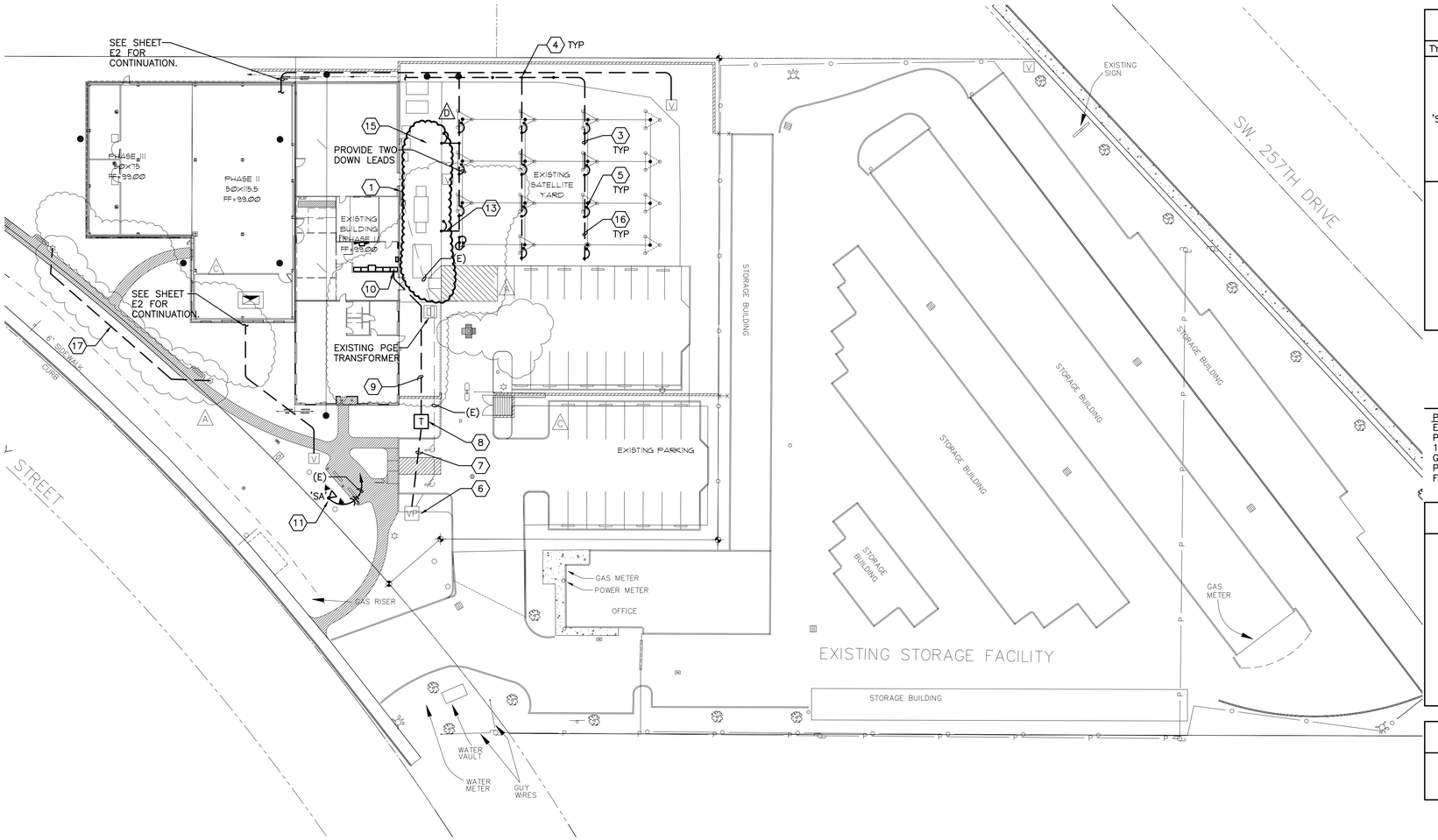


1 E0 **SITE PLAN - ELECTRICAL**
SCALE: 1" = 30'-0"

NOTES THIS SHEET

1. EXISTING CT CAN.
2. EXISTING PGE TRANSFORMER PAD/VAULT. COORDINATE RELOCATION OF EXISTING ELECTRICAL SERVICE AND REMOVAL OF GENERATOR WITH GENERAL CONTRACTOR. SUBMIT SERVICE METHOD OF PROCEDURE (SMOP) FOR ALL WORK ON ENERGIZED SYSTEMS PER ATTBI STANDARDS. A
3. THE PRIMARY CONDUCTOR USED IN THE SIGNAL GROUND SYSTEM SHALL CONSIST OF A #2 AWG BARE SOLID TINNED COPPER WIRE. THIS CONDUCTOR WILL ENCIRCLE THE ENTIRE FACILITY AT A DEPTH OF AT LEAST 18" BELOW GRADE, OR BELOW FROST LEVEL, WHICHEVER IS DEEPER. FURTHERMORE, THE CONDUCTOR WILL BE PLACED APPROXIMATELY 2' FROM THE EXTERIOR WALL OF THE FACILITY. THE SIGNAL GROUND SYSTEM SHALL BE CONNECTED BY AT LEAST 2 CONDUCTORS TO THE MGB. THESE CONNECTIONS WILL SERVE AS THE PRINCIPLE GROUND POINTS. THE SIGNAL GROUND SHALL BE BONDED TO THE EXISTING SATELLITE ANTENNA SUPPORTS, AND OTHER METALLIC OBJECT ON THE PROPERTY (FUEL TANKS, SEG'S). D
4. THE SIGNAL GROUND SYSTEM SHALL CONTAIN ELECTRODES IN THE FORM OF DRIVEN RODS. THE #2 AWG SIGNAL GROUND CONDUCTOR SHALL BE CONNECTED TO THE TOP OF 5/8" DIAMETER COPPER CLAD STEEL RODS OF 8' LENGTH, SPACED 16' APART. THE GROUND RODS SHALL BE DRIVEN SO THAT THE TOP IS AT LEAST 18" BELOW FINISHED GRADE. ALL OUTDOOR CONNECTIONS BETWEEN THE GROUND CONDUCTORS AND GROUND RODS SHALL BE MADE WITH AN EXOTHERMIC WELD. D
5. TIE NEW #2 AWG BARE SOLID TINNED COPPER GROUND WIRE TO EXISTING DISH GROUND ROD. ALL CONNECTIONS TO BE MADE WITH AN EXOTHERMIC WELD.
6. EXISTING PGE PRIMARY VAULT.
7. NEW 4" PRIMARY CONDUIT. PROVIDE LONG SWEEP RIGID ELBOWS.
8. NEW PGE TRANSFORMER PAD/VAULT. PER PGE REQUIREMENTS.
9. NEW 8-4" CONDUITS FOR SECONDARY CONDUCTORS.
10. NEW CT/TERMINAL SECTION AT SWITCHBOARD. C
11. REPLACE EXISTING BROKEN FLOODLIGHT WITH NEW TYPE AS SHOWN. REUSE EXISTING HOMERUN.
12. NOT USED. D
13. PROVIDE PIGTAIL FOR FUTURE DIESEL GENERATOR TO NEW GROUNDING RING. C
14. NOT USED.
15. PROVIDE PIGTAIL FOR FUTURE CHILLER, CH-1 TO NEW GROUND RING. D
16. COORDINATE WITH EXISTING UTILITY AND OTHER TRADES DURING TRENCHING.
17. REPLACE EXISTING CONDUIT AND CONDUCTOR BETWEEN EXISTING STREETLIGHTS AT COMPLETION OF PROJECT.
18. NOT USED. D C

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION
'SA'	EXTERIOR GROUND MOUNTED HID FLOODLIGHT. 16" WIDE BY 9" DIAMETER DIE CAST ALUMINUM HOUSING IN A BARREL CYLINDRICAL SHAPE. ONE PIECE DIE CAST ALUMINUM HOUSING. CAST ALUMINUM DOOR FRAME WITH 3/16" THICK CLEAR TEMPERED GLASS LENS. CAST ALUMINUM HEAVY DUTY SWIVEL. INTERCHANGEABLE SPECULAR ALUMINUM REFLECTOR ASSEMBLY WITH HORIZONTAL FLOOD DISTRIBUTION. PROVIDE STANTON MOUNT WITH 18" CONCRETE MOUNTED DEPTH. BRONZE PAINT FINISH. UL LISTED WET. -20 DEGREE, CWA HIGH POWER FACTOR BALLAST. ONE 150 WATT METAL HALIDE LAMP. NOMINAL INPUT WATTS: 188. GARDCO DF7 SERIES OR APPROVED SUBSTITUTE.

LUMINAIRE SCHEDULE GENERAL NOTES

1. THIS LUMINAIRE SCHEDULE IS NOT COMPLETE WITHOUT A COPY OF THE PROJECT MANUAL CONTAINING THE ELECTRICAL SPECIFICATIONS.
2. VERIFY LUMINAIRE VOLTAGE WITH BRANCH CIRCUIT SUPPLYING POWER TO LUMINAIRE PRIOR TO ORDERING.
3. T8 FLUORESCENT LAMPS TO BE 3500K WITH A MINIMUM CRI OF 75.
4. COMPACT FLUORESCENT LAMPS TO BE 3500K WITH A MINIMUM CRI OF 82.
5. METAL HALIDE LAMPS TO BE 3900K WITH A MINIMUM CRI OF 70.

NOTES:
1. CONTACT AND COORDINATE ALL REQUIREMENTS AND RESPONSIBILITIES WITH SERVING UTILITY COMPANIES PRIOR TO SUBMITTING BID.
2. ALL SERVICE INSTALLATION WORK SHALL BE IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF THE SERVING UTILITIES.

POWER UTILITY CONTACT:
ED EKSTROM
PGE
1705 NE BURNSIDE ST.
GRESHAM, OR 97030
PHONE: (503) 669-5216
FAX: (503) 464-7989

DRAWING SCHEDULE

E0	SITE PLAN - ELECTRICAL
E1	FLOOR PLAN LIGHTING
E2	FLOOR PLAN POWER / SIGNAL
E2.1	PARTIAL FLOOR PLAN GROUNDING
E3	ONE-LINE DIAGRAM
E4	SYMBOL SCHEDULE, DETAILS
E5	PANEL SCHEDULES, DETAILS
E5.1	PANEL SCHEDULES, DETAILS
E6	NOC ALARM ONE-LINE DIAGRAM
E6.1	WALM NOC PUNCHDOWN BLOCK

LINE TYPE LEGEND

- NEW
- EXISTING TO BE REMOVED

GROUP MACKENZIE
Civil Engineering · Structural Engineering · Transportation Planning
Architecture · Interior Design · Land Use Planning
0690 SW Bancroft St / PO Box 69039 · Portland, OR 97201-0039
Tel: 503.224.9560 / 360.695.7879 · Fax: 503.228.1285

AT&T

Project
BROADBAND FACILITY EXPANSION PHASE 2 and 3
Troutdale Oregon

REGISTERED PROFESSIONAL ENGINEER
9751
OREGON
JULY 14, 1978
JAMES E. MITCHELL
EXPIRES 12/31/02

REVISIONS:

REVISION NUMBER	PROGRESS NO CHANGES WHICH AFFECT	REVISION EDITION CLOSING DATE
A		07/30/02
C		09/13/02
D		09/27/02

SHEET TITLE:
SITE PLAN - ELECTRICAL

FIRST ISSUED: 7/03/02
LAST ISSUED: 8/30/02
DRAWN BY: DPR

CHECKED BY: JEM

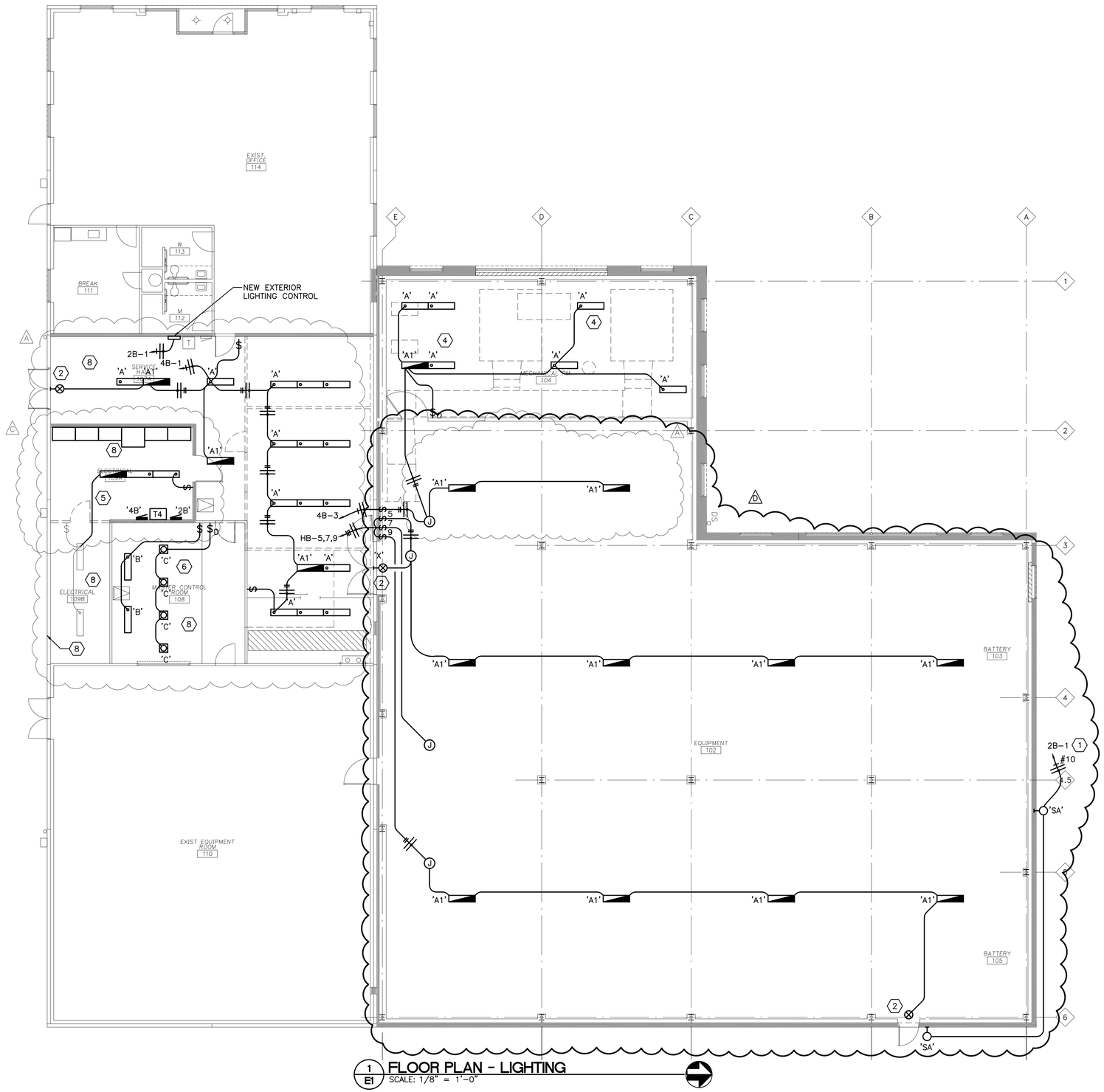
SHEET:
E0

JOB NO. 990276

R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9400 SW Beaverton-Hillsdale Highway, Suite 250
Beaverton, Oregon 97005
Phone: (503) 292-6000
FAX: (503) 292-1422
E-mail: rweng@rweng.com
Project No.: 371.009.001 Contact: JIM MITCHELL

REVISED PERMIT SET 9/27/02

H:\WT\371_Group Mackenzie\009_ATT\001_Electrical\DWG\Addendum_D\E00.dwg - Sep 30, 2002 - 3:04pm



LUMINAIRE SCHEDULE

TYPE	DESCRIPTION
'A'	SURFACE MOUNTED CORRIDOR WRAPAROUND, 6" x 48", TWO-LAMP, ACRYLIC PRISMATIC DIFFUSER WITH MOUTING CLIPS, ELECTRONIC BALLAST, (2) T8 F32 LAMPS. LITHONIA CAT No. CS-232-277-GEB10
'A1'	SAME AS 'A' EXCEPT WITH BATTERY BACKED BALLAST.
'B'	RECESSED 1' x 4', TWO-LAMP, PARABOLIC FLUORESCENT, ELECTRONIC BALLAST, (2) T8 F32 LAMPS. LITHONIA CAT No. PM3GB-232-BLD-120-GEB.
'C'	RECESSED FLUORESCENT DOWNLIGHT. 6" NOMINAL DIAMETER ALUMINUM HOUSING WITH PEWTER SPECULAR REFLECTOR, SELF-FLANGED, DIMMING ELECTRONIC BALLAST, ONE 18 WATT TRIPLE COMPACT FLUORESCENT VERTICAL LAMP, NOMINAL INPUT WATTS: 20. LITHONIA AFV 18TRT 6PR SERIES, HALO, LIGHTOLIER, PRESCOLITE OR APPROVED.
'D'	SURFACE MOUNTED, ENCLOSED, DAMP LABEL FLUORESCENT, ELECTRONIC BALLAST, (2) F32 LAMPS. LITHONIA CAT No. DM-232-120-GEB.
'D1'	SAME AS 'D' EXCEPT WITH BATTERY BACKED BALLAST.
'X'	UNIVERSAL MOUNTED LED EXIT SIGN. DIE CAST ALUMINUM HOUSING WITH BRUSHED ALUMINUM FACEPLATE AND BLACK TRIM. PROVIDE DIFFUSING LENS. PROVIDE SELF-DIAGNOSTIC. PROVIDE 90-MINUTE NICKEL CADMIUM BATTERY BACKUP. RED LED LETTERS NOMINAL INPUT WATTS: 6.5. LITHONIA LE ELN SERIES, SURE-LITES, HUBBELL, CHLORIDE OR APPROVED.
'SA'	EXTERIOR WALL MOUNTED HID LUMINAIRE. 16-1/4" WIDE BY 7" HIGH BY 9" DEEP DIE CAST ALUMINUM HOUSING IN A TRAPEZOIDAL SHAPE. DIE CAST ALUMINUM DOOR FRAME WITH A HEAT AND IMPACT RESISTANT TEMPERED GLASS LENS, 1/8" THICK. SPECULAR EXTRUDED ALUMINUM REFLECTOR WITH FORWARD THROW DISTRIBUTION. BRONZE FINISH. UL LISTED WET. -20 DEGREE, CWA, HIGH POWER FACTOR BALLAST. COORDINATE MOUNTING HEIGHT AND LOCATION WITH ARCHITECTURAL PLANS. ONE 175 WATT METAL HALIDE LAMP. NOMINAL INPUT WATTS: 210. GARDCO 101 SERIES OR APPROVED.

LUMINAIRE SCHEDULE GENERAL NOTES

1. THIS LUMINAIRE SCHEDULE IS NOT COMPLETE WITHOUT A COPY OF THE PROJECT MANUAL CONTAINING THE ELECTRICAL SPECIFICATIONS.
2. VERIFY LUMINAIRE VOLTAGE WITH BRANCH CIRCUIT SUPPLYING POWER TO LUMINAIRE PRIOR TO ORDERING.
3. T8 FLUORESCENT LAMPS TO BE 3500K WITH A MINIMUM CRI OF 85.
4. COMPACT FLUORESCENT LAMPS TO BE 3500K WITH A MINIMUM CRI OF 82.
5. METAL HALIDE LAMPS TO BE 3900K WITH A MINIMUM CRI OF 70.

NOTES THIS SHEET

1. ROUTE THRU NEW EXTERIOR LIGHTING CONTROLS.
2. CONNECT EXIT LUMINAIRE TO UNSWITCHED LEG OF ROOM CIRCUIT.
3. NOT USED.
4. COORDINATE LIGHTING LAYOUT IN MECHANICAL ROOM WITH HVAC EQUIPMENT, MOUNT ON DUCT WORK IF NECESSARY.
5. CONNECT TO EXISTING EQUIPMENT ROOM LIGHTING CIRCUIT. CONTROL WITH EXISTING EQUIPMENT ROOM LUMINAIRES WITH NEW SWITCH.
6. REMOVE EXISTING SURFACE MOUNTED STRIP AND INSTALL NEW FIXTURES AND SWITCHING. FIELD VERIFY VOLTAGE FOR 'A' OR 'B' FIXTURE.
7. NOT USED.
8. FIRE RATED GYPBOARD CEILING IS BEING ADDED TO ROOMS 107A, 108, 109A AND 109B. PROVIDE ALL LABOR AND MATERIALS NECESSARY TO REMOVE, RESUPPORT AND MAINTAIN NEC REQUIRED ACCESS TO ELECTRICAL FEEDERS, BRANCH CIRCUITS AND EQUIPMENT.
9. NOT USED.

GROUP MACKENZIE
Architecture
Interior Design
Land Use Planning
Civil Engineering
Structural Engineering
Transportation Planning
Portland, OR 97201-0039
Fax: 503.228.1285
0690 SW Bancroft St / PO Box 69039
Tel: 503.224.9560 / 360.695.7879

AT&T

Project
BROADBAND FACILITY EXPANSION PHASE 2 and 3
Troutdale Oregon

REGISTERED PROFESSIONAL ENGINEER
9751
OREGON
JULY 14, 1978
JAMES E. MITCHELL
EXPIRES 12/31/02

REVISIONS:

REVISION NUMBER	PROGRESS NO. CHANGES NO. SET	REVISION EDITION CLOSING DATE
A		07/30/02
B		08/12/02
C		09/13/02
D		09/27/02

SHEET TITLE:
FLOOR PLAN - LIGHTING

FIRST ISSUED: 7/03/02
LAST ISSUED: 8/30/02
DRAWN BY: DPR

CHECKED BY: JEM

SHEET:
E1

JOB NO. 990276

R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9400 SW Beaverton-Hillsdale Highway, Suite 250
Beaverton, Oregon 97005
Phone: (503) 292-6000
FAX: (503) 292-1422
E-mail: rweng@rweng.com
Project No.: 371.009.001 Contact: JIM MITCHELL

REVISED PERMIT SET 9/27/02

NOTES THIS SHEET

1. THE PRIMARY CONDUCTOR USED IN THE SIGNAL GROUND SYSTEM SHALL CONSIST OF A #2 AWG BARE SOLID TINNED COPPER WIRE. THIS CONDUCTOR WILL ENCIRCLE THE ENTIRE FACILITY AT A DEPTH OF AT LEAST 18" BELOW GRADE, OR BELOW FROST LEVEL, WHICHEVER IS DEEPER. FURTHERMORE, THE CONDUCTOR WILL BE PLACED APPROXIMATELY 2' FROM THE EXTERIOR WALL OF THE FACILITY. THE SIGNAL GROUND SYSTEM SHALL BE CONNECTED BY AT LEAST 2 CONDUCTORS TO THE MGB. THESE CONNECTIONS WILL SERVE AS THE PRINCIPLE GROUND POINTS. THE SIGNAL GROUND SHALL BE ALSO BONDED TO THE TOWER LEGS, IF A TOWER IS PRESENT, AND OTHER METALLIC OBJECT ON THE PROPERTY (FUEL TANKS, SEG'S).
2. THE SIGNAL GROUND SYSTEM SHALL CONTAIN ELECTRODES IN THE FORM OF DRIVEN RODS. THE #2 AWG SIGNAL GROUND CONDUCTOR SHALL BE CONNECTED TO THE TOP OF 5/8" DIAMTER COPPER CLAD STEEL RODS OF 8' LENGTH, SPACED 16' APART. THE GROUND RODS SHALL BE DRIVEN SO THAT THE TOP IS AT LEAST 18" BELOW FINISHED GRADE. ALL OUTDOOR CONNECTIONS BETWEEN THE GROUND CONDUCTORS AND THE GROUND RODS SHALL BE MADE WITH AN EXOTHERMIC WELD.
3. CADWELD #3/0 TO SERVICE GROUND AND #2 SOLID BARE TINNED COPPER TO UFER GROUND.
4. NOT USED.
5. CADWELD #2 SOLID BARE TINNED COPPER FROM GROUND RING TO GROUND BUS AT OCEF.
6. CADWELD #2 SOLID BARE TINNED COPPER FROM SIGNAL GROUND TO COLUMN AND REBAR IN COLUMN FOOTING AS REQUIRED BY OREGON STRUCTURAL SPECIALTY CODE.
7. PROVIDE #2 SOLID, BARE, TINNED COPPER PIGTAILS FOR FUTURE GENERATOR ENCLOSURE, GENERATOR, AND CHILLER.
8. INSTALL NEW 1/4" x 4" x 24" COGB UNDER EXISTING HEADEND ACCESS FLOOR. SIMILAR TO DETAIL 2/E4.
9. CONNECT EXISTING UNDERFLOOR FRAME WORK GROUND BAR TO NEW UNDERFLOOR COGB WITH NEW #2/0 CONDUCTOR. REMOVE EXISTING GROUND CONNECTION AND SUPPORTS AND REATTACH TO FLOOR WITH TWO GLASTIC CAT. No. 1872-3E INSULATORS. SUBMIT SMOP TO ATTBI FOR ALL WORK.
10. PROVIDE LABOR AND MATERIALS TO CONNECT AND EXTEND EXISTING SERVICE UFER GROUND TO MGB.

GENERAL NOTES

A. PROVIDE TWO INCH PVC PIPE OR OTHER NON-METALLIC SLEEVES THAT DO NOT FORM A METALLIC RING ABOUT THE CONDUCTOR.

B. USE FIBERGLASS UNISTRUT TO SUPPORT PVC CONDUIT AND/OR GREEN CO GROUND CONDUCTOR THAT DO NOT FORM A METALLIC RING ABOUT THE CONDUCTOR.

C. INSTALL PERMANENT BRASS "DO NOT DISCONNECT" TAG AT EVERY CO GROUND CONDUCTOR TERMINATION.

D. MINIMUM BENDING RADIUS FOR ALL GROUND CONDUCTORS 8".

LEGEND

- X 5/8" x 8' COPPERWELD GROUND ROD
- —C— #2 SOLID, BARE, TINNED COPPER
- CADWELD CONNECTION
- CO GROUND BAR – SEE DETAIL 2/E4.

SERVICE GROUND (2) 5/8" x 8'-0" RODS
#3/0
#3/0
#2
MASTER GROUND BAR (MGB) MTD +48"
750 KCMIL GREEN COBRA
COGB-1
#2/0 GREEN COBRA RUN UNDER FLOOR
EXIST. OFFICE 114
BREAK 111
W 113
M 112
SERVICE HALL 107A
ELECTRICAL 109A
MECHANICAL RM. 104
ELECTRICAL 109B
MASTER CONTROL ROOM 108
EXIST EQUIPMENT ROOM 110
EQUIPMENT 102
POWER PLANT 'B'
BATTERY 103
POWER PLANT 'A'
BATTERY 105
8D-5B & 6B
8D-3B & 4B
8D-1B & 2B
8D-5A & 6A
8D-3A & 4A
8D-1A & 2A
DNA @ 5 HR RATE 24-100ANB ABSOLYTE IP JOHN BARCRY
24-100ANB ABSOLYTE IP GNB BATTERY 861A @ 5 HR RATE
SEE SITE PLAN 2

1 / E2.1 FLOOR PLAN - GROUNDING
SCALE: 1/8" = 1'-0"

GROUP MACKENZIE
Architecture
Interior Design
Land Use Planning
Civil Engineering
Structural Engineering
Transportation Planning
0690 SW Bancroft St / PO Box 69039
Tel: 503.224.9560 / 360.695.7879
Portland, OR 97201-0039
Fax: 503.228.1285

AT&T

Project
BROADBAND FACILITY EXPANSION PHASE 2 and 3
Troutdale
Oregon

REGISTERED PROFESSIONAL ENGINEER
9751
OREGON
JULY 14, 1978
JAMES E. MITCHELL
EXPIRES 12/31/02

REVISIONS:

REVISION NUMBER	PROGRESS NO CHANGES TO SHEET	REVISION EDITION CLOSING DATE
A		07/30/02
C		09/13/02
D		09/27/02

SHEET TITLE:
FLOOR PLAN - GROUNDING

FIRST ISSUED: 7/03/02
LAST ISSUED: 8/30/02
DRAWN BY: DPR

CHECKED BY: JEM

SHEET:
E2.1

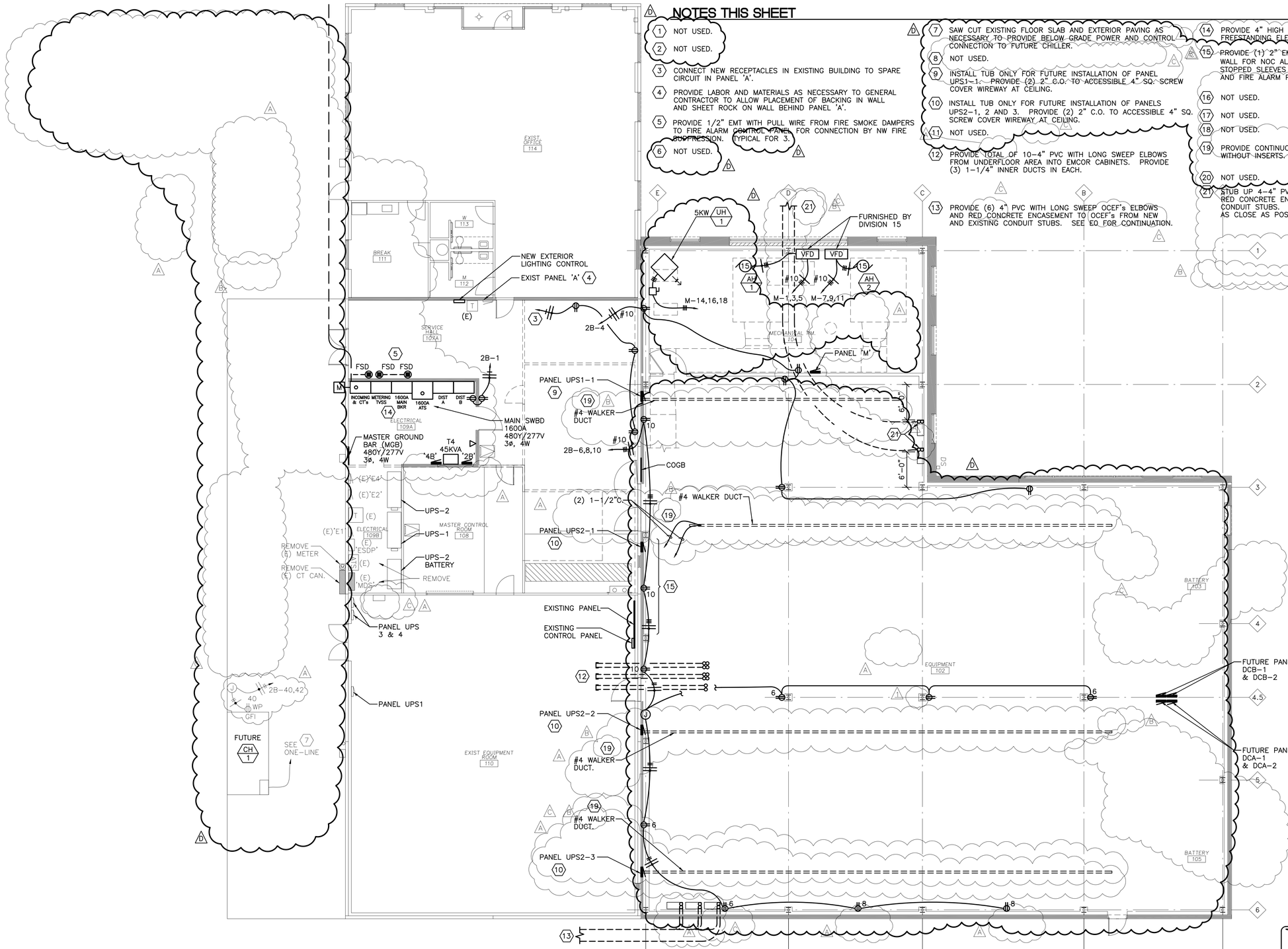
JOB NO. 990276

R&W ENGINEERING, INC.
'Engineering Integrated Solutions'
9400 SW Beaverton-Hillsdale Highway, Suite 250
Beaverton, Oregon 97005
Phone: (503) 292-6000
FAX: (503) 292-1422
E-mail: rweng@rweng.com
Project No.: 371.009.001 Contact: JIM MITCHELL

REVISED PERMIT SET 9/27/02

NOTES THIS SHEET

1. NOT USED.
2. NOT USED.
3. CONNECT NEW RECEPTACLES IN EXISTING BUILDING TO SPARE CIRCUIT IN PANEL 'A'.
4. PROVIDE LABOR AND MATERIALS AS NECESSARY TO GENERAL CONTRACTOR TO ALLOW PLACEMENT OF BACKING IN WALL AND SHEET ROCK ON WALL BEHIND PANEL 'A'.
5. PROVIDE 1/2" EMT WITH PULL WIRE FROM FIRE SMOKE DAMPERS TO FIRE ALARM CONTROL PANEL FOR CONNECTION BY NW FIRE SUPPRESSION. (TYPICAL FOR 3.)
6. NOT USED.
7. SAW CUT EXISTING FLOOR SLAB AND EXTERIOR PAVING AS NECESSARY TO PROVIDE BELOW GRADE POWER AND CONTROL CONNECTION TO FUTURE CHILLER.
8. NOT USED.
9. INSTALL TUB ONLY FOR FUTURE INSTALLATION OF PANEL UPS1-1. PROVIDE (2) 2" C.O. TO ACCESSIBLE 4" SQ. SCREW COVER WIREWAY AT CEILING.
10. INSTALL TUB ONLY FOR FUTURE INSTALLATION OF PANELS UPS2-1, 2 AND 3. PROVIDE (2) 2" C.O. TO ACCESSIBLE 4" SQ. SCREW COVER WIREWAY AT CEILING.
11. NOT USED.
12. PROVIDE TOTAL OF 10-4" PVC WITH LONG SWEEP ELBOWS FROM UNDERFLOOR AREA INTO EMCOR CABINETS. PROVIDE (3) 1-1/4" INNER DUCTS IN EACH.
13. PROVIDE (6) 4" PVC WITH LONG SWEEP OCEF's ELBOWS AND RED CONCRETE ENCASEMENT TO OCEF's FROM NEW AND EXISTING CONDUIT STUBS. SEE E0 FOR CONTINUATION.
14. PROVIDE 4" HIGH HOUSEKEEPING PADS FOR ALL FREESTANDING ELECTRICAL EQUIPMENT.
15. PROVIDE (1) 2" EMT FIRE STOPPED SLEEVE THROUGH WALL FOR NOC ALARM WIRING AND (4) 3/4" EMT FIRE STOPPED SLEEVES THROUGH WALL FOR FIRE ALARM AND FIRE ALARM POWER.
16. NOT USED.
17. NOT USED.
18. NOT USED.
19. PROVIDE CONTINUOUS RUN OF No.4 WALKERDUCT WITHOUT INSERTS.
20. NOT USED.
21. STUB UP 4-4" PVC WITH LONG SWEEP ELBOWS AND RED CONCRETE ENCASEMENT TO OCEF's FROM EXISTING CONDUIT STUBS. STUB UP 2-4" PVC TO EACH OCEF AS CLOSE AS POSSIBLE TO COLUMN FOOTING AS SHOWN.



1/E2 FLOOR PLAN - POWER/SIGNAL
SCALE: 1/8" = 1'-0"

GROUP MACKENZIE
Architecture
Interior Design
Land Use Planning
Civil Engineering
Structural Engineering
Transportation Planning
0690 SW Bancroft St / PO Box 69039
Portland, OR 97201-0039
Tel: 503.224.9560 / 360.695.7879
Fax: 503.228.1285

AT&T

Project
BROADBAND FACILITY EXPANSION PHASE 2 and 3
Troutdale
Oregon

REGISTERED PROFESSIONAL ENGINEER
9751
OREGON
JULY 14, 1978
JAMES E. MITCHELL
EXPIRES 12/31/02

REVISIONS:

REVISION NUMBER	PROGRESS NO CHANGES THIS SHEET	REVISION EDITION CLOSING DATE
A		7/30/02
B		8/12/02
C		9/13/02
D		9/27/02

SHEET TITLE:
FLOOR PLAN - POWER/ SIGNAL

FIRST ISSUED: 7/03/02
LAST ISSUED: 8/30/02
DRAWN BY: DPR

CHECKED BY: JEM

SHEET:
E2

JOB NO. 990276

R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9400 SW Beaverton-Hillsdale Highway, Suite 250
Beaverton, Oregon 97005
Phone: (503) 292-6000
FAX: (503) 292-1422
E-mail: rweng@rweng.com
Project No.: 371.009.001 Contact: JIM MITCHELL

REVISED PERMIT SET 9/27/02

H:\MFI\371_Group Mackenzie\009_ATI\001_Electrical\DWG\Addendum_01\E02.dwg - Sep 30, 2002 - 2:41pm

GENERAL NOTES

A. EXISTING PGE SERVICE TO BE REMOVED AND REPLACED BY NEW SWITCHGEAR AND PANELS AS SHOWN. △D

SHEET NOTES

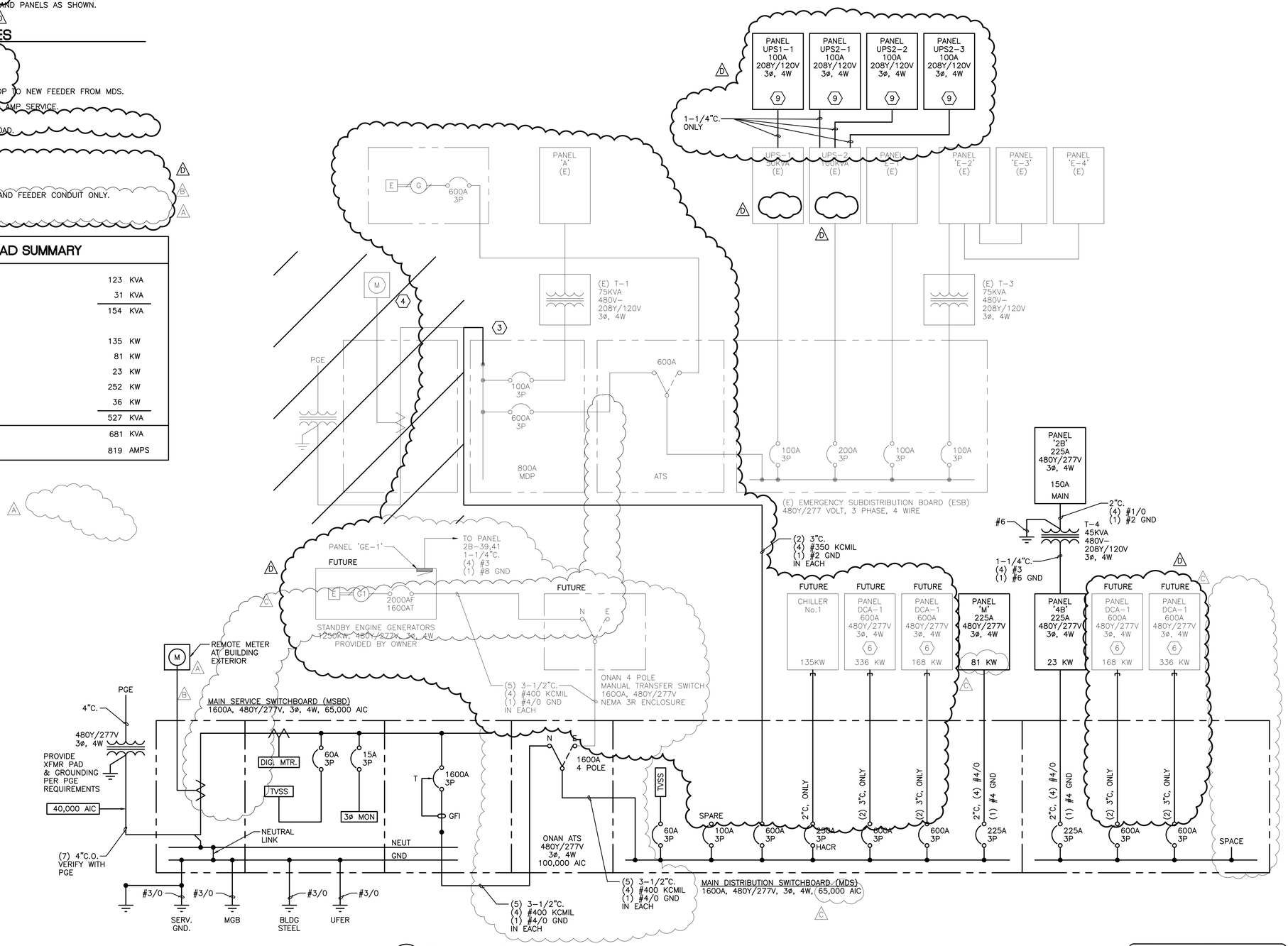
△D
1. NOT USED.
2. NOT USED.
3. CONNECT EXISTING MDP TO NEW FEEDER FROM MDS.
4. REMOVE EXISTING 800 AMP SERVICE.

△D
5. NON-COINCIDENTAL LOAD.
6. LOAD FACTOR 25%.
7. NOT USED.
8. NOT USED.
9. PROVIDE PANEL TUB AND FEEDER CONDUIT ONLY.

△C △A △B △D

LOAD SUMMARY

EXISTING LOAD	123	KVA
+ 25% PER NEC	31	KVA
	154	KVA
△D FUTURE NEW LOAD		
CHILLER	135	KW
MECH	81	KW
LTG/RECPT	23	KW
DC POWER	252	KW
UPS	36	KW
	527	KVA
TOTAL LOAD	681	KVA
@480V, 3ø	819	AMPS



1 E3 ONE-LINE DIAGRAM
NOT TO SCALE

GROUP MACKENZIE
Architecture
Interior Design
Land Use Planning
Civil Engineering
Structural Engineering
Transportation Planning
0690 SW Bancroft St / PO Box 69039 Portland, OR 97201-0039
Tel: 503.224.9560 / 360.695.7879 Fax: 503.228.1285

AT&T

Project
BROADBAND FACILITY EXPANSION PHASE 2 and 3
Troutdale
Oregon

REGISTERED PROFESSIONAL ENGINEER
9751
OREGON
JULY 14, 1978
JAMES E. MITCHELL
EXPIRES 12/31/02

REVISIONS:

REVISION NUMBER	PROGRESS NO. OWNER'S INITIALS	REVISION EDITION CLOSING DATE
A		7/30/02
B		8/12/02
C		9/13/02
D		9/27/02

SHEET TITLE:
ONE-LINE DIAGRAM

FIRST ISSUED: 7/03/02
LAST ISSUED: 8/30/02
DRAWN BY: DPR

CHECKED BY: JEM

SHEET:
E3

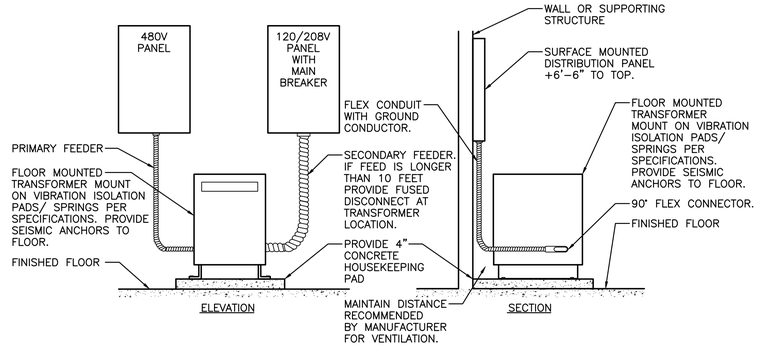
JOB NO. 990276

R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9400 SW Beaverton-Hillsdale Highway, Suite 250
Beaverton, Oregon 97005
Phone: (503) 292-6000
FAX: (503) 292-1422
E-mail: rweng@rweng.com
Project No.: 371.009.001 Contact: JIM MITCHELL

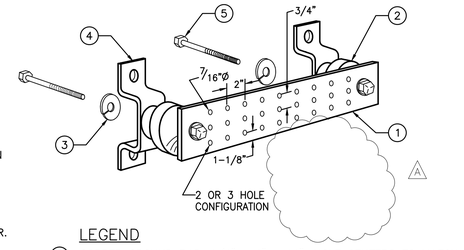
REVISED PERMIT SET 9/27/02

ELECTRICAL SYMBOL LIST

WALL MOUNTED LUMINAIRE	
RECESSED LUMINAIRE	
SURFACE OR PENDANT MOUNTED FLUORESCENT 1' x 4' LUMINAIRE	
SURFACE OR PENDANT MOUNTED FLUORESCENT 1' x 4' LUMINAIRE WITH BATTERY BACKUP	
EXIT SIGN CEILING MOUNTED, ARROW(S) INDICATES DIRECTION IF SHOWN	
SINGLE POLE SWITCH	
SWITCH WITH OCCUPANCY SENSOR	
THREE-WAY SWITCH	
SPECIAL PURPOSE RECEPTACLE	
DUPLEX RECEPTACLE	
DOUBLE DUPLEX RECEPTACLE	
DUPLEX RECEPTACLE ABOVE COUNTER	
MOTOR CONNECTION	
NON-FUSED DISCONNECT SWITCH	
FUSED DISCONNECT SWITCH	
COMBINATION MAGNETIC MOTOR STARTER/FUSED DISCONNECT SWITCH	
MAGNETIC MOTOR STARTER	
UTILITY METER BASE	
JUNCTION BOX	
TRANSFORMER	
TELEPHONE OUTLET WITH 3/4" C. AND PULLSTRING TO ACCESSIBLE CEILING SPACE	
TELEPHONE OUTLET ABOVE COUNTER WITH 3/4" C. AND PULLSTRING TO ACCESSIBLE CEILING SPACE	
DATA OUTLET WITH 3/4" C. AND PULLSTRING TO ACCESSIBLE CEILING SPACE	
DATA OUTLET ABOVE COUNTER WITH 3/4" C. AND PULLSTRING TO ACCESSIBLE CEILING SPACE	
COMBINATION TELE/DATA OUTLET WITH 3/4" C. AND PULLSTRING TO ACCESSIBLE CEILING SPACE	
CONDUIT ELLED UP	
CONDUIT ELLED DOWN	
CONDUIT/WIRING STUBBED OUT WITH END CAP OR INSULATED PLASTIC BUSHING	
CONDUIT/WIRING CONTINUATION	
GROUND ROD	
WATER PIPE GROUND CONNECTION	
GROUNDING POINT	
STANDBY/EMERGENCY GENERATOR	
DRY TYPE TRANSFORMER	
LANDING LUG	
CURRENT TRANSFORMER	
SWITCH	
CIRCUIT BREAKER	
SURFACE MOUNT EQUIPMENT ENCLOSURE AS NOTED	
FLUSH MOUNT EQUIPMENT ENCLOSURE AS NOTED	
BRANCH PANEL	
FLUSH WALL MOUNTED BRANCH PANEL	
MAIN DISTRIBUTION PANEL / SUB DISTRIBUTION PANEL	
FACP	FIRE ALARM CONTROL PANEL
S	SMOKE DETECTOR
H	HEAT DETECTOR
F	FIRE ALARM PULL STATION
F	FIRE ALARM VISUAL STROBE
	FLUSH WALL MOUNTED SECONDARY CLOCK
	FLEXIBLE CONDUIT
	CONDUIT CONCEALED IN WALL OR CEILING SPACE
	CONDUIT ROUTED BELOW FLOOR / GRADE
X	REFERENCE NOTE
X / X	MECHANICAL EQUIPMENT CONNECTION ITEM. REFER TO SCHEDULE
AFF	ABOVE FINISHED FLOOR
AIC	AVAILABLE INTERRUPTING CAPACITY
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
C	CONDUIT
CB	CIRCUIT BREAKER
CLG	CEILING
CT	CURRENT TRANSFORMER
CU	COPPER
E	EMERGENCY
(E)	EXISTING
EMT	ELECTRICAL METALLIC TUBING
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
GFI	GROUND FAULT INTERRUPTER
GND	GROUND
GRC	GALVANIZED RIGID STEEL CONDUIT
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
MCA	MINIMUM CIRCUIT AMPS
MOCP	MAXIMUM OVERCURRENT PROTECTION
NC	NORMALLY CLOSED
NL	NIGHT LIGHT
NO	NORMALLY OPEN
PH	PHASE
PNL	PANEL
PVC	POLY-VINYL-CHLORIDE
TELE	TELEPHONE
TTB	TELEPHONE TERMINAL BOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTABLE POWER SUPPLY
W	WIRE
WP	WEATHERPROOF



1 E4 FLOOR MOUNTED TRANSFORMER DETAIL FOR SURFACE MOUNTED PANELS
NOT TO SCALE

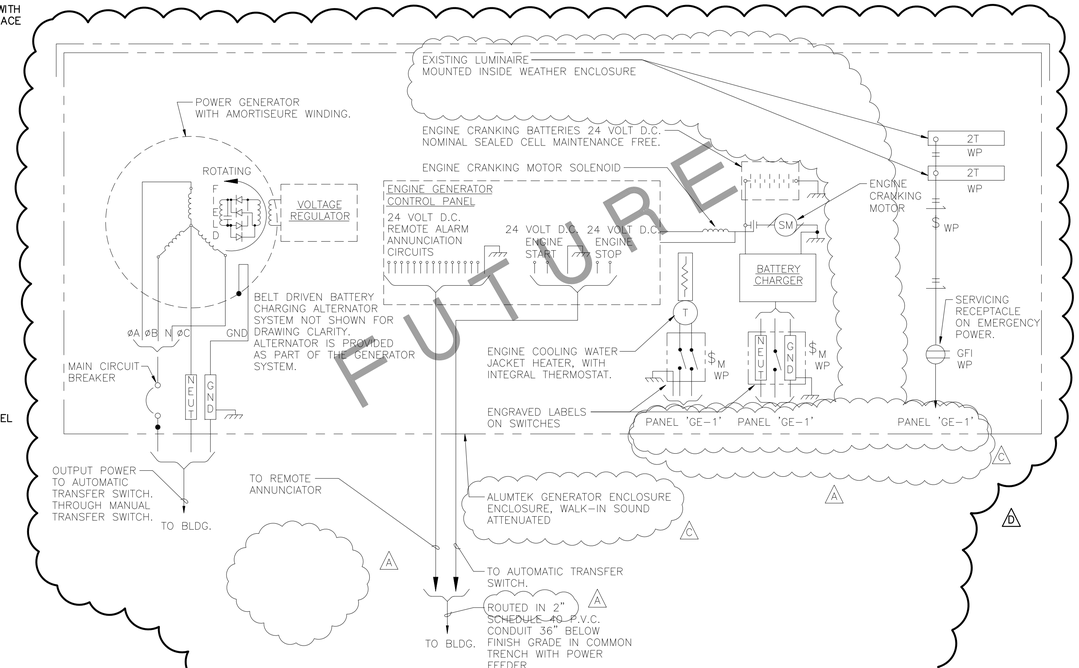


LEGEND

1. COPPER GROUND BAR, 1/4" x 4" x 44", HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2. INSULATORS
3. 5/8" LOCK WASHERS
4. WALL MOUNTING BRACKET
5. 5/8-11 X 1" H.H.C.S. BOLTS

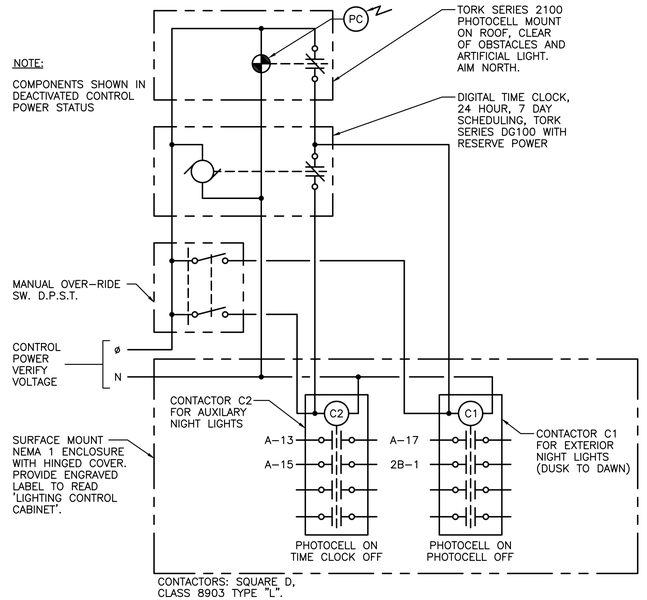
NEWTON, B-LINE TELCOM OR APPROVED SUBSTITUTE

2 E4 MASTER GROUND BAR (MGB)
NOT TO SCALE



3 E4 EXTERIOR MOUNTED ENGINE GENERATOR DIAGRAM
NOT TO SCALE

NOTE:
COMPONENTS SHOWN IN DEACTIVATED CONTROL POWER STATUS



4 E4 LIGHTING CONTROL DIAGRAM
NOT TO SCALE

R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9400 SW Beaverton-Hillsdale Highway, Suite 250
Beaverton, Oregon 97005
Phone: (503) 292-6000
FAX: (503) 292-1422
E-mail: rweng@rweng.com
Project No.: 371.009.001 Contact: JIM MITCHELL

GROUP MACKENZIE
Architecture
Interior Design
Land Use Planning
Civil Engineering
Structural Engineering
Transportation Planning
Portland, OR 97201-0039
Fax: 503.228.1285
0690 SW Bancroft St / PO Box 69039
Tel: 503.224.9560 / 360.695.7879

AT&T

Project
BROADBAND FACILITY EXPANSION PHASE 2 and 3
Troutdale
Oregon

REGISTERED PROFESSIONAL ENGINEER
9751
OREGON
JULY 14, 1978
JAMES E. MITCHELL
EXPIRES 12/31/02

REVISIONS:

REVISION NUMBER	IN PROGRESS	NO CHANGES THIS SHEET	REVISION EDITION CLOSING DATE
A			7/30/02
C			9/13/02
D			9/27/02

SHEET TITLE:
SYMBOL SCHEDULE, DETAILS

FIRST ISSUED: 7/03/02
LAST ISSUED: 8/30/02
DRAWN BY: DPR

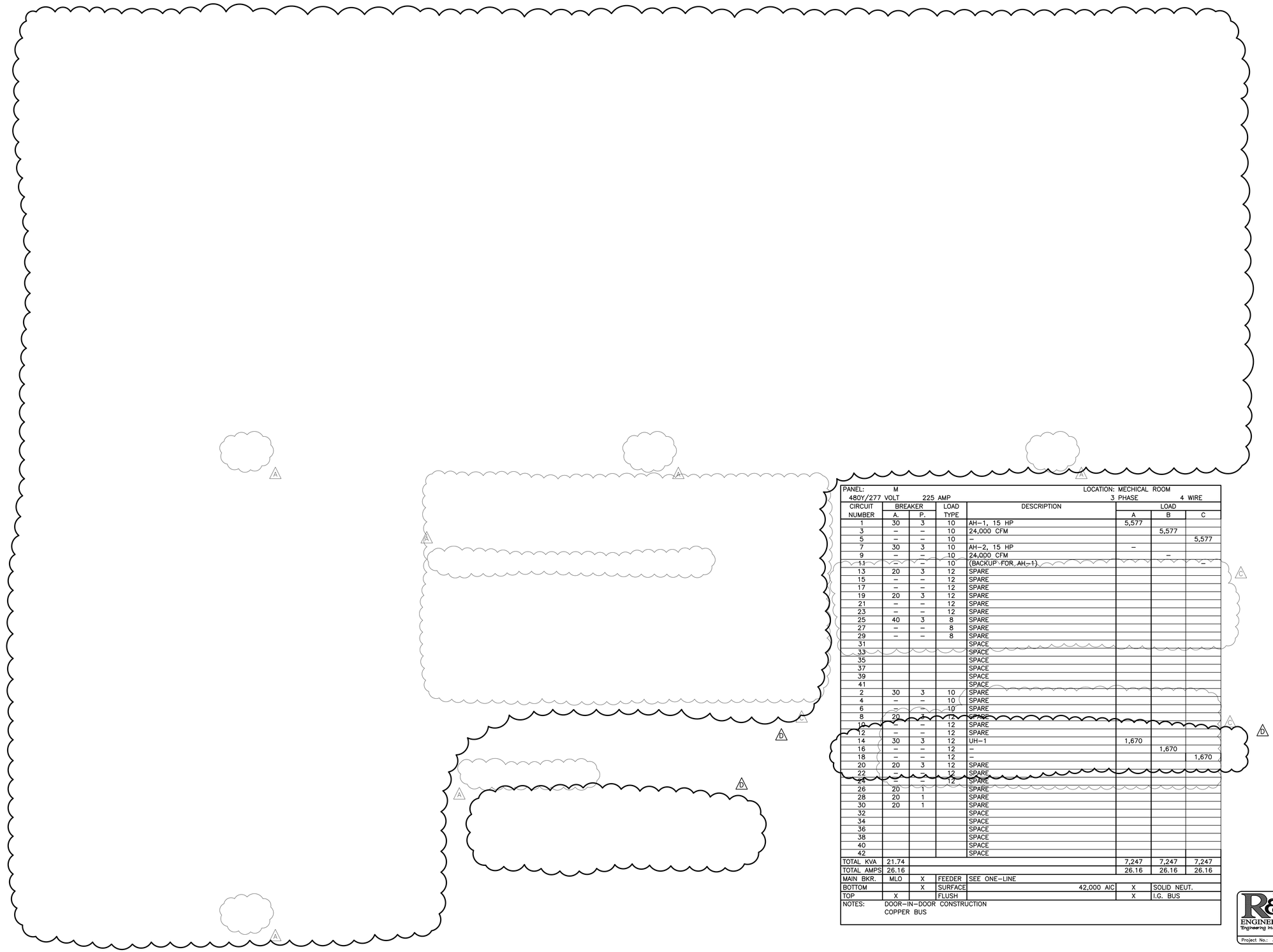
CHECKED BY: JEM

SHEET:
E4

JOB NO. 990276

REVISED PERMIT SET 9/27/02

H:\PT\371_Group Mackenzie\009_ATT\001_Electrical\DWG\Addendum_D\E04.dwg - Sep 30, 2002 - 2:48pm



PANEL: M					LOCATION: MECHICAL ROOM			
480Y/277 VOLT			225 AMP		3 PHASE		4 WIRE	
CIRCUIT	BREAKER		LOAD		LOAD			
NUMBER	A.	P.	TYPE	DESCRIPTION	A	B	C
1	30	3	10	AH-1, 15 HP	5,577		
3	–	–	10	24,000 CFM		5,577	
5	–	–	10	–			5,577
7	30	3	10	AH-2, 15 HP	–		
9	–	–	10	24,000 CFM		–	
11	–	–	10	(BACKUP FOR AH-1)			–
13	20	3	12	SPARE			
15	–	–	12	SPARE			
17	–	–	12	SPARE			
19	20	3	12	SPARE			
21	–	–	12	SPARE			
23	–	–	12	SPARE			
25	40	3	8	SPARE			
27	–	–	8	SPARE			
29	–	–	8	SPARE			
31				SPACE			
33				SPACE			
35				SPACE			
37				SPACE			
39				SPACE			
41				SPACE			
2	30	3	10	SPARE			
4	–	–	10	SPARE			
6	–	–	10	SPARE			
8	20	1	12	SPARE			
10	–	–	12	SPARE			
12	–	–	12	SPARE			
14	30	3	12	UH-1	1,670		
16	–	–	12	–		1,670	
18	–	–	12	–			1,670
20	20	3	12	SPARE			
22	–	–	12	SPARE			
24	–	–	12	SPARE			
26	20	1		SPARE			
28	20	1		SPARE			
30	20	1		SPARE			
32				SPACE			
34				SPACE			
36				SPACE			
38				SPACE			
40				SPACE			
42				SPACE			
TOTAL KVA	21.74				7,247	7,247	7,247
TOTAL AMPS	26.16				26.16	26.16	26.16
MAIN BKR.	MLO	X	FEEDER	SEE ONE-LINE			
BOTTOM		X	SURFACE	42,000 AIC	X	SOLID NEUT.	
TOP	X		FLUSH		X	I.G. BUS	
NOTES:	DOOR-IN-DOOR CONSTRUCTION COPPER BUS						

GROUP MACKENZIE

Civil Engineering
Structural Engineering
Transportation Planning
Architecture
Interior Design
Land Use Planning

0690 SW Bancroft St / PO Box 69039 Portland, OR 97201-0039
Tel: 503.224.9560 / 360.695.7879 Fax: 503.228.1285

AT&T

Project
BROADBAND
FACILITY
EXPANSION
PHASE 2 and 3

Troutdale
Oregon

REGISTERED PROFESSIONAL ENGINEER
9751
OREGON
JULY 14, 1978
JAMES E. MITCHELL
EXPIRES 12/31/02

REVISIONS:

REVISION NUMBER	PROGRESS NO. CHANGES INCLUDED	REVISION EDITION CLOSING DATE
A		07/30/02
C		09/13/02
D		09/27/02

SHEET TITLE:
PANEL
SCHEDULES

FIRST ISSUED: 7/03/02
LAST ISSUED: 8/30/02
DRAWN BY: DPR

CHECKED BY: JEM

SHEET:
E5.1

JOB NO. 990276

R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9400 SW Beaverton-Hillsdale Highway, Suite 250
Beaverton, Oregon 97005
Phone: (503) 292-6000
FAX: (503) 292-1422
E-mail: rweng@rweng.com
Project No.: 371.009.001 Contact: JIM MITCHELL

REVISED PERMIT SET 9/27/02

H:\WF\371_Group Mackenzie\009_AT\001_Electrical\DWG\Addendum_D\E05.1.dwg - Sep 30, 2002 - 2:49pm

PROVIDE TUB ONLY – NO INTERIOR

PANEL: UPS1–1 LOCATION: SOUTH WALL HEADEND
208Y/120 VOLT 100 AMP 3 PHASE 4 WIRE

CIRCUIT NUMBER	BREAKER A.	BREAKER P.	WIRE SIZE	DESCRIPTION	LOAD A	LOAD B	LOAD C
1	20	1	12	SPARE			
3	20	1	12	SPARE			
5	20	1	12	SPARE			
7	20	1	12	SPARE			
9	20	1	12	SPARE			
11	20	1	12	SPARE			
13	20	1	12	SPARE			
15	20	1	12	SPARE			
17	20	1	12	SPARE			
19	20	1	12	SPARE			
21	20	1	12	SPARE			
23	20	1	12	SPARE			
25	20	1	12	SPARE			
27	20	1	12	SPARE			
29	20	1	12	SPARE			
31	20	1	12	SPARE			
33	20	1	12	SPARE			
35	20	1	12	SPARE			
37	20	1	12	SPARE			
39	20	1	12	SPARE			
41	20	1	12	SPARE			
2	20	1	12	RACK RECEPTACLES	360		
4	20	1	12	RACK RECEPTACLES		360	
6	20	1	12	RACK RECEPTACLES			360
8	20	1	12	SPARE			
10	20	1	12	SPARE			
12	20	1	12	SPARE			
14	20	1	12	SPARE			
16	20	1	12	SPARE			
18	20	1	12	SPARE			
20	20	1	12	SPARE			
22	20	1	12	SPARE			
24	20	1	12	SPARE			
26	20	1	12	SPARE			
28	20	1	12	SPARE			
30	20	1	12	SPARE			
32	20	1	12	SPARE			
34	20	1	12	SPARE			
36	20	1	12	SPARE			
38	20	1	12	SPARE			
40	20	1	12	SPARE			
42	20	1	12	SPARE			
TOTAL KVA	1.08				360	360	360
TOTAL AMPS	3.00				3.00	3.00	3.00
MAIN BKR.	100		FEEDER	SEE ONE–LINE			
BOTTOM	X	X	SURFACE	10,000 AIC	X	SOLID NEUT.	
TOP			FLUSH		X	I.G. BUS	

NOTES: DOOR–INDOOR CONSTRUCTION
COPPER BUS

PROVIDE TUB ONLY – NO INTERIOR

PANEL: UPS2–1 LOCATION: SOUTH WALL HEADEND
208Y/120 VOLT 100 AMP 3 PHASE 4 WIRE

CIRCUIT NUMBER	BREAKER A.	BREAKER P.	WIRE SIZE	DESCRIPTION	LOAD A	LOAD B	LOAD C
1	20	1	12	SPARE			
3	20	1	12	SPARE			
5	20	1	12	SPARE			
7	20	1	12	SPARE			
9	20	1	12	SPARE			
11	20	1	12	SPARE			
13	20	1	12	SPARE			
15	20	1	12	SPARE			
17	20	1	12	SPARE			
19	20	1	12	SPARE			
21	20	1	12	SPARE			
23	20	1	12	SPARE			
25	20	1	12	SPARE			
27	20	1	12	SPARE			
29	20	1	12	SPARE			
31	20	1	12	SPARE			
33	20	1	12	SPARE			
35	20	1	12	SPARE			
37	20	1	12	SPARE			
39	20	1	12	SPARE			
41	20	1	12	SPARE			
2	20	1	12	RACK RECEPTACLES	540		
4	20	1	12	RACK RECEPTACLES		500	
6	20	1	12	RACK RECEPTACLES			500
8	20	1	12	RACK RECEPTACLES	500		
10	20	1	12	RACK RECEPTACLES		540	
12	20	1	12	RACK RECEPTACLES			500
14	20	1	12	RACK RECEPTACLES	500		
16	20	1	12	RACK RECEPTACLES		500	
18	20	1	12	RACK RECEPTACLES			540
20	20	1	12	RACK RECEPTACLES	540		
22	20	1	12	RACK RECEPTACLES		500	
24	20	1	12	RACK RECEPTACLES			500
26	20	1	12	RACK RECEPTACLES	500		
28	20	1	12	RACK RECEPTACLES		540	
30	20	1	12	RACK RECEPTACLES			500
32	20	1	12	RACK RECEPTACLES	500		
34	20	1	12	RACK RECEPTACLES		500	
36	20	1	12	RACK RECEPTACLES			540
38	20	1	12	SPARE			
40	20	1	12	SPARE			
42	20	1	12	SPARE			
TOTAL KVA	9.24				3,080	3,080	3,080
TOTAL AMPS	25.67				25.67	25.67	25.67
MAIN BKR.	100		FEEDER	SEE ONE–LINE			
BOTTOM	X	X	SURFACE	10,000 AIC	X	SOLID NEUT.	
TOP			FLUSH		X	I.G. BUS	

NOTES: DOOR–IN–DOOR CONSTRUCTION
COPPER BUS

PROVIDE TUB ONLY – NO INTERIOR

PANEL: UPS2–2 LOCATION: SOUTH WALL HEADEND
208Y/120 VOLT 100 AMP 3 PHASE 4 WIRE

CIRCUIT NUMBER	BREAKER A.	BREAKER P.	WIRE SIZE	DESCRIPTION	LOAD A	LOAD B	LOAD C
1	20	1	12	SPARE			
3	20	1	12	SPARE			
5	20	1	12	SPARE			
7	20	1	12	SPARE			
9	20	1	12	SPARE			
11	20	1	12	SPARE			
13	20	1	12	SPARE			
15	20	1	12	SPARE			
17	20	1	12	SPARE			
19	20	1	12	SPARE			
21	20	1	12	SPARE			
23	20	1	12	SPARE			
25	20	1	12	SPARE			
27	20	1	12	SPARE			
29	20	1	12	SPARE			
31	20	1	12	SPARE			
33	20	1	12	SPARE			
35	20	1	12	SPARE			
37	20	1	12	SPARE			
39	20	1	12	SPARE			
41	20	1	12	SPARE			
2	20	1	12	RACK RECEPTACLES	540		
4	20	1	12	RACK RECEPTACLES		540	
6	20	1	12	RACK RECEPTACLES			540
8	20	1	12	RACK RECEPTACLES	540		
10	20	1	12	RACK RECEPTACLES		540	
12	20	1	12	RACK RECEPTACLES			540
14	20	1	12	SPARE			
16	20	1	12	SPARE			
18	20	1	12	SPARE			
20	20	1	12	SPARE			
22	20	1	12	SPARE			
24	20	1	12	SPARE			
26	20	1	12	SPARE			
28	20	1	12	SPARE			
30	20	1	12	SPARE			
32	20	1	12	SPARE			
34	20	1	12	SPARE			
36	20	1	12	SPARE			
38	20	1	12	SPARE			
40	20	1	12	SPARE			
42	20	1	12	SPARE			
TOTAL KVA	3.24				1,080	1,080	1,080
TOTAL AMPS	9.00				9.00	9.00	9.00
MAIN BKR.	100		FEEDER	SEE ONE–LINE			
BOTTOM	X	X	SURFACE	10,000 AIC	X	SOLID NEUT.	
TOP			FLUSH		X	I.G. BUS	

NOTES: DOOR–IN–DOOR CONSTRUCTION
COPPER BUS

PROVIDE TUB ONLY – NO INTERIOR

PANEL: UPS2–3 LOCATION: SOUTH WALL HEADEND
208Y/120 VOLT 100 AMP 3 PHASE 4 WIRE

CIRCUIT NUMBER	BREAKER A.	BREAKER P.	WIRE SIZE	DESCRIPTION	LOAD A	LOAD B	LOAD C
1	20	1	12	SPARE			
3	20	1	12	SPARE			
5	20	1	12	SPARE			
7	20	1	12	SPARE			
9	20	1	12	SPARE			
11	20	1	12	SPARE			
13	20	1	12	SPARE			
15	20	1	12	SPARE			
17	20	1	12	SPARE			
19	20	1	12	SPARE			
21	20	1	12	SPARE			
23	20	1	12	SPARE			
25	20	1	12	SPARE			
27	20	1	12	SPARE			
29	20	1	12	SPARE			
31	20	1	12	SPARE			
33	20	1	12	SPARE			
35	20	1	12	SPARE			
37	20	1	12	SPARE			
39	20	1	12	SPARE			
41	20	1	12	SPARE			
2	20	1	12	RACK RECEPTACLES	540		
4	20	1	12	RACK RECEPTACLES		500	
6	20	1	12	RACK RECEPTACLES			500
8	20	1	12	RACK RECEPTACLES	500	540	
10	20	1	12	RACK RECEPTACLES			500
12	20	1	12	RACK RECEPTACLES	500		
14	20	1	12	RACK RECEPTACLES		500	
16	20	1	12	RACK RECEPTACLES			540
18	20	1	12	RACK RECEPTACLES	540		
20	20	1	12	RACK RECEPTACLES		500	
22	20	1	12	RACK RECEPTACLES			500
24	20	1	12	RACK RECEPTACLES	500		
26	20	1	12	RACK RECEPTACLES		540	
28	20	1	12	RACK RECEPTACLES			500
30	20	1	12	RACK RECEPTACLES	500		
32	20	1	12	RACK RECEPTACLES		500	
34	20	1	12	RACK RECEPTACLES			540
36	20	1	12	RACK RECEPTACLES			
38	20	1	12	SPARE			
40	20	1	12	SPARE			
42	20	1	12	SPARE			
TOTAL KVA	9.24				3,080	3,080	3,080
TOTAL AMPS	25.67				25.67	25.67	25.67
MAIN BKR.	100		FEEDER	SEE ONE–LINE			
BOTTOM	X	X	SURFACE	10,000 AIC	X	SOLID NEUT.	
TOP			FLUSH		X	I.G. BUS	

NOTES: DOOR–IN–DOOR CONSTRUCTION
COPPER BUS

PANEL: 2B LOCATION: ELECTRICAL ROOM
208Y/120 VOLT 225 AMP 3 PHASE 4 WIRE

CIRCUIT NUMBER	BREAKER A.	BREAKER P.	LOAD TYPE	DESCRIPTION	LOAD A	LOAD B	LOAD C
1	20	1	12	LIGHTS EXTERIOR	1,050		
3	20	1		SPARE			
5	20	1		SPARE			
7	20	1		SPARE			
9	20	1		SPARE			
11	20	1		SPARE			
13	20	1		SPARE			
15	20	1		SPARE			
17	20	1		SPARE			
19	20	1		SPARE			
21				SPACE			
23				SPACE			
25				SPACE			
27				SPACE			
29				SPACE			
31				SPACE			
33				SPACE			
35				SPACE			
37				SPACE			
39	–	–		SPARE			
41	–	–	3	–			
2	20	1	12	RECEPTACLES ELECTRICAL ROOM	360		
4	20	1	10	RECEPTACLES MECHANICAL ROOM		1,260	
6	20	1	10	RECEPTACLES HUB COLUMN			900
8	20	1	10	RECEPTACLES HUB EAST	720		
10	20	1	10	RECEPTACLES HUB SOUTH		540	
12	20	1		SPARE			
14	20	1		SPARE			
16	20	1		SPARE			
18	20	1		SPARE			
20	20	1		SPARE			
22	20	1		SPARE			
24				SPACE			
26				SPACE			
28				SPACE			
30				SPACE			
32				SPACE			
34				SPACE			
36				SPACE			
38				SPACE			
40	20	1		SPARE			
42	20	1		SPARE			
TOTAL KVA	4.83				2,130	1,800	900
TOTAL AMPS	13.42				3,210	15.00	7.50
MAIN BKR.	150		FEEDER	SEE ONE–LINE			
BOTTOM	X	X	SURFACE	10,000 AIC	X	SOLID NEUT.	
TOP			FLUSH		X	I.G. BUS	

NOTES: DOOR–IN–DOOR CONSTRUCTION
COPPER BUS

PANEL: 4B LOCATION: ELECTRICAL ROOM
480Y/277 VOLT 225 AMP 3 PHASE 4 WIRE

CIRCUIT NUMBER	BREAKER A.	BREAKER P.	LOAD TYPE	DESCRIPTION	LOAD A	LOAD B	LOAD C
1	20	1	12	LIGHTS SERVICE HALL	1,116		
3	20	1	12	LIGHTS MECHANICAL AND CORE HEADEND		558	
5	20	1	12	LIGHTS PODS 7 – 12			248
7	20	1	12	LIGHTS SONET			
9	20	1	12	LIGHTS PODS 1 – 6		248	
11				SPACE			
13				SPACE			
15				SPACE			
17				SPACE			
19				SPACE			
21				SPACE			
23				SPACE			
25				SPACE			
27				SPACE			
29				SPACE			
31				SPACE			
33				SPACE			
35				SPACE			
37				SPACE			
39				SPACE			
41				SPACE			
2	20	1		SPARE			
4	20	1		SPARE			
6	20	1		SPARE			
8				SPACE			
10				SPACE			
12				SPACE			
14				SPACE			
16				SPACE			
18				SPACE			
20				SPACE			
22				SPACE			
24				SPACE			
26				SPACE			
28				SPACE			
30				SPACE			
32				SPACE			
34				SPACE			
36				SPACE			
38	70	3	3	TRANSFORMER T4	10,000		
40	–	–	3	45 KVA		10,000	
42	–	–	3				10,000
TOTAL KVA	32.17				11,116	10,806	10,248
TOTAL AMPS	38.71				40.13	39.01	37.00
MAIN BKR.	MLO		FEEDER	SEE ONE–LINE			
BOTTOM		X	SURFACE	42,000 AIC	X	SOLID NEUT.	
TOP	X		FLUSH		X	I.G. BUS	

NOTES: DOOR–IN–DOOR CONSTRUCTION
COPPER BUS

FUTURE

GROUP MACKENZIE
Civil Engineering
Structural Engineering
Transportation Planning
Architecture
Interior Design
Land Use Planning
0690 SW Bancroft St / PO Box 69039 Portland, OR 97201-0039
Tel: 503.224.9560 / 360.695.7879 Fax: 503.228.1285

AT&T

Project
BROADBAND FACILITY EXPANSION PHASE 2 and 3
Troutdale
Oregon

REGISTERED PROFESSIONAL ENGINEER
9751
OREGON
JULY 14, 1978
JAMES E. MITCHELL
EXPIRES 12/31/02

REVISIONS:

REVISION NUMBER	PROGRESS NO CHANGES WO SHEET	REVISION EDITION CLOSING DATE
A		7/30/02
C		9/13/02
D		9/27/02

SHEET TITLE:
PANEL SCHEDULES

FIRST ISSUED:
LAST ISSUED: 8/30/02
DRAWN BY: DPR

CHECKED BY: JEM

SHEET:
E5

JOB NO. 990276

R&W ENGINEERING, INC.
"Engineering Integrated Solutions"
9400 SW Beaverton–Hillsdale Highway, Suite 250
Beaverton, Oregon 97005
Phone: (503) 292–6000
FAX: (503) 292–1422
E–mail: rweng@rweng.com
Project No.: 371.009.001 Contact: JIM MITCHELL

REVISED PERMIT SET 9/27/02

H:\WF\371_Group Mackenzie\009_ATT\001_Engineering\Drawings\Electrical\009_E1E5.dwg, 9/27/2002 4:08:08 PM, DPR

PANEL: