

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK CITY OF PORTLAND

Please Read Application And Notes, If Any, Attached

BUILDING DEPARTMENT PERMIT

Permit Number: 031229

This is to certify that Olympia Equity Investors I L

has permission to Install 6 antennae + base station equipment

AT 1230 Congress St Call 189 A014001

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of the State and of the Ordinances of the City of Portland regulating the construction, maintenance and use of buildings and structures, and of the application on file in this department.

Apply to Public Works for street line and grade if nature of work requires such information.

Notification of inspection must be given and work on permit on procedure before this building or part thereof is leased or closed-in. FOUR NOTICE IS REQUIRED.

A certificate of occupancy must be procured by owner before this building or part thereof is occupied.

OTHER REQUIRED APPROVALS

Fire Dept. CKM/J

Health Dept. _____

Appeal Board _____

Other _____
Department Name

[Signature] 10/17/03
Director - Building & Inspection Services

PENALTY FOR REMOVING THIS CARD

City of Portland, Maine - Building or Use Permit Application
 389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 03-1229	Issue Date:	CBL: 189 A014001
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Location of Construction: 1230 Congress St	Owner Name: Olympia Equity Investors I Lp	Owner Address: 50 Monument Sq 2nd Floor	Phone:
Business Name:	Contractor Name:	Contractor Address:	Phone:
Lessee/Buyer's Name:	Phone:	Permit Type: Alterations - Commercial	Zones: B2

Past Use: Doubletree Hotel	Proposed Use: Doubletree Hotel w/6 antennae + base station equipment	Permit Fee: \$381.00	Cost of Work: \$40,000.00	CEO District: 3
		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied	INSPECTION: Use Group: U Type: 2 10/17/03 Signature: <i>[Signature]</i>	

Proposed Project Description:
Install 6 antennae + base station equipment

Signature: *[Signature]* **Signature:** *[Signature]*
PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)
 Action: Approved Approved w/Conditions Denied
Signature: _____ **Date:** _____

Permit Taken By: kwd	Date Applied For: 10/03/2003	Zoning Approval	
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<ol style="list-style-type: none"> This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules. Building permits do not include plumbing, septic or electrical work. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work.. 	Special Zone or Reviews <input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input type="checkbox"/> Site Plan Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/> Date: <i>10/19/03</i>	Zoning Appeal <input type="checkbox"/> Variance <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Conditional Use <input type="checkbox"/> Interpretation <input type="checkbox"/> Approved <input type="checkbox"/> Denied Date: _____	Historic Preservation <input checked="" type="checkbox"/> Not in District or Landmark <input type="checkbox"/> Does Not Require Review <input type="checkbox"/> Requires Review <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied Date: <i>9</i>
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CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

_____ SIGNATURE OF APPLICANT	_____ ADDRESS	_____ DATE	_____ PHONE
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_____ RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE	_____ DATE	_____ PHONE
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City of Portland, Maine - Building or Use Permit

389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No: 03-1229	Date Applied For: 10/03/2003	CBL: 189 A014001
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Location of Construction: 1230 Congress St	Owner Name: Olympia Equity Investors I Lp	Owner Address: 50 Monument Sq 2nd Floor	Phone:
Business Name:	Contractor Name:	Contractor Address:	Phone:
Lessee/Buyer's Name	Phone:	Permit Type: Alterations - Commercial	

Proposed Use: Doubletree Hotel w/6 antennae + base station equipment	Proposed Project Description: Install 6 antennae + base station equipment
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Dept: Zoning	Status: Approved	Reviewer: Marge Schmuckal	Approval Date: 10/08/2003
Note:			Ok to Issue: <input checked="" type="checkbox"/>
Dept: Building	Status: Pending	Reviewer: Mike Nugent	Approval Date:
Note:			Ok to Issue: <input type="checkbox"/>
Dept: Fire	Status: Approved	Reviewer: Lt. MacDougal	Approval Date: 10/08/2003
Note:			Ok to Issue: <input checked="" type="checkbox"/>

Comments: 10/14/2003-mjn: Left message with engineer about roof loading issues.

OEST Associates, Inc.

• engineers
• architects
• surveyors
• construction
managers

343 Gorham Road • South Portland, ME 04106-2317 • TEL (207) 761-1770 • FAX (207) 774-1246
E- mail: mail@oest.com • Web Site: www.oest.com

October 14, 2003

City of Portland
Michael Nugent
389 Congress Street
Portland Maine 04101

SUBJECT: Portland Maine Wireless Communications Projects

Dear Michael:

This letter will hopefully clear up any questions that you raised in a phone conversation with me on 14 October 2003.

Promenade East

1. The answer to the question that you raised about the railing configuration around the platform as shown on our drawings is Use group U. This allows the railing to be as shown. The whole equipment platform is enclosed in a locked wood fence compound.
2. The analysis of the existing roof for capacity is shown in the calculation package as submitted on pages 2 thru 5.

Doubletree Hotel

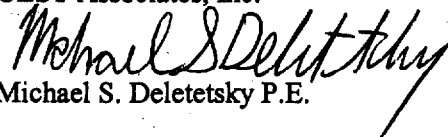
1. The analysis of the existing penthouse for capacity is shown in the calculation package as submitted on pages 4 and 5.

Deering Pavilion

1. The analysis of the existing roof for capacity is shown in the calculation package as submitted on pages 5 and 10 (Concrete Wall Design (ACI 381-99)).

The work for the field welds shall be visually inspected by an AWS Certified Weld Inspector prior to welding for all the projects that are submitted for your review. If you have any questions please feel free to call me.

Sincerely,
OEST Associates, Inc.

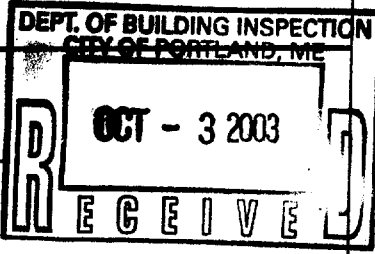

Michael S. Deletetsky P.E.

MSD:lam
M:\390 LCC, International\City of Portland\101403.doc

03-1229

All Purpose Building Permit Application

If you or the property owner owes real estate or personal property taxes or user charges on any property within the City, payment arrangements must be made before permits of any kind are accepted.

Location/Address of Construction: <u>1230 Congress Street</u>		
Total Square Footage of Proposed Structure <u>200 square feet</u>	Square Footage of Lot	
Tax Assessor's Chart, Block & Lot Chart# <u>189</u> Block# <u>A01</u> Lot# <u>400</u> <u>189 A014</u>	Owner: <u>Olympia Equity Investors LLC</u>	Telephone: <u>774-5611</u>
Lessee/Buyer's Name (If Applicable) <u>U.S. Cellular</u>	Applicant name, address & telephone: <u>US Cellular</u> <u>482 Congress Street</u> <u>Portland Me 04101</u>	Cost Of Work: \$ <u>40,000</u> Fee: \$ <u>381.00</u>
Current use: <u>Hotel</u>		
If the location is currently vacant, what was prior use: _____		
Approximately how long has it been vacant: _____		
Proposed use: <u>Install (6) six antennas + Base Station Equipment</u> Project description:		
Contractor's name, address & telephone: <u>TBD</u>		
Who should we contact when the permit is ready: <u>Ed Shaw</u>		
Mailing address:		
We will contact you by phone when the permit is ready. You must come in and pick up the permit and review the requirements before starting any work, with a Plan Reviewer. A stop work order will be issued and a \$100.00 fee if any work starts before the permit is picked up. PHONE: <u>771-9992</u>		

IF THE REQUIRED INFORMATION IS NOT INCLUDED IN THE SUBMISSIONS THE PERMIT WILL BE AUTOMATICALLY DENIED AT THE DISCRETION OF THE BUILDING/PLANNING DEPARTMENT, WE MAY REQUIRE ADDITIONAL INFORMATION IN ORDER TO APPROVE THIS PERMIT.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Code Official's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

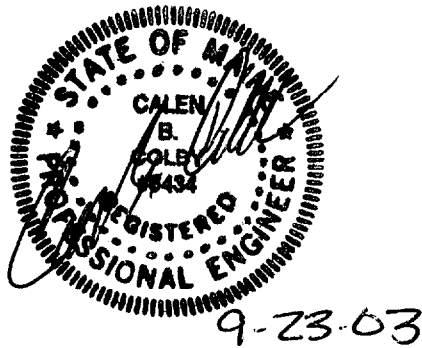
Signature of applicant: <u>Edmund A. Shaw</u>	Date: <u>9/15/03</u>
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This is NOT a permit, you may not commence ANY work until the permit is issued. If you are in a Historic District you may be subject to additional permitting and fees with the Planning Department on the 4th floor of City Hall

DOUBLETREE HOTEL
Portland, Maine

**CELLULAR TELEPHONE ANTENNA SUPPORT
STRUCTURAL CALCULATIONS**

SUBMITTAL #1



Prepared for:

LCC International, Inc.
482 Congress Street, Suite 502
Portland, ME 04101

Prepared by:

OEST Associates, Inc.
343 Gorham Rd.
South Portland, ME 04106-2317

September 22, 2003

OEST ASSOCIATES, INC.

PREPARED BY J. Walker
 CALCULATIONS CHECKED BY _____
 SUBJECT Double Tree Antenna Monopole Design

DATE 9/13/03 PROJECT NO. 390.01.01
 DATE _____ SHEET NO. 1 OF 6

Monopole Design Criteria

Wind Loads: [TIA/EIA-222]

$V = 85 \text{ mph}$ [Portland, ME]

$h = 90.5'$

$G_M = 1.69$ [Pole Structures]

Antennas:

(3) EMS FV65-17 (See Attached Sheet)

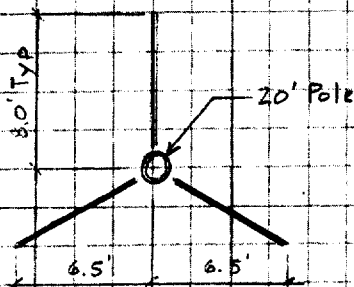
$W_t = 18 \#$ each

$A = 3.1 \text{ ft}^2$ each [56" x 8"]

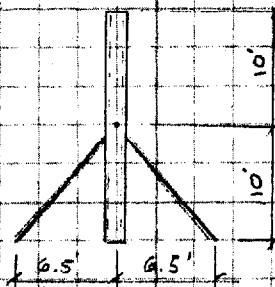
Ice Loads: [TIA/EIA-222]

Design Structures for $\frac{1}{2}$ " Radial Ice

Pole & Bracing Design:



Plan View



Elevation

Calculate Pole Loads:

Try 12" Std Pipe Pole & L3 $\frac{1}{2}$ " x 3 $\frac{1}{2}$ " x 9/16" Braces

Ice:

$$\text{Pole} \Rightarrow I = 56 \text{ pcf} \left[\frac{\pi (0.5') (12.75 \times \frac{3}{4})}{144} \right] = 8 \text{ plf}$$

$$\text{Antennas} \Rightarrow I = 6 [2(3.1 \text{ ft}^2)] (50 \text{ pcf}) (0.5 \times \frac{1}{2}) = 87 \#$$

$$\text{Braces} \Rightarrow I = 56 \text{ pcf} \left[\frac{4(3') (2.5')}{144} \right] = 2.5 \text{ plf}$$

OEST ASSOCIATES, INC.

PREPARED BY J. Walker DATE 9/13/03 PROJECT NO. 390.01.01
 CALCULATIONS CHECKED BY _____ DATE _____ SHEET NO. 2 OF 6
 SUBJECT Double Tree Antenna Monopole Design

Pole & Bracing Design Cont.:

Calculate Pole Loads Cont.:

Wind:

$$K_z = \left(\frac{90.5}{33}\right)^{2/7} = 1.33 \quad \therefore q_z = 0.00256(1.33)(65\text{mph})^2 = \underline{24.6\text{psf}}$$

Pole $\Rightarrow C = \sqrt{1.33}(65\text{mph})\left(\frac{8.625}{12}\right) = 70.5 \quad \therefore C_F = 0.59 \quad [TIA/EIA-222 TB1]$

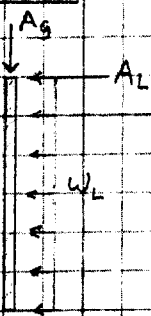
$$W = 24.6\text{psf}(1.69)(0.59) \Rightarrow \underline{W = 25\text{psf}}$$

Antenna \Rightarrow Aspect Ratio = $\frac{56''}{8''} = 7.0 \quad \therefore C_A = 1.4 \quad [TIA/EIA-222 TB1]$

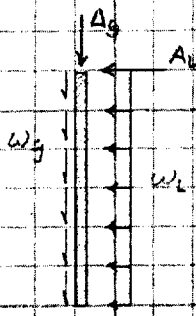
$$W = 24.6\text{psf}(1.69)(1.4) = \underline{58\text{psf}}$$

Load Combinations:

DL+WL



DL+0.75WL+I



$$A_g = DL = 6(18^*) = 108^*$$

$$A_g = DL+I = 100^* + 87^* = 195^*$$

$$A_L = WL = 6(58\text{psf})(3.14\text{ft}^2) = 1,079^*$$

$$A_L = WL = 6(58\text{psf})\left(\frac{57''}{12}\right)\left(\frac{9''}{12}\right) = 1,240^*$$

$$W_L = WL = 25\text{psf}\left(\frac{12.75''}{2}\right) = 27\text{plf}$$

$$W_L = WL = 25\text{psf}\left(\frac{13.75''}{12}\right) = 29\text{plf}$$

$$W_g = I = 6\text{plf} = 6\text{plf}$$

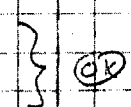
Results:

Pole $\Rightarrow U_{MAX} = 0.14$

$R = 1.75\text{K} \downarrow \quad 1.0\text{K} \leftarrow \quad \delta \approx 1/4''$

Brace $\Rightarrow U_{MAX} = 0.51$

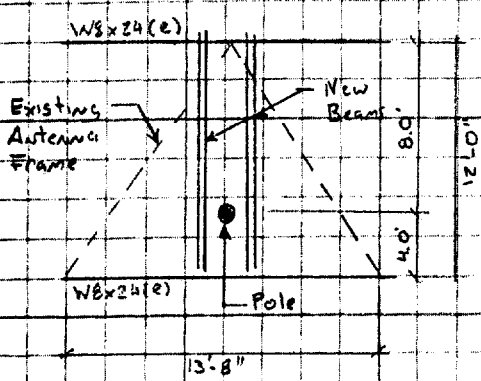
$R = 4.0\text{K}$



OEST ASSOCIATES, INC.

PREPARED BY J. Walker DATE 4/13/03 PROJECT NO. 390.01.01
 CALCULATIONS CHECKED BY _____ DATE _____ SHEET NO. 3 OF 6
 SUBJECT Double Tree Antenna Monopole Design

Pole Support Design



Size New Beams:

Try W8x18

$L = 13'-8"$	$w = DL = 18 \text{ plf}$	$M_w = \frac{18 \text{ plf} (13.67')^2}{2} = 0.40 \text{ K-ft}$
$L_b = 13'-8"$	$P_1 = \text{Pole} = 1.125 \text{ K}$	$M_{P1} = \frac{1.75 \text{ K} (4)(8')}{2} = 4.67 \text{ K-ft}$
	$P_2 = \text{Pole} = 0.5 \text{ K}$	$M_{P2} = \frac{1.0 \text{ K} (4)(8')}{2} = 2.67 \text{ K-ft}$

$F_{bx} \Rightarrow f_{bx} = \frac{4.67 \text{ K-ft} (12)}{15.21 \text{ in}^3} = 3.69 \text{ ksi}$

$M_x = 19.25 \text{ K-ft}$ [ASDM pg 2-21] $\therefore F_{bx} = \frac{19.25 \text{ K-ft} (12)}{15.21 \text{ in}^3} = 15.2 \text{ ksi}$

$F_{by} \Rightarrow f_{by} = \frac{2.67 \text{ K-ft} (12)}{3.04 \text{ in}^3} = 10.5 \text{ ksi}$

$F_{by} = 0.75 (50 \text{ ksi}) = 37.5 \text{ ksi}$

Unity $\Rightarrow U = \frac{3.69 \text{ ksi}}{15.2 \text{ ksi}} + \frac{10.5 \text{ ksi}}{37.5 \text{ ksi}} = 0.52 < 1.0$ OK

Deflection \Rightarrow

$\delta_x = \frac{(1.75 \text{ K})(13.67 \cdot 12)^3}{48(29,000 \text{ ksi})(6 \cdot 9 \text{ in}^4)} = 0.09 \text{ in}$	}	OK
$\delta_y = \frac{(1.0 \text{ K})(13.67 \cdot 12)^3}{48(29,000 \text{ ksi})(7.97 \text{ in}^4)} = 0.40 \text{ in}$		

Use (2) W8x18 Beams

OEST ASSOCIATES, INC.

PREPARED BY J. Walker DATE 9/13/03 PROJECT NO. 390.01.01
 CALCULATIONS CHECKED BY _____ DATE _____ SHEET NO. 4 OF 6
 SUBJECT Double Tree Check Existing Roof Framing

Check Existing W6 e Roof

$W6 \times 24 @ 13'-8" \Rightarrow M_{cap} = 40.75 \text{ K-ft}$ [ASDM pg 2-210]

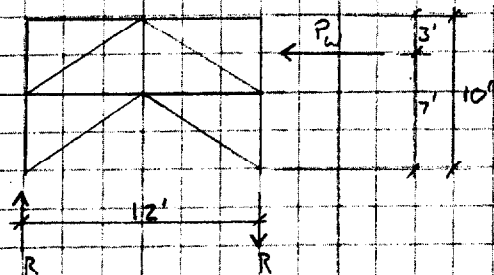
$P_{all} = \frac{4(40.75 \text{ K-ft})}{13.67} = 12 \text{ K}$

Estimate Existing Tower Loads:

DL+I

	SHAPE	DL	I
Legs	(3) TSHx4 @ 10'	(3)(10')(12 pcf) = 360#	(3)(10')(56 pcf)(4)($\frac{10'}{12}$)($\frac{0.5'}{12}$) = 93#
Horizontals	(6) L3x3 @ 13'	(6)(13')(6 pcf) = 468#	(6)(13')(56 pcf)(4)($\frac{13'}{12}$)($\frac{0.5'}{12}$) = 182#
Vert Bracing	(12) L3x3 @ 6.5'	(12)(6.5')(6 pcf) = 612#	(12)(6.5')(56 pcf)(4)($\frac{6.5'}{12}$)($\frac{0.5'}{12}$) = 238#
Horz Bracing	(6) L3x3 @ 6.5'	(6)(6.5')(6 pcf) = 234#	(6)(6.5')(56 pcf)(4)($\frac{6.5'}{12}$)($\frac{0.5'}{12}$) = 91#
		1,674#	604#

WL



$P_w = 50 \text{ psf}(12)(3.1 \text{ ft}^2) = 2,158 \text{#}$

$R = 2,158 \text{#} \left(\frac{7'}{12'} \right) = 1,258 \text{#}$

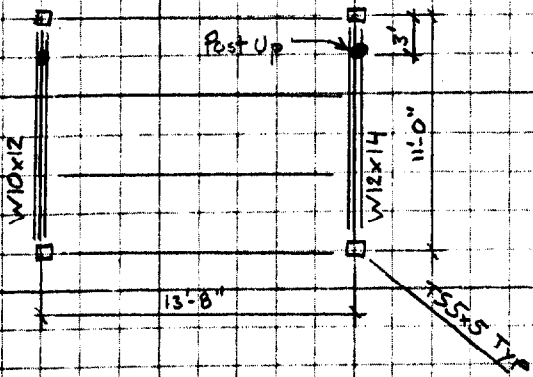
$R_{Total} = \left(\frac{1,674 \text{#} + 604 \text{#}}{3} \right) + 1,258 \text{#} = 2,017 \text{#}$

Existing W6x24 is OK

OEST ASSOCIATES, INC.

PREPARED BY J. Walker DATE 9/13/03 PROJECT NO. _____
 CALCULATIONS CHECKED BY _____ DATE _____ SHEET NO. 5 OF 6
 SUBJECT Double Tree Check Existing Roof Framing

Check Existing Penthouse Framing:



W10 Beam:

$$L = 11.0' \quad W = DL = 20 \text{ psf} \left(\frac{13.67'}{2} \right) = 137 \text{ plf}$$

$$= SL = 0.7(50 \text{ psf})(11) = 239 \text{ plf}$$

$$P = 6 \times e3' \text{ [See Previous Page]}$$

Bending:

$$M = \frac{(137 + 239) \text{ plf} (11')^2}{8} + \frac{6,000 \# (3') (6')}{11'} = 18,778 \# \cdot \text{ft}$$

$$f_b = \frac{18.8 \text{ k} \cdot \text{ft} (12)}{10.91 \text{ in}^3} = 20.7 \text{ ksi} < F_b = 0.66(50) = 33 \text{ ksi}$$

Shear:

$$V = \frac{(137 + 239) \text{ plf} (11')}{2} + 6,000 \# = 8,060 \#$$

$$f_v = \frac{8.1 \text{ k}}{9.87 (0.14')} = 4.3 \text{ ksi} < F_v = 0.4(50 \text{ ksi}) = 20 \text{ ksi}$$

T55x5 Column:

$$K \cdot L = 15'$$

$$P = DL = 20 \text{ psf} \left(\frac{13.67'}{2} \right) (11') = 1,503 \#$$

$$= SL = 0.7(50 \text{ psf})(11)(11) = 2,630 \#$$

$$= \text{Post} = 6,000 \#$$

$$= 10,133 \#$$

$$T55 \times 5 \times \frac{1}{4} @ 15' \Rightarrow P_{CR} = 72 \text{ k} > 10,133 \# \quad \text{OK}$$