City of Belle Isle

Universal Engineering Sciences 3532 Maggie Blvd., Orlando, FL 32811
Tel 407-581-8161 * Fax 407-581-0313 * www.universalengineering.com

PERMIT CARD – PLEASE POST AT JOB SITE

THIS DOCUMENT BECOMES YOUR PERMIT WHEN PROPERLY VALIDATED

Per FBC 105.3.3: An enforcing authority may not issue a building permit for any building construction, erection, alteration, modification, repair or addition unless the permit either includes on its face or there is attached to the permit the following statement: "**NOTICE: In addition to the requirements of this permit, there may be additional restrictions applicable to this property that may be found in the public records of this county, and there may be additional permits required from other governmental entities such as water management districts, state agencies, or federal agencies**." The issuance of this permit does not grant permission to violate any applicable City, Orange County, State of Florida and/or Federal codes and/or ordinances. Separate permits are required for Signs, Roofing, Electrical, Gas, Plumbing and Mechanical services. This permit becomes VOID if the work authorized is not commenced within 6 months, or is suspended or abandoned for a period of 6 months after commencement. WORK SHALL BE CONSIDERED SUSPENDED IF AN APPROVED INSPECTION HAS NOT BEEN MADE WITHIN A 6 MONTH PERIOD. PERMISSION IS GRANTED TO DO THE FOLLOWING WORK ACCORDING TO THE CONDITIONS HEREON AND THE APPROVED PLANS AND SPECIFICATIONS, SUBJECT TO COMPLIANCE WITH THE ORDINANCES OF THE CITY OF BELLE ISLE, FLORIDA.

Scope of Work: MECHANICAL: one 5-ton change out

Comments: None

Project Information
Address: 4155 Bell Tower Ct, Belle Isle, FL 32809
Parcel ID: 20-23-30-1618-00-470
Property Owner: Grozio, Derek
Phone Number: 321 662 9627

****

Company Name: Greens Energy Services, Inc.
Contractor Name: Green, John T
License Number: CAC1813726
Address: 186 N Goldenrod Rd, Orlando, FL 32807
Phone Number: 407-282-5000

Permit Number: 2015-09-001

Date of Application: 08/28/2015
Date Permit Issued: 08/31/2015

***WARNING TO OWNER*:** "YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOU PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT." ON THE JOB INSPECTION(S) MUST BE MADE BEFORE PROCEEDING WITH SUBSEQUENT WORK. THIS CARD MUST BE DISPLAYED OUTSIDE AND BE PROTECTED FROM THE WEATHER WHILE BEING VISIBLE FROM THE STREET UNTIL THE FINAL INSPECTIONS HAVE BEEN APPROVED.

BUILDING FEATURES

IMPACT FEES
School $
Traffic $

ZONING FEES
Zoning Fee $

UNIVERSAL ENG - BUILDING FEES

Cert of Occ	$
Demo	$
Building	$
Fence	$
Driveway	$
Shed	$
Window(s)	$
Door(s)	$
PrePower	$
Electrical	$
Temp Pole	$
Plumbing	$
Mechanical	$100.50
Gas	$
Roofing	$
Boat Dock	$
Screen Encl	$
Swimming Pool	$
Sign	$

SURCHARGE FEES

Surcharge Fee	$2.00
Surcharge Fee	$2.00

TOTAL FEES $104.50

Date Paid 8-31-15
CC or Check # MC 9806
Amount Paid 104.50

The person accepting this permit shall conform to the terms of the application on file and construction shall conform to the requirements of the Florida Building Code (FS 553).

BUILDING INSPECTOR USE ONLY

IF APPLICABLE:
Have Zoning Approval Conditions Been Met? YES NO **Have Stormwater Approval Conditions Been Met?** YES NO **Silt fencing in place?** YES NO **Turbidity Barrier in place?** YES NO

BUILDING
1st _____ (Footing/Foundation)
Survey specific foundation plan must be onsite before slab pour. Approved Plan on Site? ____
2nd _____ (Slab)
3rd _____ (Lintel)(Wall Reinforcing on Masonry Building)
4th _____ (Exterior Framing)(Roof/Wall Sheathing)
5th _____ (Framing) (To be made after Plumbing/ Mechanical/ Electrical Rough-Ins & Windows/Doors Installed)
6th _____ (Insulation to be Made After Roof Installed)
7th _____ (Drywall)
8th _____ (Sidewalk/Driveway)
9th _____ (Other)
10th _____ (Final – After MEP and Other Applicable Finals)

ROOFING
1ST ROOFING Deck Nailing/Dry-in/Flashing _____
2nd ROOFING Covering In-Progress _____
3rd ROOFING Covering Final _____

PLUMBING (Pool-Piping, Solar, Irrigation, Water Treatment Equip, Etc...)
1ST _____ (Underground) 2nd _____ (Sewer)
3rd _____ (Rough-In/Tub Set) 4th _____ (Final)

CHECK APPROPRIATE BOX
GAS __Natural ___LP ☐ **MECHANICAL** ☐**ELECTRICAL** ☐ **LOW VOLTAGE**
1st _____ (Rough-In) 2nd _____ (Final)

Inspection requests are to be emailed to BIDscheduling@UniversalEngineering.com; a confirmation email will be sent back to you upon scheduling. Next-Day Inspection requests must be made by 1pm. Please include the following in your request: Permit #, project address, type of inspection, date of the requested inspection, a contact name & a contact phone number. AM or PM may be requested but cannot be guaranteed.

For a copy of your permit, or to check inspection results, please visit https://universalengineering.sharefile.com/f/fo94edc4-832d-44bd-9809-ecf32f9e2e63
login ID = cobi@universalengineering.com password = universal13

PROJECT NUMBER 0115.14000 27.0000

TASK NUMBER 03

CITY OF BELLE ISLE

Permit Application Review Sheet

Permit Number	2015-01-009
Property Owner	Grazio Derek
Address	4155 Bell Tower Ct.
Nature of Improvement	Mechanical: one 5-ton change out
Received Application	8-28-15
Sent for Stormwater Review	
Stormwater Approved	✓
Sent for Zoning Review	
Zoning Approved	✓
Applied for Variance	
Variance Approved	
Sent to BO for Review	8.28-15
Building Official Approved	

Comments	
1. Susan 8-28-15	WO # 56437
2. Susan 8-28-15	Emailed to Jay ✓
3.	base 37
4. + 6 x 5 tons	30
5.	67 ÷ 2 =
6.	33.50
7.	100.50
8.	4 39% (44 min)
9.	
10.	104.50
11.	
12.	

City of Belle Isle

Universal Engineering Sciences 3532 Maggie Blvd., Orlando, FL 32811
Tel 407-581-8161 * Fax 407-581-0313 * www.universalengineering.com

RECEIVED AUG 28 2015 BY:

APPLICATION FOR MECHANICAL PERMIT

WARNING TO OWNER: YOUR FAILURE TO RECORD A NOTICE OF COMMENCEMENT MAY RESULT IN YOUR PAYING TWICE FOR IMPROVEMENTS TO YOUR PROPERTY. A NOTICE OF COMMENCEMENT MUST BE RECORDED AND POSTED ON THE JOB SITE BEFORE THE FIRST INSPECTION. IF YOU INTEND TO OBTAIN FINANCING, CONSULT WITH YOUR LENDER OR AN ATTORNEY BEFORE RECORDING YOUR NOTICE OF COMMENCEMENT.

DATE OF APPLICATION: 8/27/15 **PERMIT NUMBER** 2015-09-001

PLEASE PRINT. The undersigned hereby applies for a permit to make installations as indicated below:

Project Address 4155 Bell Tower Ct, Belle Isle FL ___32809 ___32812
Property Owner Derek Grozio Phone 321-662-9627
Property Owner's Mailing Address 4155 Bell Tower Ct. City Belle Isle
State FL Zip Code 32812 **Parcel Id Number:** 20-23-30-1618-00-470
To obtain this information, please visit http://www.ocpafl.org/Searches/ParcelSearch.aspx

Class of Building: Old ☑ New ☐ **Type of Building:** Residential ☑ Commercial ☐ Other ☐
Type of Work: New ☐ Alteration ☐ Addition ☐ Repair ☐ Changeout ☒

- **REQUIRED: Tie Down Engineering**
- **REQUIRED: if adding A/C to new space, provide Energy Calculations & Equipment Sizing Calculations**
- **REQUIRED: if replacing unit with no duct work, Duct Certification as per FB 101.4.7.1, must be posted on unit**

Please indicate the nature of work by completing the information below:

Air Conditioning: # of Units 1 Tons Per Unit 5 Total Tons 5
Type of System: Water to Air ____ Chiller ____ Split System X Package ____ Heat Pump X Estimated Cost $ 6123.00

Heating: # of Units KWS Per Unit 5 Total KWS 5 BTU's ____ Estimated Cost $ ____
Oil ____ Electric ____ Boiler ____ Gas ____

(A) Estimated Cost Fee $ 6123.00

Fees for items below are based on valuation of all units, equipment, materials and labor supplied by owner or contractor.

Ventilation:
(Number of) Grease ____ Heat ____ Hoods, Air Intakes ____ Exhaust Fans ____ Dryer Vents ____ Estimated Cost $ ____

Refrigeration: Number of units ____ Estimated Cost $ ____

Piping: Air ____ Vacuum ____ Steam ____ Chill Water ____ Estimated Cost $ ____

Others: (Specify) ____ Estimated Cost $ ____

Was the space previously Air Conditioned? Yes X No ____ (B) Estimated Cost Fee $ ____

I hereby certify that the above is true and correct to the best of my knowledge and make Application for Permit as outlined above, and if same is granted I agree to conform to all Florida Building Code Regulations and City Ordinances regulating same and in accordance with plans submitted. The issuance of this permit does not grant permission to violate any applicable Town and/or State of Florida codes and/or ordinances.

LICENSE HOLDER SIGNATURE [signature] LICENSE # CAC1813726
LICENSE HOLDER NAME JOHN GREEN COMPANY NAME GREENS ENERGY SERVICES, INC
Street Address 186 N. GOLDENROD RD
City ORLANDO State FL Zip Code 32807 Phone Number 407-282-5000
Email Address cdurham@greensenergy.com

Building Official: ____ **Date** ____
Verified Contractor's Licenses & Insurance are on file SW Date 8-28-15

Permit Fee	$ 67.-
Review Fee	$ 33.50
3% Florida Surcharge	$ 4.02
Total Permit Fee	$ 104.52

NOTE: The Building Permit Number is required if the Mechanical Installation is associated with any construction or alteration where a Building Permit has been issued. Building Permit Number ____

Susan Manchester

From: John Connell
Sent: Friday, August 28, 2015 4:45 PM
To: Susan Manchester
Cc: BIDReviews
Subject: RE: 4155 Bell Tower Ct - review app for mechanical 2015-01-009 - Greens Energy Services Inc

Approved

From: Susan Manchester
Sent: Friday, August 28, 2015 3:14 PM
To: John Connell
Cc: CobiPermits
Subject: 4155 Bell Tower Ct - review app for mechanical 2015-01-009 - Greens Energy Services Inc

All info on the cover sheet.

Thank you,

Susan Manchester
Universal Engineering Sciences, Inc.
3532 Maggie Blvd.
Orlando, FL 32811
Phone: 407-581-8161
Fax: 407-581-0313
Email: smanchester@universalengineering.com

ORLANDO BUSINESS JOURNAL

BPTW

2015 BEST PLACES TO WORK

PLEASE NOTE:
DUE TO THE HIGH DEMAND FOR OUR SERVICES, THE 1PM CUTOFF TIME FOR NEXT-DAY INSPECTION REQUESTS WILL BE STRICTLY ENFORCED. THANK YOU!!

RICK SCOTT, GOVERNOR

KEN LAWSON, SECRETARY

STATE OF FLORIDA
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
CONSTRUCTION INDUSTRY LICENSING BOARD

LICENSE NUMBER
CAC1813726

The CLASS B AIR CONDITIONING CONTRACTOR
Named below IS CERTIFIED
Under the provisions of Chapter 489 FS.
Expiration date: AUG 31, 2016

GREEN, JOHN T JR
GREENS ENERGY SERVICES INC
186 N. GOLDENROD RD
ORLANDO FL 32807

ISSUED: 08/17/2014

DISPLAY AS REQUIRED BY LAW

SEQ # L1408170002010

1" STEEL CLIP TIE-DOWN SCHEDULE: **AT GRADE** INSTALLATIONS:

MAXIMUM SURFACE AREA OF UNITS LARGEST FACE	UNIT HEIGHT	UNIT WIDTH	MAXIMUM ALLOWABLE LATERAL WIND PRESSURE (ANCHOR TO HOST STRUCTURE): (1) CLIP AT EACH CORNER (TOTAL OF 4 CLIPS PER UNIT)				(2) CLIPS AT EACH CORNER (TOTAL OF 8 CLIPS PER UNIT)				(4) CLIPS AT EACH SIDE (TOTAL OF 8 CLIPS PER UNIT)††			
			TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	WOOD SCREW TO WOOD	TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	WOOD SCREW TO WOOD	TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	WOOD SCREW TO WOOD
6 FT2	24" MAX	12" MIN	43 PSF	43 PSF	43 PSF	43 PSF	81 PSF	81 PSF	81 PSF	81 PSF	▨	▨	▨	▨
9 FT2	32" MAX	15" MIN	32 PSF	32 PSF	32 PSF	32 PSF	60 PSF	60 PSF	60 PSF	60 PSF	▨	▨	▨	▨
4 FT2	48" MAX	24" MIN	90 PSF	90 PSF	90 PSF	90 PSF	170 PSF	170 PSF	170 PSF	170 PSF	123 PSF	123 PSF	123 PSF	123 PSF
6 FT2			60 PSF	60 PSF	60 PSF	60 PSF	113 PSF	113 PSF	113 PSF	113 PSF	82 PSF	82 PSF	82 PSF	82 PSF
9 FT2			(40 PSF)	40 PSF	40 PSF	40 PSF	75 PSF	75 PSF	75 PSF	75 PSF	54 PSF	54 PSF	54 PSF	54 PSF
12 FT2			30 PSF	30 PSF	30 PSF	30 PSF	56 PSF	56 PSF	56 PSF	56 PSF	41 PSF	41 PSF	41 PSF	41 PSF
16 FT2			▨	▨	▨	▨	42 PSF	42 PSF	42 PSF	42 PSF	30 PSF	30 PSF	30 PSF	30 PSF
20 FT2	60" MAX	48" MIN	29 PSF	29 PSF	29 PSF	27 PSF	55 PSF	55 PSF	55 PSF	52 PSF	49 PSF	49 PSF	49 PSF	48 PSF
25 FT2			▨	▨	▨	▨	44 PSF	44 PSF	44 PSF	42 PSF	39 PSF	39 PSF	39 PSF	38 PSF
30 FT2			▨	▨	▨	▨	37 PSF	37 PSF	37 PSF	35 PSF	33 PSF	33 PSF	33 PSF	32 PSF
36 FT2			▨	▨	▨	▨	30 PSF	30 PSF	30 PSF	29 PSF	27 PSF	27 PSF	27 PSF	26 PSF

1. TIE-DOWN CLIPS SHALL BE FASTENED TO MECHANICAL HOUSING UNIT WITH (3)-#12 SAE GRADE 5 SHEET METAL SCREWS OR (2)- ⅜"Ø SAE GRADE 5 SHEET METAL SCREWS. [NOTE: FOR LONGER CLIPS UTILIZE (5)-#12 SMS OR (4)-⅜"Ø SMS].
2. MECHANICAL HOUSING UNIT SHALL CONFORM TO THE FOLLOWING:
   - 2.1. ALUMINUM HOUSING UNITS SHALL BE 6063-T6 MIN. ALUMINUM SHEET WITH Fty=30 KSI, 0.125" MIN. THICKNESS.
   - 2.2. STEEL HOUSING UNITS SHALL BE 33KSI MIN. STEEL, GRADE 33, 22GA MIN. (t=0.0299").
3. MAXIMUM ALLOWABLE WIND PRESSURES FOR EACH INDIVIDUAL SUBSTRATE MAY BE EQUIVALENT DUE TO THE LIMITING CAPACITY OF THE 1" CLIP.
4. A MAXIMUM ALLOWABLE VALUE OF 200 PSF HAS BEEN UTILIZED; FOR HIGHER DEMAND CAPACITIES CONTACT THIS ENGINEER FOR SITE-SPECIFIC ENGINEERING.

ANCHOR SCHEDULE:

SUBSTRATE	ANCHOR
CONCRETE: (4" THICK MIN, 3192KSI MIN.)	(1)-¼"Ø CARBON STEEL ITW BUILDEX TAPCON, 1 ¾" FULL EMBED TO CONCRETE, 2 ½" MIN. EDGE DISTANCE, 3" MIN. SPACING TO ANY ADJACENT ANCHOR.
ALUMINUM: (0.125" MIN. THICK, 6061-T6 MIN. ALUMINUM)	(1)-#14 SAE GRADE 5 SHEET METAL SCREW TO ALUMINUM, PROVIDE (5) PINCHES MIN PAST THREAD PLANE FOR SHEET METAL SCREW.
STEEL: (0.125" MIN. THICK, 33 KSI MIN. STEEL)	(1)-#14 SAE GRADE 5 SHEET METAL SCREW TO STEEL, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.
SEALED WOOD: (SOUTHERN YELLOW PINE, G=0.55 OR BETTER)	(1)-#14 SAE GRADE 5 WOOD SCREW TO WOOD MEMBER, PROVIDE 1 ½" MIN. THREAD PENETRATION, 1" MIN. EDGE DISTANCE, 1" MIN. END DISTANCE.

ANCHOR SCHEDULE NOTES:
1. EMBEDMENT AND EDGE DISTANCE EXCLUDES FINISHES, IF APPLICABLE.
2. ENSURE MINIMUM EDGE DISTANCE AS NOTED IN ANCHOR SCHEDULE.

TABLE LEGEND:
- (oval) -DENOTES EXAMPLE VALUE FOR USE WITH COVER PAGE DIRECTIVE
- ▨ -DENOTES VALUES NOT APPROVED FOR USE
- †† -SEE ALTERNATE CLIP DETAIL 5/4 ON SHEET 4

2" STEEL CLIP TIE-DOWN SCHEDULE: **AT GRADE** INSTALLATIONS:

MAXIMUM SURFACE AREA OF UNITS LARGEST FACE	UNIT HEIGHT	UNIT WIDTH	MAXIMUM ALLOWABLE LATERAL WIND PRESSURE (ANCHOR TO HOST STRUCTURE): (1) CLIP AT EACH CORNER (TOTAL OF 4 CLIPS PER UNIT)				(2) CLIPS AT EACH CORNER (TOTAL OF 8 CLIPS PER UNIT)				(4) CLIPS AT EACH SIDE (TOTAL OF 8 CLIPS PER UNIT)††			
			TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	WOOD SCREW TO WOOD	TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	WOOD SCREW TO WOOD	TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	WOOD SCREW TO WOOD
6 FT2	24" MAX	12" MIN	43 PSF	73 PSF	73 PSF	73 PSF	81 PSF	141 PSF	141 PSF	141 PSF	▨	▨	▨	▨
9 FT2	32" MAX	15" MIN	32 PSF	53 PSF	53 PSF	53 PSF	60 PSF	103 PSF	103 PSF	103 PSF	▨	43 PSF	43 PSF	43 PSF
4 FT2	48" MAX	24" MIN	90 PSF	147 PSF	147 PSF	147 PSF	170 PSF	200 PSF	200 PSF	200 PSF	123 PSF	200 PSF	200 PSF	200 PSF
6 FT2			60 PSF	98 PSF	98 PSF	98 PSF	113 PSF	191 PSF	191 PSF	191 PSF	82 PSF	142 PSF	142 PSF	142 PSF
9 FT2			40 PSF	65 PSF	65 PSF	65 PSF	75 PSF	127 PSF	127 PSF	127 PSF	54 PSF	94 PSF	94 PSF	94 PSF
12 FT2			30 PSF	49 PSF	49 PSF	49 PSF	56 PSF	95 PSF	95 PSF	95 PSF	41 PSF	71 PSF	71 PSF	71 PSF
16 FT2			▨	36 PSF	36 PSF	36 PSF	42 PSF	71 PSF	71 PSF	71 PSF	30 PSF	53 PSF	53 PSF	53 PSF
20 FT2	60" MAX	48" MIN	29 PSF	44 PSF	44 PSF	44 PSF	55 PSF	86 PSF	86 PSF	86 PSF	49 PSF	79 PSF	79 PSF	79 PSF
25 FT2			▨	35 PSF	35 PSF	35 PSF	44 PSF	69 PSF	69 PSF	69 PSF	39 PSF	63 PSF	63 PSF	63 PSF
30 FT2			▨	29 PSF	29 PSF	29 PSF	37 PSF	57 PSF	57 PSF	57 PSF	33 PSF	52 PSF	52 PSF	52 PSF
36 FT2			▨	▨	▨	▨	30 PSF	48 PSF	48 PSF	48 PSF	27 PSF	43 PSF	43 PSF	43 PSF

1. TIE-DOWN CLIPS SHALL BE FASTENED TO MECHANICAL HOUSING UNIT WITH (3)-#12 SAE GRADE 5 SHEET METAL SCREWS OR (2)- ⅜"Ø SAE GRADE 5 SHEET METAL SCREWS. [NOTE: FOR LONGER CLIPS UTILIZE (5)-#12 SMS OR (4)-⅜"Ø SMS].
2. MECHANICAL HOUSING UNIT SHALL CONFORM TO THE FOLLOWING:
   - 2.1. ALUMINUM HOUSING UNITS SHALL BE 6063-T6 MIN. ALUMINUM SHEET WITH Fty=30 KSI, 0.125" MIN. THICKNESS.
   - 2.2. STEEL HOUSING UNITS SHALL BE 33KSI MIN. STEEL, GRADE 33, 22GA MIN. (t=0.0299").
3. A MAXIMUM ALLOWABLE VALUE OF 200 PSF HAS BEEN UTILIZED; FOR HIGHER DEMAND CAPACITIES CONTACT THIS ENGINEER FOR SITE-SPECIFIC ENGINEERING.

ANCHOR SCHEDULE:

SUBSTRATE	ANCHOR
CONCRETE: (4" THICK MIN, 3192KSI MIN.)	(1)-¼"Ø CARBON STEEL ITW BUILDEX TAPCON, 1 ¾" FULL EMBED TO CONCRETE, 2 ½" MIN. EDGE DISTANCE, 3" MIN. SPACING TO ANY ADJACENT ANCHOR.
ALUMINUM: (0.125" MIN. THICK, 6061-T6 MIN. ALUMINUM)	(2)-#14 SAE GRADE 5 SHEET METAL SCREW TO ALUMINUM, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.
STEEL: (0.125" MIN. THICK, 33 KSI MIN. STEEL)	(2)-#14 SAE GRADE 5 SHEET METAL SCREW TO STEEL, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.
SEALED WOOD, 1-1/2" MIN THICKNESS: (SOUTHERN YELLOW PINE, G=0.55 OR BETTER)	(2)-#14 SAE GRADE 5 WOOD SCREW TO WOOD MEMBER, PROVIDE 1 ½" MIN. THREAD PENETRATION, 1" MIN. EDGE DISTANCE, 1" MIN. END DISTANCE.

ANCHOR SCHEDULE NOTES:
1. EMBEDMENT AND EDGE DISTANCE EXCLUDES FINISHES, IF APPLICABLE.
2. ENSURE MINIMUM EDGE DISTANCE AS NOTED IN ANCHOR SCHEDULE.

TABLE LEGEND:
- ▨ -DENOTES VALUES NOT APPROVED FOR USE
- †† -SEE ALTERNATE CLIP DETAIL 5/4 ON SHEET 4

RECEIVED AUG 28 2015 BY:

ENGINEERING EXPRESS
160 SW 12th AVENUE, ...
DEERFIELD BEACH, FL ...
PH: (954) 354-0660 FAX: (954) 354-0...
WWW.ENGEXP.COM
CERT OF AUTH ...
A FRANK L. BENNARDO, P.E., INC. CORPORATION

FRANK L. BENNARDO LICENSE No. 46549 STATE OF FLORIDA PROFESSIONAL ENGINEER 02/21/2013

BMP INTERNATIONAL, INC.
4710 28TH STREET NORTH
ST. PETERSBURG, FL 33471
PH: (727) 577-1613

MECHANICAL UNIT STEEL TIE-DOWN CLIPS

FLORIDA STATEWIDE APPROVAL

REMARKS	DRWN	CHKD	DATE
INT ISSUE	TSB	FLB	12-11-11
REV FOR UNITS	CSL	TSB	02-15-13

11-BMP-0001

SCALE: N.T.S 04

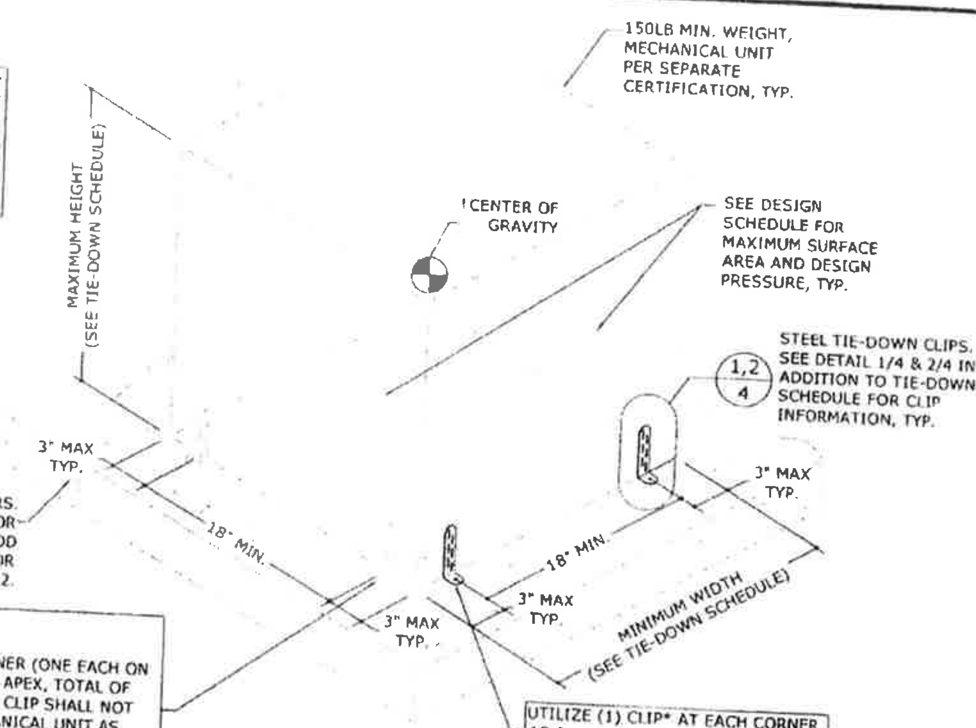
PAGE DESCRIPTION:

2 OF 4

BMP INTERNATIONAL, INC.

MECHANICAL UNIT STEEL TIE-DOWN CLIP CAPACITIES: AT GRADE & ROOF-TOP MOUNTED APPLICATIONS

!CENTER OF GRAVITY ASSUMED TO ACT AT THE GEOMETRIC CENTER OF THE MECHANICAL UNIT. MECHANICAL UNIT MUST BE SQUARE OR RECTANGULAR, NO IRREGULAR SHAPES



DOUBLE CLIP OPTION:

(2) TOTAL CLIPS MAY BE USED AT EACH CORNER (ONE EACH ON OPPOSING CORNER FACES, 3" FROM CORNER APEX, TOTAL OF (8) CLIPS PER UNIT FOR THIS OPTION). EACH CLIP SHALL NOT EXCEED 3" MAX OFFSET FROM END OF MECHANICAL UNIT AS DETAILED HEREIN. DO NOT SPACE CONCRETE ANCHORS CLOSER THAN THE ALLOWED SPACING LISTED IN THE TIE-DOWN ANCHOR SCHEDULES. SEE SHEETS 2&3 FOR MORE INFORMATION.

1/1 MECHANICAL UNIT TIE-DOWN ISOMETRIC
1" = 1'-0" ISOMETRIC

*FOR CLARITY, THIS ISOMETRIC ONLY SHOWS 1" CLIPS. THE ISOMETRIC LAYOUT IS TYPICAL FOR BOTH 1" AND 2" CLIP APPLICATIONS.

TIE-DOWN CLIP DIRECTIVE EXAMPLE

(THE FOLLOWING EXAMPLE ILLUSTRATES THE PROCEDURE USED TO DETERMINE THE MAXIMUM ALLOWABLE WIND PRESSURE FOR ANY GIVEN MECHANICAL UNIT THAT CONFORMS TO THE DIMENSION RESTRICTIONS LISTED HEREIN. SEE SHEETS 2&3 FOR TIE-DOWN SCHEDULES.)

MECHANICAL UNIT CRITERIA:

CONSIDER THE INSTALLATION OF (1) MECHANICAL UNIT WITH THE FOLLOWING CRITERIA= 36" TALL x 36" DEEP x 24" WIDE, 150 LB WEIGHT AS VERIFIED BY OTHERS, INSTALLED TO 3192 KSI MIN. CONCRETE **AT GRADE** AS VERIFIED BY OTHERS.

PROCEDURE:

	PROCEDURE STEP	RESULT
1	LOCATE THE AT GRADE TIE-DOWN SCHEDULE ON SHEET 2 AND SELECT CLIP TYPE	CONSIDER 1" STEEL CLIP
2	DETERMINE LARGEST FACE AREA OF MECHANICAL UNIT TO BE INSTALLED	36"x36"=9FT²
3	CHECK MAXIMUM UNIT HEIGHT RESTRICTION	UNIT HEIGHT IS 36" WHICH IS LESS THAN THE MAXIMUM ALLOWABLE HEIGHT OF 48"
4	CHECK MINIMUM UNIT WIDTH RESTRICTION	UNIT WIDTH IS 24" WHICH IS EQUIVALENT TO THE MINIMUM ALLOWABLE WIDTH OF 24"
5	DETERMINE THE NUMBER OF CLIPS TO BE USED AT EACH CORNER OF THE MECHANICAL UNIT	CONSIDER (1) CLIP AT EACH CORNER, INSTALLED TO CONCRETE SUBSTRATE

CONCLUSION: MAXIMUM ALLOWABLE LATERAL DESIGN PRESSURE= 40PSF

(COMPARE THIS VALUE TO THE SEPARATE SITE SPECIFIC REQUIRED DESIGN WIND PRESSURE PROVIDED BY A LICENSED ENGINEER OR REGISTERED ARCHITECT; NOT INCLUDED IN THIS CERTIFICATION)

GENERAL NOTES:

1. THIS PRODUCT HAS BEEN DESIGNED AND SHALL BE FABRICATED IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2010 FLORIDA BUILDING CODE FOR USE WITH ASCE 7-10. THIS PRODUCT MAY BE USED WITHIN AND OUTSIDE THE HIGH VELOCITY HURRICANE ZONE.
2. NO 33-1/3% INCREASE IN ALLOWABLE STRESS HAS BEEN USED IN THE DESIGN OF THIS SYSTEM.
3. DESIGN IS BASED ON CLIENT PROVIDED PRODUCT AND DIE SHEETS FROM TEST REPORTS #TEL 01970387A, #TEL 01970387B BY TESTING EVALUATION LABORATORIES, INC.. NO SUBSTITUTIONS WITHOUT WRITTEN APPROVAL BY THIS ENGINEER SHALL BE PERMITTED.
4. ALLOWABLE DESIGN PRESSURES TO QUALIFY CAPACITY OF CLIPS AS LISTED HEREIN ARE DETERMINED THROUGH TESTING REPORT DATA AND RATIONALLY CHECKED FOR CONSISTENCY WITH EACH TEST PERFORMED.
5. REQUIRED LATERAL AND/OR UPLIFT DESIGN PRESSURES CALCULATED FOR USE WITH THIS SYSTEM SHALL BE DETERMINED BY OTHERS ON A SITE-SPECIFIC BASIS IN ACCORDANCE WITH THE GOVERNING CODE .
6. MAXIMUM & MINIMUM DIMENSIONS AND MINIMUM WEIGHT OF MECHANICAL UNIT SHALL CONFORM TO SPECIFICATIONS STATED HEREIN. ALL MECHANICAL SPECIFICATIONS (CLEAR SPACE, TONNAGE, ETC.) SHALL BE AS PER MANUFACTURER RECOMMENDATIONS AND ARE THE EXPRESS RESPONSIBILITY OF THE CONTRACTOR.
7. FASTENERS TO BE #12 X ¾" OR GREATER SAE GRADE 5 UNLESS NOTED OTHERWISE. TAPCONS REFERRED TO HEREIN SHALL BE ITW BUILDEX BRAND, CARBON STEEL ONLY, INSTALLED TO 3192 KSI MIN CONCRETE. SEE ANCHOR SCHEDULE FOR ANCHOR REQUIREMENTS. ALL FASTENERS SHALL HAVE APPROPRIATE CORROSION PROTECTION TO PREVENT ELECTROLYSIS.
8. ALL STEEL CLIPS SHALL BE ASTM A283 STEEL (GRADE D) WITH Fy = 33 KSI OR BETTER. ALL STEEL MEMBERS SHALL BE PROTECTED AGAINST CORROSION WITH AN APPROVED COAT OF PAINT, ENAMEL OR OTHER APPROVED PROTECTION IN ACCORDANCE WITH THE 2010 FBC SECTIONS 2203.2 AND 2220. G90-RATED COATING REQUIRED FOR ALL COASTAL INSTALLATIONS.
9. ALL CONCRETE SPECIFIED HEREIN IS NOT PART OF THIS CERTIFICATION. AS A MINIMUM, ALL CONCRETE SHALL BE STRUCTURAL CONCRETE 4" MIN. THICK AND SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3192 PSI, UNLESS NOTED OTHERWISE.
10. ALL WOOD MEMBERS SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE GRADE #2 WITH SPECIFIC GRAVITY G = 0.55 OR GREATER. DIRECT CONNECTION TO WOOD MEMBERS/SLEEPERS IS NOT PERMITTED FOR ROOF-TOP APPLICATIONS PER FBC SECTION 1522.
11. THE CONTRACTOR IS RESPONSIBLE TO INSULATE ALL MEMBERS FROM DISSIMILAR MATERIALS TO PREVENT ELECTROLYSIS, I.E. ALUMINUM PER F.B.C. 2003.8.4.
12. ELECTRICAL GROUND, WHEN REQUIRED, TO BE DESIGNED & INSTALLED BY OTHERS.
13. THE ADEQUACY OF ANY EXISTING STRUCTURE TO WITHSTAND SUPERIMPOSED LOADS SHALL BE VERIFIED BY THE ONSITE DESIGN PROFESSIONAL AND IS NOT INCLUDED IN THIS CERTIFICATION. EXCEPT AS EXPRESSLY PROVIDED HEREIN, NO ADDITIONAL CERTIFICATIONS OR AFFIRMATIONS ARE INTENDED.
14. THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. FOR SITE CONDITIONS DIFFERENT FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE IN CONJUNCTION WITH THIS DOCUMENT.
15. WATER-TIGHTNESS OF EXISTING HOST SUBSTRATE SHALL BE THE FULL RESPONSIBILITY OF THE INSTALLING CONTRACTOR. CONTRACTOR SHALL ENSURE THAT ANY REMOVED OR ALTERED WATERPROOFING MEMBRANE IS RESTORED AFTER FABRICATION AND INSTALLATION OF STRUCTURE PROPOSED HEREIN. THIS ENGINEER SHALL NOT BE RESPONSIBLE FOR ANY WATERPROOFING OR LEAKAGE ISSUES WHICH MAY OCCUR AS WATER-TIGHTNESS SHALL BE THE FULL RESPONSIBILITY OF THE INSTALLING CONTRACTOR.

DESIGN PRESSURE EXAMPLE SCENARIO

SEE SHEET 4 FOR A SITE-SPECIFIC DESIGN PRESSURE EXAMPLE & ACCOMPANYING UNIT CONFIGURATIONS WITH TIE-DOWN CLIP REQUIREMENTS.

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MECHANICAL UNIT STEEL TIE-DOWN CLIPS
FLORIDA STATEWIDE APPROVAL

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	TSB	FLB	12-11-11
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1" STEEL CLIP TIE-DOWN SCHEDULE: **ROOF-TOP MOUNTED** INSTALLATIONS:

MAXIMUM ALLOWABLE LATERAL WIND PRESSURE (ANCHOR TO HOST STRUCTURE)

MAXIMUM SURFACE AREA OF UNITS LARGEST FACE	UNIT HEIGHT	UNIT WIDTH	(1) CLIP AT EACH CORNER (TOTAL OF 4 CLIPS PER UNIT)			(2) CLIPS AT EACH CORNER (TOTAL OF 8 CLIPS PER UNIT)			(4) CLIPS AT EACH SIDE (TOTAL OF 8 CLIPS PER UNIT)††		
			TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL
6 FT2	24" MAX	12" MIN	30 PSF	30 PSF	30 PSF	54 PSF	54 PSF	54 PSF			
9 FT2	32" MAX	15" MIN				40 PSF	40 PSF	40 PSF			
4 FT2	48" MAX	24" MAX	61 PSF	61 PSF	61 PSF	113 PSF	113 PSF	113 PSF	83 PSF	83 PSF	83 PSF
6 FT2			41 PSF	41 PSF	41 PSF	75 PSF	75 PSF	75 PSF	55 PSF	55 PSF	55 PSF
9 FT2			27 PSF	27 PSF	27 PSF	50 PSF	50 PSF	50 PSF	37 PSF	37 PSF	37 PSF
12 FT2						37 PSF	37 PSF	37 PSF	27 PSF	27 PSF	27 PSF
16 FT2						28 PSF	28 PSF	28 PSF	20 PSF	20 PSF	20 PSF
20 FT2	60" MAX	48" MAX				36 PSF	36 PSF	36 PSF	33 PSF	33 PSF	33 PSF
25 FT2						29 PSF	29 PSF	29 PSF	26 PSF	26 PSF	26 PSF
30 FT2											
36 FT2											

1. TIE-DOWN CLIPS SHALL BE FASTENED TO MECHANICAL HOUSING UNIT WITH (3)-#12 SAE GRADE 5 SHEET METAL SCREWS OR (2)- ⅜"Ø SAE GRADE 5 SHEET METAL SCREWS. [NOTE FOR LONGER CLIPS UTILIZE (5)-#12 SMS OR (4)- ⅜"Ø SMS].
2. MECHANICAL HOUSING UNIT SHALL CONFORM TO THE FOLLOWING:
   2.1. ALUMINUM HOUSING UNITS SHALL BE 6063-T6 MIN. ALUMINUM SHEET WITH Fty=30 KSI, 0.125" MIN. THICKNESS.
   2.2. STEEL HOUSING UNITS SHALL BE 33KSI MIN. STEEL, GRADE 33, 22GA MIN. (t=0.0299").
3. MAXIMUM ALLOWABLE WIND PRESSURES FOR EACH INDIVIDUAL SUBSTRATE MAY BE EQUIVALENT DUE TO THE LIMITING CAPACITY OF THE 1" CLIP. A MAXIMUM ALLOWABLE VALUE OF 200 PSF HAS BEEN UTILIZED; FOR HIGHER DEMAND CAPACITIES CONTACT THIS ENGINEER FOR SITE-SPECIFIC ENGINEERING.

NOTE: ROOFTOP INSTALLATIONS SHALL CONFORM TO FLORIDA BUILDING CODE SECTION 1509 (AND 1522 FOR HVHZ) WHICH REQUIRES THAT ROOF MOUNTED MECHANICAL UNITS BE MOUNTED ON CURBS RAISED A MINIMUM OF 6 INCHES ABOVE THE ROOF SURFACE, OR WHERE ROOFING MATERIALS EXTEND BENEATH THE UNIT, ON RAISED EQUIPMENT SUPPORTS PROVIDING A MINIMUM CLEARANCE HEIGHT IN ACCORDANCE WITH SECTION 1509 AND/OR 1522 OF THE BUILDING CODE TO PERMIT REPAIRS, REPLACEMENT, AND/OR MAINTENANCE OF THE ROOFING SYSTEM. ANY CURB OR SUPPORT UTILIZED WITH THIS DESIGN SHALL HAVE SEPARATE DOCUMENTATION VERIFYING INTEGRITY AND IS OUTSIDE THE SCOPE OF THIS CERTIFICATION.

ANCHOR SCHEDULE:

SUBSTRATE	ANCHOR
CONCRETE: (4" THICK MIN, 3192KSI MIN.)	(1)-¼"Ø CARBON STEEL ITW BUILDEX TAPCON, 1 ¾" FULL EMBED TO CONCRETE, 2 ½" MIN. EDGE DISTANCE, 3" MIN. SPACING TO ANY ADJACENT ANCHOR.
ALUMINUM: (0.125" MIN. THICK, 6061-T6 MIN. ALUMINUM)	(1)-#14 SAE GRADE 5 SHEET METAL SCREW TO ALUMINUM, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.
STEEL: (0.125" MIN. THICK, 33 KSI MIN. STEEL)	(1)-#14 SAE GRADE 5 SHEET METAL SCREW TO STEEL, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.

1. EMBEDMENT AND EDGE DISTANCE EXCLUDES FINISHES, IF APPLICABLE.
2. ENSURE MINIMUM EDGE DISTANCE AS NOTED IN ANCHOR SCHEDULE.

ADDITIONAL ALLOWABLE UPLIFT: 90 LBS/CLIP

(DESIGN TABLE ACCOMMODATES MAX 90LB/CLIP AS ADDITIONAL UPLIFT IN COMBINATION WITH UPLIFT CAUSED BY OVERTURNING FROM LATERAL FORCES. SEE ASCE 7-10 SECTION 29.5 FOR MORE INFORMATION.)

ALLOWABLE UPLIFT PER UNIT IS BASED ON THE NUMBER OF CLIPS UTILIZED x 90LB/CLIP

EXAMPLE: 4 CLIPS x 90 LB/CLIP =360LB

(REQUIRED UPLIFT DEMAND SHALL BE DETERMINED ON A SITE SPECIFIC BASIS BY LICENSED ENGINEER OR REGISTERED ARCHITECT; NOT INCLUDED IN THIS CERTIFICATION)

TABLE LEGEND:

- (hatched) -DENOTES VALUES NOT APPROVED FOR USE
- †† -SEE ALTERNATE CLIP DETAIL 5/4 ON SHEET 4

2" STEEL CLIP TIE-DOWN SCHEDULE: **ROOF-TOP MOUNTED** INSTALLATIONS:

MAXIMUM ALLOWABLE LATERAL WIND PRESSURE (ANCHOR TO HOST STRUCTURE)

MAXIMUM SURFACE AREA OF UNITS LARGEST FACE	UNIT HEIGHT	UNIT WIDTH	(1) CLIP AT EACH CORNER (TOTAL OF 4 CLIPS PER UNIT)			(2) CLIPS AT EACH CORNER (TOTAL OF 8 CLIPS PER UNIT)			(4) CLIPS AT EACH SIDE (TOTAL OF 8 CLIPS PER UNIT)††		
			TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL	TAPCON TO CONCRETE	SHEET METAL SCREW TO ALUMINUM	SHEET METAL SCREW TO STEEL
6 FT2	12" MAX	12" MIN	30 PSF	61 PSF	61 PSF	54 PSF	117 PSF	117 PSF			
9 FT2	24" MAX	15" MIN		44 PSF	44 PSF	40 PSF	85 PSF	85 PSF		36 PSF	36 PSF
4 FT2	48" MAX	24" MAX	61 PSF	123 PSF	123 PSF	113 PSF	200 PSF	200 PSF	83 PSF	172 PSF	172 PSF
6 FT2			41 PSF	82 PSF	82 PSF	75 PSF	158 PSF	158 PSF	55 PSF	118 PSF	118 PSF
9 FT2			27 PSF	54 PSF	54 PSF	50 PSF	105 PSF	105 PSF	37 PSF	78 PSF	78 PSF
12 FT2				41 PSF	41 PSF	37 PSF	79 PSF	79 PSF	27 PSF	59 PSF	59 PSF
16 FT2				30 PSF	30 PSF	28 PSF	59 PSF	59 PSF	20 PSF	44 PSF	44 PSF
20 FT2	60" MAX	48" MAX		36 PSF	36 PSF	36 PSF	71 PSF	71 PSF	33 PSF	65 PSF	65 PSF
25 FT2				29 PSF	29 PSF	29 PSF	57 PSF	57 PSF	26 PSF	52 PSF	52 PSF
30 FT2							47 PSF	47 PSF		43 PSF	43 PSF
36 FT2							39 PSF	39 PSF		36 PSF	36 PSF

1. TIE-DOWN CLIPS SHALL BE FASTENED TO MECHANICAL HOUSING UNIT WITH (3)-#12 SAE GRADE 5 SHEET METAL SCREWS OR (2)- ⅜"Ø SAE GRADE 5 SHEET METAL SCREWS. [NOTE: FOR LONGER CLIPS UTILIZE (5)-#12 SMS OR (4)- ⅜"Ø SMS].
2. MECHANICAL HOUSING UNIT SHALL CONFORM TO THE FOLLOWING:
   2.1. ALUMINUM HOUSING UNITS SHALL BE 6063-T6 MIN. ALUMINUM SHEET WITH Fty=30 KSI, 0.125" MIN. THICKNESS.
   2.2. STEEL HOUSING UNITS SHALL BE 33KSI MIN. STEEL, GRADE 33, 22GA MIN. (t=0.0299")
3. A MAXIMUM ALLOWABLE VALUE OF 200 PSF HAS BEEN UTILIZED; FOR HIGHER DEMAND CAPACITIES CONTACT THIS ENGINEER FOR SITE-SPECIFIC ENGINEERING.

NOTE: ROOFTOP INSTALLATIONS SHALL CONFORM TO FLORIDA BUILDING CODE SECTION 1509 (AND 1522 FOR HVHZ) WHICH REQUIRES THAT ROOF MOUNTED MECHANICAL UNITS BE MOUNTED ON CURBS RAISED A MINIMUM OF 6 INCHES ABOVE THE ROOF SURFACE, OR WHERE ROOFING MATERIALS EXTEND BENEATH THE UNIT, ON RAISED EQUIPMENT SUPPORTS PROVIDING A MINIMUM CLEARANCE HEIGHT IN ACCORDANCE WITH SECTION 1509 AND/OR 1522 OF THE BUILDING CODE TO PERMIT REPAIRS, REPLACEMENT, AND/OR MAINTENANCE OF THE ROOFING SYSTEM. ANY CURB OR SUPPORT UTILIZED WITH THIS DESIGN SHALL HAVE SEPARATE DOCUMENTATION VERIFYING INTEGRITY AND IS OUTSIDE THE SCOPE OF THIS CERTIFICATION.

ANCHOR SCHEDULE:

SUBSTRATE	ANCHOR
CONCRETE: (4" THICK MIN, 3192KSI MIN.)	(1)-¼"Ø CARBON STEEL ITW BUILDEX TAPCON, 1 ¾" FULL EMBED TO CONCRETE, 2 ½" MIN. EDGE DISTANCE, 3" MIN. SPACING TO ANY ADJACENT ANCHOR.
ALUMINUM: (0.125" MIN. THICK, 6061-T6 MIN. ALUMINUM)	(2)-#14 SAE GRADE 5 SHEET METAL SCREW TO ALUMINUM, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.
STEEL: (0.125" MIN. THICK, 33 KSI MIN. STEEL)	(2)-#14 SAE GRADE 5 SHEET METAL SCREW TO STEEL, PROVIDE (5) PINCHES MIN. PAST THREAD PLANE FOR SHEET METAL SCREW.

1. EMBEDMENT AND EDGE DISTANCE EXCLUDES FINISHES, IF APPLICABLE.
2. ENSURE MINIMUM EDGE DISTANCE AS NOTED IN ANCHOR SCHEDULE.

ADDITIONAL ALLOWABLE UPLIFT: 90 LBS/CLIP

(DESIGN TABLE ACCOMMODATES MAX 90LB/CLIP AS ADDITIONAL UPLIFT IN COMBINATION WITH UPLIFT CAUSED BY OVERTURNING FROM LATERAL FORCES. SEE ASCE 7-10 SECTION 29.5 FOR MORE INFORMATION.)

ALLOWABLE UPLIFT PER UNIT IS BASED ON THE NUMBER OF CLIPS UTILIZED x 90LB/CLIP

EXAMPLE: 4 CLIPS x 90 LB/CLIP =360LB

(REQUIRED UPLIFT DEMAND SHALL BE DETERMINED ON A SITE SPECIFIC BASIS BY LICENSED ENGINEER OR REGISTERED ARCHITECT; NOT INCLUDED IN THIS CERTIFICATION)

TABLE LEGEND:

- (hatched) -DENOTES VALUES NOT APPROVED FOR USE
- †† -SEE ALTERNATE CLIP DETAIL 5/4 ON SHEET 4

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MECHANICAL UNIT STEEL TIE-DOWN CLIPS
FLORIDA STATEWIDE APPROVAL

REMARKS	DRWN	CHKD	DATE
INT ISSUE	TJB	FLB	12-11-11
REV FOR UNITS	CSL	TJB	02-15-13

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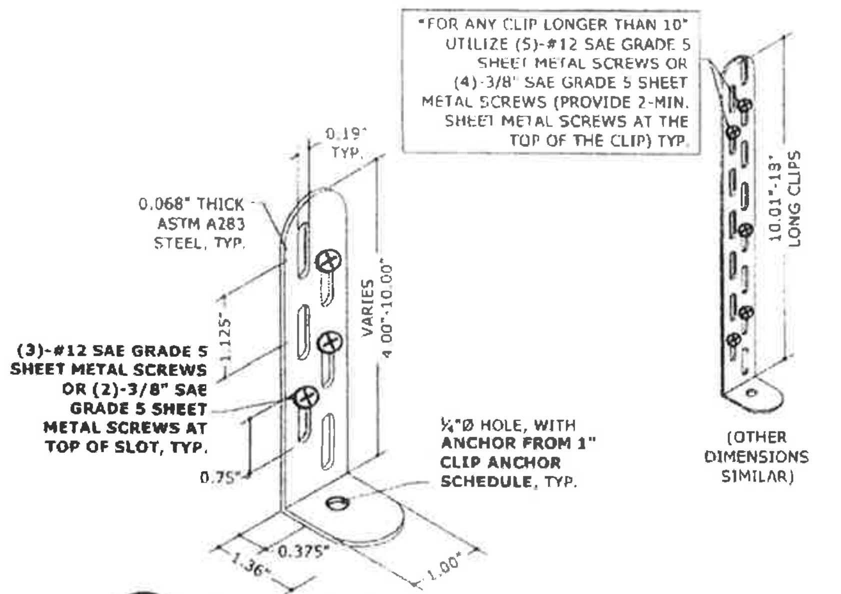
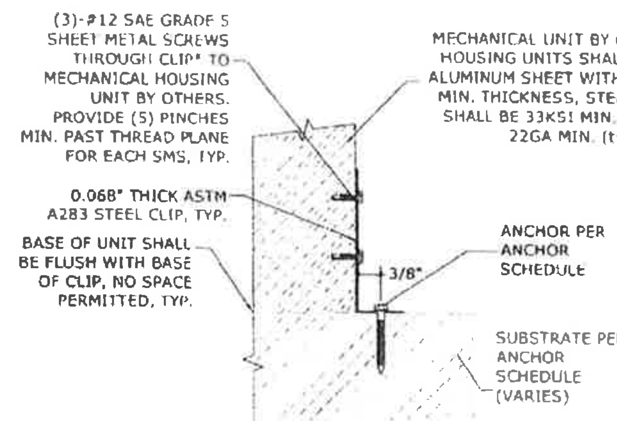
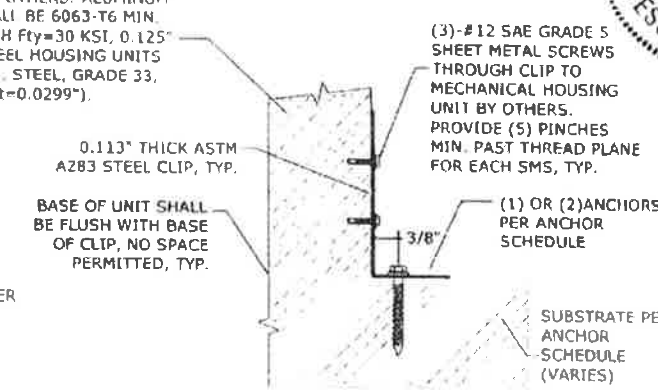


1 / 4 — 1" CLIP ISOMETRIC DETAIL
N.T.S. ISOMETRIC



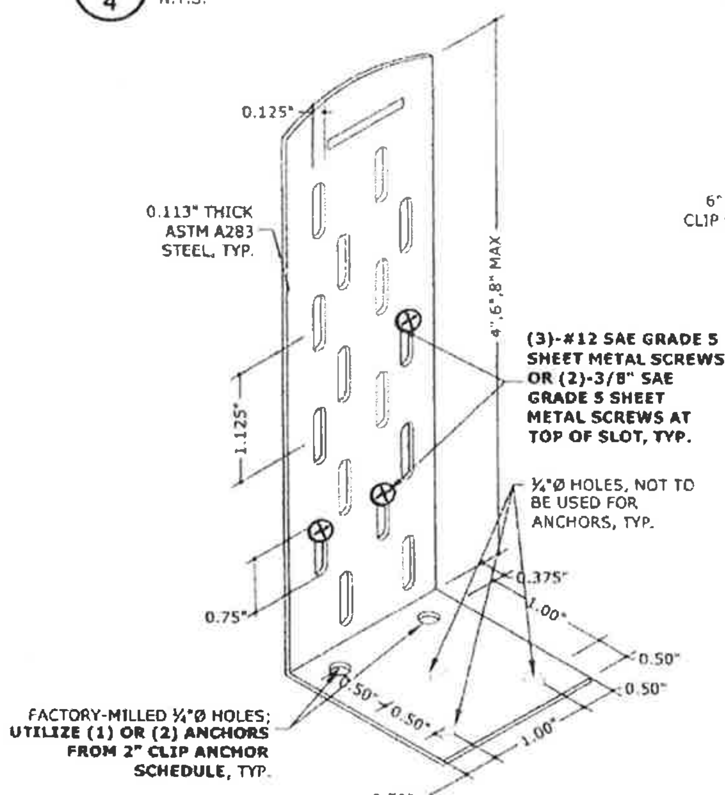
3 / 4 — 1" TIE-DOWN CLIP ANCHOR DETAIL
3" = 1'-0" DETAIL

CLIP IS DESIGNED FOR FULL CONTACT WITH THE BASE OF EACH MECHANICAL UNIT, TYP.

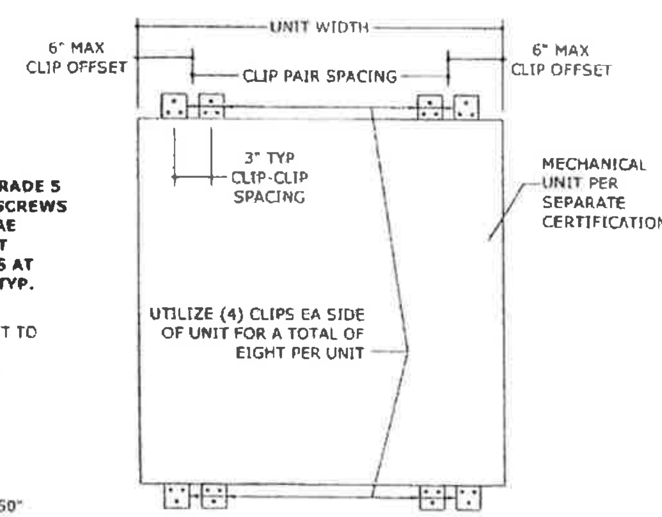


4 / 4 — 2" TIE-DOWN CLIP ANCHOR DETAIL
3" = 1'-0" DETAIL

CLIP IS DESIGNED FOR FULL CONTACT WITH THE BASE OF EACH MECHANICAL UNIT, TYP.



2 / 4 — 2" CLIP ISOMETRIC DETAIL
N.T.S. ISOMETRIC



5 / 4 — ††ALTERNATE CLIP DETAIL
N.T.S. PLAN

DESIGN PRESSURE EXAMPLE SCENARIO

(THE FOLLOWING EXAMPLE ILLUSTRATES THE PROCEDURE USED TO DETERMINE THE SITE SPECIFIC DESIGN PRESSURE FOR 175 MPH, EXPOSURE D. THE DESIGN PARAMETERS USED HEREIN SHALL BE VERIFIED BY A LICENSED ENGINEER, REGISTERED ARCHITECT OR BUILDING OFFICIAL FOR APPLICABILITY TO THE SITE-SPECIFIC ADDRESS AT WHICH THE MOUNTING SYSTEM ILLUSTRATED HEREIN IS BEING INSTALLED. THIS CALCULATION ASSUMES NO WIND SPEED-UP EFFECTS, BUFFETING OR CHANNELING FROM OTHER STRUCTURES)

SITE SPECIFIC PARAMETER

BASIC WIND SPEED.......175 MPH
EXPOSURE CATEGORY.......D
MEAN ROOF HEIGHT.......70 FT
MAX HEIGHT OF UNIT CENTROID (ABOVE ROOF).......5.00FT
TOTAL HEIGHT OF UNIT CENTRIOD.......70FT + 5.00FT= 75.00FT

DESIGN VARIABLES

Kd=0.90, qz=96.28 PSF, GCf (LATERAL)=3.10, GCf (UPLIFT)= 1.50
(ASD) LATERAL WIND LOAD= 0.6 x (qz x GCf) = 0.6 x 96.17PSF x 3.10 = 178.88 PSF
(ASD) UPLIFT WIND LOAD= 0.6 x (qz x GCf) = 0.6 x 96.17PSF x 1.50 = 86.56 PSF

30"x30"x30" UNIT INSTALLATIONS MUST MEET/UTILIZE THE FOLLOWING CRITERIA:
- HEIGHT FROM GRADE TO CENTROID OF UNIT SHALL BE ≤ 75.00 FEET.
- UTILIZE (2)-2" TIE-DOWN CLIPS PER CORNER. SEE "ALTERNATE SPACING DETAIL 5/4" FOR CLIP CONFIGURATION.
- *UTILIZE (4)-#12 SMS TO HOUSING UNIT PER EACH CLIP.
- *UTILIZE (2)-#14 SMS INTO 1/8" 6061-T6 ALUMINUM RAIL/SUBSTRATE PER THIS APPROVAL.
- *UTILIZE (2)-#14 SMS INTO 1/8" 33KSI STEEL RAIL/SUBSTRATE PER THIS APPROVAL.

48"x48"x48" UNIT INSTALLATIONS MUST MEET/UTILIZE THE FOLLOWING CRITERIA:
- HEIGHT FROM GRADE TO CENTROID OF UNIT SHALL BE ≤ 75.00 FEET.
- UTILIZE (2)-2" TIE-DOWN CLIPS PER CORNER. SEE "ALTERNATE SPACING DETAIL 5/4" FOR CLIP CONFIGURATION.
- *UTILIZE (5)-#12 SMS TO HOUSING UNIT PER EACH CLIP.
- *UTILIZE (2)-#14 SMS INTO 1/8" 6061-T6 ALUMINUM RAIL/SUBSTRATE PER THIS APPROVAL.
- *UTILIZE (2)-#14 SMS INTO 1/8" 33KSI STEEL RAIL/SUBSTRATE PER THIS APPROVAL.

*SEE 2" ***STEEL CLIP TIE-DOWN SCHEDULE: ROOFTOP MOUNTED INSTALLATION*** TABLE NOTES & ACCOMPANYING ANCHOR SCHEDULE FOR ADDITIONAL ANCHOR/SUBSTRATE INFORMATION. INSTALLATION TO CONCRETE MAY NOT BE UTILIZED FOR THE DESIGN CRITERIA NOTED IN THIS EXAMPLE.

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