

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF PERMIT ISSUED

CITY OF PORTLAND

BUILDING INSPECTION

PERMIT

Please Read
Application And
Notes, If Any,
Attached

MAR 21 2008

Permit Number: 080190

CITY OF PORTLAND

This is to certify that CITY OF PORTLAND / Revolution Energy LLC

has permission to installing Solar electric panels on the roof of the building and on South wall of library

AT 512 STEVENS AVE

135 E007001

provided that the person or persons, firm or person accepting this permit shall comply with all of the provisions of the Statutes of Maine 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 when permission procured before this building or part thereof is occupied or otherwise used-in. HOUR NOT REQUIRED.

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

OTHER REQUIRED APPROVALS

Fire Dept. *Craig Cass*

Health Dept. _____

Appeal Board _____

Other _____

Department Name

James Burke 3/20/08
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: 08-0190	Issue Date:	CBL: 135 E007001
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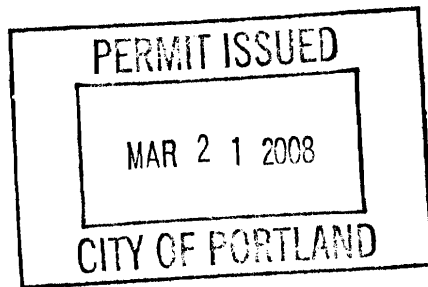
Location of Construction: 512 STEVENS AVE	Owner Name: CITY OF PORTLAND	Owner Address: 389 CONGRESS ST	Phone:
Business Name:	Contractor Name: Revision Energy LLC	Contractor Address: 109 Fox Street Portland	Phone 2072216342
Lessee/Buyer's Name	Phone:	Permit Type: Institutional	Zone: R-5

Past Use: Lincoln Middle School	Proposed Use: Lincoln Middle School - installing Solar electric panels on the roof of the building and on South wall of library	Permit Fee: \$490.00	Cost of Work: \$46,500.00	CEO District: 5
Proposed Project Description: installing Solar electric panels on the roof of the building and on South wall of library		FIRE DEPT: <input checked="" type="checkbox"/> Approved <input type="checkbox"/> Denied	INSPECTION: Use Group: <i>E</i> Type: <i>Solar panels</i> <i>IBC-2003</i>	
		Signature: <i>[Signature]</i> Date: <i>3/20/08</i>		
PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)				
Action: <input type="checkbox"/> Approved <input type="checkbox"/> Approved w/Conditions <input type="checkbox"/> Denied				
Signature: _____ Date: _____				

Permit Taken By: Idobson	Date Applied For: 03/03/2008
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Zoning Approval		
Special Zone or Reviews	Zoning Appeal	Historic Preservation
<input type="checkbox"/> Shoreland <input type="checkbox"/> Wetland <input type="checkbox"/> Flood Zone <input type="checkbox"/> Subdivision <input checked="" type="checkbox"/> Site Plan Exemption Maj <input type="checkbox"/> Minor <input type="checkbox"/> MM <input type="checkbox"/> Date: <i>3/14/08 ABM</i>	<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: _____	<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 <i>ABM</i> Date: _____

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. 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..



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
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

to schedule your inspections as agreed upon

Permits expire in 6 months, if the project is not started or ceases for 6 months.

The Owner or their designee is required to notify the inspections office for the following inspections and provide adequate notice. Notice must be called in 48-72 hours in advance in order to schedule an inspection:

By initializing at each inspection time, you are agreeing that you understand the inspection procedure and additional fees from a "Stop Work Order" and "Stop Work Order Release" will be incurred if the procedure is not followed as stated below.

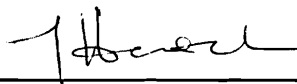
A Pre-construction Meeting will take place upon receipt of your building permit.

 X Final inspection required at completion of work.


Certificate of Occupancy is not required for certain projects. Your inspector can advise you if your project requires a Certificate of Occupancy. All projects DO require a final inspection.

If any of the inspections do not occur, the project cannot go on to the next phase, REGARDLESS OF THE NOTICE OR CIRCUMSTANCES.

CERIFICATE OF OCCUPANICES MUST BE ISSUED AND PAID FOR, BEFORE THE SPACE MAY BE OCCUPIED.



Signature of Applicant/Designee



Signature of Inspections Official

 3/21/08
Date

 3/20/08
Date

City of Portland, Maine - Building or Use Permit

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

Permit No: 08-0190	Date Applied For: 03/03/2008	CBL: 135 E007001
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Location of Construction: 512 STEVENS AVE	Owner Name: CITY OF PORTLAND	Owner Address: 389 CONGRESS ST	Phone:
Business Name:	Contractor Name: Revision Energy LLC	Contractor Address: 109 Fox Street Portland	Phone (207) 221-6342
Lessee/Buyer's Name	Phone:	Permit Type: Educational	

Proposed Use: Lincoln Middle School - installing Solar electric panels on the roof of the building and on South wall of library	Proposed Project Description: installing Solar electric panels on the roof of the building and on South wall of library
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Dept: Zoning	Status: Approved with Conditions	Reviewer: Ann Machado	Approval Date: 03/04/2008
Note:			Ok to Issue: <input checked="" type="checkbox"/>
1) This permit is being approved on the basis of plans submitted. Any deviations shall require a separate approval before starting that work.			
Dept: Building	Status: Approved with Conditions	Reviewer: Jeanine Bourke	Approval Date: 03/20/2008
Note:			Ok to Issue: <input checked="" type="checkbox"/>
1) Separate permits are required for any electrical, plumbing, or HVAC systems. Separate plans may need to be submitted for approval as a part of this process.			
Dept: Fire	Status: Approved with Conditions	Reviewer: Capt Greg Cass	Approval Date: 03/05/2008
Note:			Ok to Issue: <input checked="" type="checkbox"/>
1) Install shall not obstruct any means of egress.			

Comments:
3/4/2008-amachado: Spoke to Jen at Revision Energy. I told her that I needed a full site plan that showed exactly where the awning panels are being located on the building to check the side setbacks.
3/4/2008-amachado: Gave site plan exemption form to planning.
3/6/2008-gg: received granted site plan exemption as of 3/6/08. Gg filed exemption with permit (Jeanie)



General 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>LINCOLN MIDDLE SCHOOL</u> <u>522 STEVENS AVE PORTLAND, 04103</u>		
Total Square Footage of Proposed Structure/Area		Square Footage of Lot
Tax Assessor's Chart, Block & Lot Chart# Block# Lot# <u>135 E 7</u>	Applicant * must be owner, Lessee or Buyer * Name <u>Revision Energy</u> Address <u>109 Fox St</u> City, State & Zip <u>Portland, ME 04101</u>	Telephone: <u>221.6342</u>
Lessee/DBA (If Applicable)	Owner (if different from Applicant) Name <u>Lincoln Middle School</u> Address <u>522 Stevens Ave</u> City, State & Zip <u>Portland, ME 04103</u>	Cost Of Work: \$ <u>46,500.00</u> C of O Fee: \$ _____ Total Fee: \$ <u>490.00</u>
Current legal use (i.e. single family) <u>school</u> If vacant, what was the previous use? _____ Proposed Specific use: _____ Is property part of a subdivision? _____ If yes, please name _____ Project description: <u>installing solar electric panels on the roof of the building and on south wall of library.</u>		
Contractor's name: <u>REVISION ENERGY LLC</u> Address: <u>109 Fox Street</u> City, State & Zip <u>Portland, ME 04101</u> Telephone: <u>221.6342</u> Who should we contact when the permit is ready: <u>Jen</u> Telephone: _____ Mailing address: <u>same as above</u>		

Please submit all of the information outlined on the applicable Checklist. Failure to do so will result in the automatic denial of your permit.

30 15 + \$1,000
10 each \$1,000

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

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: [Signature]

Date: 2/8/08

This is not a permit; you may not commence ANY work until the permit is issue



APPLICATION FOR EXEMPTION FROM SITE PLAN REVIEW

Lincoln Middle School
Applicant

4/9/08
Application Date

555 Stevens Ave
Applicant's Mailing Address

Storage Shed
Project Name/Description

Thomas Foreman 774 811 1111
Consultant/Agent/Phone Number

Stevens Ave
Address of Proposed Site

CBL: 135-E-7

Description of Proposed Development: 8' x 8'
Storage Shed

Please Attach Sketch/Plan of Proposal/Development

Criteria for Exemptions:
See Section 14-523 (4) on back side of form

- a) Within Existing Structures; No New Buildings, Demolitions or Additions
- b) Footprint Increase Less Than 500 Sq. Ft.
- c) No New Curb Cuts, Driveways, Parking Areas
- d) Curbs and Sidewalks in Sound Condition/Comply with ADA
- e) No Additional Parking/ No Traffic Increase
- f) No Stormwater Problems
- g) Sufficient Property Screening
- h) Adequate Utilities

Applicant's Assessment
(Yes, No, N/A)

Planning Office
Use Only

Applicant's Assessment (Yes, No, N/A)	Planning Office Use Only
<u>Yes</u>	<u>sketch is map</u>
<u>Yes</u>	<u>sketch/accessory</u>
<u>Yes</u>	<u>yes</u>
<u>Yes</u>	<u>yes</u>
<u>Yes</u>	<u>yes</u>
<u>Yes</u>	<u>yes</u>
<u>Yes</u>	<u>yes</u>
<u>Yes</u>	<u>yes</u>
<u>N/A</u>	<u>yes</u>

Planning Division Use Only



General 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>LINCOLN Middle School 522 STEVENS AVE</u>		
Total Square Footage of Proposed Structure/Area <u>100 sqft</u>		Square Footage of Lot
Tax Assessor's Chart, Block & Lot Chart# <u>135</u> Block# <u>2</u> Lot# <u>7</u>	Applicant * <u>must</u> be owner, Lessee or Buyer* Name <u>THOMAS FOURNIER</u> Address <u>522 STEVENS AVE</u> City, State & Zip <u>Portland ME 04106</u>	Telephone: <u>874 8145</u>
Lessee/DBA (If Applicable)	Owner (if different from Applicant) Name <u>Portland Public School</u> Address <u>196 Allen Ave</u> City, State & Zip <u>Portland ME 04103</u>	Cost Of Work: \$ <u>799⁰⁰</u> C of O Fee: \$ _____ Total Fee: \$ <u>30⁰⁰</u>
Current legal use (i.e. single family) <u>public school</u>		
If vacant, what was the previous use? _____		
Proposed Specific use: <u>storage of gardening supplies</u> must have 4/12/08		
Is property part of a subdivision? <u>NO</u> If yes, please name _____		
Project description: <u>construction of a 10'x10' storage shed in the educational garden near the geodesic dome. Built by Home Depot</u>		
Contractor's name: <u>Home Depot</u>		
Address: <u>245 Riverside St</u>		
City, State & Zip: <u>Portland ME 04103</u>		Telephone: <u>761-0600</u>
Who should we contact when the permit is ready: <u>THOMAS FOURNIER</u>		Telephone: <u>874 8145</u>
Mailing address: <u>245 Riverside St Portland ME 04103</u>		

Please submit all of the information outlined on the applicable Checklist. Failure to do so will result in the automatic denial of your permit.

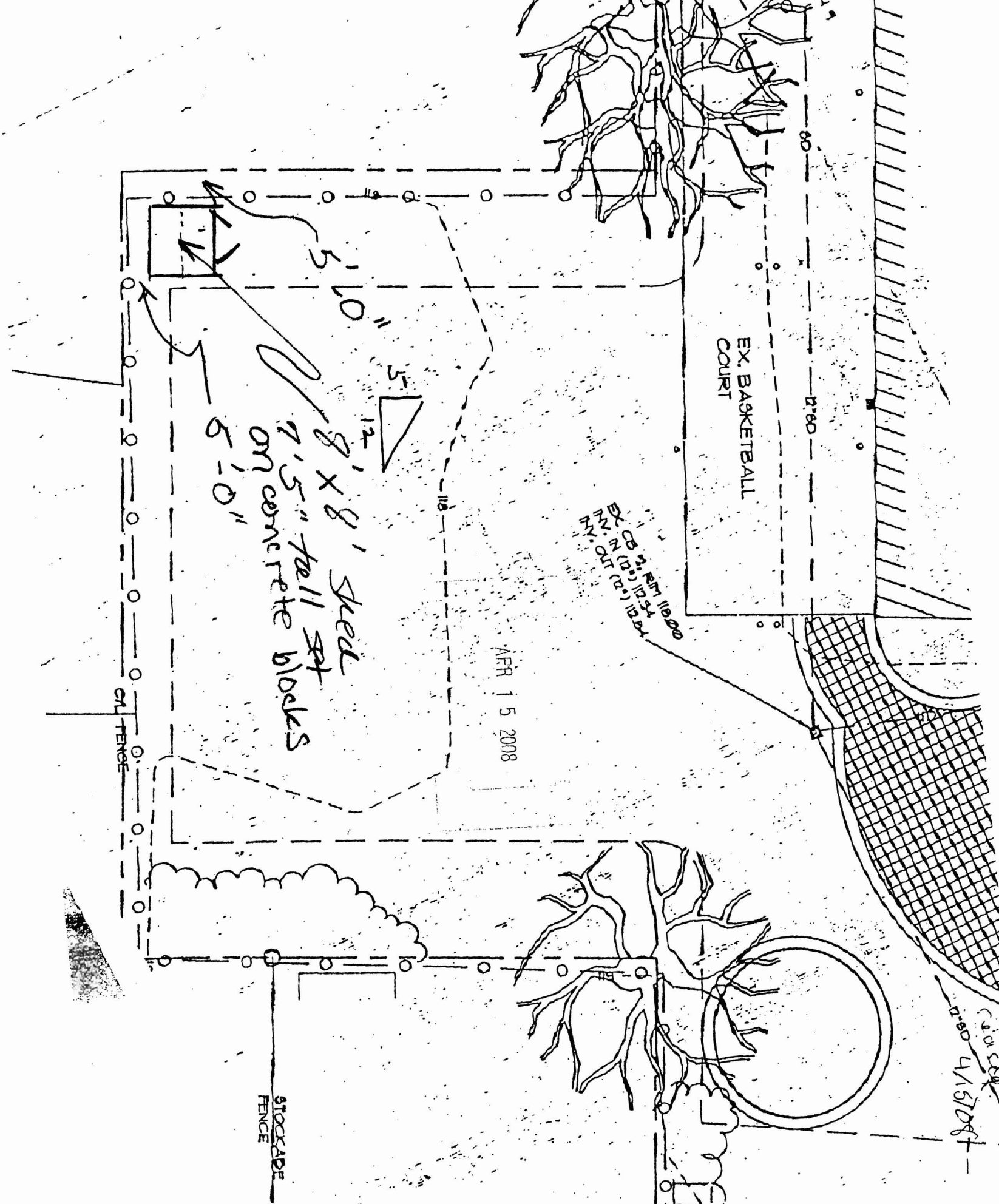
In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

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Signature: Thom Fournier

Date: 4/9/08

This is not a permit; you may not commence ANY work until the permit is issue



EX. BASKETBALL COURT

EX. CB 2. BMT 10.00
 EX. N 10.00 10.00
 EX. N 10.00 10.00

APR 15 2008

5'-10" 5'-12" 5'-10"
 8' x 8' steel
 7.5" tall set
 on concrete blocks

CAL FENCE

STOCKADE FENCE

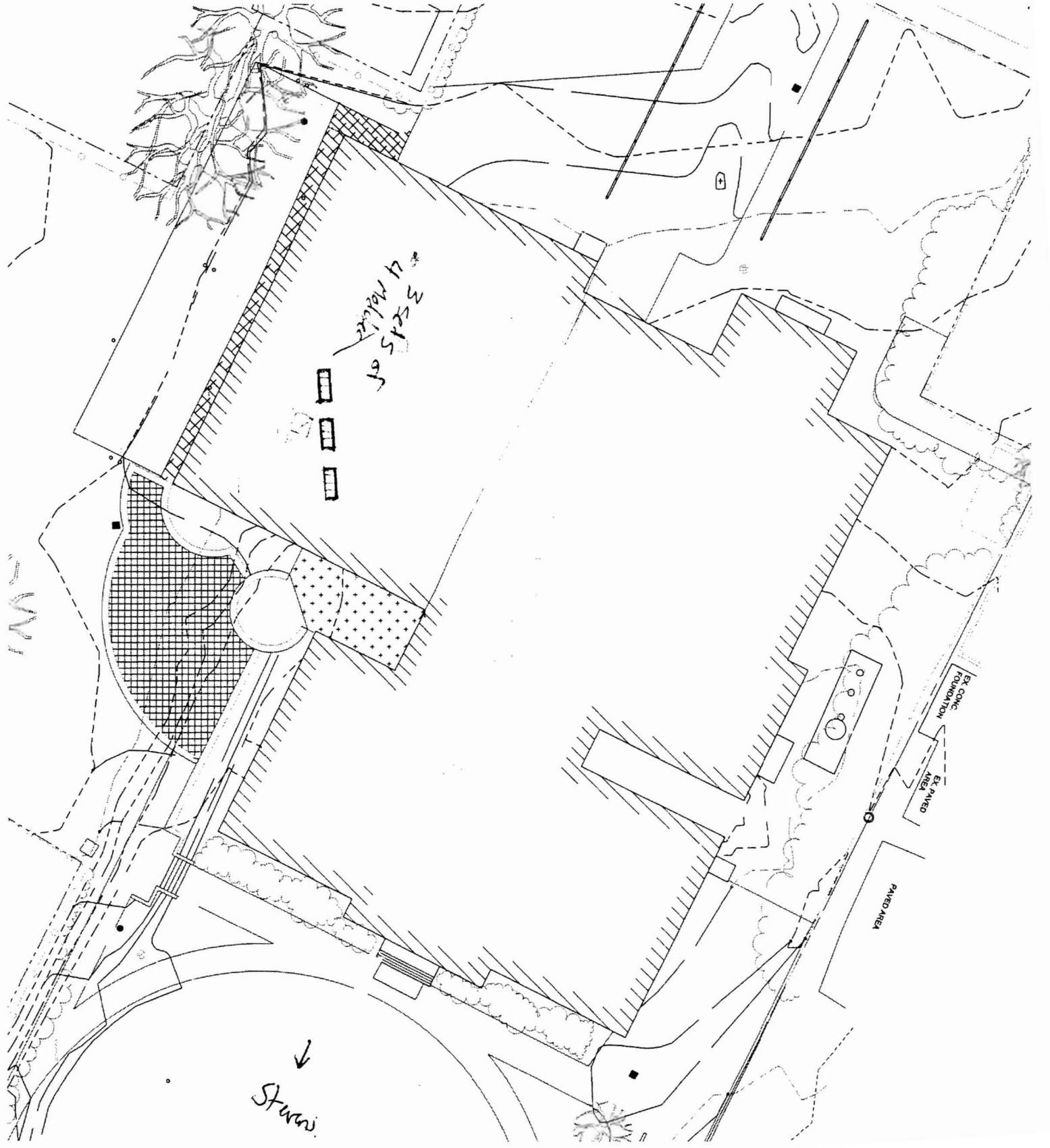
4.51081-

front 20' coverage
rear 30'
side 2 1/2' stairs 14'
lot coverage - 40%

R-5



Leland
↑

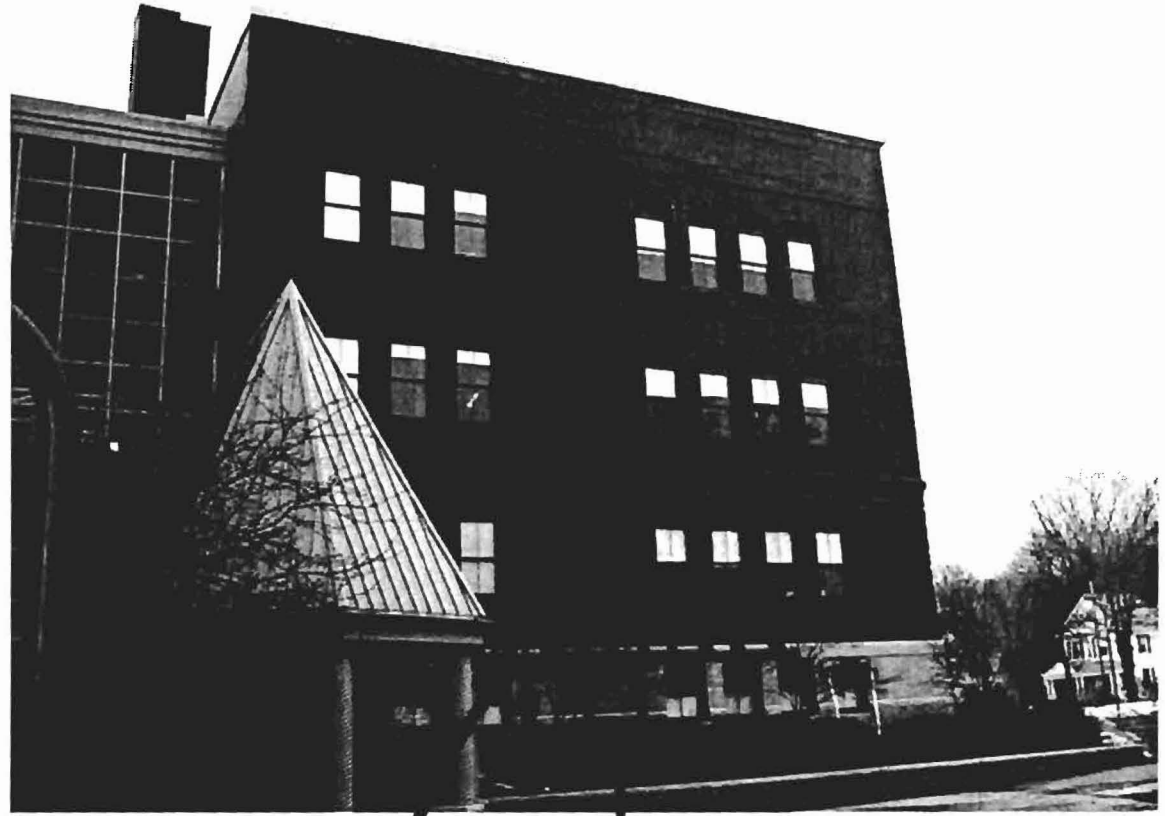


3 sets of
4 Mod. Ltr.

EX. CONC.
FOUNDATION
EX. PAVED
AREA
PAVED AREA

↓
Stairs

Lincoln Middle School Awning Mount



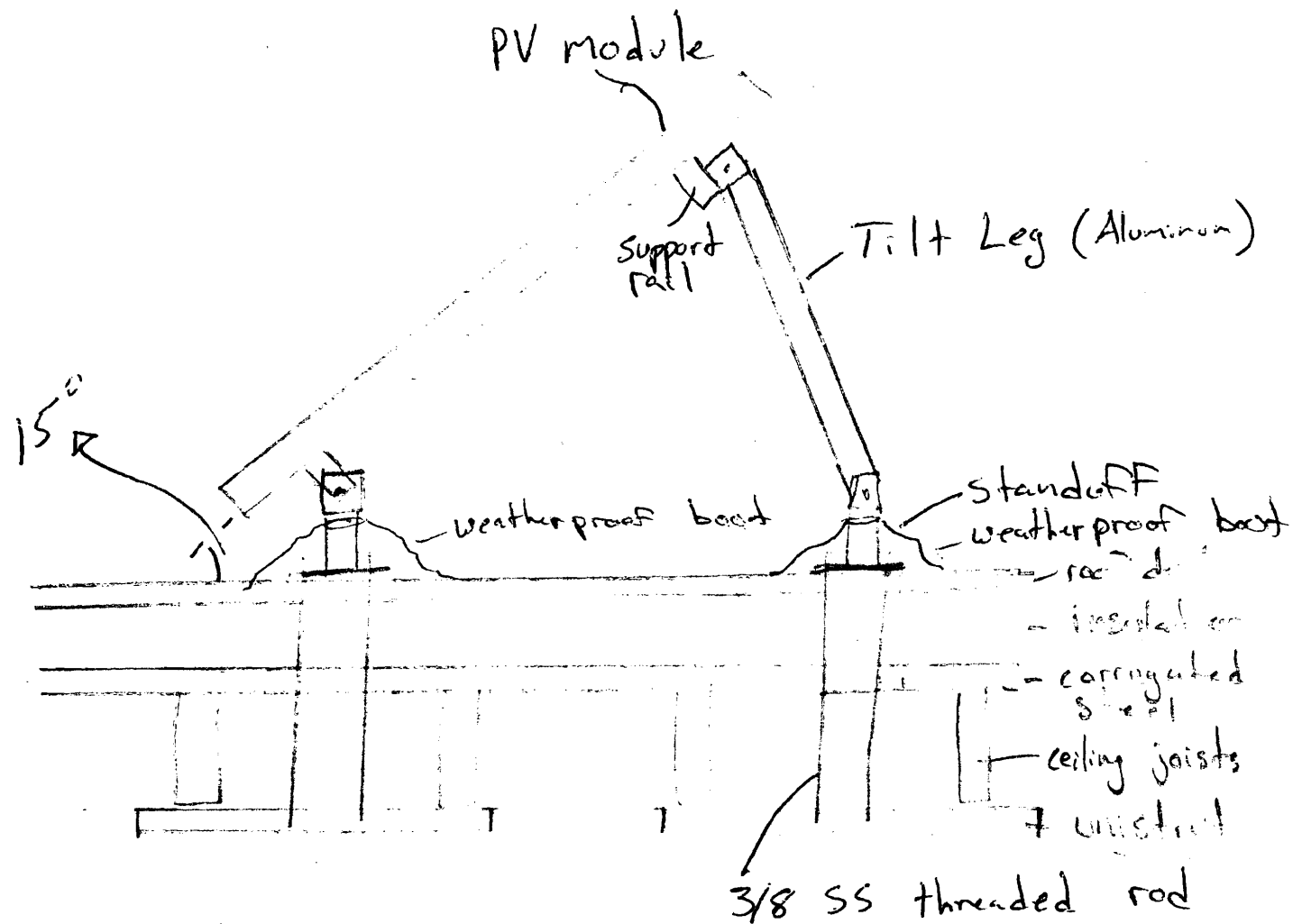
Solar Thermal collectors
for Geo Dome

9 PV Module Awning Mount

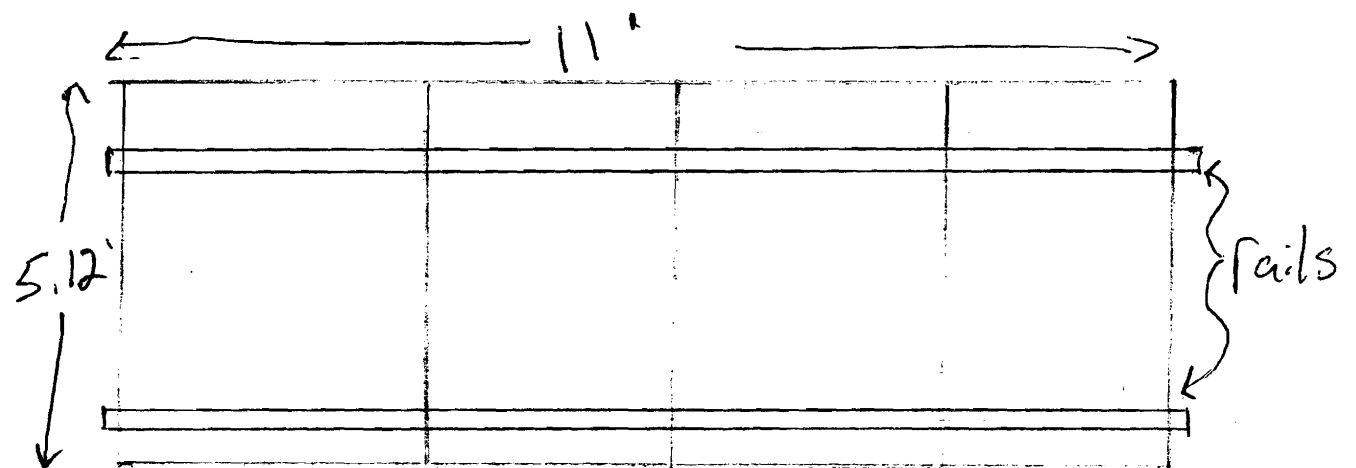
Lincoln Middle School Rooftop Array (total of 12 Modules)

- 3 groups of four on flat roof

Total weight of array = 511 lbs or 3.1 psf max

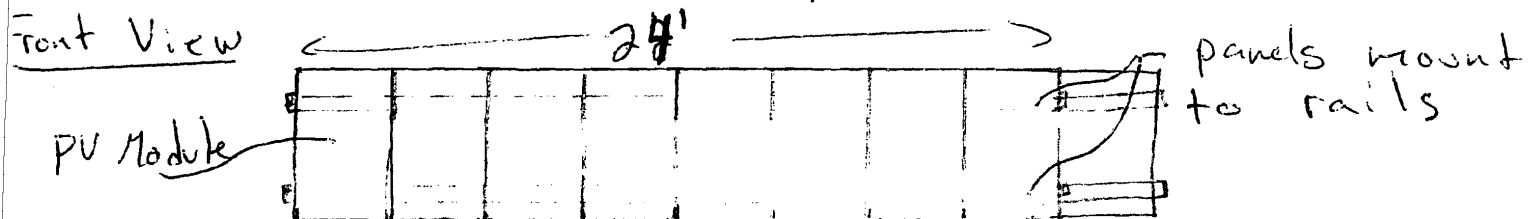


Panel Face View



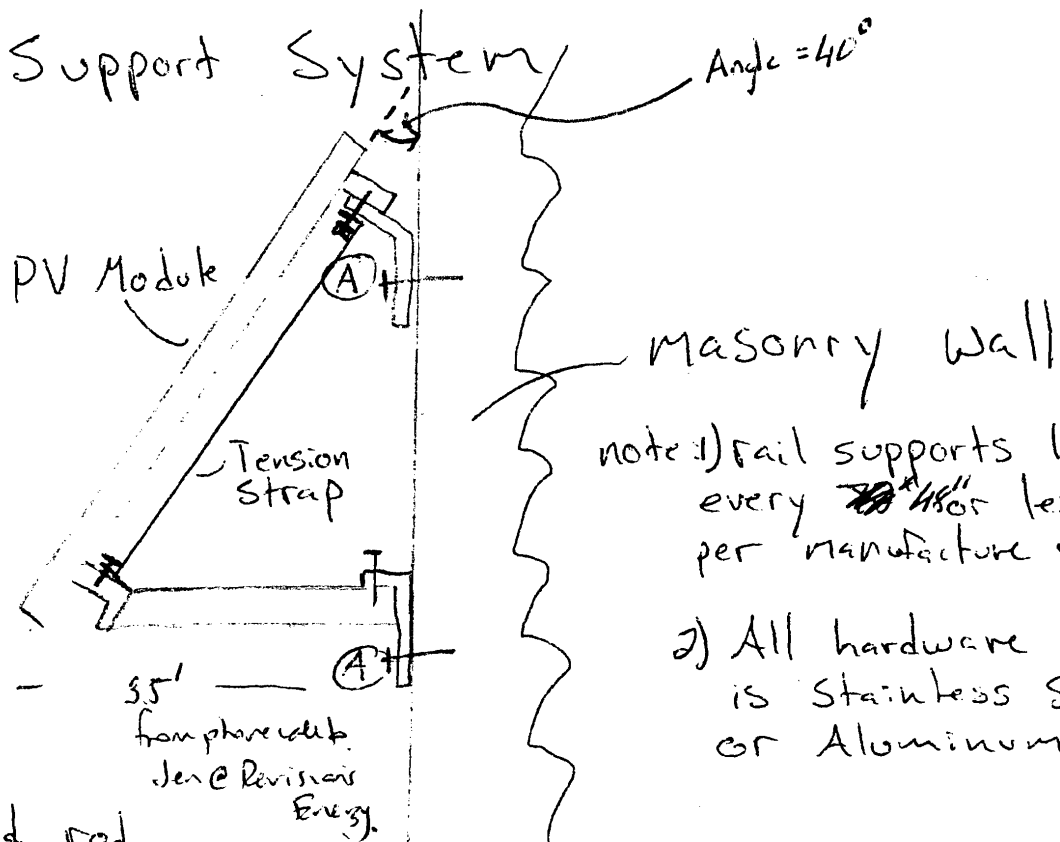
Lincoln Middle School wall mounted array

9 ~~6~~ module Awning Style Photo-voltaic array



Side View

Rail Support System



note: 1) Rail supports located every ~~20"~~ 48" or less per manufacture specs.

2) All hardware is Stainless Steel or Aluminum

Ⓐ 3/8 SS Threaded rod attached to a Lead anchor inside Masonry wall or using epoxy fastener such as Hilti Hy-120 or Powers AC-100 with 6" embedment.

Wind Load Calculations for Lincoln Middle School

Vse 6.5.13

$$P = q_h G C_u$$

$$q_h = .00256 k_z k_{zt} k_d V^2 I$$

$$k_z = .81$$

$$k_{zt} = 1$$

$$k_d = .85$$

$$V = 100 \text{ mph}$$

$$I = .87$$

(See table 6-3 exposure Cat B)
 $h_z = 50'$

$$q_h = .0019 k_z V^2$$

$$G = .85$$

~~15°~~
15°

$$C_u = 1.1$$

$$C_A = 1.415$$

$$P_{up/down} = .0019 k_z V^2 G C_u$$
$$P_{up/down} = .0019 (.81) \cdot 100^2 (.85) \cdot (-1.1) = -14.4 \text{ psf}$$

$$P_{down} = .0019 (.81) \cdot 100^2 (.85) (1.415) = +18.97 \text{ psf}$$



DESIGN, INSTALLATION AND SERVICE OF RENEWABLE AND EFFICIENT ENERGY SYSTEMS

March 03, 2008

Fortunat Mueller
ReVision Energy
109 Fox St
Portland, ME 04101

To whom it may concern,

I have reviewed the attached installation sketches and notes and find them to be adequate. The additional weight of the PV array on the roof is less than 3 psf and the existing roof structure is adequate to support this additional load.

Respectfully,

Fortunat Mueller
ME PE # 11246



Certificate of Design

Date: 1/30/08

From: Energyworks LLC / Revision Energy LLC

These plans and / or specifications covering construction work on:

Lincoln Middle School 522 Stevens Avenue, 04103

Have been designed and drawn up by the undersigned, a Maine registered Architect / Engineer according to the *2003 International Building Code* and local amendments.

Signature: 

Title: Principal

Firm: Revision Energy

Address: 109 Fox St

Portland, ME 04101

Phone: 207-221-6342

(SEAL)

For more information or to download this form and other permit applications visit the Inspections Division on our website at www.portlandmaine.gov



Certificate of Design Application

From Designer: Revision Engr
 Date: 1/30/08
 Job Name: Lincoln Middle School
 Address of Construction: 522 Stevens Ave PORTLAND, ME 04103

2003 International Building Code

Construction project was designed to the building code criteria listed below:

Building Code & Year _____ Use Group Classification (s) _____

Type of Construction _____

Is there a Fire suppression system in Accordance with Section 903.3.1 of the 2003 IBC? _____ Supervisory alarm system? _____

Is the Structure mixed use? NO If yes, separated or non separated or non separated (section 302.3) _____

Geotechnical/Soils report required? (See Section 1802.2) NO

Structural Design Calculations

_____ Submitted for all structural members (106.1 – 106.11)

Design Loads on Construction Documents (1603)

Uniformly distributed floor live loads (7603.11, 1807)

Floor Area Use	Loads Shown
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Wind loads (1603.1.4, 1609)

_____ Design option utilized (1609.1.1, 1609.6)
 _____ Basic wind speed (1809.3)
 _____ Building category and wind importance Factor, w
table 1604.5, 1609.5)
 _____ Wind exposure category (1609.4)
 _____ Internal pressure coefficient (ASCE 7)
 _____ Component and cladding pressures (1609.1.1, 1609.6.2.2)
 _____ Main force wind pressures (7603.1.1, 1609.6.2.1)

Earth design data (1603.1.5, 1614-1623)

_____ Design option utilized (1614.1)
 _____ Seismic use group ("Category")
 _____ Spectral response coefficients, S_D s & S_1 (1615.1)
 _____ Site class (1615.1.5)

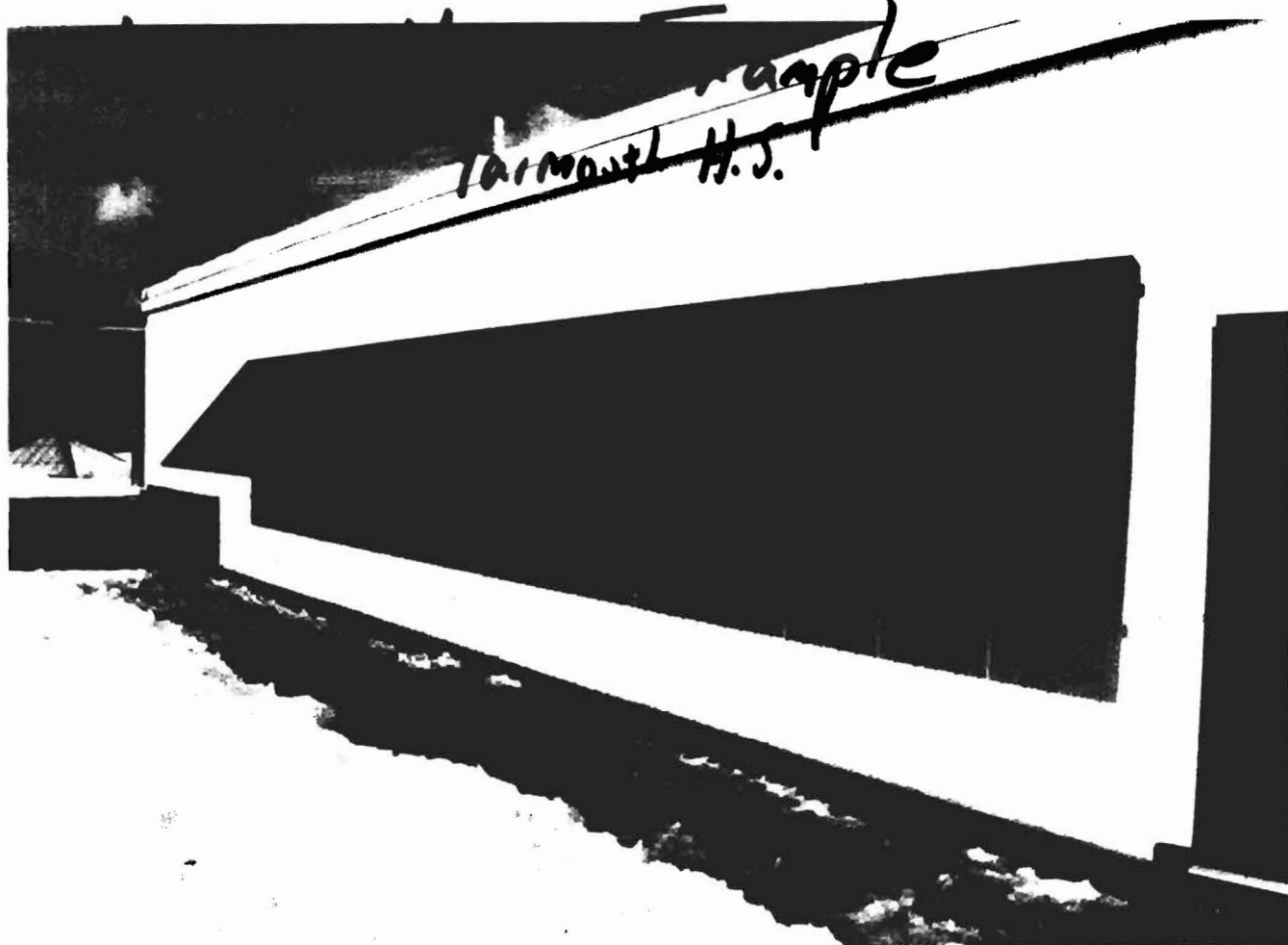
_____ Live load reduction
 _____ Roof *live* loads (1603.1.2, 1607.11)
 _____ Roof snow loads (1603.7.3, 1608)
 _____ Ground snow load, P_g (1608.2)
 _____ If $P_g > 10$ psf, flat-roof snow load P_f
 _____ If $P_g > 10$ psf, snow exposure factor, C_e
 _____ If $P_g > 10$ psf, snow load importance factor, I_s
 _____ Roof thermal factor, C_t (1608.4)
 _____ Sloped roof snowload, P_s (1608.4)
 _____ Seismic design category (1616.3)
 _____ Basic seismic force resisting system (1617.6.2)
 _____ Response modification coefficient, R_f and
 deflection amplification factor C_d (1617.6.2)
 _____ Analysis procedure (1616.6, 1617.5)
 _____ Design base shear (1617.4, 16175.5.1)

Flood loads (1803.1.6, 1612)

_____ Flood Hazard area (1612.3)
 _____ Elevation of structure

Other loads

_____ Concentrated loads (1607.4)
 _____ Partition loads (1607.5)
 _____ Misc. loads (Table 1607.8, 1607.6.1, 1607.7,
 1607.12, 1607.13, 1610, 1611, 2404)



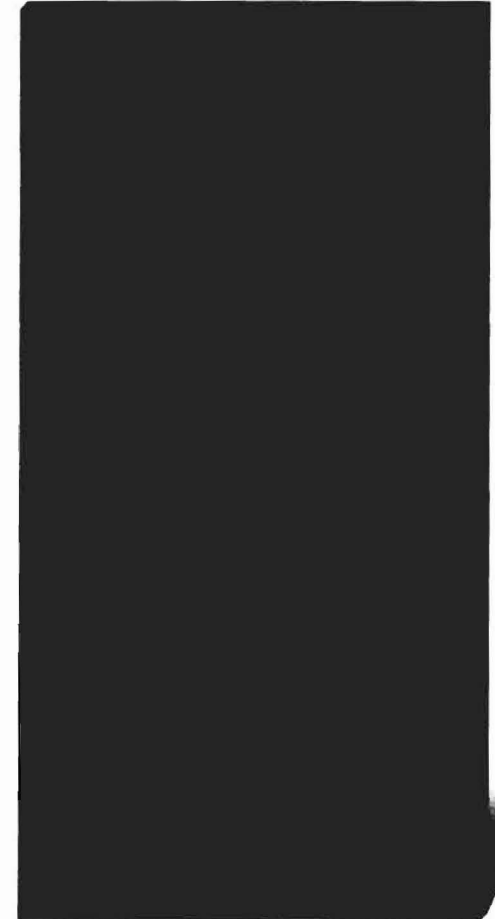
SPR-205-BLK RESIDENTIAL PV MODULE

The SunPower SPR-205-BLK is designed specifically for on-grid residential systems where a combination of high module efficiency and outstanding appearance is desirable. Utilizing 72 series-connected A-300 solar cells, the SPR-205-BLK delivers industry-leading power density in a unique all-black module package with exceptionally uniform appearance.


SunPower modules—innovative design, proven materials, outstanding performance.


FEATURES & BENEFITS

- All-black module package eliminates harsh reflections and other noticeable cosmetic module features to provide optimum array appearance
- Unique all-back contact solar cells with conversion efficiency up to 21.5%
- Low voltage temperature coefficient, exceptional low-light performance, and high sensitivity to light across the entire solar spectrum maximize yearly energy delivery
- Highest quality, high-transmission tempered glass provides enhanced stiffness and impact resistance
- Aerospace style cell interconnects with in-plane strain relief provide extremely high reliability
- Advanced EVA encapsulation system with multi-layer backsheets meets the most stringent safety requirements for high-voltage operation
- A sturdy, black anodized aluminum frame allows modules to be easily roof-mounted with a wide variety of standard mounting systems



SPR-205-BLK RESIDENTIAL PV MODULE
An unequalled combination of power and grace

 LISTED UL 1703, Class C Fire Rating

 IEC 61215, Safety Class II Certified

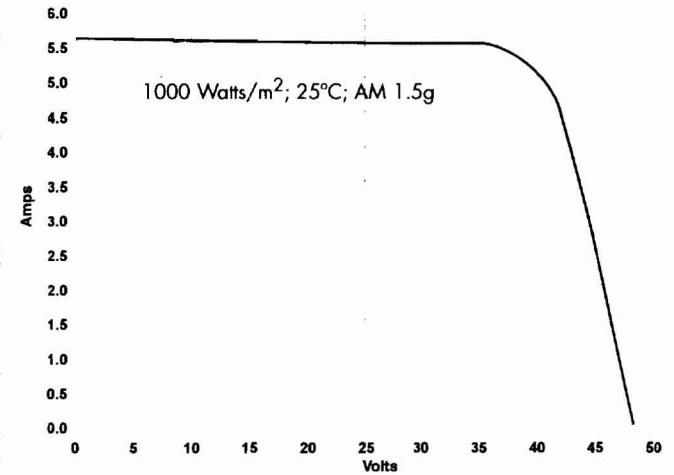
SPR-205-BLK RESIDENTIAL PV MODULE

ELECTRICAL CHARACTERISTICS AT STANDARD TEST CONDITIONS (STC)

STC is defined as: irradiance of 1000W/m², spectrum AM 1.5g and cell temperature of 25°C

Peak Power ^{1,2}	P _{max}	205W
Rated Voltage	V _{mp}	40.0V
Rated Current	I _{mp}	5.13A
Open Circuit Voltage	V _{oc}	47.8V
Short Circuit Current	I _{sc}	5.53A
Series Fuse Rating		15A
Maximum System Voltage		600V (UL) 1000V (IEC)
Temperature Co-efficients	Power	-0.38%/°C
	Voltage	-136.8mV/°C
	Current	2.3mA/°C
Module Efficiency		16.5%
Peak Power per Unit Area		15.3W/sq.ft. ; 165W/m ²
PTC Rating		189W

IV CURVE



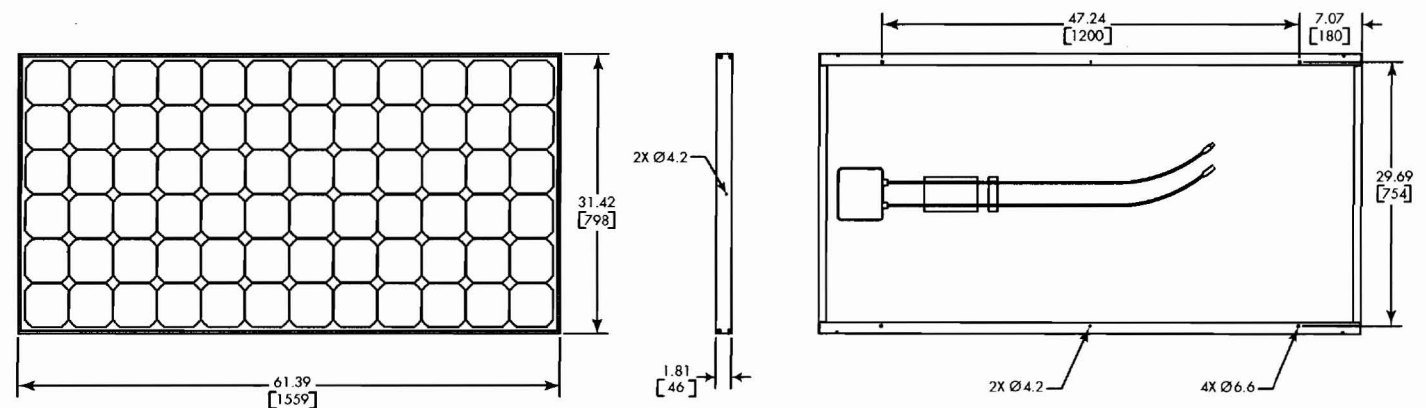
¹ Peak Power Tolerance: +/- 5%

² Power guaranteed for 25 years. See SunPower Limited Warranty for details.

MECHANICAL SPECIFICATIONS

Length	61.39 in x 31.42 in [1559 mm x 798mm]
Thickness, including junction box	1.81 in [46 mm]
Weight	33 lbs [15 kg]

DIMENSIONS



© December 2006 SunPower Corporation. All rights reserved. Specifications included in this datasheet are subject to change without notice.

Document# 001-12153 Rev **



THE STANDARD IN PV MOUNTING STRUCTURES™

PV's Most Versatile Mounting System



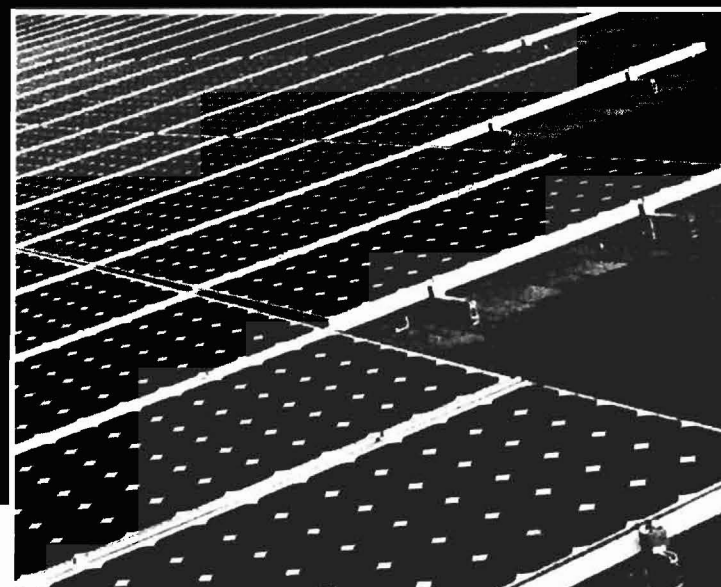
Flush Mount



Low Profile



High Profile



www.unirac.com

SolarMount is much more than a product.

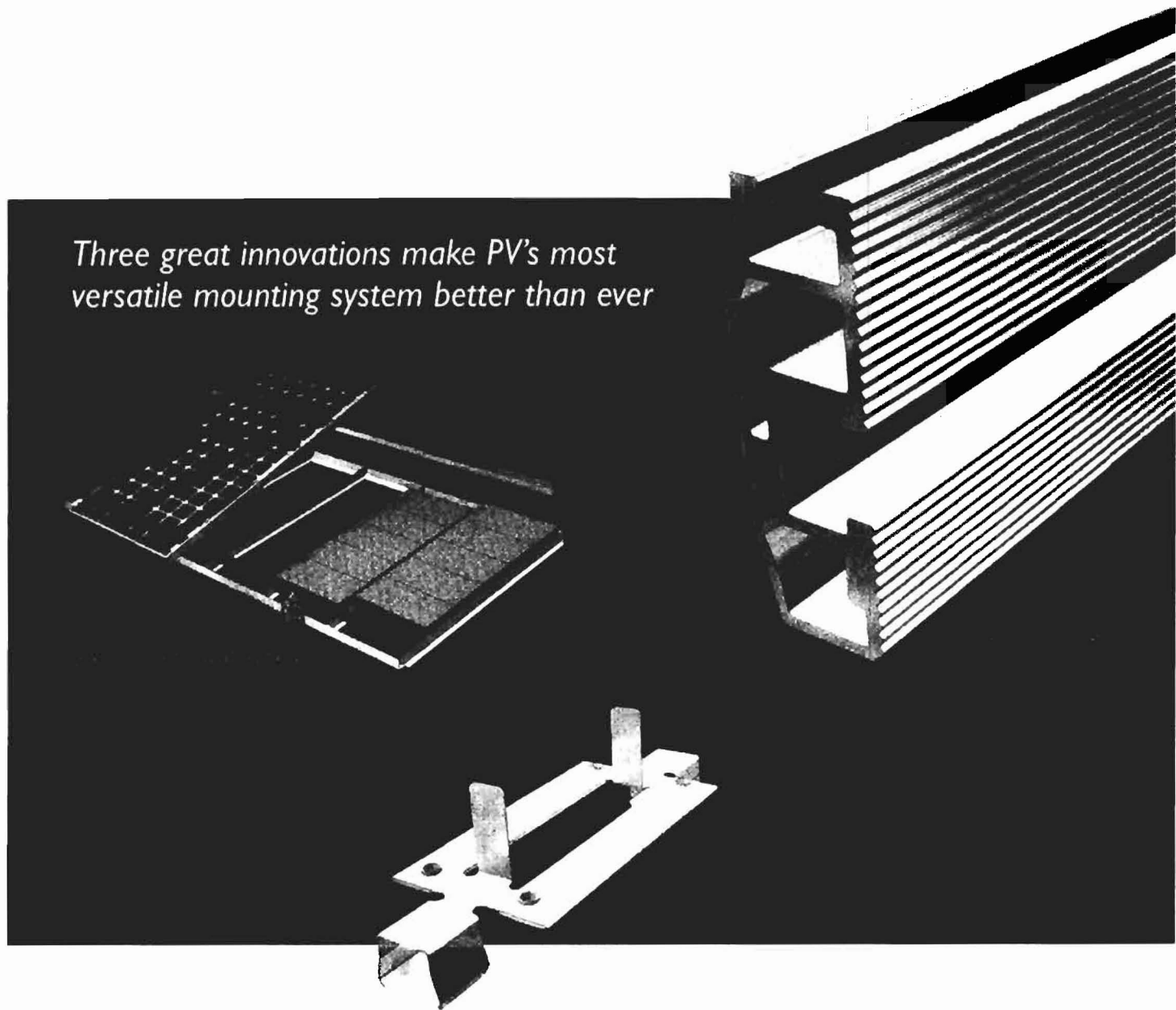
It's a system of engineered components that can be assembled into a wide variety of PV mounting structures. With SolarMount you'll be able to solve virtually any PV module mounting challenge.

It's also a system of technical support: complete installation and code compliance documentation, an on-line SolarMount Estimator, person-to-person customer service, and design assistance to help you solve the toughest challenges.

Which is why SolarMount is PV's most widely used mounting system.

U.S. Des. Patent Nos. D496,248S, D496,249S. Other patents pending.

Three great innovations make PV's most versatile mounting system better than ever



UniRac Grounding Clip

Save time and materials by eliminating the need to tediously install a grounding lug on each module and bare copper wire between all modules. Instead, simply press one of these clips into the top slot of the SolarMount rail at the end of the row and between each pair of modules as they are installed. Align and fasten the modules with SolarMount top mounting clamps in the usual manner. The nibs of the UniRac Grounding Clip pierce the anodizing as the mounting nuts are tightened, thus creating a ground path through the SolarMount rail. Complete the installation by installing one grounding lug at the end of the SolarMount rail. Connect the lugs with a bare copper wire to ground the entire array.

SolarMount[®] Light

Lower-cost SolarMount Light rail employs 38 percent less aluminum than standard rail, yet it's more than strong enough for flush applications. Use the same installer-friendly top mounting clamps and footing components that work with SolarMount standard rail.

SolarMount[®] Ballast Frame

The SolarMount system is more flexible than ever with the introduction of a ballast frame, in most cases requiring no penetrations whatsoever. Learn more from our data sheet **SolarMount Modular PV Ballast Frame**, which you can download at www.unirac.com.



SOLARMOUNT®

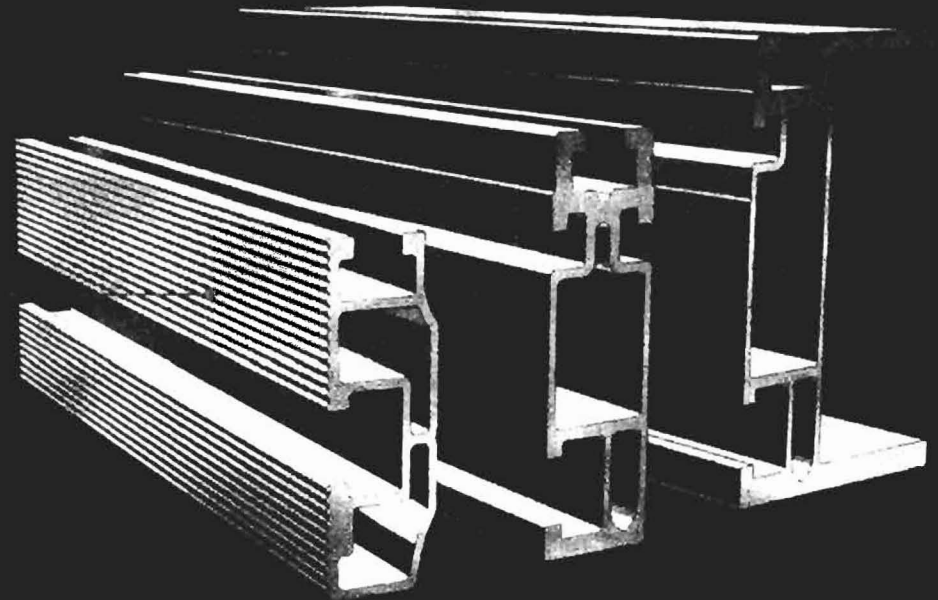
PV's most versatile mounting system

SolarMount® Rail Options

HD (heavy duty) rail adds the SolarMount advantage to PV PoleTops®, U-LAs (see separate data sheets), and custom applications that require long spans.

Standard rail gives you ultimate flexibility, including bottom mounting and tilt-up options.

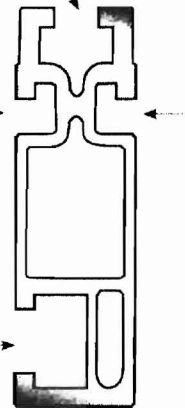
In flush mounted arrays, easy handling SolarMount® Light rail saves aluminum and expense without compromising structural integrity.



Top mounting and grounding slots

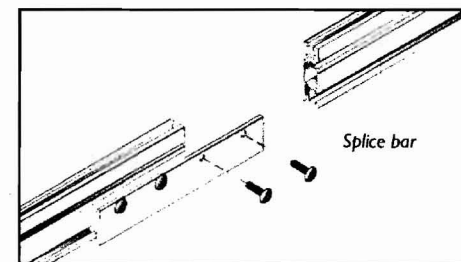
Bottom mounting slots

Footing and splicing slots

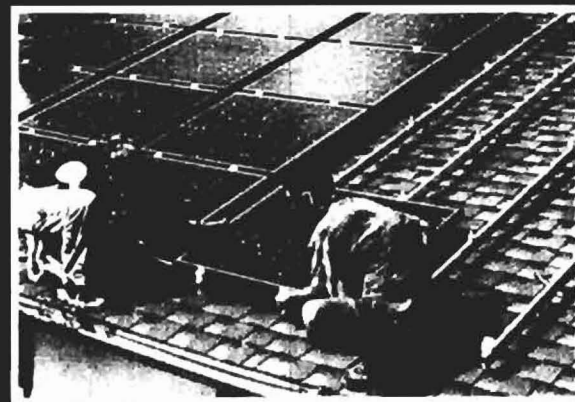


Splice Bars

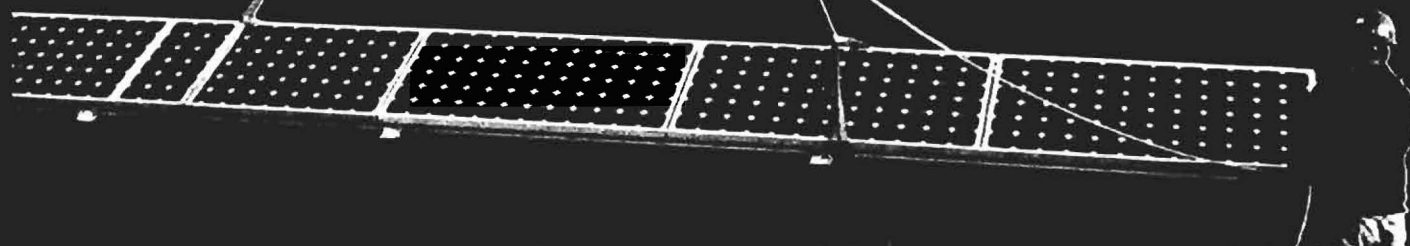
In flush and low profile installations, securely join SolarMount® rail sections using rail footing slots.



Module Mounting



Top mounting: Attach modules one-by-one to installed rails.



■ Bottom mounting: Preassemble full rows before final installation (standard and HD rail only).

Top Mounting Clamps

SolarMount T-bolts quickly mount your modules to any SolarMount rail from the top. This is ideal for flush mount applications, such as residential rooftops, where it is most convenient to secure footings and rails before installing modules. Clamps securely grip any point of the module frame, freeing you from the constraints of module mounting holes.



T-bolt

Bottom Mounting Clips

Use bottom mounting clips (standard and HD rail only) whenever you prefer to attach rails directly to the module mounting holes. Simply fit the clip into its rail slot over the mounting bolt for a secure connection. Adjust the clip position anywhere along the rail slot. Alignment of rails to module mounting holes is always easy and convenient.



Junction Plates

In shared-rail configurations (standard and HD rail only), attach modules with four-slot junction plates. North-south slots secure the rail to the plates. East-west slots secure a module on each side of the rail.

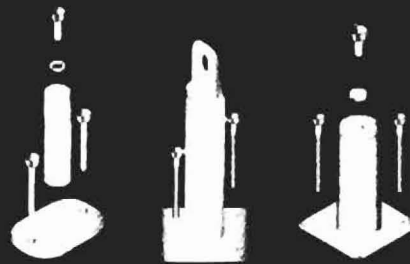


System Footing

Secure footings bolt quickly and easily to footing bolt slots in any SolarMount® rail.

Use standoffs whenever flashed installations are required, on tile roofs, for example. Two-piece aluminum standoffs allow precise placement of a flashing over a secured base prior to the installation of the standoff itself.

All standoff types come in four standard heights: 3, 4, 6, and 7 inches. Appropriate flashings are available.



Two-piece aluminum flat top

Steel raised flange

Steel flat top

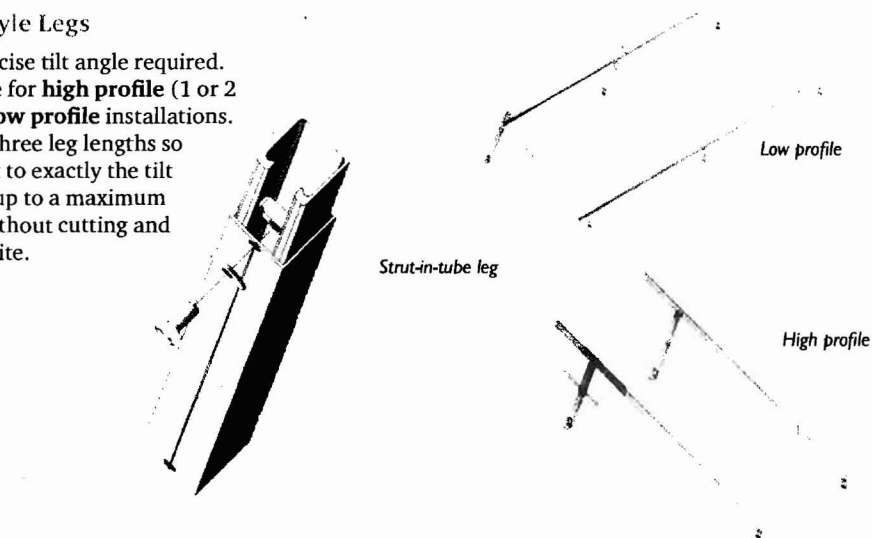
Standard for ground mount installations, L-foot mount rails to residential and commercial rooftops as well. Use them alone above asphalt composition shingles or in conjunction with flat top standoffs. Rail mounting holes are at two heights. In flush mounts, use the upper hole to raise the modules and promote air flow for cooling. Where aesthetics are the greater concern, use the lower hole to keep the modules close to the roof.



L-foot

Strut-in-Tube Style Legs

Quickly set the precise tilt angle required. Styles are available for **high profile** (1 or 2 legs per rail) and **low profile** installations. Each series offers three leg lengths so that you can adjust to exactly the tilt angle you want—up to a maximum of 60 degrees—without cutting and drilling at the job site.



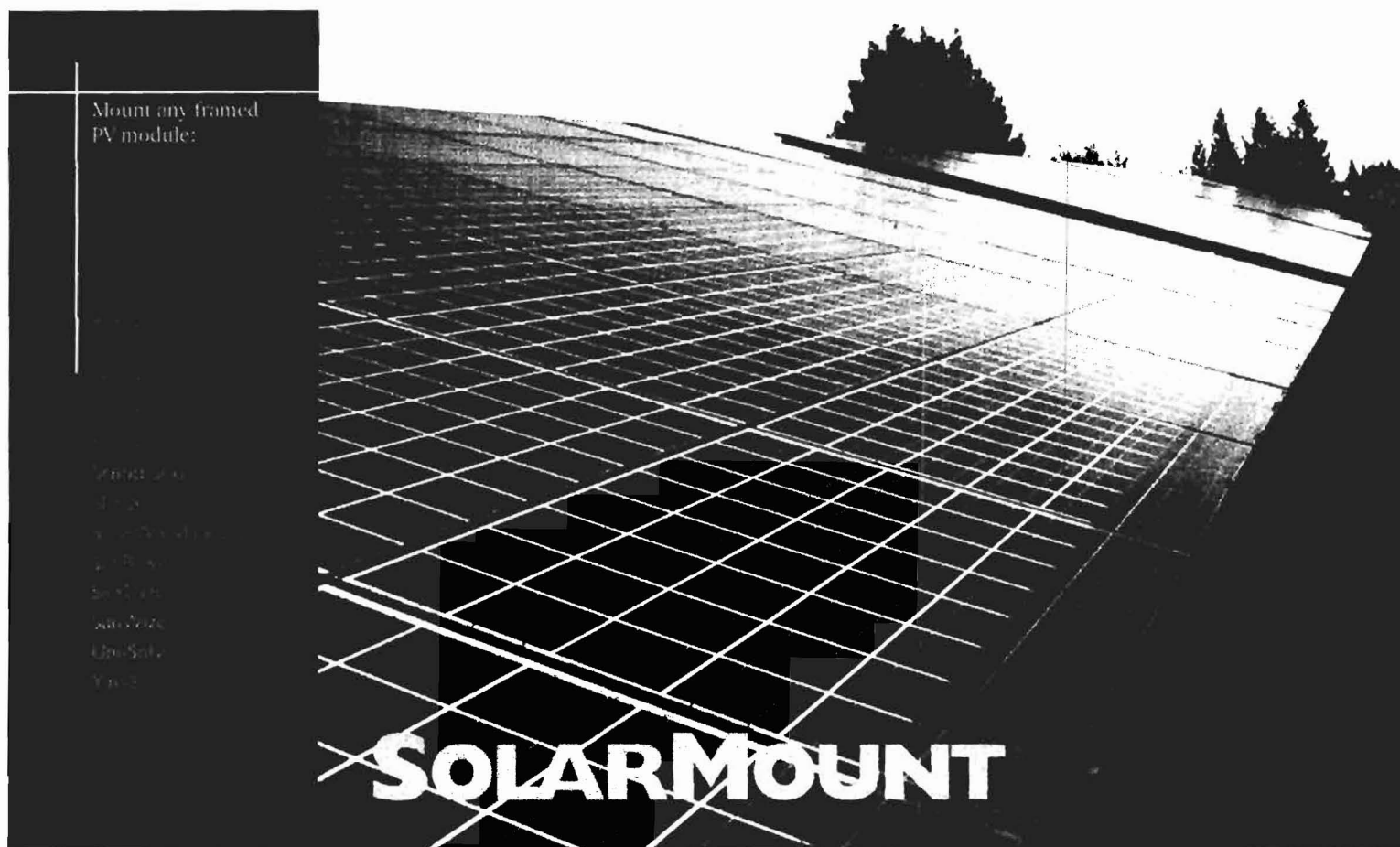
Strut-in-tube leg

Low profile

High profile

Start at www.unirac.com

Download our **SolarMount® Master Price List with Sizing Charts** and installation manuals. Generate quick price estimates with our on-line **SolarMount® Estimator**.



Mount any framed
PV module:

6061-T6
6105-T5
6063-T5
6105-T5
6063-T5
6105-T5
6063-T5
6105-T5
6063-T5
6105-T5
6063-T5

SOLARMOUNT

Code Compliant

The SolarMount® system is PE certified. Call UniRac for documentation applicable to your building code.

Component Specifications

6061-T6 and 6063-T5

- SolarMount ballast frame

6105-T5 aluminum extrusion

- SolarMount® rails
- Mounting clips and clamps
- Tilt legs and L-feet
- two-piece standoffs

Severe Condition 4 (very severe) zinc-plated welded steel

- One-piece standoffs

18-8 stainless steel

- Fasteners

Warranty

SolarMount® is covered by a 10-year limited product warranty and a 5-year limited finish warranty. For complete warranties, download any SolarMount® installation manual from our web site.



THE STANDARD IN PV MOUNTING STRUCTURES™
1411 Broadway NE, Albuquerque NM 87102-1545 USA

Pub 060901-1ds • October 2006
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APPLICATION FOR EXEMPTION FROM SITE PLAN REVIEW

ED# 2008 0025

Revision Exemption
Applicant

2/14/08
Application Date

100 Forest Belle Ave. Unit 101
Applicant's Mailing Address

100 Forest Belle Ave. Unit 101
Project Name/Description

Jan 2008 1012
Consultant/Agent/Phone Number

100 Forest Belle Ave. Unit 101
Address of Proposed Site

CBL: 100-5-02

Description of Proposed Development:

rebuild existing structure, all data removed, new structure with
new utility lines, new driveway, new sidewalk, new porch, new
100 Forest Belle Ave.

Please Attach Sketch/Plan of Proposal/Development

Criteria for Exemptions:
See Section 14-523 (4) on back side of form

- a) Within Existing Structures; No New Buildings, Demolitions or Additions
- b) Footprint Increase Less Than 500 Sq. Ft.
- c) No New Curb Cuts, Driveways, Parking Areas
- d) Curbs and Sidewalks in Sound Condition/Comply with ADA
- e) No Additional Parking/ No Traffic Increase
- f) No Stormwater Problems
- g) Sufficient Property Screening
- h) Adequate Utilities

Applicant's Assessment (Yes, No, N/A)	Planning Office Use Only
	<u>points on case of school</u>
	<u>yes</u>
	<u>✓</u>
	<u>✓</u>
	<u>✓</u>
	<u>✓</u>
	<u>✓</u>
	<u>✓</u>
	<u>✓</u>



General 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>LINCOLN MIDDLE SCHOOL</u> <u>522 STEVENS AVE PORTLAND, 04103</u>		
Total Square Footage of Proposed Structure/Area		Square Footage of Lot
Tax Assessor's Chart, Block & Lot Chart# Block# Lot# <u>135 E 7</u>	Applicant * must be owner, Lessee or Buyer * Name <u>Revision Energy</u> Address <u>109 Fox St</u> City, State & Zip <u>Portland, ME 04101</u>	Telephone: <u>221.6342</u>
Lessee/DBA (If Applicable)	Owner (if different from Applicant) Name <u>Lincoln Middle School</u> Address <u>522 Stevens Ave</u> City, State & Zip <u>Portland, ME 04103</u>	Cost Of Work: \$ <u>46,500.00</u> C of O Fee: \$ _____ Total Fee: \$ <u>490.00</u>
Current legal use (i.e. single family) <u>school</u> If vacant, what was the previous use? _____ Proposed Specific use: _____ Is property part of a subdivision? _____ If yes, please name _____ Project description: <u>installing solar electric panels on the roof of the building and on south wall of library.</u>		
Contractor's name: <u>REVISION ENERGY LLC</u> Address: <u>109 Fox Street</u> City, State & Zip <u>Portland, ME 04101</u> Telephone: <u>221.6342</u> Who should we contact when the permit is ready: <u>Jen</u> Telephone: _____ Mailing address: <u>same as above</u>		

Please submit all of the information outlined on the applicable Checklist. Failure to do so will result in the automatic denial of your permit.

30 15 + \$1000
10 each \$1,000

In order to be sure the City fully understands the full scope of the project, the Planning and Development Department may request additional information prior to the issuance of a permit. For further information or to download copies of this form and other applications visit the Inspections Division on-line at www.portlandmaine.gov, or stop by the Inspections Division office, room 315 City Hall or call 874-8703.

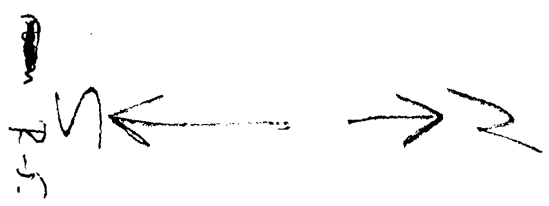
I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, 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: [Signature]

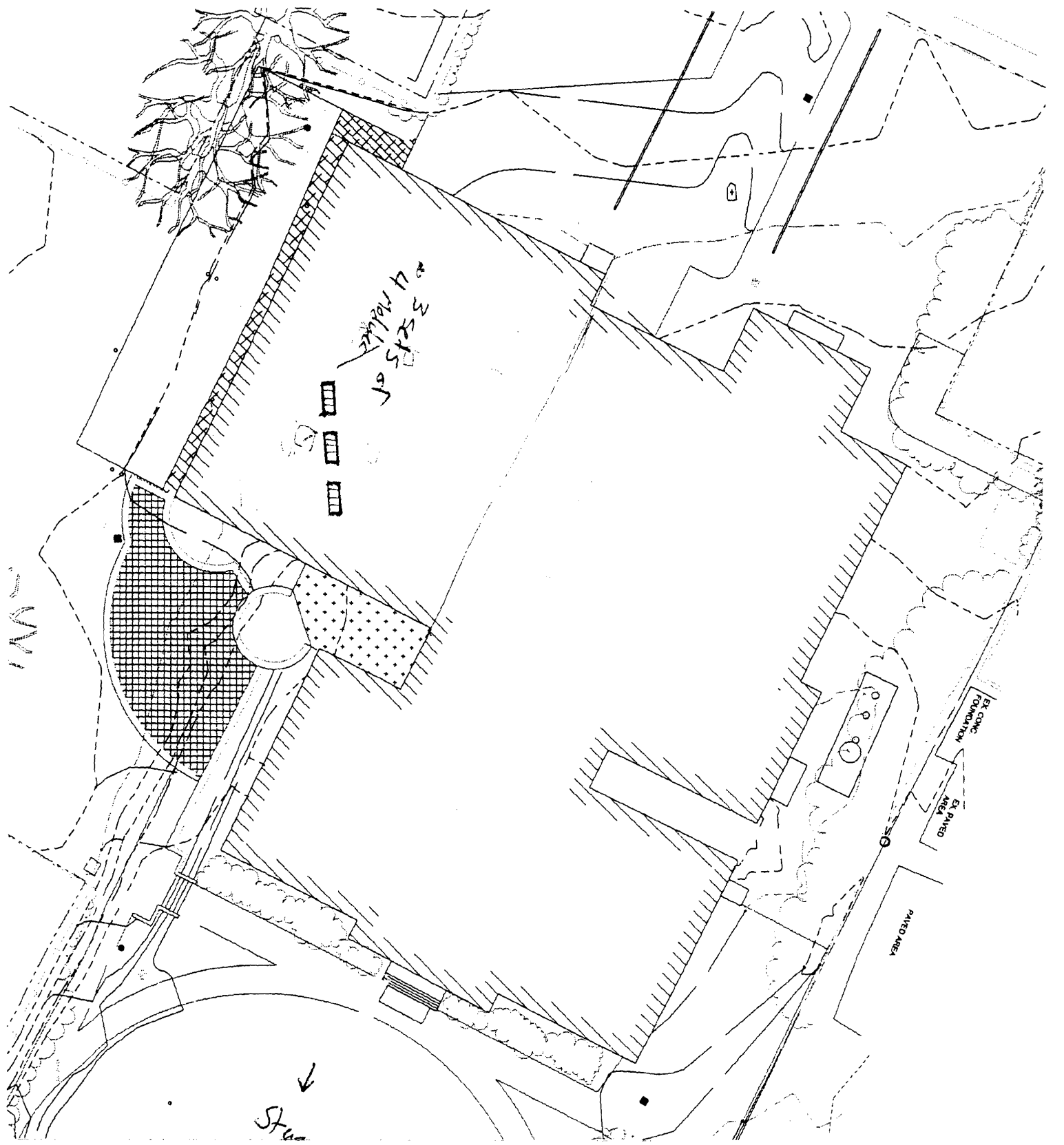
Date: 2/8/08

This is not a permit; you may not commence ANY work until the permit is issued.

front door way
row 30
side 2 1/2, bottom 14'
lot coverage - 40%

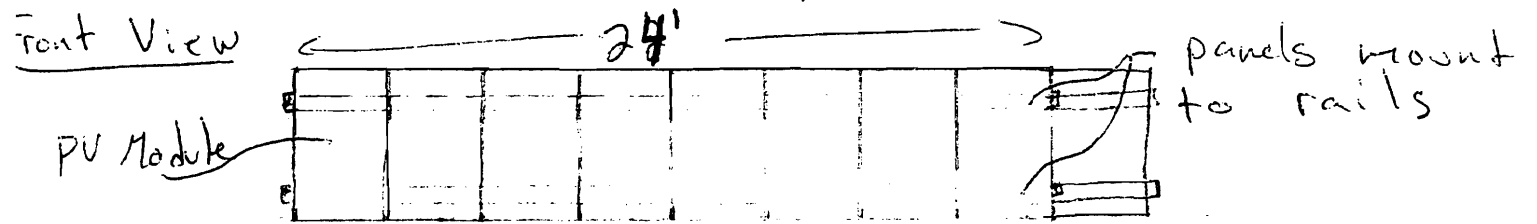


LeLand
↑



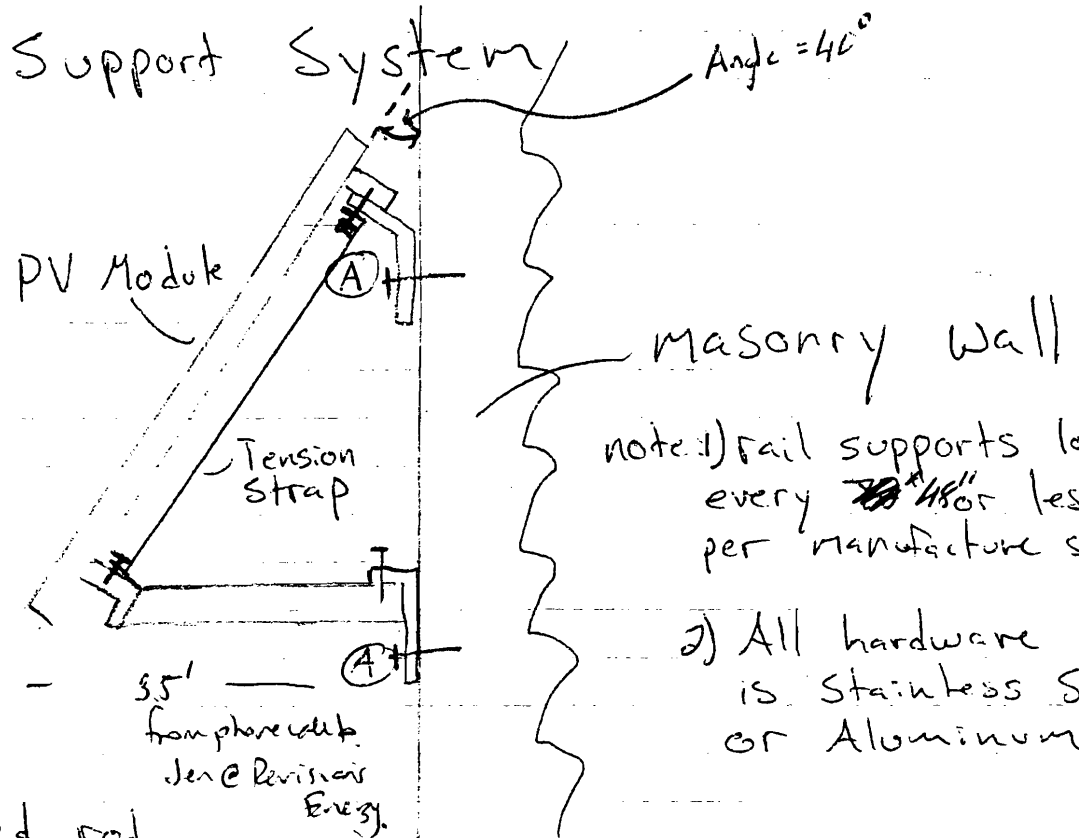
Lincoln Middle School wall mounted array

9 ~~6~~ module Awning Style Photo-voltaic array



Side View

Rail Support System

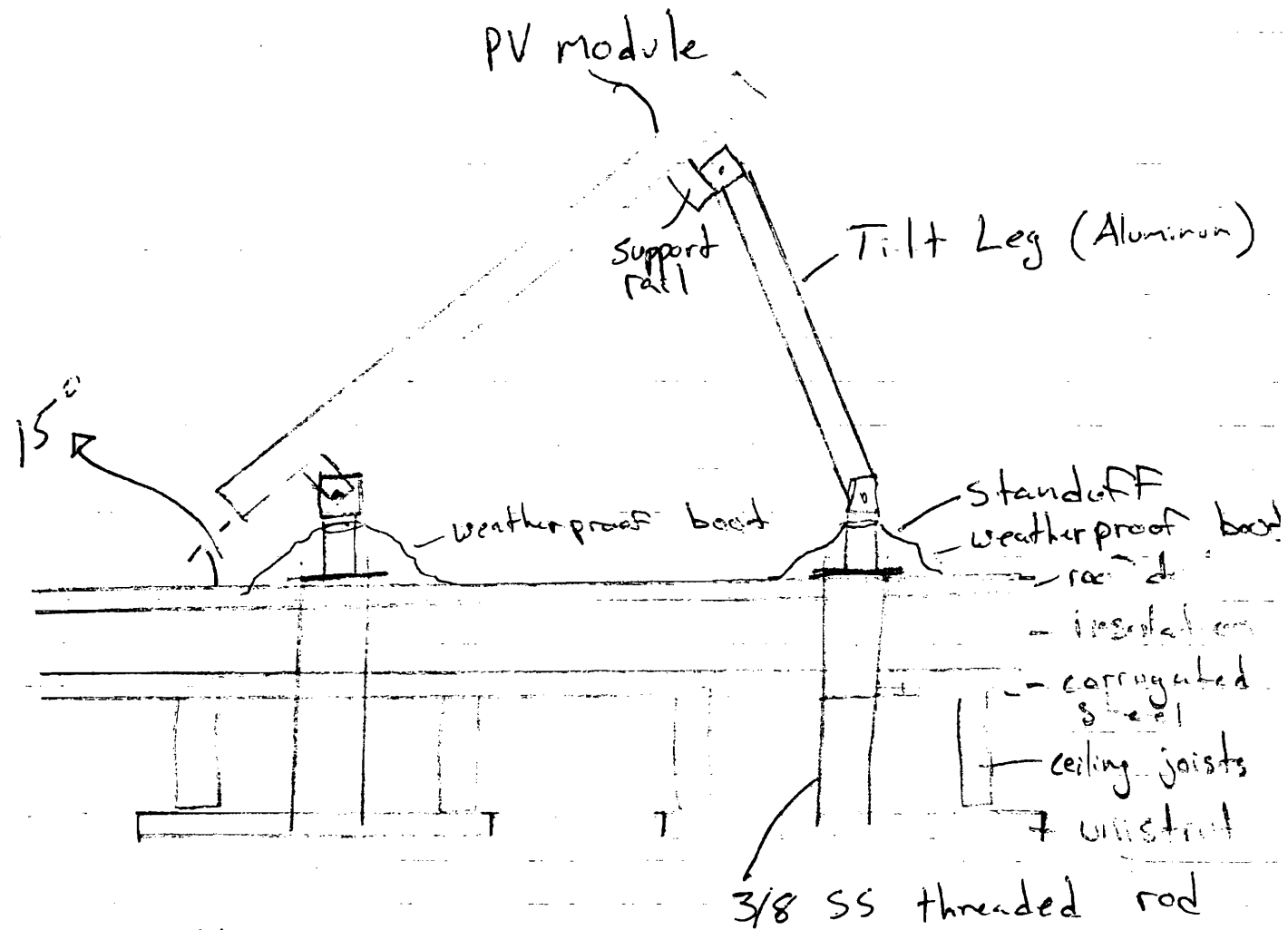


- Ⓐ 3/8 SS Threaded rod attached to a Lead anchor inside Masonry wall or using epoxy fastener such as Hilti Hy-120 or Powers AC-100 with 6" embedment.

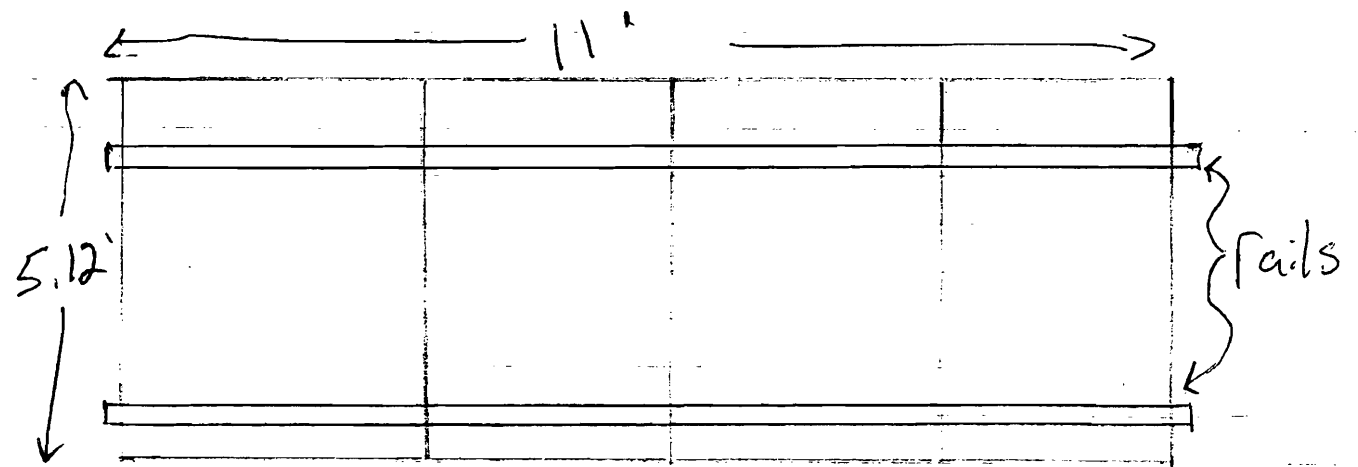
Lincoln Middle School Rooftop Array (total of 12 Modules)

- 3 groups of four on flat roof

Total weight of array = 511 lbs or 3.1 psf max



Panel Face View





DESIGN, INSTALLATION AND SERVICE OF RENEWABLE AND EFFICIENT ENERGY SYSTEMS

March 03, 2008

Fortunat Mueller
ReVision Energy
109 Fox St
Portland, ME 04101

To whom it may concern,

I have reviewed the attached installation sketches and notes and find them to be adequate. The additional weight of the PV array on the roof is less than 3 psf and the existing roof structure is adequate to support this additional load.

Respectfully,

A handwritten signature in black ink, appearing to read 'Fortunat Mueller', is written over a light gray horizontal line.

Fortunat Mueller
ME PE # 11246



Certificate of Design

Date: 1/30/08

From: Energyworks LLC / Revision Energy LLC

These plans and / or specifications covering construction work on:

Lincoln Middle School 522 Stevens Avenue, 04103

Have been designed and drawn up by the undersigned, a Maine registered Architect / Engineer according to the *2003 International Building Code* and local amendments.

Signature: 

Title: Principal

Firm: Revision Energy

Address: 109 Fox St

Portland, ME 04101

Phone: 207.221.6342

(SEAL)

For more information or to download this form and other permit applications visit the Inspections Division on our website at www.portlandmaine.gov



Certificate of Design Application

From Designer:

Revision Engr

Date:

1/30/08

Job Name:

Lincoln Middle School

Address of Construction:

522 Stevens Ave PORTLAND, ME 04103

2003 International Building Code

Construction project was designed to the building code criteria listed below:

Building Code & Year _____ Use Group Classification (s) _____

Type of Construction _____

~~Is there a fire suppression system in accordance with Section 903.2 of the 2003 IBC? _____ Supervision: _____~~

Is the Structure mixed use? NO If yes, separated or non separated or non separated (section 302.3) _____

Geotechnical/Soils report required? (See Section 1802.2) NO

Structural Design Calculations

_____ Submitted for all structural members (106.1 – 106.11)

Design Loads on Construction Documents (1603)

Uniformly distributed floor live loads (7603.11, 1807)

Floor Area Use	Loads Shown
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Wind loads (1603.1.4, 1609)

_____ Design option utilized (1609.1.1, 1609.6)

_____ Basic wind speed (1809.3)

_____ Building category and wind importance Factor, I_w
table 1604.5, 1609.5)

_____ Wind exposure category (1609.4)

_____ Internal pressure coefficient (ASCE 7)

_____ Component and cladding pressures (1609.1.1, 1609.6.2.2)

_____ Main force wind pressures (7603.1.1, 1609.6.2.1)

Earth design data (1603.1.5, 1614-1623)

_____ Design option utilized (1614.1)

_____ Seismic use group ("Category")

_____ Spectral response coefficients, SDs & SD1 (1615.1)

_____ Site class (1615.1.5)

_____ Live load reduction

_____ Roof *live* loads (1603.1.2, 1607.11)

_____ Roof snow loads (1603.7.3, 1608)

_____ Ground snow load, P_g (1608.2)

_____ If $P_g > 10$ psf, flat-roof snow load P_f

_____ If $P_g > 10$ psf, snow exposure factor, C_e

_____ If $P_g > 10$ psf, snow load importance factor, I_s

_____ Roof thermal factor, C_t (1608.4)

_____ Sloped roof snowload, P_s (1608.4)

_____ Seismic design category (1616.3)

_____ Basic seismic force resisting system (1617.6.2)

_____ Response modification coefficient, R_d and

deflection amplification factor C_d (1617.6.2)

_____ Analysis procedure (1616.6, 1617.5)

_____ Design base shear (1617.4, 16175.5.1)

Flood loads (1803.1.6, 1612)

_____ Flood Hazard area (1612.3)

_____ Elevation of structure

Other loads

_____ Concentrated loads (1607.4)

_____ Partition loads (1607.5)

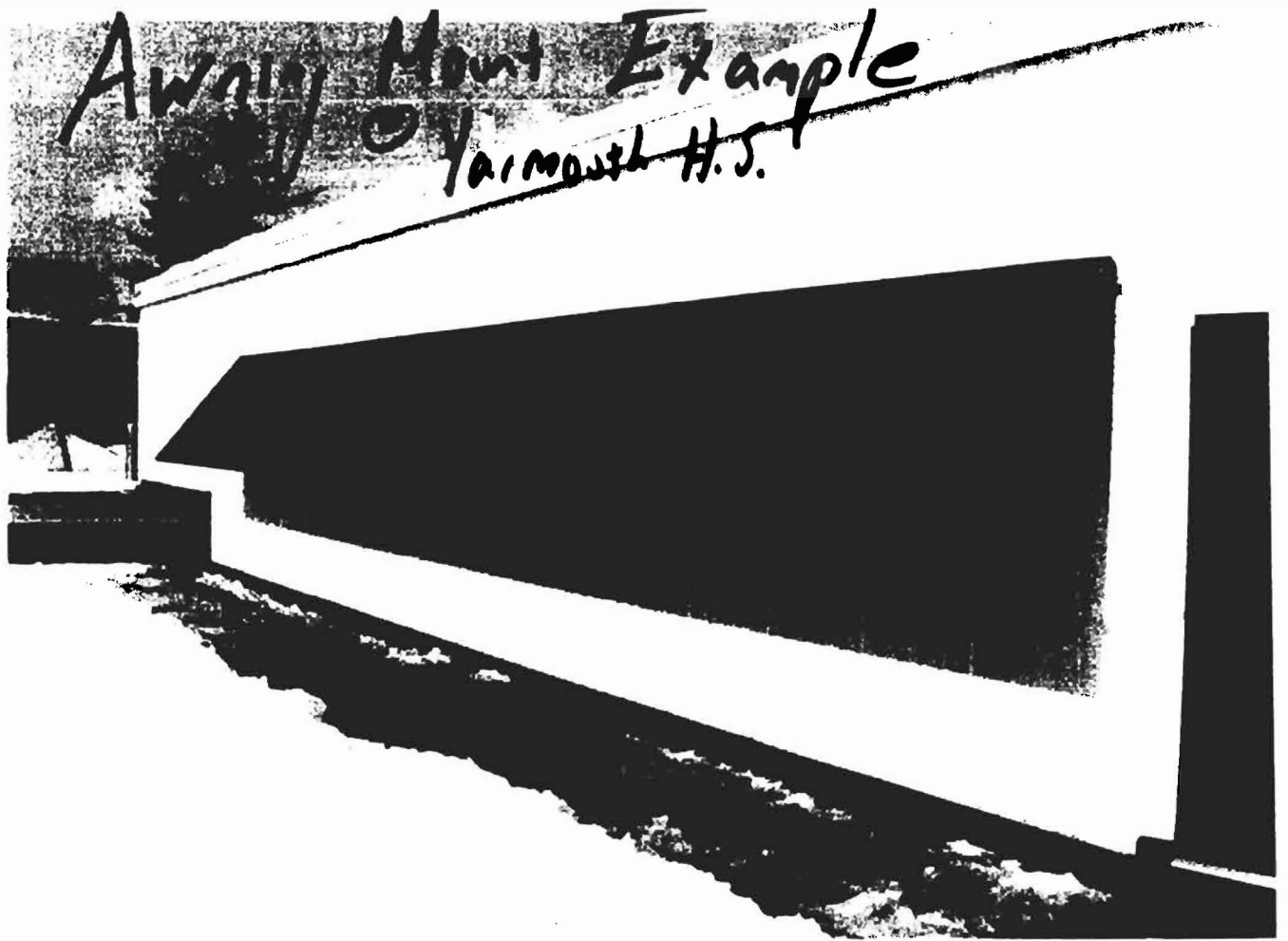
_____ Misc. loads (Table 1607.8, 1607.6.1, 1607.7, 1607.12, 1607.13, 1610, 1611, 2404)

Lincoln Middle School - Albany, Missouri



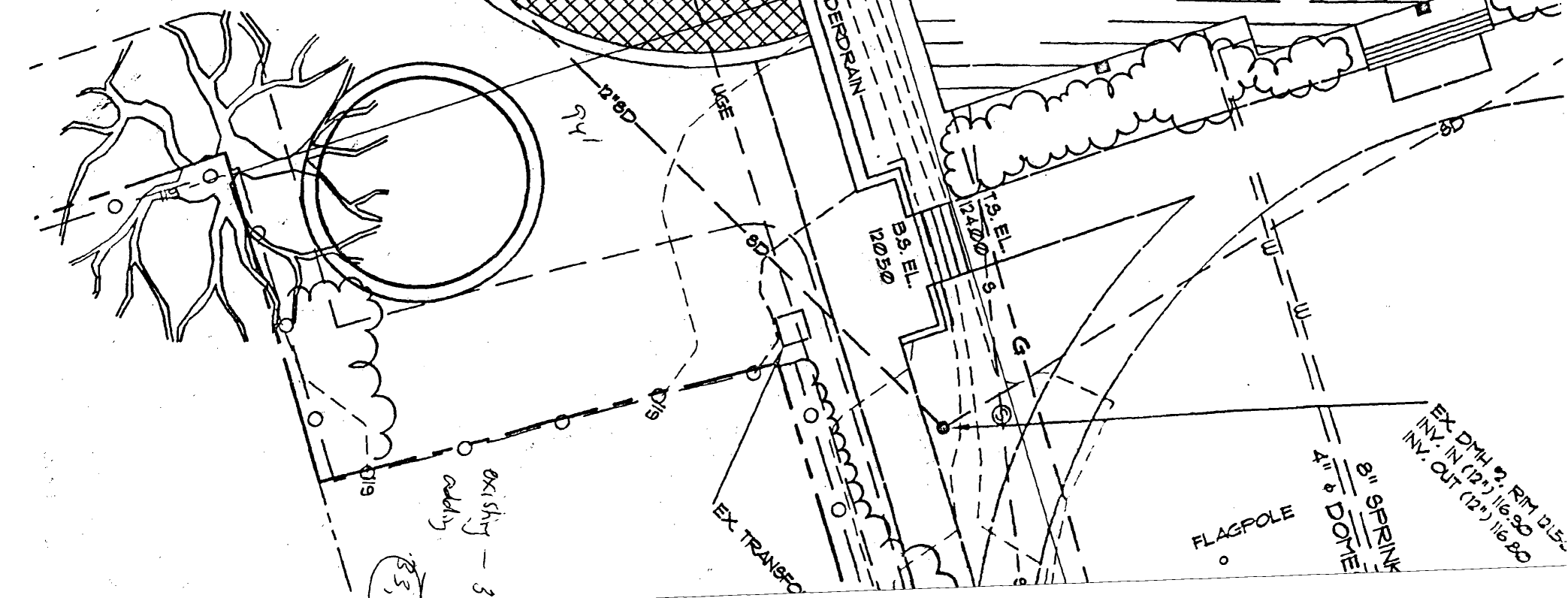
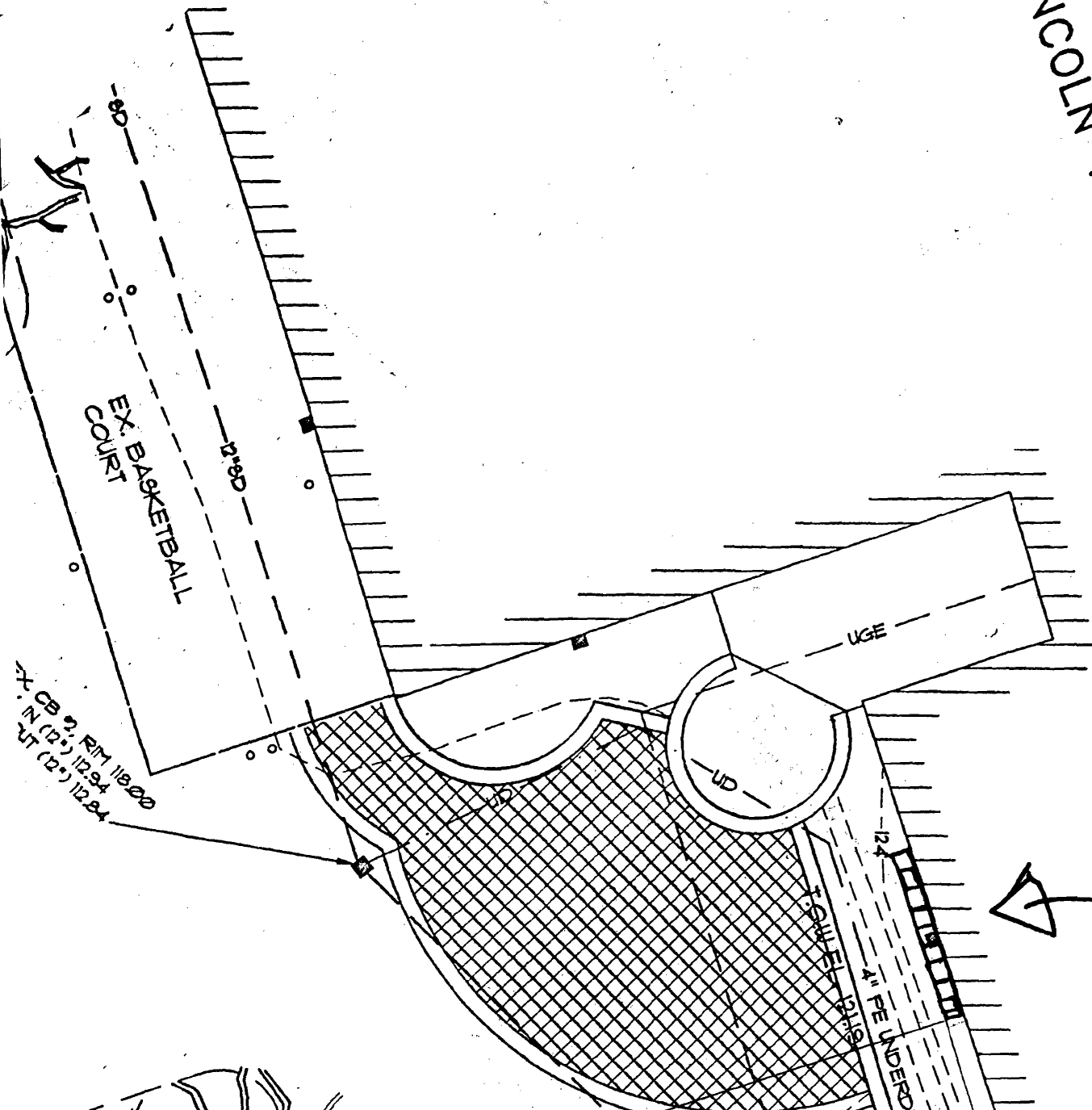
Solar Thermal collectors
for gas furnace

9 PV Modules - Albany, Missouri



INCOLN MIDDLE SCHOOL

Proposal
Mount Location
Plan Dimensions approx. 24' x 3'



EX. CB 2' RM 11000
EX. IN (12") 1204
EX. OUT (12") 1204

EX. SHINY - 3
EX. ADDING

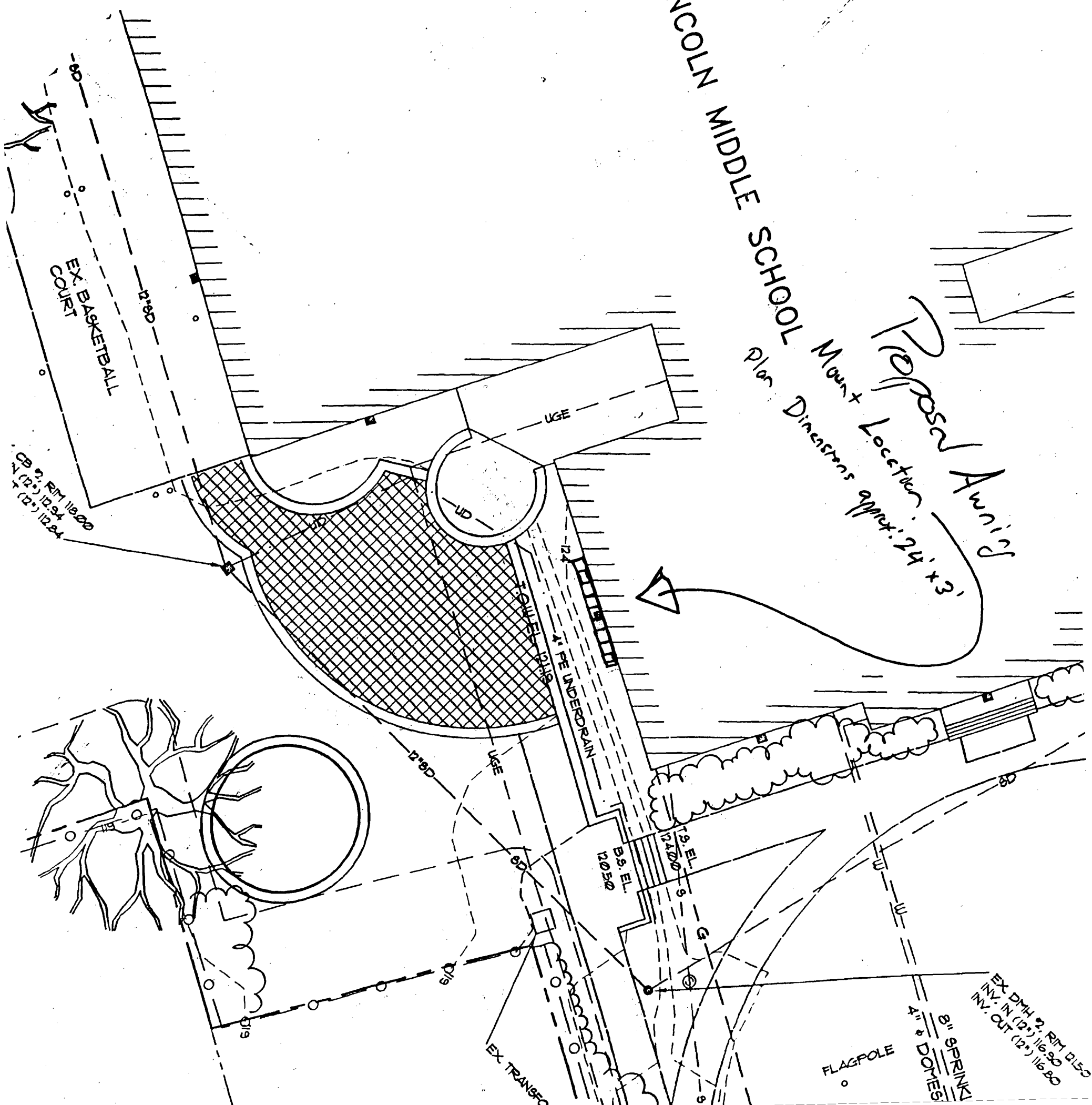
19. EL.
10700
9
B.S. EL.
10550

FLAGPOLE

EX. DMH 2' RM 1215
EX. IN (12") 11680
EX. OUT (12") 11680
8" SPRINK
A" & DOME

NICCOLN MIDDLE SCHOOL

Plan Mount Location
Dimensions approx. 24' x 3'



EX. BASKETBALL COURT

CB 2' RIM 116.00
EX. IN (12') 116.84
EX. OUT (12') 116.84

UGE

UD

UGE

EX. TRANSFO

19' EL. 124.00
8' EL. 120.50

FLAGPOLE

8" SPRINKL
A" & DOWNES

EX. DMH 2' RIM 115.5
EX. IN (12') 116.90
EX. OUT (12') 116.90