





LEFT ELEVATION

Scale: 1/8" = 1'0"









OTG Consulting, PLLC

Geotechnical

• Consulting Engineers

• Quality Control

10 October 2024

Allen Peterson Precision Custom Homes

Reference: Structural Evaluation Magnolia Hills – Lot 4

Dear Allen Peterson:

OTG Consulting, PLLC (OTG) was requested to evaluate the planned footings at the garage door and determine the required sizes. OTG was provided a copy of building plans, truss layouts, and member design report. We understand that the garage header will span approximately 16 feet 10 inches and consist of a 2-ply 1 $\frac{3}{4}$ " x 20" LVL. The footing loads from the garage door header are 14,865# and 10,290#.

Based on the assumed allowable soil bearing pressure of 2,000 psf (pounds per square foot) and the above stated footing loads from the garage door header, OTG recommends that the footings on each side of the garage door header be 36'' W by 36'' L. The footing should be a minimum of 24 inches thick. The 28-day compressive strength for the footing concrete should be 3,000 psi. A bottom mat of #4 reinforcing steel (2- #4 bars ea way) should be placed in the bottom of the footing on rebar chairs providing a minimum of 3 inches of cover from the bottom of the footing. Contractor should also ensure a minimum cover of 1 1/2'' of cover between the sides of the footing and the edges of the rebar.

Closing

If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, OTG should be contacted immediately in order that we can review the report in light of the changes and provide additional or alternate recommendations as may be required.

0 Oct 2024

Respectfully,

President

OTG Consulting, PLLC

Scott G. Dowell, P.E.

NC Registration No. 037387

North Carolina 2018 - R402.1.5 Total UA

Property

32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab -Liberty Meadows Lot 33 Organization

Southern Energy Manager Justin Smith

Inspection Status Results are projected



Builder

SMG Precision Properties

This report is based on a proposed design and does not confirm field enforcement of design elements.

Building UA

Elements	NC Reference	As Designed
Ceilings	52.2	49.6
Above-Grade Walls	219.5	163.0
Windows, Doors and Skylights	122.3	110.4
Slab Floor:	95.1	123.3
Framed Floors	15.8	17.2
Foundation Walls	0.0	0.0
Rim Joists	7.4	6.0
Overall UA (Design must be equal or lower):	512.3	469.5

Requirements

	9	R402.1.5	Total UA alternative compliance passes by 8.4%.	The proposed home meets the UA requirement by 8.4%
	>	402.3.2	Average SHGC: 0.28 Max SHGC: 0.30	Average SHGC of 0.28 is greater than the maximum of 0.30.
(R402.4.2.2	Air Leakage Testing	Air sealing is 0.27 CFM50 / ft^2 Shell Area. It must not exceed 0.30 CFM50 / ft^2 Shell Area.
6		R402.5	Area-weighted average fenestration SHGC	Area-weighted average fenestration SHGC is 0.28. The maximum allowed value is [No Limit].
	>	R402.5	Area-weighted average fenestration U-Factor	
6		R404.1	Lighting Equipment	At least 75.0% of fixtures shall be high-efficacy lamps, currently 100.0% are high- efficacy.
6	>	Mandatory Checklist	Mandatory code requirements that are not checked by Ekotrope must be met.	2015 IECC Mandatory Checklist must be checked as complete.
6		R403.3.1	Duct Insulation	Duct insulation meets the requirements specified in North Carolina 2018 Code Section 403.3.1.
	>	403.3.3	Duct Testing	

Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 8.4%.

Name:	Justin Smith	Signature:	Justin Smith
Organization:	Southern Energy Management	Digitally signed:	2/1/23 at 10:15 AM

North Carolina 2018 Prescriptive compliance results calculated using Ekotrope RATER's energy and code compliance algorithm, including appropriate amendments. Ekotrope RATER is a RESNET Accredited HERS Rating Tool. All results are based on data entered by Ekotrope users. Ekotrope disclaims all liability for the information shown on this report.

Property

32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

General Building Information

Number Of Bedrooms	4
Number Of Floors	2
Conditioned Floor Area [sq. ft.]	2,477
Has Electric Vehicle Ready Space	No
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	22,622
Total Units in Building	1
Residence Type	Single family detached
Number of Floors in Building	-
Floor Number	-
Model	Anconia
Community	Liberty Meadows
RESNET/IECC 2006-2018 Climate Zone	4A
IECC 2021 Climate Zone	3A

Organization

Justin Smith

SMG Precision Properties

Builder

Foundation Wall

None Present

Foundation Wall Library List

None Present

Slab								
Nam	e Library Type	e Perimeter	r Floor Grade	e Carpet R	Exposed Masonry Area	Surface Area	Location	Enclosing
slat	Uninsulated	200	On Grade	1	0	1,403.0 ft²	Exposed Exterior	Conditioned Space

Slab Library List										
Name	Wall Construction Type	Slab Completely Insulated?	Underslab Insulation Width [ft]	Perimeter Insulation Depth [ft]	Perimeter Insulation R Value	Thermal Break	Effective R-value			
Uninsulated	Wood Frame / Other	No	0	0	0	No	0.00			

Inspection Status Southern Energy Management Results are projected SOUTHERNENERGY M A N A G E M E N T ENERGY EFFICIENCY & SOLAR POWER

Property 32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Organization Southern Energy Management Justin Smith

Inspection Status Results are projected



Builder SMG Precision Properties

Fra	amed Floor					
Г	Name	Library Type	Carpet R	Floor Grade	e Surface Area	Location
	over garage	R 19, 16"OC G1 Carpet	0	Above Grade	337.0 ft²	Unconditioned, attached garage



Rim Joist

2nd floor ambient

2nd floor attic

R 19 Adv. Framing G1 16" O.C

R 19 Adv. Framing G1 16" O.C

Name	e Library Type	Surface Area	Location
1st floor ambient	R 19 G1, 16"OC	87.0 ft ²	Exposed Exterior
1st floor garage	R 19 G1 16"OC	47 0 ft ²	Unconditioned attached garage
ierneer genage			

Rim Joist Lib	rary List				
	Name	Effective Insulation R	value		
R 19 G1	1, 16"OC		17.30		
Wall		Library Type	Surface Color	Surface Area	Location
1st floor ambient	R 19 Adv. Fr	aming G1 16" O.C	Medium	1,381.0 ft²	Exposed Exterior
1st floor garage	R 19 Adv. Fr	aming G1 16" O.C	Medium	419.0 ft²	Unconditioned, attached garage

Medium

Medium

694.0 ft²

706.0 ft²

Attic

Exposed Exterior

Property 32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Organization Southern Energy Management Justin Smith

SMG Precision Properties

Builder

Inspection Status Results are projected



Wall Library List Name Effective R-value R 19 Adv. Framing G1 16" O.C 17.492

Glazing

-									
Name	Library Type	Wall Assignment	Foundation Wall Assignment	is Operable	e Overhang Deptr	Overhang Ft To (Top	Overhang Ft To Bottom	Orientation	Surface Area
front 2nd unshaded	33/28	2nd floor ambient		Yes	0	0	0	Southeast	42.2 ft²
front unshaded	33/28	1st floor ambient		Yes	0	0	0	Southeast	27.0 ft²
left shaded	33/28	1st floor ambient		Yes	15	1	6	Southwest	27.0 ft²
left unshaded	33/28	1st floor ambient		Yes	0	0	0	Southwest	27.0 ft²
rear 2nd unshaded	33/28	2nd floor ambient		Yes	0	0	0	Northwest	27.0 ft²
rear shaded	33/28	1st floor ambient		Yes	12	2	9	Northwest	40.2 ft²
rear unshaded	33/28	1st floor ambient		Yes	0	0	0	Northwest	60.0 ft²
right 2nd unshaded	33/28	2nd floor ambient		Yes	0	0	0	Northeast	54.0 ft²
right unshaded	33/28	1st floor ambient		Yes	0	0	0	Northeast	7.0 ft ²

Glazing Library List			
Name	Shgc	U-factor	
33/28	0.28	0.330	

Skylight

None Present

Property 32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Skylight Library List

None Present

Opaque Dool								
Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location
front entry	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft²	Exposed Exterior
garage entry	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	18.0 ft²	Unconditioned, attached garage

Inspection Status

Results are projected

Opaque Door Library List

Name Effective U-factor Fiberglass R-5 0.200

Roof Insulati	on					
Name	Library Type	Attic Exterior Area [ft ²]	Clay or Concrete Roof Tiles	Surface Color	r Surface Area	a Location
attic	R 38 Attic BLOWN FG G1 2x10 24"OC NO Padiant Barrier	2,557.8	No	Dark	1,740.0 ft²	Attic

Roof Insulation Library List				
Name	Has Radiant Barrier	Effective R-value		
R 38 Attic BLOWN FG	No	35.115		
G1 2x10 24"OC NO				

Whole House	e Infiltration		
Infiltration	Measurement Type	Shelter Class	
1809 CFM at 50 Pa	Blower-door tested	4	



4

Organization Southern Energy Management Justin Smith

Builder SMG Precision Properties

Property

32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33 Organization Southern Energy Management Justin Smith

SMG Precision Properties

Builder

Inspection Status Results are projected



	Mechanical Ventilation					
		No	one Present			
ì						
I	Lighting					
	% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting

10	90	0	0	0	0

Onsite	Generation	

None Present

Onsite Generation Library List

None Present

Solar Generation

None Present

Dehumidifier

None Present

Dehumidifier Library List

None Present

Property

32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Whole House Fan

Organization Southern Energy Management Justin Smith Inspection Status Results are projected



Builder SMG Precision Properties

-

None Present

Whole House Fan Library List

None Present

Conditioning	Equipment					
Name	Library Type	Serial Number	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
1st floor heat pump	z 24k 14 SEER 8.2hspf		57%	57%	0%	Attic
2nd floor heat pump	z 30k 14 SEER 8.2hspf		43%	43%	0%	Attic
Water Heating	z 50 gal. 0.95 EF Elec		0%	0%	100%	Unconditioned Garage

Equipment Type: z 24k 14 SEER 8.2hspf

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	8.2 HSPF
Heating Capacity [kBtu/h]	24
Backup Fuel Type	Electric
Switchover Temperature [°F]	0
Backup Heating Efficiency	1 COP
Use default Supplemental Heat	Yes
Cooling Efficiency	14 SEER
Cooling Capacity [kBtu/h]	24

Property 32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Organization Southern Energy Management Justin Smith

Inspection Status Results are projected



Builder SMG Precision Properties

Equipment Type: z 30k 14 SEER 8.2hspf

Equipment Type	Air Source Heat Pump
Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	8.2 HSPF
Heating Capacity [kBtu/h]	30
Backup Fuel Type	Electric
Switchover Temperature [°F]	0
Backup Heating Efficiency	1 COP
Use default Supplemental Heat	Yes
Cooling Efficiency	14 SEER
Cooling Capacity [kBtu/h]	30

Equipment Type: z 50 gal. 0.95 EF Elec

Equipment Type	Residential Water Heater
Fuel Type	Electric
Distribution Type	Hydronic Delivery (Radiant)
Hot Water Efficiency	0.95 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.98

Property

32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Distribution System

Distribution Type Forced Air Heating Equipment 1st floor heat pump **Cooling Equipment** 1st floor heat pump Sq. Feet Served 1,403 # Return Grilles 2 Supply Duct R Value 8 Return Duct R Value 8 Supply Duct Area [ft2] 378.81 Return Duct Area [ft²] 140.3 Leakage to Outdoors 56 CFM @ 25Pa (3.99 / 100 ft2) Total Leakage 56 CFM25 Total Leakage Duct Test Conditions Post-Construction Use Default Flow Rate Yes Duct 1 Duct Location Attic (well vented) Percent Supply Area 100 Percent Return Area 100 Duct 2 Duct Location Conditioned Space Percent Supply Area 0 Percent Return Area 0 Duct 3 Duct Location Conditioned Space Percent Supply Area 0 0 Percent Return Area Duct 4 Duct Location Conditioned Space Percent Supply Area 0 0 Percent Return Area Duct 5 Duct Location Conditioned Space Percent Supply Area 0 Percent Return Area 0 Duct 6 Duct Location Conditioned Space Percent Supply Area 0 Percent Return Area 0

Organization

Justin Smith

SMG Precision Properties

Builder

Southern Energy Management

Inspection Status Results are projected



Property

32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Distribution System

Distribution Type Forced Air Heating Equipment 2nd floor heat pump **Cooling Equipment** 2nd floor heat pump Sq. Feet Served 1,074 # Return Grilles 2 Supply Duct R Value 8 8 Return Duct R Value Supply Duct Area [ft2] 289.98 Return Duct Area [ft²] 107.4 Leakage to Outdoors 42 CFM @ 25Pa (3.91 / 100 ft2) Total Leakage 42 CFM25 Total Leakage Duct Test Conditions Post-Construction Use Default Flow Rate Yes Duct 1 Duct Location Attic (well vented) Percent Supply Area 100 Percent Return Area 100 Duct 2 Duct Location Conditioned Space Percent Supply Area 0 Percent Return Area 0 Duct 3 Duct Location Conditioned Space Percent Supply Area 0 0 Percent Return Area Duct 4 Duct Location Conditioned Space Percent Supply Area 0 Percent Return Area 0 Duct 5 Duct Location Conditioned Space Percent Supply Area 0 Percent Return Area 0 Duct 6 Duct Location Conditioned Space Percent Supply Area 0 Percent Return Area 0

Builder

SMG Precision Properties

HVAC Grading

HVAC Grading Not Conducted

Ceiling Fan

Has Ceiling Fan Cfm Per Watt No 100

Organization Southern Energy Management Justin Smith Inspection Status Results are projected



Property 32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Water Distribution

Water Fixture Type	Low-flow
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	100
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Recirculation System Pipe Loop Length [ft]	20
Drain Water Heat Recovery?	No

Justin Smith

SMG Precision Properties

Builder

Clothes Dryer

3.01
Electric
Timer Controls
No
Yes
HERS Reference

Clothes Washer

153 kWb/Year
\$12.00
\$0.11/k/Mb
\$1 22/Therm
3.31
2 1547
Custom
Front-load
6
No
Yes

Dishwasher	
Dishwasher Efficiency	270 kWh
Dishwasher Size	Standard
Annual Gas Cost	\$22.23
Electric Rate	\$0.12/kWh
Gas Rate	\$1.09/Therm
Is Outside Conditioned Space	No

Organization Southern Energy Management Inspection Status Results are projected



Property 32 Brewster Ct Cameron, NC 28326 Model: Anconia Community: Liberty Meadows

Template - SMG Precision - Liberty Meadows Lot 33 - CZ 4 slab - ecoSelect Liberty Meadows Lot 33

Organization Southern Energy Management Justin Smith

SMG Precision Properties

Inspection Status Results are projected



Appliances and Controls	
Thermostat Cooling Setpoint	* * * * 75.0
Thermostat Heating Setpoint	* * * * 70.0
Range/Oven Fuel	Electric
Convection Oven?	No
Induction Range?	No
Range/Oven Outside Conditioned Space?	No
Refrigerator Consumption	538 kWh/Year
Refrigerator Outside Conditioned Space?	No

Builder

Notes

Initial Inputs _____JS 02/01/22_____

-confirm HVAC specs -confirm water heater specs -confirm ventilation entry -modeled to worst case orientation -confirm cfl lighting %



A = Indicates Left End of Truss (Reference Engineered Truss Drawing) Do NOT Erect Truss Backwards



(Reference Engineered Truss Drawing) Do NOT Erect Truss Backwards