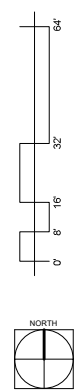
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Z24-105 - Project Exhibits



4 BUILDING B-FIRST FLOOR
SCALE 1/8" = 1'-0"



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This architectural floor plan depicts a multi-room facility, possibly a laboratory or industrial building, organized in a grid system. The plan includes the following details:

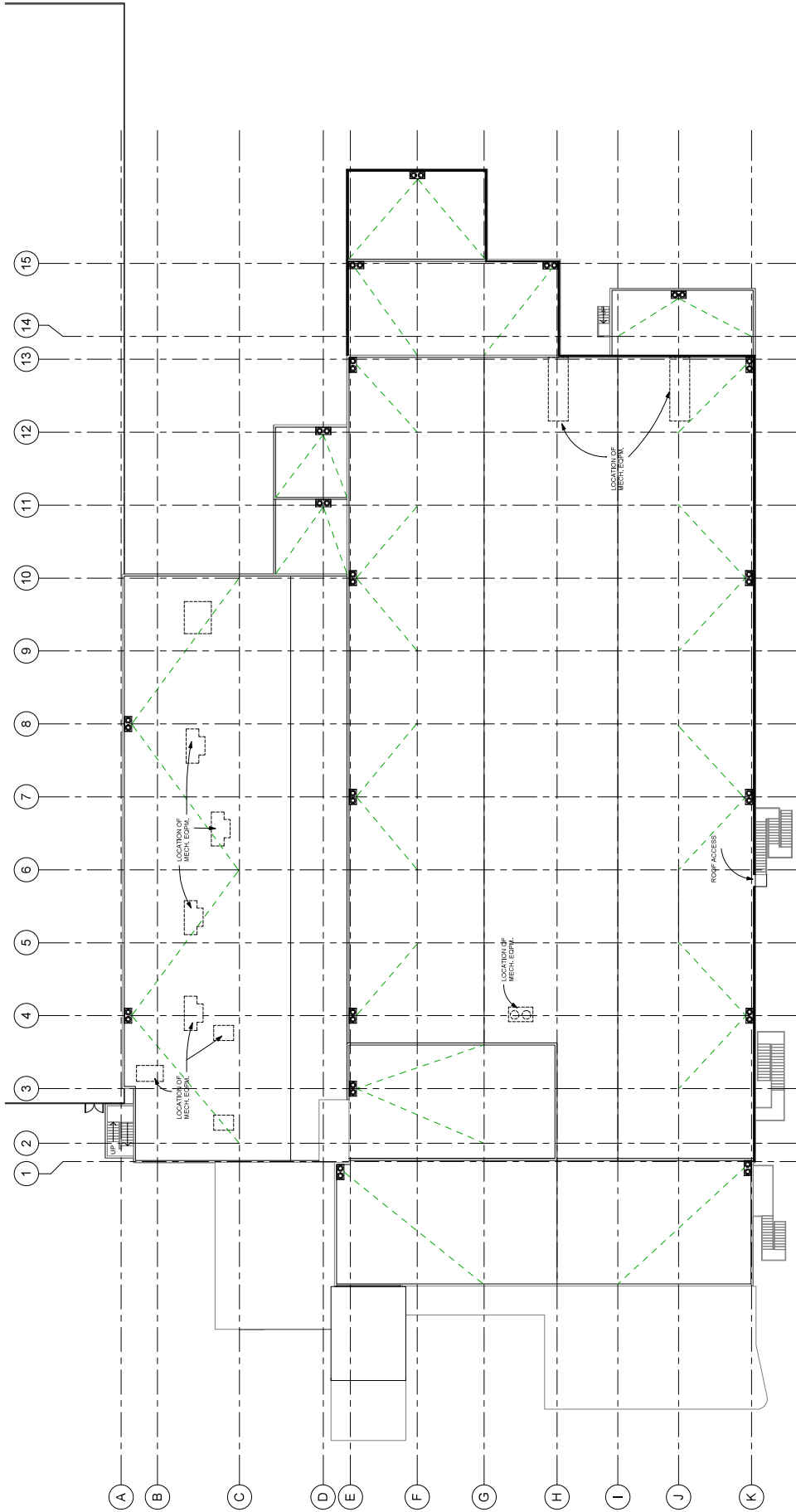
- Room Layout and Numbering:**
 - Cultivation Rooms:** A large section of the plan is dedicated to cultivation rooms, numbered sequentially from 201 to 240. These are arranged in a grid, with some rooms labeled as "CULTIVATION RM" and others as "CULTIVATION RM" (e.g., 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240).
 - Preparation Clones:** Rooms labeled "PREPARED CLONES" are located in the upper right and lower left sections, numbered 231-240.
 - Water Tanks:** Two rooms labeled "WATER TANKS" are located in the upper left section, numbered 221-230.
 - Support Rooms:** Other rooms include "TOILET" (221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240), "STAFF LOUNGE" (221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240), "OFFICE" (221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240), and "DINING RM" (221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240).
- Corridors and Stairs:**
 - Corridors:** Labeled "CORR. 1", "CORR. 2", "CORR. 3", and "CORR. 4" are shown throughout the plan.
 - Stairs:** Indicated by "UP" and "DOWN" arrows, showing vertical circulation.
 - Elevators:** Labeled "ELEV." are located in the upper right and lower right sections.
- Dimensions and Orientation:**
 - Dimensions are provided for various sections, such as 24'-0" and 27'-0".
 - The plan is oriented with North at the top.



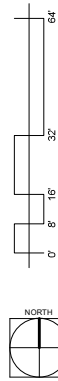
Comstock
ARCHITECTS INC.

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Z24-105 - Project Exhibits



6 BUILDING B - ROOF PLAN
SCALE: 1/8" = 1'-0" (EXISTING - SHOWN FOR REFERENCE ONLY)



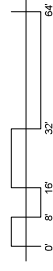
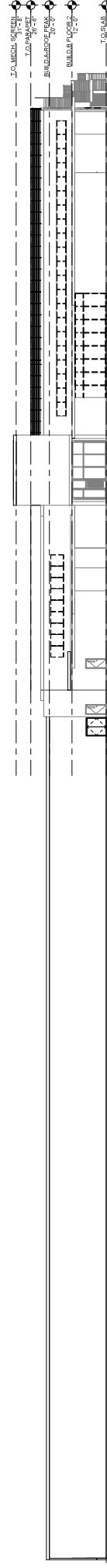
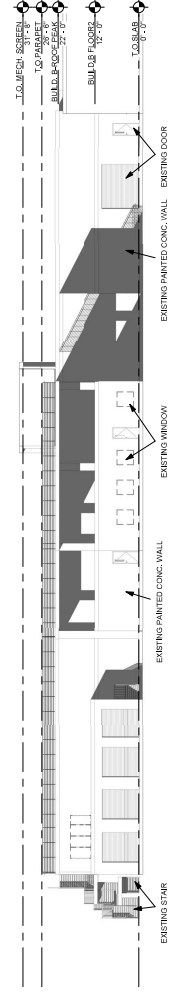
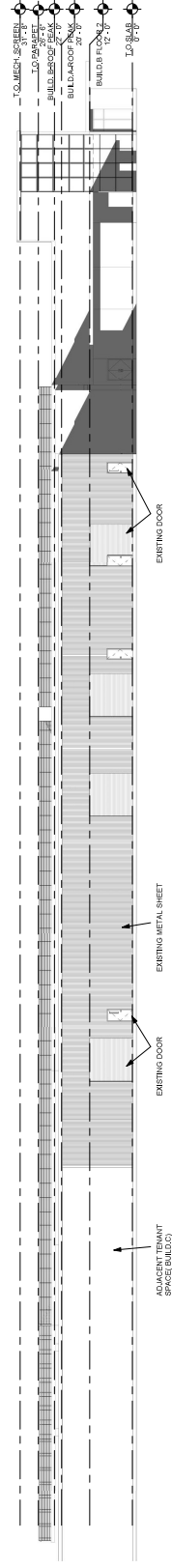
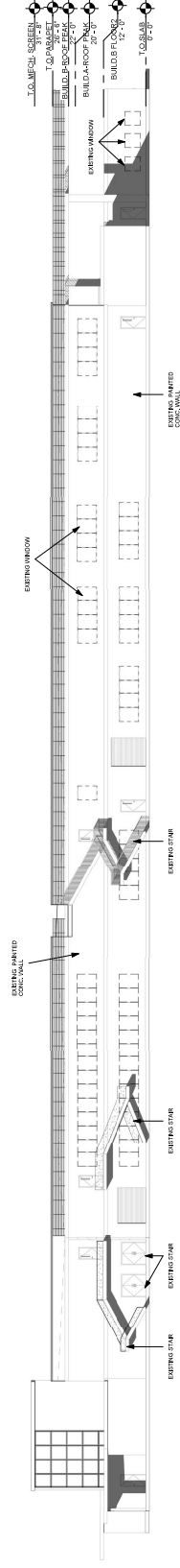
Preliminary Design For:
8151 FRUITRIDGE RD
8151 FRUITRIDGE RD, SACRAMENTO, CA

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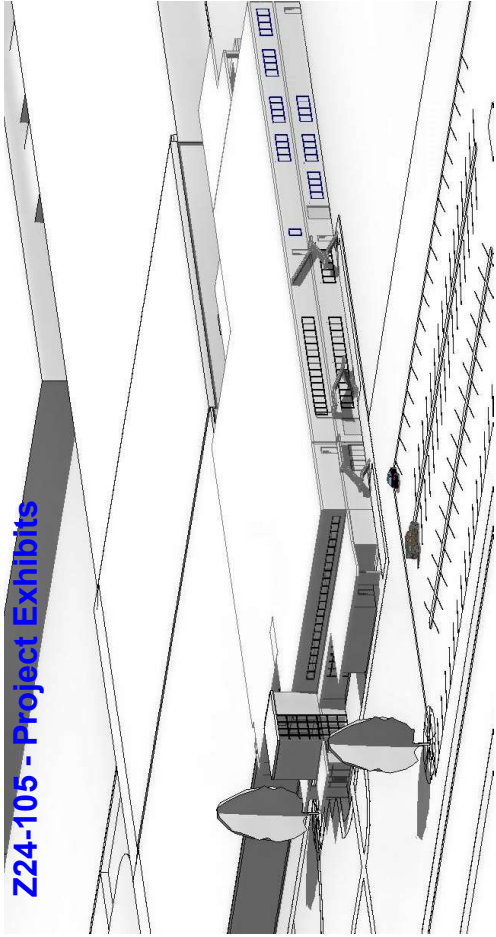
Preliminary Design For:
8151 FRUITRIDGE RD
8151 FRUITRIDGE RD, SACRAMENTO, CA

KLW / NS 2017146.00 01/30/25

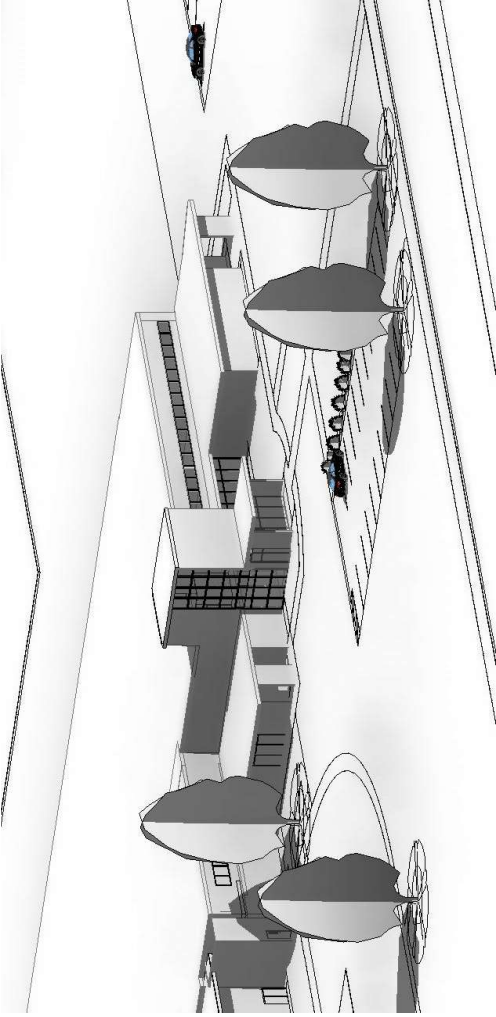


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Z24-105 - Project Exhibits



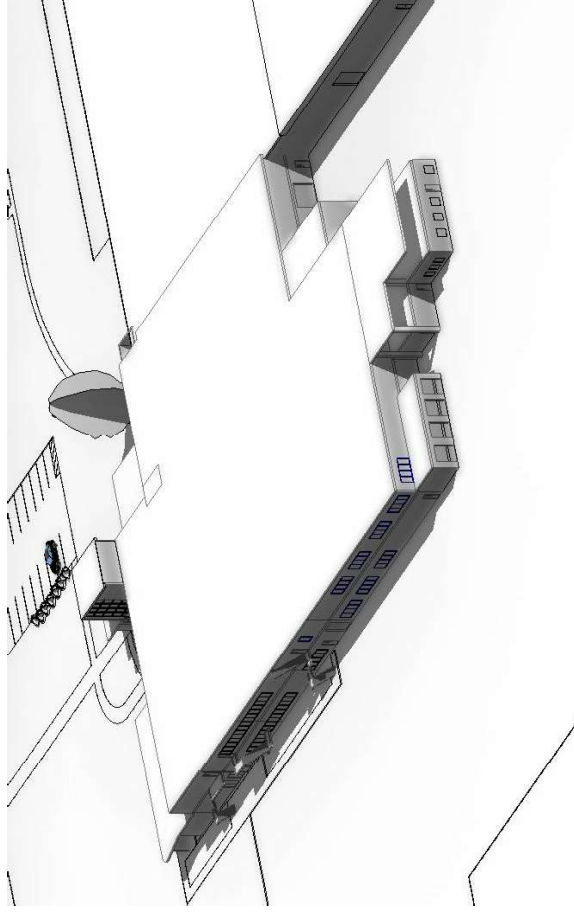
BUILDING B PERSPECTIVE



BUILDING B PERSPECTIVE



BUILDING A&B PERSPECTIVE



BUILDING A & B PERSPECTIVE

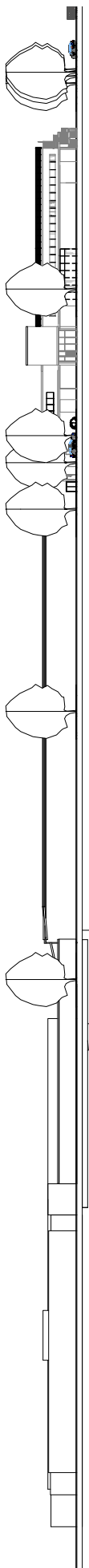
Preliminary Design For:
8151 FRUITRIDGE RD
8151 FRUITRIDGE ROAD
SACRAMENTO, CA



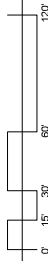
KJW/MS 2017/4620 01/30/25

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Z24-105 - Project Exhibits



1 STREETScape VIEW
SCALE: 1" = 30'-0"



Preliminary Design For:
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8151 FRUITRIDGE ROAD
SACRAMENTO, CA

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