

REPORT

THE INTENTION OF THIS DOCUMENT IS TO REPORT THE EFFECTS OF FIRE SETBACKS ON RESIDENTIAL SYSTEMS SIZES, AND WE ASK THAT THE CODE COMMITTEE CONSIDER ELIMINATION OF THE BOTTOM EDGE 2' SETBACK AND ONE OF THE 2' SIDE PATHWAYS. INCLUDED IN THIS REPORT ARE THE LAYOUTS OF SEVEN SolarCity JOBS SOLD IN THE STATE OF OREGON. EACH SHEET SHOWS FOUR LAYOUTS; THE AS-SOLD SYSTEM AND THREE VARYING SETBACK GUIDELINE SETS. PLEASE CONSIDER THE SUMMARY TABLE REFLECTING SYSTEM SIDE REDUCTION AND THE RESULTS PARAGRAPHS BELOW.

ASSUMPTIONS

SHADE HAS BEEN FACTORED INTO FOUR OF THE RE-DESIGNED SYSTEMS. MODULES WERE NOT PLACED IN AREAS WITH SIGNIFICANTLY REDUCED SOLAR ACCESS. RE-DESIGNED MODULES WERE PLACED FOR EFFICIENCY IN MATERIALS USE, INSTALLATION, AND ENERGY PRODUCTION.

SUMMARY OF DRAFTED RESTRICTIONS (GUIDELINE SET #1)

ON ONE AND TWO FAMILY DWELLINGS THE PATHWAY SHALL NOT BE LESS THAN 24" WIDE MEASURED FROM THE EDGE OF THE SOLAR ARRAY OR ANY PORTION THEREOF. FIREFIGHTER ACCESS: A PATHWAY SHALL BE CONSTRUCTED ALONG ALL ROOF EDGES, PEAKS, AND VALLEYS FOR FIREFIGHTER ACCESS. ACCESS FOR MAINTENANCE: A PATHWAY SHALL BE PROVIDED TO ACCESS SKYLIGHTS, ROOF HATCHES, AND EQUIPMENT THAT REQUIRES MAINTENANCE INCLUDING, BUT NOT LIMITED TO, HVAC EQUIPMENT AND SHALL EXTEND FROM A FIREFIGHTER ROOF ACCESS PATHWAY.

GUIDELINE SET #1: RESTRICTIONS PER OREGON SOLAR ENERGY CODE DRAFT

- 2' AT BOTH SIDE EAVES.
- 2' AT THE RIDGE (BOTH SIDES).
- 2' AT THE BOTTOM EDGE,

GUIDELINE SET #2: PROPOSED RESTRICTIONS

- 2' AT BOTH SIDE EAVES.
- 2' AT THE RIDGE (BOTH SIDES).

GUIDELINE SET #3: PROPOSED RESTRICTIONS

- 2' AT ONE SIDE EAVE
- 2' AT THE RIDGE (BOTH SIDES).

% OF ORIGINAL SYSTEM SIZE PER GUIDELINES

LOCATION	#1	#2	#3
BEAVERTON, OR (3.38 kW)	66%	77%	88%
PORTLAND, OR (3.6 kW)	100%*	100%*	100%
PORTLAND, OR (4 kW)	65%	90%	100%
ORENCO, OR (5.74 kW)	92%	92%	100%*
MILWAUKIE, OR (5.74 kW)	85%	85%	85%
ALOHA, OR (6.97 kW)	100%*	100%	100%
ROCKWOOD, OR (18.04 kW)	95%	100%*	100%
AVERAGES	86%	92%	96%

* MOUNTING SOME MODULES IN LANDSCAPE ALLOWS SYSTEM SIZES TO BE MAINTAINED, BUT REQUIRES MORE HARDWARE AND MATERIALS, THEREFORE INCREASING THE COST OF INSTALLATION

SUMMARY OF REPORT

- GUIDELINE SET #1: THE AVERAGE SYSTEM SIZE WAS 86% OF THE UNRESTRICTED SYSTEM. OUT OF THE 7 EXAMPLES – 5 WERE REDUCED IN SIZE AND 2 WOULD HAVE LIKELY BEEN CANCELED. THE GUIDELINES ARE ESPECIALLY RESTRICTIVE IN THE CASES OF HIPPED ROOFS AND SMALLER SYSTEMS.
- GUIDELINE SET #2: THE AVERAGE SYSTEM SIZE WAS 92% OF THE UNRESTRICTED SYSTEM. OUT OF THE 7 EXAMPLES – 4 WERE REDUCED IN SIZE BUT NONE WOULD HAVE LIKELY BEEN CANCELED. THE SMALL INCREASE IN USABLE VERTICAL SPACE BY THE ELININATION OF THE 2' SETBACK AT THE BOTTOM EAVE ALLOWED MORE MODULES TO BE MOUNTED IN PORTRAIT – INCREASING THE SYSTEM SIZE AND LOWERING SYSTEM COST. FIRE ACCESS PATHWAYS ON BOTH SIDES OF THE ARRAY AND RIDGE SETBACK FOR VENTILATION WERE MAINTAINED.
- GUIDELINE SET #3: THE AVERAGE SYSTEM SIZE WAS 96% OF THE UNRESTRICTED SYSTEM. OUT OF THE 7 EXAMPLES – 2 WERE REDUCED IN SIZE BUT NONE WOULD HAVE LIKELY BEEN CANCELED. WITH A SETBACK ON ONE SIDE OF THE ARRAY THE DESIGNER WAS MORE ABLE TO CHOOSE THE SIDE OF THE ROOF WITH LESS SHADE AND FEWER OBSTRUCTIONS – INCREASING THE SYSTEM SIZE EVEN MORE. A FIRE ACCESS PATHWAY FROM EAVE TO RIDGE AS WELL AS A RIDGE SETBACK FOR VENTILATION WERE MAINTAINED.

PV
1



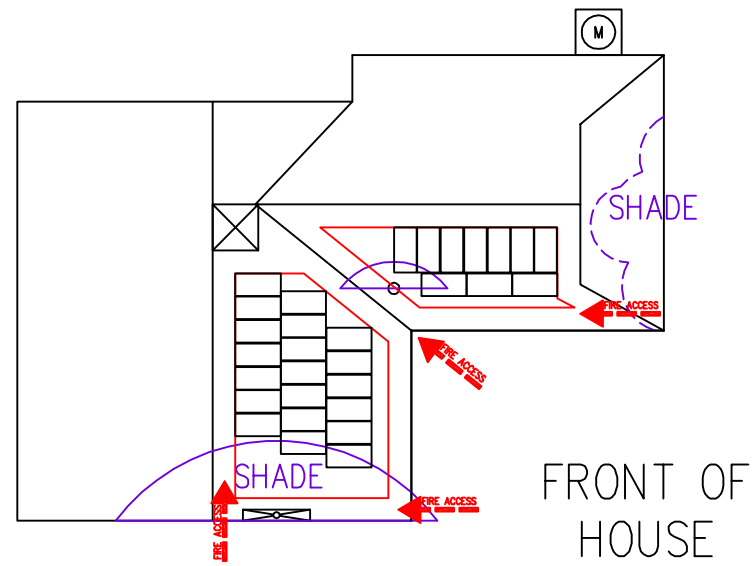
V 1.1 SOLARCITY DETAILS
DESIGN: JCWK
DATE: 01/05/2010
PRODUCT GROUP: RESI.

EFFECT OF FIRE REGULATIONS ON SYSTEM SIZE
ATTN: OREGON SOLAR ENERGY CODE COMMITTEE

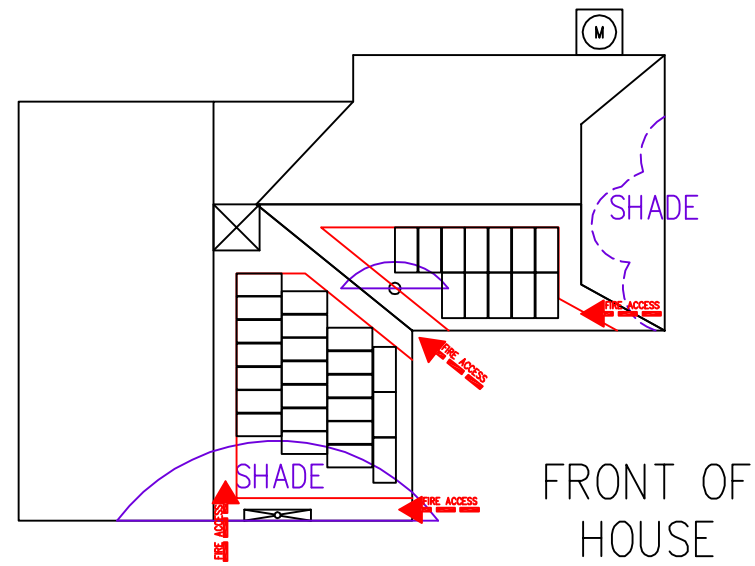
JOB NUMBER: JB-009119-01
REV: -

393 Vintage Park Drive, Suite 140
Foster City, CA 94404
T: (650) 638-1028 | F: (650) 638-1029
(888)-SOL-CITY (765-2489) | www.solarcity.com

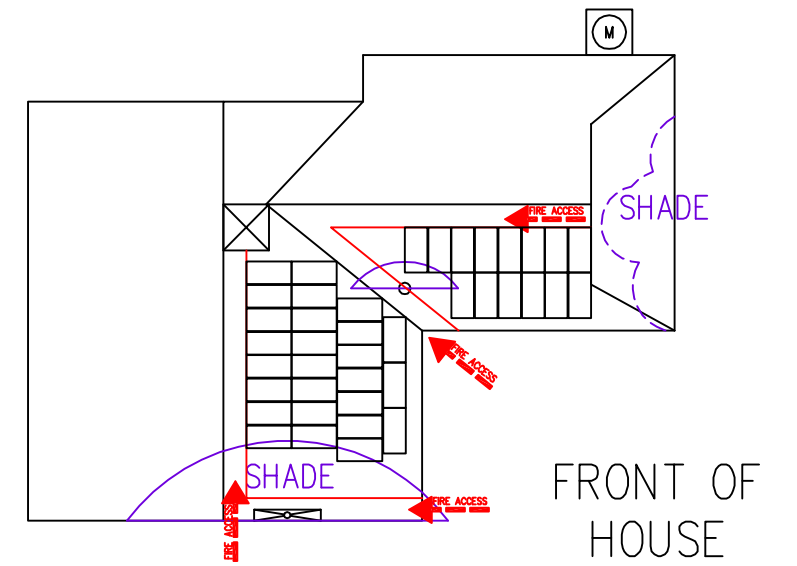
FIRST SET OF GUIDELINES
 SYSTEM: 2.25 kW DC (30 MODULES)
 66% OF ORIGINAL SYSTEM SIZE



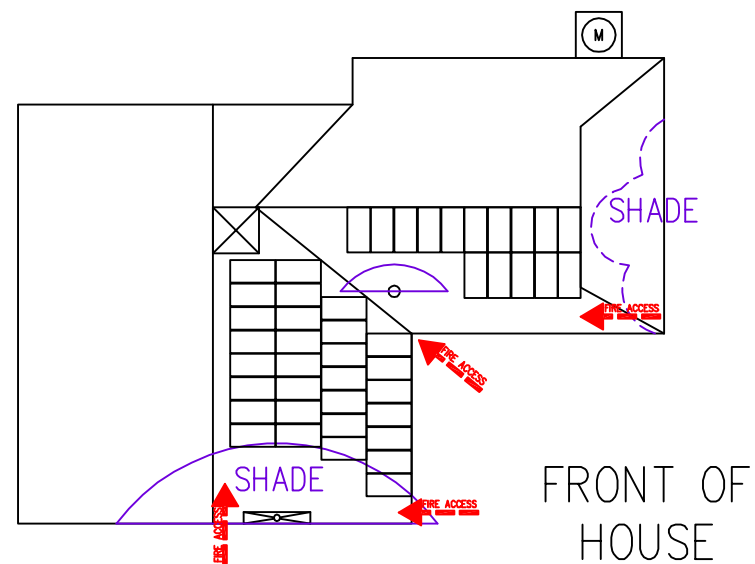
SECOND SET OF GUIDELINES
 SYSTEM: 2.63 kW DC (35 MODULES)
 77% OF ORIGINAL SYSTEM SIZE



THIRD SET OF GUIDELINES
 SYSTEM: 3.0 kW DC (40 MODULES)
 88% OF ORIGINAL SYSTEM SIZE



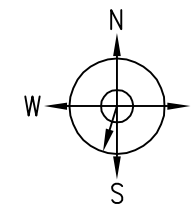
NO RESTRICTIONS
 SYSTEM: 3.38 kW DC (45 MODULES)



BEAVERTON, OR
 3.38 kW DC

90° AND 180° AZIMUTH
 22° COMP. SHINGLE ROOF
 2x8 RAFTERS AT 24" O.C.

SITE PLAN



PV
 2



V 1.1 SOLARCITY DETAILS
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 DESIGN:
 JCWK
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 01/05/2010

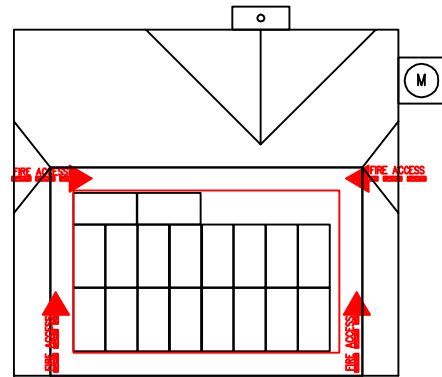
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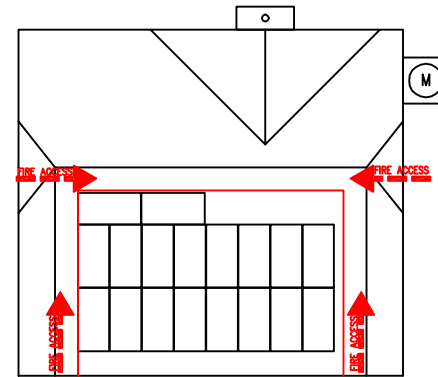
FIRST SET OF GUIDELINES
 SYSTEM: 3.6 kW DC (18 MODULES)
 100% OF ORIGINAL SYSTEM SIZE
 22% INCREASE IN HARDWARE

FRONT OF HOUSE



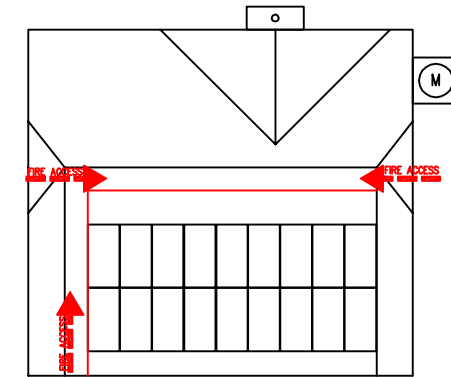
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 SYSTEM: 3.6 kW DC (18 MODULES)
 100% OF ORIGINAL SYSTEM SIZE
 22% INCREASE IN HARDWARE

FRONT OF HOUSE



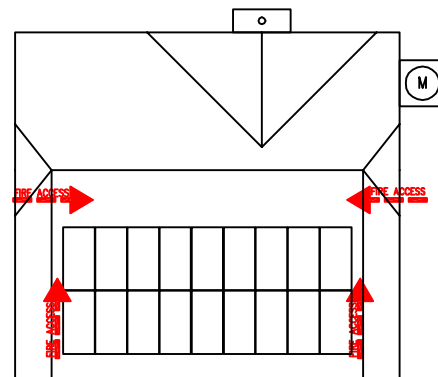
THIRD SET OF GUIDELINES
 SYSTEM: 3.6 kW DC (18 MODULES)
 100% OF ORIGINAL SYSTEM SIZE

FRONT OF HOUSE



NO RESTRICTIONS
 SYSTEM: 3.6 kW DC (18 MODULES)

FRONT OF HOUSE



PORTLAND, OR

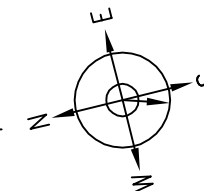
3.6 kW DC

284° AZIMUTH

39° COMP. SHINGLE ROOF

2x4 RAFTERS AT 24" O.C.

SITE PLAN



PV
3



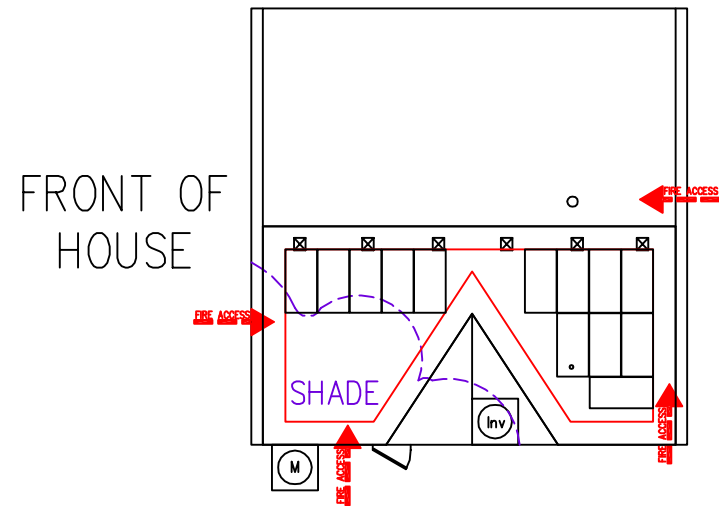
V 1.1	SOLARCITY DETAILS:
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DATE: 01/05/2010	

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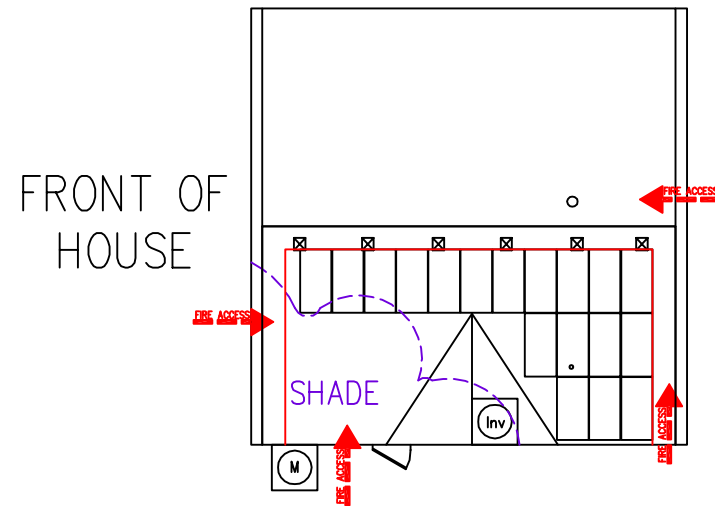
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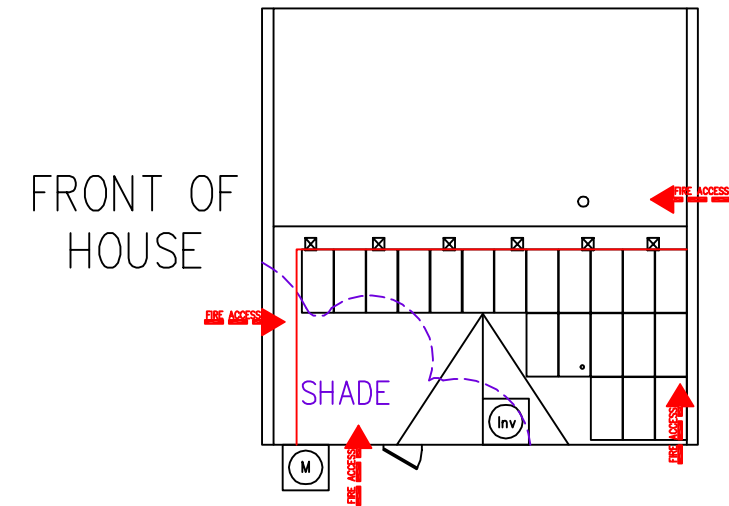
FIRST SET OF GUIDELINES
 SYSTEM: 2.6 kW DC (13 MODULES)
 65% OF ORIGINAL SYSTEM SIZE



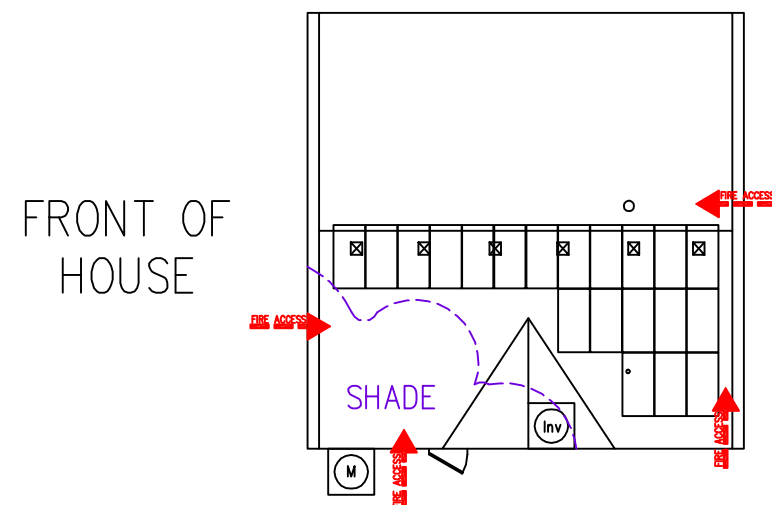
SECOND SET OF GUIDELINES
 SYSTEM: 3.6 kW DC (18 MODULES)
 90% OF ORIGINAL SYSTEM SIZE



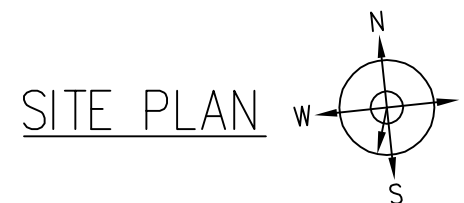
THIRD SET OF GUIDELINES
 SYSTEM: 4 kW DC (20 MODULES)
 100% OF ORIGINAL SYSTEM SIZE



NO RESTRICTIONS
 SYSTEM: 4 kW DC (20 MODULES)



PORTLAND, OR
 4 kW DC
 174° AZIMUTH
 19° COMP. SHINGLE ROOF
 2x4 RAFTERS AT 24" O.C.



PV
4



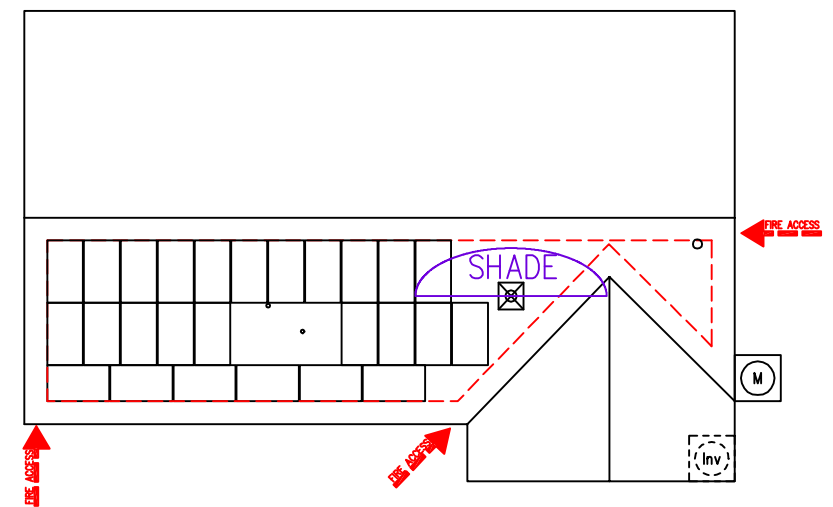
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 PRODUCT GROUP:
RESI.
 DESIGN:
JCWK
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01/05/2010

EFFECT OF FIRE REGULATIONS ON SYSTEM SIZE
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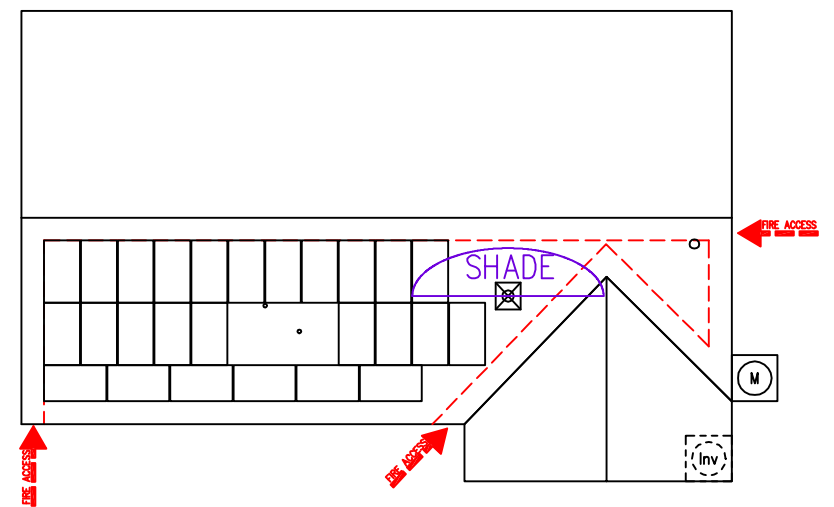
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FIRST SET OF GUIDELINES
 SYSTEM: 5.33 kW DC (26 MODULES)
 92% OF ORIGINAL SYSTEM SIZE



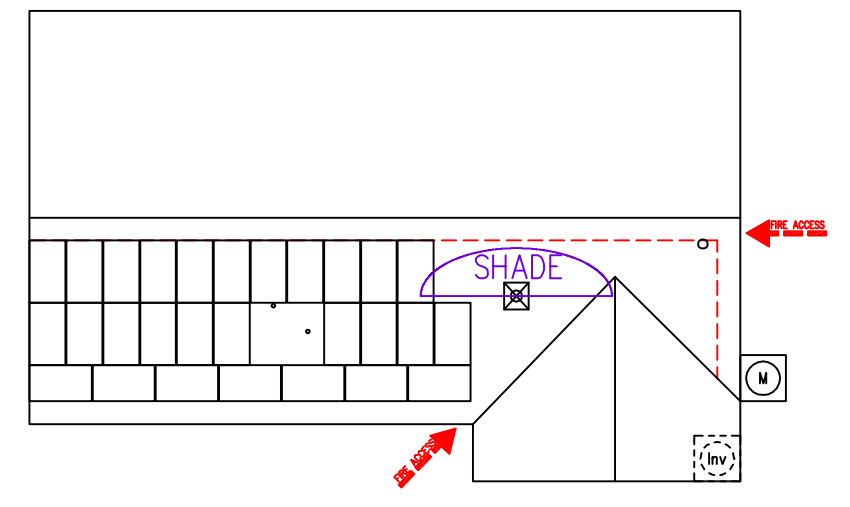
FRONT OF HOUSE

SECOND SET OF GUIDELINES
 SYSTEM: 5.33 kW DC (26 MODULES)
 92% OF ORIGINAL SYSTEM SIZE



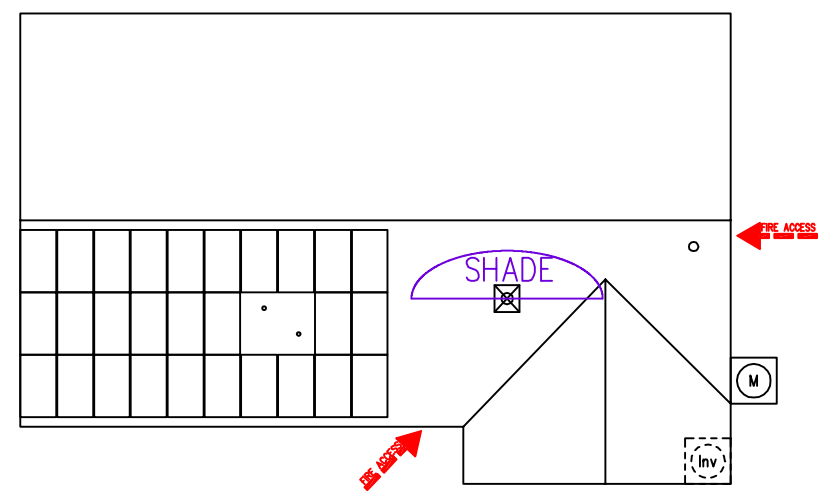
FRONT OF HOUSE

THIRD SET OF GUIDELINES
 SYSTEM: 5.74 kW DC (28 MODULES)
 100% OF ORIGINAL SYSTEM SIZE
 18% INCREASE IN HARDWARE



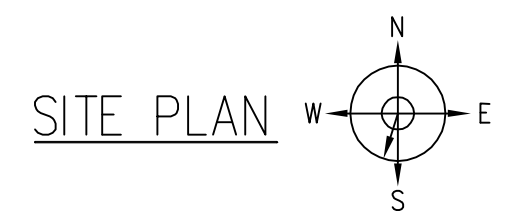
FRONT OF HOUSE

NO RESTRICTIONS
 SYSTEM: 5.74 kW DC (28 MODULES)



FRONT OF HOUSE

ORENCO, OR
 5.74 kW DC
 180° AZIMUTH
 18° COMP. SHINGLE ROOF
 2x4 RAFTERS AT 24" O.C.



PV
 5



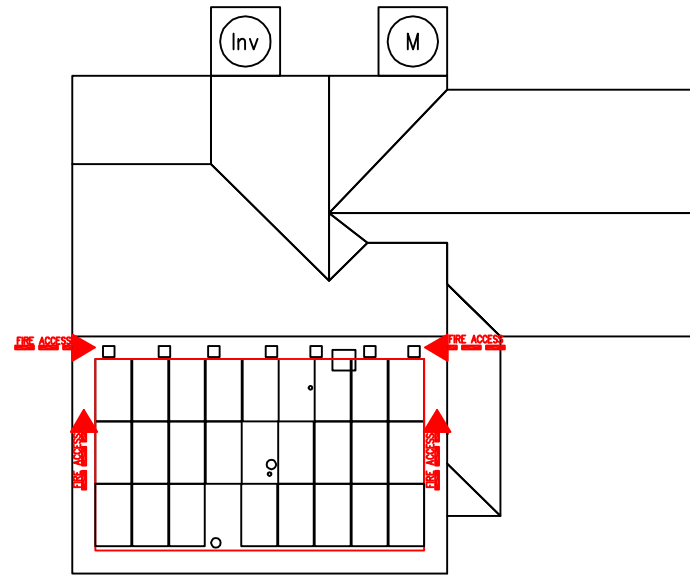
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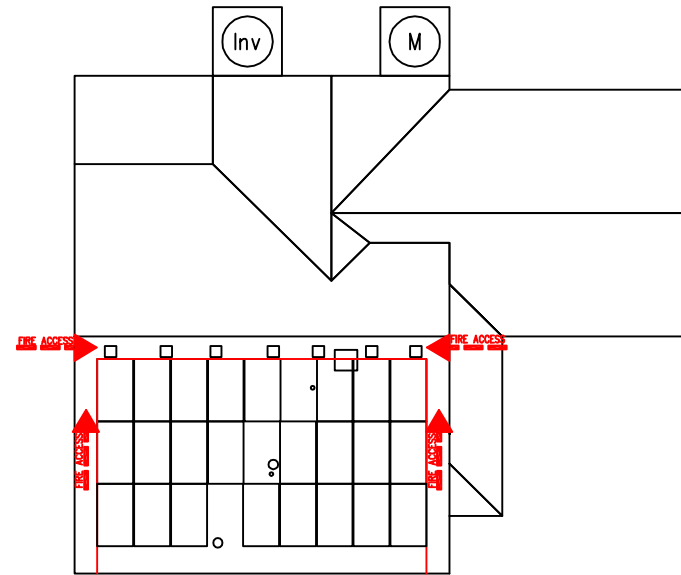
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FIRST SET OF GUIDELINES
 SYSTEM: 4.92 kW DC (24 MODULES)
 85% OF ORIGINAL SYSTEM SIZE



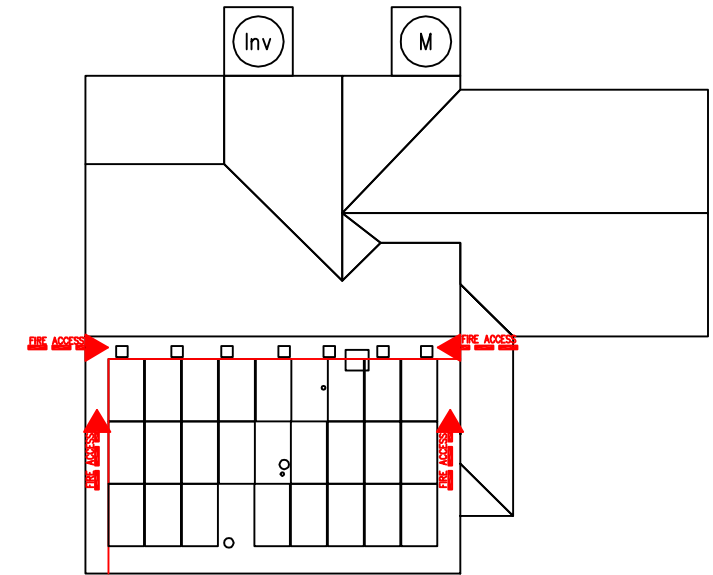
FRONT OF HOUSE

SECOND SET OF GUIDELINES
 SYSTEM: 4.92 kW DC (24 MODULES)
 85% OF ORIGINAL SYSTEM SIZE



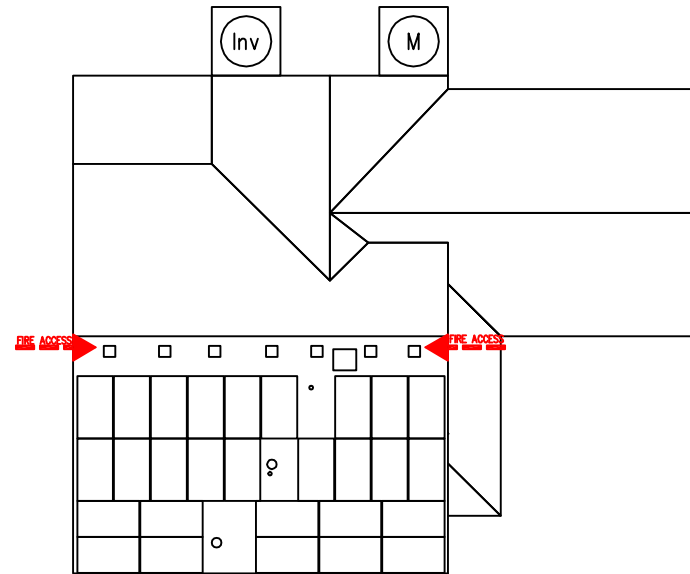
FRONT OF HOUSE

THIRD SET OF GUIDELINES
 SYSTEM: 4.92 kW DC (24 MODULES)
 85% OF ORIGINAL SYSTEM SIZE



FRONT OF HOUSE

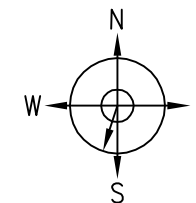
NO RESTRICTIONS
 SYSTEM: 5.74 kW DC (28 MODULES)



FRONT OF HOUSE

MILWAUKIE, OR
 5.74 kW DC
 180° AZIMUTH
 37° COMP. SHINGLE ROOF
 2x4 RAFTERS AT 16" O.C.

SITE PLAN



PV
6



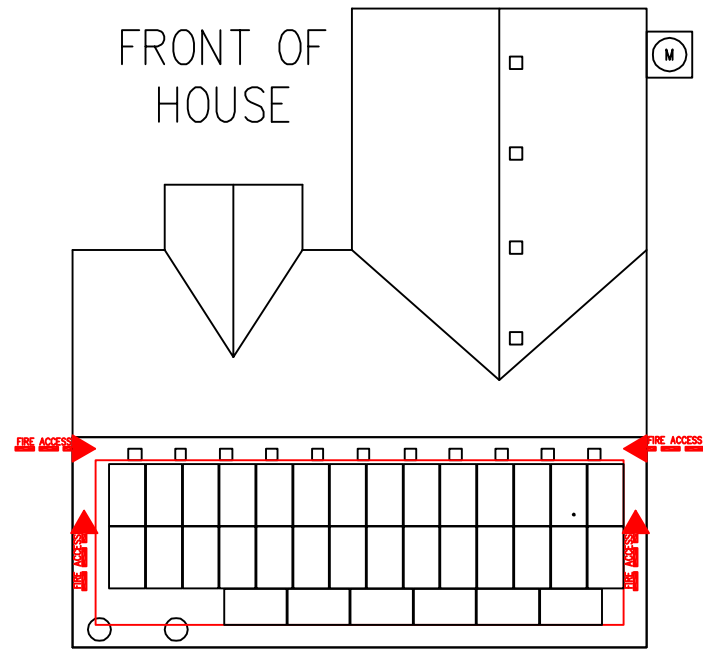
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DESIGN: JCWK	PRODUCT GROUP: RESI.
DATE: 01/05/2010	

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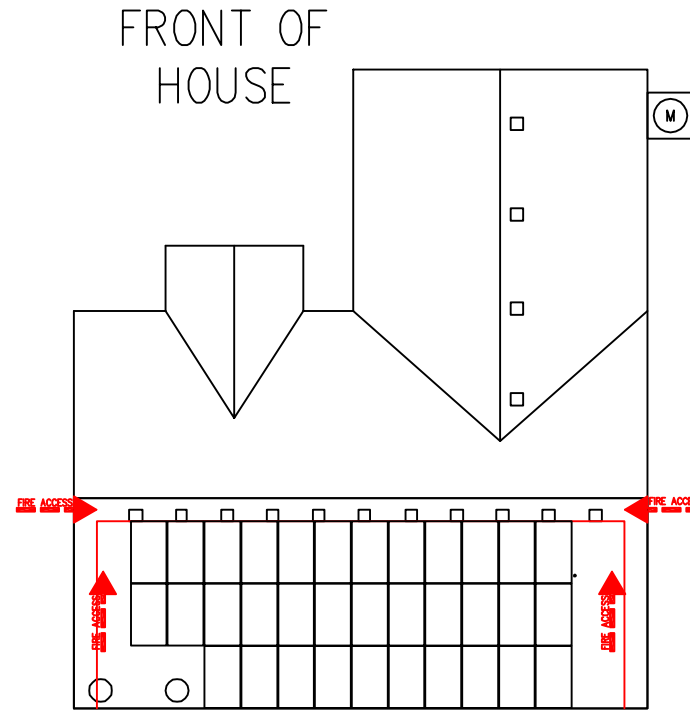
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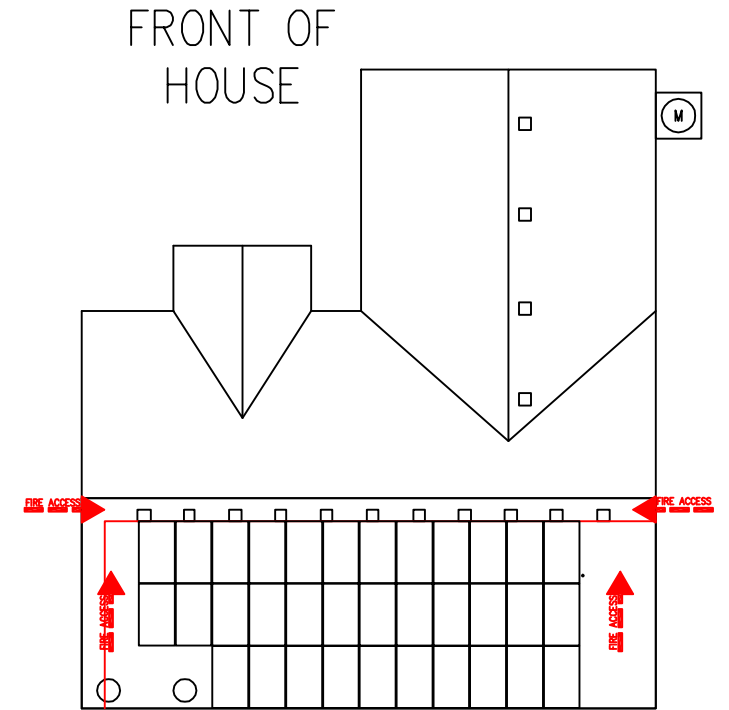
FIRST SET OF GUIDELINES
 SYSTEM: 6.97 kW DC (34 MODULES)
 100% OF ORIGINAL SYSTEM SIZE
 13% INCREASE IN HARDWARE



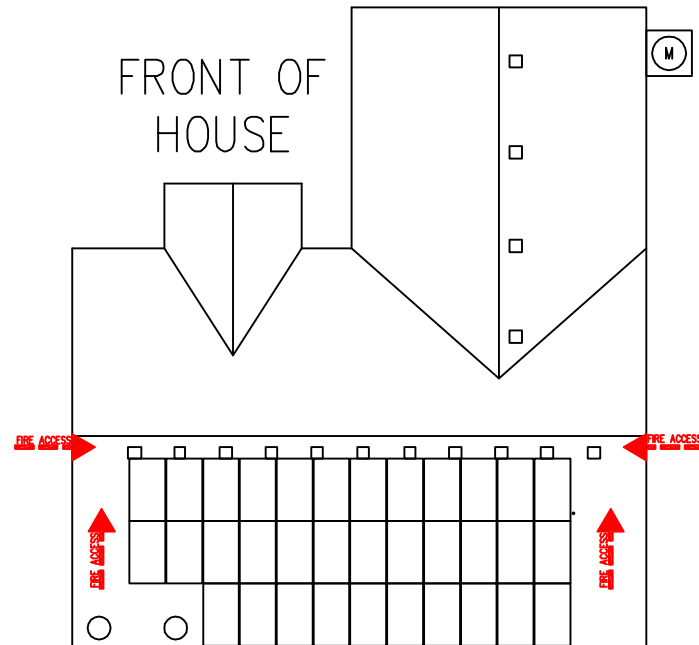
SECOND SET OF GUIDELINES
 SYSTEM: 6.97 kW DC (34 MODULES)
 100% OF ORIGINAL SYSTEM SIZE



THIRD SET OF GUIDELINES
 SYSTEM: 6.97 kW DC (34 MODULES)
 100% OF ORIGINAL SYSTEM SIZE

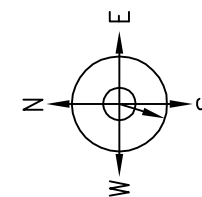


NO RESTRICTIONS
 SYSTEM: 6.97 kW DC (34 MODULES)



ALOHA, OR
 6.97 kW DC
 270° AZIMUTH
 26° COMP. SHINGLE ROOF
 2x4 RAFTERS AT 24" O.C.

SITE PLAN



PV
7



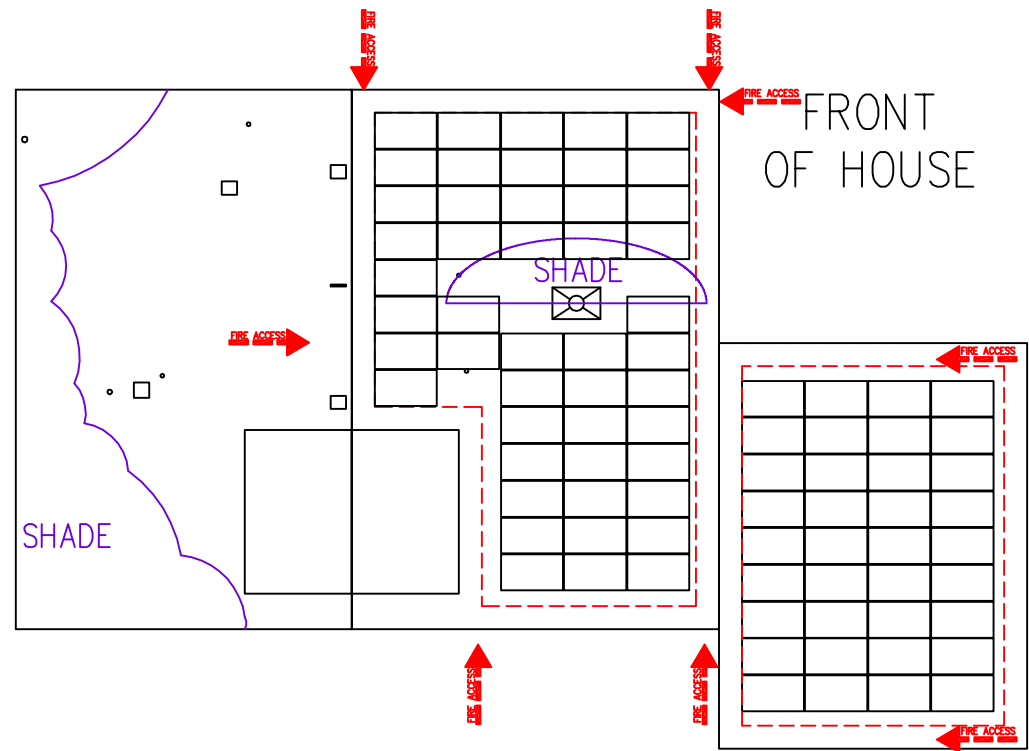
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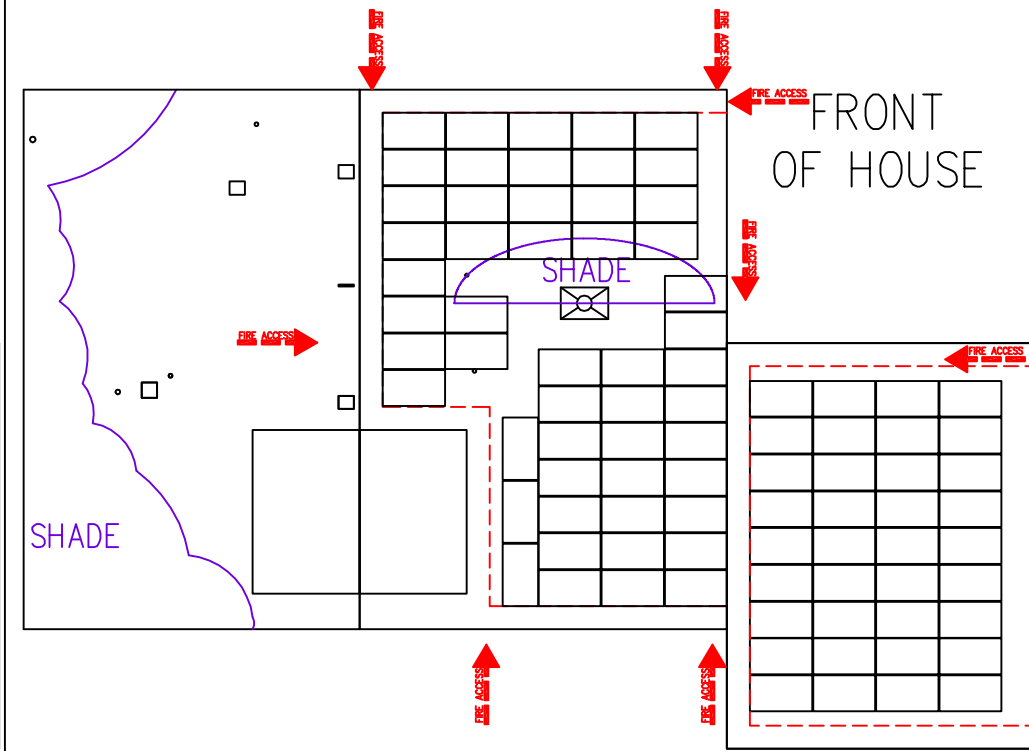
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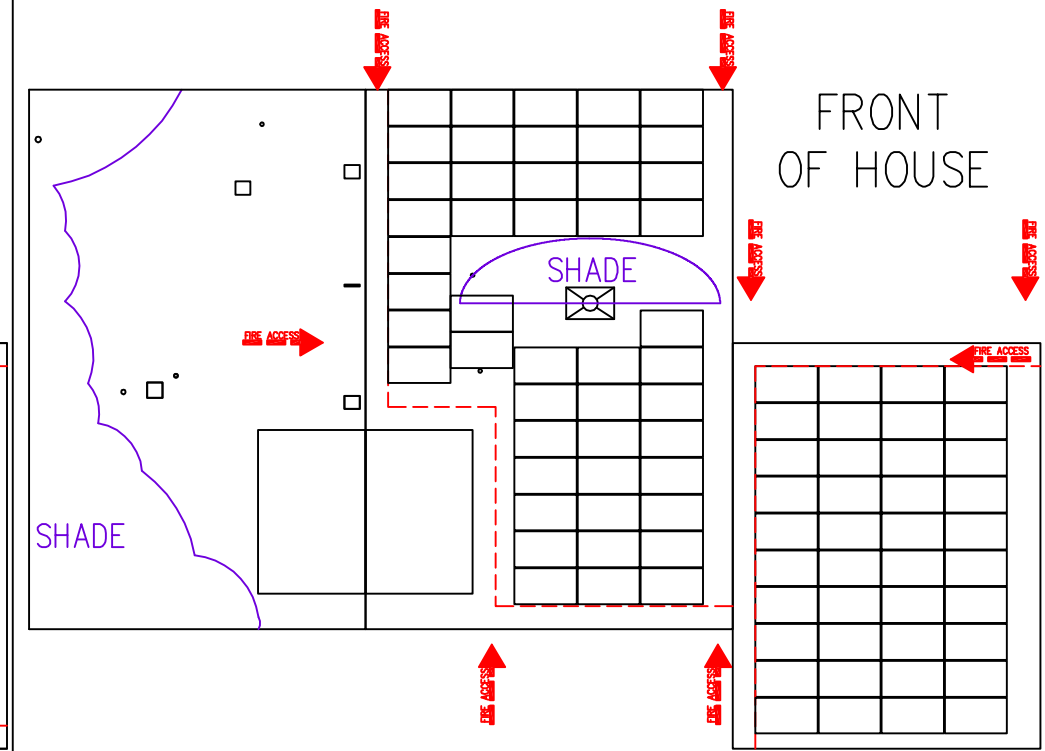
FIRST SET OF GUIDELINES
 SYSTEM: 17.22 kW DC (84 MODULES)
 95% OF ORIGINAL SYSTEM SIZE



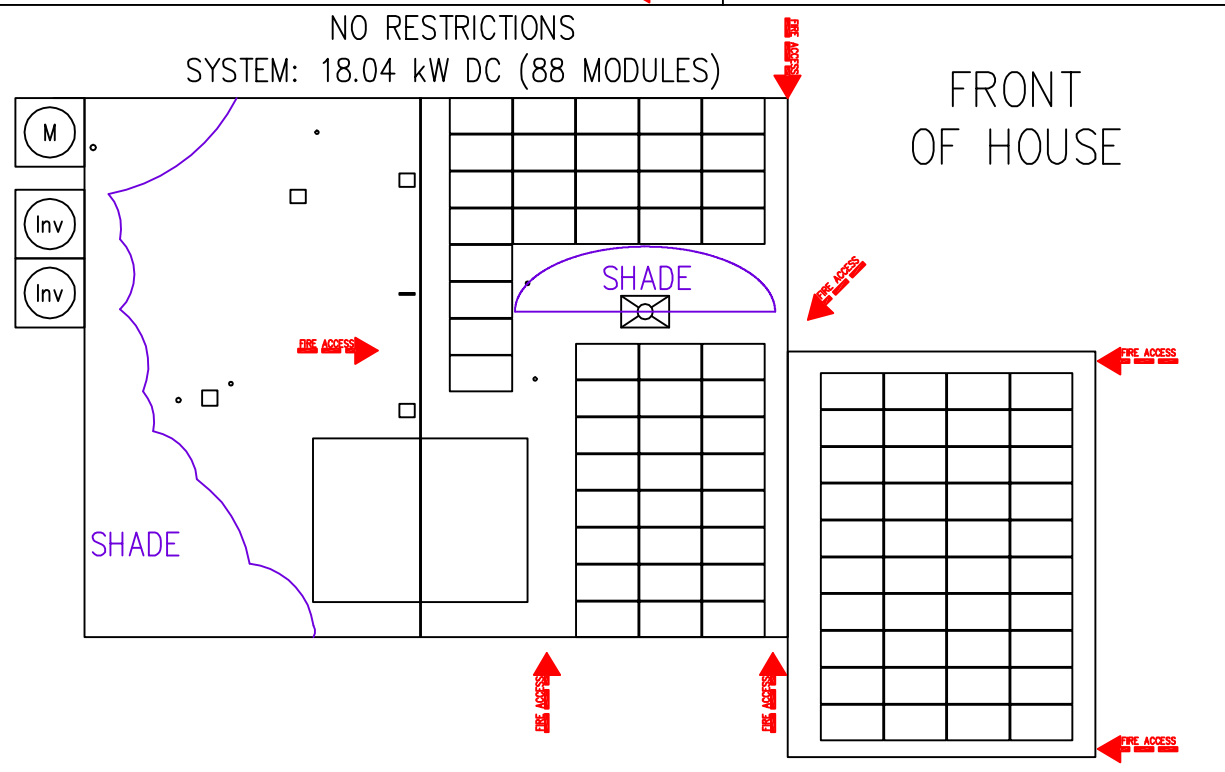
SECOND SET OF GUIDELINES
 SYSTEM: 18.04 kW DC (88 MODULES)
 100% OF ORIGINAL SYSTEM SIZE
 2% INCREASE IN HARDWARE



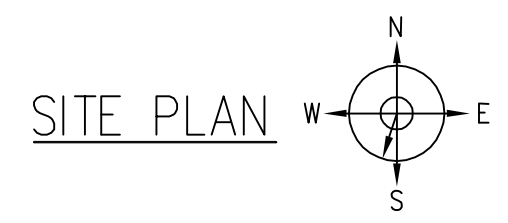
THIRD SET OF GUIDELINES
 SYSTEM: 18.04 kW DC (88 MODULES)
 100% OF ORIGINAL SYSTEM SIZE



NO RESTRICTIONS
 SYSTEM: 18.04 kW DC (88 MODULES)



ROCKWOOD, OR
 18.04 kW DC
 90° AZIMUTH
 8° MODIFIED BITUMEN ROOF
 2x6 RAFTERS AT 16" O.C.



PV
8



V 1.1 SOLARCITY DETAILS
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