1,350 kW EXTERIOR FUEL CELL INSTALLATION

PRIOR TO COMMENCING ANY EXCAVATION OR DEMOLITION, THE CONTRACTOR SHALL CONTACT LOCAL UTILITIES, INCLUDING BUT NOT LIMITED TO ELECTRICAL, GAS, WATER, CABLE, AND TELEPHONE, REQUESTING A UTILITY MARK OUT AND AS NECESSARY RETAIN THE SERVICES OF A PRIVATE UTILITY MARK OUT COMPANY TO PERFORM SUCH MARK OUT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY THE LOCATION OF UTILITIES, IRRIGATION, SITE LIGHTING, AND ELECTRICAL LINES IN THE VICINITY OF THE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR ANY AND ALL UTILITIES DAMAGED BY THE CONTRACTOR'S OPERATION AT NO ADDITIONAL EXPENSE.

Know what's below. Call before you dig.

Bloomenergy
4353 N. FIRST STREET
SAN JOSE, CA 95134

PROPRIETARY AND CONFIDENTIAL

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KAISER PERMANENTE®

City of Santa Rosa
Planning & Economic
Development Department
May 19, 2021
RECEIVED

401 BICENTENNIAL WAY
SANTA ROSA, CA 95403

Bloomenergy®

SITE INFORMATION

PARCEL INFORMATION

PROPERTY OWNER	KAISER PERMANENTE
COUNTY	SONOMA COUNTY
TAX MAP #	173-030-003

PROPERTY DESCRIPTION

PROPERTY TYPE	HOSPITAL
PROPERTY AREA*	9,77,922 S.F
DISTURBED AREA	±3,100 S.F

*BASED ON ACESSOR'S MAP/ PARCEL MAP DATED 16/21/2018

PERMITTING INFORMATION

MUNICIPAL

AGENCY	DEPARTMENT	CONTACT INFO
PLANNING	CITY OF SANTA ROSA BUILDING DEPARTMENT	(707) 543-4698
BUILDING	CITY OF SANTA ROSA BUILDING DEPARTMENT	(707) 543-3200
FIRE	SANTA ROSA FIRE STATION 3	(707) 543-3500

UTILITY

TYPE	COMPANY	CONTACT INFO
NATURAL GAS	PACIFIC GAS AND ELECTRIC COMPANY	(707) 543-3985
ELECTRICAL	PACIFIC GAS AND ELECTRIC COMPANY	(707) 543-3985
WATER	SANTA ROSA UTILITIES DEPARTMENT	(707) 543-4200

CODES

BUILDING	2019 CALIFORNIA BUILDING CODE
ENERGY	2019 CALIFORNIA ENERGY CODE
PLUMBING	2019 CALIFORNIA PLUMBING CODE
FUEL GAS	2019 CALIFORNIA MECHANICAL CODE
ELECTRICAL	2019 CALIFORNIA ELECTRICAL CODE

PROJECT TEAM CONTACTS

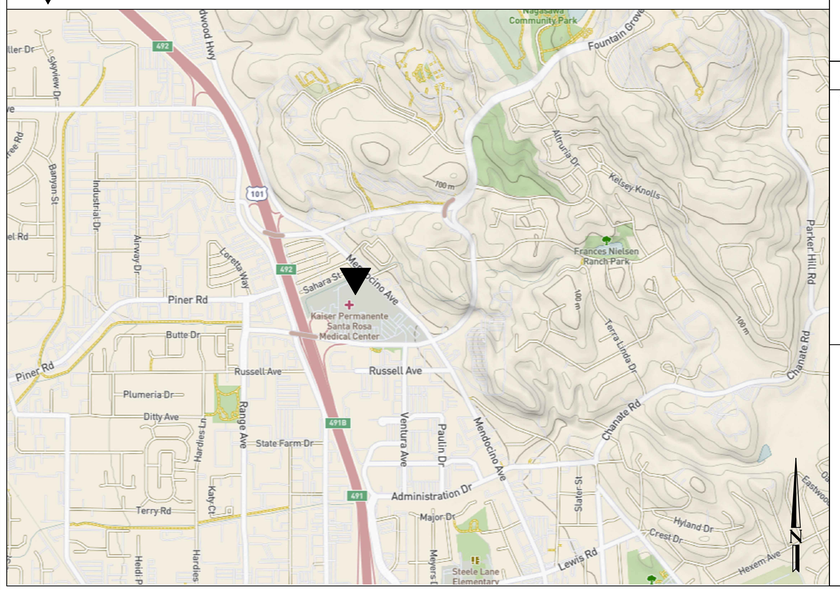
FIRM	ADDRESS	CONTACT INFO
MANUFACTURER BLOOM ENERGY	4353 N. FIRST STREET SAN JOSE, CA 95134	(408) 543-1500
CUSTOMER KAISER PERMANENTE	401 BICENTENNIAL WAY SANTA ROSA, CA 95403	(707)-393-4000

DRAWING INDEX

SHT#	DWG#	SHEET TITLE	REV#	DATE
01	G0.1	COVER SHEET	–	–
02	G0.2	GENERAL CONSTRUCTION NOTES	–	–
03	G1.1	PROPOSED SITE PLAN	–	–
04	G1.2	NEIGHBORHOOD CONTEXT MAP	–	–
05	C1.1A	DETAILED SITE PLAN–1	–	–
06	C1.1B	DETAILED SITE PLAN–2	–	–
07	C1.2	GRADING PLAN	–	–
08	C1.3	SECTIONAL ELEVATIONS	–	–
09	C1.4	ELEVATION VIEWS	–	–
10	E3.1	ELECTRICAL SINGLE LINE DIAGRAM	–	–
11	R0.1	BLOOM ENERGY PRODUCT DATA SHEET	–	–

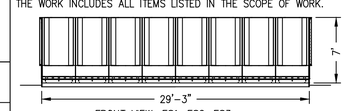
VICINITY MAP (NTS)

▼ PROJECT SITE

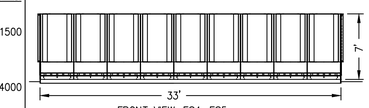


PROJECT DESCRIPTION

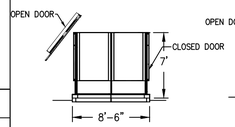
THIS PROJECT CONSISTS OF THE INSTALLATION OF FIVE (5) BLOOM ENERGY ES5 OUTDOOR NATURAL GAS CLEAN ENERGY SERVERS. THE CLEAN ENERGY SERVERS ARE SUPPORTED ON A CONCRETE PADS. THE WORK INCLUDES ALL ITEMS LISTED IN THE SCOPE OF WORK.



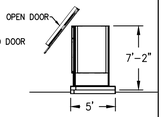
FRONT VIEW–ES1, ES2, ES3



FRONT VIEW–ES4, ES5



SIDE VIEW–ES2, ES3, ES4, ES5



SIDE VIEW–ES1

SCOPE OF WORK

THE SCOPE OF WORK FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH THE DETAILS AND SPECIFICATIONS SET FORTH IN THIS PLAN SET AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

CIVIL WORK
- SAWCUTTING EXISTING LANDSCAPE AND PAVEMENT FOR NEW EQUIPMENT PADS TO SUPPORT BLOOM ENERGY SERVERS AND ANCILLARY EQUIPMENTS.
- PREPARATION OF SUBGRADE AT CUTOUTS IN ORDER TO SUPPORT THE WEIGHT OF THE NEW EQUIPMENT.
- TRENCHING AND BACKFILLING FOR NEW UTILITY, WATER, AND ELECTRICAL CONNECTIONS FROM BLOOM ENERGY SERVERS PER LOCATIONS AS SPECIFIED ON PLANS.
- RESEEDING TO MATCH EXISTING OF ALL VEGETATED AREAS THAT WERE DISTURBED.
- PAVEMENT RESTORATION OF ALL TRENCHING AREAS WITHIN THE EXISTING ASPHALT.
- PLACEMENT OF NEW CONCRETE PADS FOR BLOOM ENERGY SERVERS AND ANCILLARY EQUIPMENT AT PREPARED SUBGRADE SURFACE WITHIN LANDSCAPE AND PAVEMENT CUTOUTS.
- INSTALLATION OF NEW BOLLARDS IN FRONT OF BLOOM ENERGY SERVERS TO PROVIDE PROTECTION FROM VEHICULAR TRAFFIC.

ELECTRICAL WORK
- INSTALLATION OF NEW ELECTRICAL FEEDERS BETWEEN BLOOM ENERGY SERVERS AND EXISTING MAIN SERVICE SWITCHGEAR.

PLUMBING WORK
- NEW WATER CONNECTION FROM POTABLE WATER SOURCE IN FACILITY TO BLOOM ENERGY SERVER..
- NEW NATURAL GAS CONNECTION AT EXISTING EXISTING GAS SERVICE LINE FROM MENDOCINO AVE.

BLOOM ENERGY FAQ's

Q: WHAT IS A BLOOM ENERGY SERVER?
A: THE BLOOM ENERGY SERVER IS A STATIONARY FUEL CELL POWER SYSTEM.
Q: IS THE BLOOM ENERGY SERVER PRODUCT LISTED OR CERTIFIED?
A: YES. ES–5XXX SERIES:
- THE FUEL CELL IS UL LISTED AS A "STATIONARY FUEL CELL POWER SYSTEM" TO ANSI/CSA AMERICA FC 1–2004.
- IT IS UL LISTED UNDER UL CATEGORY IRGZ AND UL FILE NUMBER MH45102.

ES5 SERIES:
- THE FUEL CELL IS UL LISTED AS A "STATIONARY FUEL CELL POWER SYSTEM" TO ANSI/CSA FC 1–2014.
- IT IS UL LISTED UNDER UL CATEGORY IRGZ AND UL FILE NUMBER MH45102.

Q: WHERE ARE FUEL CELLS COVERED IN THE NATIONAL ELECTRICAL CODE (NEC)?
A: FUEL CELLS ARE COVERED IN ARTICLE 692 OF THE NEC (NFPA 70). FUEL CELLS HAVE BEEN INCORPORATED INTO THE NEC SINCE 2002.
Q: WHAT IS THE MODEL NUMBER OF THIS PRODUCT?
A: PLEASE SEE THE DATA SHEET PROVIDED WITH THIS FAQ.
Q: WHAT IS THE NOISE LEVEL OF THE FUEL CELL SYSTEM?
A: FOR SPECIFIC DB RANGES, PLEASE REFER TO THE DATA SHEET PROVIDED WITH THIS FAQ.
Q: DO BLOOM ENERGY FUEL CELL SYSTEMS PROVIDE LIFE SAFETY POWER?
A: NO. WE ARE NOT LIFE SAFETY AND DO NOT PROVIDE LIFE SAFETY POWER, EVEN WHEN A UPM IS INSTALLED. WE ARE NOT ALTERING WHATEVER LIFE SAFETY IS CURRENTLY PRESENT AT THE FACILITY.
Q: IS THE BLOOM ENERGY FUEL CELL SYSTEM TAMPER–PROOF?
A: YES. THE FUEL CELLS ARE SECURED IN PLACE AND DOORS ARE SECURED AND LOCKED. ONLY BLOOM SERVICE PERSONNEL HAVE THE KEYS AND CAN BE ON–SITE WITHIN 24 HOURS.
Q: WHAT HAPPENS TO THE CUSTOMER FACILITY POWER IF THE FUEL CELLS SHUT DOWN?
A: THE FUEL CELL SYSTEM IS OPERATED IN GRID–PARALLEL MODE. IF THE UTILITY GRID IS OPERATIONAL, THE CUSTOMER FACILITY WILL RECEIVE POWER FROM THE GRID AND NOTICE NO DIFFERENCE.
Q: WHAT HAPPENS TO THE FUEL CELL SYSTEM WHEN THE UTILITY POWER SHUTS DOWN?
A: IF UTILITY PROVIDED POWER IS LOST FOR ANY REASON, THE FUEL CELL SYSTEM WILL ALSO STOP PRODUCING POWER. THE FUEL CELL SYSTEM WILL REMAIN IN STAND–BY MODE UNTIL IT AUTOMATICALLY SENSES THE UTILITY GRID HAS BEEN RESTORED.
Q: WHAT HAPPENS TO THE FUEL CELL SYSTEM WHEN THE UTILITY GAS SHUTS DOWN?
A: IF THE UTILITY GAS IS INTERRUPTED, THE FUEL CELL SYSTEM WILL AUTOMATICALLY SHUT DOWN AS WELL.
Q: CAN THE FUEL CELL SYSTEM BE SHUT DOWN LOCALLY IN CASE OF AN EMERGENCY?
A: YES. IF THE FUEL CELL MUST BE SHUT DOWN RIGHT AWAY––FOR EXAMPLE, IN CASE OF A BUILDING FIRE OR ELECTRICAL HAZARD––TWO SHUTOFF CONTROLS ARE INSTALLED AT THE FACILITY EXTERNAL TO THE SYSTEM. THE LOCATIONS OF THESE TWO CONTROLS SHOULD BE KNOWN TO THE FACILITIES MANAGER BEFORE OPERATION AND SHOULD BE NOTED ON THE SITE DIAGRAM THAT IS CREATED FOR EACH SITE DURING INSTALLATION. THE TWO SHUTOFFS ARE:
(1) THE ELECTRICAL DISCONNECT SWITCH AND
(2) THE MANUAL NATURAL GAS SHUTOFF VALVE. A THIRD SHUTOFF, AN EMERGENCY POWER OFF (EPO) BUTTON, MAY BE PROVIDED ON–SITE.
Q: DOES THE BLOOM ENERGY FUEL CELL SYSTEM OPERATE 24/7?
A: YES.
Q: ARE THE BLOOM ENERGY FUEL CELL SYSTEMS MONITORED?
A: YES. BLOOM ENERGY FUEL CELL SYSTEMS ARE CONTROLLED REMOTELY AND HAVE INTERNAL SENSORS THAT CONTINUOUSLY MONITOR SYSTEM OPERATION. IF SAFETY CIRCUITS DETECT A CONDITION OUTSIDE NORMAL OPERATING PARAMETERS, THE FUEL SUPPLY IS STOPPED AND INDIVIDUAL SYSTEM COMPONENTS ARE AUTOMATICALLY SHUT DOWN. A BLOOM ENERGY REMOTE OPERATOR CAN ALSO REMOTELY INITIATE ANY EMERGENCY SEQUENCE. AN EMERGENCY STOP ALARM INITIATES AN AUTOMATIC SHUTDOWN SEQUENCE THAT PUTS THE SYSTEM INTO "SAFE MODE" AND CAUSES IT TO STOP EXPORTING POWER. IF YOU HAVE QUESTIONS ABOUT ANY OF THESE SAFETY FEATURES, PLEASE CONTACT BLOOM ENERGY AT CUSTOMERCARE@BLOOMENERGY.COM.
Q: WHAT ARE THE EMISSIONS GENERATED BY BLOOM ENERGY FUEL CELL SYSTEMS?
A: THE SPECIFIC PERCENTAGE OF CARBON EMISSION REDUCTIONS ARE DEPENDENT ON YOUR STATE'S GENERATION MIX, BUT BLOOM ENERGY FUEL CELL SYSTEMS VIRTUALLY ELIMINATE NOX, SOX, AND OTHER CRITICAL AIR POLLUTANTS THAT ARE FOUND IN TRADITIONAL ELECTRICITY GENERATION METHODS. FOR SPECIFIC EMISSIONS RANGES, PLEASE REFER TO THE DATA SHEET PROVIDED WITH THIS FAQ.
Q: WHAT IS THE SUSTAINABILITY IMPACT OF BLOOM ENERGY FUEL CELL SYSTEMS?
A: BLOOM ENERGY FUEL CELL SYSTEMS GENERATE ELECTRICITY ON–SITE THROUGH AN EFFICIENT ELECTROCHEMICAL REACTION WITHOUT COMBUSTION. DUE TO THE HIGH EFFICIENCY (60%–53% COMPARED TO A COMBINED CYCLE NATURAL GAS PLANT WITH EFFICIENCY OF 40–45% OR COAL PLANTS AT 35%) BLOOM ENERGY SERVERS REDUCE CARBON EMISSIONS BY 20–50% COMPARED TO THE US GRID EMISSION RATES. THE VARIATION IN EMISSIONS REDUCTION IS DUE TO THE VARIATION IN HOW DIFFERENT STATES GENERATE ELECTRICITY. IN ADDITION, BLOOM ENERGY FUEL CELL SYSTEMS USE NO WATER DURING NORMAL OPERATION

CUSTOMER SITE
KAISER PERMANENTE
401 BICENTENNIAL WAY
SANTA ROSA, CA 95403

KAISER PERMANENTE®

REVISION HISTORY

REV	REVISION ISSUE	DATE

DESIGNED BY PREETI AGARWAL	REVIEWED BY CARSON TURNER
DRAWN BY CHIRANJEEVI	APPROVED BY CARSON TURNER

SHEET TITLE
COVER SHEET

DRAWING NUMBER
G0.1

BLOOM DOCUMENT
DOC–1013199

THIS DRAWING IS 24" X 36" AT FULL SIZE

SITE ID: KSR094.0 | SHEET 01 OF 11

GENERAL CONSTRUCTION NOTES

1. IN THE EVENT OF DISCREPANCIES BETWEEN THE DRAWINGS, SPECIFICATIONS, OR SCOPE OF WORK SUMMARY IN THIS PACKAGE, NOTIFY BLOOM ENERGY IMMEDIATELY. REFERENCE SEPARATE BLOOM ENERGY DOC-1008337 FOR ASSOCIATED ENERGY SERVER INSTALLATION SPECIFICATIONS.
2. THE EXISTING SITE PLAN FEATURES ARE BASED ON DESIGN DRAWINGS, AS-BUILT PLANS, AERIAL PHOTOGRAPHS AND FIELD MEASUREMENTS UNLESS OTHERWISE NOTED. THE LOCATIONS OF ALL FEATURES AND STRUCTURES ON THE PLANS ARE APPROXIMATE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL WORK IS DONE IN ACCORDANCE WITH CURRENT APPLICABLE NATIONAL, STATE AND LOCAL CODES, ORDINANCES AND REQUIREMENTS AT A MINIMUM; EVEN IF NOT SPECIFICALLY REFERENCED IN THESE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS. MORE STRINGENT REQUIREMENTS MAY BE SPECIFIED. IN SITUATIONS WHERE THERE IS A CONFLICT BETWEEN THE MINIMUM REGULATORY REQUIREMENTS AND INFORMATION PROVIDED IN THESE DRAWINGS OR SPECIFICATIONS CONSULT BLOOM ENERGY FOR RESOLUTION BEFORE COMMENCING WORK.
4. THE CONTRACTOR SHALL PROTECT ALL EXISTING ITEMS AND FACILITIES TO REMAIN THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL REPAIR AND/OR REPLACE, AT CONTRACTOR'S EXPENSE, ANY EXISTING ITEMS AND FACILITIES TO REMAIN THAT ARE DAMAGED BY THE CONTRACTOR'S OPERATIONS, TO THE SATISFACTION OF PROPERTY OWNER AND BLOOM ENERGY.
5. UNLESS DELIVERY IS SPECIFIED BY BLOOM ENERGY TO THE JOB SITE, CONTRACTOR SHALL DELIVER ALL EQUIPMENT, DAMAGE-FREE TO THE JOB SITE.
6. PRIOR TO COMMENCING ANY EXCAVATION OR DEMOLITION, THE CONTRACTOR SHALL CONTACT LOCAL UTILITIES, INCLUDING BUT NOT LIMITED TO, ELECTRICAL, GAS, WATER, CABLE, AND TELEPHONE, CONTRACTOR SHALL REQUEST A UTILITY MARK OUT AND AS NECESSARY RETAIN THE SERVICES OF A PRIVATE UTILITY MARK OUT COMPANY TO PERFORM SUCH MARK OUT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND VERIFY THE LOCATION OF UTILITIES, IRRIGATION, SITE LIGHTING, AND ELECTRICAL LINES IN THE VICINITY OF THE CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY AND ALL UTILITIES DAMAGED BY THE CONTRACTOR'S OPERATION AT NO ADDITIONAL EXPENSE.
7. BLOOM ENERGY WILL PROVIDE THE CONTRACTOR WITH COPIES OF ALL PERMITS AND PROVIDE THE CONTRACTOR ANY CONDITIONS OF APPROVAL BY THE PLANNING DEPARTMENT.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING JURISDICTIONS AS REQUIRED FOR INSPECTIONS.
9. THE CONTRACTOR SHALL PROVIDE BLOOM ENERGY WITH
   - A CONSTRUCTION SCHEDULE PRIOR TO STARTING THE WORK
   - A QUALIFIED JOB SUPERINTENDENT THROUGHOUT THE WORK
   - PHOTOS SHOWING TRENCHES PRIOR TO BACKFILL, SLOPE OF STEEL OR PRECAST PADS
   - FINAL AS BUILT DRAWINGS OF ALL UNDERGROUND CONSTRUCTION.
10. THE CONTRACTOR SHALL PROVIDE BARRICADES AND SAFETY SIGNS PER OSHA REQUIREMENTS.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OVERALL CONSTRUCTION SITE CLEANLINESS, INCLUDING PROVISIONS OF A DEBRIS BOX WITH WEEKLY SERVICING, REMOVAL OF ALL CONTRACTOR/SUBCONTRACTOR REFUSE AND DEBRIS, AND SWEEPING OF THE ENTIRE YARD AREA AT THE COMPLETION OF THE WORK.
12. UNLESS STATED OTHERWISE IN THE SCOPE OF WORK SUMMARY, ALL OTHER PROCEDURES, TESTING, MATERIALS AND EQUIPMENT SHOWN ON THE PLANS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
13. THE PLAN VIEW DRAWINGS PROVIDED IN THIS SET INCLUDE A ROUGH SCALE REPRESENTATION OF EXISTING AND PROPOSED CONDITIONS AND SHOULD NOT BE SCALED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS ON SITE. ALL DRAWINGS MARKED "NTS" HAVE NO RELATIVE SCALE AND ONLY LISTED DIMENSIONS SHOULD BE USED.
14. EACH CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF DAMAGE TO THE WORK OF OTHER TRADES CAUSED BY THEIR OPERATIONS. ALL REPAIRS SHALL BE PERFORMED AT THE COST OF THE CONTRACTOR RESPONSIBLE FOR THE DAMAGES. WORK SHALL ONLY BE PERFORMED AFTER APPROVAL OF A REPRESENTATIVE OF THE TRADE WHOSE WORK WAS DAMAGED.
15. THE CONTRACTOR SHALL NOTIFY BLOOM ENERGY IF SITE CONDITIONS OR DIMENSIONS DISAGREE WITH INFORMATION SHOWN ON THE DRAWINGS. WORK IS NOT TO PROCEED UNTIL SUCH DIFFERENCES ARE RESOLVED.
16. THE CONTRACTOR SHALL EXAMINE THE SITE AND FAMILIARIZE THEMSELVES WITH ALL EXISTING CONDITIONS, AND BE PREPARED TO PERFORM THE WORK WITHIN THE EXISTING CONDITIONS.
17. THE CONTRACTOR AND EACH SUBCONTRACTOR SHALL INSPECT WORK PREVIOUSLY PREPARED OR INSTALLED BY OTHERS BEFORE APPLYING SUBSEQUENT MATERIALS OR FINISHES. IF UNSATISFACTORY, NOTIFY BLOOM ENERGY. DO NOT PROCEED UNTIL THE DEFECTIVE WORK HAS BEEN CORRECTED.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FAULTY MATERIALS OR WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER FINAL PROJECT PAYMENT IS MADE. ANY DEFECT OR DAMAGE FOUND EVEN AFTER THE FINAL ACCEPTANCE, CERTIFICATION AND PAYMENT FOR THIS PROJECT WILL BE REMEDIED AT THE CONTRACTOR'S EXPENSE. REPAIRS OR REPLACEMENTS REQUIRED WILL SUBSEQUENTLY BE WARRANTED FOR ONE YEAR AFTER WORK COMPLETION AND ACCEPTANCE.
19. IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES AND OSHA REQUIREMENTS, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS OF THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND WILL NOT BE LIMITED TO NORMAL WORKING HOURS.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ANY LANDSCAPED AREAS TO PRE-CONSTRUCTION CONDITION AS ASSESSED BY THE PROPERTY OWNER OR CUSTOMER. CUSTOMER APPROVAL OF AN ACCEPTABLE STATE IS REQUIRED TO CONFIRM COMPLETION OF WORK. THE CONTRACTOR SHALL SCHEDULE A POST CONSTRUCTION WALK TO EVALUATE THE LANDSCAPING FUNCTIONALITY WITH THE OWNER OR CUSTOMER'S LANDSCAPER.
21. GENERAL HOUSEKEEPING OF THE SITE, INCLUDING SWEEPING AND CONTROL OF SEDIMENT, TRASH, AND DEBRIS SHALL BE PERFORMED DAILY OR IMMEDIATELY UPON THE OCCURRENCE.
22. DURING CONSTRUCTION ALL EXITS AND DOORWAYS MUST REMAIN UNOBSTRUCTED.
23. THE TYPES, LOCATION, SIZES, AND/OR DEPTHS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE AND WERE OBTAINED FROM SOURCES OF VARYING RELIABILITY. ONLY ACTUAL EXCAVATION WILL REVEAL THE TYPES, EXTENTS, SIZED , LOCATIONS AND DEPTHS OF SUCH GROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY BLOOM ENERGY IF WORK CANNOT PROCEED AS PROPOSED.

SITE SPECIFIC CONSTRUCTION NOTES

1. CONSTRUCTION SUPERINTENDENT SHALL CONTACT THE CUSTOMER REPRESENTATIVE FOR A PRE-CONSTRUCTION CONFERENCE TWO WEEKS PRIOR TO THE START OF THE WORK. THE SCOPE OF WORK AND TIMELINE SHALL BE DISCUSSED WITH RESPECT TO ANY COORDINATION ISSUES WHICH SHALL DISRUPT THE FACILITY OPERATIONS. THE SUPERINTENDENT SHALL SUBMIT A WEEKLY STATUS REPORT TO THE CUSTOMER, WITH PICTURES, VIA EMAIL TO THE CUSTOMER REPRESENTATIVE. THIS INCLUDES ANY FACILITY EQUIPMENT WHICH ARE IN CLOSE PROXIMITY TO THE CONSTRUCTION WORK WHICH WILL BE MOVED BY THE FACILITY REPRESENTATIVES.
2. TRENCHING:
   - 2.1. ALLOWABLE TIMES FOR UTILITY TRENCH WORK IN DRIVEWAY SHALL BE COORDINATED WITH THE CUSTOMER.
   - 2.2. TRENCHING SHOULD BE DONE IN STAGES, TO ENSURE CUSTOMER TRAFFIC FLOW IS NOT IMPEDED.
   - 2.3. WHEN THE TRENCH IS OPEN, IT SHALL BE COVERED DURING OFF-WORK HOURS WITH PLATES THAT ARE CAPABLE OF SUPPORTING THE WEIGHT OF H20 VEHICLE LOADS.
3. UTILITY CONNECTIONS THAT REQUIRE TAPPING ON LIVE LINES SHALL BE PERFORMED AT NIGHT AND BE COORDINATED WITH AND APPROVED BY THE CUSTOMER PRIOR TO MAKING UTILITY CONNECTIONS. ANY PRECAUTIONARY MEASURES REQUIRED DUE TO UTILITY SHUT-OFF NEED TO BE COMPLETED BY CONTRACTOR.
4. ONLY HALF OF DRIVE AISLES MAY BE CLOSED IN ACTIVE CONSTRUCTION AREAS. OTHER VEHICLES OR MATERIALS SHALL BE KEPT AWAY FROM THE AREA SO AS TO NOT HINDER TRAFFIC FLOW. COORDINATE THE LOCATION OF ON-SITE PARKING AND/OR TEMPORARY STORAGE WITH CUSTOMER REPRESENTATIVES.
5. MAINTAIN MINIMUM 20' FIRE LANE ACCESS DURING CONSTRUCTION AND STAGE TRENCHING TO ACCOMPLISH REQUIRED FIRE ACCESS AS NECESSARY.
6. STABILIZATION:
   - 6.1. SEDIMENT, EROSION AND TRASH CONTROL SHALL BE PERFORMED AT ALL TIMES. BEST MANAGEMENT PRACTICES (BMPS) SHALL BE INSTALLED PRIOR TO WORK START AND REMOVED ONLY WHEN THE SITE IS FULLY STABILIZED.
   - 6.2. THE SITE SHALL BE CONSIDERED "FULLY STABILIZED" WHEN THE CUSTOMER REPRESENTATIVES HAS REVIEWED SUBMITTED PICTURES AND ACCEPT THE STABILIZATION.
7. ALL SITE RELATED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO PAVEMENT RESTORATION, CURB INSTALLATION, AND TURF RESTORATION SHALL BE IN CONFORMANCE TO THE AUTHORITY HAVING JURISDICTION SITE DEVELOPMENT STANDARDS, SPECIFICATIONS, AND DETAILS, UNLESS MORE STRINGENTLY SPECIFIED HEREIN.

ABBREVIATIONS

°C	DEGREES CELSIUS
°F	DEGREES FAHRENHEIT
A	AMPS
AC	ALTERNATING CURRENT, ASPHALT CONCRETE
AC5	ES5 AC POWER SECTION
AHJ	AUTHORITIES HAVING JURISDICTION
AL	ALUMINUM
ASTM	AMERICAN SOCIETY OF THE INTERNATIONAL ASSOCIATION FOR TESTING AND MATERIALS
ATM	ATMOSPHERE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BC	BASE COURSE
BMPS	BEST MANAGEMENT PRACTICES
C	CONDUIT
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CL	CENTER LINE
CLR	CLEAR
CONC	CONCRETE
CMU	CONCRETE MASONRY UNIT
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DI	DEIONIZED
ECM	ELECTRICAL COMBINATION MODULE
EDM	ELECTRICAL DISTRIBUTION MODULE
ELEV	ELEVATION
EMT	ELECTRICAL METAL TUBING
EPO	EMERGENCY POWER OFF
ES	ENERGY SERVER
FH	FIRE HYDRANT
FNPT	FEMALE NATIONAL PIPE THREAD
FP5	ES5 FUEL PROCESSING MODULE
FPM	FUEL CELL POWER MODULE
G	GROUND
GAL	GALLON
GF	GROUND FAULT
GFEP	GROUND FAULT EQUIPMENT PROTECTION
GND	GROUND
HDD	HORIZONTAL DIRECTIONAL DRILLING
HDPE	HIGH DENSITY POLYETHYLENE
HR	HOUR
HZ	HERTZ
ID	INNER DIAMETER
IEEE	INSTITUTE FOR ELECTRICAL & ELECTRONIC ENGR.
IOM	INPUT OUTPUT MODULE
ISC	SHORT CIRCUIT CURRENT
ISS	INTEGRATED STEEL SKID
K	KILO
KA	KILOAMPERE
KAIC	KILOAMPERE INTERRUPTING CAPACITY
KVA	KILOVOLT-AMPS
KW	KILOWATTS
LBS	POUNDS
LSIG	LONG, SHORT, INSTANTANEOUS, GROUND FAULT
MA	MILLIAMPERES
MDPE	MEDIUM DENSITY POLYETHYLENE
MIN	MINUTE/MINIMUM
MMBTU	MILLION BRITISH THERMAL UNITS
MNPT	MALE NATIONAL PIPE THREAD
MSA	METER SET ASSEMBLY
MTS	MANUAL TRANSFER SWITCH
MW	MEGAWATTS
N	NEW
NEC	NATIONAL ELECTRIC CODE
NFPA	NATIONAL FIRE PROTECTION AGENCY
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTER DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMIN.
P	POLE
PEX	CROSS-LINED POLYETHYLENE
PDS	POWER DISTRIBUTION SECTION
PH	PHASE
PM5	ES5 POWER MODULE
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAGE
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
PWM	POWER MODULE
QDC	QUICK DISCONNECT
RSA	REGULATOR SET ASSEMBLY
RMC	RIGID METAL CONDUIT
SD	STORM DRAIN
SF	SQUARE FEET
SPD	SURGE PROTECTIVE DEVICE
SS	STAINLESS STEEL, SANITARY SEWER

SITE PLAN SYMBOLS

- DOOR
- BUILDING HATCH
- TREE/SHRUB
- SITE LIGHTING/POWER POLE
- UTILITY TRANSFORMER
- BOLLARD (REMOVABLE/FIXED)
- DETAIL CALL OUT (X / X#.#)
- DETAIL SECTION (1 / X#.#)
- GAS MSA/RSA (AS NOTED)
- GAS SHUTOFF VALVE
- SQUARE DRAIN COVER
- ROUND DRAIN COVER
- MANHOLE COVER
- FIRE HYDRANT
- ROOF DRAIN (BELOW GROUND/ABOVE GROUND)
- SLOPE — SLOPE DIRECTION
- DISCONNECT SWITCH
- OVERHEAD ROLL UP DOOR
- REVISION CONTROL SYMBOL

ELECTRICAL SINGLE LINE SYMBOLS

- XFMR-XXXX, ### kVA, XXX V – XXX/XXX V — TRANSFORMER (3-PHASE)
- CB-XX, XXX AF, XXX AT, XXX kAIC, XP — MOLDED CASE CIRCUIT BREAKER
- CB-XX, XXX AF, XXX AT, XXXKAIC, 3P — DRAWOUT CIRCUIT BREAKER
- ATS-XX, XXX A / XXX V, XXX kAIC, 3P — AUTOMATIC TRANSFER SWITCH (ATS)
- SPD-X — SURGE PROTECTIVE DEVICE
- CPT-X, XXXV – XXXV, X kVA, 1ø — POTENTIAL TRANSFORMER (PT)
- XXX:X, X% — CURRENT TRANSFORMER (CT) (POWER FLOWING INTO DOT FIRST REPRESENTS POSITIVE POWER, POWER FLOWING OUT OF DOT REPRESENTS NEGATIVE POWER)
- DISC-XX, XXX AS, XXX AF, XP, XXX kAIC, NEMA 3R — FUSED DISCONNECT SWITCH (STAND-ALONE ENCLOSURE)
- XX A, Xø — FUSE
- SW-XX, XXXA, XP — BOLTED PRESSURE SWITCH
- EMERGENCY POWER OFF (EPO) BUTTON
- DISC-XX, XP, XX kA, NEMA 3R — NON-FUSED DISCONNECT SWITCH (STAND-ALONE ENCLOSURE)
- TO XXX — CONTINUATION
- G, GEN XX, XXX kW, XXX V — GENERATOR
- K — KIRK KEY INTERLOCK
- DISC-XX, XXX AS, XXX AF, XP — FUSED DISCONNECT SWITCH
- M — POWER METER

ABBREVIATIONS (CONTINUED)

SWPP	STORM WATER POLLUTION PROTECTION
TBD	TO BE DETERMINED
TC	TELEMETRY CABINET
TM#	TAX MAP NUMBER
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UL	UNDERWRITER'S LABORATORY
UPM	UNINTERRUPTIBLE POWER MODULE
V	VOLTS
VAC	VOLTS (AC)
VDC	VOLTS (DC)

ABBREVIATIONS (CONTINUED)

VIF	VERIFY IN FIELD
W	WIRE
WDM	WATER DISTRIBUTION MODULE
XFMR	TRANSFORMER
MOB	MEDICAL OFFICE BUILDING
MG	MICRO GRID
GP	GRID PARALLEL
GD	GROUNDING
POC	POINT OF CONNECTION

LINETYPES

		NEW	EXISTING	DEMOLISH
UTILITY	UNKNOWN UTILITY – UNDERGROUND	UTL	UTL	UTL X
	COMMUNICATIONS UTILITY – OVERHEAD	OCU	OCU	OCU X
	COMMUNICATIONS UTILITY – UNDERGROUND	UCU	UCU	UCU X
	ELECTRICAL UTILITY – OVERHEAD	OEU	OEU	OEU X
	ELECTRICAL UTILITY – UNDERGROUND	UEU	UEU	UEU X
	GAS UTILITY – UNDERGROUND	UGU	UGU	UGU X
	WATER UTILITY – UNDERGROUND	UWU	UWU	UWU X
	SANITARY SEWER UTILITY	SSU	SSU	SSU X
	STORM WATER UTILITY	SWU	SWU	SWU X
ELECTRICAL	COMMUNICATIONS FEEDER – ABOVE GROUND	C	C	C X
	COMMUNICATIONS FEEDER – OVERHEAD	OC	OC	OC X
	COMMUNICATIONS FEEDER – UNDERGROUND	UC	UC	UC X
	ELECTRICAL FEEDER – ABOVE GROUND	E	E	E X
	ELECTRICAL FEEDER – OVERHEAD	OE	OE	OE X
	ELECTRICAL FEEDER – UNDERGROUND	UE	UE	UE X
	FIBER OPTIC – ABOVE GROUND	FO	FO	FO X
	FIBER OPTIC – OVERHEAD	OFO	OFO	OFO X
	FIBER OPTIC – UNDERGROUND	UFO	UFO	UFO X
PLUMBING	GAS PIPING – ABOVE GROUND	G	G	G X
	GAS PIPING – UNDERGROUND	UG	UG	UG X
	WATER PIPING – ABOVE GROUND	W	W	W X
	WATER PIPING – UNDERGROUND	UW	UW	UW X
	PETROLEUM PIPING – ABOVE GROUND	P	P	P X
	PETROLEUM PIPING – UNDERGROUND	UP	UP	UP X
SITE	CURBS			
	FENCING			
	PARKING			
	EASEMENT BOUNDARY			
	PROPERTY LINE			
	TRENCHING BOUNDARY			
	WATER BOUNDARY			
	FLOOD LINE			
	SETBACK LINE			
	SHRUB/BUSH LINE			

HATCH: GRASS; ASPHALT SERVICE AREA; SCOPE OF WORK UNDER OSHPD REVIEW; GRAVEL SERVICE AREA; BUILDING EXTERIOR WALL OUTLINE

ES5-EAXAAC ENERGY SERVER SYSTEM (TYP 3X)

GROSS OUTPUT POWER	250 kW	WEIGHT – POWER MODULE PM5	3,577 LBS
NET OUTPUT POWER	250 kW	WEIGHT – AC MODULE AC5	3,161 LBS
VOLTAGE	480 VAC	WEIGHT – FUEL PROCESSING MODULE FP5	2,569 LBS
MAXIMUM OUTPUT CURRENT	300 Amps		
FREQUENCY	60 Hz		

ES5-YASAAN ENERGY SERVER SYSTEM (TYP 2X)

GROSS OUTPUT POWER	300 kW	WEIGHT – POWER MODULE PM5	3,577 LBS
NET OUTPUT POWER	300 kW	WEIGHT – AC MODULE AC5	3,161 LBS
VOLTAGE	480 VAC	WEIGHT – FUEL PROCESSING MODULE FP5	2,569 LBS
MAXIMUM OUTPUT CURRENT	316 Amps		
FREQUENCY	60 Hz		

FUEL REQUIREMENTS

CONNECTION	2" FLANGE	PRESSURE	15 (+3/-5) psig
FUEL TYPE	NATURAL GAS	AVERAGE CONSUMPTION RATE (60°F, 1 atm)	1.686 MMBtu/hr
PIPE SIZE – SUPPLY	SIZE SITE DEPENDENT	MAX CONSUMPTION RATE (60°F, 1 atm)	1.871 MMBtu/hr

WATER REQUIREMENTS

CONNECTION	1/2" MNPT	FLOW – STARTUP	0.8 gal/min MAXIMUM
WATER TYPE	MUNICIPAL GRADE	FLOW – CONTINUOUS	0 gal/min
MINIMUM PRESSURE	35 psi	WATER DISCHARGE	0 gal/min
MAXIMUM PRESSURE	150 psi	PIPE SIZE – SUPPLY	SIZE SITE DEPENDENT, USE STAINLESS STEEL OR PVC

SL5 SPECIFICATIONS (TYP 4X)

NOMINAL VOLTAGE	± 390 Vdc		
DISCHARGING			
TYPICAL ES BUS VOLTAGE DURING CHARGING1	± 390 Vdc	POWER	100 kW
REDUNDANCY	N+1	CURRENT	128 Adc

MI5 SPECIFICATIONS (TYP 5X)

GROSS OUTPUT POWER	300 kW	FREQUENCY	60 Hz
VOLTAGE	415 VAC	TOTAL MI5 WEIGHT (LESS PAD)	2500 LBS
MAXIMUM OUTPUT CURRENT	417 Amps	WEIGHT – CAST IN PLACE PAD	SEE STRUCTURAL DRAWINGS

MI5-B SPECIFICATIONS

GROSS OUTPUT POWER	1 kW	FREQUENCY	60 Hz
VOLTAGE	415/277 VAC	TOTAL MI5 WEIGHT (LESS PAD)	2500 LBS
MAXIMUM OUTPUT CURRENT	2.5 Amps	WEIGHT – CAST IN PLACE PAD	SEE STRUCTURAL DRAWINGS

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KAISER PERMANENTE
401 BICENTENNIAL WAY
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KAISER PERMANENTE®

REVISION HISTORY

REV	REVISION ISSUE	DATE

DESIGNED BY PREETI AGARWAL	REVIEWED BY CARSON TURNER
DRAWN BY CHIRANJEEVI	APPROVED BY CARSON TURNER

SHEET TITLE
GENERAL CONSTRUCTION NOTES

DRAWING NUMBER
G0.2

BLOOM DOCUMENT
DOC-1013199

THIS DRAWING IS 24" X 36" AT FULL SIZE

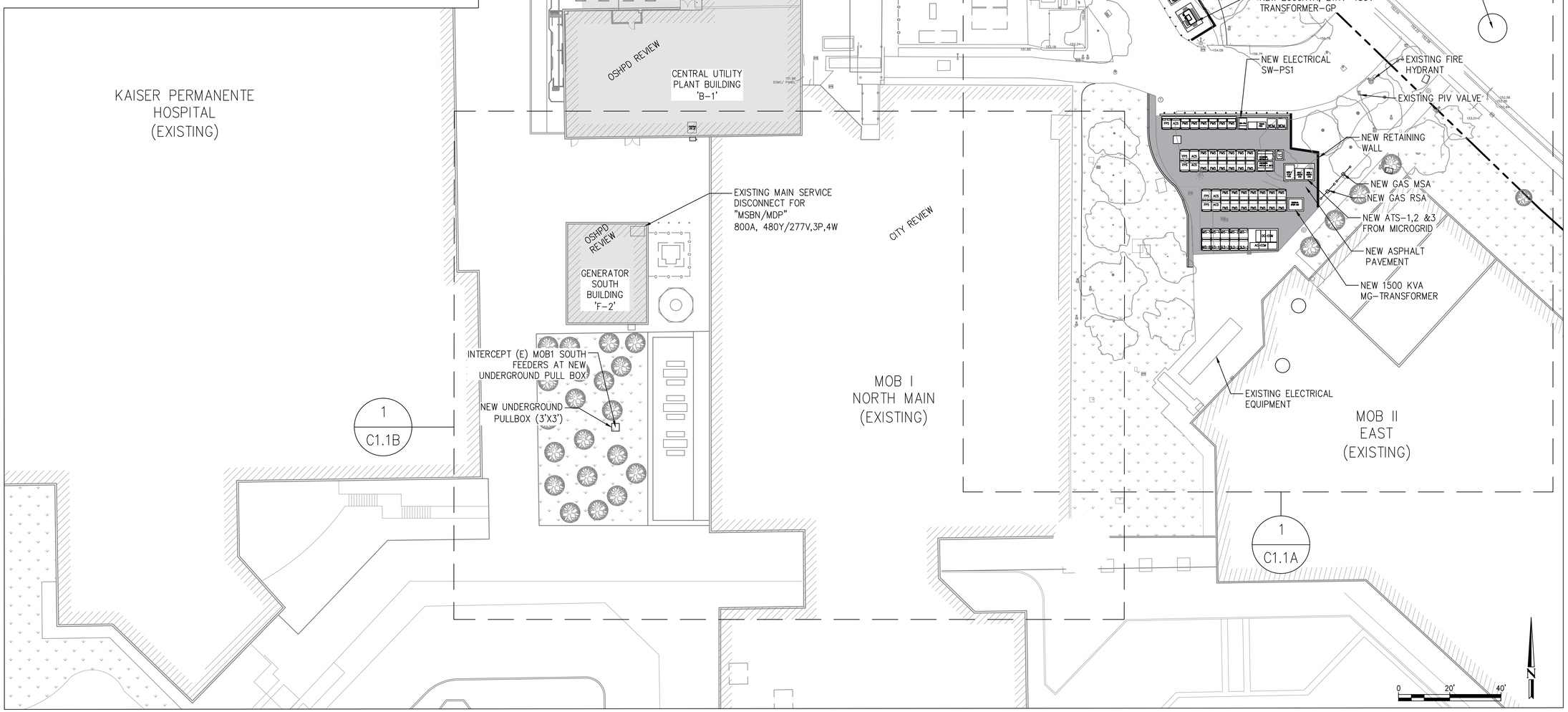
SITE ID: KSR094.0 | SHEET 02 OF 11

OVERALL SITE PLAN

SCALE: NTS

▼ LOCATION OF ENERGY SERVERS

1 / G1.1



PROPOSED SITE PLAN

SCALE: 1" = 20'

2 / G1.1

SITE REFERENCE NOTE:

SUREVEY TO BE COMPLETED AS DESCRIBED IN BELOW SCOPE. COORDINATE WITH CLIENT FOR SITE ACCESS. INCLUDE DRIPLINE OF REDWOOD TREES THAT ARE IN THE WORK AREA IN THE FINAL DELIVERABLES. ANY EXCEPTIONS TAKEN TO THE BELOW SCOPE OR DELIVERABLES SHALL BE PROVIDED IN WRITING FOR ENGINEER REVIEW.

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PROPOSED SITE PLAN

DRAWING NUMBER

G1.1

BLOOM DOCUMENT

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SITE ID: KSR094.0

SHEET 03 OF 11

NEIGHBORHOOD CONTEXT MAP

SCALE: NTS

▼ LOCATION OF ENERGY SERVERS

1 / G1.2

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REVISION HISTORY

REV	REVISION ISSUE	DATE

DESIGNED BY PREETI AGARWAL	REVIEWED BY CARSON TURNER
DRAWN BY CHRYSANEE REDDY	APPROVED BY CARSON TURNER

SHEET TITLE

NEIGHBORHOOD CONTEXT MAP

DRAWING NUMBER

G1.2

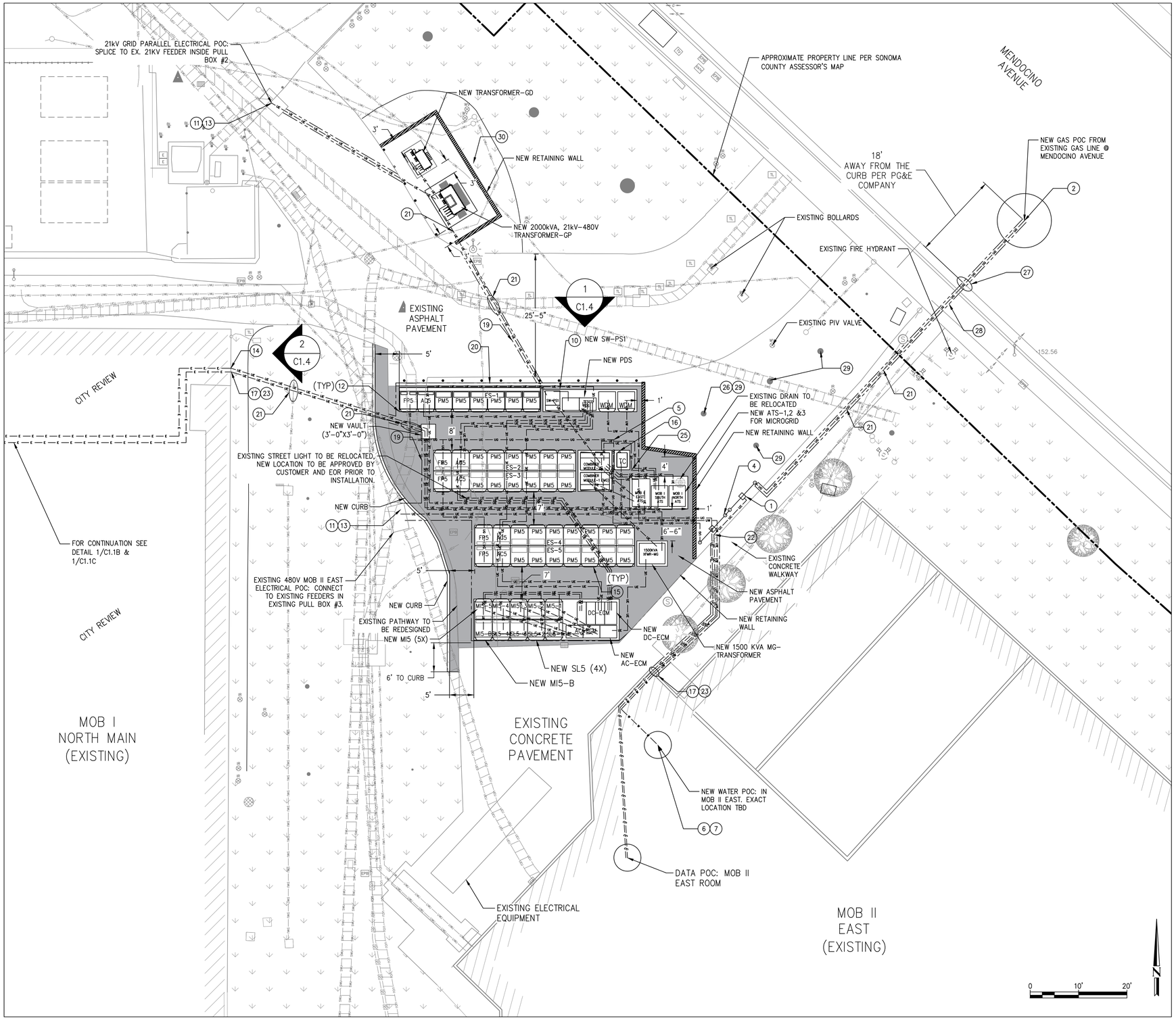
BLOOM DOCUMENT

DOC-1013199

THIS DRAWING IS 24" X 36" AT FULL SIZE

SITE ID: KSR094.0

SHEET 04 OF 11



DETAILED SITE PLAN-1

SCALE: 1" = 10'

1 / C1.1A

GENERAL NOTES

1. CLEAN AND PRIME ALL NEW WALL MOUNTED PIPING AND CONDUIT. PIPING AND CONDUIT SHALL BE PAINTED WITH EXTERIOR GRADE PAINT TO MATCH EXISTING.
2. CONDUITS AND PIPES MOUNTED TO BUILDING WALL SHALL BE SUPPORTED AS PER LOCAL CODE, RUN AT HEIGHT ABOVE DOORWAYS, AND STAND OFF WALL TO AVOID EXISTING CONDUITS AND PIPES.
3. SLOPE LINES SHOWN ARE APPROXIMATE AND INTENDED TO SHOW THE GENERAL DIRECTION OF WATER RUN OFF; SLOPE LINES ARE DRAWN PER VISUAL SURVEY OF SURROUNDING AREA.
4. SEE BLOOM ENERGY PRODUCT INSTALLATION DRAWINGS FOR UTILITY CONNECTIONS TO ANCILLARY EQUIPMENT AND ENERGY SERVER.

REFERENCE SHEET NOTES

1. NEW UTILITY PROVIDED AND INSTALLED GAS METER & REGULATOR ASSEMBLY WITH SHUT-OFF VALVE. CONTRACTOR SHALL PROVIDE PAD PER DETAILS IF REQUIRED BY UTILITY COMPANY. COORDINATE ALL CONNECTIONS WITH GAS UTILITY.
2. NEW UNDERGROUND GAS SERVICE TAP BY UTILITY COMPANY. COORDINATE WITH GAS UTILITY. CONTRACTOR SHALL PERFORM COMPACTION AND MATCH EXISTING SURFACE AND GRADE. CONTRACTOR SHALL COORDINATE GAS PIPE SIZING AND INSTALLATION REQUIREMENTS WITH UTILITY.
4. NEW PRIVATE GAS REGULATOR SET ASSEMBLY FOR BLOOM ENERGY SERVER WITH SHUT-OFF VALVE. REFER TO GAS RISER DETAIL FOR ADDITIONAL REQUIREMENTS.
5. NEW GAS PIPE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. REFER TO GAS RISER DETAIL FOR ADDITIONAL REQUIREMENTS.
6. TAP EXISTING WATER LINE AT NEAREST ACCESSIBLE LOCATION IN BUILDING AS SHOWN WITH A LOCAL SHUT-OFF VALVE. REFER TO DOMESTIC WATER CONNECTION DETAIL FOR ADDITIONAL REQUIREMENTS.
7. NEW WATER PIPE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. REFER TO WATER RISER DETAIL FOR ADDITIONAL REQUIREMENTS.
9. EXISTING UTILITY ELECTRIC METER. REFER TO ELECTRICAL SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
10. NEW BLOOM ENERGY FURNISHED, CONTRACTOR INSTALLED, DISCONNECT SWITCH. PAD MOUNT PER MANUFACTURER AND UTILITY SPECIFICATIONS.
11. CONTRACTOR SHALL TERMINATE ELECTRIC FEEDER AS SHOWN. REFER TO ELECTRICAL SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
12. CONTRACTOR SHALL PROVIDE TWO GROUNDING RODS TO BE PLACED 20' APART MINIMUM. REFER TO ELECTRICAL SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
13. NEW ELECTRICAL FEEDER SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. REFER TO ELECTRICAL SINGLE LINE DIAGRAM FOR ADDITIONAL REQUIREMENTS.
14. MOUNT NEW CONDUIT/PIPE TO EXTERIOR WALL AND RELOCATE EXISTING SECURITY CAMERA ON THIS WALL. COORDINATE EXACT ROUTING AND RELOCATION WITH CUSTOMER REPRESENTATIVE IN THE FIELD. REFER TO WALL MOUNTING DETAIL FOR ADDITIONAL REQUIREMENTS.
15. NEW BLOOM ENERGY SERVER. REFER TO BLOOM ENERGY STANDARD INSTALLATION DRAWING SET FOR ADDITIONAL BLOOM ENERGY SERVER DETAILS.
16. FACTORY WIRED BLOOM ENERGY SERVER EMERGENCY POWER-OFF SWITCH (EPO).
17. CONTRACTOR SHALL CORE CONDUIT AND/OR PIPE THROUGH WALL. SCAN WALL PRIOR TO CORING TO AVOID COLLATERAL DAMAGE TO EXISTING PLUMBING AND WIRING. REFER TO WALL PENETRATION DETAIL FOR ADDITIONAL REQUIREMENTS.
19. CONTRACTOR SHALL PROVIDE SAWCUT TRENCH FOR UNDERGROUND UTILITIES IN THIS LOCATION AND HAND DIG TRENCHES WHERE THEY CROSS EXISTING UTILITIES. REFER TO UNDERGROUND/TRENCH CONDUIT AND PIPING DETAIL FOR ADDITIONAL REQUIREMENTS.
20. CONTRACTOR SHALL SAWCUT TO ALLOW FOR EXCAVATION UNDER ENERGY SERVER AND ANCILLARY PAD LOCATIONS. REFER TO PAD DETAIL FOR ADDITIONAL EXCAVATION AND BACKFILL REQUIREMENTS.
21. PROTECT EXISTING UNDERGROUND UTILITY LINES FROM DAMAGE WHEN CROSSING WITH NEW UNDERGROUND UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY DAMAGED LINES.
22. CONTRACTOR SHALL PROVIDE NEW CONDUIT AND CABLE FROM NEW UTILITY GAS MSA TO CUSTOMER MPOE FOR UTILITY BILLING. REFER TO BLOOM ENERGY PRODUCT INSTALLATION DRAWINGS FOR CONNECTION REQUIREMENTS.
23. CONTRACTOR SHALL TRANSITION ALL ABOVEGROUND NEW LINES TO UNDERGROUND TOWARD ANCILLARY EQUIPMENT. ABOVE GROUND UTILITIES SHALL BE PROTECTED AS NECESSARY, THEN ROUTED UNDERGROUND TO EQUIPMENT STUB-UP LOCATIONS PER MECHANICAL DETAIL.
25. CONTRACTOR SHALL REMOVE EXISTING TREE.
26. CONTRACTOR SHALL TRIM EXISTING TREES FOR 10'-0" CLEARANCE TO BLOOM ENERGY SERVER TOP VENTS AND 6'-0" CLEARANCE TO ALL OTHER SURFACES OF ENERGY SERVER AND EXISTING ROOT SYSTEM TO THE DEPTH NEEDED FOR THE PAD PREPARATION WORK AND DEPTHS.
27. CONTRACTOR SHALL UNDER-CUT EXISTING CURB FOR TRENCHING UTILITY LINES AND BACKFILL WITH CONCRETE SLURRY. IF CURB IS DAMAGED, REPAIR TO MATCH EXISTING.
28. CONTRACTOR SHALL REMOVE AND REPLACE CONCRETE SIDEWALK TO THE NEAREST JOINT AS REQUIRED TO COMPLETE THE WORK. REFER TO CONCRETE SIDEWALK DETAIL FOR ADDITIONAL REQUIREMENTS.
29. CONTRACTOR SHALL PROVIDE TREE PROTECTION AND EXISTING ROOT SYSTEM TO THE DEPTH NEEDED FOR THE PAD PREPARATION WORK AND DEPTHS. REFER TO TREE PROTECTION DETAIL FOR ADDITIONAL REQUIREMENTS.
30. CONTRACTOR SHALL PROVIDE LANDSCAPE/TURF RESTORATION. REFER TO LANDSCAPE/TURF RESTORATION DETAIL FOR ADDITIONAL REQUIREMENTS. IRRIGATION SHALL BE PROTECTED AND REMAIN OPERATIONAL DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR EXTENDING AND/OR REROUTING IRRIGATION LINES AS NECESSARY AND THE REPAIR/REPLACEMENT IF ANY DAMAGE OCCURS.

EXISTING UTILITY NOTE:
THE LOCATION OF EXISTING UTILITIES IS SHOWN FOR THE CONTRACTOR'S REFERENCE. EXACT LOCATION, DEPTH AND SIZE OF ALL EXISTING UTILITIES IS NOT KNOWN. CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES NOT SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES AND PROTECT THE EXISTING UNDERGROUND UTILITIES FROM DAMAGE WHEN CROSSING WITH NEW UNDERGROUND UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY DAMAGED LINES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY FIELD CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON. SUCH CONDITIONS COULD RENDER THE DESIGN HEREON INAPPROPRIATE AND MAY REQUIRE ADJUSTMENTS TO AVOID CONFLICTS.

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REVISION HISTORY		
REV	REVISION ISSUE	DATE

DESIGNED BY PREETI AGARWAL	REVIEWED BY CARSON TURNER
DRAWN BY CHIRANJEEVI	APPROVED BY CARSON TURNER

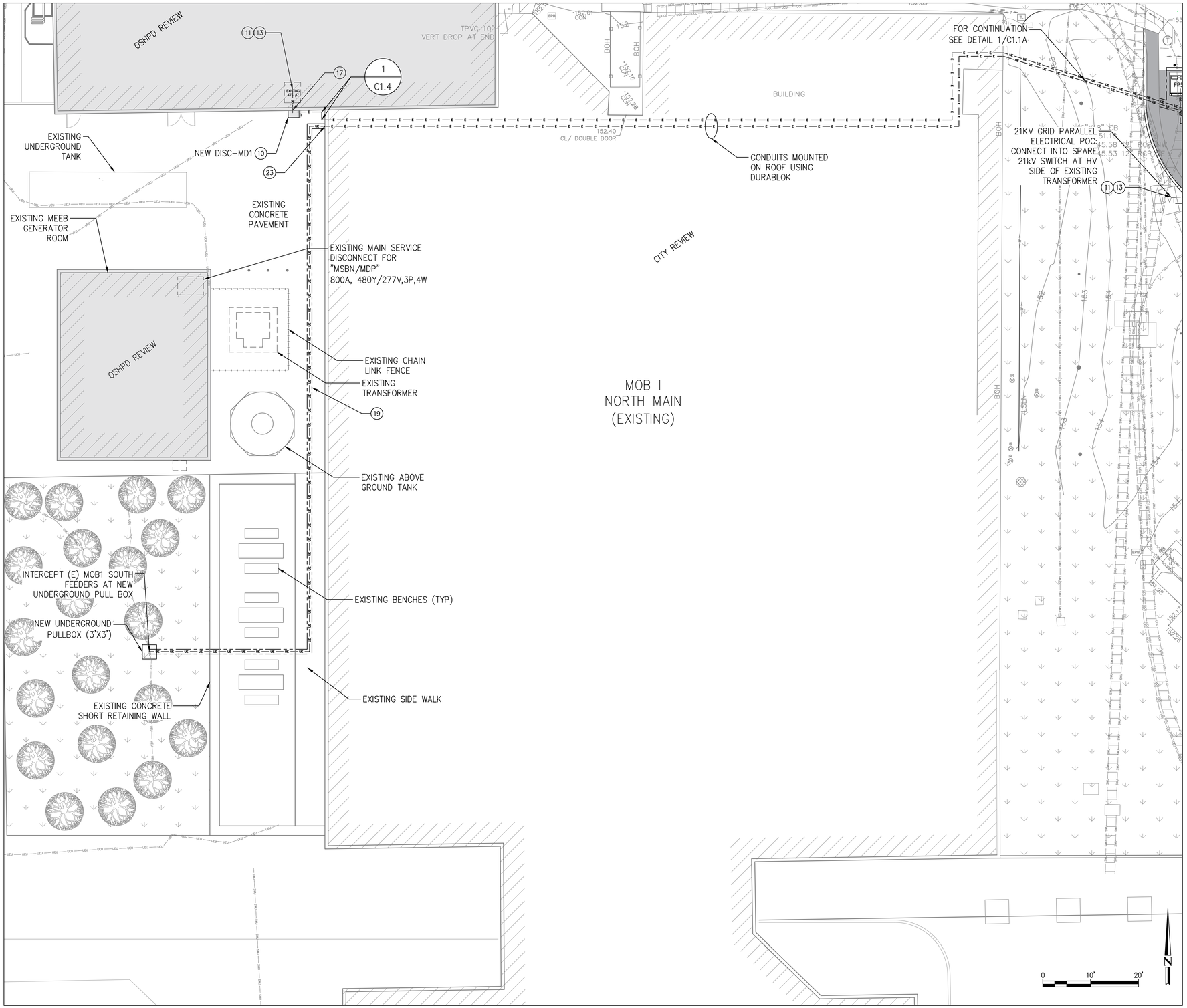
SHEET TITLE
DETAILED SITE PLAN-1

DRAWING NUMBER
C1.1A

BLOOM DOCUMENT
DOC-1013199

THIS DRAWING IS 24" X 36" AT FULL SIZE

SITE ID: KSR094.0 | SHEET 05 OF 11



DETAILED SITE PLAN-2

SCALE: 1" = 10'

1 / C1.1B

GENERAL NOTES

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30. CONTRACTOR SHALL PROVIDE LANDSCAPE/TURF RESTORATION. REFER TO LANDSCAPE/TURF RESTORATION DETAIL FOR ADDITIONAL REQUIREMENTS. IRRIGATION SHALL BE PROTECTED AND REMAIN OPERATIONAL DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR EXTENDING AND/OR REROUTING IRRIGATION LINES AS NECESSARY AND THE REPAIR/REPLACEMENT IF ANY DAMAGE OCCURS.

EXISTING UTILITY NOTE:
THE LOCATION OF EXISTING UTILITIES IS SHOWN FOR THE CONTRACTOR'S REFERENCE. EXACT LOCATION, DEPTH AND SIZE OF ALL EXISTING UTILITIES IS NOT KNOWN. CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES NOT SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL FIELD VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES AND PROTECT THE EXISTING UNDERGROUND UTILITIES FROM DAMAGE WHEN CROSSING WITH NEW UNDERGROUND UTILITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY DAMAGED LINES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY FIELD CONDITIONS ENCOUNTERED DIFFER FROM THOSE REPRESENTED HEREON. SUCH CONDITIONS COULD RENDER THE DESIGN HEREON INAPPROPRIATE AND MAY REQUIRE ADJUSTMENTS TO AVOID CONFLICTS.

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KAISER PERMANENTE®

REVISION HISTORY

REV	REVISION ISSUE	DATE

DESIGNED BY PREETI AGARWAL	REVIEWED BY CARSON TURNER
DRAWN BY CHIRANJEEVI	APPROVED BY CARSON TURNER

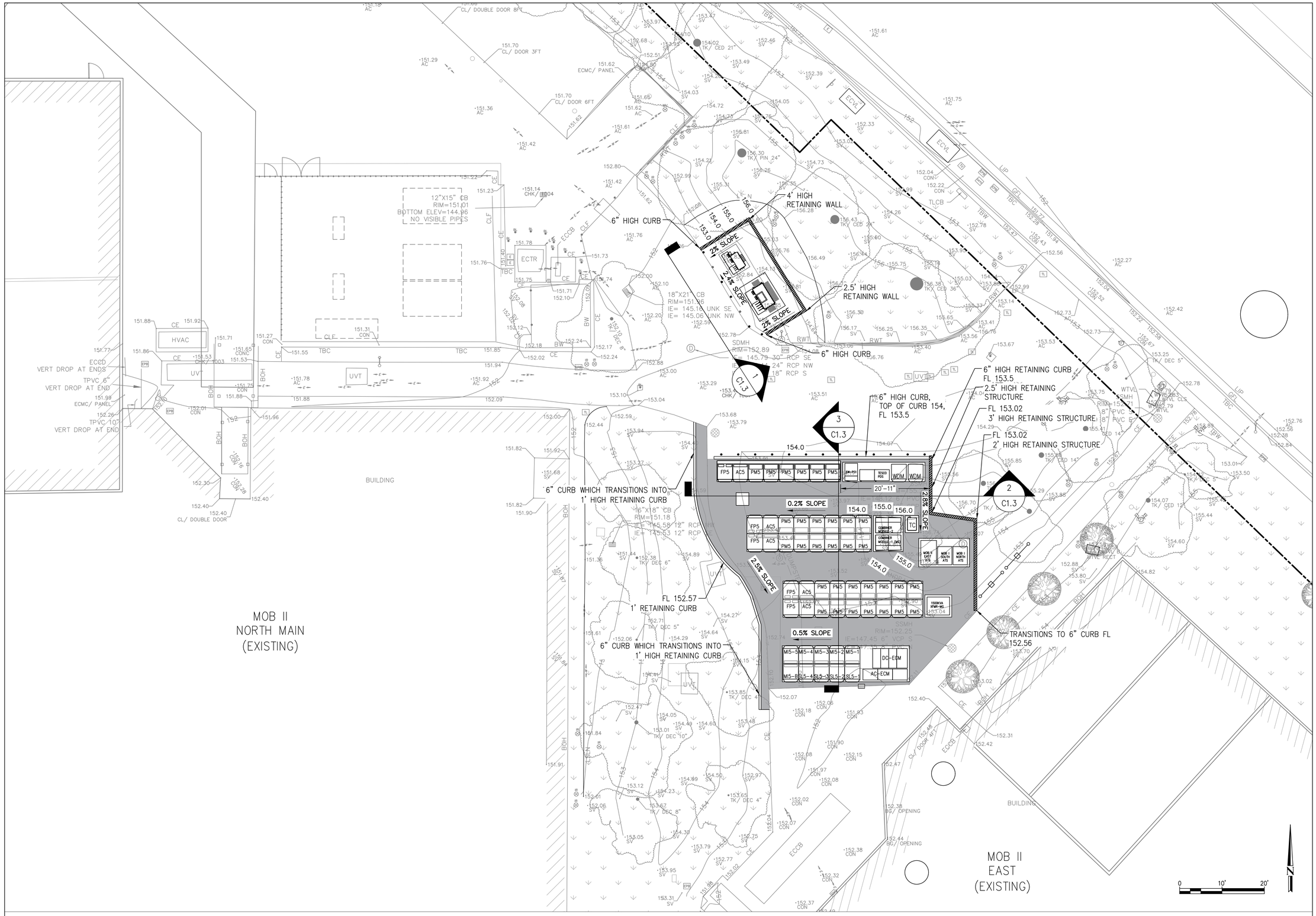
SHEET TITLE
DETAILED SITE PLAN-2

DRAWING NUMBER
C1.1B

BLOOM DOCUMENT
DOC-1013199

THIS DRAWING IS 24" X 36" AT FULL SIZE

SITE ID: KSR094.0 | SHEET 06 OF 11



GRADING PLAN

SCALE: 1" = 10'

1 / C1.2

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GRADING PLAN

DRAWING NUMBER

C1.2

BLOOM DOCUMENT

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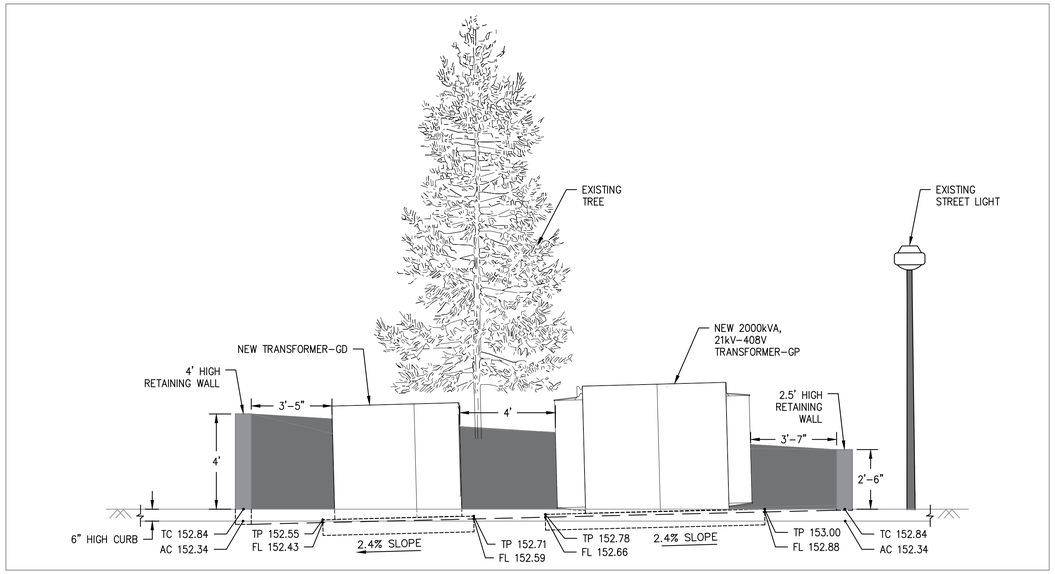
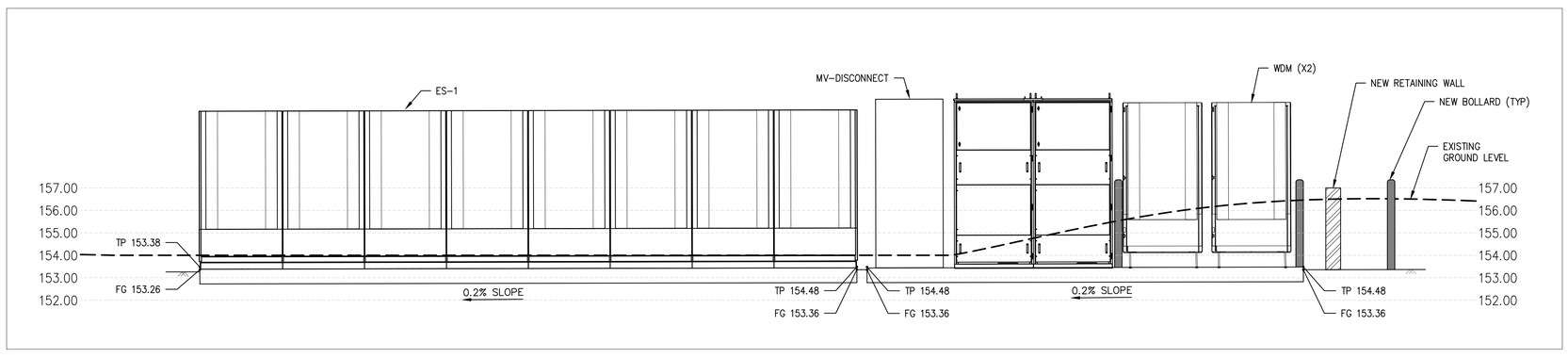


FRONT ELEVATION

SCALE: 1" = 3'

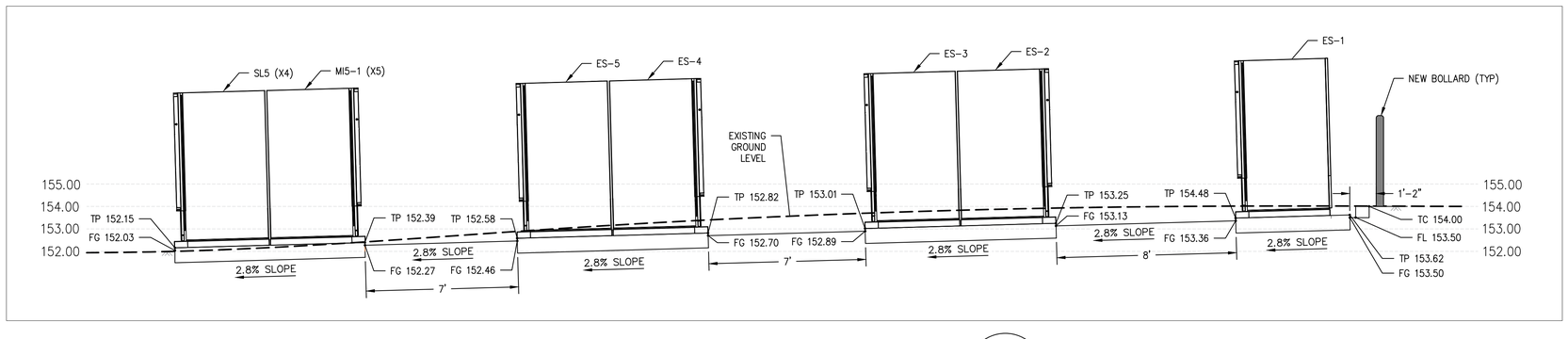
1 / C1.3



SECTIONAL ELEVATION

SCALE: 1" = 3'

2 / C1.3



SECTIONAL ELEVATION

SCALE: 1" = 3'

3 / C1.3

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SECTIONAL ELEVATIONS

DRAWING NUMBER

C1.3

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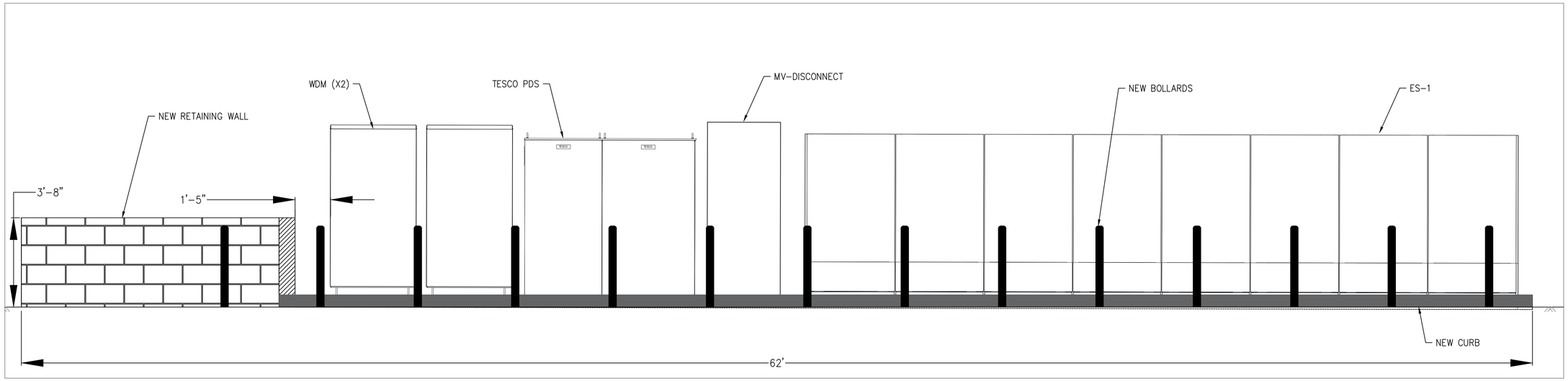
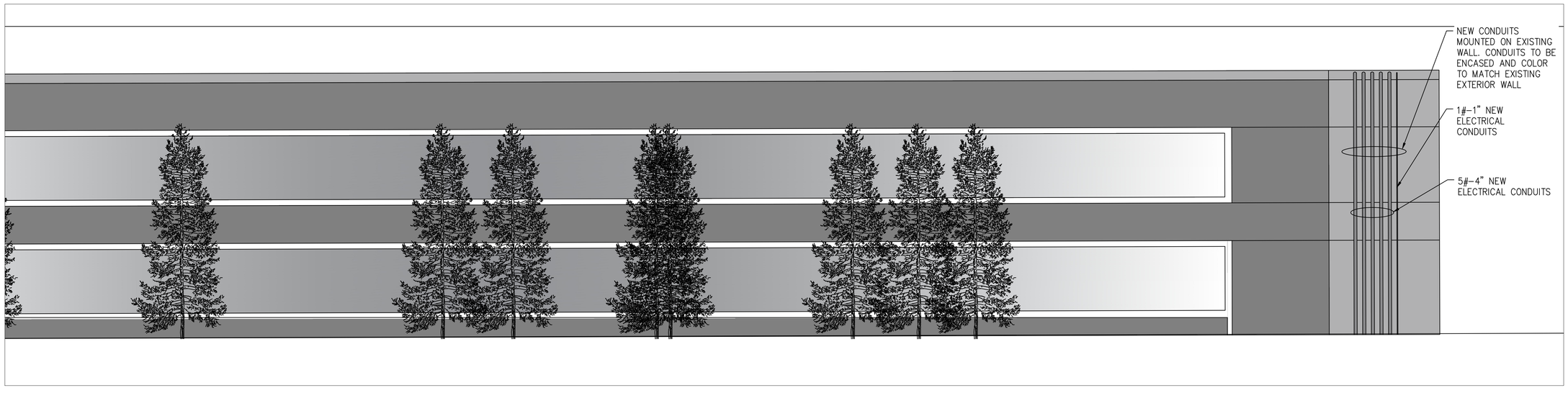


ES LAYOUT ELEVATION

SCALE: NTS

1 / C1.4



CONDUIT RUN ELEVATION

SCALE: NTS

2 / C1.4

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ELEVATION VIEWS

DRAWING NUMBER

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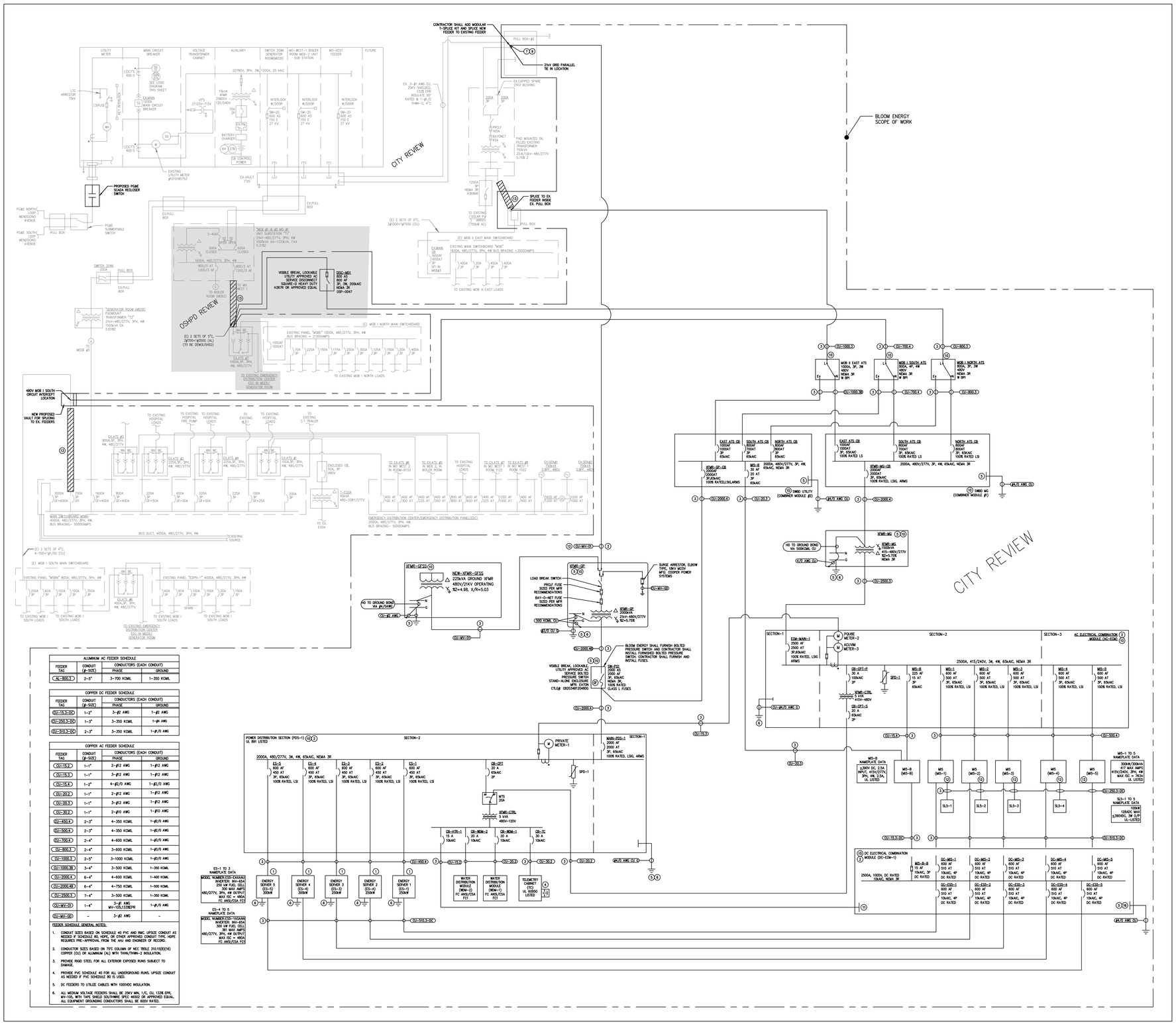

ALUMINUM AC FEEDER SCHEDULE			
FEEDER TAG	CONDUIT (ø-SIZE)	CONDUCTORS (EACH CONDUIT) PHASE	GROUND
AC-800.3	2-5"	3-700 KCMIL	1-350 KCMIL

COPPER DC FEEDER SCHEDULE			
FEEDER TAG	CONDUIT (ø-SIZE)	CONDUCTORS (EACH CONDUIT) PHASE	GROUND
DC-15.3-DC	1-2"	3-#2 AWG	1-#2 AWG
DC-250.3-DC	1-3"	3-350 KCMIL	1-#4 AWG
DC-510.3-DC	2-3"	3-350 KCMIL	1-#1/0 AWG

COPPER AC FEEDER SCHEDULE			
FEEDER TAG	CONDUIT (ø-SIZE)	CONDUCTORS (EACH CONDUIT) PHASE	GROUND
DC-15.2	1-1"	2-#12 AWG	1-#12 AWG
DC-15.3	1-1"	3-#12 AWG	1-#12 AWG
DC-15.4	1-2"	4-#12/0 AWG	1-#12/0 AWG
DC-20.2	1-1"	2-#12 AWG	1-#12 AWG
DC-20.3	1-1"	3-#12 AWG	1-#12 AWG
DC-30.3	1-1"	2-#10 AWG	1-#10 AWG
DC-450.4	2-3"	4-350 KCMIL	1-#2/0 AWG
DC-500.4	2-3"	4-350 KCMIL	1-#2/0 AWG
DC-700.4	2-4"	4-600 KCMIL	1-#3/0 AWG
DC-800.3	2-4"	3-600 KCMIL	1-#3/0 AWG
DC-1000.3	2-5"	3-1000 KCMIL	1-#3/0 AWG
DC-1000.3B	3-4"	3-500 KCMIL	1-350 KCMIL
DC-2000.4	6-4"	4-600 KCMIL	1-400 KCMIL
DC-2000.4B	6-4"	4-750 KCMIL	1-500 KCMIL
DC-2500.3	7-4"	3-500 KCMIL	1-350 KCMIL
DC-MV-DC	1-4"	3-#2 AWG MV-105,133REPR	1-#1/0 AWG
DC-MV-DC	-	3-#2 AWG	-

FEEDER SCHEDULE GENERAL NOTES:

1. CONDUIT SIZES BASED ON SCHEDULE 40 PVC AND RMC. UPSIZE CONDUIT AS NEEDED IF SCHEDULE 80, HDPE, OR OTHER APPROVED CONDUIT TYPE. HDPE REQUIRES PRE-APPROVAL FROM THE AHJ AND ENGINEER OF RECORD.
2. CONDUCTOR SIZES BASED ON 75°C COLUMN OF NEC TABLE 310.15(B)(16) COPPER (CU) OR ALUMINUM (AL) WITH THWN/THWN-2 INSULATION.
3. PROVIDE RIGID STEEL FOR ALL EXTERIOR EXPOSED RUNS SUBJECT TO DAMAGE.
4. PROVIDE PVC SCHEDULE 40 FOR ALL UNDERGROUND RUNS. UPSIZE CONDUIT AS NEEDED IF PVC SCHEDULE 80 IS USED.
5. DC FEEDERS TO UTILIZE CABLES WITH 1000VDC INSULATION.
6. ALL MEDIUM VOLTAGE FEEDERS SHALL BE 25kV MV, 1/0, CU, 133% EPR, MV-105, WITH TAPE SHIELD SOLTHWIRE SPEC 46502 OR APPROVED EQUAL. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE 600V RATED.

SINGLE LINE DIAGRAM

SCALE: NTS

1

E3.1

GENERAL NOTES

1. FEEDER SHALL NOT BE ROUTED THROUGH THE UTILITY PULL OR UTILITY METER SECTIONS. FEEDER SHALL NOT BE ROUTED THROUGH ANY OTHER SECTION THAN THAT IN WHICH IT TERMINATES UNLESS BARRIERS ARE PROVIDED PER NEC 408.3.
2. THE ENERGY SERVER INVERTER OUTPUT CHARACTERISTICS SHALL BE IN ACCORDANCE WITH NEC 705.14.
3. INTERCONNECTIONS SHALL BE IN ACCORDANCE WITH NEC 705.10.
4. THE ENERGY SERVER OUTPUT IS EQUIPPED WITH UTILITY-INTERACTIVE INVERTERS RECOGNIZED BY UL TO UL1741 AND IEEE 1547 AND COMPLIES WITH NEC 692.62. INVERTER SETTINGS PER THE PROVIDED TABLE BELOW.
5. THE ENERGY SERVER IS NOT A SEPARATELY DERIVED SYSTEM PER NEC 250.30 [ART. 100]
6. CONTRACTOR SHALL GROUND AND BOND ALL METALLIC EQUIPMENT, BOXES, AND CONDUIT BETWEEN EACH BLOOM ENERGY SERVER AND FACILITY POINT OF CONNECTION IN COMPLIANCE WITH LOCAL AHJ AND NEC REQUIREMENTS.
7. CONTRACTOR SHALL TEST ALL NEW CIRCUIT BREAKERS GREATER THAN 100A.
8. INSTALLATION PHASE ROTATION SHOULD MATCH THE EXISTING FACILITY PHASE ROTATION FOR 3-PHASE WIRES.

REFERENCE SHEET NOTES

1. ALL CONNECTIONS FROM FUEL CELLS TO INVERTER ARE FACTORY WIRED AND ALL MAINTENANCE CBSINETS ARE ACTIVELY PRESSURIZED; THEREFORE, NO CLASS 1, DIVISION 2 WIRING IS REQUIRED.
2. ALL COMPONENTS SHOWN IN THIS BOUNDARY SHALL BE UL LISTED TOGETHER AS A SINGLE, COMPLETE, ALL INCLUSIVE UNIT. ALL ELECTRICAL CONDUIT/CBSLE CONNECTIONS WITHIN THIS BOUNDARY SHALL BE FACTORY INSTALLED WITH SOME FINAL CONNECTIONS TO BE COMPLETED BY THE CONTRACTOR IN THE FIELD. REFER TO BLOOM INSTALLATION MANUAL FOR ALL FINAL TERMINATION POINTS.
3. CONTRACTOR SHALL PROVIDE CONDUIT AND CONDUCTORS AS INDICATED. SELECTION OF CONDUIT TYPE SHALL BE PER NEC REQUIREMENTS. REFER TO BLOOM INSTALLATION MANUAL FOR ALL FINAL TERMINATION POINTS AT BLOOM PROVIDED EQUIPMENT.
4. MANUFACTURER INSTALLED, PRE-WIRED EPO BUTTON LOCATED IN READILY ACCESSIBLE LOCATION AT ENERGY SERVER PLATFORM AND CONNECTED TO TELEMETRY CBSINET TERMINAL STRIP.
5. CONTRACTOR SHALL PROVIDE NEW GROUND CONDUCTOR FROM NEW EQUIPMENT TO BE SOLIDLY GROUNDED TO NEW GROUND RODS.
6. CONTRACTOR SHALL PROVIDE (1) #1/0 AWG CU FROM EQUIPMENT GROUND TO EQUIPMENT PAD UFER GROUND ROD.
7. CONTRACTOR SHALL UTILIZE EXISTING TRANSFORMER SPARE BUSHINGS AT POINT OF INTERCONNECTION. AND TERMINATE GROUND CONDUCTOR TO THE GROUND BUS.
9. THE UTILITY-INTERACTIVE INVERTER POINT OF CONNECTION SHALL BE IN ACCORDANCE WITH NEC 705.12
10. NEW EQUIPMENT SHALL BE FURNISHED BY BLOOM ENERGY AND INSTALLED BY CONTRACTOR.
11. THE CONTRACTOR SHALL FURNISH AND INSTALL 120VAC CIRCUIT FOR DC-ECM CABINET HEATER AND VOLTMETER.
12. MI5 TO SL5 CONDUCTORS ARE PROTECTED WITH INTERNAL 250A FUSING INSIDE MI5.
13. THIS SECTION OF FEEDER / BUS SHALL BE DEMOLISHED AS PART OF FUEL CELL INSTALLATION WORK.
16. CONTRACTOR SHALL REMOVE FACTORY INSTALLED NEUTRAL TO GROUND BOND LINK.

MANUFACTURER SUPPLIED INVERTER SETTINGS

FUEL CELLS UTILIZE RULE 21 SMART INVERTER COMPLIANT INVERTER

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KAISER PERMANENTE®

REVISION HISTORY		
REV	REVISION ISSUE	DATE

DESIGNED BY	REVIEWED BY
DRAWN BY VIJAYPAL REDDY	APPROVED BY

SHEET TITLE

ELECTRICAL SINGLE LINE DIAGRAM

DRAWING NUMBER

E3.1

BLOOM DOCUMENT

DOC-1013199

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SITE ID: KSR094.0

SHEET 10 OF 11

Bloomenergy

PRODUCT DATASHEET

Energy Server 5

Always On, Clean Energy
Using Patented Solid Oxide
Fuel Cell Technology

The Energy Server 5 provides combustion-free electric power with these benefits

Clean
Our systems produce near zero criteria pollutants (NOx, SOx, and particulate matter) and far fewer carbon emissions than legacy technologies.

Reliable
Bloom Energy Servers are designed around a modular architecture of simple repeating elements. This enables us to generate power 24 x 7 x 365 and can be configured to eliminate the need for traditional backup power equipment.

Resilient
Our system operates at very high availability due to its fault-tolerant design and use of the robust natural gas pipeline system. Bloom Energy Servers have survived extreme weather events and other incidences and have continued providing power to our customers.

Simple Installation and Maintenance
Our Energy Servers are 'plug and play' and have been designed in compliance with a variety of safety standards. Bloom Energy manages all aspects of installation, operation and maintenance of the systems.

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Energy Server 5	Technical Highlights (ES5-EAXAAC)
Outputs	
Nameplate power output (net AC)	250kW
Load output (net AC)	250kW
Electrical connection	480V, 3-phase, 60 Hz
Inputs	
Fuels	Natural gas, directed biogas
Input fuel pressure	10-18 psig (15 psig nominal)
Water	None during normal operation
Efficiency	
Cumulative electrical efficiency (LHV net AC)[1]	65-53%
Heat rate (HHV)	5,811-7,127 Btu/kWh
Emissions[2]	
NOx	0.0017 lbs/MWh
SOx	Negligible
CO	0.034 lbs/MWh
VOCs	0.0159 lbs/MWh
CO_2 @ stated efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas
Physical Attributes and Environment	
Weight	13.6 tons
Dimensions (variable layouts)	14'4" x 8'8" x 6'9" or 28'8" x 4'4" x 7'2"
Temperature range	-20° to 45° C
Humidity	0% - 100%
Seismic vibration	IBC site class D
Location	Outdoor
Noise	< 70 dBA @ 6 feet
Codes and Standards	
Complies with Rule 21 interconnection and IEEE1547 standards	
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards	
An Energy Server is a Stationary Fuel Cell Power System. It is Listed by Underwriters Laboratories, Inc. (UL) as a 'Stationary Fuel Cell Power System' to ANSI/CSA FC1-2014 under UL Category IRGZ and UL File Number MH45102.	
Additional Notes	
Access to a secure website to monitor system performance & environmental benefits	
Remotely managed and monitored by Bloom Energy	
Capable of emergency stop based on input from the site	

[1] 65% LHV efficiency verified by ASME PTC 50 Fuel Cell Power Systems Performance Test
[2] NOx and CO measured per CARB Method 100, VOCs measured as hexane by SCAQMD Method 25.3

About Bloom Energy
Bloom Energy's mission is to make reliable, clean energy affordable for everyone in the world. The company's product, the Bloom Energy Server, delivers highly reliable and resilient, Always On electric power that is clean and sustainable. Bloom's customers include twenty-five of the Fortune 100 companies and leaders in cloud services and data centers, healthcare, retail, financial services, utilities and many other industries.

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DOC-1013935 Rev A

Energy Server 5	Technical Highlights (ES5-YASAAN)
Outputs	
Nameplate power output (net AC)	300kW
Load output (net AC)	300kW
Electrical connection	480V, 3-phase, 60 Hz
Inputs	
Fuels	Natural gas, directed biogas
Input fuel pressure	10-18 psig (15 psig nominal)
Water	None during normal operation
Efficiency	
Cumulative electrical efficiency (LHV net AC)[1]	65-53%
Heat rate (HHV)	5,811-7,127 Btu/kWh
Emissions[2]	
NOx	0.0017 lbs/MWh
SOx	Negligible
CO	0.034 lbs/MWh
VOCs	0.0159 lbs/MWh
CO_2 @ stated efficiency	679-833 lbs/MWh on natural gas; carbon neutral on directed biogas
Physical Attributes and Environment	
Weight	15.8 tons
Dimensions (variable layouts)	17'11" x 8'8" x 6'9" or 32'3" x 4'4" x 7'2"
Temperature range	-20° to 45° C
Humidity	0% - 100%
Seismic vibration	IBC site class D
Location	Outdoor
Noise	< 70 dBA @ 6 feet
Codes and Standards	
Complies with Rule 21 interconnection and IEEE1547 standards	
Exempt from CA Air District permitting; meets stringent CARB 2007 emissions standards	
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DRAWN BY CHIRANJEEVI	APPROVED BY CARSON TURNER

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