

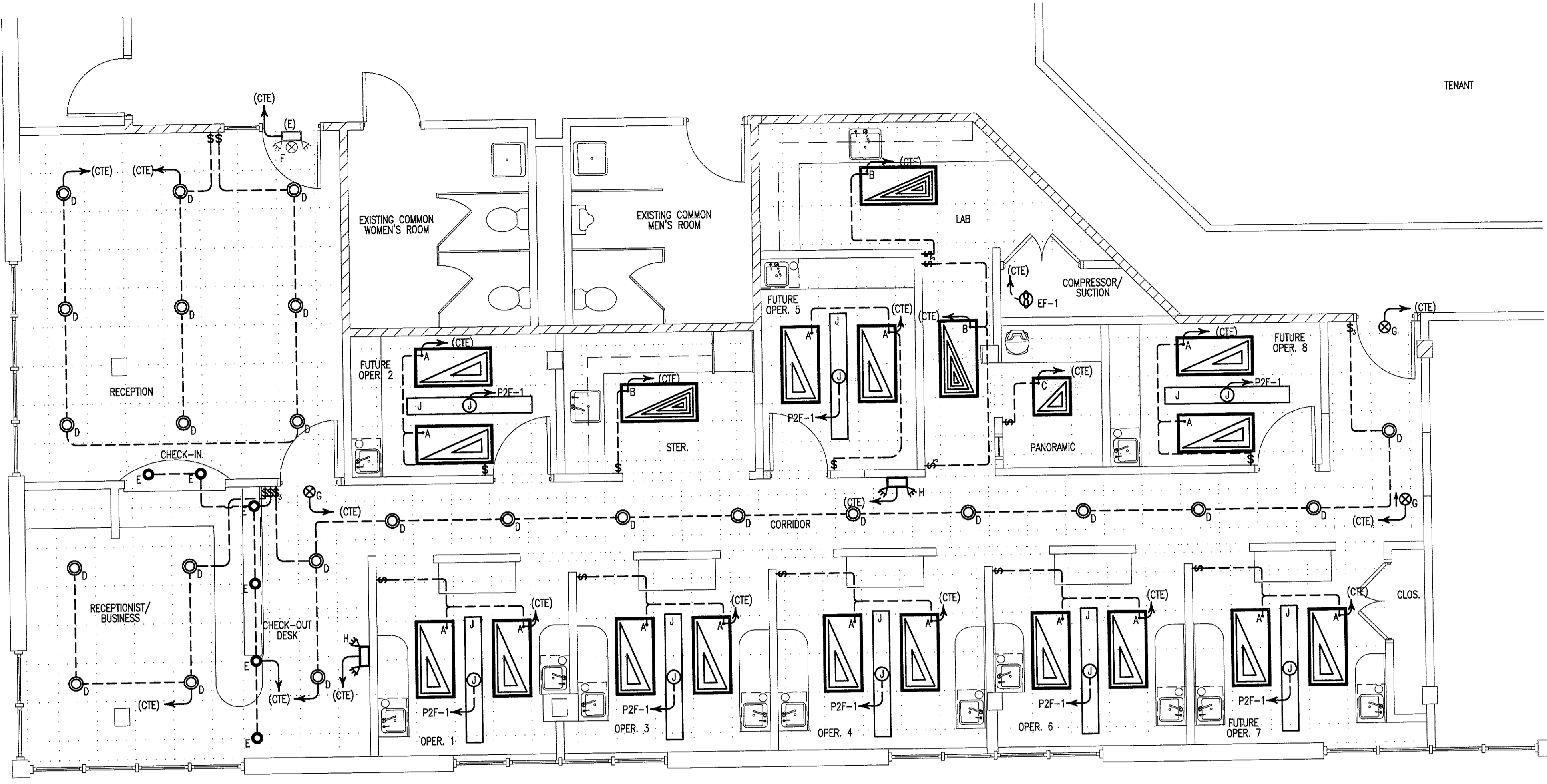
System No. W-L-1049  
 (Formerly System No. 635)  
 F-Rating - 1 and 2 Hr (See Item 1B)  
 T-Rating - 0 Hr  
 L Rating At Ambient - Less Than 1 CFM/sq ft  
 L Rating At 400 F - Less Than 1 CFM/sq ft

**SECTION A-A**

- Wall Assembly** - The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
  - Studs** - Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. When steel studs are used and the diam of opening exceeds the width of stud cavity, the opening shall be framed on all sides using lengths of steel stud installed between the vertical studs and screw-attached to the steel studs at each end. The framed opening in the wall shall be 4 to 6 in. (102 to 152 mm) wider and 4 to 6 in. (102 to 152 mm) higher than the diam of the penetrating item such that, when the penetrating item is installed in the opening, a 2 to 3 in. (51 to 76 mm) clearance is present between the penetrating item and the framing on all four sides.
  - Gypsum Board** - 5/8 in. (16 mm) thick, 4 ft (1.22 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in. (660 mm) for steel stud walls. Max diam of opening is 14-1/2 in. (368 mm) for wood stud walls. The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.
- Through Penetration** - One metallic pipe, conduit or tubing to be installed either concentrically or eccentrically within the firestop system. Pipes, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. The annular space between pipe, conduit or tubing and periphery of opening shall be min 0 in. (0 mm, point contact) to max 2 in. (51 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:
  - Steel Pipe** - Nom 24 in. (610 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.
  - Iron Pipe** - Nom 24 in. (610 mm) diam (or smaller) cast or ductile iron pipe.
  - Conduit** - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing, nom 6 in. (152 mm) diam (or smaller) steel conduit or nom 1 in. (25 mm) diam (or smaller) flexible steel conduit.
  - Copper Tubing** - Nom 6 in. (152 mm) diam (or smaller) Type L (or heavier) copper tubing.
  - Copper Pipe** - Nom 6 in. (152 mm) diam (or smaller) Regular (or heavier) copper pipe.
- Fill, Void or Cavity Material** - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrant and gypsum board, a min 3/8 in. (10 mm) bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall. SPECIFIED TECHNOLOGIES INC - SpecSeal 100, 101, 102 or 105 Sealant.

\*Bearing the UL Classification Mark

**2 FIRE PENETRATION DETAIL**  
 E-1 SCALE: N.T.S.

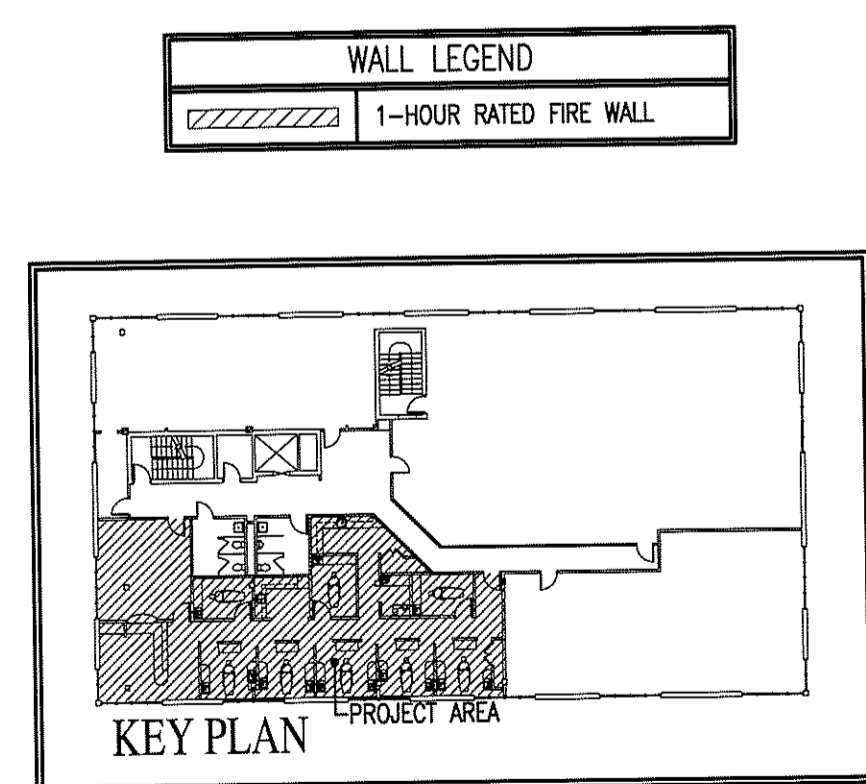


**1 LIGHTING PLAN**  
 E-1 SCALE: N.T.S.

**ELECTRICAL NOTES:**

- THE AIC RATINGS ARE BASED ON PRELIMINARY UTILITY INFORMATION AND CERTAIN ASSUMPTIONS. IF THE TRANSFORMERS ARE LOCATED CLOSER THAN 50' TO THE METER THROUGH, THE FAULT CURRENT AT THE TRANSFORMER IS GREATER THAN 41,000A, AND/OR THE TRANSFORMER IS LARGER THAN 250 KVA, THE ELECTRICAL CONTRACTOR IS TO CONTACT THE ENGINEER TO RECALCULATE THE AIC RATINGS PRIOR TO ORDERING ELECTRICAL PANELS.
- FUSES IN SERVICE DISCONNECTS SHALL BE CURRENT LIMITING TYPE.
- COORDINATE ALL HVAC WIRING WITH MECHANICAL CONTRACTOR.
- EMERGENCY LIGHTING AND EXIT SIGNS TO BE CONNECTED AHEAD OF ANY SWITCHING.
- WIRE TO BE TYPE THWN (EXTERIOR) AND TYPE THHN (INTERIOR) OR APPROVED EQUAL.
- COORDINATE LOCATION OF ALL DEVICES AND MOUNTING HEIGHTS OF RECEPTACLES WITH OWNER.
- ALL ELECTRICAL COMPONENTS ARE TO BE UL LISTED.
- ANY FIRE RATED ASSEMBLY PENETRATIONS ARE TO BE PER CODE. CONTRACTOR SHOULD REVIEW ALL FIRE RATING PENETRATIONS.
- OUTLET BOXES ON OPPOSITE SIDES OF A FIRE RATED WALL SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24". WHERE THIS PROVISION CANNOT BE MET, THE OUTLET BOX SHOULD BE ENCASED WITH FIRE-RATED GYPSUM BOARD OR EQUIPPED WITH APPROVED INTUMESCENT PUDDY PADS.
- LOW VOLTAGE CABLE, SUCH AS COMMUNICATION AND SIGNAL WIRE, SHALL BE PLENUM RATED AND SHALL BE LISTED AND LABELED AS SUCH.
- EMT CONDUIT OR MC CABLE TO BE USED FOR ELECTRICAL POWER CONDUCTORS LOCATED IN PLENUMS.
- EQUIPMENT GROUND CONDUCTOR TO BE PROVIDED IN ACCORDANCE WITH NEC SECTION 250.
- ALL INTERIOR WIRING TO BE RUN IN EMT UNLESS OTHERWISE APPROVED BY ENGINEER. MC CABLE MAY BE USED FOR LIGHTING FIXTURE WHIPS AND WHERE CONCEALED AND APPROVED BY OWNER.
- ALL EXTERIOR LIGHTING TO BE WIRED THROUGH A LIGHTING CONTACTOR AND CONTROLLED BY A PHOTOCELL AND TIMECLOCK.
- THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CONDUIT AND EQUIPMENT WITH ALL OTHER TRADES PRIOR TO BEGINNING INSTALLATION TO AVOID CONFLICTS AND INTERFERENCE WITH OTHER TRADES.
- FINAL UTILITY CONNECTIONS (GAS, ELECTRIC, WATER, ETC.) TO EQUIPMENT SHALL BE MADE BY THE CONTRACTOR INSTALLING THE EQUIPMENT REQUIRING THE UTILITIES.
- ELECTRICAL DRAWINGS ARE DIAGRAMMATIC. THERE IS NO INTENT TO INDICATE ALL FITTINGS REQUIRED. GENERALLY, CONDUIT SHALL BE INSTALLED PARALLEL OR PERPENDICULAR TO AND PLUMB WITH WALL CONSTRUCTION.
- REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONED LOCATIONS OF WALL AND PARTITIONS AND FOR PARTITION THICKNESS AND CONSTRUCTION MATERIALS.
- EXISTING RECEPTACLES THAT ARE DETERMINED TO BE IN PROPER WORKING ORDER MAY BE RELOCATED AND REUSED.
- REFER TO THE HENRY SCHEIN DENTAL EQUIPMENT DRAWINGS FOR EQUIPMENT ELECTRICAL REQUIREMENTS, LOCATIONS, AND INSTALLATION DETAILS.
- ALL ELECTRICAL IN PATIENT CARE AREAS SHALL COMPLY WITH NEC SECTION 517.13.
- ELECTRICAL CONTRACTOR TO CONNECT ALL NEW LIGHTING TO NEAREST EXISTING LIGHTING CIRCUIT. CONTRACTOR TO FIELD VERIFY THAT CIRCUITS BEING REUSED ARE IN PROPER WORKING ORDER AND SIZED LARGE ENOUGH TO ACCOMMODATE THE NEW LOAD.

LIGHTING LEGEND		
MARK	SYMBOL	DESCRIPTION
A		2'x4' LAY-IN FLUORESCENT, 2-TUBE, WITH ACRYLIC LENS, T-8 LAMPS, 2-LAMP ELECTRONIC BALLAST, 64W
B		2'x4' LAY-IN FLUORESCENT, 4-TUBE, WITH ACRYLIC LENS, T-8 LAMPS, ELECTRONIC BALLASTS, 128W
C		2'x2' LAY-IN FLUORESCENT, 2-TUBE, WITH ACRYLIC LENS, T-8 LAMPS, 2-LAMP ELECTRONIC BALLAST, 34W
D		RECESSED MOUNTED COMPACT FLUORESCENT CAN LIGHT, 1-LAMP, ELECTRONIC BALLAST, 42W
E		RECESSED MOUNTED COMPACT FLUORESCENT CAN LIGHT, 1-LAMP, ELECTRONIC BALLAST, 32W
F		EMERGENCY/EXIT LIGHT WITH BATTERY BACK-UP
G		EXIT SIGN WITH BATTERY BACK-UP
H		EMERGENCY LIGHT WITH BATTERY BACK-UP
J		DENTAL EQUIPMENT LIGHT, 100W SEE HENRY SCHEIN DENTAL EQUIPMENT PLANS FOR SPECIFICATIONS
--		SINGLE POLE WALL SWITCH
--		THREE WAY WALL SWITCH
--	(E)	DENOTES EXISTING
--	(CTE)	DENOTES TO CONNECT TO EXISTING LIGHTING CIRCUIT (SEE NOTE #22)



**ELECTRICAL SYSTEM AND EQUIPMENT METHOD OF COMPLIANCE**

PRESCRIPTIVE  PERFORMANCE  ENERGY COST BUDGET

PROVIDE A STANDARD RISER DIAGRAM WHICH INDICATES DESIGNATED POINTS FOR CHECK METERING. PROVIDE A STANDARD PANEL SCHEDULE DESCRIPTION WHICH IDENTIFIES DIFFERENT ENDOUSE LOADS.

LIGHTING SCHEDULE (OFFICE)

LAMP TYPE REQUIRED IN FIXTURE	FLUORESCENT/FLUORESCENT
BALLAST TYPE USED IN FIXTURE	ELECTRONIC/ELCTRONIC
NUMBER OF LAMPS IN FIXTURE	2/1
NUMBER OF BALLASTS IN FIXTURE	1/1
TOTAL WATTAGE PER FIXTURE	64/42
TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED	1.40 W/SQ. FT. VS 1.55 W/SQ. FT.

EQUIPMENT SCHEDULES WITH MOTORS (NOT USED FOR MECHANICAL SYSTEMS)

MOTOR HORSEPOWER	N/A	HP
NUMBER OF PHASES	1	Ø
MINIMUM EFFICIENCY	88	%
MOTOR TYPE		
# OF POLES		

DESIGNER STATEMENT:  
 TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE ELECTRICAL SYSTEM AND EQUIPMENT REQUIREMENTS OF NORTH CAROLINA STATE BUILDING CODE.

\* EXTERIOR LIGHTS MUST HAVE MINIMUM EFFICACY OF 45 W/LUMEN.

AIC=10,000 VA. (SEE NOTE #1)										PANEL P2B			150A M.L.O.				
208/120V, 3Ø, 4W										EXISTING			150A BUS				
POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND.	SERVES	LOAD VA	AP	BP	CP	POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND.	SERVES
1	1	20	1	*	*	EXISTING RECEPTACLES					2	2					
3	3	20	1	*	*	EXISTING RECEPTACLES/EXIT					4	4					
5	5	20	1	*	*	EXISTING RECEPTACLES					6	6	20	1	*	*	EXISTING RECEPTACLES/EXIT
7	7	20	2	12	1/2"	VACUUM					8	8					
9	9	-	-	-	-						10	10					
11	11	30	2	10	1/2"	WATER HEATER					12	12	20	1	*	*	EXISTING RECEPTACLES/EXIT
13	13	-	-	-	-						14	14	20	1	*	*	EXISTING RECEPTACLES/EXIT
15	15	-	-	-	-						16	16					
17	17	-	-	-	-						18	18					
CONNECTED V.A. PER PHASE							**	**	**								
TOTAL AMPERES PER PHASE							**	**	**								

- DENOTES BREAKER LOCK-OUT  
 \* - DENOTES EXISTING BREAKER, WIRE, AND CONDUIT TO REMAIN  
 \*\* - REFER TO ELECTRICAL LOAD SUMMARY

AIC=10,000 VA. (SEE NOTE #1)										PANEL P2C			125A M.L.O.				
208/120V, 3Ø, 4W										EXISTING			125A BUS				
POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND.	SERVES	LOAD VA	AP	BP	CP	POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND.	SERVES
1	1	30	3	*	*	HEAT					2	2	40	3	*	*	HEAT
3	3	-	-	-	-						4	4	-	-	-	-	
5	5	-	-	-	-						6	6	-	-	-	-	
7	7	30	3	*	*	RTU					8	8	20	1	*	*	DAMPER
9	9	-	-	-	-						10	10	20	1	*	*	EXIT
11	11	-	-	-	-						12	12	20	1	*	*	PHOTOCELL YORK SIGN
CONNECTED V.A. PER PHASE							**	**	**								
TOTAL AMPERES PER PHASE							**	**	**								

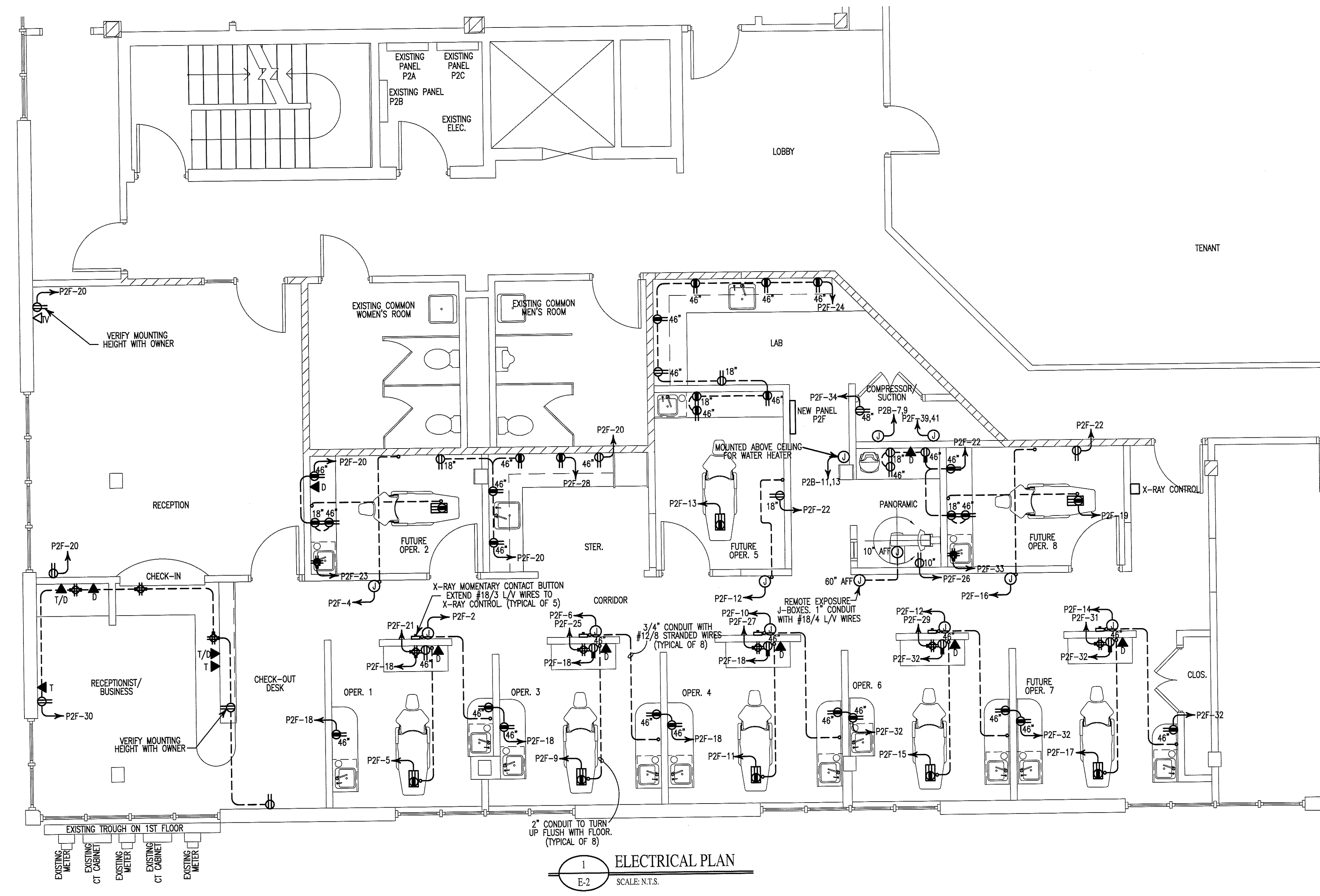
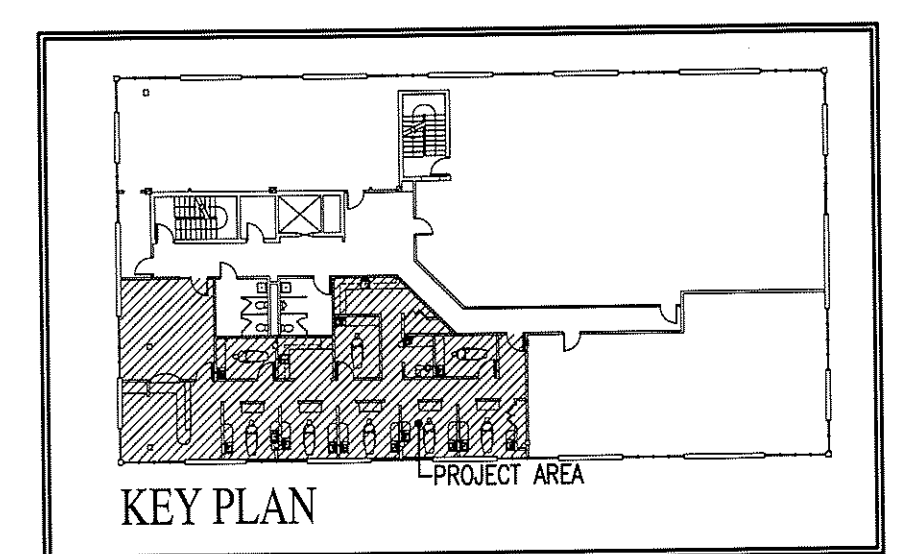
\* - DENOTES EXISTING BREAKER, WIRE, AND CONDUIT TO REMAIN  
 \*\* - REFER TO ELECTRICAL LOAD SUMMARY

AIC=10,000 VA. (SEE NOTE #1)										PANEL P2F			200A M.L.O.				
208/120V, 3Ø, 4W										EXISTING			200A BUS				
POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND.	SERVES	LOAD VA	AP	BP	CP	POLE NO.	BRKR NO.	TRIP AMPS	BRKR POLES	WIRE	COND.	SERVES
1	1	20	1	12	1/2"	DENTAL LIGHTS	800				2	2	20	1	12	1/2"	X-RAY 1
3	3	-	-	-	-		1296				4	4	20	1	12	1/2"	X-RAY 2
5	5	20	1	12	1/2"	CHAIR 1	1200				6	6	20	1	12	1/2"	X-RAY 3
7	7	20	1	12	1/2"	CHAIR 2	1200				8	8	20	1	12	1/2"	X-RAY 4
9	9	20	1	12	1/2"	CHAIR 3	1200				10	10	20	1	12	1/2"	X-RAY 5
11	11	20	1	12	1/2"	CHAIR 4	1200				12	12	20	1	12	1/2"	X-RAY 6
13	13	20	1	12	1/2"	CHAIR 5	1200				14	14	20	1	12	1/2"	X-RAY 7
15	15	20	1	12	1/2"	CHAIR 6	1200				16	16	20	1	12	1/2"	X-RAY 8
17	17	20	1	12	1/2"	CHAIR 7	1200				18	18	20	1	12	1/2"	RECEPTACLE
19	19	20	1	12	1/2"	CHAIR 8	1200				20	20	20	1	12	1/2"	RECEPTACLE
21	21	20	1	12	1/2"	UTILITY CENTER 1	1200				22	22	20	1	12	1/2"	RECEPTACLE
23	23	20	1	12	1/2"	UTILITY CENTER 2	1200				24	24	20	1	12	1/2"	RECEPTACLE
25	25	20	1	12	1/2"	UTILITY CENTER 3	1200				26	26	20	1	12	1/2"	PANORAMIC
27	27	20	1	12	1/2"	UTILITY CENTER 4	1200				28	28	20	1	12	1/2"	STERILIZER
29	29	20	1	12	1/2"	UTILITY CENTER 6	1200				30	30	20	1	12	1/2"	OFFICE RECEPTACLE
31	31	20	1	12	1/2"	UTILITY CENTER 7	1200				32	32	20	1	12	1/2"	RECEPTACLE
33	33	20	1	12	1/2"	UTILITY CENTER 8	1200				34	34	20	1	12	1/2"	DEDICATED RECEPTACLE
35	35	-	-	-	-		500				36	36					
37	37	-	-	-	-		500				38	38					
39	39	40	2	8	3/4"	COMPRESSOR	3016				40	40					
41	41	-	-	-	-		3016				42	42					
CONNECTED V.A. PER PHASE							14,188	14,584	14,528								
TOTAL AMPERES PER PHASE							118	122	121								

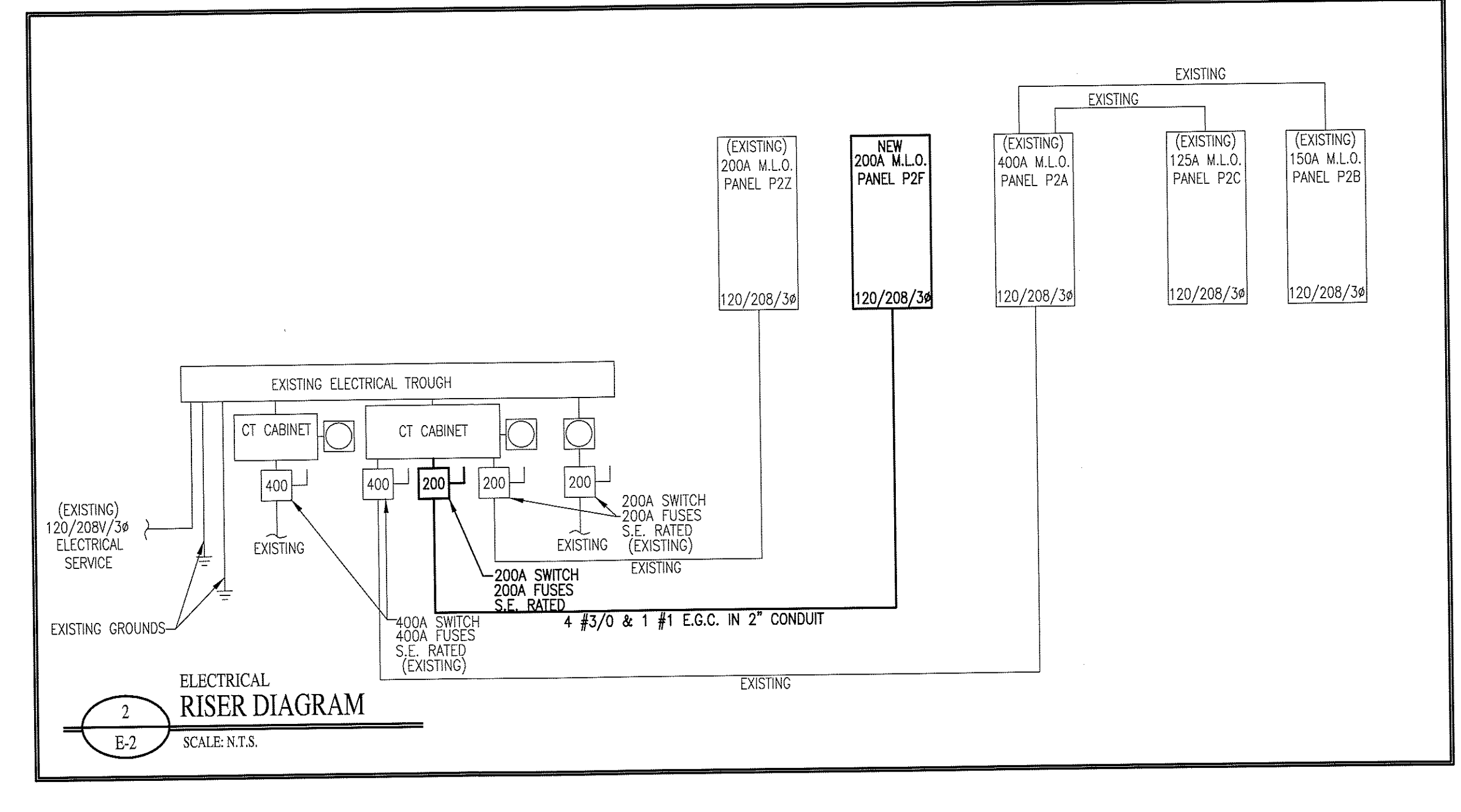
- DENOTES BREAKER LOCK-OUT

LOAD CALCULATION SUMMARY			
ITEM	TOTAL VA	(X) D.F.	VA
LIGHTS	2,840	125 (%)	3,550
RECEPTACLES	9,320	100 (%)	9,320
DENTAL EQUIPMENT	23,344	100 (%)	23,344
X-RAY MACHINE ** (FRIST MACHINE @ 50%)	1,840	50 (%)	920
(SECOND MACHINE @ 25%)	1,296	25 (%)	324
(REMAINING MACHINES @ 10%)	9,072	10 (%)	907
WATER HEATER	4,500	125 (%)	5,625
EXISTING SECOND FLOOR LOADS*	147,340	100 (%)	147,340
TOTAL	199,552	-	191,332
TOTAL AMPS = VA/(208 x V <sup>3</sup> ) = 531			

\* NOTE: EXISTING LOAD OBTAINED FROM BAXTER ARMISTEAD ARCHITECTURE DRAWINGS FOR SECOND FLOOR UPGRADES DATED 08-31-06. THE LOAD INCLUDES HVAC.  
 \*\* NOTE: X-RAY IS CALCULATED PER NEC 517.73(2)



ELECTRICAL LEGEND	
SYMBOL	DESCRIPTION
⊕	120V DUPLEX RECEPTACLE
⊕	120V DUPLEX RECEPTACLE GROUND FAULT INTERRUPTER
⊕	120V DUPLEX RECEPTACLE GROUND FAULT INTERRUPTER FLOOR MOUNTED IN DENTAL FLOOR BOX
⊕	120V QUAD RECEPTACLE
⊕	120V QUAD RECEPTACLE GROUND FAULT INTERRUPTER
T	TELEPHONE OUTLET
D	DATA OUTLET
T/D	TELE/DATA OUTLET
ΔTV	TV CABLE OUTLET
⊙	JUNCTION BOX
□	PANEL
▨	1-HOUR RATED FIRE WALL



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 INTERIOR DESIGN  
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**NEW TENANT UPGRADE:**  
**DR. MARTIN CLARK DENTISTRY**  
 Raleigh, North Carolina

DRAWING NAME: ELECTRICAL PLAN  
 SEAL 25043  
 DATE: 9/17/08  
 SCALE: AS NOTED  
 SHEET

**E-2**