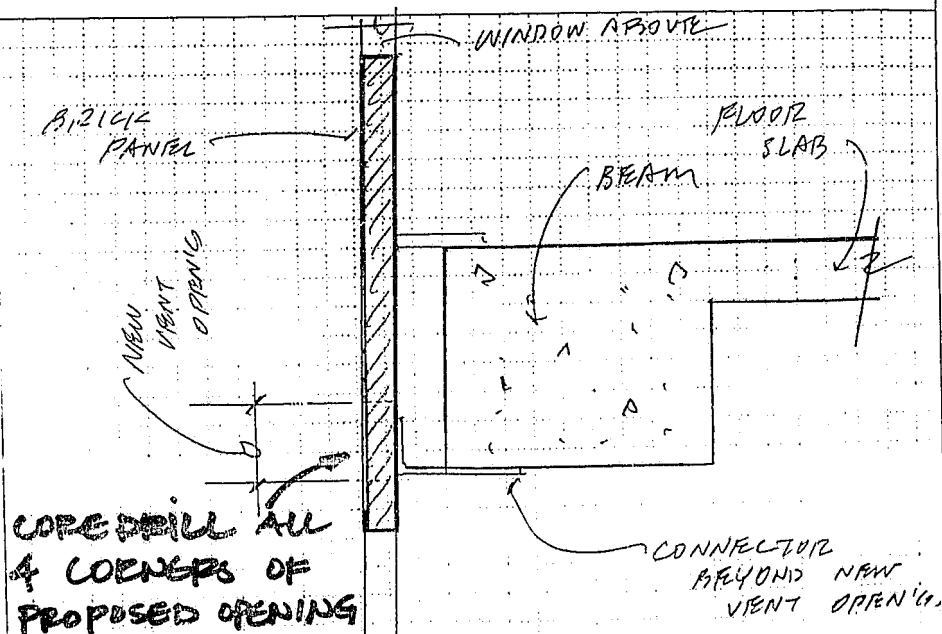




**BERRY-NORDLING
ENGINEERS, INC.
CIVIL-STRUCTURAL**

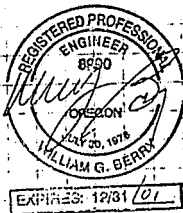
3607 SW CORBETT AVENUE
PORTLAND, OR 97201
(503) 227-7783 / FAX 227-7784
bneng@e-z.net

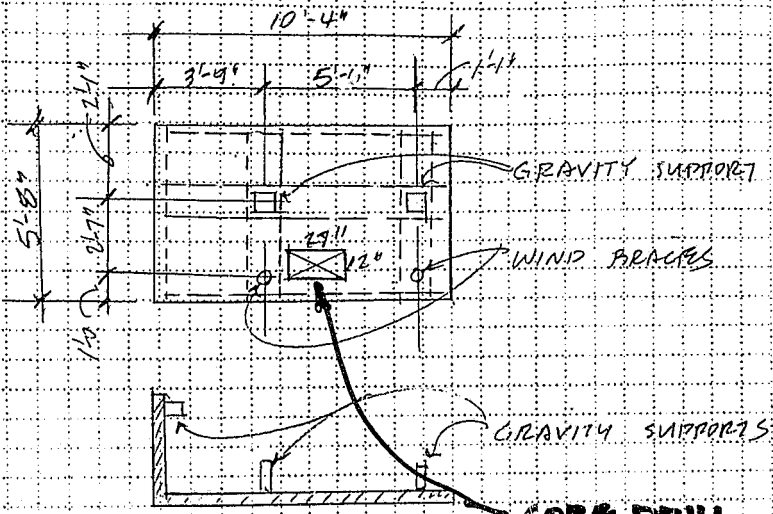
☐ Conference Job: ROBT. DUNCAN PLAZA
☐ Phone Subject: NEW VENT OPENING
☐ Field With: _____ Job No.: _____
☐ Memo To: _____ Date: 5/14/01
☐ Job Observation Weather Condition: _____ Time: _____
Distribution: _____ By: AB



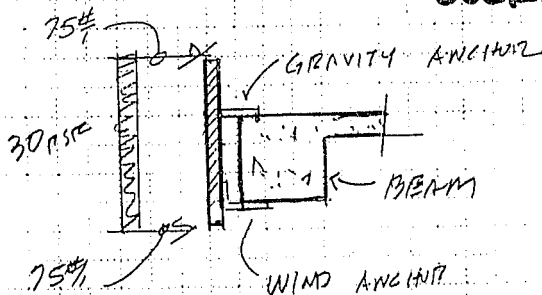
01-124968-FA

STRUCTURAL CALCULATIONS
FOR
ROBERT DUNCAN PLAZA
BRICK PANELS
NEW VENT OPENING





**CORE DRILL ALL
4 CORNERS OF
OPENING TO AVOID
OVERCUTTING.**



**BERRY-NORDLING
ENGINEERS, INC.
CIVIL-STRUCTURAL**

3407 SW CORBETT AVE., PORTLAND OR, 97201, 503-227-7783, FAX 503-227-7784, bnc@gte.net

JOB: ONE OAK PLAZA - VIET HOU
CLIENT: CC PARADE JOB NO.:
DATE: MAY 01 BY: MB SHEET NO.: 1

WIND LOAD ON PANEL
SPANNING HORIZ

$$W = 30 \text{ PSF} + 150/5 = 60 \text{ PSF}$$

$$M = (60)(5.5)^2/8 = 226 \text{ #/ft}$$

$$b = 12", d = 1.15$$

$$F_u = 4500 \text{ PSF}$$

$$R = 60 \text{ ksi}$$

$$K = \frac{226(12)}{12(1.15)} = 74$$

$$p = 0.0024$$

$$A_s = 0.05 \text{ in}^2/\text{ft}$$

$$A_s = 0.25 \text{ in}^2$$

$$A_s \text{ provided} = 4\text{-}\#3 = 0.44 \text{ in}^2$$

PANEL CAN SPAN HORIZ
WHICH MEANS NEW
OPENING WON'T AFFECT
PANEL TO RESIST OUT OF
PLANE LOADS

CHECK VERTICAL
BRIEF AT RA

$$W_v = (60)(9/2) = 270 \text{ #/ft}$$

$$M = 270(2.07 - 0.35)^2/2 = 403 \text{ #/ft}$$

$$b = 16", d = 1.15$$

$$K = 101$$

$$p = 0.0036$$

$$A_s = 0.1 \text{ in}^2$$

$$A_s \text{ provided} = 2\text{-}\#3 = 0.22 \text{ in}^2 \text{ OK}$$

GRAVITY LOAD SPANNING

$$W = 10(5) + 45(6) = 320 \text{ #/ft}$$

$$M = 320(5.5)^2/8 = 1210 \text{ #/ft}$$

$$M = 320(9.75)^2/2 = 2250 \text{ #/ft}$$

$$b = 3.5", d = 3.0"$$

$$K = \frac{(2250)(12)}{3.5(3.0)^2} = 6$$

$$p = 0.0003$$

$$A_s = 0.04 \text{ in}^2$$

$$A_s \text{ provided} = 1\text{-}\#3 = 0.11 \text{ in}^2$$

$$K = 6.0 \quad K_u = 3.6$$



**BERRY-NORDLING
ENGINEERS, INC.**
CIVIL-STRUCTURAL

JOB: ONE OAK PLAZA - VENT HOLE
CLIENT: LC PARADEUR JOB NO.:
DATE: MAY/01 BY: BJB SHEET NO.: 2

HAZ. HEIGHT OF COMPRESSION
PLATE = 4"

HEIGHT FROM BEAM OF
PANEL TO 13TH FLOOR
NEW OPENING
= 12" > 4"
"OK"

SHEAR CAPACITY AT
NEW OPENING

ALLOWABLE SHEAR STRESS
= 50 psi C.F. = 4500

PANEL IS SOLID GRAVITAD
AREA = (5.5)(32') = 176 in²
Vcap = 176(50) = 8800 lb

THIS EXCEEDS WEIGHT OF
PANEL "OK"



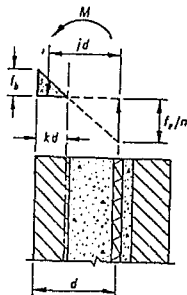
BERRY-NORDLING
ENGINEERS, INC.
CIVIL-STRUCTURAL

JOB: ONE OAK PLAZA - VENT HOLE
CLIENT: L. PARDEUE JOB NO.:
DATE: 1/24/01 BY: HJB SHEET NO.: 3

3607 SW CORBETT AVE., PORTLAND OR, 97201, 503-227-7783, FAX 503-227-7784, bnm@b-n.com

TABLE E-7 Flexural Design Coefficients for Full Allowable Stresses,
 $f'_m = 4500$ psi, $f_y = 60,000$ psi and $n = 9.7$

For use of Table,
 see Example 5-A



DESIGN DATA

$$f'_m = 4500 \text{ psi}$$

$$f_y = 60,000 \text{ psi}$$

$$F_b = 0.33 f'_m = 1500 \text{ psi}$$

$$F_y = 24,000 \text{ psi}$$

$$E_m = 750 f'_m = 3,000,000 \text{ psi}$$

$$E_s = 29,000,000 \text{ psi}$$

DESIGN EQUATIONS

$$n = \frac{E_s}{E_m} = 9.7$$

$$K = \frac{M}{F} = \frac{M(\text{ft kips})}{bd^2/12,000} \text{ or } \frac{M(\text{in. lbs})}{bd^2}$$

$$K = \frac{1}{2} j k f_b$$

$$j = 1 - \frac{k}{3}$$

$$k = \frac{1}{1 + f_y/n f_b}$$

$$A_s = \frac{M}{f_y j d}$$

$$p = \frac{A_s}{bd} = \frac{K}{f_y j}$$

Increase for wind or earthquake
 $1.33 F_b = 2000 \text{ psi}$
 $1.33 F_y = 32,000 \text{ psi}$

f_b	f_y	K	p	np	k	j	$2/jk$	f_b	f_y	K
500	24,000	39.7	0.0018	0.017	0.168	0.944	12.60	667	32,000	52.9
550	24,000	47.0	0.0021	0.020	0.182	0.939	11.71	733	32,000	62.6
600	24,000	54.7	0.0024	0.024	0.195	0.935	10.96	800	32,000	73.0
650	24,000	62.9	0.0028	0.027	0.208	0.931	10.33	867	32,000	83.9
700	24,000	71.5	0.0032	0.031	0.221	0.926	9.79	933	32,000	95.3
750	24,000	80.5	0.0036	0.035	0.233	0.922	9.32	1,000	32,000	107.3
800	24,000	89.8	0.0041	0.040	0.244	0.919	8.91	1,067	32,000	119.7
850	24,000	99.4	0.0045	0.044	0.256	0.915	8.55	1,133	32,000	132.5
900	24,000	109.4	0.0050	0.049	0.267	0.911	8.23	1,200	32,000	145.8
950	24,000	119.6	0.0055	0.053	0.277	0.906	7.94	1,267	32,000	159.5
1,000	24,000	130.1	0.0060	0.058	0.288	0.904	7.69	1,333	32,000	173.5
1,050	24,000	140.9	0.0065	0.063	0.298	0.901	7.45	1,400	32,000	187.8
1,100	24,000	151.9	0.0071	0.068	0.308	0.897	7.24	1,467	32,000	202.5
1,150	24,000	163.2	0.0076	0.074	0.317	0.894	7.05	1,533	32,000	217.5
1,200	24,000	174.6	0.0082	0.079	0.327	0.891	6.87	1,600	32,000	232.8
1,250	24,000	186.3	0.0087	0.085	0.336	0.888	6.71	1,667	32,000	248.4
1,300	24,000	198.2	0.0093	0.090	0.344	0.885	6.56	1,733	32,000	264.2
1,350	24,000	210.2	0.0099	0.096	0.353	0.882	6.42	1,800	32,000	280.3
1,400	24,000	222.5	0.0105	0.102	0.361	0.880	6.29	1,867	32,000	296.6
1,450	24,000	234.9	0.0112	0.108	0.369	0.877	6.17	1,933	32,000	313.2
1,500	24,000	247.5	0.0118	0.114	0.377	0.874	6.06	2,000	32,000	329.9
1,500	23,000	253.1	0.0126	0.123	0.387	0.871	5.93	2,000	30,667	337.4
1,500	22,000	258.9	0.0136	0.132	0.398	0.867	5.79	2,000	29,333	345.3
1,500	21,000	265.1	0.0146	0.142	0.409	0.864	5.66	2,000	28,000	353.4
1,500	20,000	271.7	0.0157	0.152	0.421	0.860	5.55	2,000	26,667	362.0
1,500	19,000	278.7	0.0167	0.162	0.434	0.855	5.39	2,000	25,333	371.0
1,500	18,000	285.3	0.0186	0.181	0.447	0.851	5.26	2,000	24,000	380.4
1,500	17,000	292.7	0.0203	0.197	0.461	0.846	5.12	2,000	22,667	390.3
1,500	16,000	300.5	0.0223	0.217	0.476	0.841	4.99	2,000	21,333	400.7
1,500	15,000	308.7	0.0246	0.239	0.492	0.836	4.86	2,000	20,000	411.6



BERRY-NORDLING
ENGINEERS, INC.
CIVIL-STRUCTURAL

3607 SW CORBETT AVENUE
PORTLAND, OR 97201
(503) 227-7783 / FAX 227-7784
bneng@e-z.net

LETTER OF TRANSMITTAL TO:

Melvin Monks Co.

Job *Robt Duncan Plaza*

Job No. _____ Date *5/29/91*

Attention *Robert Penner*

Re _____

WE ARE SENDING THE FOLLOWING ITEMS:

- ☒ ATTACHED ☐ SHOP DRAWINGS
☐ UNDER SEPARATE COVER ☐ PRINTS
VIA _____ ☐ COPY OF LETTER

- ☐ CALCULATIONS ☐ SUBMITTAL DATA
☐ SPECIFICATIONS ☐ CHANGE ORDER
OTHER _____

COPIES	DATE OR NO.	DESCRIPTION
<i>1</i>		<i>Revised letter on vent openings</i>

THESE ARE TRANSMITTED AS INDICATED:

- ☒ FOR ACCEPTANCE ☐ FURNISHED AS SUBMITTED ☐ RESUBMIT _____ COPIES FOR ACCEPTANCE
☒ FOR YOUR USE ☐ FURNISHED AS NOTED ☐ SUBMIT _____ FULL SETS CONSTRUCTION DOCUMENTS
☐ AS REQUESTED ☐ RETURNED FOR CORRECTIONS ☐ RETURN _____ CORRECTED PRINTS
☐ FOR REVIEW AND COMMENT ☐ REJECTED (SEE REMARKS) ☐ PRINTS RETURNED AFTER LOAN TO US
☐ RETURN MARKUPS WITH _____ COPIES CORRECTED PRINTS FOR ACCEPTANCE PRIOR TO ANY DOCUMENT RELEASE
☐ FOR BIDS DUE _____ ☐ OTHER _____

REMARKS _____

*OPENING 5/24 CAN BE INCREASED
to 12" E x 27" E*

COPIES TO: _____

IF ENCLOSURES ARE NOT AS NOTED, KINDLY NOTIFY US AT ONCE.

NAME *Bill Barry*

SIGNED _____



BERRY-NORDLING
ENGINEERS, INC.
CIVIL-STRUCTURAL

3607 S.W. CORBETT AVENUE
PORTLAND, OREGON 97201
503-227-7783 / FAX 227-7784

May 14, 2001

Melvin Mark Companies
111 SW Columbia, Suite 1380
Portland, Oregon 97201

Attn: Robert E. Butler

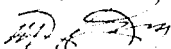
Re: Robert Duncan Plaza
New Openings in Brick Panels

Dear Robert:

It is my understanding that you wish to cut new openings in some of the existing brick panels at the Robert Duncan Plaza. The purpose of these new openings is to provide additional ventilation into the building. The panels in which you want to cut the new openings are shown on the enclosed Figure 1. Figure 1 is a copy of the east and west side of the building showing the brick panels. The panels in which you wish to cut the openings are 46L and 46R. For both sides of the building, the total number of panels affected is 20. The enclosed Figure 2 is a copy of the shop drawing for Panel 46L. Panel 46R would be the exact opposite. An approximate 12 inch high by 27 inch wide opening can be cut into the bottom of this panel as shown on Figure 2. As noted on Figure 2, it will be necessary to verify the location for the gravity support connection for the panel at its mid-span. The vertical reinforcing on each side of the gravity panel anchor is to be left intact and not cut. The bottom of the new openings should be set approximately 6 inches above the bottom of the panel. The enclosed Figure 3 is an enlarged copy of the elevation of the panel showing the opening. The enclosed Figure 4 is a section through the panel showing the location of the opening relative to the structure behind. Also enclosed are stamped calculations verifying that the new opening can be cut into the panel.

Robert, if you should have any questions regarding any of the above, please do not

Sincerely yours,



Bill Berry, P.E.

WGB:jh

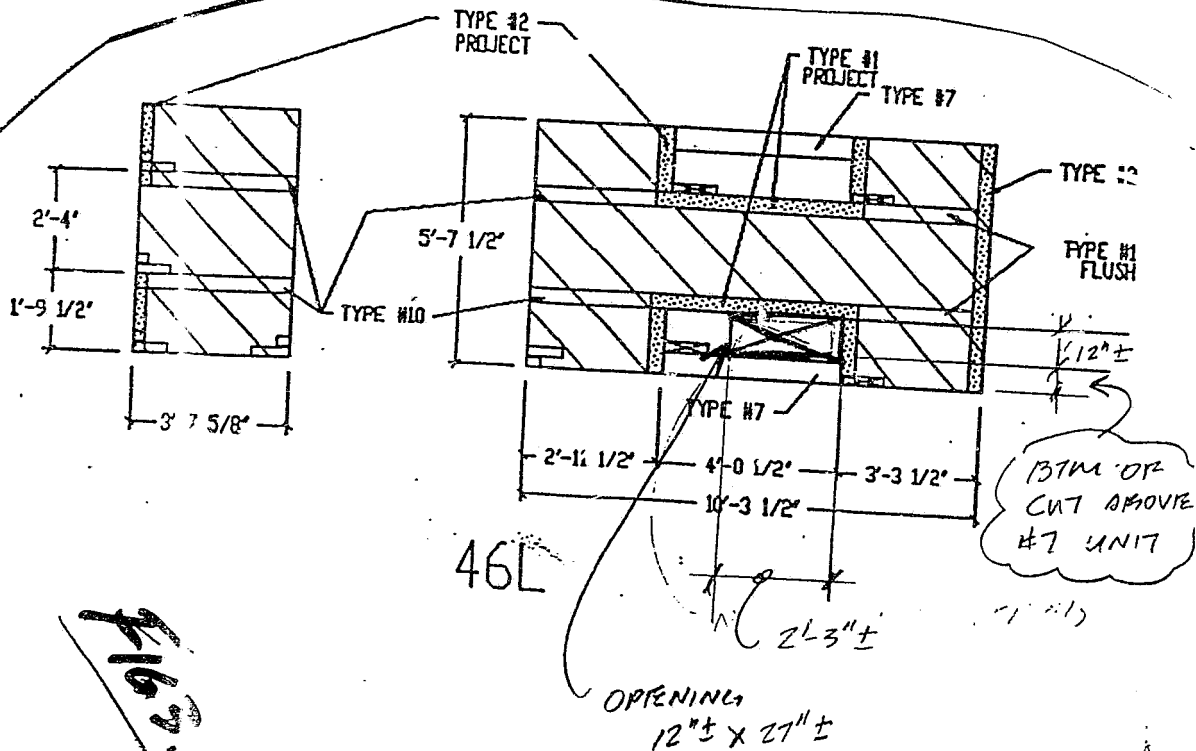


Fig. 3.

1. #3 HORIZ PERIMETER REINFORCING U.N.D.
2. # 3 VERTICALS AS SHOWN AND AT
18" O/C BETWEEN
3. 1 # 3 HORIZ ABOVE & BELOW
P.A.C. (2 TOTAL)
4. 1 # 3 HORIZ ABOVE BOTTOM
CONNECTION LINE (1 TOTAL)

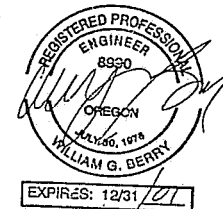


Fig. 2

PREPARED UNDER THE
DESIGN SUPERVISION OF
W. G. BERRY
STRUCTURAL ENGINEERS
W.G.B.S.E. IS NOT RESPONSIBLE
FOR DIMENSIONAL ACCURACY



NO	REVISIONS	DATE
1	G-5A	3/1

ONE OAK PLAZA
PORTLAND, OREGON

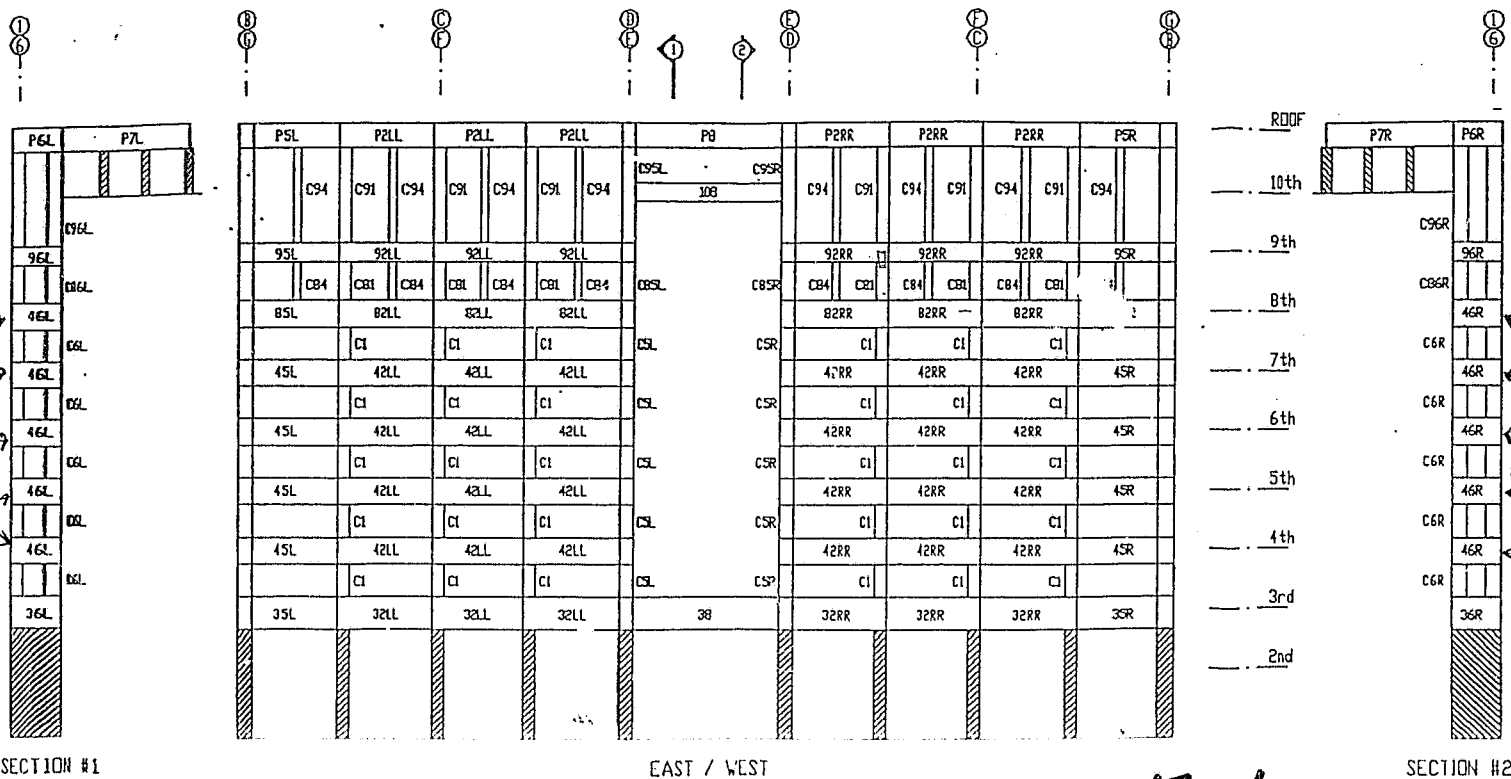


L. C. PARDUE INC.
20913 S.W. 103th
TUALATIN, OREGON 97062
503-692-3333 FAX-692-3717

PANELS - 1/4" = 1'-0"
DETAILS AS NOTED
ALL OTHERS NTS

15B

1. #3 HORIZ. PERIMETER REINFORCING UNO.
2. # _____ VERTICALS AS SHOWN AND AT _____ O/C BETWEEN _____
3. # _____ HORIZ. ABOVE & BELOW P.A. (_____ TOTAL)
4. # _____ HORIZ. ABOVE BOTTOM CONNECTION LINE (_____ TOTAL)



SECTION #1

EAST / WEST

SECTION #2

NO	REVISIONS	DATE

BILL BERRY ENGINEERS
701 S.E. HILIER
PORTLAND, OREGON
531-0777

BAUGH CONSTRUCTION CO.
BEAVERTON, OREGON
641-2300

ONE OAK PLAZA
PORTLAND, OREGON



L. C. PARDUE INC.
20915 S.W. 103th
TUALATIN, OREGON 97062
503-692-3053 FAX-692-3717

PANELS - 1/4" = 1'-0"
DETAILS AS NOTED
ALL OTHERS NTS

S-16-90

2