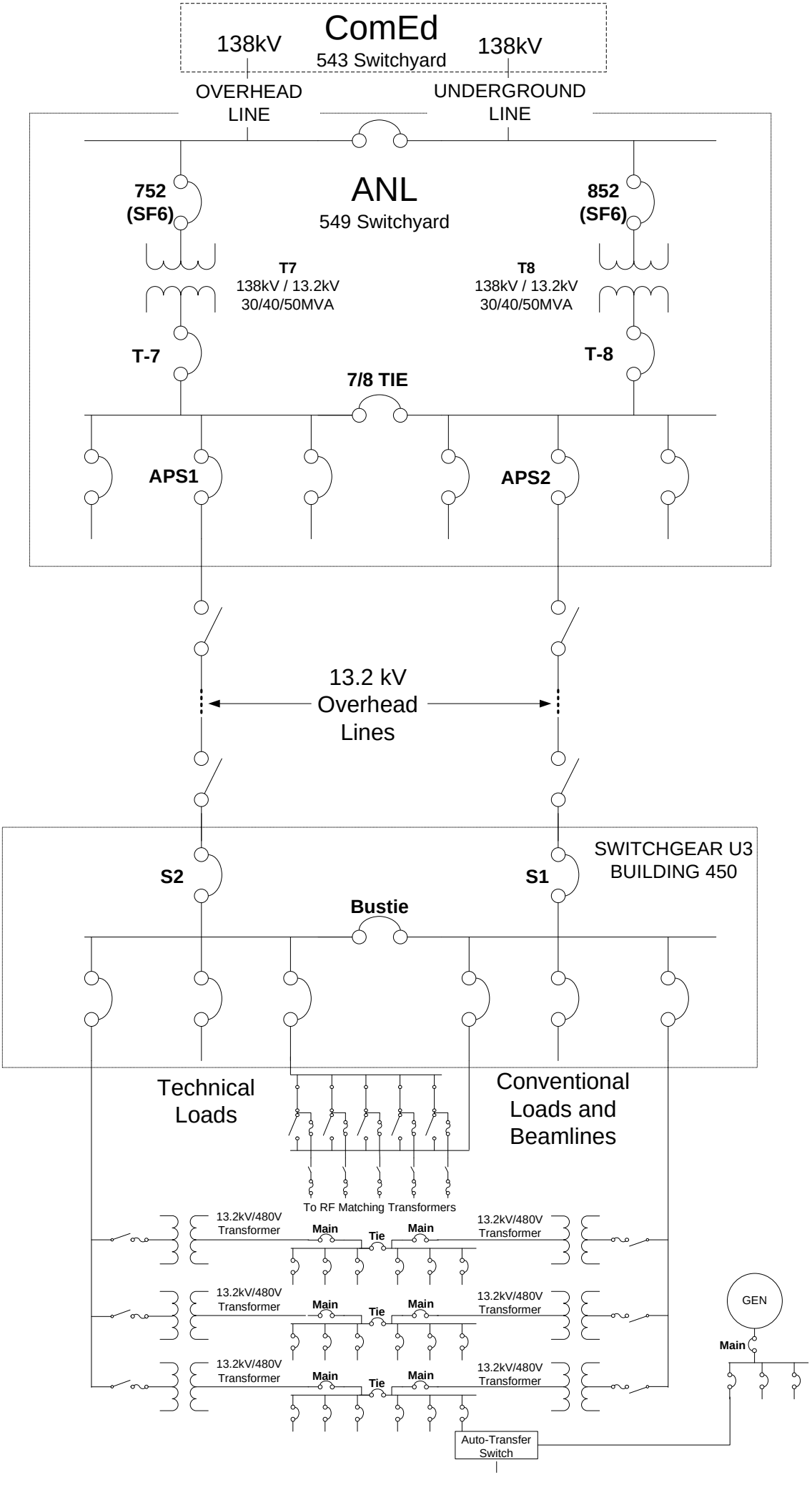
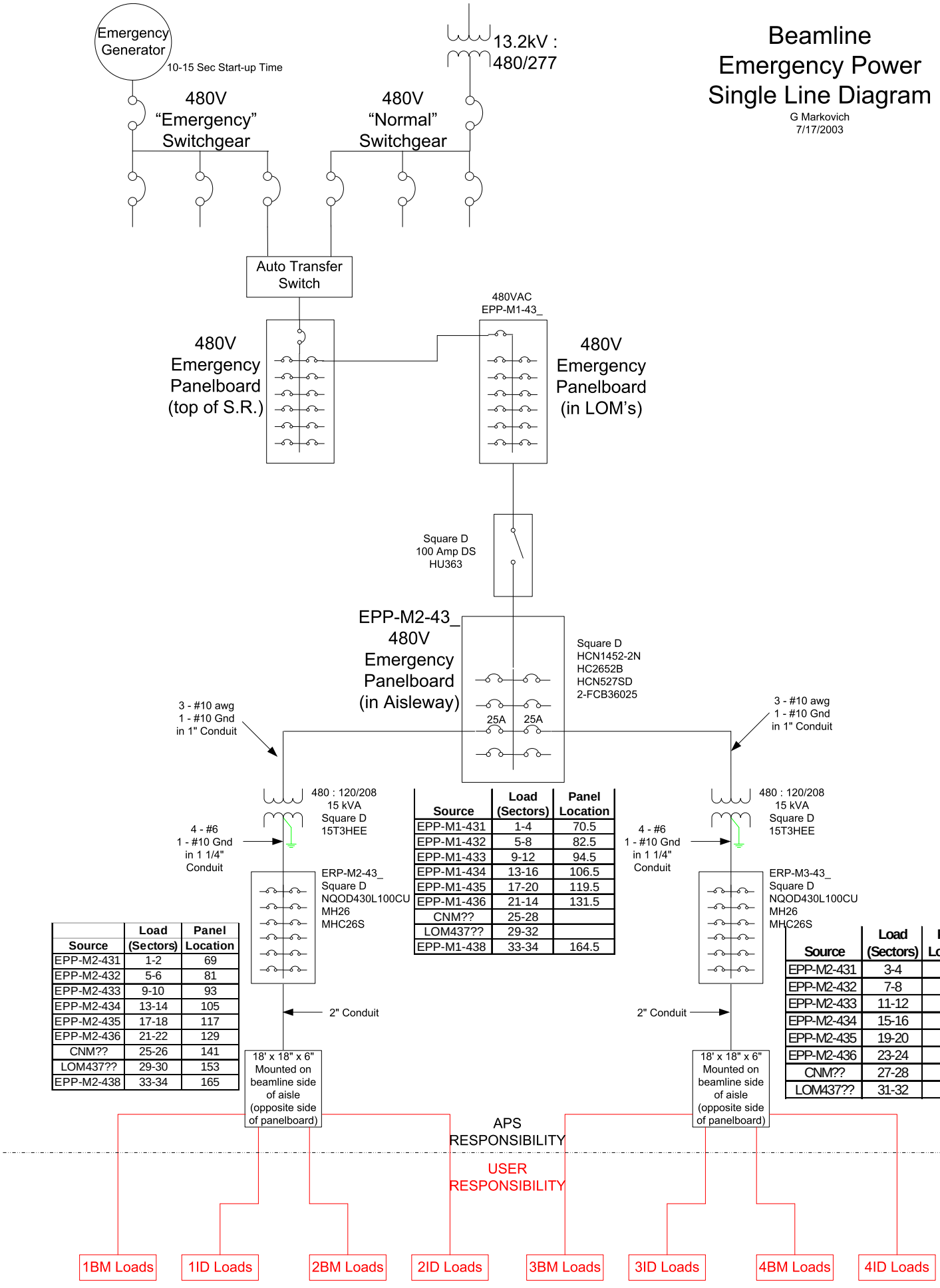

ComEd
543 Switchyard
138kV
138kV
OVERHEAD LINE
UNDERGROUND LINE
ANL
549 Switchyard
752 (SF6)
852 (SF6)
T7
138kV / 13.2kV
30/40/50MVA
T8
138kV / 13.2kV
30/40/50MVA
T-7
T-8
7/8 TIE
APS1
APS2
13.2 kV Overhead Lines
SWITCHGEAR U3
BUILDING 450
S2
S1
Bustie
Technical Loads
Conventional Loads and Beamlines
To RF Matching Transformers
13.2kV/480V Transformer
Main
Tie
Main
13.2kV/480V Transformer
GEN
Main
Auto-Transfer Switch

Beamline Emergency Power Single Line Diagram

G Markovich
7/17/2003



Source	Load (Sectors)	Panel Location
EPP-M1-431	1-4	70.5
EPP-M1-432	5-8	82.5
EPP-M1-433	9-12	94.5
EPP-M1-434	13-16	106.5
EPP-M1-435	17-20	119.5
EPP-M1-436	21-14	131.5
CNM??	25-28	
LOM437??	29-32	
EPP-M1-438	33-34	164.5

Source	Load (Sectors)	Panel Location
EPP-M2-431	1-2	69
EPP-M2-432	5-6	81
EPP-M2-433	9-10	93
EPP-M2-434	13-14	105
EPP-M2-435	17-18	117
EPP-M2-436	21-22	129
CNM??	25-26	141
LOM437??	29-30	153
EPP-M2-438	33-34	165

Source	Load (Sectors)	Panel Location
EPP-M2-431	3-4	75
EPP-M2-432	7-8	87
EPP-M2-433	11-12	99
EPP-M2-434	15-16	111
EPP-M2-435	19-20	123
EPP-M2-436	23-24	135
CNM??	27-28	147
LOM437??	31-32	159

ODD

EVEN

UTILITY AISLE

STORAGE RING

EXPERIMENT HALL

ELEV. +100'-0"

EXPERIMENT HALL

ID

BM

IO

BM

J. Box

MAIN AISLE

225A 480V
6CKT
PANELBOARD
FED FROM LOM

15KVA
480/120/208V
3Ø XFMR
42 AMP
SECONDARY

100A 208V
30 CKT
PANELBOARD

Emergency Power for Beamline Use

Emergency power (e-power) is available for distribution to the beam lines. This power is intended for use on **equipment that is required to maintain the integrity of the beam line**, e.g. ion pumps or cryo-pumps, and thus prevent excessive downtime due to the loss of vacuum or other critical equipment due to a power outage. **Note:** Any equipment connected to e-power is subject to ~15 second power outage when power is transferred to e-power and another 5-10 second power outage when normal power is restored. This means that any equipment connected to e-power must have automatic restart capability. **If power is required to be uninterruptible, a UPS must be used** (provided by user). The UPS should be connected to e-power. That way the UPS only has to provide power during the "power bumps" involved in switching from normal to e-power, and back again. Also **note** that any equipment connected to e-power is subject to periodic testing which means the "power bumps" will occur during tests of transfer switches.

For an individual beam line it is anticipated the critical ion pumps would be on e-power. With good vacuum this would require ~0.5 amp at 120 volt per pump to maintain, so several pumps could be on one circuit. The cryo-pump (which is presently on e-power from another source) requires 208 V 3-phase and while in operation requires about 2-3 amps. It may be desirable that data acquisition systems are connected to e-power, this would only require about 1-2 amps. In general, three to four circuits may be all that is required to maintain the beam line integrity following a power outage. Recommendation is that mechanical pumps are NOT put on e-power.

What e-power is available to the beam lines?
Each sector (BM & ID line) will have space for as many as 15 single pole, 120 V circuit breakers. Note that 208 V single phase requires 2 spaces, and that 208 V three phases requires 3 spaces.
Each sector will have 7.5 kVA available (i.e. ~62 amps at 120 volt). Note that several 120 volt 20 amp breakers can be used provided that the maximum load on all circuits does not exceed 62 amps.

How is the e-power being distributed?
A junction box exists at the inboard side of the aisle way just below the mechanical mezzanine. From this point it is the beam line that must extend conduit and provide receptacles to the locations on their respective beam lines.

What does the individual beam line have to provide to make use of e-power?
Each beamline is responsible to provide the circuit breakers desired, the wire, conduit, receptacles, and labor associated.

Note: Bil Wesolowski and Greg Markovich will be contacting the individual beam lines to determine their particular requirements. Bill can be reached at 2-9496 or page 4-9496 and Greg can be reached at 2-4421 or page 4-4421.