

**EAST GOSHEN TOWNSHIP  
PLANNING COMMISSION  
Agenda  
Wednesday, April 2, 2014  
7:00 PM**

**Workshop Session: 7:00 PM to 7:30PM (Board Room – Open to the Public)**

**Formal Meeting: 7:30PM (Board Room – Open to the Public)**

- A. Call to Order / Pledge of Allegiance and Moment of Silence
- B. Chairman will ask if anyone is going to record the meeting
- C. **Review of Tracking Log / Determine need for Workshop Meeting**
- D. Public Comment on Non-Agenda Items
- E. Approval of Minutes
  - 1. **March 5, 2013**
- F. **Acknowledge Receipt of New Applications**
  - 1. **1131 N. Chester Rd. (Dimensional Variance)**
- G. Subdivision Plans
  - 1. **1662 E. Boot Rd. / Renehan Building Group (SD/LD)**
- H. Land Development Plans
  - 1. **1641 Manley Rd. / Mullray Builders (LD)**
- I. Conditional Uses and Variances
  - 1. **1131 N. Chester Rd. (Dimensional Variance)**
- J. Ordinance Amendments
- K. **Comprehensive Plan Update**
- L. Old Business
  - 1. Zoning Ordinance Review
    - a. **Draft Solar Energy Ordinance**
- M. New Business
- N. 2014 Goals
- O. Any Other Matter
- P. Liaison Reports
- Q. **Dates of Importance**

April 01, 2014	Board of Supervisors	7:00 PM
April 03, 2014	Park Commission	7:00 PM
April 05, 2014	Keep East Goshen Beautiful Day	8:30 AM
April 08, 2014	Police Commission	5:30 PM
April 08, 2014	Board of Supervisors	7:00 PM (Exec. Ses. for ABC Interviews)
April 09, 2014	Conservancy Board	7:00 PM
April 10, 2014	Historical Commission	7:00 PM
April 12, 2014	Egg Hunt	10:00 AM (EGT Park)
April 14, 2014	Municipal Authority	<b>Rescheduled for April 21</b>
April 15, 2014	Board of Supervisors	<b>Canceled</b>
April 17, 2014	Farmers Market	3-6:00 PM (Last Indoor Market)
April 17, 2014	Openspace Rec Task Force	7:00 PM
April 18, 2014	Office Closed	Good Friday Holiday
April 21, 2014	Commerce Commission	7:00 PM
April 21, 2014	Municipal Authority	7:00 PM
April 22, 2014	Board of Supervisors	7:00 PM
April 22, 2014	Futurist Committee	7:00 PM
April 22, 2014	Friends of EGT	7:00 PM
April 26, 2014	National Take Back Day	10-2:00 PM (WEGO at Giant)
April 28, 2014	Comp Plan Task Force	7:00 PM

**Summer Newsletter – Articles to Nancy by April 28, 2014, Newsletters will be mailed on June 13.**

**Bold Items indicate new information to review.**

East Goshen Planning Commission Tracking Log

Application Name	Application (CU, LD, O, SD, V, SE, CA)	Type (Sk, P, F)	Date Filed	Start Date	Date to Township Engineer	Date to CCPC	Date to Abutting Prop. / ABC's	Extension	PC NLT Action Date	BOS NLT Action Date	Hearing Date	Drop Dead date
1641 Manley Rd.	LD	P	2/4/2014	2/5/2014	2/4/2014	2/4/2014	2/19/2014		4/16/2014	5/6/2014	NA	5/6/2014
1662 E. Boot Rd	SD / LD	P	2/26/2014	3/5/2014	2/26/2014	2/26/2014	2/28/2014		5/7/2014	6/3/2014	NA	6/3/2014
1131 N. Chester Rd.	V	Sk	3/19/2014	3/19/2014	NA	NA	3/26/2014		4/2/2014	4/22/2014	4/30/2014	5/8/2014
<b>Bold = New Application or PC action required</b>												

Completed in 2014

1637 Manley Rd.	SD	P	10/24/13	11/6/13	10/24/13	10/24/13	10/28/2013		1/8/14	2/4/14	NA	2/4/2014
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**Draft**  
**EAST GOSHEN TOWNSHIP**  
**PLANNING COMMISSION MEETING**  
**March 5, 2014**

The East Goshen Township Planning Commission held a regularly scheduled meeting on Wednesday, March 5, 2014 at 7:00 p.m. at the East Goshen Township building. Members present were: Chairman Dan Daley, Jim McRee, Adam Knox, Monica Close and Al Zuccarello. Also present were Mark Gordon, Township Zoning Officer; and Janet Emanuel, Township Supervisor.

**COMMON ACRONYMS:**

*BOS – Board of Supervisors*

*SWM – Storm Water Management*

*BC – Brandywine Conservancy*

*CPTF – Comprehensive Plan Task Force*

*CVS – Community Visioning Session*

**A. WORKSHOP – 7:00 PM**

1. Mark mentioned that Sunoco has a facility at Rt. 202 and Boot Rd. They are considering running an additional pipeline.
2. Dunkn Donuts – A new franchisee met with Mark today about the vacant bank pad in Goshen Village shopping center. Mark reviewed the items that will require a variance. DD requires a drive-thru and their own, trademarked sign. So, one of the first things they will have to do is ask the Zoning Hearing Board to amend their decision regarding signs.
3. The minutes of February 19, 2014 were reviewed and corrected.
4. Dan reviewed the 2 applications scheduled for this meeting.
5. The Commission reviewed the tracking log and determined there is no action to be taken at this meeting.

**B. FORMAL MEETING – 7:30 PM**

1. Dan called the meeting to order. He led the Pledge of Allegiance and a moment of silence to remember our troops.
2. Dan asked if anyone would be recording the meeting. There was no response.
3. Dan asked for any comments on non-agenda items. There was no response.
3. Dan noted that the minutes of the February 19, 2014 meeting were approved as amended.

**C. SUBDIVISION/LAND DEVELOPMENT PLANS**

- 1. 1641 Manley Road** – Bill Mullray of Mullray Builders, and John Smirga, engineer, were present. John explained that this is the address for the new lot that was subdivided from 1637 Manley Road. They received 2 reviews from the Township Engineer. They dug several deep holes on the property which resulted in zero perc, thus, the rain gardens, which will be shown on the land development plan. They went to a Conservancy Board meeting as part of the subdivision process and the Board approved. They will present the land development plan to the CB at their meeting next week. John needs the Township to tell him what TMDLs he should be aware of. The size of the house footprint is about 2600 sq. ft., which is 200 sq. ft. more than was shown on the original plan. The orientation of the house is the same. There are 9 trees at the house site, 2 at the entrance and 4 in the right of way that will be removed. Bill commented that his concern is the protection of the house, so the number of trees to be removed is about 18% of total. The house is staked out and the trees are flagged.  
John mentioned that the rain garden is typical, 18" deep with an underground drainage system. Water from the down spouts will flow into the garden and be diverted to a level spreader. A soil mixture required by DEP will be used and plants installed. The garden is outside the floodplain and riparian buffer zone. Mark suggested that they plan for placement of a pool. John commented that they are allowing 500 sq. ft. for future SWM impact. Adam pointed out that the

1 plan showed a drain near a tree. John will put the drain outside the drip line of trees if needed.  
2 John mentioned that the traffic report was revised using PennDOTs formula to determine sight  
3 lines. Bill will provide proof of equitable interest in the property.  
4

5 Public Comment:

6 Ed and Liz Last, 200 Pheasant Run – Mr. Last is a retired architect. Mr. Last asked about the size  
7 of the home. Bill explained that the footprint will be about 2600 sq. ft. The total square footage  
8 will be about 3500. It will be about the same size as the new houses across Manley Road. Bill  
9 will email the floor plan to Mark Gordon for Mr. Last to review. John showed them which trees  
10 will be removed and which are in the township right of way. Liz is concerned about the trees.  
11 She is also concerned about traffic coming over the hill in the road. John explained the sight line  
12 distance from the driveway.  
13

14 **2. 1662 E. Boot Road** – Nick Vastardis was present representing Jim Renehan, of the Renehan  
15 Group. The existing house was recently removed from the East Goshen Township Historic  
16 Resource Inventory. They plan to subdivide the lot into 3 lots. Lot #1 will be the biggest. There  
17 will probably be onsite septic systems. They plan to keep the existing barn. They plan to use the  
18 existing driveway for the middle lot. Driveways, sight distance and the embankment were  
19 discussed. Dan suggested they do another site walk and remove the note on the plan about snow  
20 and utilities. Dan voiced concern about the stone wall on the property line. There can be  
21 ownership issues. He suggested making it one property owner's responsibility. They show the  
22 right of way at 33 ft. It should be 50 ft. The house footprints are not definite. Jim pointed out  
23 that the proposed lot's setbacks are shown larger than required. There was discussion about the  
24 existing barn. Mark mentioned it is a legal, non-conforming structure. The Commission wants a  
25 note on the plan stating that the barn cannot be expanded or enlarged.  
26 Adam commented that Renehan Group also needs to show proof of equitable interest in the  
27 property.  
28

29 **D. OLD BUSINESS**

30 **1. Solar Energy Ordinance** – Mark distributed copies of the Solar Energy Systems with  
31 comments from the Township Solicitor and a copy of the Caln Township Ordinance. Dan  
32 commented on the Caln ordinance regarding principal use. For this use, they would have to get  
33 conditional use first. The amount of space on a roof needed for firemen to vent the roof in case of  
34 fire was discussed. There are actually shingles that are solar panels. Dan knows the owner of a  
35 company that sells solar panels. He is willing to come and give a presentation about solar panels.  
36  
37

38 **ADJOURNMENT**

39 There being no further business, Monica moved to adjourn the meeting. Jim seconded the motion.  
40 The motion passed unanimously. The next meeting will be held on Wednesday, April 2, 2014 at 7:00  
41 pm. The meeting adjourned at 9:00 pm.  
42  
43

44 Respectfully submitted, \_\_\_\_\_  
45 *Ruth Kiefer, Recording Secretary*

**EAST GOSHEN TOWNSHIP**  
**ZONING HEARING BOARD APPLICATION**

1580 PAOLI PIKE WEST CHESTER, PA 19380-6199

PHONE (610)-692-7171 FAX (610)-692-8950

Name of Applicant: James J. Callaghan, Jr.

Applicant Address: 1131 North Chester Road

West Chester, PA 19380

Telephone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_

Email Address: JIM.CALLAGHAN@verizon.net

Property Address: same as above

Tax Parcel Number: 53-2-31.2 Zoning District: R-2 Acreage: 1.989

**Purpose of Application (check one)**

- ☒ Variance (Type: ☐ Use Variance ☒ Dimensional Variance)  
☐ Special Exception  
☐ Appeal determination of the Zoning Officer  
☐ Other \_\_\_\_\_

**Sections of Zoning Ordinance in which relief is sought:**

240-9 G Lot size

**Description of the Zoning Relief requested and the future use of the property:**

See attached

We hereby acknowledge that we have read this application and state that the above is correct and agree to comply with all provisions of the East Goshen Township Zoning Ordinance applicable to this project and property.

[Signature]  
Signature of Applicant

Ally for App  
Date

3-19-14

**\*Please review the formal application and review procedures on page three.**

ADDENDUM TO  
EAST GOSHEN TOWNSHIP  
ZONING HEARING BOARD APPLICATION  
OF JAMES J. CALLAGHAN, JR  
1131 NORTH CHESTER ROAD  
WEST CHESTER, PA

Description of Zoning Relief requested and the future use of the Property:

Applicant seeks a variance from the minimum Lot Area requirement of One Acre in this R-2 zoning district in that one of the two lots being created will have only .989 acres of land and, thus be 463 square feet short of the required minimum lot area. The lot complies in all other respects.

**BOARD OF SUPERVISORS**  
EAST GOSHEN TOWNSHIP  
CHESTER COUNTY  
1580 PAOLI PIKE, WEST CHESTER, PA 19380-6199

March 26, 2014

Dear Property Owner:

The purpose of this letter is to inform you that James J. Callaghan Jr., owner of 1131 N. Chester Road, West Chester, PA 19380 has submitted a Zoning Hearing Board application requesting a dimensional variance. Mr. Callaghan proposes to subdivide the property and is requesting relief from the lot area requirement in §240-9.G of the Zoning Ordinance. In this case the zoning ordinance requires a lot size of at least 1 acre for each single family home. Mr. Callaghan's plan proposes a lot with an area of .989 acres. Mr. Callaghan is seeking relief for 463 square feet.

Pursuant to Township policy, property owners within 1000 feet of the subject property are notified of Zoning Hearing Board applications.

The meeting dates and times scheduled for the review and discussion of this application are outlined below and subject to change:

**April 2, 2014** - Planning Commission meeting (workshop at 7:00 pm, formal meeting @ 7:30 pm)

**April 22, 2014** - Board of Supervisors meeting (7:00 pm)

**April 30, 2014** - Zoning Hearing Board (7:30 pm) **(Zoning Variance Hearing)**

All hearings are held at the Township Building and are open to the public. The Zoning Hearing Board Application is available for review during normal business hours. If any person who wishes to attend the hearing has a disability and/or requires an auxiliary aid, service or other accommodation to observe or participate in the proceedings, he or she should contact East Goshen Township at 610-692-7171, to discuss how those needs may be accommodated.

Please give me a call if you have any questions or need additional information.

Sincerely,



Mark A. Gordon  
Township Zoning Officer

Cc: All Township Boards and Commissions

March 21, 2014

EGOS 0110

Mark A. Gordon  
Director of Code Enforcement/Zoning Officer  
East Goshen Township  
1580 Paoli Pike  
West Chester, PA 19380

**RE: Renehan Building Group, 1662 E. Boot Road  
Subdivision and Land Development Plan**

Dear Mr. Gordon:

As requested, we have reviewed the following information, prepared by Vastardis Consulting Engineers, LLC, regarding the referenced submission:

- *"Subdivision & Land Development Plan for Renehan Building Group"* (six sheets) dated February 13, 2014;
- *"Stormwater Management Report"* dated February 25, 2014; and applications.

The applicant, Renehan Building Group, of Malvern, proposes to remove the existing residence on UPI No. 53-4-131.1 (4.090 acres), subdivide the parcel into three (3) residential lots and construct three (3) new single-family detached dwellings. Lot 1 is proposed to be 1.671 acres, and Lots 2 and 3 are each proposed to be 1.210 acres. The applicant is additionally proposing utilities, stormwater management facilities, private on-lot septic systems and public water service for each lot. The parcel is located on the south side of E. Boot Road (T-385), east of its intersection with Clock Tower Drive, within the R-2 Low Density Residential zoning district. Three (3) new driveways are proposed via E. Boot Road; the existing driveway will be removed.

We offer the following comments:

**ZONING**

1. To obtain more flexibility in placing buildings in all residential subdivisions of two (2) or more lots, an average building setback line of 60 feet shall be required. (§240-9.G) The building setback line should be revised accordingly.
2. The required right-of-way of E. Boot Road, a local road, is 50 feet (§240-27.A(3)(a), (6)); the plan indicates an existing 33-foot right-of-way. The required right-of-way shall be indicated (§205-43.B), and the minimum front yard setbacks shall be indicated from the required street right-of-way. (§240-27.A(4))
3. Clear sight triangles and sight distances in accordance with §240-23.D(11) and §205-57.D(4) should be indicated at the proposed driveways.



4. Any residential subdivision or land development shall give careful attention to providing attractive landscaping. The developer shall submit an overall landscape plan for all subdivisions or land developments. The landscape plan shall be prepared in accordance with §205; the plan is subject to review and approval by the Township Conservancy Board. (§240-27.D, §205-30.D(2), §205-36.) A landscape plan has not been submitted.
5. Walls which are erected in the side yards shall not exceed six feet in height on a residential lot. (§240-32.E(1)) The top/bottom stone wall elevations should be indicated and a detail provided.

#### SUBDIVISION AND LAND DEVELOPMENT

6. Regarding the preliminary plan requirements (§205-30), the following should be provided:
  - a. Abutting property owner information across E. Boot Road. (§205-30.B(5))
  - b. Property boundaries shall be balanced and closed with an error closure not to exceed one foot in 10,000 feet. In addition, the engineer or surveyor shall certify to the accuracy of the survey and that the plan is in conformance with all Township ordinances. (§205-30.B(7))
  - c. Ownership of existing utility lines. (§205-30.B(10))
  - d. A statement noting verification of the availability of water and sewer. (§205-30.C(4)(b))
  - e. Location and results of soil percolation tests whenever on-site disposal of sewage is planned. (§205-35.D)
  - f. A note shall be added to the plans indicating that the applicant is responsible for installation and maintenance of all soil and erosion control measures until closeout of the escrow account. (§205-35.E)
  - g. Such private deed restrictions and/or a statement of any restrictions previously imposed in accordance with §205-33.C(2). If no such deed restrictions exist or will be imposed, it is recommended a note stating the same be indicated on the plan.
7. No alterations of grading shall be done within a distance of five feet from an adjoining tract. (§205-35.G) This setback has not been maintained along the eastern property line.
8. No driveway shall be less than twelve (12) feet wide within the limits of the right-of-way (§205-57.D(3)); this has not been met for the proposed driveways on Lots 1 and 3 within the required 50-foot right-of-way.
9. The plan should provide a calculation verifying no more than 20% of the existing trees on the lot are proposed to be cleared or removed. (§205-61.C) Regarding tree protection, the plan should provide notes in accordance with §205-63. (§205-30.B(16))
10. Monuments are required along the required right-of-way of E. Boot Road. (§205-65.A)

#### STORMWATER MANAGEMENT

11. As the proposed development does not discharge directly to waters of the Commonwealth, the applicant shall provide the Township with a copy of the easement authorizing such discharge or confirmation from PaDEP that an easement is not required. (§195-15.G) The

applicant should provide additional information regarding the downstream conveyance of the proposed discharges; this issue will remain outstanding pending review and approval from CCCD/PaDEP.

12. When the regulated activity is divided by multiple drainage areas, the analyses regarding water quality and infiltration volumes, stream channel protection and peak rate control shall be separately addressed for each drainage area. (§195-19.H, -20.G, -21.G, -22.F) The existing conditions plan appears to indicate a ridge line conveying a portion of the current runoff to the northwest corner of the site and right-of-way, while the drainage report analyzes one point of interest at the southwest corner of the site. Additionally, as the proposed rear basins discharge upstream of three (3) adjacent properties, the applicant should provide additional information off-site/downstream to verify the collective point of interest.
13. Weighted averaging of runoff coefficients shall not be used for water quality and runoff volume calculations. (§195-19.I)
14. Regarding the infiltration seepage beds:
  - a. The report narrative indicates infiltration testing has not yet been completed due to weather. Satisfaction of the requirements regarding infiltration volume, 24-inch depth to limiting zone and 72-hour drain time (§195-20.A, B, J(1,3)) will remain outstanding pending this information. Note the soils evaluation requirements per §195-20.I.
  - b. All areas designated for infiltration shall not receive runoff until the contributory drainage area has achieved final stabilization. (§195-20.M)
  - c. Where roof drains are designed to discharge to infiltration practices, they shall have appropriate measures to prevent clogging by unwanted debris. (§195-20.O)
  - d. Stormwater shall be distributed throughout the entire seepage bed (§195-20.R(5)); the applicant should verify adequate distribution pipes have been provided.
15. Per the BMP Manual, regarding the above-ground berm, the following should be addressed:
  - a. If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1.
  - b. Berms should be vegetated with turf grass at a minimum, however more substantial plantings such as meadow vegetation, shrubs and trees are recommended.
  - c. The use of clay in the berm may be required due its cohesive qualities and where the berm height is high or relatively steeply sloped; however, well-compacted soil usually is sufficient provided that the angle of repose is not exceeded for the soil medium used.
  - d. Additional construction notes (i.e., soil materials, placing/compaction, etc.) for the above-ground berm/basin should be indicated in accordance with the BMP Manual. The applicant should review whether the compaction requirements for the proposed berm will be excessive atop the underground infiltration facilities.
16. Regarding the stormwater management site plan contents (§402), the following should be provided:
  - a. A listing of all regulatory approvals required (i.e., NPDES permit, etc.) for the proposed project and proof of application of the same. (§195-27.A(2))
  - b. A statement, signed by the applicant, in accordance with §195-27.A(3).
  - c. The licensed professional signature block in accordance with §195-27.A(4).

- d. Phone number of the owner/applicant. (§195-27.B(2))
  - e. Areas that are part of the Pennsylvania Natural Diversity Inventory (PNDI), and a list of potential impacts and clearances received. (§195-27.B(8)(g))
  - f. Soil boundaries. (§195-27.B(8)(k)) Additionally, the soil map in the report indicates soils GdB and GdC only, while GdD is additionally listed on the plan.
  - g. Location of existing well(s) within 50 feet beyond the boundary of the project property boundary. (§195-27.B(8)(n)[2])
  - h. Total area of new or additional impervious surfaces. (§195-27.B(11)(d))
  - i. The total extent of the upstream area draining through the site, as applicable. (§195-27.B(12))
  - j. Flow paths used for the times of concentration. (§195-27.B(14))
  - k. The locations of all existing utilities, sanitary sewers, on-lot wastewater facilities, and water supply lines within 50 feet beyond the proposed limits of earth disturbance, as applicable. (§195-27.B(15))
  - l. Easements and deed restrictions in accordance with §195-39. (§195-27.B(18)(c))  
Per §195-39, easements shall be established in connection with any regulated activity for all permanent BMPs and conveyances that will not be dedicated to or otherwise owned by the Township. Additionally, notes or other documentation in accordance with §195-27.B(18)(c) are required, as applicable.
  - m. A written description/narrative of the information, as applicable, per §195-27.C (i.e., existing features, site design per §195-18, stormwater design concept, etc.).
  - n. Regarding the O&M plan, the following shall be provided: lawn care maintenance, the landowner statement per §195-37.B(4); inspection and maintenance schedules and statements in accordance with §195-37.C and D and §195-40.A through D. (§195-27.F(1), -37.B)
  - o. An O&M agreement. (§195-27.F(2))
17. Loading ratios shall be in accordance with the PA BMP Manual. (§195-27.E) The proposed facilities exceed the maximum 8:1 loading ratio of total drainage area to infiltration area.
18. Regarding level spreaders, the BMP Manual recommended a minimum 75- foot flow length of the receiving (downstream) area. Additionally, level spreader design calculations should be provided.
19. Details and/or cross-sections for the proposed swales should be provided.

#### GENERAL

20. The existing deed for the parcel should be provided to confirm the tract should be plotted to the existing right-of-way rather than the title line within the street.
21. E&S calculations (i.e., silt fence slope length, etc.) should be provided to verify sediment barriers are adequate for E&S control. Additionally, a rock construction entrance should be indicated for Lot 1 and soil stockpiles should be indicated with sediment protection.
22. The E&S notes on Sheet 6 indicate fills steeper than 3:1 shall be protected with erosion control matting. It is recommended all proposed slopes be a maximum of 3:1.

23. Per the PA Code §73.13, 10 feet of horizontal isolation distance is required between septic system absorption areas and property lines; this has not been met for Lots 2 and 3.
24. All sanitary sewer construction shall be in conformance with Township standards; maintenance and protection of traffic shall be in accordance with PennDOT Publication 408, Section 900.
25. If the plan application is intended to be a preliminary/final submission, the plan should indicate the same and request the applicable waiver, as directed by the Township.
26. Please additionally note the status of the following reviews/permits:
- a. NPDES Permit (PaDEP/CCCD) (§195-15.C(2), -16.A, -17.A) – *Correspondence has not yet been received.*
  - b. Planning Module (PaDEP) (§240-24.F, §205-33.B(22)(a)) – *Correspondence has not yet been received.*
  - c. Sanitary Sewer (Municipal Authority) – *Not applicable.*
  - d. Water (Water Utility) – *Correspondence has not yet been received.*
  - e. Highway Occupancy Permit (PennDOT) – *Not applicable.*
  - f. Fire Planning (Fire Marshal) – *Not applicable.*
  - g. Historic Resource (Historical Comm.) – *Correspondence has not yet been received.*
  - h. Landscaping (Conservancy Board) – *Correspondence has not yet been received.*
  - i. Wetlands – *Not applicable.*
  - j. Floodplain (FEMA) – *Not applicable.*

Should you have any further questions or comments, please contact the undersigned.

Sincerely,



Nathan M. Cline, PE  
**PENNONI ASSOCIATES INC.**  
Township Engineer

cc: Rick Smith, Township Manager (via e-mail)  
Renehan Building Group, 318 E. King Street, Malvern (via e-mail)  
Nicholas L. Vastardis, PE, Vastardis Consulting Engineers, LLC (via e-mail)



# THE COUNTY OF CHESTER

**COMMISSIONERS**

Ryan Costello  
Kathi Cozzone  
Terence Farrell

Ronald T. Bailey, AICP  
Executive Director

**PLANNING COMMISSION**

Government Services Center, Suite 270  
601 Westtown Road  
P. O. Box 2747  
West Chester, PA 19380-0990  
(610) 344-6285 Fax (610) 344-6515



March 24, 2014

Louis F. Smith, Jr., Manager  
East Goshen Township  
1580 Paoli Pike  
West Chester, PA 19380

Re: Preliminary/Final Subdivision - 1662 East Boot Road  
# SD-2-14-9362 - East Goshen Township

Dear Mr. Smith, Jr.:

A preliminary/final subdivision plan entitled "1662 East Boot Road," prepared by Vastardis Consulting Engineers, LLC, and dated February 13, 2014, was received by this office on February 26, 2014. The subdivision is situated on the south side of East Boot Road north of Clocktower Drive and involves the creation of three residential lots from a 4.09 acre site (UPI #53-4-131.1). The existing residence will be removed. The project site, which will be served by public water and on-site sewer, is located in the R-2 Residence zoning district.

This plan is reviewed by the Chester County Planning Commission in accord with the provisions of Section 502 of the Pennsylvania Municipalities Planning Code (MPC). This report does not review the plan for compliance to all aspects of your ordinance, as this is more appropriately done by agents of East Goshen Township. We offer the following comments on the proposed subdivision for your consideration:

## **LANDSCAPES:**

1. The project site is located within the **Suburban Landscape** designation of *Landscapes2*, the 2009 County Comprehensive Plan. The location of the proposed subdivision is consistent with the guidelines of the **Suburban Landscape**.

## **WATERSHEDS:**

2. *Watersheds, An Integrated Water Resources Plan for Chester County and Its Watersheds*, was adopted in 2002 as the water resources component of *Landscapes*. *Watersheds* indicates that the proposed development activity is located within the Ridley Creek watershed. The highest priority management objectives identified in *Watersheds* for consideration in land development and land use planning within the Ridley Creek watershed include: reduce stormwater runoff, protect vegetated riparian corridors, and protect/enhance water-based recreation, cultural, historic resources and public access.

It is recommended that these concerns and conditions be taken into consideration in final site design decisions. Specific strategies for implementation to effectively address these items can be found in Part 8 of *Watersheds*. A more detailed listing of water resources management needs and resources to be protected within the Ridley Creek watershed can be found in Part 10 of *Watersheds*.

3. The site is located in an area designated by the Pennsylvania Department of Environmental Protection (DEP) as a Special Protection Watershed. Special Protection Watersheds are important because Chester County's High Quality and Exceptional Value Watersheds may be especially

Page: 2

March 24, 2014

Re: Preliminary/Final Subdivision - 1662 East Boot Road  
# SD-2-14-9362 - East Goshen Township

sensitive to degradation and pollution that could result from development. The DEP or the municipality may impose stricter limitations on proposed wastewater and stormwater discharges in these watersheds, and special care should be exercised in the design, construction, operation and maintenance of stormwater control facilities in these areas to prevent degradation of the waters of the Commonwealth.

**PRIMARY ISSUE:**

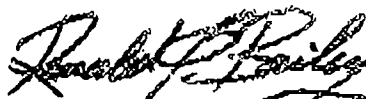
4. We recommend that, due to the steep slopes located along the East Boot Road frontage, the applicant and Township consider the use of a single shared driveway entrance for the three proposed lots. Shared driveways can reduce the number of new access points on public roads, limit impervious coverage, reduce earth disturbance and lower construction costs.

**ADMINISTRATIVE NOTES:**

5. The site contains areas of hydric (wet) soils (GdB, GdC and GdD Gladstone) which have limitations to development. These limitations include drainage problems due to low permeability, low runoff rates and sub-surface saturation. When construction takes place on these soils, it interferes with the natural drainage of the land. If construction occurs on this site, on-site alterations to existing drainage patterns should be carefully inspected by the Township Engineer to insure that off-site drainage conditions are not negatively affected.
6. The items on the attached agency contact list should be addressed and reflected in the proposed subdivision.
7. A minimum of five (5) copies of the plan should be presented at the Chester County Planning Commission for endorsement to permit recording of the final plan in accord with the procedures of Act 247, the Pennsylvania Municipalities Planning Code, and to meet the requirements of the Recorder of Deeds, the Assessment Office, and the Health Department.

**RECOMMENDATION:** The Commission recommends that the issues raised in this letter be addressed and all East Goshen Township requirements be satisfied before action is taken on this plan.

Sincerely,



Ronald T. Bailey, AICP  
Secretary

/ppw

RTB/PF

Attachment

cc: Renchan Building Group, Inc.  
J. Eric and Loretta Rudolph  
Vastardis Consulting Engineers, LLC  
Chester County Health Department  
Chester County Conservation District



PENNONI ASSOCIATES INC.  
CONSULTING ENGINEERS

March 21, 2014

EGOS 0107

Mark A. Gordon,  
Director of Code Enforcement/Zoning Officer  
East Goshen Township  
1580 Paoli Pike  
West Chester, PA 19380

**RE: Mullray Builders, 1637 Manley Road (Lot 1)  
Land Development Plan – 2<sup>nd</sup> Submission**

Dear Mr. Gordon:

As requested, we have reviewed the following information regarding the referenced submission:

- “*Development Plan for Mullray Builders*” (one sheet), prepared by John Smirga and Associates, P.C., dated January 27, 2014, last revised March 4, 2014; and
- “*Stormwater Management Report Narrative and Calculations*”, prepared by Della Penna Engineering, Inc., dated January 29, 2014, last revised February 27, 2014.

The applicant, Mullray Builders c/o William T. Mullray, of Newtown Square, proposes to develop Lot 1 (1.218 acres), a recently subdivided lot from UPI No. 53-6-129.1 (originally 5.84 acres) with a single-family detached dwelling. The 2-lot subdivision for this parcel was approved at the Board of Supervisors’ January 28, 2014 meeting. The parcel is located on the north side of Manley Road (T-483), east of its intersection with Edith Lane. The parcel is located within the R-2 Low Density Residential zoning district. A private on-lot well is proposed for water service; connection to the public sanitary sewer main within Manley Road is proposed to address sewage.

The following comments from our February 18, 2014 review letter remain outstanding (new comments in *italics*):

1. The developer shall submit an overall landscape plan in accordance with §205. (§240-27.D, §205-30.D(2), §205-36.)

*This information has not yet been provided; note this plan is required for review and approval by the Conservancy Board.*

2. Regarding the preliminary plan requirements (§205-30), the following should be provided:
  - a. Names of all abutting or adjacent property owners. (§205-30.B(5))  
*Abutting owners include those across Manley Road; the plan should be updated.*
  - b. The engineer or surveyor shall certify to the accuracy of the survey and that the drawn plan is in conformance with all Township ordinances. (§205-30.B(7))  
*Please provide a certification statement on the plan noting the same.*

3. Regarding tree protection, the plan should provide notes in accordance with §205-63 and §205-30.B(16).

*This information has not yet been provided; additionally, the plan indicates disturbance (i.e., grading in front of the dwelling, 6-inch roof drain installation) within tree protection limits.*

4. A minimum depth of twenty-four (24) inches between the bottom of the BMP and the top of the limiting zone is required. (§195-20.J(1))

*This information has not yet been provided.*

5. Regarding the stormwater management site plan contents (§195-27), the following should be provided:

- a. A statement, signed by the applicant, in accordance with §195-27.A(3)).
- b. Easements and deed restrictions in accordance with §195-39. (§195-27.B(18))  
Easements shall be established for all permanent BMPs and conveyances that will not be dedicated to the Township. (§195-39.A)
- c. The O&M Plan shall include the landowner statement per §195-37.B(4) and statements in accordance with §195-37.C and D and §195-40.B, C and D.
- d. An O&M agreement. (§402.F.2)

*This information has not yet been provided.*

6. The following new items should be addressed:

- a. *If the plan application is intended to be a preliminary/final submission, the plan should indicate the same and request the applicable waiver, as directed by the Township.*
- b. *As the plan indicates the ultimate right-of-way of Manley Road was previously dedicated, the plan should indicate this right-of-way as "existing".*

7. Please additionally note the status of the following reviews/permits:

- a. Planning Module (PaDEP) – *An exemption was granted per PaDEP's January 14, 2014 letter.*
- b. Sanitary Sewer (Municipal Authority) – *Capacity reserved.*
- c. On-Site Water Permit (CCHD) – *Correspondence has not yet been received.*
- d. Highway Occupancy Permit (PennDOT) – *Not applicable.*
- e. Fire Planning (Fire Marshal) – *Not applicable.*
- f. Historic Resource (Historical Commission) – *Not applicable.*
- g. Landscaping (Conservancy Board) – *Correspondence has not yet been received; on March 12, 2014 agenda.*
- h. Wetlands – *No wetlands exist per a letter, prepared by Environmental Management & Consulting, Inc., dated November 19, 2013.*
- i. Floodplain (FEMA) – *Letter of Map Amendment (LOMA) issued per FEMA's October 4, 2013 letter. Please note it is our understanding the site is outside of the 100-year floodplain, as mapped on the plan in accordance with the LOMA; therefore, the requirements per §240-26 are not applicable.*



Should you have any further questions or comments, please contact the undersigned.

Sincerely,



Nathan M. Cline, PE

**PENNONI ASSOCIATES INC.**

Township Engineer

cc: Rick Smith, Township Manager (via e-mail)  
William T. Mullray, P.O. Box 934, Newtown Square (via e-mail)  
John Smirga, PE, John Smirga and Associates, P.C. (via e-mail)  
Christopher R. Della Penna, PE, Della Penna Engineering, Inc. (via e-mail)



# THE COUNTY OF CHESTER

## COMMISSIONERS

Ryan Costello  
Kathi Cozzone  
Terence Farrell

Ronald T. Bailey, AICP  
Executive Director

## PLANNING COMMISSION

Government Services Center, Suite 270  
601 Westtown Road  
P. O. Box 2747  
West Chester, PA 19380-0990  
(610) 344-6285 Fax (610) 344-6515



March 3, 2014

Louis F. Smith, Jr., Manager  
East Goshen Township  
1580 Paoli Pike  
West Chester, PA 19380

Re: Preliminary/Final Subdivision - Mullray Builders, Manley Road  
# SD-2-14-9291 - East Goshen Township

Dear Mr. Smith:

A preliminary/final subdivision plan entitled Mullray Builders, Manley Road, prepared by John Smirga & Associates, PC, and dated January 27, 2014, was received by this office on February 4, 2014. The subdivision is situated on the north side of Manley Road east of Edith Lane and involves the construction of a single-family residence on a 1.22 (net) acre portion of a 5.84 acre site (UPI #53-6-129.1). The project site, which will be served by on-site water and public sewer, is located in the R-2 Low Density Residential zoning district.

This plan is reviewed by the Chester County Planning Commission in accord with the provisions of Section 502 of the Pennsylvania Municipalities Planning Code (MPC). This report does not review the plan for compliance to all aspects of your ordinance, as this is more appropriately done by agents of East Goshen Township. We offer the following comments on the proposed subdivision for your consideration:

### BACKGROUND:

1. The Chester County Planning Commission has previously reviewed a subdivision plan for this site. CCPC# SD-10-13-8821, dated November 8, 2013, addressed the creation of two residential lots from the 5.84 acre project site. According to our records, this subdivision plan submission was approved by East Goshen Township on January 28, 2014. The current plan submission depicts the proposed construction of a single-family residence on Lot 1 of the previously approved plan. We note that the development activity depicted on the current plan submission is generally identical to the development activity depicted on Sheet 3 of the previously approved plan.

### LANDSCAPES:

2. The project site is located within the **Suburban Landscape** and **Natural Landscape** designations of *Landscapes2*, the 2009 County Comprehensive Plan. The location of the proposed subdivision is consistent with the guidelines of the **Suburban Landscape**.

### ADMINISTRATIVE NOTES:

3. The UPI-Uniform Parcel Identifier number of the parent tract is not indicated on the plan. This should be corrected by the applicant. The Chester County Recorder of Deeds Office requires that the correct UPI numbers be identified on all subdivision and land development plans submitted for recording.

Page: 2

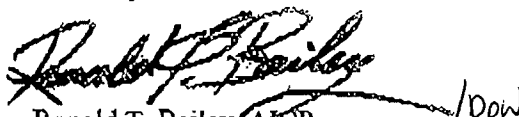
March 3, 2014

Re: Preliminary/Final Subdivision - Mullray Builders, Manley Road  
# SD-2-14-9291 - East Goshen Township

4. The plan does not include the County Planning Commission Review signature block. This information should be added to the plan.
5. The item on the attached agency contact list should be addressed and reflected in the proposed subdivision.
6. A minimum of five (5) copies of the plan should be presented at the Chester County Planning Commission for endorsement to permit recording of the final plan in accord with the procedures of Act 247, the Pennsylvania Municipalities Planning Code, and to meet the requirements of the Recorder of Deeds, the Assessment Office, and the Health Department.

**RECOMMENDATION:** The Commission recommends that East Goshen Township requirements be satisfied, and the administrative issues raised in this letter be addressed, before action is taken on this plan.

Sincerely,

  
Ronald T. Bailey, AICP /DPW  
Secretary

RTB/PF

Attachment

cc: Mullray Builders Corporation  
John Smirga  
Chester County Health Department

# THE COUNTY OF CHESTER

Chester County  
Planning Commission  
601 Westtown Road, Suite 270  
P.O. Box 2747  
West Chester, PA 19380-0990



Board of  
County Commissioners  
Chester County, Pennsylvania

MUNICIPALITY East Goshen Township

CCPC FILE # SD-2-14-9291

DATE March 3, 2014

The following agencies should be contacted regarding this subdivision:

- ☐ Pennsylvania Department of Transportation (PennDOT): A PennDOT permit is required for new or revised access and should be identified on the final plan as required by Section 508(6) of the Municipalities Planning Code.
- ☐ U.S. Army Corps of Engineers and Pennsylvania Department of Environmental Protection (DEP): Placement of fill in wetlands is regulated by the Corps of Engineers in accordance with Section 404 of the Clean Water Act (1977) and with DEP under Chapter 105 Rules and Regulations for the Bureau of Dams and Waterway Management. The applicant should contact these agencies to determine if the proposed activity will require a permit and provide the municipality with documentation of this contact and of any subsequent permit(s) before action on this plan is taken.
- ☐ Pennsylvania Department of Environmental Protection (DEP): The applicant should contact DEP to determine whether a stream encroachment permit is necessary for the proposed road, driveway, or sanitary sewer line crossing in accordance with Section 205.293 of its rules and regulations and provide the municipality with documentation of this contact and the requirements of DEP before action on this plan is taken.
- ☒ Chester County Health Department (CCHD): A copy of the plan should be submitted to the CCHD for their review and comment on the proposed sewage disposal and/or water supply. The municipality from the appropriate authority and company prior to final plan approval, if applicable, should receive confirmation on the availability of sufficient sewer and water capacity.
- ☐ Chester County Conservation District (CCCD): The applicant should contact the office of the CCCD for information and clarification on erosion control measures. The provisions of the Commonwealth Erosion Control Regulations may apply to the project and may require an Earth Disturbance Permit or a National Pollutant Discharge Elimination System permit for discharge of stormwater from construction activities.

## Solar Energy Systems

### Current East Goshen Ordinance Regulations.

1. Solar Energy System is a permitted Accessory Use is all zoning districts except R-1 (Hershey's Mill). [I question if the Declaration of Covenants for Hershey's Mill would allow solar facilities? If not, no need to allow.]

### 2. Section 240-6 Definitions

#### **SOLAR ENERGY SYSTEM**

Any structure attached to a building or erected as a structure and attached to the ground and used for the purpose of generating solar energy.

### 3. Section 240-23 General Regulations

- C. Maximum height of buildings and structures. [Amended 5-7-2002 by Ord. No. 129-K-02]  
(2) Structures such as flagpoles, windmills, watertowers, silos, solar energy collectors and the equipment used for the mounting of such collectors shall be subject to and shall not exceed the maximum permitted building height unless a special exception is granted by the Zoning Hearing Board and the Board affirmatively finds that such structure is proposed, designed, intended and limited in use only to such purpose. In such case, the Board may approve such increased height as is proven by the applicant to be warranted by the functional needs of the structure, subject to such reasonable limitations and conditions as the Board shall impose, provided the height allowed by the Board shall not exceed two times the permitted building height absent the Board's granting of a variance and provided, further, that no structure shall significantly impair solar access of adjacent buildings or solar collector locations.

[I don't think you would want to allow a solar facility to be 2 times the maximum building height.]

### 4. Section 240-32 Accessory uses

- O. Solar energy system. A solar generating energy system shall be permitted. No such system shall deny solar access of adjacent lots, exceed the maximum height regulations for the zoning district in which it is located or be located within the front yard or a required minimum side or rear yard.

[This is inconsistent with 240-23 which says by special exception a solar energy collector can exceed max. building height. What is a solar energy collector?]

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## Recommendations for Zoning Ordinance Revision

### General Consideration:

1. System types. Permit all types of systems in all districts?
  - a. Roof mounted systems
  - b. Pole mounted systems
  - c. Ground mounted systems

[what is the difference between pole mounted and ground mounted? Isn't the pole mounted to the ground?]

2. Restrictions in any districts
  - a. Historic
  - b. Floodplain (?)

[I would think you would not want to allow these on properties that have historic resources.]

3. Impacts of tree plantings

4. Screening requirements

[be careful of how much screening you require- screening may defeat the purpose.]

5. Impervious coverage regulations for ground or pole mounted systems.

### Draft Ordinance:

Recommend:

- A. Update Section 240-6 Definitions with more current definitions.

[I like the definitions that we used in Caln- we adopted these from a model ordinance that was circulated to the Board.]

- B. Update Accessory Uses - Section 240-32.O - Solar energy systems to include Standards (similar format to Section 240-32.J(6))

Source of recommended model ordinance:

Monroe (Pennsylvania), County of. 2010. "Model Ordinance for On-Site Usage of Solar Energy Systems.

Note: Following draft has not been formatted and cross referenced to the applicable ordinance sections of the current zoning.

Purpose of document is for discussion related to design standards.

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Source: Monroe (Pennsylvania), County of. 2010. "Model Ordinance for On-Site Usage of Solar Energy Systems.

## MODEL ORDINANCE FOR ON-SITE USAGE OF SOLAR ENERGY SYSTEMS

Township of East Goshen  
Chester County, Pennsylvania  
ORDINANCE NO. -----

AN ORDINANCE TO AMEND THE ZONING ORDINANCE OF EAST GOSHEN TOWNSHIP, BY AMENDING ARTICLE I, SECTION 240-6, DEFINITIONS, BY AMENDING EXISTING DEFINITIONS AND BY AMENDING ARTICLE V, SECTION 240-32.O \_\_\_\_\_

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BE IT HEREBY ENACTED AND ORDAINED by the Board of Supervisors of East Goshen Township, Chester County, Pennsylvania, that the Township Zoning Ordinance, shall be amended in the following respects:

Section 1. The Zoning Ordinance of East Goshen Township Section 240-6, Definitions, shall be amended to include the following definitions:

**Mechanical Equipment:** Any device associated with a solar energy system, such as an outdoor electrical unit/control box, that transfers the energy from the solar energy system to the intended on-site structure.

**Solar Access:** A property owner's right to have sunlight shine on the owner's land.

**Solar Energy System:** An energy conversion system, including appurtenances, which converts solar energy to a usable form of energy to meet all or part of the energy requirements of the on-site user. This definition shall include the terms passive solar and active solar systems.

**Solar Glare:** The effect produced by light reflecting from a solar panel with an intensity sufficient to cause annoyance, discomfort, or loss in visual performance and visibility.

Section 2. Applicability:

1. This ordinance applies to solar energy systems to be installed and constructed after the effective date of the ordinance.
2. Solar energy systems constructed prior to the effective date of this ordinance shall not be required to meet the requirements of this ordinance.

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3. Any upgrade, modification, or structural change that materially alters the size or placement of an existing solar energy system shall comply with the provisions of [Section/Article].

Section 3. The Zoning Ordinance of East Goshen Township, Article V, Section 240.32.O-, Accessory Regulations, shall be amended by repealing existing Section 240.32.O and replacing it as follows: adding [Section/Article#] as follows:

#### SOLAR ENERGY SYSTEMS

It is the purpose of this regulation to promote the safe, effective and efficient use of solar energy systems installed to reduce the on-site consumption of utility supplied energy and/or hot water as a permitted accessory use while protecting the health, safety and welfare of adjacent and surrounding land uses through appropriate zoning and land use controls. A solar energy system shall be permitted in any zoning district as an accessory to a principal use herein and subject to specific criteria as set forth below. Where said general standards and specific criteria overlap, the specific criteria shall supersede the general standards.

1. The installation and construction of a solar energy system shall be subject to the following development and design standards:
  - A. A solar energy system is permitted in all zoning districts as an accessory to a principal use.  
**NOTE: CURRENTLY NOT PERMITTED IN R-1 DISTRICT**
  - B. A solar energy system shall provide power for the principal use and/or accessory use of the property on which the solar energy system is located and shall not be used for the generation of power for the sale of energy to other users, although this provision shall not be interpreted to prohibit the sale of excess power generated from time to time to the local utility company.
  - C. A solar energy system connected to the utility grid shall provide written authorization from the local utility company to the Township acknowledging and approving such connection.
  - D. A solar energy system may be roof mounted [attachment #1] or ground mounted [attachment #2]. When installed on the roof of a building, no solar energy system/facility shall cover more than 50% of the roof area.
  - E. A roof mounted system may be mounted on a principal building or accessory building. A roof mounted system, whether mounted on the principal building or accessory building, may not exceed the maximum principal building height or accessory building height specified for the building type in the underlying zoning district. In no instance shall any part of the solar energy system extend beyond the

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edge of the roof. [do you want to limit how many feet above the building height these can be installed?]

F. All structure (ROOF?) mounted solar energy facilities shall be located on the rear portion of the structure, such that it is not visible from the front and is not higher than the peak of the roof. An applicant may utilize the front portion of the structure only if the applicant is able to demonstrate that no other alternative is feasible, including ground-mounted array areas, to the satisfaction of the Codes Enforcement Officer.

G. A solar energy facility may not be located on a building or structure that is listed on the Township's Historic Resources Map nor on any tract that contains a building or structure that is listed on the Township's Historic Resources Map unless an Historic Resource Study is completed in accordance with § \_\_\_\_\_.

[I actually like this provision but it is a policy decision for Township.]

F. A ground mounted system shall not exceed the maximum building height of eight (8) feet for accessory buildings. [agree we need to check how high these structures typically are.]

H. NOTE: NEED TO CHECK INDUSTRY STANDARDS FOR TYPICAL HEIGHT OF GROUND MOUNTED SYSTEMS.

NOTE: CURRENT ORDINANCE DOES NOT HAVE A MAXIMUM HEIGHT OF ACCESSORY BUILDINGS. STORAGE SHEDS - MAXIMUM HEIGHT IS 12- FEET.

I.G. \_\_\_\_\_ The surface area of a ground mounted system, regardless of the mounted angle, shall be calculated as part of the overall impervious coverage. [defer to engineer]

J.H. \_\_\_\_\_ A ground mounted system or system attached to an accessory building, including all mechanical equipment, shall be located behind the principal structure within the building envelope. not be located within the required front yard setback.

NOTE: RESTRICT PLACEMENT IN FRONT / SIDE YARDS?

[is this too restrictive to require it in bldg envelope?]

K. The minimum solar energy system setback distance from the property lines shall be equivalent to the building setback or accessory building setback requirement of the underlying zoning district. [Please note that some municipalities have less stringent accessory structure setbacks, e.g. 10 foot side yard setback for sheds. If accessory structure setbacks are less stringent than the primary structure setback, it is recommended that the municipality require solar energy systems to have the setback requirements of the primary structure in the underlying zoning district.]

L. NOTE: DISCUSSION RELATED TO SETBACK REQUIREMENTS.

L. All mechanical equipment associated with and necessary for the operation of the solar energy system shall comply with the following:

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~~a.J. Ground mounted solar energy systems including solar panels and m~~Mechanical equipment shall be fully screened from any adjacent property ~~that is residentially or public / private roadzoned or used for residential purposes~~. The screen shall consist of shrubbery, trees, or other non-invasive plant species which provides a visual screen. In lieu of a planting screen, a solid decorative fence meeting the requirements of the Zoning Ordinance may be used. Plantings or fence shall provide screening for the full height of the solar energy system at the time of installation.

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~~b. Mechanical equipment shall not be located within the minimum front yard setback of the underlying zoning district.~~

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~~c. Mechanical equipment shall comply with the setbacks specified for accessory structures in the underlying zoning district. [Please note that some municipalities have less stringent accessory structure setbacks, e.g. 10 foot side yard setback for sheds. If accessory structure setbacks are less stringent than the primary structure setback, it is recommended that the municipality requiresolar energy systems to have the setback requirements of the primary structure in the underlying zoning district.]~~

**NOTE: DISCUSSION RELATED TO SETBACK REQUIREMENTS.**

~~M.K.~~ Solar panels shall be placed such that concentrated solar radiation or glare shall not be directed onto nearby properties or roadways.

~~N.L.~~ Solar panels shall not be placed in the vicinity of any airport in a manner that would interfere with airport flight patterns. Acknowledgement from the Federal Aviation Administration may be necessary.

**[dountful you will get this from FAA.]**

~~O.M.~~ All power transmission lines from a ground mounted solar energy system to any building or other structure shall be located underground.

~~P.N.~~ A solar energy system shall not be used to display advertising, including signage, streamers, pennants, spinners, reflectors, ribbons, tinsel, balloons, flags, banners or similar materials. The manufacturers and equipment information, warning, or indication of ownership shall be allowed on any equipment of the solar energy system provided they comply with the prevailing sign regulations.

~~Q.O.~~ A solar energy system shall not be constructed until a building/zoning permit has been approved and issued.

~~R.P.~~ The design of the solar energy system shall conform to applicable industry standards. A building permit shall be obtained for a solar energy system per the Pennsylvania Uniform Construction Code (UCC), Act 45 of 1999, as amended, and the regulations adopted by the Department of Labor and Industry. All wiring

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shall comply with the applicable version of the National Electric Code (NEC). The local utility provider shall be contacted to determine grid interconnection and net metering policies. The Applicant shall submit certificates of design compliance obtained by the equipment manufacturer from a certifying organization and any such design shall be certified by an Engineer registered in the Commonwealth of Pennsylvania. ~~The [Please note that the existing roof structure and the weight of the solar energy system shall be taken into consideration when applying for a solar energy system permit].~~

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S.Q. The solar energy system shall comply with all applicable Township Ordinances and Codes so as to ensure the structural integrity of such solar energy system.

R. Before any construction can commence on any ground mounted solar energy system, the property owner must prepare an Operation and Maintenance Agreement (O&M) with the Township. The agreement must address the following: acknowledge that he/she is the responsible party for owning and maintaining the solar energy system

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1. Identify the responsible party for owning and maintaining the solar energy system, mechanical equipment, fence, screening and any other requirement of the Township approval.
2. Grant the Township the right, but not the duty, to access the system to conduct periodic inspections and to undertake other actions that may be necessary to enforce the requirements of this Ordinance, or of any applicable O&M Agreement.
3. In the event that the responsible person or entity fails to maintain the system, the agreement shall grant to the Township the right but not the duty to enter upon the premises to repair or restore said facilities, to charge and assess the costs thereof to the owner and to enforce said charges and assessments by lien upon the property.

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4. The agreement shall contain a covenant binding on the grantee and all successors in interest designating the responsibility for operation and maintenance of the on-lot facilities. The agreement shall be recorded in the Chester County Office of the Recorder of Deeds

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[I agree with Rick that this is very onerous.]

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2. If a ground mounted solar energy system is removed, any earth disturbance as a result of the removal of the ground mounted solar energy system shall be graded and reseeded.
3. If a ground mounted solar energy system has been abandoned (meaning not having been in operation for a period of six (6) months) or is defective or is deemed to be unsafe by the Township Building Code Official, the solar energy system shall be required to be repaired by the owner to meet federal, state and local safety standards, or be removed by the property owner within the time period allowed by the Township

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Building Code Official. If the owner fails to remove or repair the defective or abandoned solar energy system, the Township may pursue a legal action to have the system removed at the owner's expense. [I think you rely on the Zoning Ordinance's enforcement mechanisms that are already in place which includes the right to request a restraining order from court to stop zoning violation. No need to include this last sentence.]

STORMWATER MANAGEMENT REQUIREMENTS FOR GROUND MOUNTED SYSTEMS. [I defer to engineer]

Section 4. All other portions, parts and provisions of the Zoning Ordinance of East Goshen Township, as heretofore enacted and amended, shall remain in force and effect.

Section 5. This Ordinance shall take effect five (5) days after the date of its enactment.

DULY ORDAINED AND ENACTED the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_, by the Board of Supervisors of the Township of East Goshen, Chester County, Pennsylvania, in lawful session duly assembled.

ADDITIONAL COMMENTS (NOT COMPLETE):

- AMEND REGULATIONS FOR LARGER SIZE SYSTEMS → CONDITIONAL USE. [if the solar energy system is the primary use of the lot, I think it should be defined differently and the Board must decide which zoning districts are appropriate for such use.]
- STORMWATER MANAGEMENT REGULATIONS FOR SMALL AND LARGE GROUND MOUNTED SYSTEMS.

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**CALIFORNIA DEPARTMENT of FORESTRY  
and FIRE PROTECTION  
OFFICE OF THE STATE FIRE MARSHAL**



**SOLAR PHOTOVOLTAIC  
INSTALLATION GUIDELINE**

**(In partnership with interested local fire officials, building officials,  
and industry representatives)**

April 22, 2008

# SOLAR PHOTOVOLTAIC INSTALLATION GUIDELINE

April 22, 2008

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## **About the Guideline**

The California Department of Forestry and Fire Protection - Office of the State Fire Marshal (CAL FIRE-OSFM), local Fire Departments (FD), and the solar photovoltaic industry have developed this guideline for installations to increase public safety for all structures equipped with solar photovoltaic systems.

This guideline was developed with safety as the principal objective. The solar photovoltaic industry has been presented with certain limitations in roof installations due to firefighting suppression techniques. The intent of this guideline is to provide the solar photovoltaic industry with information that will aid in the designing, building, and installation of solar photovoltaic systems in a manner that should meet the objectives of both the solar photovoltaic industry and the Fire Service.

The provisions of this guideline, if adopted by the local enforcing agency by local ordinance, is meant to apply to the design, construction and installation of solar photovoltaic systems on buildings regulated by Title 24 of the California Building Standards Codes.

A solar contractor should always contact their local fire department to determine if the means or methods to be used will allow for a safe installation that is acceptable to the fire department and meets local code requirements.

## **General Information about Solar Photovoltaic Systems**

Solar photovoltaic systems generate electricity from the sun. As of September 2007, there are roughly 30,000 solar photovoltaic systems installed on homes, commercial buildings and free-standing structures in California. Most systems are connected to the electric grid and provide power to the site. The majority of these systems do not have any battery backup equipment – instead, excess power is sent to the electric utility system.

Solar photovoltaic (PV) systems are installed with an alternating current (AC) disconnect at the service panel. Conduit carrying direct current (DC) power connects the modules to the inverter. The inverter connects the PV system to the utility service panel. AC disconnects are not required in all jurisdictions because the main breaker provides this level of disconnect.

A DC disconnect is installed on the site side of the inverter. Typical systems seen today have an inverter located near the utility service panel. Some inverters (micro inverters, AC modules) are located at the PV module (the solar industry refers to PV panels as “modules”). If the inverter is located at the PV module, the conduit from the modules to the utility power supply is AC. The DC disconnect at the service panel cuts power to the inverter, which is then unable to export power to the utility service panel and prevents any solar electricity from harming service or maintenance workers on the utility side of

the panel. During the day, there is power in the conduit between the PV modules and the DC disconnect.

The systems can produce up to 8 amps and up to 600 volts of electricity which varies by installation. Modules connected together are called strings. Multiple strings are connected together at a combiner box. The power output is highest on a bright day with low ambient temperatures and drops as the modules heat up (such as on a very hot day). There is no power output in the dark and there is no stored energy in the modules themselves. Service lights used by fire crews do not provide enough light to develop any harmful power levels.

Modules are mounted on buildings or on ground supported frames. Roof mounted modules, also sometimes known as panels, can be one of these types:

- Directly on a building's roof
- Integral to the roof system of a building
- On a rack with a space above the roof surface
- On a freestanding structure but not on the habitable structure (such as a trellis or other free-standing support structure)

Specifically:

- Modules attached to a mounting system may be attached to the roof or rest on the roof surface.
- Modules integrated to the roof system are commonly referred to as Building Integrated Photovoltaics (BIPV) and are of two types:
  - Physically integrated roofing products resemble roof shingles or tiles and are installed along with standard roof shingles or tiles so that they blend into the overall appearance of the roof. Physically integrated BIPV modules alternate current as part of a defined roofing system.
  - Aesthetically integrated modules also resemble roof shingles or tiles and are installed along with standard roof shingles or tiles to blend into the overall appearance of the roof. Aesthetically integrated modules do not alternate current as part of a defined roofing system.

Modules are located in a manner to provide the best access to sunlight. This means they are typically mounted on the south or west side facing roof façade. In residential applications, the typical roof area used is about 400 square feet. Larger size systems correspond to a higher site electricity demand. Although it is not advisable to step or walk on any solar system due to slip and/or trip hazards, the systems should be able to support a firefighter's weight.

Other PV products, such as those integrated with a curtain wall or as windows are not currently addressed in this guideline. Other types of solar energy systems that might be seen at a site do not generate electricity. These can be broken down into three major types - solar water heating, solar pool heating, and solar space conditioning. In these



systems, modules and piping usually carry water or glycol. Glycol is used in areas where extended periods of freezing temperature levels could cause ice to damage the solar panels and/or distribution pipes.

### **Resources**

In July 2007 CAL FIRE-OSFM established a Task Force to develop this guideline, working with the California Solar Energy Industries Association (CAL SEIA). Members of local fire service agencies and the solar photovoltaic industry worked together to develop a guideline that would help the fire service ensure safe access to perform rescue and fire suppression operations and aid local government in developing appropriate codes to ensure that solar photovoltaic system installations on residential and commercial buildings are applied in a safe manner.

CAL FIRE: Vickie Sakamoto: [vickie.sakamoto@fire.ca.gov](mailto:vickie.sakamoto@fire.ca.gov)  
California Solar Energy Industries Association (CAL SEIA): [info@calseia.org](mailto:info@calseia.org)

### **Task Force Participants**

Significant contributions to the guideline were made by the following individuals:

#### **Fire Service**

Vickie Sakamoto, CAL FIRE-OSFM  
Kevin Reinertson, CAL FIRE-OSFM  
Matthew Gatewood, Los Angeles Fire Department  
Denise Enea and Marshall Hird, Woodside Fire Department  
Jim Hone, Santa Monica Fire Department  
Kent Miller, Port of Stockton  
Ken Kwong and Elizabeth Brueck, Sacramento Fire Department  
Lisa Beaver, SMUD  
Ron Keefer, Menlo Park Fire Department  
Tim Ippolito, Roseville Fire Department  
Wes Kitchel, Santa Rosa Fire Department  
Scott Poster, County of Los Angeles Fire Department  
Ed Hadfield, Coronado Fire Department  
William Bigariani, San Francisco Fire Department

#### **Solar Industry**

Sue Kateley, CAL SEIA  
Gary Gerber, Sun Light & Power  
Edgar Becerra, Sharp Solar  
Colin Murchie, SunEdison  
John Hostetter, REC Solar, Inc.  
Mark Mrohs, Kurt Johnson, Gary Neate, Dylan Anderson, and Carl Lenox, Sunpower  
Peter Rive, SolarCity  
Kirk Uhler and Carl Woods, SolarPower, Inc.

#### **Additional Participants**

Bill Brooks, Brooks Engineering  
John Taeker, Underwriters Laboratories

## **Adopting the Guideline**

This guideline is just that, it is a suggested means of writing a local ordinance and does not have the force of law. Adoption of this guideline is optional. The provisions of this guideline may be adopted by local city, county, or city and county governments to establish more restrictive and reasonably necessary differences to the provisions contained in the California Building or Fire Codes, pursuant to complying with Section 101.8. It may be necessary to amend the wording of this guideline to convert it from a guideline to an adopted ordinance. In accordance with Sections 101.8 and 101.8.1, of the California Building Code, the city, county, or city and county must make express findings for each amendment, addition or deletion of the state building codes. Those findings must be based on climatic, topographic, or geological conditions.

## **General**

Provisions contained in this guideline do not apply unless specifically adopted by local ordinance by a local enforcing agency in compliance with Health and Safety Code Section 18938(b) for Building Standards Law, Health and Safety Code Section 17950 for State Housing Law and Health and Safety Code Section 13869.7 for Fire Protection Districts.

Growing demand for solar photovoltaic products is leading to new products, designs, technologies, and installation methods. As new products and methods become available, local fire departments may encounter solar photovoltaic systems that will require an alternative means of compliance. Solar contractors should contact their local fire department to determine if alternate means or methods would allow for a safe installation that is acceptable to the fire department.

Authorities Having Jurisdiction may approve Alternative Means of Compliance based on their authority, in accordance to California Building Code Sections 108.7 for residential buildings or Section 111.2.4 for occupancies regulated by the Office of the State Fire Marshal. This may be necessary where, for example, new products, designs, technologies or methods become available that provide sufficient alternative protection and access, pathways, and ventilation opportunities for fire crews.

## **Local Ordinance Required by City, County, City and County, Fire Protection Districts**

This guideline does not have the force of law and the provisions of this guideline do not limit the existing authority of city or county governments or Fire Protection districts to establish more restrictive and reasonably necessary changes to the provisions contained in the California Code of Regulations, Title 24, the California Building Standard Codes pursuant to complying with the findings and filings requirements.

Local modifications to California Building Standards Codes must comply with Health and Safety Code Section 18938(b) for Building Standards Law, Health and Safety Code

Section 17950 for State Housing Law, or Health and Safety Code Section 13869.7 for Fire Protection Districts.

## **Findings and Filings**

The city, county, or city and county that wish to amend the current California Building Standards Codes as it pertains to their jurisdiction must make express findings for each amendment, addition or deletion based upon climatic, topographical, or geological conditions.

The city, county, or city and county shall file the amendments, addition or deletions expressly marked and identified as to the applicable findings. Cities, counties, cities and counties, and fire departments shall file the amendments, additions, or deletions and the findings with the California Building Standards Commission at 2525 Natomas Park Drive, Suite 1320, Sacramento, CA 95833.

Findings prepared by fire protection districts shall be ratified by the local city, county, or city and county and filed with the California Department of Housing and Community Development at 1800 3<sup>rd</sup> Street, Room 260, Sacramento, CA 95814.

## **Wording**

For ease of use, the below listed installation guidelines are worded as requirements. Please remember that these are not legally enforceable requirements, they are just guidelines. To convert these guidelines into a legally enforceable format, a city, county, or city and county must follow the appropriate procedure as explained above.

### **1.0 MARKING**

PV systems must be marked. Marking is needed to provide emergency responders with appropriate warning and guidance with respect to working around and isolating the solar electric system. This can facilitate identifying energized electrical lines that connect the solar modules to the inverter, as these should not be cut when venting for smoke removal.

Materials used for marking must be weather resistant. It is recommended that Underwriters Laboratories Marking and Labeling System 969 (UL 969) be used as standard to determine weather rating. (UL listing of markings is not required).

#### **1.1 Main Service Disconnect**

For residential applications, the marking may be placed within the main service disconnect. If the main service disconnect is operable with the service panel closed, the marking should be placed on the outside cover.

For commercial application, the marking should be placed adjacent to the main service disconnect in a location clearly visible from the location where the lever is operated.

### 1.1.1 Marking Content and Format

- MARKING CONTENT: CAUTION: SOLAR ELECTRIC SYSTEM
- RED BACKGROUND
- WHITE LETTERING
- MINIMUM 3/8" LETTER HEIGHT
- ALL CAPITAL LETTERS
- ARIAL OR SIMILAR FONT, NON-BOLD
- REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT (durable adhesive materials may meet this requirement)

**CAUTION: SOLAR ELECTRIC SYSTEM**

### 1.2 Marking for Direct Current Conduit, Raceways, Enclosures, Cable Assemblies, and Junction Boxes

Marking is required on all interior and exterior DC conduit, raceways, enclosures, cable assemblies, and junction boxes to alert the Fire Service to avoid cutting them. Marking should be placed on all interior and exterior DC conduit, raceways, enclosures, and cable assemblies, every 10 feet, at turns and above and/or below penetrations and all DC combiner and junction boxes.

#### 1.2.1 Marking Content and Format

- MARKING CONTENT: CAUTION: SOLAR CIRCUIT
- RED BACKGROUND
- WHITE LETTERING
- MINIMUM 3/8" LETTER HEIGHT
- ALL CAPITAL LETTERS
- ARIAL OR SIMILAR FONT, NON-BOLD
- REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT (durable adhesive materials meet this requirement)

**CAUTION: SOLAR CIRCUIT**

### 1.3 Inverters

The inverter is a device used to convert DC electricity from the solar system to AC electricity for use in the building's electrical system or the grid.

No markings are required for the inverter.

## **2.0 ACCESS, PATHWAYS AND SMOKE VENTILATION**

Access and spacing requirements should be observed in order to:

- Ensure access to the roof
- Provide pathways to specific areas of the roof
- Provide for smoke ventilation opportunities area
- Provide emergency egress from the roof

Local jurisdictions may create exceptions to this requirement where access, pathway or ventilation requirements are reduced due to:

- Proximity and type of adjacent exposures
- Alternative access opportunities (as from adjoining roofs)
- Ground level access to the roof area in question
- Adequate ventilation opportunities beneath solar array (as with significantly elevated or widely-spaced arrays)
- Adequate ventilation opportunities afforded by module set back from other rooftop equipment (example: shading or structural constraints may leave significant areas open for ventilation near HVAC equipment)
- Automatic ventilation device
- New technology, methods, or other innovations that ensure adequate fire department access, pathways and ventilation opportunities

Designation of ridge, hip, and valley does not apply to roofs with 2-in-12 or less pitch. All roof dimensions are measured to centerlines.

Roof access points should be defined as areas where ladders are not placed over openings (i.e., windows or doors) and are located at strong points of building construction and in locations where they will not conflict with overhead obstructions (i.e., tree limbs, wires, or signs).

### **2.1 Residential Systems—Single and Two-Unit Residential Dwellings**

Plan review is required if a system is to be installed that will occupy more than 50% of the roof area of a residential building.

Examples of these requirements appear at the end of this guideline.

#### **2.1.1 Access/Pathways**

- a. Residential Buildings with hip roof layouts: Modules should be located in a manner that provides one (1) three-foot (3') wide clear access pathway from the

eave to the ridge on each roof slope where modules are located. The access pathway should be located at a structurally strong location on the building (such as a bearing wall).

- b. Residential Buildings with a single ridge: Modules should be located in a manner that provides two (2) three-foot (3') wide access pathways from the eave to the ridge on each roof slope where modules are located.
- c. Hips and Valleys: Modules should be located no closer than one and one half (1.5) feet to a hip or a valley if modules are to be placed on both sides of a hip or valley. If the modules are to be located on only one side of a hip or valley that is of equal length then the modules may be placed directly adjacent to the hip or valley.

### **2.1.2 Smoke Ventilation**

The modules should be located no higher than three feet (3') below the ridge.

## **2.2 Commercial Buildings and Residential Housing Comprised of Three (3) or More Units**

Exception: If a local fire department determines that the roof configuration is similar to residential (such as in the case of townhouses, condominiums, or single family attached buildings), the local fire department may make a determination to apply the residential access and ventilation requirements.

Examples of these requirements appear at the end of this guideline.

### **2.2.1 Access**

There should be a minimum six foot (6') wide clear perimeter around the edges of the roof.

Exception: If either axis of the building is 250 feet or less, there should be a minimum four feet (4') wide clear perimeter around the edges of the roof.

### **2.2.2 Pathways**

Pathways should be established in the design of the solar installation. Pathways should meet the following requirements:

- a. Should be over structural members
- b. Centerline axis pathways should be provided in both axis of the roof. Centerline axis pathways should run on structural members or over the next closest structural member nearest to the center lines of the roof
- c. Should be straight line not less than 4 feet (4') clear to skylights and/or ventilation hatches
- d. Should be straight line not less than 4 feet (4') clear to roof standpipes
- e. Should provide not less than 4 feet (4') clear around roof access hatch with at least one not less than 4 feet (4') clear pathway to parapet or roof edge

### **2.2.3 Smoke Ventilation**

- a. Arrays should be no greater than 150 by 150 feet in distance in either axis
- b. Ventilation options between array sections should be either:
  1. A pathway 8 feet (8') or greater in width
  2. 4 feet (4') or greater in width pathway **and** bordering on existing roof skylights or ventilation hatches
  3. 4 feet (4') or greater in width pathway **and** bordering four feet (4') x 8 feet 8' "venting cutouts" every 20 feet (20') on alternating sides of the pathway

## **3.0 LOCATION OF DIRECT CURRENT (DC) CONDUCTORS**

Conduit, wiring systems, and raceways for photovoltaic circuits should be located as close as possible to the ridge or hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities.

Conduit runs between sub arrays and to DC combiner boxes should use design guidelines that minimize total amount of conduit on the roof by taking the shortest path from the array to the DC combiner box. The DC combiner boxes are to be located such that conduit runs are minimized in the pathways between arrays.

To limit the hazard of cutting live conduit in venting operations, DC wiring should be run in metallic conduit or raceways when located within enclosed specs in a building and should be run, to the maximum extent possible, along the bottom of load-bearing members.

## **4.0 NON-HABITABLE BUILDINGS**

This guideline does not apply to non-habitable structures. Examples of non-habitable structures include, but are not limited to, parking shade structures, solar trellises, etc.

## **5.0 GROUND MOUNTED PHOTOVOLTAIC ARRAYS**

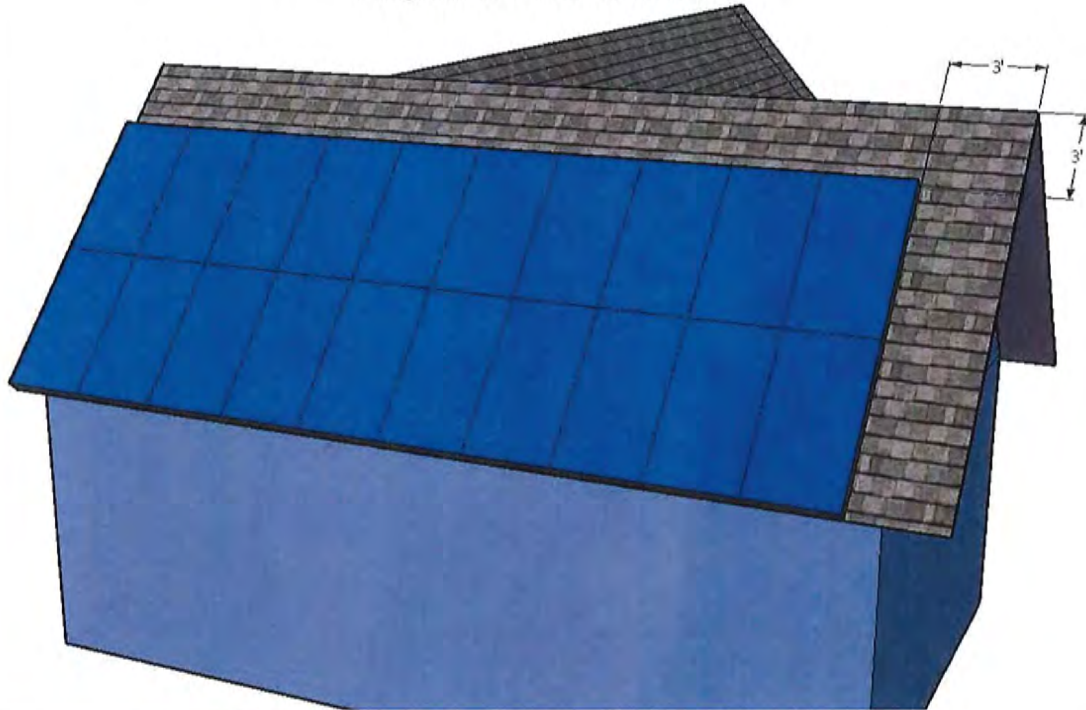
Setback requirements do not apply to ground-mounted, freestanding photovoltaic arrays. A clear brush area of ten feet (10') is required for ground mounted photovoltaic arrays.

**\*\*\*SEE PAGES 12 – 17 FOR EXAMPLES\*\*\***



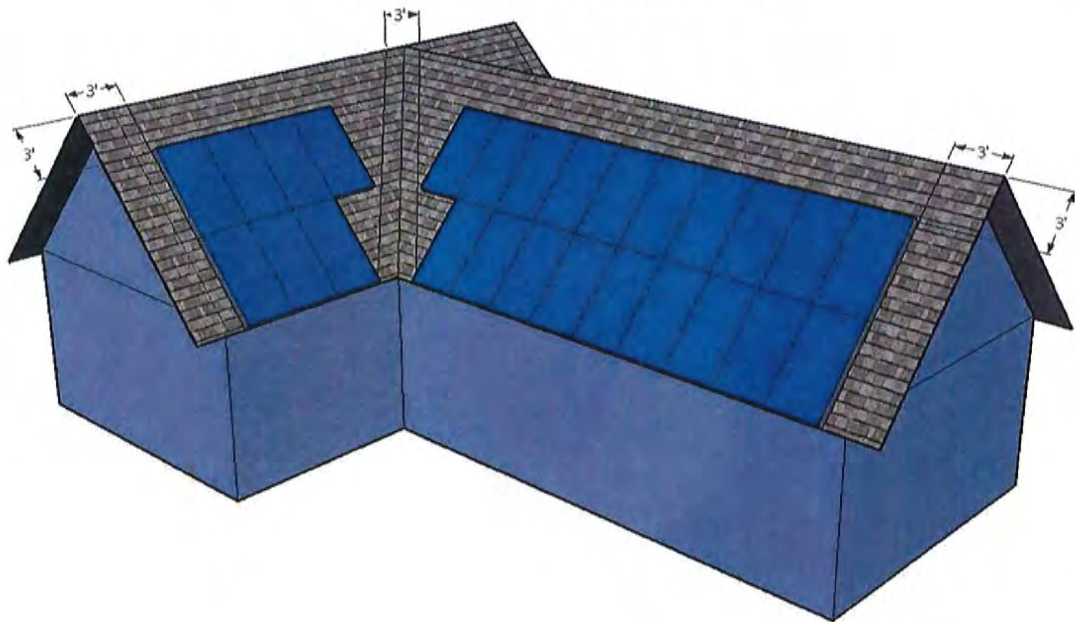
**EXAMPLE 1**

Diagram 1: Cross Gable Roof



**EXAMPLE 2**

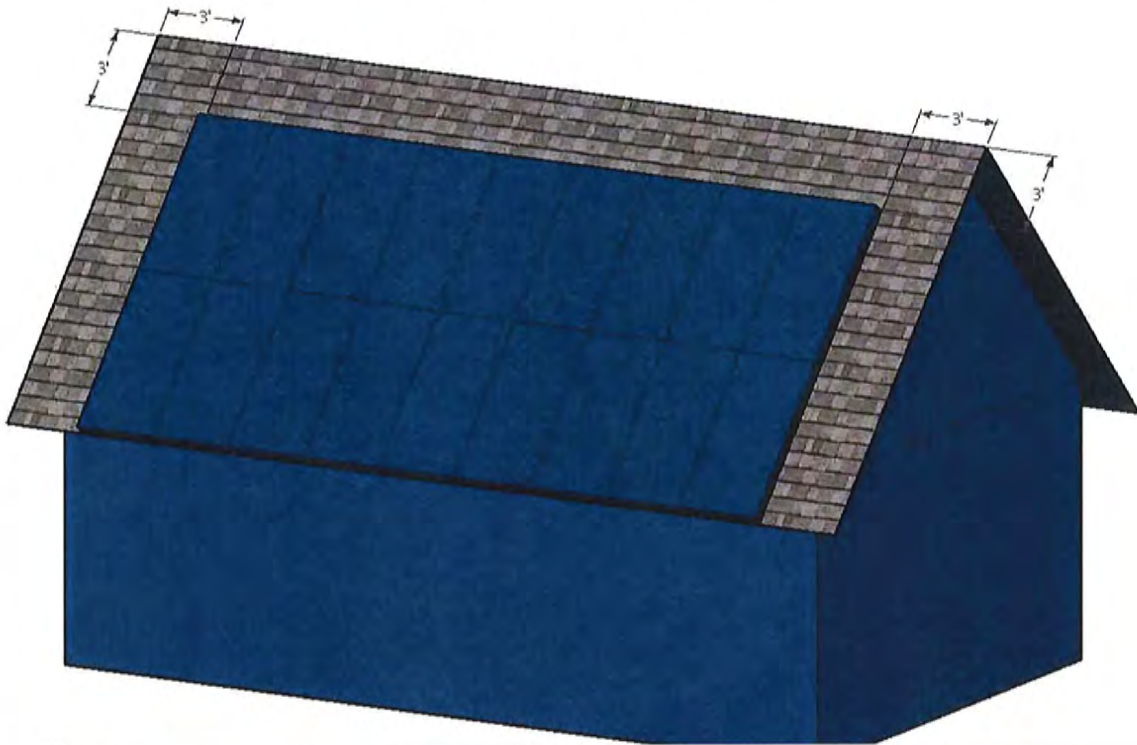
Diagram 2: Cross Gable with Valley





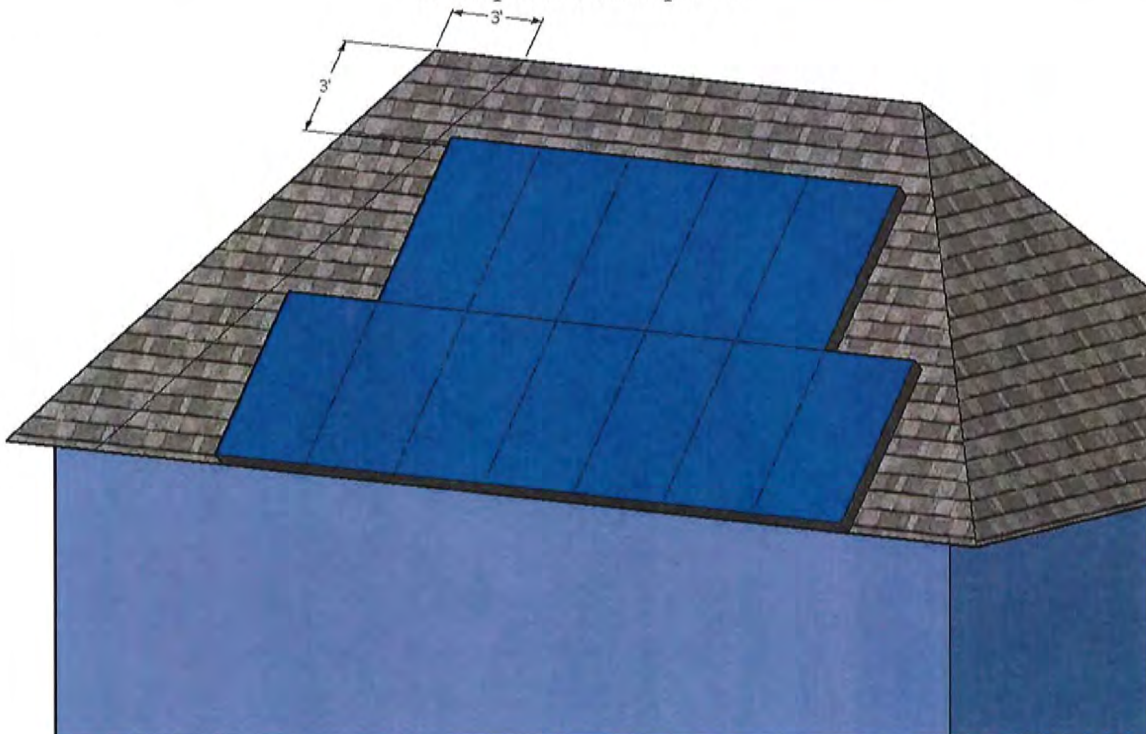
**EXAMPLE 3**

Diagram 3: Full Gable



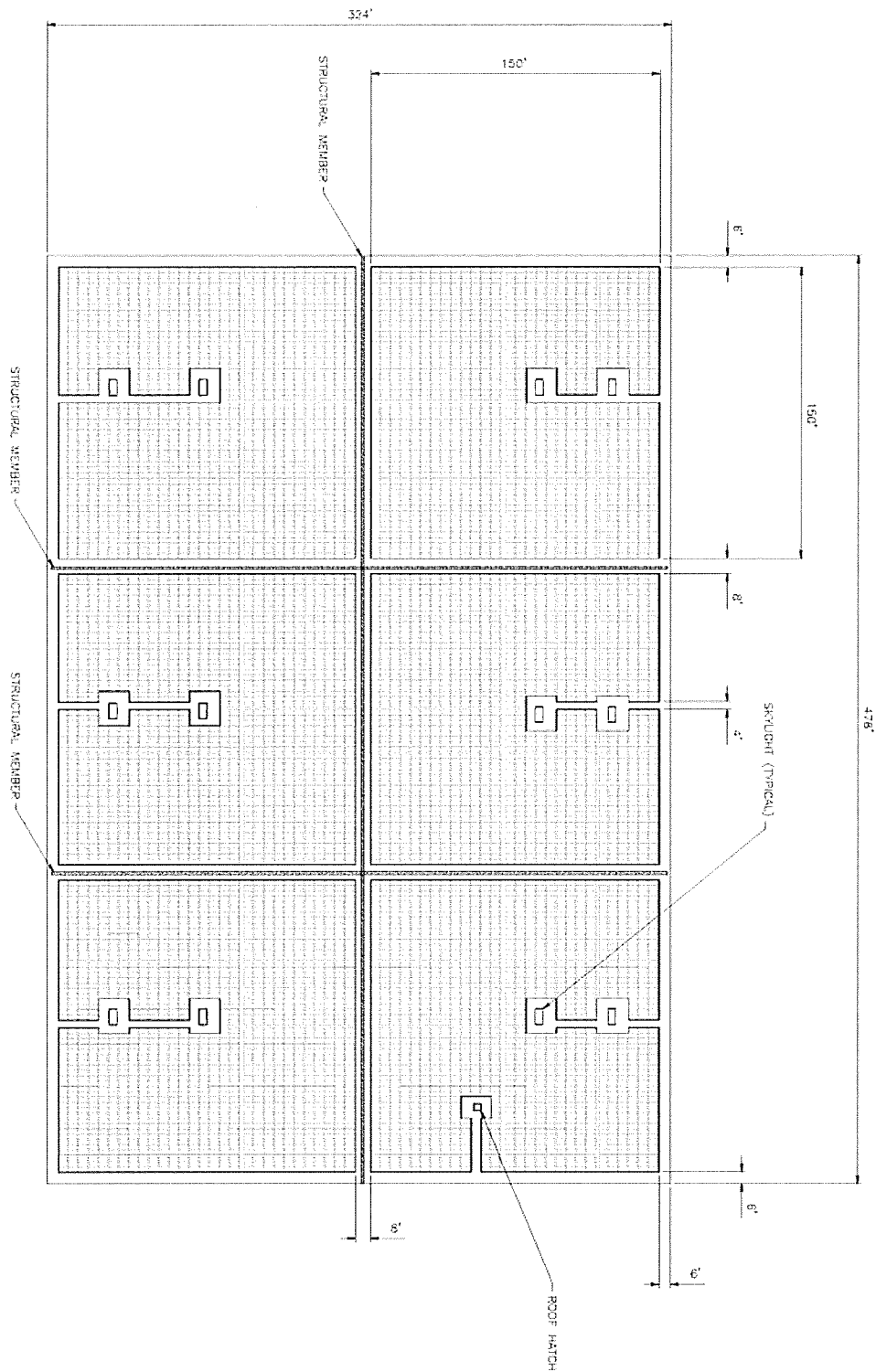
**EXAMPLE 4**

Example 4: Full Hip Roof



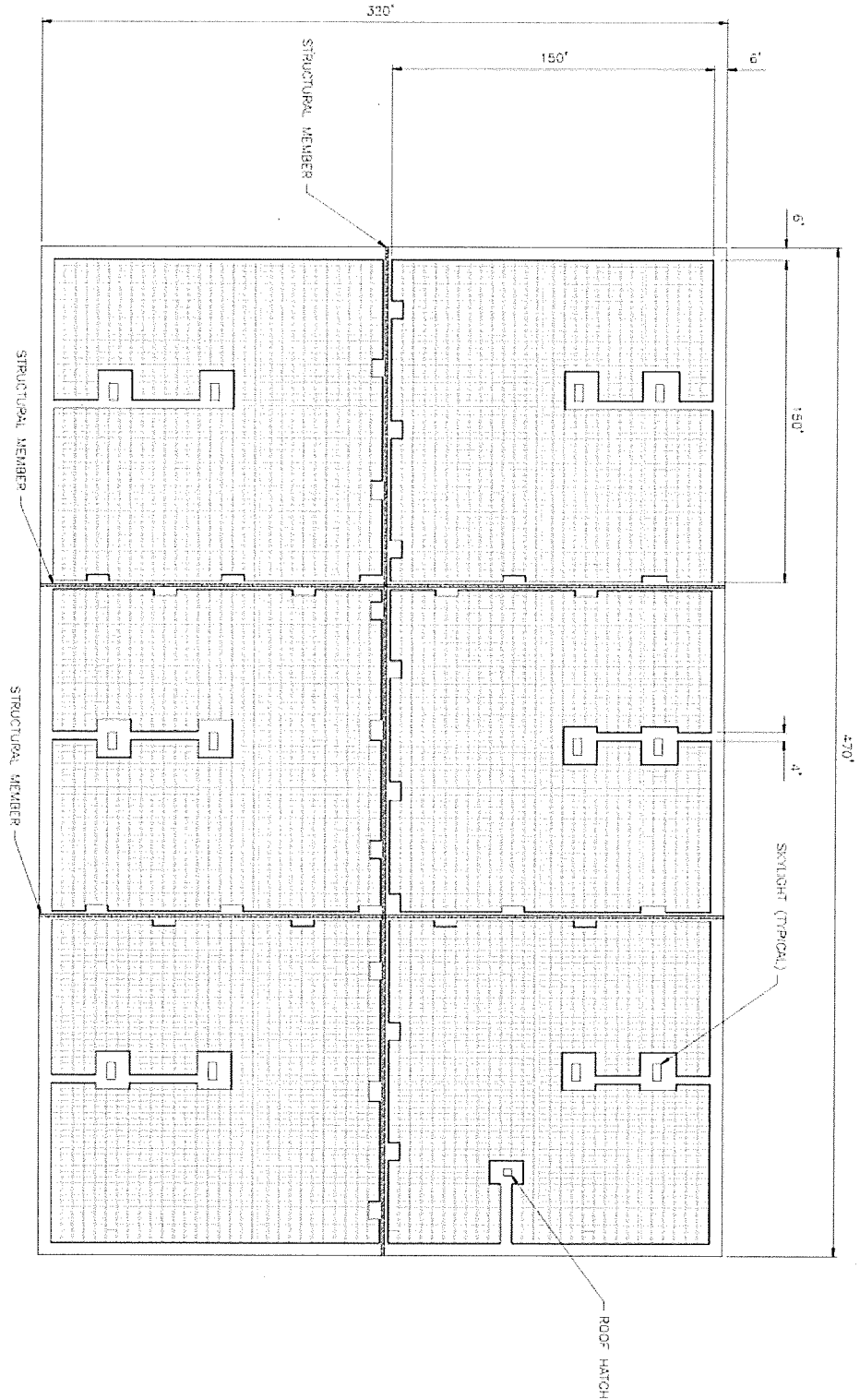
**EXAMPLE 5**

SOLAR ARRAY EXAMPLE – LARGE COMMERCIAL  
8' WALKWAYS



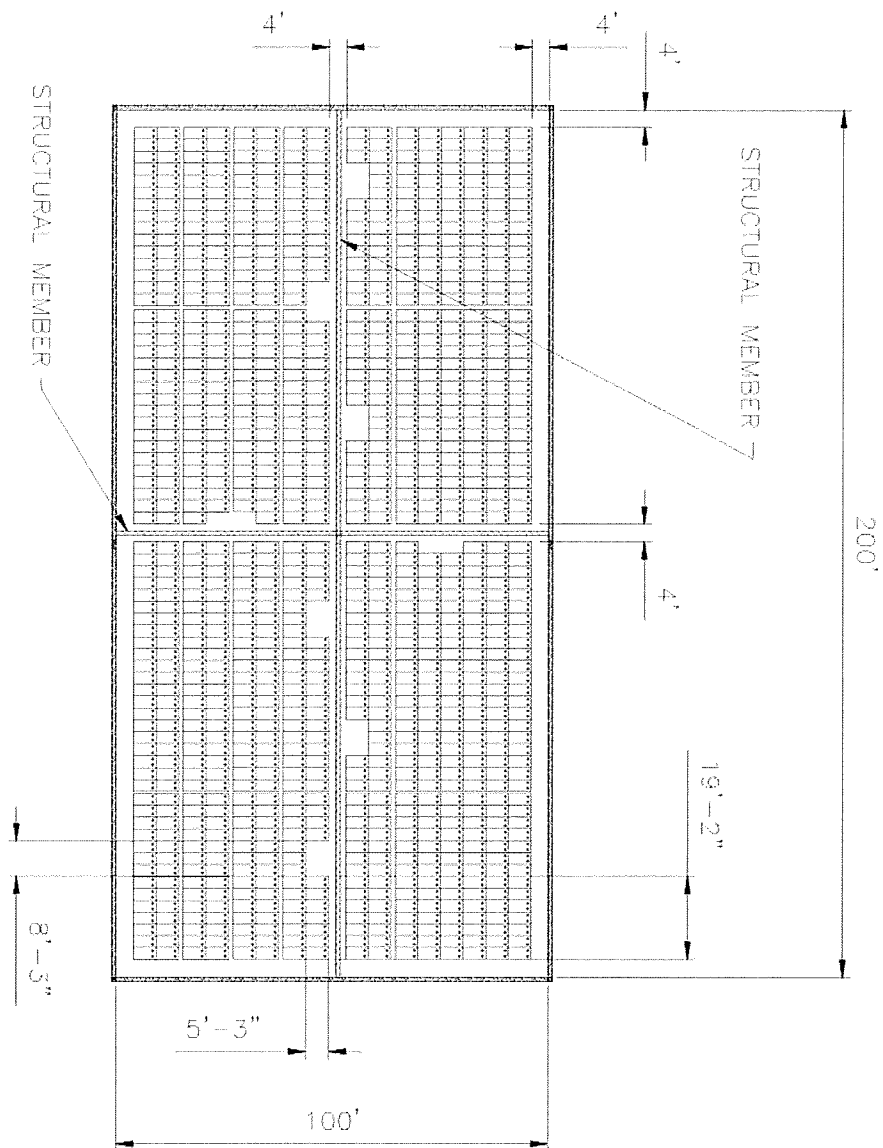
# EXAMPLE 6

SOLAR ARRAY EXAMPLE – LARGE COMMERCIAL  
4' WALKWAYS WITH 8' X 4' VENTING OPPORTUNITIES EVERY 20'



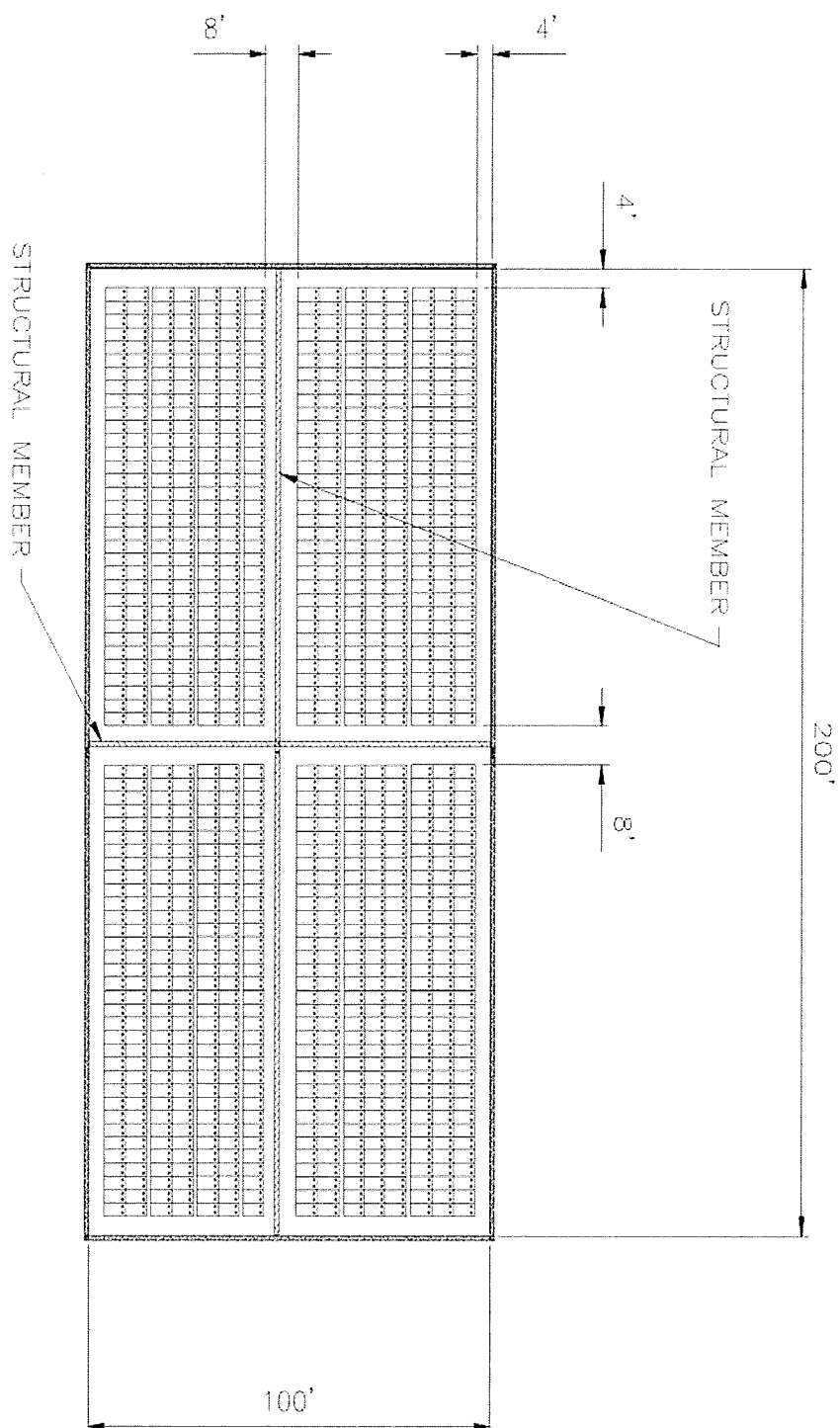
# EXAMPLE 7

SOLAR ARRAY EXAMPLE – SMALL COMMERCIAL  
 4' WALKWAYS WITH 8' X 4' VENTING OPPORTUNITIES EVERY 20' ALONG WALKW.



**EXAMPLE 8**

SOLAR ARRAY EXAMPLE – SMALL COMMERCIAL  
8' WALKWAYS





MARK - THIS IS FROM THE  
2012 INTERNATIONAL FIRE CODE

**605.11 Solar photovoltaic power systems.**

Solar photovoltaic power systems shall be installed in accordance with [Sections 605.11.1](#) through [605.11.4](#), the *International Building Code* and NFPA 70.

**Exception:** Detached, nonhabitable Group U structures including, but not limited to, parking shade structures, carports, solar trellises and similar structures shall not be subject to the requirements of this section.

**605.11.1 Marking.**

Marking is required on interior and exterior direct-current (DC) conduit, enclosures, raceways, cable assemblies, junction boxes, combiner boxes and disconnects.

**605.11.1.1 Materials.**

The materials used for marking shall be reflective, weather resistant and suitable for the environment. Marking as required in [Sections 605.11.1.2](#) through [605.11.1.4](#) shall have all letters capitalized with a minimum height of  $\frac{3}{8}$  inch (9.5 mm) white on red background.

**605.11.1.2 Marking content.**

The marking shall contain the words "WARNING: PHOTOVOLTAIC POWER SOURCE."

**605.11.1.3 Main service disconnect.**

The marking shall be placed adjacent to the main service disconnect in a location clearly visible from the location where the disconnect is operated.

**605.11.1.4 Location of marking.**

Marking shall be placed on interior and exterior DC conduit, raceways, enclosures and cable assemblies every 10 feet (3048 mm), within 1 foot (305 mm) of turns or bends and within 1 foot (305 mm) above and below penetrations of roof/ceiling assemblies, walls or barriers.

**605.11.2 Locations of DC conductors.**

Conduit, wiring systems, and raceways for photovoltaic circuits shall be located as close as possible to the ridge or hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities. Conduit runs between sub arrays and to DC combiner boxes shall be installed in a manner that minimizes the total amount of conduit on the roof by taking the shortest path from the array to the DC combiner box. The DC combiner boxes shall be located such that conduit runs are minimized in the pathways between arrays. DC wiring shall be installed in metallic conduit or raceways when located within enclosed spaces in a building. Conduit shall run along the bottom of load bearing members.

**605.11.3 Access and pathways.**

Roof access, pathways, and spacing requirements shall be provided in accordance with [Sections 605.11.3.1](#) through [605.11.3.3.3](#).

**Exceptions:**

1. Residential structures shall be designed so that each photovoltaic array is no greater than 150 feet (45 720 mm) by 150 feet (45 720 mm) in either axis.
2. Panels/modules shall be permitted to be located up to the roof ridge where an alternative ventilation method approved by the fire chief has been provided or where the fire chief has determined vertical ventilation techniques will not be employed.



**605.11.3.1 Roof access points.**

Roof access points shall be located in areas that do not require the placement of ground ladders over openings such as windows or doors, and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires, or signs.

**605.11.3.2 Residential systems for one- and two-family dwellings.**

Access to residential systems for one- and two-family dwellings shall be provided in accordance with [Sections 605.11.3.2.1](#) through [605.11.3.2.4](#).

**605.11.3.2.1 Residential buildings with hip roof layouts.**

Panels/modules installed on residential buildings with hip roof layouts shall be located in a manner that provides a 3-foot-wide (914 mm) clear access pathway from the eave to the ridge on each roof slope where panels/modules are located. The access pathway shall be located at a structurally strong location on the building capable of supporting the live load of fire fighters accessing the roof.

**Exception:** These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.

**605.11.3.2.2 Residential buildings with a single ridge.**

Panels/modules installed on residential buildings with a single ridge shall be located in a manner that provides two, 3-foot-wide (914 mm) access pathways from the eave to the ridge on each roof slope where panels/modules are located.

**Exception:** This requirement shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.

**605.11.3.2.3 Residential buildings with roof hips and valleys.**

Panels/modules installed on residential buildings with roof hips and valleys shall be located no closer than 18 inches (457 mm) to a hip or a valley where panels/modules are to be placed on both sides of a hip or valley. Where panels are to be located on only one side of a hip or valley that is of equal length, the panels shall be permitted to be placed directly adjacent to the hip or valley.

**Exception:** These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.

**605.11.3.2.4 Residential building smoke ventilation.**

Panels/modules installed on residential buildings shall be located no higher than 3 feet (914 mm) below the ridge in order to allow for fire department smoke ventilation operations.

**605.11.3.3 Other than residential buildings.**

Access to systems for occupancies other than one- and two-family dwellings shall be provided in accordance with [Sections 605.11.3.3.1](#) through [605.11.3.3.3](#).

**Exception:** Where it is determined by the *fire code official* that the roof configuration is similar to that of a one- or two-family dwelling, the residential access and ventilation requirements in [Sections 605.11.3.2.1](#) through [605.11.3.2.4](#) shall be permitted to be used.

**605.11.3.3.1 Access.**

There shall be a minimum 6-foot-wide (1829 mm) clear perimeter around the edges of

the roof.

**Exception:** Where either axis of the building is 250 feet (76 200 mm) or less, there shall be a minimum 4-foot-wide (1290 mm) clear perimeter around the edges of the roof.

#### **605.11.3.3.2 Pathways.**

The solar installation shall be designed to provide designated pathways. The pathways shall meet the following requirements:

1. The pathway shall be over areas capable of supporting the live load of fire fighters accessing the roof.
2. The centerline axis pathways shall be provided in both axes of the roof. Centerline axis pathways shall run where the roof structure is capable of supporting the live load of fire fighters accessing the roof.
3. Shall be a straight line not less than 4 feet (1290 mm) clear to skylights or ventilation hatches.
4. Shall be a straight line not less than 4 feet (1290 mm) clear to roof standpipes.
5. Shall provide not less than 4 feet (1290 mm) clear around roof access hatch with at least one not less than 4 feet (1290 mm) clear pathway to parapet or roof edge.

#### **605.11.3.3.3 Smoke ventilation.**

The solar installation shall be designed to meet the following requirements:

1. Arrays shall be no greater than 150 feet (45 720 mm) by 150 feet (45 720 mm) in distance in either axis in order to create opportunities for fire department smoke ventilation operations.
2. Smoke ventilation options between array sections shall be one of the following:
  - 2.1. A pathway 8 feet (2438 mm) or greater in width.
  - 2.2. A 4-foot (1290 mm) or greater in width pathway and bordering roof skylights or smoke and heat vents.
  - 2.3. A 4-foot (1290 mm) or greater in width pathway and bordering 4-foot by 8-foot (1290 mm by 2438 mm) "venting cutouts" every 20 feet (6096 mm) on alternating sides of the pathway.

#### **605.11.4 Ground-mounted photovoltaic arrays.**

Ground-mounted photovoltaic arrays shall comply with [Sections 605.11](#) through [605.11.2](#) and this section. Setback requirements shall not apply to ground-mounted, free-standing photovoltaic arrays. A clear, brush-free area of 10 feet (3048 mm) shall be required for ground-mounted photovoltaic arrays.