Brick BOE

ECC

BLOCK 1068 LOT 15.02 QUALIFICATION CODE _____ ADDRESS (SITE) 101 Hendrickson Ave. PERMIT NO. 14-2041

CONSTRUCTION PERMIT APPLICATION

NEW JERSEY UNIFORM CONSTRUCTION CODE

Applicant Completes: Sections I, II, III (optional), IV, VI, and VII C16-002080

I. IDENTIFICATION

1. Proposed Work Site at 101 Hendrickson Ave, Brick, NJ 08723
2. Name of Owner in Fee: Brick Township Board of Education
   Tel. (732) 785-3000 e-mail _____
   Address 101 Hendrickson Ave, Brick, NJ 08724 (street, municipality, zip code)
3. Ownership in Fee: Public Y Private _____
4. Principal Contractor: Altec Building Systems Tel. (732) 903-6264
   Address 904 Atlantic Ave, Pt. Pleasant, NJ 08742 e-mail info@altecbuildingsystems.com
   License No. OR, if new home, Builder Reg. No. 13VH04948600 Exp. Date 3-31-17
   Home Improvement Contractor Registration No. or Exemption Reason (if applicable): _____
   Federal Emp. ID No. 223292289 FAX: (732) 903-6298
5. Architect or Engineer Stantec Contact David Faccas
   Address 171 Rt. 34 Wall Twp, NJ 07719 e-mail _____
   Tel. (732) 449-0099 FAX: ( ) _____
6. Responsible Person in Charge once Work has Begun Bob Smith
   Tel. (732) 609-1187 FAX: (732) 903-6298

V. FEE SUMMARY (for office use only)

		Update	Update
1. Building	$		
2. Electrical			
3. Plumbing			
4. Fire Protection			
5. Elevator Devices			
6. Subtotal			
7. Less 20% for State Plan Review	$		
8. Subtotal	$		
9. State Permit Surcharge Fee			
10. Subtotal	$		
11. Cert. of Occupancy			
12. Other			
13. TOTAL	$		

VI. BUILDING/SITE CHARACTERISTICS (office use only)

1. Number of Stories 95.68 kw
2. Height of Structure _____ ft.
3. Area — Largest Floor _____ sq. ft.
4. New Building Area _____ sq. ft.
5. Volume of New Structure _____ cu. ft.
6. Max. Live Load _____
7. Max. Occupancy Load _____
8. If Industrialized Building: State Approved _____ HUD _____
9. Total Land Area Disturbed _____ sq. ft.
10. Flood Hazard Zone _____
11. Base Flood Elevation _____ ft.
12. Wetlands yes _____ no _____

IIa. PROPOSED WORK

☐ Minor Work ☐ New Building ☐ Addition ☐ Demolition
☐ Repair ☐ Alteration ☐ Renovation ☐ Reconstruction
☐ Asbestos Abat. - Subch. 8 ☐ Lead Hazard Abatement ☐ Radon Remediation ☐ Annual Permit

Solar Panels

IIb. SUBCODES (Check all that apply)

FOR OFFICE USE ONLY (Optional)

	Est. Cost	Plans Rec'd by	Date Rec'd	Rejection Date	Approval Date	Re-viewer	Resubmission Dates Approval	Resubmission Dates Rejection	Re-viewer
☒ Building	4,000	MFF	5/3/16		06/18/16	KEK			
☒ Electrical	17,260				6/14/16	PJC			
☐ Plumbing									
☐ Fire Protection									
☐ Elevator		Eng Exempt			5/26/16	ECC			
TOTAL COST									

VII. DESCRIPTION OF BUILDING USE

A. RESIDENTIAL (primary use)
1. State Specific Use:
2. Use Group, Proposed:
3. Change in Use Group, Indicate Present:
4. No. of dwelling units: Total Units Income-restricted
   Gained, Sale
   Gained, Rental
   Lost, Sale
   Lost, Rental

B. NON-RESIDENTIAL (primary use)
1. State Specific Use:
2. Use Group, Proposed:
3. Change in Use Group, Indicate Present:

C. MIXED USE - List secondary use(s):

D. Construct. Classification: Present _____ Proposed _____

COMPLETE

III. PLAN REVIEW (optional)

DO YOU WANT:
1. ☐ Partial Releases
2. ☐ Prototype Processing

IV. DOES OR WILL YOUR BUILDING CONTAIN ANY OF THE FOLLOWING?

1. ☐ Elevators/Escalators/Lifts/Dumbwaiters/Moving Walks
2. ☐ High Pressure Boilers
3. ☐ Pressure Vessels
4. ☐ Refrigeration Systems
5. ☐ Cross-Connections/Backflow Preventers
6. ☐ Hazardous Uses/Places of Assembly
7. ☐ Sprinklers/Standpipes
8. ☐ Smoke Control Systems in Open Wells
9. ☐ Underground Storage Tanks
10. ☐ Swimming Pools, Spas and Hot Tubs
11. ☐ LPGas Tanks
12. ☐ Fire Alarm

Rolled Plans

U.C.C. F100-1 (rev. 8/08)

Rolled Flows

CERTIFICATION IN LIEU OF OATH

I. OWNER SECTION (to be completed if the applicant is the owner in fee)

I hereby certify that I am the owner in fee of the property listed on Page 1.

Mark the following applicable boxes:

A. ( ) I further certify that a new home (private residence) will be constructed on this property for my own use and occupancy. This dwelling is to be occupied by myself and is not to be used for any purpose other than single family residential use. I attest that all construction, plumbing, or electrical work will be done, in whole or in part, by me or by subcontractors under my supervision, in accordance with all applicable laws; and, I further acknowledge that said new home is not covered under the New Home Warranty and Builders Registration Act (N.J.S.A. 46:3B-1 et seq.) and that such fact shall be disclosed to any person purchasing this property within ten years of the date of issuance of a certificate of occupancy.

I UNDERSTAND THAT IN MARKING BOX A, I ACKNOWLEDGE THAT I AM ASSUMING RESPONSIBILITY FOR THE WORK DONE ON SAID PROPERTY, THE CONDITION OF THE PROPERTY PRIOR TO, DURING, AND AFTER ANY WORK PERFORMED, AND FOR THE PERFORMANCE OF THE SUBCONTRACTORS I HIRE, EMPLOY, OR OTHERWISE CONTRACT OR WITH WHOM I MAKE AGREEMENTS TO PERFORM WORK. I AM VOLUNTARILY AND KNOWINGLY ASSUMING THIS RESPONSIBILITY.

B. ( ) I further certify the following as required by the New Jersey Uniform Construction Code, N.J.A.C. 5:23-2.15(f)1.ix:

I personally prepared the plans submitted for: 1) the new home referred to in A.; or, 2) an addition, alteration, renovation, or repair to an existing single family residence owned and occupied by myself and located on the property listed on Page 1; or, 3) a new structure that will be physically separate from, but that will be deemed part of, an existing single family residence that is owned and occupied by myself and located on the property listed on Page 1.

C. ( ) I further certify that I will perform or supervise the following work:
C.1. ( ) Building C.2. ( ) Fire Protection

I further certify that I will perform the following work:
C.3. ( ) Electrical C.4. ( ) Plumbing

D. ( ) I agree to advise all contractors on this project that they are required to be registered with the New Jersey Division of Taxation and to comply with all New Jersey tax laws.

I further certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(a)5: All required State, county, and local prior approvals have been given, including such certification as the construction official may require.

I understand that if any of the above statements are willfully false, I am subject to punishment.

Signature _____ Date _____

II. AGENT SECTION (to be completed if the applicant is not the owner in fee)

I hereby certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(d): the proposed work is authorized by the owner in fee; and I have been authorized by the owner in fee to make this application as his agent.

I further certify the following as required by the Uniform Construction Code, N.J.A.C. 5:23-2.15(a)5: All required State, county, and local prior approvals have been given, including such certification as the construction official may require.

I agree to advise all contractors on this project that they are required to be registered with the New Jersey Division of Taxation and to comply with all New Jersey tax laws.

I understand that if any of the above statements are willfully false, I am subject to punishment.

(X) Check if contractor.

Agent Name Altec Building Systems Corp.
Address 904 Atlantic Avenue
Pt. Pleasant, NJ 08742
Telephone (732) 903-6264
Signature _____

III. ( ) LEAD HAZARD ABATEMENT: Include Homeowner or Building Owner Affidavit as per N.J.A.C. 5:17.

OFFICE DATE RECEIVED: _____

VIII. PRIOR APPROVALS CHECKLIST (office use only)	LOCAL APPROVAL		COUNTY APPROVAL		REGIONAL APPROVAL		STATE APPROVAL		COMMENTS
	Prelimin. Initial	Final Date	Prelimin. Initial	Final Date	Prelimin. Initial	Final Date	Prelimin. Initial	Final Date	
☒ Zoning Officer	JC	7/20/16							ZA-16-00742
☐ Planning Board									
☐ Zoning Board									
☐ Sewer Authority									
☐ Water Authority									
☐ Police Department									
☐ Health Department									
☐ Soil Conservation									
☐ N.J. Department of Community Affairs									
☐ N.J. Department of Transportation									
☐ N.J. Department of Environmental Protection									
☐ Utility Dig No.									
☐									
☐									

IX. SUBCODES AND SPECIAL REGULATIONS APPLICABLE (office use only—optional)

	Name of Code & Edition		Name of Code & Edition		
Building		Energy		Other	
Electrical		Barrier Free			
Plumbing		Flood Hazard			
Fire Protection		As Built Elevation Cert.			
Mechanical		Other			

X. CERTIFICATES ISSUED (office use only)

		DATE ISSUED	DATE EXPIRED	DATE REISSUED	DATE EXPIRED
☐ Temporary Certificate of Occupancy	No.				
☐ Temporary Certificate of Compliance	No.				
☐ Continued Certificate of Occupancy	No.				
☐ Certificate of Compliance	No.				
☐ Certificate of Occupancy	No.				
☐ Certificate of Approval	No.				
☐ Lead Abatement Clearance Certificate	No.				

OFFICE USE ONLY

DATE:	COMMENTS:	INITIALS:

Brick Township
401 Chambersbridge Rd
Brick, NJ 08723

Date Issued	4/13/2017
Control Number	C-16-002080
Permit Number	16-2041
Permit Issue Date	6/21/2016
Certificate Number	16-2041

Certificate

Construction Code Division

(Certificate of Approval)

Identification

Work Site Location: 101 HENDRICKSON AVE Brick Township, NJ Block: 1068 Lot: 15.01 Qual:

Owner in Fee: BRICK TOWNSHIP BOARD OF EDUCATION

Owner Address: 101 HENDRICKSON AVE. BRICK NJ 08724

Telephone: (732) 785-3000

Contractor ALTEC BUILDING SYSTEMS CORP

Address 904 Atlantic Ave. Point Pleasant NJ 08742

Telephone: (732) 903-6264 Fax:

License Number or Builders Registration Number: 11073 Federal Emp. Number: 22-3292289

Home Warranty Number:

Type of Warranty Plan: ☐ State ☐ Private

Use Group: E Construction Classification:

Maximum Live Load: 0 Maximum Occupancy Load: 0

Description of Work/Use: SOLAR PANELS ...INSTALL 95.68 kw ROOF MOUNT PHOTOVOLTAIC SOLAR SYSTEM

Certificate Comments:

☐ **Certificate of Occupancy**
This serves notice that said building or structure has been constructed in accordance with the New Jersey Uniform Construction Code and is approved for occupancy.

☑ **Certificate of Approval**
This serves notice that the work completed has been constructed or installed in accordance with the New Jersey Uniform Construction Code and is approved. If the permit was issued for minor work, this certificate was based upon what was visible at the time of inspection.

☐ **Certificate of Continued Occupancy**
This serves notice that based on a general inspection of the visible parts of the building there are no imminent hazards and the building is approved for continued occupancy.

☐ **Temporary Certificate of Compliance**
The following conditions must be met no later than
or the owner will be subject to fine or order to vacate:
This certificate has an expiration date of:
Conditions to be met:

☐ **Certificate of Clearance - Lead Abatement 5:17**
This serves notice that based on written certification, lead abatement was performed as per NJAC5:17 to the following extent.

☐ Total removal of lead-based paint hazards in scope of work
☐ Partial or limited time period (years); see file

☐ **Certificate of Clearance - Asbestos Abatement**
This serves notice that based on written certification, asbestos abatement was performed to the following extent.

☐ Total removal of asbestos hazards in scope of work
☐ Partial or limited time period (years); see file

☐ **Certificate of Compliance**
This serves notice that said potentially hazardous equipment has been installed and/or maintained in accordance with the New Jersey Uniform Construction Code and is approved for use until

☐ **Temporary Certificate of Occupancy**
The following conditions must be met no later than:
or the owner will be subject to fine or order to vacate:
This certificate has an expiration date of:
Conditions to be met:

David F Newman Jr

Construction Official

Fee: $0.00
Check Number:
Collected By:

Brick BOE

BUILDING SUBCODE
TECHNICAL SECTION

Date Received Control # 6/21/16

Date Issued Permit # 16-2041

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 1068 Lot ~~15.02~~ 15.01 Qualification Code

Work Site Location 101 Hendrickson Ave. Brick, NJ 08723

Owner in Fee: Brick Township Board of Education

Tel. (732) 785-3000 e-mail

Address 101 Hendrickson Ave Brick NJ 08724

Contractor: Altec Building Systems Corp. (street, municipality) Tel. (732) 903-6264 (zip code)

Address 904 Atlantic Ave. Pt. Pleasant NJ 08742 e-mail info@altecbuildingsystems.com

Contractor License No. or Builder Registration No. 13VH04943600 Exp. Date 3-31-17

Home Improvement Contractor Registration No. or Exemption Reason (if applicable):

Federal Emp. ID No. 223292289 FAX: (732) 903-6298

JOB SUMMARY (Office Use Only)

PLAN REVIEW	Date	Initial
[ ] No Plans Required		
[✓] All	06/18/16	RCM
[ ] Footings/Foundations		
[ ] Structural/Framework		
[ ] Exterior		
[ ] Interior		

Joint Plan Review Required:
[ ] Elec. [ ] Plumb. [ ] Fire [ ] Elevator

SUBCODE APPROVAL for PERMIT
Date: 06/18/16
Approved by: RCM

SUBCODE APPROVAL for CERTIFICATE
[ ] CO [ ] CCO [✓] CA
Date: 07/12/17
Approved by: RCM

INSPECTIONS Type:	Failure	Dates (Month/Day) Failure	Approval	Initial
Footing				
Footing Bonding				
Foundation				
Slab *	10/19/16	RCM	10/21/16	RCM
Frame				
Truss Sys./Bracing				
Barrier-Free				
Insulation				
Finishes -Base Layer				
Finishes -Final				
Energy				
Mechanical				
TCO				
Other				
Final			7-12-17	MM
Barrier-Free				

B. BUILDING CHARACTERISTICS

Use Group Present _____ Proposed _____

No. of Stories _____

Height of Structure _____ ft.

Area — Largest Floor _____ sq. ft.

New Bldg. Area/All Floors _____ sq. ft.

Volume of New Structure _____ cu. ft.

Max. Live Load _____

Max. Occupancy Load _____

Constr. Class Present _____ Proposed _____

If Industrialized Building:
State Approved _____ HUD _____

Est. Cost of Bldg. Work:
1. New Bldg. $
2. Rehabilitation $ 81,260
3. Total (1+ 2) $

U.C.C. F110 (rev. 11/09)

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application.

Sign here:

Print name here: James E. Lawrosh

D. TECHNICAL SITE DATA

DESCRIPTION OF WORK

Rooftop Solar Installation
95.68 KW
1 concrete transformer pad

TYPE OF WORK:
[ ] New Building
[ ] Addition
[ ] Rehabilitation
[ ] Roofing
[ ] Siding
[ ] Fence _____ Height (exceeds 6')
[ ] Sign _____ Sq. Ft.
[ ] Pool
[ ] Retaining Wall _____ Sq. Ft.
[ ] Asbestos Abatement Subchapter 8
[ ] Lead Haz. Abatement NJAC 5:17
[ ] Radon Remediation
[ ] Other _____
[ ] Demolition

FEE (Office Use Only)
$

Administrative Surcharge $
Minimum Fee $
State Permit Surcharge Fee $
TOTAL FEE $

COMPLETED

1 White = Inspector Copy
2 Canary = Office Copy
3 Pink = Office Copy
4 Gold = Applicant Copy

* SLAB 10/14/16 Am - Plans have no Details on slab

Brick BOE

ELECTRICAL SUBCODE
TECHNICAL SECTION

Date Received 6/21/16
Control #
Date Issued
Permit # 16-2041

A. IDENTIFICATION—APPLICANT: COMPLETE ALL APPLICABLE INFORMATION. WHEN CHANGING CONTRACTORS, NOTIFY THIS OFFICE. CALL UTILITY DIG NO: 1-800-272-1000.

Block 10108 Lot ~~[illegible]~~ 15.01 Qualification Code

Work Site Location 101 Hendrickson Ave. Brick, NJ 08723

Owner in Fee: Brick Township Board of Education

Tel. (732) 785-3000 e-mail

Address 101 Hendrickson Ave Brick NJ 08724 (street / municipality / zip code)

Contractor: Altec Electrical Corp. 732 (903-6264

Address 904 Atlantic Avenue e-mail jlawroski@altecbuildingsystems.com
Pt. Pleasant, NJ 08742

Contractor License No. 11073 Exp. Date 3-31-18

Home Improvement Contractor Registration No. or Exemption Reason (if applicable): 13VH04948600

Federal Emp. ID No. 22-3292289 FAX: (732) 903-6298

B. ELECTRICAL CHARACTERISTICS

Use Group Present Proposed

[ ] Pole/Pad # [ ] Temporary [ ] Other

Building Occupied as School Utility Co. JCP&L

Est. Cost of Elec. Work $ 81,260

JOB SUMMARY (Office Use Only)

PLAN REVIEW

[ ] No Plans Required

[ ] Partial -Underslab Utilities Approved

Date: Approved by:

[✓] Electric Plans Approved

Date: 6/14/16 Approved by: PJC

Joint Plan Review Required:

[ ] Bldg. [ ] Plumb. [ ] Fire. [ ] Elev.

SUBCODE APPROVAL for PERMIT

Date: 6/14/16

Approved by:

SUBCODE APPROVAL for CERTIFICATE

[ ] CO [ ] CCO [✓] CA

Date: 4/12/17

Approved by:

INSPECTIONS Type:	Failure	Failure	Approved	Initial
Rough	~~11-15-16~~		11-29-16	
Barrier-Free				
Trench				
Temp. Serv.				
Constr. Serv.				
TCO				
Other				
Service			2/17/17	PJC
Final			4-11-17	
Barrier-Free				

Temp. Cut-in-Card Date Issued

Final Cut-in-Card Date Issued 2/17/17

Annual Pool Inspection

Date of Grounding and Bonding Certification

C. CERTIFICATION IN LIEU OF OATH

I hereby certify that I am the (agent of) owner of record and am authorized to make this application and perform the work listed on this application.

Applicant sign/Contractor sign and seal here:

Print name here: James E. Lawroski Jr.

[✓] Licensed Elec. Contractor [ ] Certif'd Landscape Irrigation Cont'r [ ] Exempt Applicant

D. TECHNICAL SITE DATA

DESCRIPTION OF WORK: Install Solar System 95.68 KW

QTY.	SIZE	ITEMS	FEE (Office Use Only)
		Lighting Fixtures	
		Receptacles	
		Switches	
		Detectors	
		Light Poles	
		Motors—Fract. HP	
		Emergency & Exit Lights	
		Communications Points	
		Alarm Devices/F.A.C. Panel	
		TOTAL NUMBERS	$
		Pool Permit/with UW Lights	
		Storable Pool/Spa/Hot Tub	
		KW Elec. Range/Receptacle	
		KW Oven/Surface Unit	
		KW Elec. Water Heater	
		KW Elec. Dryer/Receptacle	
		KW Dishwasher	
		HP Garbage Disposal	
		KW Central A/C Unit	
		HP/KW Space Heater/Air Handler	
		KW Baseboard Heat	
1	meter	~~HP Motors 1/+ HP~~ Revenue Grade	
1	1125	KW Transformer/Generator	
1	400	AMP ~~Service~~ Disconnect	
1	125	AMP Subpanels	
4	20KW	~~AMP Motor Control Center~~ Inverters	
		KW Elec. Sign/Outline Light	
368	260	Modules	

COMMERCIAL

Administrative Surcharge $

Minimum Fee $

State Permit Surcharge Fee $

TOTAL FEE $

To reorder call: ALLEGRA Marketing • Print • Mail (609)-390-1400

U.C.C. F120 (rev. 11/09)

CONSTRUCTION PERMIT

Date Issued 6/21/2016
Control # C-16-002080
Permit # 16-2041

IDENTIFICATION Block: 1068 Lot: 15.01 Qualifier
Work Site Location: 101 HENDRICKSON AVE Brick Township, NJ

Owner in Fee: BRICK TOWNSHIP BOARD OF EDUCATION
101 HENDRICKSON AVE. BRICK NJ 08724

Telephone: (732) 785-3000

Contractor: ALTEC BUILDING SYSTEMS CORP
Address: 904 Atlantic Ave. Point Pleasant NJ 08742
Telephone: (732) 903-6264
Lic. No. or Bldrs. Reg. No. 11073 11073 11073
Federal Employee. No. 22-3292289

Is hereby granted permission to perform the following work:

- [x] BUILDING
- [ ] PLUMBING
- [ ] LEAD HAZARD ABATEMENT
- [x] ELECTRICAL
- [ ] FIRE PROTECTION
- [ ] DEMOLITION
- [ ] ELEVATOR DEVICES
- [ ] ASBESTOS ABATEMENT (Subchapter 8 only)
- [ ] OTHER

DESCRIPTION OF WORK:
SOLAR PANELS ...INSTALL 95.68 kw ROOF MOUNT PHOTOVOLTAIC SOLAR SYSTEM

Note: If constuction does not commence within one (1) year of date of issuance, or if construction ceases for a period of six (6) months, this permit is void.
Estimated Cost of Work $162,520

D. Newman Jr. / 6/21/16
Construction Official Date

PAYMENTS (Office Use Only)

Building	$0
Electrical	$0
Plumbing	$0
Fire Protection	$0
Elevator Devices	$0
Other	$0.00
DCA Training Fee	$0
CO Fee	
Other	$0
Total	$0
Check No.	
Cash	$0
Credit	$0
Collected By	

U.C.C. F170
equiv (rev 1/04)

1 WHITE - INSPECTOR 2 CANARY - OFFICE 3 PINK - TAX ASSESSOR 4 GOLD - APPLICANT

REQUIRED INSPECTIONS

Construction work must be inspected in accordance with the State Uniform Construction Code Regulations N.J.A.C. 5:23-2.18. This agency will carry out such periodic inspections during the progress of work as are necessary to insure that the work installed conforms with the requirements of the Uniform Construction Code.

The owner or other responsible person in charge of work must notify this agency when work is ready for any required inspections specified below. Requests for inspections must be made at least 24 hours prior to the time the inspection is desired. Inspections will be performed within three business days of the time for which they are requested. The work must not proceed in a manner which will preclude the inspection until it has been made and approval granted.

- [ ] Required inspections for all subcodes for one- and two-family dwellings are as follows:
  1. The bottom of footing trenches before placement of footings, except that in cases of pile foundations, inspections shall be made in accordance with the requirements of the building subcode.
  2. Foundations and all walls up to grade level prior to back filling.
  3. All structural framing, connections, wall and roof sheathing and insulation; electrical rough wiring, panel and service installation; rough plumbing. The framing inspection shall take place after the rough electrical and plumbing inspections and after the installation of the heating, ventilation and /or air conditioning duct system. The insulation inspection shall be performed after all other subcode rough inspections and prior to the installation of any interior finish material.
  4. Installation of all finished materials, sealings of exterior joints, plumbing piping, trim and fixtures; electrical wiring, devices and fixtures; mechanical systems equipment.

  Additional required inspections for all subcodes of construction, for other than one- and two-family dwellings, are fire suppression systems, heat producing devices and Barrier Free subcode accessibility, if applicable.

- [ ] Required special inspections. The applicant by accepting the permit will be deemed to have consented to these requirements:

- [x] A final inspection is required for each applicable subcode area before a final Certificate of Occupancy or Approval may be issued. The final inspections include the installation of all interior and exterior finish materials, sealing of exterior joints, mechanical system and other required equipment; electrical wiring, devices and fixtures; plumbing pipes, trim and fixtures; tests required by any provision of the adopted subcodes, Barrier Free accessibility, if applicable; and verification of compliance with NJAC 5:23-3.5, "Posting structures".

- [x] A complete copy of released plans must be kept on the job site.

If you do not understand any of this information, please ask.

FILE COPY

February 22, 2016

Mr. Michael Ford
Project Manager
GeoPeak Energy
285 Davidson Ave
Somerset, NJ 08873

RE: Brick BOE – Roof Framing Assessment for Solar
Brick, NJ
MPP Project No: 14-0729

Dear Mr. Ford:

Pursuant to your request, MPP Engineers has performed a limited structural evaluation of the roof framing at several additional areas of the Brick Township High School to verify that the roof framing is adequate to support a proposed ballasted photovoltaic (PV) system. This work supplements our previous evaluation of other portions of the High School and other BOE buildings within the district. The new roof areas under evaluation encompass the six areas shown in the attached Figure 1. The new evaluation areas at the High School consist of several different framing systems constructed at different times.

Structural Data and Code Information

Our analysis was performed in accordance with the requirements of the 2015 International Building Code, NJ Edition. It is our understanding that the proposed solar system for flat roofs is anticipated to consist of standard solar modules mounted on an interlocking ballasted racking system to avoid roof penetrations. It is our understanding that the proposed PV arrays will be mounting using the Grid-Lite racking system that imposes a total loading of only about 3.5 to 4 pounds per square foot (PSF) on the existing roof structure.

The pertinent design data is listed below:

Ground Snow Load, Pg:	**20 PSF (Brick, NJ)**
Importance Factor, I:	**1.1 (Occupancy Category III)**
Exposure Factor, Ce:	**1.0 (Fully Exposed)**
Thermal Factor, Ct:	**1.0 (Existing) &1.1 (With Solar Panels)**
Basic Wind Speed:	**132 MPH Ultimate (Risk Category III)**
Exposure:	**B (Urban and Suburban Areas)**
Minimum Flat Roof Snow Load:	**22 PSF (20 PSF * 1.1 Importance Factor)**

* Since the solar panels are mounted slightly above the roof line, it is appropriate to consider a thermal factor, Ct of 1.1, treating the panel surface as a cold, ventilated roof, rather than a warm roof.

FILE COPY

Estimated Roof Dead Loads - Dead load based on field observations of existing framing systems and our experience which include hung mechanical loads, roofing, insulation, ceiling, and self-weight of framing. The framing does not include the additional dead load of the proposed photovoltaic system, including the panels, rails, ballast and mounting hardware. The additional weight of the proposed ballasted solar panel system, including the panels, rails, mounting hardware, and the ballast, is estimated to be in the range of 3.5 to 4 pounds per square foot (PSF) and NOT included in the below estimated dead loads. All of the roof sections have built-up roofing with gravel.

Area 1: (Field Surveyed)
□ Wide Flange Beams spaced at approximately 8 feet on center supporting 1-1/2" metal roof deck. At the corridor areas, there appears to be a concrete topping over the metal deck. For these areas, we used a total dead loading of 65 PSF. At the classroom areas on either side of the corridor, it was evident that there was no concrete present. At these areas, we used a total dead load of 24 PSF for our calculations. It should be noted that this roof has several rooftop HVAC units. We suspect that this roof area may have been designed for a future second floor.

Area 2: (Field Surveyed)
□ This area also consists of wide flange beams spaced at approximately 8'-4" on center. The beams are supported by masonry bearing walls and have a cantilever with hung span framing arrangement. The total estimated existing dead loads at this area are 24 PSF.

Area 3: (Field Surveyed)
□ This roof area has the same framing system as Area 1 but the beam sizes were noticeably smaller despite having the same spacing and spans as those members in Area 1. The total estimated dead loads for this roof area are 24 PSF.

Area 4: (Field Surveyed)
□ This is the roof over the gymnasium. The framing consists of custom structural steel trusses spaced at 23' on center that clear span approximately 80 across the width of the gymnasium. The trusses support wide flange beams spaced at 8' on center spanning between the trusses and supported by masonry bearing walls at the end walls. The beams support metal roof deck. The estimated total dead loads at this section of the roof are 16 PSF plus the self weight of the framing.

Area 5: (Field Surveyed)
□ The roof framing over the auxiliary gym consists of 32" open web steel bar joists spaced at 6'-6" on center with a clear span of approximately 50 feet. The joists support a tectum roof deck system with bulb tees. We estimate that the total weight of the existing roof framing to be approximately 20 PSF at this roof area. It should be noted that the roof joists also support two

Area 6: (Field Surveyed)
□ The roof framing over the weight room consists of 22" deep K-Series open web steel joists supporting metal roof deck. We estimate that the total weight of the existing roof framing to be approximately 16 PSF at this roof area.

Existing Framing and Analysis (Ref Figure 1)

Area 1:

Existing Framing – The framing in this area appears to have been designed for a future second floor loading. Based on the member sizes, this roof appears to have more than enough capacity to support solar panels, even in those areas where existing rooftop mechanical equipment exists.

Analysis Results – Our analysis indicates that the existing roof framing in this area has a minimum reserve capacity of well above 10 PSF and would be more than adequate to support PV arrays. However, as previously mentioned, the ability to utilize much of this space will be hindered by the large number of rooftop HVAC units.

Area 2:

Existing Framing - The framing in this area consists of W14x30 wide flange beams spanning approximately 41 feet between bearing walls and cantilevering 7 feet beyond the wall to support W14x30 hung beams. The beams support conventional 1-1/2" metal roof deck.

Analysis Results – Our analysis indicates that the framing in this area is capable of supporting an additional 8 PSF.

Area 3:

Existing Framing - The framing in this area consists of W12x22 steel beams spaced at 8' on center with a span of 30'-8" supporting conventional 1-1/2" metal roof deck.

Analysis Results – Our calculations indicate that this section of the roof has a reserve capacity of approximately 6 PSF.

Area 4:

Existing Framing – The framing for the gym roof has custom structural steel trusses with an out-to-out depth of 7'-4". The truss chord members consist of 8" T-Sections with double angle chord and web members that vary in size depending on the location. The web members are welded to the chord members. The W12 beams that frame into the trusses are bolted to the vertical angles at the panel point locations which occur every 8 feet on center. The typical beam size appears to be W12x14 members except at the cross bridging between trusses where the beams are larger. In addition, there are two HVAC units hung from the framing at each end of the gym. The beam sizes at these locations suggest that slightly larger W12x19 beams were used to accommodate the additional loading. The steel trusses span 80' clear and are supported by steel columns at each end. The trusses are spaced at 23' on center and support conventional 1-1/2", 16 Gauge metal roof deck.

Analysis Results – Our analysis indicates that the framing has a reserve capacity of 7 PSF based primarily on the capacity of the bottom chord members of the trusses.

Area 5:

Existing Framing – The auxiliary gym framing consists of 32" LH joists spaced at 6'-6" on center. Based on the size of the chord and web members, the joists appear to be 32LH08 members. We conservatively assumed that the joist members are 32LH06 members or perhaps even 32LJ08 members in performing our analyses. It should be noted that there are two mechanical units supported in between the 2nd and 3rd roof

joists from each end of the gym. The joists at these locations appear to be the same size as the typical joists and have not been reinforced or strengthened to accommodate the additional loading.

Analysis Results – Based on our assumptions the standard joists have a reserve capacity of approximately 8 PSF. Given the unknowns regarding the weight of the existing HVAC units that are supported by the joists, we do not recommend that any solar panels be installed along the length of the joists within an 8 foot strip centered on the mechanical units.

Area 6:

Existing Framing - The framing at the weight room consists of 22K11 joists spaced at 4' on center with a span of 39'-0". The joists are supported by W21x44 and W21x62 beams having 27' +/- and 33' +/- spans, respectively.

Analysis Results – Our analysis indicates that the framing within this roof area conservatively has a reserve capacity of 10 PSF.

Conclusions

The attached Figure 1 shows the available reserve capacity for various areas of the roof along with some limitations with regard to the panels at the auxiliary gym and where low roof sections meet higher roof sections. Provided that the Grid-Lite racking system is used to support the PV arrays, all 6 of the new areas at the High School are generally adequate to support the proposed PV arrays.

Solar panels may not be supported within 5 feet of all existing rooftop mechanical equipment areas and within 14 feet at changes in roof elevations (e.g., between high and low roof areas). These areas typically result in shadow zones and may not be suitable for solar panels anyway.

We have also reviewed the proposed PV array layouts for the other Brick BOE facilities as follows:

1. Midstreams Elementary School
2. Veterans Memorial Elementary School
3. Veterans Memorial Middle School
4. Lake Riviera Middle School
5. Emma Haven Young Elementary School
6. Education Enrichment Center

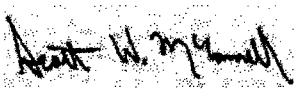
In all of the zones where panels are proposed on these roofs, we have confirmed that the roof has a minimum reserve capacity of at least 4 PSF and would be capable of supporting the proposed PV arrays installed using the Grid-Lite racking system.

We trust that this evaluation will provide you with the information required to finalize the layout and design of the PV systems. If you have any questions regarding this matter, please feel free to contact my office at 609-489-5511.

We appreciate the opportunity to assist you with this evaluation.

Sincerely,

MPP Engineers, LLC

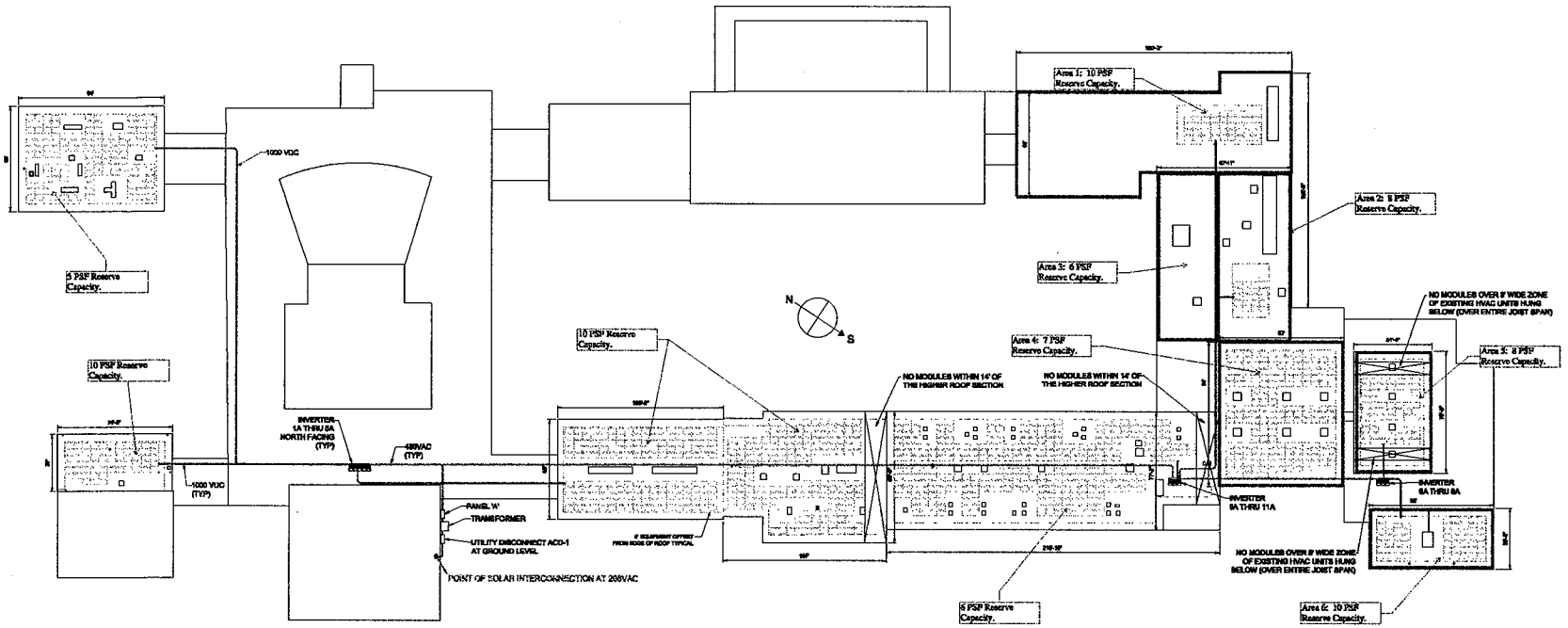


Scott W. McConnell
Principal
NJ PE Lic No. 40281

Encl.

Figure 1 – Brick Township High School Roof Reserve Capacity

Appendix A – Proposed PV Roof Layouts and Grid-Lite Racking Information



MPP Engineers LLC
34 S. Main Street, Ste. D
Allentown, NJ 08501
Phone: (609) 489-5511

Scott W. McConnell
NJ Prof. Eng. Lic. No. 40281

CLIENT:
GeoPeak Energy

PROJECT NAME:

Brick BOE
Roof Assessment for Solar
Brick Twp High School
Brick, NJ

PLOT SCALE	DATE
NONE	2/22/16
DRAWN BY	**DESIGNED BY**
SWM	SWM

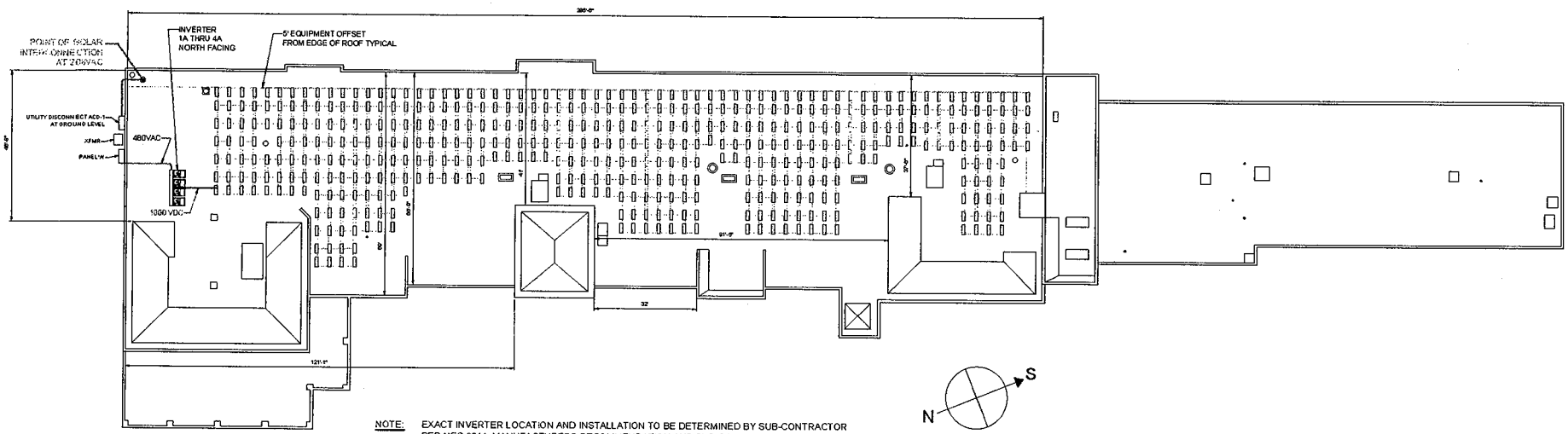
MPP PROJECT NO.
14-0729

SKETCH NO:
Figure 1

STRUCTURAL ENGINEERS
MPP

Appendix A

PV Array Layouts & Grid-Lite Racking System Information



NOTE: EXACT INVERTER LOCATION AND INSTALLATION TO BE DETERMINED BY SUB-CONTRACTOR PER NEC 2014, MANUFACTURERS RECOMMENDATION AND SUB-CONTRACT DOCUMENTS IN COMPLIANCE WITH ROOFING WARRANTY.

ENRICHMENT CENTER - WIRE AND CONDUIT SCHEDULE

Item	Description	Wire Size	Wire type	Voltage/Phase	Ampacity (A)	OCPD (A)
1	INV#1A TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	24.07	Refer to E-101 Electrical Diagram
2	INV#2A TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	24.07	Refer to E-101 Electrical Diagram
3	INV#3ATO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	24.07	Refer to E-101 Electrical Diagram
4	INV#4A TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	24.07	Refer to E-101 Electrical Diagram
5	PNL A to XFMR	3#2/0, 1#4N, 1#4G in 2"C	AL THWN-2	480/3	96.27	Refer to E-101 Electrical Diagram
6	XMFR TO ACD-1	3#500kCM, 1#1/0N, 1#1/0G in 4"C	AL THWN-2	208/3	222.22	Refer to E-101 Electrical Diagram
7	ACD-1 TO INTERCONNECTION	3#500kCM, 1#1/0N, 1#1/0G in 4"C	AL THWN-2	208/3	222.22	Refer to E-101 Electrical Diagram

1 **SOLAR ROOF LAYOUT**
SCALE: 1"=15'

01

TOTAL MODULES: 368 (260W PV MODULES)
TOTAL SYSTEM SIZE: 95.68 kW DC

NO.	DATE	REVISIONS	BY	CHK
3	02-03-16	PERMIT SET	JK	DF
2	10-30-15	ELECTRICAL INTERCONNECTION SUBMITTAL	JK	DF
1	08-25-15	INITIAL RELEASE	JK	DF

DESIGNED BY: JMK	SCALE: AS SHOWN
DRAWN BY: JMK	DATE: 10-26-15
CHECKED BY: -	PROJECT NO.: -
CLIENT APPROVAL BY:	REVISION NUMBER: 3

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SOMERSET, NJ 08873
(888) 526-4478

Stantec
David D. Faccas, P.E.
PROFESSIONAL ENGINEER

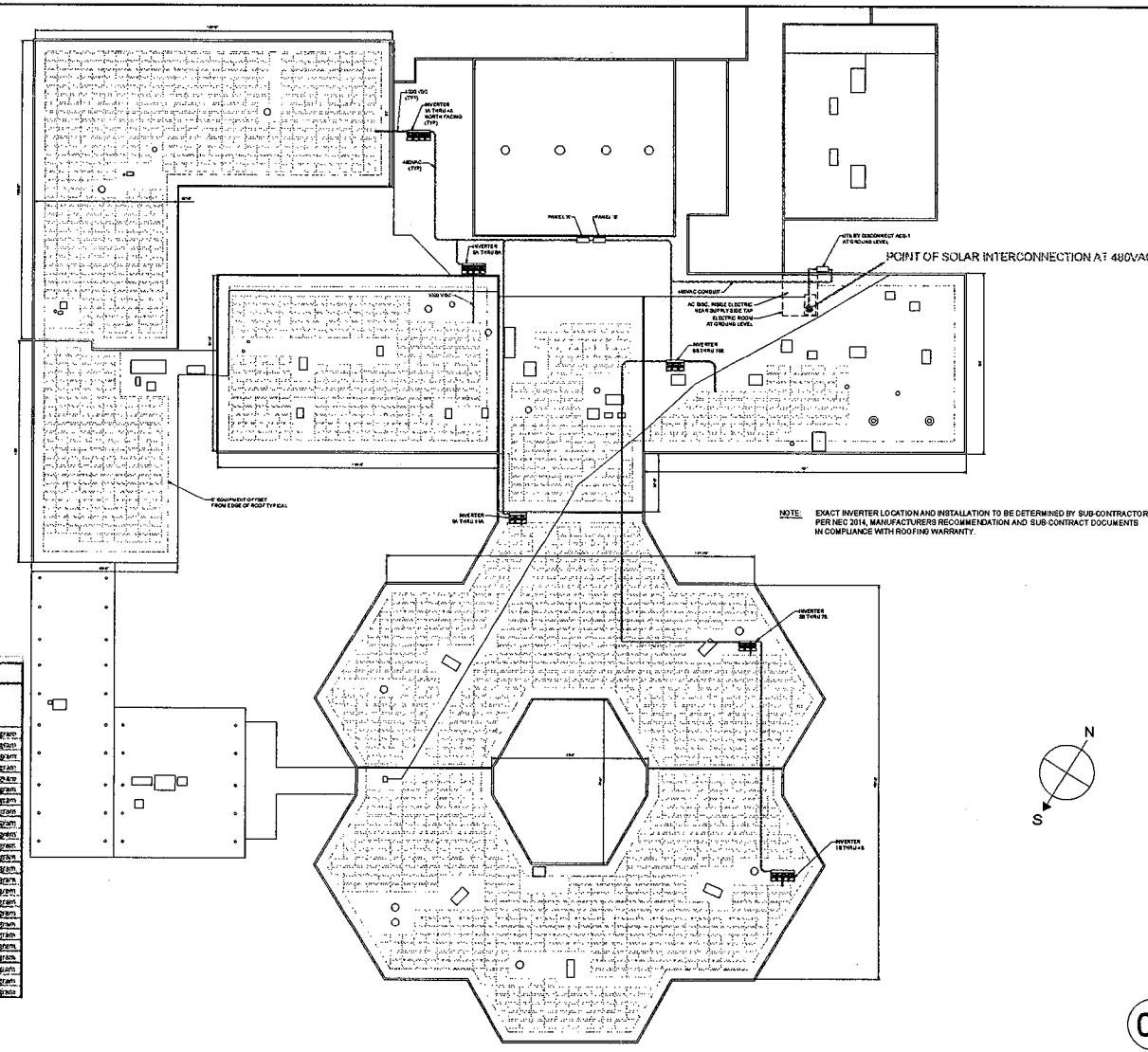
DRAWING NAME: SOLAR ROOF LAYOUT AND CONDUIT SCHEDULE

PROJECT NAME: BRICK TWSP SCHOOL ROOF SYSTEM PHOTOVOLTAIC CONSTRUCTION PLANS
PV SYSTEM SPECIFICATIONS (5° TILT, 203°AZIMUTH)

DRAWING: A-101
24" x 36"

PROPERTY LOCATION: EDUCATION ENRICHMENT CENTER 101-107 HENDRICKSON AVENUE BRICK, NJ 08723

SHEET NO: 4 OF 14



02

BRICK VETERANS MEMORIAL - WIRE AND CONDUIT SCHEDULE

Item	Description	Wire Size	Wire Type	Voltage/Phase	Ampacity (A)	OCPD (A)
1	INVERTA TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
2	INVERTA TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
3	INVERTA TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
4	INVERTA TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
5	INVERTA TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
6	INVERTA TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
7	INVERTA TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
8	INVERTA TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
9	INVERTA TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
10	INVERTA TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
11	INVERTA TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
12	INVERTB TO PNL B	3#1, 1#1N, 1#1G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
13	INVERTB TO PNL B	3#1, 1#1N, 1#1G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
14	INVERTB TO PNL B	3#1, 1#1N, 1#1G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
15	INVERTB TO PNL B	3#1, 1#1N, 1#1G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
16	INVERTB TO PNL B	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
17	INVERTB TO PNL B	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
18	INVERTB TO PNL B	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
19	INVERTB TO PNL B	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
20	INVERTB TO PNL B	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
21	INVERTB TO PNL B	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
22	PNL A to ACD-1	2 SETS 3#250KCM, 1#1/0N, 1#1/0G in (2) 3"C	AL THWN-2	480/3	317.60	Refer to E-101 Electrical Diagram
23	PNL B to ACD-1	2 SETS 3#250KCM, 1#1/0N, 1#1/0G in (2) 3"C	AL THWN-2	480/3	254.00	Refer to E-101 Electrical Diagram
24	ACD-1 to INTERCONNECTION	4 SETS 3#250KCM, 1#2/0N, 1#1/0G in (4) 3"C	AL THWN-2	480/3	601.66	Refer to E-101 Electrical Diagram

1 **SOLAR ROOF LAYOUT**
SCALE: 1"=25'

TOTAL MODULES: 2,500 (260W PV MODULES)
TOTAL SYSTEM SIZE: 650.00 kW DC

NO.	DATE	REVISIONS	BY	CHK
3	02-03-16	PERMIT SET	JK	DF
2	10-30-15	ELECTRICAL INTERCONNECTION SUBMITTAL	JK	DF
1	09-25-15	INITIAL RELEASE	JK	DF

DESIGNED BY: JMK	SCALE: AS SHOWN
DRAWN BY: JMK	DATE: 10-26-15
CHECKED BY: -	PROJECT NO.: -
CLIENT APPROVAL BY:	REVISION NUMBER: 3

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Smart Solutions, Clean Alternatives
285 DAVIDSON AVENUE
SOMERSET, NJ 08873
(888) 526-4478

Stantec
David D. Faccas, P.E.

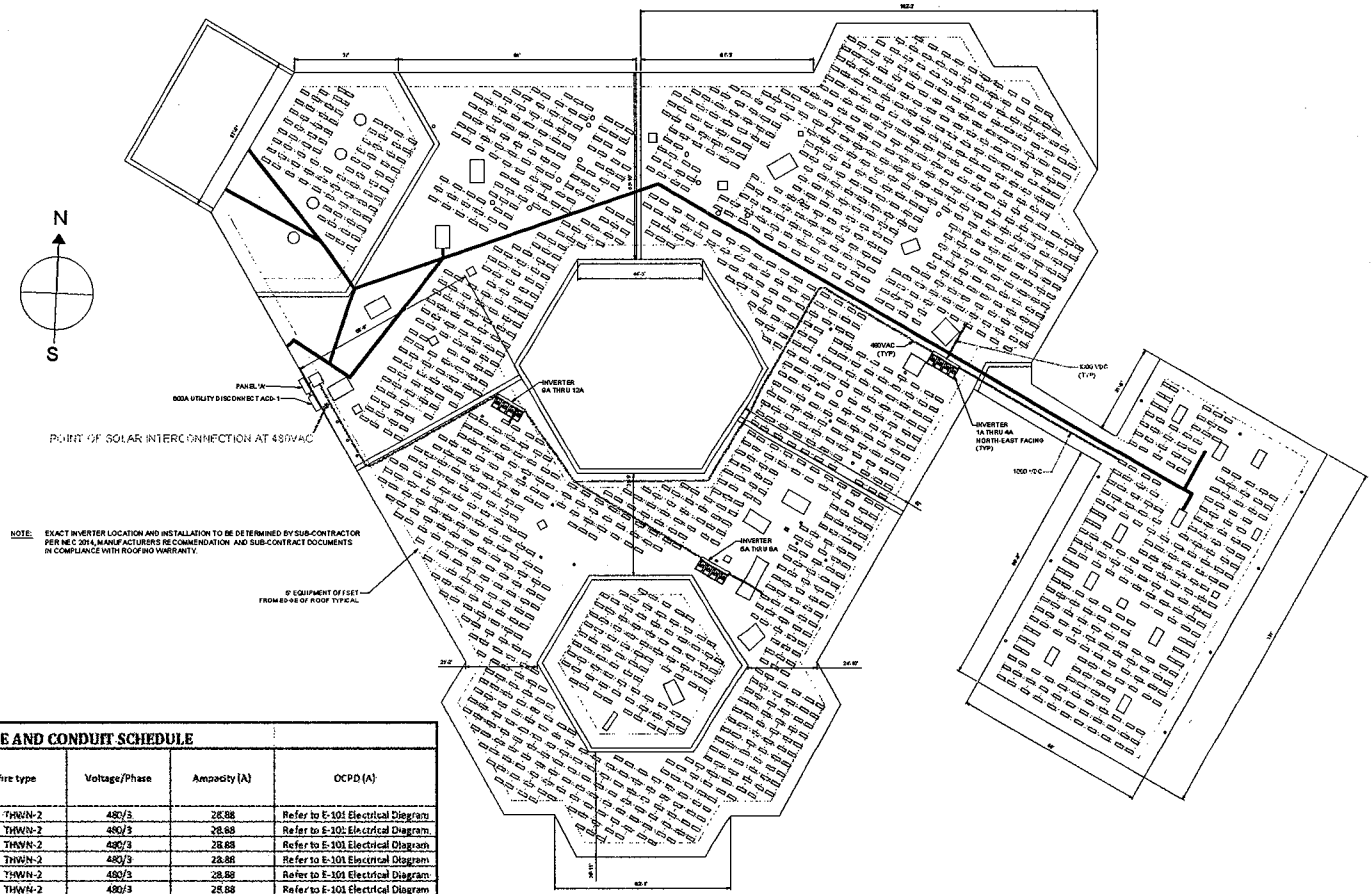
DRAWING NAME: SOLAR ROOF LAYOUT AND CONDUIT SCHEDULE

PROJECT NAME: BRICK TWSP SCHOOL ROOF SYSTEM PHOTOVOLTAIC CONSTRUCTION PLANS
PV SYSTEM SPECIFICATIONS (6° TILT, 143°AZIMUTH)

DRAWING: A-101
24" x 36"

PROPERTY LOCATION: VETERANS MEMORIAL MIDDLE SCHOOL, 105 HENDRICKSON AVENUE, BRICK, NJ 08723

SHEET NO: 4 OF 14



NOTE: EXACT INVERTER LOCATION AND INSTALLATION TO BE DETERMINED BY SUB-CONTRACTOR PER NEC 2014, MANUFACTURERS RECOMMENDATION AND SUB-CONTRACT DOCUMENTS IN COMPLIANCE WITH ROOFING WARRANTY.

VETERANS MEMORIAL ELEMENTARY - WIRE AND CONDUIT SCHEDULE

Item	Description	Wire Size	Wire type	Voltage/Phase	Ampacity (A)	OCPD (A)
1	INV#1A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
2	INV#2A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
3	INV#3A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
4	INV#4A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
5	INV#5A TO PNL A	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
6	INV#6A TO PNL A	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
7	INV#7A TO PNL A	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
8	INV#8A TO PNL A	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
9	INV#9A TO PNL A	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
10	INV#10A TO PNL A	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
11	INV#11A TO PNL A	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
12	INV#12A TO PNL A	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
13	PNL A to ACD-1	2 SETS 3#350KCM, 1#1/0N, 1#1/0G in (2) 3.5"C	AL THWN-2	480/3	346.57	Refer to E-101 Electrical Diagram
14	ACD-1 to INTERCONNECTION	2 SETS 3#350KCM, 1#1/0N, 1#1/0G in (2) 3.5"C	AL THWN-2	480/3	346.57	Refer to E-101 Electrical Diagram

03

1 SOLAR ROOF LAYOUT
SCALE: 1"=20'

TOTAL MODULES: 1,440 (260W PV MODULES)
TOTAL SYSTEM SIZE: 374.40 kW DC

NO.	DATE	REVISIONS	BY	CHK
3	02-03-16	PERMIT SET	JK	DF
2	10-30-16	ELECTRICAL INTERCONNECTION SUBMITTAL	JK	DF
1	09-25-15	INITIAL RELEASE	JK	DF

DESIGNED BY: JMK
SCALE: AS SHOWN
DRAWN BY: JMK
DATE: 10-26-15
CHECKED BY: -
PROJECT NO.: -
CLIENT APPROVAL BY:
REVISION NUMBER: 3

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SOMERSET, NJ 08873
(888) 526-4478

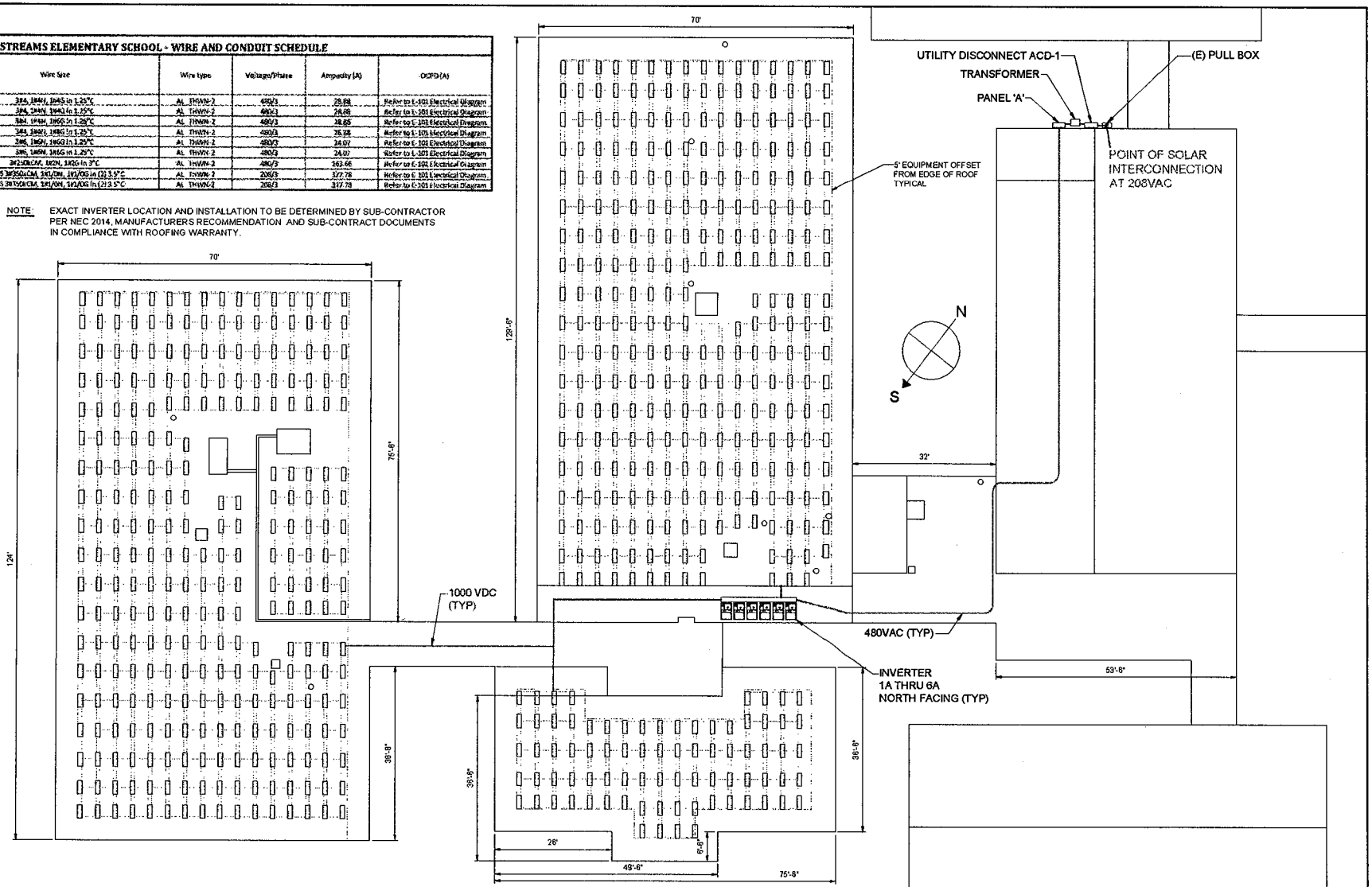
Stantec
David D. Faccas, P.E.
PROFESSIONAL ENGINEER
N.J. LICENSE #24GE03481500
DATE:

DRAWING NAME: SOLAR ROOF LAYOUT AND CONDUIT SCHEDULE
PROJECT NAME: BRICK TWSP SCHOOL ROOF SYSTEM PHOTOVOLTAIC CONSTRUCTION PLANS
PV SYSTEM SPECIFICATIONS (5° TILT, 208°AZIMUTH)
DRAWING: A-101
24" x 36"
PROPERTY LOCATION: VETERANS MEMORIAL ELEMENTARY SCHOOL 103 HENDRICKSON AVENUE BRICK, NJ 08723
SHEET NO: 4 OF 14

MIDSTREAMS ELEMENTARY SCHOOL - WIRE AND CONDUIT SCHEDULE

Item	Description	Wire Size	Wire type	Voltage/Phase	Ampacity (A)	OCPD (A)
1	INV#1A TO PNL A	3#6, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
2	INV#2A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	24.68	Refer to E-101 Electrical Diagram
3	INV#3A TO PNL A	3#4, 1#4N, 1#6G in 1.25"C	AL THWN-2	480/3	28.65	Refer to E-101 Electrical Diagram
4	INV#4A TO PNL A	3#4, 1#4N, 1#6G in 1.25"C	AL THWN-2	480/3	26.28	Refer to E-101 Electrical Diagram
5	INV#5A TO PV-A	3#6, 1#6N, 1#6G in 1.25"C	AL THWN-2	480/3	24.07	Refer to E-101 Electrical Diagram
6	INV#6A TO PNL A	3#6, 1#6N, 1#6G in 1.25"C	AL THWN-2	480/3	24.07	Refer to E-101 Electrical Diagram
7	PNL A to XFMR	3#250kCM, 1#2N, 1#2G in 3"C	AL THWN-2	480/3	363.66	Refer to E-101 Electrical Diagram
8	XFMR to ACD-1	2 SETS 3#350kCM, 1#1/0N, 1#1/0G in (2) 3.5"C	AL THWN-2	208/3	377.78	Refer to E-101 Electrical Diagram
9	ACD-1 to INTERCONNECTION	2 SETS 3#350kCM, 1#1/0N, 1#1/0G in (2) 3.5"C	AL THWN-2	208/3	377.78	Refer to E-101 Electrical Diagram

NOTE: EXACT INVERTER LOCATION AND INSTALLATION TO BE DETERMINED BY SUB-CONTRACTOR PER NEC 2014, MANUFACTURERS RECOMMENDATION AND SUB-CONTRACT DOCUMENTS IN COMPLIANCE WITH ROOFING WARRANTY.



1 SOLAR ROOF LAYOUT
SCALE: 1"=10'

04

TOTAL MODULES: 528 (310W PV MODULES)
TOTAL SYSTEM SIZE: 163.68 kW DC

NO	DATE	REVISIONS	BY	CHK
3	02-03-16	PERMIT SET	JK	DF
2	10-30-15	ELECTRICAL INTERCONNECTION SUBMITTAL	JK	DF
1	09-25-15	INITIAL RELEASE	JK	DF

DESIGNED BY: JMK	SCALE: AS SHOWN
DRAWN BY: JMK	DATE: 10-26-15
CHECKED BY: -	PROJECT NO.: -
CLIENT APPROVAL BY:	REVISION NUMBER: 3

GEOPEAK ENERGY®
Smart Solutions, Clean Alternatives
285 DAVIDSON AVENUE
SOMERSET, NJ 08873
(888) 526-4478

Stantec
David D. Faccas, P.E.

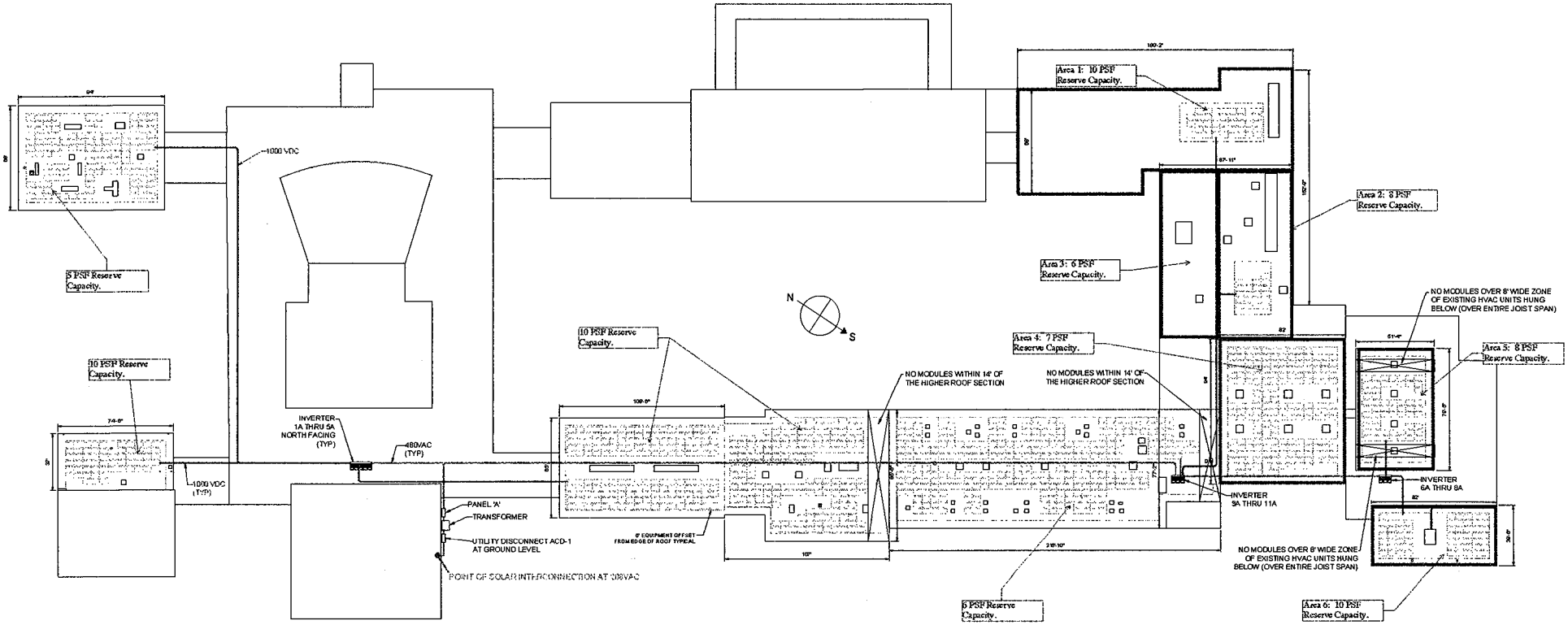
DRAWING NAME: SOLAR ROOF LAYOUT AND CONDUIT SCHEDULE

PROJECT NAME: BRICK TWSP SCHOOL ROOF SYSTEM PHOTOVOLTAIC CONSTRUCTION PLANS
PV SYSTEM SPECIFICATIONS (5° TILT, 230°AZIMUTH)

DRAWING: A-101
24" x 36"

PROPERTY LOCATION: MIDSTREAMS ELEMENTARY SCHOOL, 500 MIDSTREAMS ROAD, BRICK, NJ 08723

SHEET NO: 4 OF 14



BRICK HS - WIRE AND CONDUIT SCHEDULE

Item	Description	Wire Size	Wire type	Voltage/Phase	Ampacity (A)	OCPD (A)
1	INV#1A TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
2	INV#2A TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
3	INV#3A TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
4	INV#4A TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
5	INV#5A TO PNL A	3#8, 1#8N, 1#8G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
6	INV#6A TO PNL A	3#1, 1#1N, 1#1G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
7	INV#7A TO PNL A	3#1, 1#1N, 1#1G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
8	INV#8A TO PNL A	3#1, 1#1N, 1#1G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
9	INV#9A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
10	INV#10A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
11	INV#11A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	24.07	Refer to E-101 Electrical Diagram
12	PNL A to XFMR	2 SETS 3#250kCM, 1#1/0N, 1#1/0G in (2) 3"C	AL THWN-2	480/3	312.88	Refer to E-101 Electrical Diagram
13	XMFR TO ACD-1	4 SETS 3#250kCM, 1#4/0N, 1#4/0G in (4) 3"C	AL THWN-2	208/3	722.22	Refer to E-101 Electrical Diagram
14	ACD-1 to INTERCONNECTION	4 SETS 3#250kCM, 1#4/0N, 1#4/0G in (4) 3"C	AL THWN-2	208/3	722.22	Refer to E-101 Electrical Diagram

NOTE: EXACT INVERTER LOCATION AND INSTALLATION TO BE DETERMINED BY SUB-CONTRACTOR PER NEC 2014, MANUFACTURERS RECOMMENDATION AND SUB-CONTRACT DOCUMENTS IN COMPLIANCE WITH ROOFING WARRANTY.

05

1 **SOLAR ROOF LAYOUT**
SCALE: 1"=30'

TOTAL MODULES: 1,307 (260W PV MODULES)
TOTAL SYSTEM SIZE: 339.82 kW DC

NO.	DATE	REVISIONS	BY	CHK
3	02-03-16	PERMIT SET	JK	DF
2	10-30-15	ELECTRICAL INTERCONNECTION SUBMITTAL	JK	DF
1	09-10-15	INITIAL RELEASE	JK	DF

DESIGNED BY: JMK
SCALE: AS SHOWN
DRAWN BY: JMK
DATE: 10-26-15
CHECKED BY: -
PROJECT NO.: -
CLIENT APPROVAL BY:
REVISION NUMBER: 3

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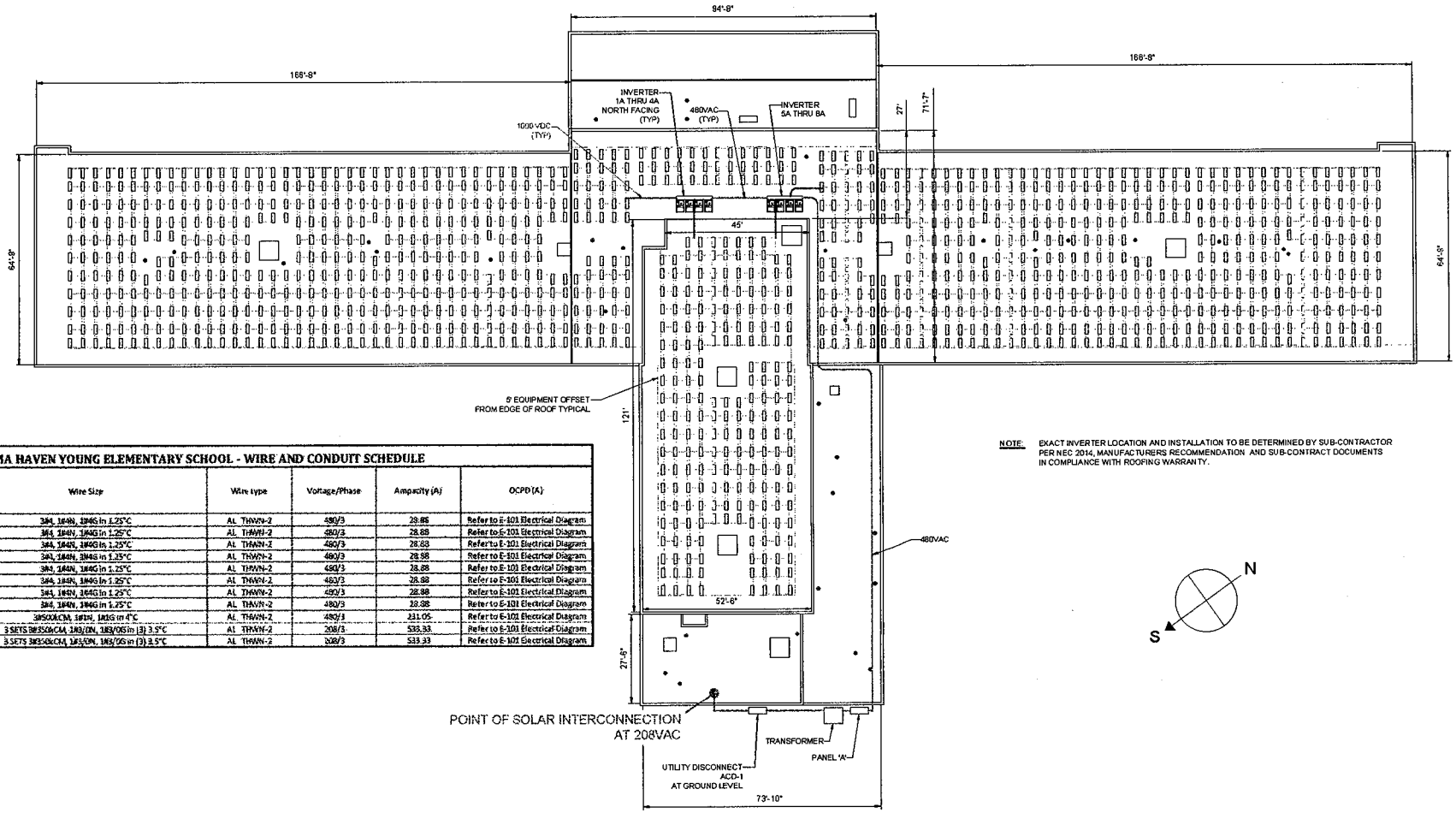
Smart Solutions, Clean Alternatives
285 DAVIDSON AVENUE
SOMERSET, NJ 08873
(888) 526-4478

Stantec
David D. Faccas, P.E.
PROFESSIONAL ENGINEER

DRAWING NAME: SOLAR ROOF LAYOUT AND CONDUIT SCHEDULE
PROJECT NAME: BRICK TWSP SCHOOL ROOF SYSTEM PHOTOVOLTAIC CONSTRUCTION PLANS
PV SYSTEM SPECIFICATIONS (6° TILT, 246°AZIMUTH)
DRAWING: A-101
24" x 36"
PROPERTY LOCATION: BRICK TWSP HIGH SCHOOL, 346 CHAMBERS BRIDGE ROAD, BRICK, NJ 08723
SHEET NO.: 4 OF 14



NOTE: EXACT INVERTER LOCATION AND INSTALLATION TO BE DETERMINED BY SUB-CONTRACTOR PER NEC 2014, MANUFACTURERS RECOMMENDATION AND SUB-CONTRACT DOCUMENTS IN COMPLIANCE WITH ROOFING WARRANTY.

EMMA HAVEN YOUNG ELEMENTARY SCHOOL - WIRE AND CONDUIT SCHEDULE

Item	Description	Wire Size	Wire type	Voltage/Phase	Ampacity (A)	OCPD (A)
1	INVW1A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
2	INVW2A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
3	INVW3A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
4	INVW4A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
5	INVW5A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
6	INVW6A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
7	INVW7A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
8	INVW8A TO PNL A	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
9	PNL A to XFMR	3#500kCM, 1#1N, 1#1G in 4"C	AL THWN-2	480/3	231.05	Refer to E-101 Electrical Diagram
10	XMFR TO ACD-1	3 SETS 3#350kCM, 1#3/0N, 1#3/0G in (3) 3.5"C	AL THWN-2	208/3	533.33	Refer to E-101 Electrical Diagram
11	ACD-1 to INTERCONNECTION	3 SETS 3#350kCM, 1#3/0N, 1#3/0G in (3) 3.5"C	AL THWN-2	208/3	533.33	Refer to E-101 Electrical Diagram

06

1 **SOLAR ROOF LAYOUT**
SCALE: 1"=10'

TOTAL MODULES: 966 (260W PV MODULES)
TOTAL SYSTEM SIZE: 251.16 kW DC

NO.	DATE	REVISIONS	BY	CHK
3	02-03-16	PERMIT SET	JK	DF
2	10-30-15	ELECTRICAL INTERCONNECTION SUBMITTAL	JK	DF
1	08-25-15	INITIAL RELEASE	JK	DF

DESIGNED BY: JMK	SCALE: AS SHOWN
DRAWN BY: JMK	DATE: 10-26-15
CHECKED BY: -	PROJECT NO.: -
CLIENT APPROVAL BY:	REVISION NUMBER: 3

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(888) 526-4478

Stantec
David D. Faccas, P.E.

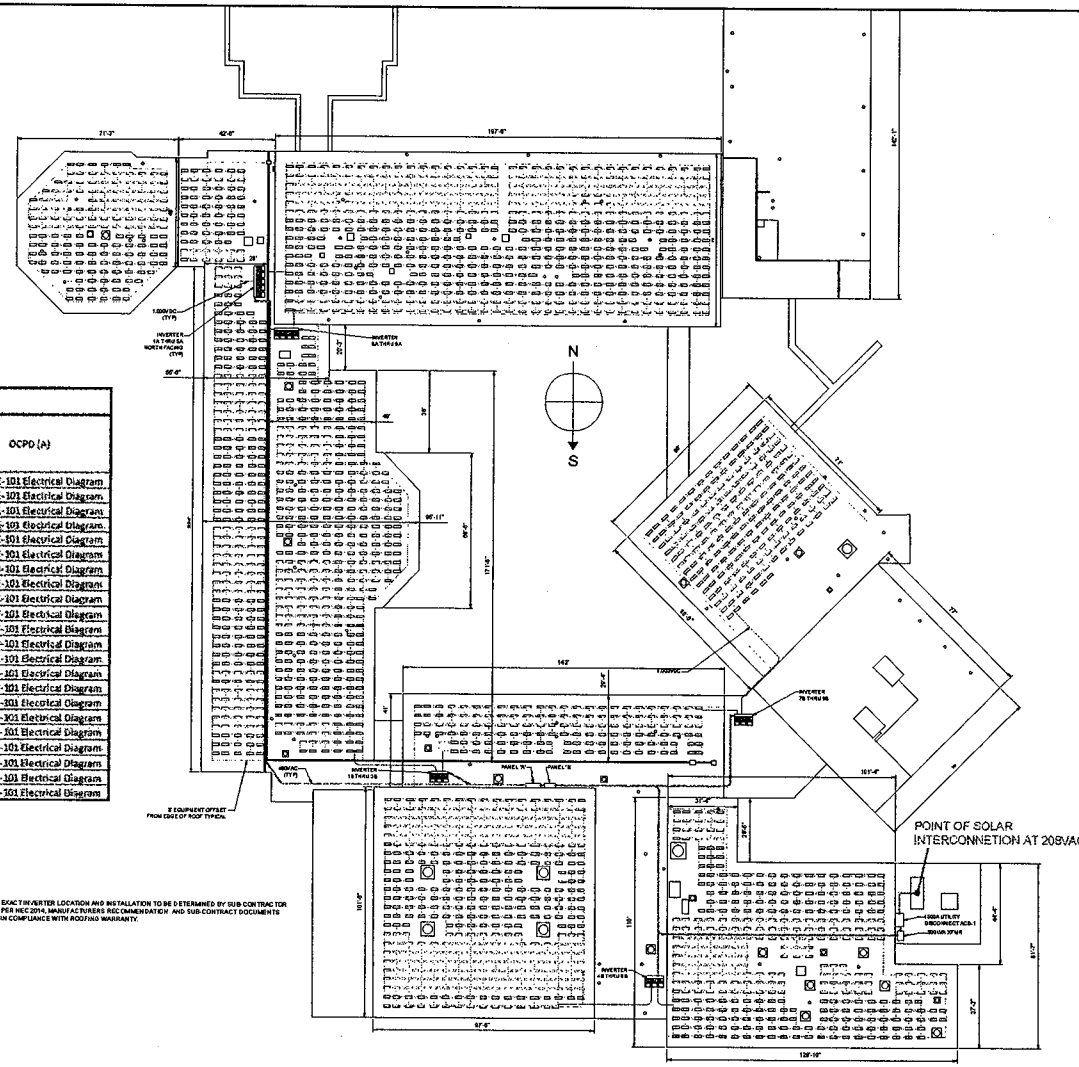
DRAWING NAME: SOLAR ROOF LAYOUT AND CONDUIT SCHEDULE

PROJECT NAME: BRICK TWSP SCHOOL ROOF SYSTEM PHOTOVOLTAIC CONSTRUCTION PLANS
PV SYSTEM SPECIFICATIONS (5° TILT, 216°AZIMUTH)

DRAWING: A-101
24" x 36"

PROPERTY LOCATION: EMMA HAVEN YOUNG ELEMENTARY SCHOOL 43 DRUM POINT ROAD BRICK, NJ 08723

SHEET NO: 4 OF 14



LAKE RIVIERA - WIRE AND CONDUIT SCHEDULE

Item	Description	Wire Size	Wire type	Voltage/Phase	Ampacity (A)	OCPD (A)
1	INV#1A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
2	INV#2A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
3	INV#3A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
4	INV#4A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
5	INV#5A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
6	INV#6A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
7	INV#7A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
8	INV#8A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
9	INV#9A TO PNL A	3#2, 1#2N, 1#2G in 1.5"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
10	INV#1B TO PNL B	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
11	INV#2B TO PNL B	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
12	INV#3B TO PNL B	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
13	INV#4B TO PNL B	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
14	INV#5B TO PNL B	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
15	INV#6B TO PNL B	3#4, 1#4N, 1#4G in 1.25"C	AL THWN-2	480/3	28.88	Refer to E-101 Electrical Diagram
16	INV#7B TO PNL B	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	18.05	Refer to E-101 Electrical Diagram
17	INV#8B TO PNL B	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	18.05	Refer to E-101 Electrical Diagram
18	INV#9B TO PNL B	3#6, 1#6N, 1#6G in 1"C	AL THWN-2	480/3	18.05	Refer to E-101 Electrical Diagram
19	PNL A to XFMR	2 SETS 3#500kCM, 1#3/0N, 1#3/0G in (2) 3"C	AL THWN-2	480/3	259.93	Refer to E-101 Electrical Diagram
20	PNL B to XMFR	2 SETS 3#250kCM, 1#1/0N, 1#1/0G in (2) 3"C	AL THWN-2	480/3	227.44	Refer to E-101 Electrical Diagram
21	XMFR TO ACD-1	5 SETS 3#500kCM, 1#350kCMN, 1#350kCMG in (5) 4"C	AL THWN-2	208/3	1125.00	Refer to E-101 Electrical Diagram
22	ACD-1 to INTERCONNECTION	5 SETS 3#500kCM, 1#350kCMN, 1#350kCMG in (5) 4"C	AL THWN-2	208/3	1125.00	Refer to E-101 Electrical Diagram

07

1 SOLAR ROOF LAYOUT
SCALE: 1"=25'

TOTAL MODULES: 2,040 (260W PV MODULES)
TOTAL SYSTEM SIZE: 530.40 kW DC

NO.	DATE	REVISIONS	BY	CHK
3	02-03-16	PERMIT SET	JK	DF
2	10-30-15	ELECTRICAL INTERCONNECTION SUBMITTAL	JK	DF
1	09-25-15	INITIAL RELEASE	JK	DF

DESIGNED BY: JMK
SCALE: AS SHOWN
DRAWN BY: JMK
DATE: 10-26-15
CHECKED BY: -
PROJECT NO.: -
CLIENT APPROVAL BY:
REVISION NUMBER: 3

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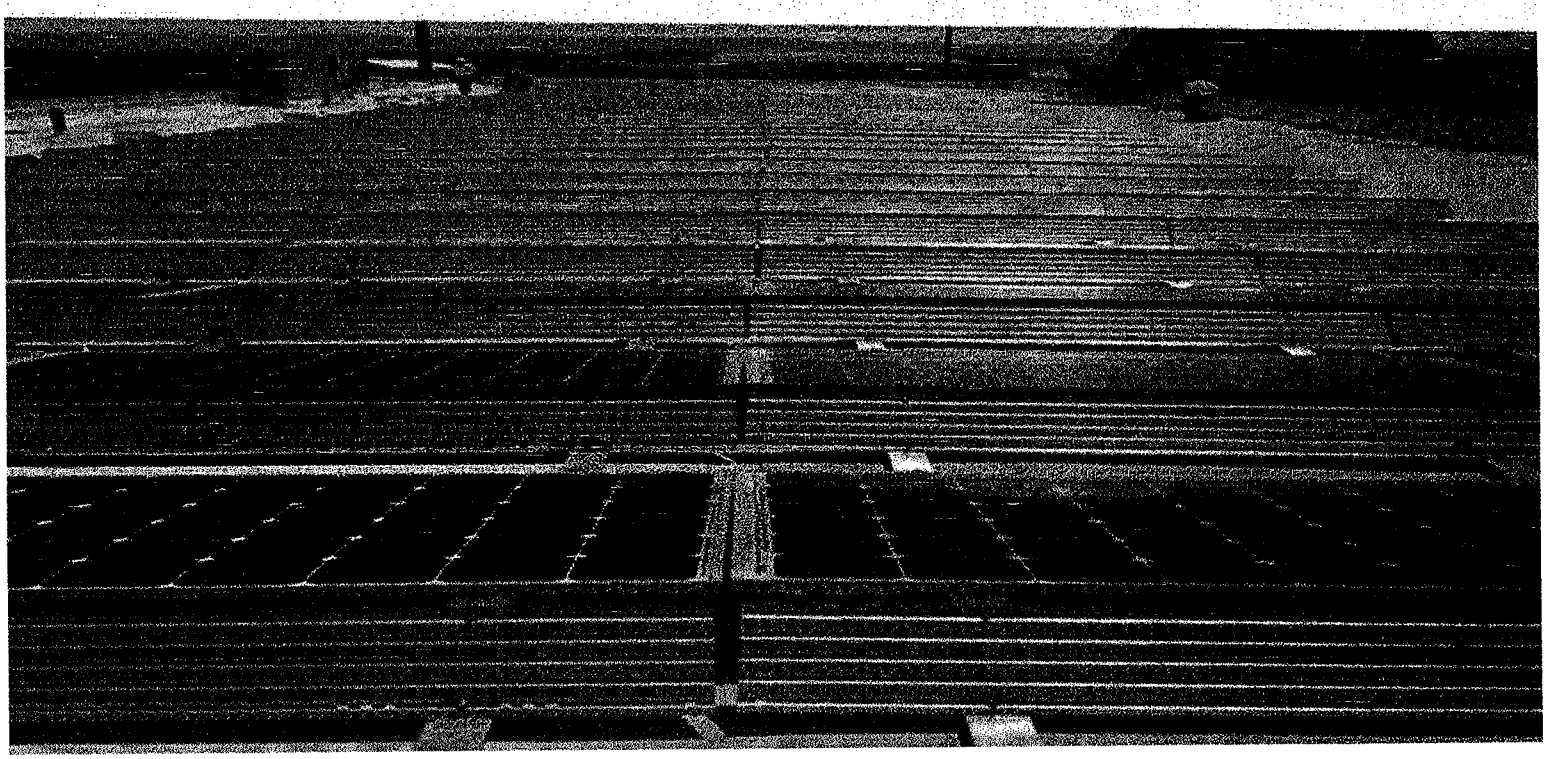
(888) 526-4478

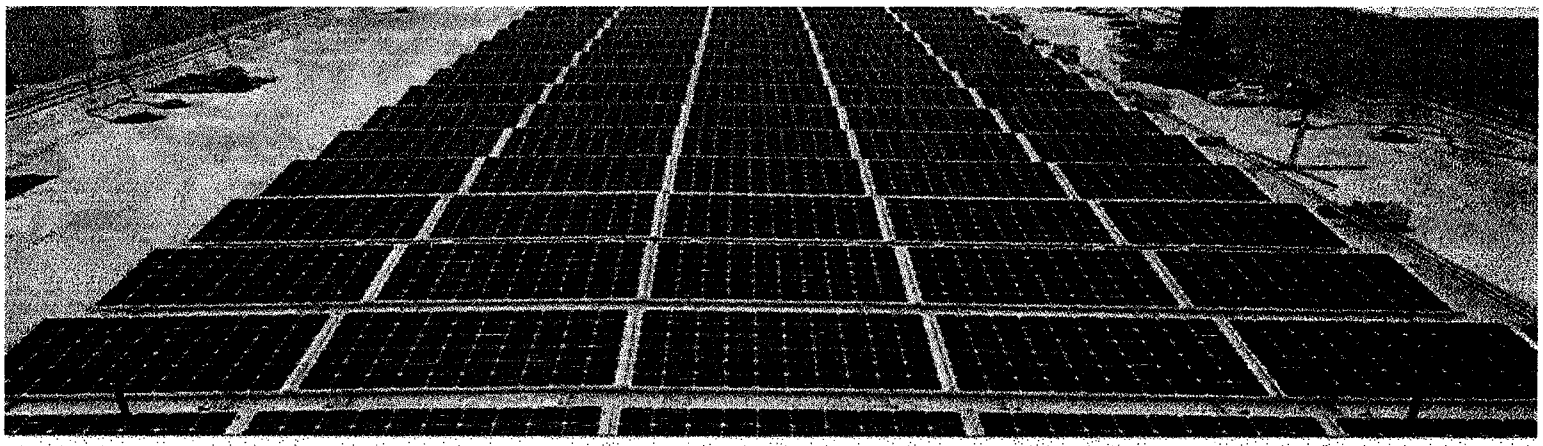
Stantec
David D. Faccas, P.E.
PROFESSIONAL ENGINEER

DRAWING NAME: SOLAR ROOF LAYOUT AND CONDUIT SCHEDULE
PROJECT NAME: BRICK TWSP SCHOOL ROOF SYSTEM PHOTOVOLTAIC CONSTRUCTION PLANS
PV SYSTEM SPECIFICATIONS (5° TILT, 182°AZIMUTH)
DRAWING: A-101
24" x 36"
PROPERTY LOCATION: LAKE RIVIERA MIDDLE SCHOOL 171 BEAVERSON BLVD BRICK, NJ 08723
SHEET NO: 4 OF 14

Grid-Lite™

- Interlocking grid design combined with next-gen wind deflector reduces ballast to minimal or zero
- Industry's best system to handle most severe seismic conditions
- Integrated wire management trays enable string wiring throughout entire array prior to panelizing
- Near zero ballast saves up to $.02/watt
- Fast install with minimal components
- 5 and 10 degree tilts
- Durable G90 and stainless steel components
- ETL / UL 2703 tested, ETL/UL 1703/2703 Class A fire rated
- 20-year warranty - Made in USA
- Wind tunnel testing industry leader CPP and rated for 150mph wind speed





Features

- Interlocking grid design combined with Nextgen wind deflector reduces ballast to minimal or zero
- Fire proof, durable galvanized and stainless steel components
- Minimal ballast when required on edges quickly installs with additional rail
- Ultra high grade galvanized interlocking rails install quickly to build grid
- Industry's best system to handle most severe seismic conditions
- Typical roof loading 0 to 1 psf for ballast; 2.5-3.5 total load including ballast, panels and racking
- Less ballast and related labor reduce total installed cost
- Full layout and engineering analysis for every project
- Panel supports both 5 and 10° tilt
- Snap-on EPDM blocks available in place of slip sheets
- Unique design innovations protected under patent pending
- Made in the U.S.A.

Installation

- Fast install with minimal components
- Integrated wire management trays enable string wiring throughout entire array for NE & EW runs prior to panelizing
- Pre-punched slots in wind deflectors enable fast east-west string wiring prior to panelizing
- Can be installed on any flat roof
- Flexibility for up to 5 degree roof slope variations
- 5 men install est. 195 panels, racks and ballast per day
- 15 men install .90 MW per week
- Bundles typically 3100lbs. maximum for easy offloading
- 2 trucks per MW typical

Grounding

- Racking system has integrated grounding utilizing ETL/UL teethed panel clips two corner of each array
- Grounding must be done by electrician at row end at corner array

Test & Certification

- Wind tunnel testing in progress with industry leader CPP and rated for 150 mph wind speed
- Unique design innovations with patents pending
- Class A fire rating tested by ETL to UL 1703 & 2703: covers essentially all available modules (Fire guards optional at additional cost)
- ETL/UL 2703 listed
- 60 psf ground snow load rated
- Meets IBC and ASME standards for structural loading
- Warranty 20 years
- Minimum order size 300 KW

Calculations

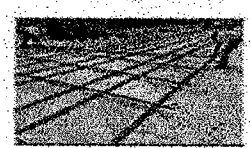
- 100% code compliant designs for any locality
- Third-party structural PE stamped drawings and calculations
- Individual system structural calculations
- Individual system design calculations based on regional load values Design loads according to IBC 2009 or 2012
- Patent pending profile geometries with optimum material utilization

Distribution Load

- Typical roof loading 0 to 1 psf ballast; 2.5-3.5 total load including ballast, panels and racking
- Pan Row Spacing:
  5 and 10° tilt option, 10.5/18.7 inches
- Shade Angles:
  5 and 10° tilts: 18/19° shade angle

Material

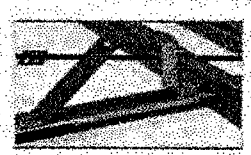
- Rails, Panel Supports, Wind Deflectors, Fire Guards optional at additional cost: G90 galvanized steel
- Panel Clips: stainless steel
- Hardware –1/4-20 x 2-1/2 inch bolts with serrated flange nuts, 5/16-inch x 1/2 inch machine screws, 3/8-inch x 1-3/4 bolts with serrated flange nuts: stainless steel or Magnacoat



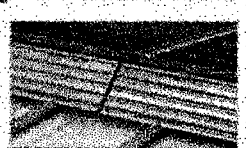
Ultra high grade galvanized interlocking rails install quickly to build grid

Interlocking grid design combined with Nextgen wind deflector reduces ballast to minimal or zero

Integrated wire management trays enable string wiring throughout entire array for NE & EW runs prior to panelizing



Panel supports for both 5 and 10° tilts. EPDM block available in place of slip sheets



Pre-punched slots in wind deflectors enable fast EW string wiring prior to panelizing

Fire proof, durable galvanized and stainless steel components

MADE IN USA

tyz@gamechangeracking.com
www.gamechangeracking.com

GAMECHANGE RACKING®

QUALITY. VALUE. INNOVATION.

Brick BOE

RECEIVING CLERK MFF
DATE REC'D 5/3/16

ZONING PERMIT APPLICATION

PERMIT # ZP-16-00929
DATE ISSUED 6/21/16

BLOCK: 1068 LOT: ~~15.02~~ 15.01 QUALIFIER: _____ SITE ADDRESS: 107 Hendrickson Ave, Brick, NJ 08723

IDENTIFICATION:

1. NAME OF OWNER IN FEE: Brick Township Board of Education
   COMPLETE ADDRESS: 101 Hendrickson Ave, Brick, NJ 08724
   PHONE # 732-785-3000 EMAIL: _____
2. NAME OF APPLICANT: Altec Building Systems Corp.
   APPLICANT ADDRESS: 904 Atlantic Ave, Pt. Pleasant, NJ 08742
   PHONE # 732-785-3000 EMAIL: info@altecbuildingsystems.com
3. RESPONSIBLE PERSON FOR WORK: Bob Smith
   PHONE# 732-609-1187 FAX# 732-903-6298
4. SIGNATURE OF APPLICANT: _____

FOR OFFICE USE ONLY

FEE SUMMARY:

APPLICATION FEE: $ 0-
OTHER: $ _____
TOTAL: $ 0-

REQUIRED BY APPLICANT

RESIDENTIAL: _____
COMMERCIAL: Commercial
EXISTING USE: _____
PROPOSED USE: _____

BOARD APPROVAL: ___ PB ___ ZB
RESOLUTION#: _____
APPROVAL DATE: _____

PROJECT DESCRIPTION: (PLEASE CHECK APPLICABLE WORK & DESCRIBE)
*NEW BUILDING: _____ *ADDITION _____ *ALTERATION ✓ *PORCH _____ *DECK _____

POOL: ABOVE GROUND _____ IN GROUND _____ FENCE: HEIGHT _____ TYPE _____ MATERIAL _____

HEIGHT: _____ (*IF APPLICABLE)

OTHER Solar System

DESCRIPTION: 95.168 Roof Mount System

ZONING REVIEW:
DATE REVIEWED: 5-9-16 DATE DENIED: _____ DATE APPROVED: 5-9-16 INTLS: [illegible]

(SEE BACK PAGE)

TOWNSHIP OF BRICK ZONING CHECKLIST

1) **Four (4) copies of plot plan containing:**

- All existing and proposed structures
- All dimensions of the lot and structures
- All setbacks from the structures to the property lines
- All adjacent streets and waterways
- If applicable, include a copy of the Zoning Board of Adjustment Resolution, the date that the map was signed, and/or the date that the subdivision map was filed with the Ocean County Clerk, along with the file map and number.

2) **Two copies of the plans with dimensions and heights noted:**

- Floor plans and elevations
- Signed site plans
- Property map
- Survey map

Choose which is applicable for submission

3) **Plot plans and building plans must match for complete review**

NOTE: NO PARTIAL, TAPED, FAXED, REDUCED OR ENLARGED COPIES CAN BE ACCEPTED

01/2010