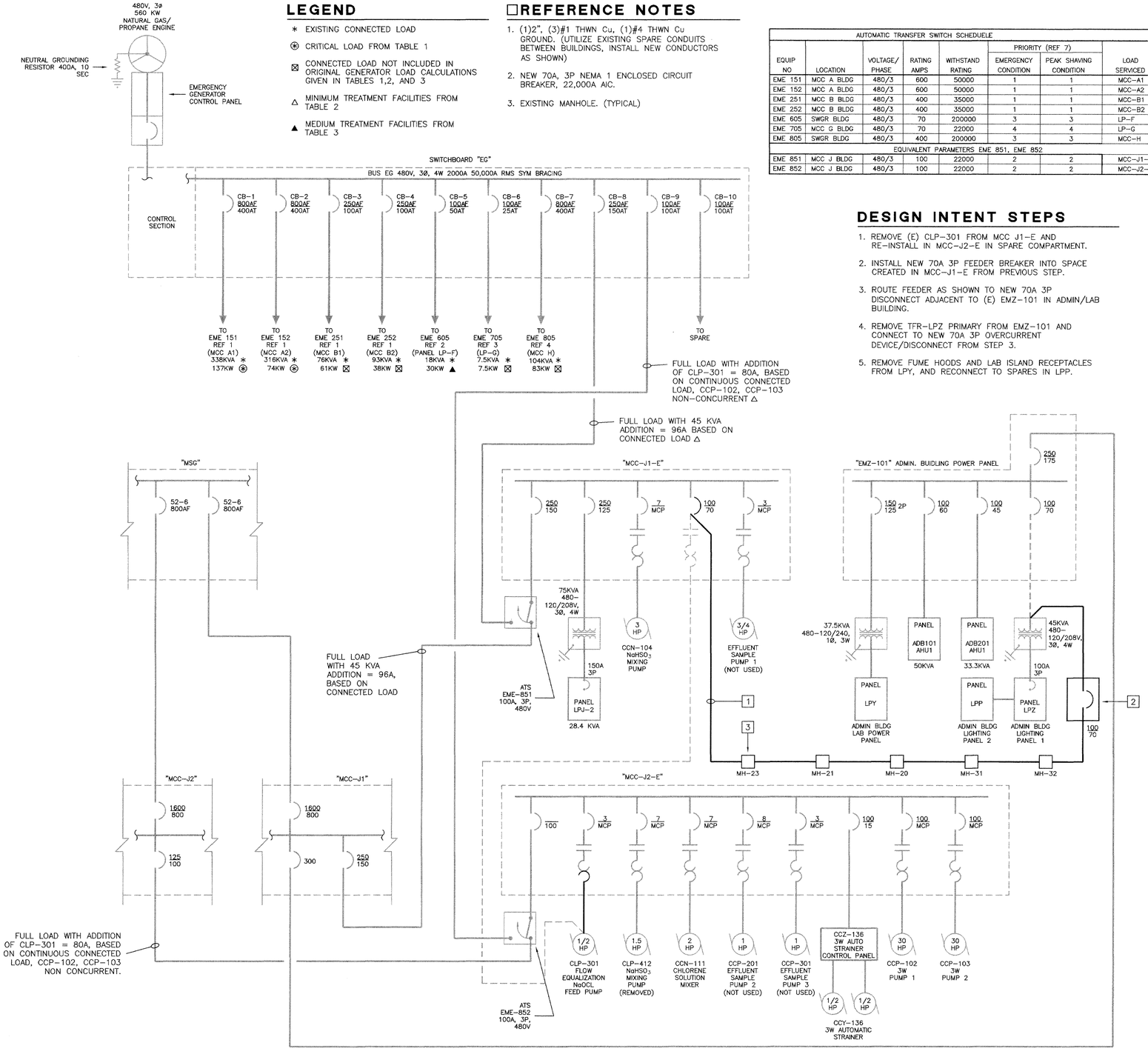

LEGEND

- * EXISTING CONNECTED LOAD
- ⊛ CRITICAL LOAD FROM TABLE 1
- ⊠ CONNECTED LOAD NOT INCLUDED IN ORIGINAL GENERATOR LOAD CALCULATIONS GIVEN IN TABLES 1,2, AND 3
- △ MINIMUM TREATMENT FACILITIES FROM TABLE 2
- ▲ MEDIUM TREATMENT FACILITIES FROM TABLE 3

□REFERENCE NOTES

1. (1)2", (3)#1 THWN Cu, (1)#4 THWN Cu GROUND. (UTILIZE EXISTING SPARE CONDUITS BETWEEN BUILDINGS, INSTALL NEW CONDUCTORS AS SHOWN)
2. NEW 70A, 3P NEMA 1 ENCLOSED CIRCUIT BREAKER, 22,000A AIC.
3. EXISTING MANHOLE. (TYPICAL)

AUTOMATIC TRANSFER SWITCH SCHEDUELE

EQUIP NO	LOCATION	VOLTAGE/ PHASE	RATING AMPS	WITHSTAND RATING	PRIORITY (REF 7) EMERGENCY CONDITION	PRIORITY (REF 7) PEAK SHAVING CONDITION	LOAD SERVICED
EME 151	MCC A BLDG	480/3	600	50000	1	1	MCC-A1
EME 152	MCC A BLDG	480/3	600	50000	1	1	MCC-A2
EME 251	MCC B BLDG	480/3	400	35000	1	1	MCC-B1
EME 252	MCC B BLDG	480/3	400	35000	1	1	MCC-B2
EME 605	SWGR BLDG	480/3	70	200000	3	3	LP-F
EME 705	MCC G BLDG	480/3	70	22000	4	4	LP-G
EME 805	SWGR BLDG	480/3	400	200000	3	3	MCC-H
EQUIVALENT PARAMETERS EME 851, EME 852							
EME 851	MCC J BLDG	480/3	100	22000	2	2	MCC-J1-E
EME 852	MCC J BLDG	480/3	100	22000	2	2	MCC-J2-E

DESIGN INTENT STEPS

1. REMOVE (E) CLP-301 FROM MCC J1-E AND RE-INSTALL IN MCC-J2-E IN SPARE COMPARTMENT.
2. INSTALL NEW 70A 3P FEEDER BREAKER INTO SPACE CREATED IN MCC-J1-E FROM PREVIOUS STEP.
3. ROUTE FEEDER AS SHOWN TO NEW 70A 3P DISCONNECT ADJACENT TO (E) EMZ-101 IN ADMIN/LAB BUILDING.
4. REMOVE TFR-LPZ PRIMARY FROM EMZ-101 AND CONNECT TO NEW 70A 3P OVERCURRENT DEVICE/DISCONNECT FROM STEP 3.
5. REMOVE FUME HOODS AND LAB ISLAND RECEPTACLES FROM LPY, AND RECONNECT TO SPARES IN LPP.

GENERAL NOTES

1. CODE COMPLIANCE: All work shall conform to and be performed in accordance with codes, standards, and ordinances as set forth by the authorities having jurisdiction and their latest adopted editions (in effect at time of building permit application) of the following publications:
   (a) California Code of Regulations Title 24; includes 1995 California Electrical Code, Uniform Fire Code, Uniform Building Code, etc. with California and other local amendments as applicable.
   (b) Americans with Disabilities Act (ADA)
2. SAFETY: The Electrical Contractor is responsible to maintain all equipment in a safe and responsible manner. Keep dead front equipment in place while equipment is energized. Conduct all construction operations in a safe manner for employees as well as other workpersons or anyone visiting the job site. Provide barriers, flags, tape, etc. as required for safety. The Contractor shall hold all parties harmless of negligent safety practices which may cause injury to others on or near the job site.
3. Before rough-in, verify all mounting heights and exact locations for all equipment electrical connections, stub-ups, receptacles, outlets, etc. with Architect or
4. LABEL panels, cabinets, backboards, main devices, safety switches, contactors and other specifically designated equipment shown on plans. Use engraved laminated plastic nameplates attached by screws or rivets. Neatly and indelibly label conduit destinations on both visible ends of conduit runs where conduits terminate at designated enclosures, structures or equipment (including pull and splice boxes). Correct existing panel directories and field-labeled designations to reflect new conditions.
5. FUSING: All fusible safety disconnect switches shall be provided with dual-element time delay type fuses sized and rated per equipment manufacturers' recommendations. Verify with equipment nameplate before installation.
6. EQUIPMENT ANCHORAGE: Brace or anchor all electrical equipment to resist a horizontal force acting in any direction. Use the following criteria:
   a. Fixed Equipment on Grade 30% of operating weight
   b. Fixed Equipment on Structure 45% of operating weight
   c. Emergency Power Equipment on Grade 40% of operating weight
   d. Emergency Power Equipment on Structure 60% of operating weight
   Exceptions: for Flexibly Mounted Equipment, use 4x the above values; for Simultaneous Vertical Force, use 1/3x horizontal force. See structural plans for anchorage details and where anchorage details are not shown on the drawings, the field installation shall be subject to the approval of the Structural Engineer and the field representative of the authority having jurisdiction. Should said approval be withheld, Electrical Contractor shall, at no extra cost to the Owner, modify and justify installation as required to gain approval.
7. GENERAL CONTRACTOR WORK includes but is not necessarily limited to the following:
   a. Concrete bases including rebar.
   b. Fire rated assembly around light fixtures, panels and cabinets located in fire-rated assemblies.
8. MOTOR OVERLOAD PROTECTION: Where required by NEC Article 430 Part C and not shown on plan or provided integral with equipment, provide and install thermal overload protection for all motors.
9. MECHANICAL UNIT CONDUITS: To prevent damage due to vibration, both power and control wiring conduits feeding exterior mechanical units shall be provided and installed by Electrical Contractor and shall be liquid tight flexible type at final connection to unit and between roof jack and disconnect switch where disconnect is mounted on unit.
10. MECHANICAL EQUIPMENT CONTROLS: Mechanical Contractor shall be responsible for all low voltage conduit, wire and connections (below 120 volt) to and from all mechanical control devices. All control wire shall be in conduit.
11. EQUIPMENT GROUNDING CONDUCTORS shall be installed in ALL power system raceways.
12. MINIMUM CONDUIT SIZE shall be 1/2" except use minimum 3/4" for undersiab, homeruns and below grade outside of building exterior walls. Run exposed conduit square and plumb with building lines.
13. PULLROPES: Any raceway without cable or wire shall be installed with minimum 200 pound test pull line and larger if required by serving utility company. Any new or existing communication or signal raceway routed between buildings, signal cabinets, and/or signal closets with future capacity shall be installed with minimum 200 pound test pull line as well as the called for cable.
14. EXISTING CONDITIONS: Information shown for existing conditions was primarily gained from "as built" drawings and/or limited field investigation. Before bid, visit site to verify existing conditions and make allowance for variations from that shown.
15. EXISTING CONDUCTORS: Intercept, extend, reroute, repull conductors, splice and otherwise modify existing conductors of all systems as required to maintain and/or establish proper function and satisfy design intent. Remove abandoned conductors.
16. EXISTING COMMUNICATIONS, DATA and other low voltage type system outlet locations shown on the plan to be relocated shall be performed by the Electrical Contractor. Modify existing system as required for full function (same as existing) in new location.
17. WHERE EXISTING BUILDING CONSTRUCTION, mechanical units and other equipment is shown to be removed, disconnect and remove all associated electrical installation.
18. CLOSELY COORDINATE OUTAGE AND FACILITY DISRUPTION TIME with Architect and Owner. Minimum 72 hour notice is required before any circuit shutdown or disruption of facility personnel functioning.
19. BEFORE CONSTRUCTION, PROVIDE SUBMITTALS of proposed products for Owner review and approval. All equipment and materials shall be new and listed, labeled or certified for its use by a Nationally Recognized Testing Laboratory (NRTL) as recognized by the US Dept. of Labor, Occupational Safety and Health Administration. The quality and suitability of all products and materials shall conform to the standards and practices of this trade.
20. THE ELECTRICAL PLANS indicate the general layout and arrangement; exact locations shall be determined by the architectural drawings and field conditions. Field verify all conditions and modify as required to satisfy design intent. Maintain all required working clearances.
21. DISCREPANCIES shall be brought immediately to the attention of the Architect for clarification. Any changes shall be approved by the Architect. Prior to rough-in, refer to architectural plans which shall take precedence over electrical plans with respect to locations.
22. PROFESSIONALISM AND APPEARANCE of all installations shall be in accordance with accepted practices of this trade. Installation methods shall conform to manufacturers' specifications. The Contractor shall provide the job with qualified journeymen and helpers in this trade for the duration of the job. It is the Contractor's responsibility to communicate with and keep the job superintendent appraised of changes or clarifications, etc.
23. THE INTENT OF THESE SPECIFICATIONS is to establish a standard of quality for materials and equipment. Therefore, some items are identified by manufacturer or trade name designation. Substitutions shall be subject to the Architect's approval. Samples of the proposed and substitute materials may be required for inspection prior to approval. Costs, if any, for evaluation of substitutions shall be the Contractor's responsibility. The decision of the Architect shall be final. Where the substitution will affect other trades, coordinate all changes with those trades concerned and pay any additional costs incurred by them as a result of this substitution. Approval of substitutions shall not relieve the Contractor from providing an operational system in accordance with all applicable codes and ordinances.
24. STORAGE OF EQUIPMENT for the job is the responsibility of the Electrical Contractor and shall be scheduled for delivery to the site as the equipment is required. Damage to the equipment delivered to the site or in transport to the job shall be the responsibility of the Electrical Contractor.
25. PROVIDE TEMPORARY CONSTRUCTION POWER to the construction site. The payment for construction power metering and energy charges shall be the responsibility of the Owner unless otherwise stated in the general conditions of these specifications.
26. ALL POWER SYSTEM CONDUCTORS shall be copper with type THHN/THWN insulation.
27. MOTOR CONTROLS shall be manual or magnetic with motor overload thermal relays. Individual thermal elements sized to the correct motor full load amps shall be used. Provide correct NEMA rated enclosure. Select proper voltage, class, size and horsepower rating. Select the correct coil voltage if magnetic.
28. PROVIDE NEAT AND ACCURATE FIELD RECORD DRAWINGS to Owner upon completion of work.
29. OPERATION & MAINTENANCE MANUALS: The Contractor shall provide 2 copies of all operating instructions, manuals, installation instructions for equipment indicated in submittal packages. The Contractor shall instruct the Owner's representative as to the operation and location of all equipment necessary to allow them to operate the facility upon final acceptance. This instruction period shall be prearranged with the Owner's representative prior to occupancy of the facility.
30. GUARANTEES: All equipment and labor shall be guaranteed and warranted free of defects, unless otherwise stated to be more restrictive, for a period of one year from the date of final acceptance by the Owner. A written warranty shall be presented to the Architect at the time of completion prior to final acceptance. Equipment deemed to be damaged, broken or failed shall be repaired or replaced at no additional cost to the Owner.

SINGLE LINE DIAGRAM

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city of san luis obispo

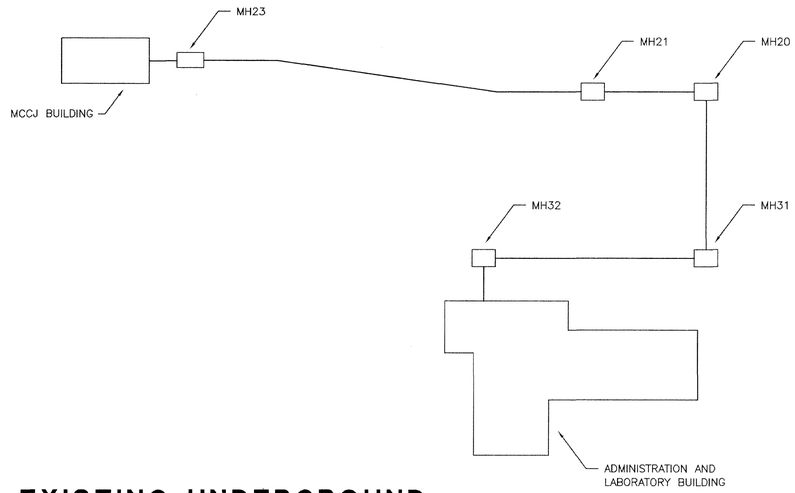
REVISIONS: Record Drawing

Metric Scale: H: SCALE V: SCALE

PROJECT TITLE: SAN LUIS OBISPO WASTE WATER TREATMENT GENERATOR LOAD ADDITION

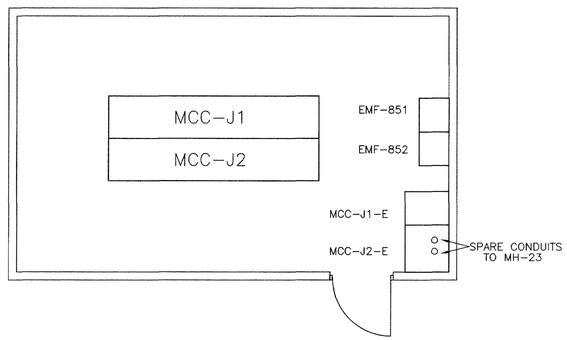
SHEET TITLE: GENERAL NOTES, SINGLE LINE DIAGRAM

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:
DATE: 03/01/00
CITY SPECIFICATION NO. 6E111A,E MODIFICATION
SHEET NO. E-1



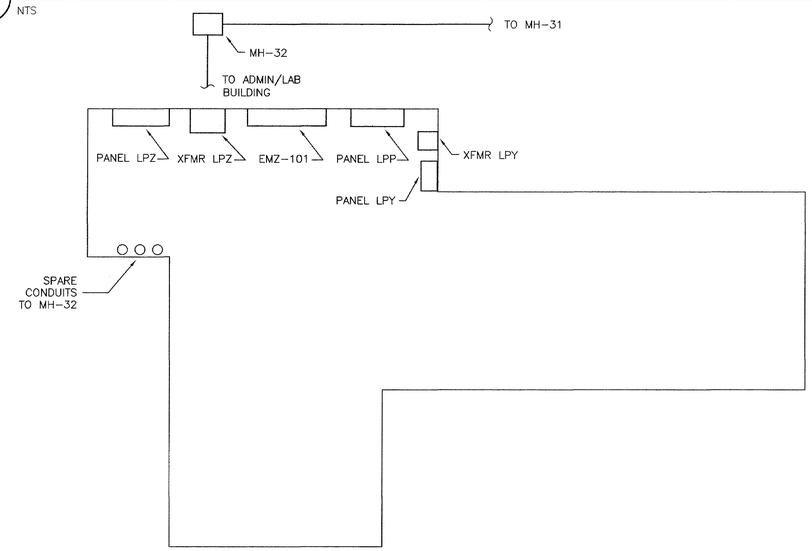
1 EXISTING UNDERGROUND DUCTBANK/MANHOLE LOCATATIONS

NTS



2 MCC-J BUILDING

NTS



3 ADMINISTRATION AND LABORATORY BUILDING

NTS

ENGINEER'S LOAD JUSTIFICATION QUALIFYING STATEMENT

The existing 560KW generator was originally sized based on specific operating scenarios detailed below. However, actual generator loading is managed by plant operations staff.
The load justification calculations presented herein are based on adherence to specific generator loading as follows:

Critical Facilities:

Critical facilities include those facilities which will be required to provide pumping to prevent flooding of the plant, minimum lighting in those areas where pumping equipment is located, plus lighting in the Switchgear Building. This includes:

Table 1

Equipment Number	Equipment Name	MCC	Load, KW
HWP 200	Influent Pump 2	A1	16
HWP 300	Influent Pump 3	A2	16
HWP 500	Influent Pump 5	A1	58
HWP 6 00	Influent Pump 6	A2	58
LPA	Lighting Panel A	A1	21
LPL	Lighting Panel L	A1	42

Total Table 1: 211KW

Minimum Treatment Facilities:

Minimum treatment facilities are those facilities which will provide minimum state – required treatment. These would include chlorination, dechlorination and lighting in those areas which have this process equipment. This includes:

Table 2

Equipment No.	Equipment Name	MCC	Load, KW
	Table 1 Loads		211.0
CLP 101	Plant effluent sodium hypo – chlorite feed pump	J1 – E (LP – J2)	1.6
CLP 201	Plant effluent sodium hypo – chlorite feed pump	J1 – E (LP – J2)	1.6
CLP 601	Headworks sodium hypochlorite feed pump	J2 – E	.05
CLP 701	RAS sodium hypochlorite feed pump	J1 – E (LP – J2)	.07
CLP 801	3W sodium hypochlorite feed pump	J1 – E (LP – J2)	.07
CLP 412	Sodium bisulfite mixing pump	J2 – E	1.5
CLP 901	Plant effluent sodium bisulfite feed pump	J1 – E (LP – J2)	1.2
CLP 902	Plant effluent sodium bisulfite feed pump	J1 – E (LP – J2)	1.2
CCN 104	sodium bisulfite flash mixer	J1 – E	3.0
CC AIT 141	Chl orine analyzer	J1 – E (LP – J2)	0.1
CC AIT 241	Sulfite analyzer	J1 – E (LP – J2)	0.1
CC AIT 341	Sulfite analyzer	J1 – E (LP – J2)	0.1
CCI 106	Automatic sampler	J1 – E (LP – J2)	0.2

Total Table 2: 238.5KW

Medium Treatment Facilities:

Medium treatment facilities are those facilities required to provide medium quality plant effluent. This includes:

Table 3

Equipment Number	Equipment Name	MCC	Load, KW
	Table 2 Loads		238.5
LPF	Lighting Panel F	F1	30.0
(Transfer Switch supplies this panel only. See transfer switch schedule.)			
ASB 100	Aeration Blower 1	F1	200.0
(Note: ASB 100 and MCC – F1 are not connected to generator.)			

Total, Table 3: 468.5KW

Planned spare capacity = 560KW – 468.5KW = 91.5KW

The following loads not shown in the operating scenarios described above have been added to the generator load:

Table 4

Equipment Number	Equipment Name	MCC	Load, KW
MCC – B1 (Connected load)			61
MCC – B2 (Connected load less redundancies)			38
LPG	Lighting Panel G	G	7.5
MCC – H (Connected load less redundancies)			83

Total Table 4: 189.5KW

Planned Loading plus additional loads enumerated in Table 4 above
= 268.5KW + 189.5KW = 458KW

Therefore, spare capacity as described
= 560KW – 458KW = 102KW

Given that loading is as outlined above, there is sufficient capacity to add the following load:

Table 5

Equipment Number	Equipment Name	MCC	Load, KW
TFR – LPZ	Transformer LPZ	J1–E	45

Total Table 5: 45KW

Existing planned loads, existing added loads
plus additional new load addition from Table 5
= 458KW + 45KW = 503 KW

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DATE: 03/01/00
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SHEET NO. E–2