



# Staff Report

Infill Housing Design Review Committee

File Number: 3-C-21-IH

**Meeting:** 3/17/2021  
**Applicant:** Heraclio Limon  
**Owner:** Heraclio Limon

---

## Property Information

**Location:** 230 Cedar Ave. **Parcel ID** 81 B F 033  
**Zoning:** RN-2 (Single-Family Residential Neighborhood)  
**District:** Oakwood/Lincoln Park Infill Housing Overlay District

---

## Description of Work

Level III New Primary Structure

Proposed new primary structure fronting Cedar Avenue. One-story, front-gable house measures 32' wide and 44' long on the left (west) side and 40' long on the right (east) side. The house is proposed to be set 25' from the front porch to the front property line; the 15' wide porch projects 7' from the primary massing of the house. Access is proposed from Cedar Avenue, with an 18' wide parking pad and concrete driveway extending along the left (east) side of the house.

The house features a front-gable roof with an 8/12 pitch clad in asphalt shingles, an exterior of 5" exposure lap siding, and a brick foundation. The roof features 1' eave overhangs with decorative wood brackets in the front gable fields. Gable fields are clad in shingles. A hipped roof, partial width porch projects from the left half of the façade (north), with a small projecting front-gable portico centered on the door. A shed-roof bay with two adjoining one-over-one, double-hung windows and a decorative panel below is located on the right half of the façade.

The left (east) elevation features a secondary entry recessed under the primary roofline on a small porch, and two double-hung one-over-one windows. Paired multi-light doors are located on the rear elevation.

---

## Applicable Design Guidelines

Heart of Knoxville Infill Housing Design Guidelines

### 1. Front Yards

- Consistent front yard space should be created along the street with the setback of a new house matching the older houses on the block.
- When several infill houses, porches and the habitable portion of each house should be about the same distance from the street as the original houses.
- A walkway should be provided from the sidewalk or street to the front door. Along grid streets, the walk should be perpendicular to the street.
- Healthy trees that are outside the building footprint should be preserved. The root area should be marked and protected during construction.

### 2. House Orientation and Side Yards

- New housing should be proportional to the dimensions of the lot and other houses on the block.
- Side yard setbacks should be similar to older houses on the block, keeping the rhythm of spacing between houses consistent.

### 3. Alleys, Parking, and Services

- Parking should not be in front yards.
- Alley access should be used for garage or parking pad locations.
- On streets without alleys, garages or parking pads should be at least 20' behind the front façade of the infill house with access limited to one lane between the street and the front façade.
- On those streets which have alleys, driveways should not be permitted from the front of the house.
- Alley oriented parking pads, garbage collection points, and utility boxes should be screened with a combination of landscaping and fencing.

### 4. Scale, Mass, and Foundation Height

- The front elevation should be designed to be similar in scale to the other houses along the street.
- The front façade of new houses should be about the same width as original houses on the block.
- If extensions or bays were typically part of the neighborhood's historic house design, such elements should be incorporated into infill housing.
- New foundations should be about the same height as the original houses in the neighborhood.

### 5. Porches and Stoops

- Porches should be part of the housing design in those neighborhoods where porches were commonplace.
- Porches should be proportional to original porches on the block, extending about 8-12' toward the street from the habitable portion of the house.
- Porches should extend into the front yard setback, if necessary, to maintain consistency with similarly sited porches along the street.
- Porch posts and railings should be like those used in the historic era of the neighborhood's development.

### 6. Windows and Doors

- When constructing new houses, the windows and door styles should be similar to the original or historic houses on the block.
- To respect the privacy of adjacent properties, consider the placement of side windows and doors.
- The windows and doors on the front façade of an infill house should be located in similar proportion and position as the original houses on the block.
- Attention should be paid to window placement and the ratio of solid (the wall) to void (the window and door openings).
- Contemporary windows such as "picture windows" should not be used in pre-World War II neighborhoods.

### 7. Roof Shapes and Materials

- New roofs should be designed to have a similar pitch to original housing on the block.
- More complex roofs, such as hipped roofs and dormers, should be part of new housing designs when such forms were historically used on the block.
- Darker shades of shingle were often used and should be chosen in roofing houses in Infill neighborhoods.

### 8. Siding Materials

- Clapboard-like materials should be used in constructing new housing where painted wood siding was traditionally used.
- Faced stone, vertical siding, and other non-historic materials should not be used in building new houses.

### 11. Landscape and Other Considerations

- One native or naturalized shade tree should be planted in the front and rear yards of infill lots with 25' or more in

depth to the front of the house.

---

## Comments

1. The proposed setback is 25' to the front porch, which projects 5' from the primary house's massing (with an additional 2' recessed into the left side of the house). The average front setback along this block is 30.5'. While the adjacent property at 226 Cedar Avenue is recessed substantially behind the main streetscape and should not be used as a reference, the proposed setback is in line with the surrounding properties at 222 and 234 Cedar Avenue. The proposed 25' to the front porch/30' to the primary residence will create a consistent streetscape. The final site plan should include a walkway from the street to the front door.
2. Parking is proposed to extend off Cedar Avenue. This block has an operable alley; parking should extend off the alley. Per City Engineering, a culvert will be required for drainage, (15' minimum diameter), and the parking should be a min. 18' by 18' parking pad or a 10' by 35' min. driveway to accommodate the required parking spaces. Parking should receive screening or landscaping to meet design guidelines.
3. The block to receive the new house is characterized by one-story, rectangular Minimal Traditionals, Craftsman bungalows, and some infill construction. The one-story, rectangular house is proportional to the dimensions of the lot and the other houses on the block. A revised site plan (removing the front-access parking) will be necessary to show side setbacks as consistent with the context.
4. The one-story, three-bay façade is similar in scale to houses on the block. The porch roofs and bays provide additional complexity to the façade. The house incorporates a brick-clad raised foundation, which meets guidelines.
5. The porch meets design guidelines and projects from the façade, using appropriate square 8 by 8 columns and picket railings.
6. The proposed windows and doors meet the design guidelines and are appropriate for the context of the block.
7. The 8/12 roof pitch meets the design guidelines, and the proposed design incorporates sufficient complexity in the façade and rear roof massings.
8. The proposed lap siding with a 5" exposure, cedar shakes in the gable fields, and a brick-clad foundation all meet design guidelines. Past Infill Housing reviews have recommended a square or rectangular louvered vent in gable fields instead of round.
9. Final site plan should include a native or naturalized shade tree in both front and rear yards.

---

## Recommendation

Staff recommends approval of Certificate 3-C-21-IH, with the following conditions:

- 1) Include a walkway from the street to the front door;
- 2) Parking and access to extend from the alley, receive landscaping screening or fencing to meet design guidelines, and meet City Engineering standards, with submission of a revised site plan to staff;
- 3) Use horizontal lap siding with an overlap (to reflect wood clapboard) instead of flush horizontal siding or Dutch lap;
- 4) Use a square or rectangular gable vent instead of round;
- 5) Incorporate one native or naturalized shade tree in the front and rear yards on the final site plan.



**3-C-21-IH**

**APPLICATION FOR CERTIFICATE OF APPROPRIATENESS**

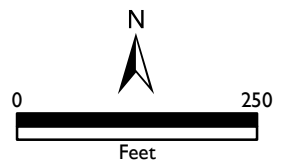
Applicant: Heraclio Limon

**INFILL  
HOUSING  
REVIEW  
BOARD**



**230 Cedar Ave.**  
Oakwood/Lincoln Park Infill Housing Overlay  
District

Original Print Date: 3/9/2021  
Revised:  
Knoxville/Knox County Planning - Infill Housing Design Review Committee





## DESIGN REVIEW REQUEST

- DOWNTOWN DESIGN (DK)
- HISTORIC ZONING (H)
- INFILL HOUSING (IH)

---

Applicant

---

Date Filed

Meeting Date (if applicable)

File Number(s)

### CORRESPONDENCE

All correspondence related to this application should be directed to the approved contact listed below.

- Owner    Contractor    Engineer    Architect/Landscape Architect

---

Name

Company

---

Address

City

State

Zip

---

Phone

Email

### CURRENT PROPERTY INFO

---

Owner Name (if different from applicant)

Owner Address

Owner Phone

---

Property Address

Parcel ID

---

Neighborhood

Zoning

### AUTHORIZATION

---

Staff Signature

Please Print

Date

---

Applicant Signature

Please Print

Date

# REQUEST

## DOWNTOWN DESIGN

**Level 1:**

- Signs     Alteration of an existing building/structure

**Level 2:**

- Addition to an existing building/structure

**Level 3:**

- Construction of new building/structure     Site design, parking, plazas, landscape

**See required Downtown Design attachment for more details.**

Brief description of work: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## HISTORIC ZONING

**Level 1:**

- Signs     Routine repair of siding, windows, roof, or other features, in-kind; Installation of gutters, storm windows/doors

**Level 2:**

- Major repair, removal, or replacement of architectural elements or materials     Additions and accessory structures

**Level 3:**

- Construction of a new primary building

**Level 4:**

- Relocation of a contributing structure     Demolition of a contributing structure

**See required Historic Zoning attachment for more details.**

Brief description of work: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## INFILL HOUSING

**Level 1:**

- Driveways, parking pads, access point, garages or similar facilities     Subdivisions

**Level 2:**

- Additions visible from the primary street     Changes to porches visible from the primary street

**Level 3:**

- New primary structure  
 Site built     Modular     Multi-Sectional

**See required Infill Housing attachment for more details.**

Brief description of work: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## STAFF USE ONLY

**ATTACHMENTS**

- Downtown Design Checklist  
 Historic Zoning Design Checklist  
 Infill Housing Design Checklist

**ADDITIONAL REQUIREMENTS**

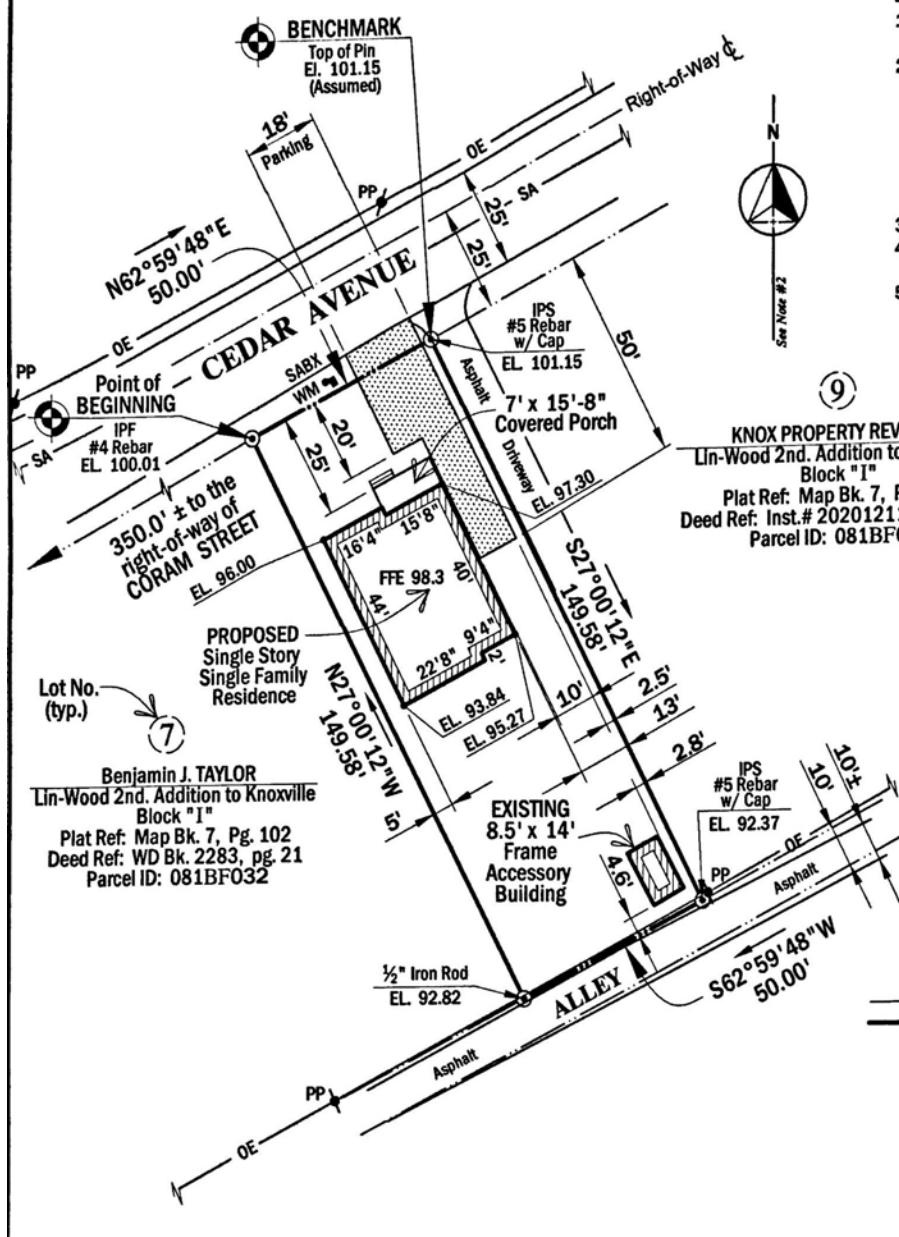
- Property Owners / Option Holders

**Level 1:** \$50 • **Level 2:** \$100 • **Level 3:** \$250 • **Level 4:** \$500

<b>FEE 1:</b>		<b>TOTAL:</b>
<b>FEE 2:</b>		
<b>FEE 3:</b>		

**General Notes:**

1. Iron pins are set at all property corners, unless noted otherwise.
2. The North Arrow is referenced to the bearings found on the Lin-Wood 2nd. Addition to Knoxville plat surveyed by Holt Brothers Engineering, Knoxville Tennessee, dated: December 23, 1921 and recorded in the Knox County Register of Deeds Office in Map Bk. 7, pg. 107 & the elevations are assumed.
3. This lot contains 7,479 sqft. or 0.172 acres.
4. This property is Zoned RN-2 and located within a City Overlay 'Infill Housing' District.
5. Site Drainage shall be directed away from the proposed building on a minimum slope of 1/4" per foot.



**KNOX PROPERTY REVIVALS**  
 Lin-Wood 2nd. Addition to Knoxville Block "I"  
 Plat Ref: Map Bk. 7, Pg. 102  
 Deed Ref: Inst. # 20201211-0047748  
 Parcel ID: 081BF034

Benjamin J. TAYLOR  
 Lin-Wood 2nd. Addition to Knoxville Block "I"  
 Plat Ref: Map Bk. 7, Pg. 102  
 Deed Ref: WD Bk. 2283, pg. 21  
 Parcel ID: 081BF032

**Symbols & Abbreviations:**

IPF	Iron Pin Found
IPS	Iron Pin Set
OE	Overhead Electrical
PP	Power Pole
⊕	Centerline
⊖	Centerline
⊕	Right-of-Way line
▨	Concrete Paving
±	More or Less
Sqft.	Square Feet
Inst. #	Instrument Number
WD Bk.	Warranty Deed Book
SA	Sanitary Sewer Line
WM	Water Meter
SABX	Sanitary Sewer Box
FFE	Finished Floor Elevation
EL	Elevation

**230 CEDAR AVENUE**  
**LIN-WOOD 2nd. ADDITION TO KNOXVILLE**  
**BLOCK "I" - LOT #8**  
 18th. Ward - City of Knoxville, Tennessee  
 7th. Civil District - Knox County, Tennessee  
 City Block #18642

Date: 29 January 2021  
 Scale: 1" = 40'  
 Deed Ref: Inst. # 20201223 - 0051548  
 Plat Ref: Map Bk. 7, pg. 102  
 TAX Map: 81" B" Group "I", Parcel 33  
 Surv'd By: GFB Rev1:  
 Dwg. By: GFB Rev2:  
 Proj. No: 210119a Rev3:



I hereby certify that this is a Category I Survey and that the Unadjusted error of field closure is 1' in 10,000' or greater.

By: *Glenn F. Biggs, Jr.*  
 Glenn F. Biggs, Jr. 712 TN  
 Original Signed in Blue  
 Date: 1/28/2021

**Glenn F. Biggs, Jr.**  
 REGISTERED LAND SURVEYOR  
 2855 Gibbs Drive, Knoxville, Tennessee 37918  
 OFFICE: (865) 688-1843 FAX: (865) 688-2104  
 e-Mail: dtcgnf@comcast.net

OWNER:  
**Heraclio LIMON**  
 5600 Kentwood Road  
 Knoxville, TN. 37917  
 (865) 455-0724

THIS PLAN IS AUTHORIZED FOR THIS ADDRESS ONLY AND IS NOT TO BE USED FOR ANY ADDITIONAL ADDRESSES WITHOUT THE PURCHASE OF ADDITIONAL LICENSES OR WRITTEN AUTHORIZATION FROM TIGHTLINES:  
 Single-Use License  
 230 Cedar Avenue  
 Knoxville, TN.

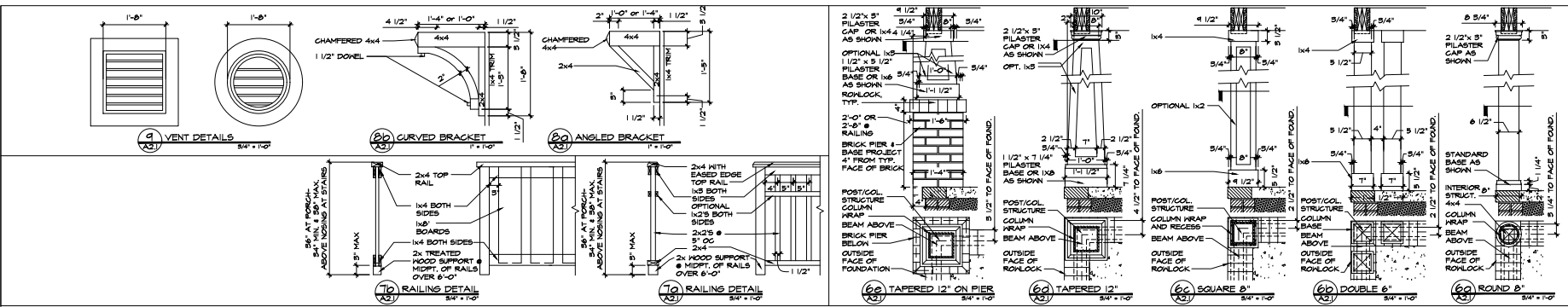
**TightLines Designs**  
 creating great spaces

**Carson II**  
**Mirrored**

date 01.15.20  
 drafter D.A.S.  
 checked by C.L.B.  
 proj. no. I-21015.1  
 revisions date

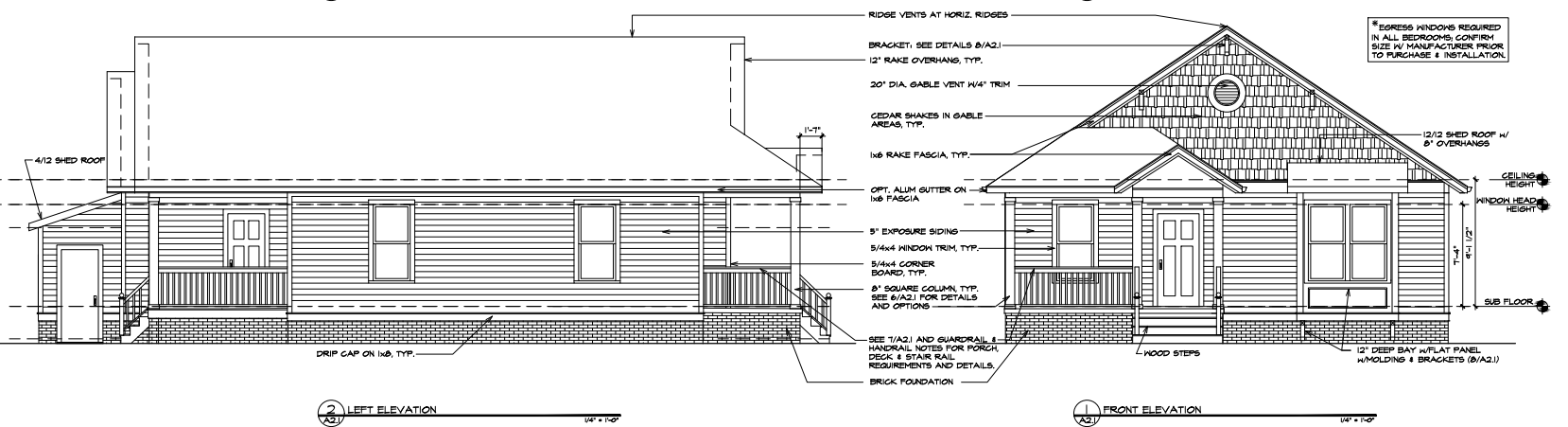
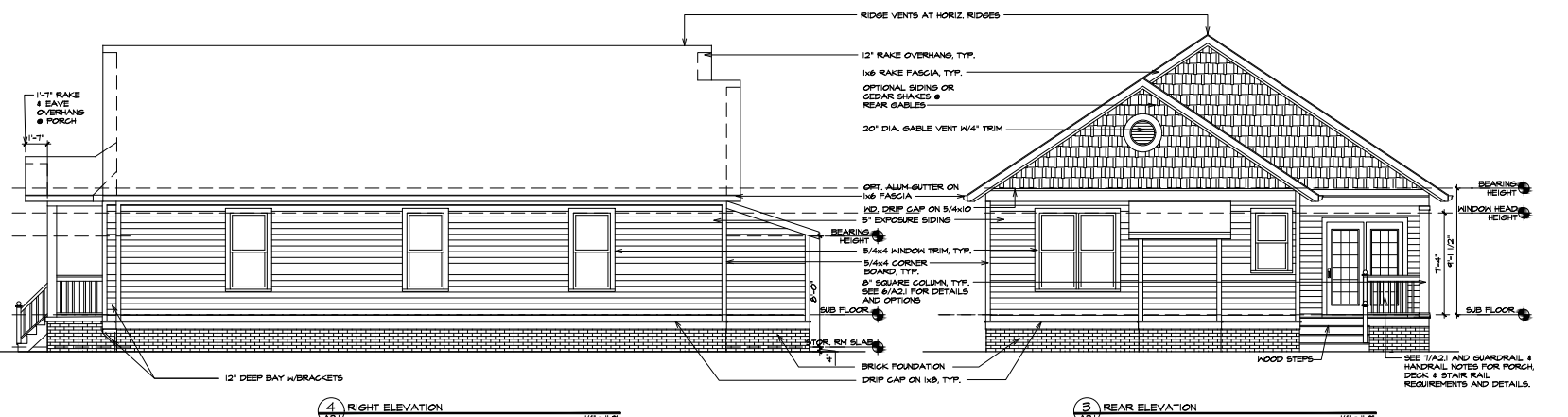
Elevations, Details, & Notes

**A2.1**



**GUARDRAIL AND HANDRAILS:**  
 1) INSTALL HANDRAILS AND GUARDS PER 2018 RESIDENTIAL BUILDING CODE SECTIONS RS11.7.2 THROUGH RS12. PORCHES, BALCONIES, RAMPS OR RAISED FLOOR SURFACES LOCATED MORE THAN 30\"/>

**CLADDING VALUES**  
 PROVIDE POS. AND NEG. WALL & ROOF CLADDING DESIGN VALUES. PLANS MAY STATE THAT WALL CLADDING IS DESIGNED FOR 1 LB/SF OR GREATER POS. OR NEG. PRESSURE FOR HOUSES W/ MEAN ROOF HGT. OF 50 FT. OR LESS. ROOF VALUES BOTH POS. & NEG. SHALL BE DESIGNED AS FOLLOWS:  
 - 45 LBS/SF FOR ROOF PITCHES OF 0/12 TO 2.25/12  
 - 24 LBS/SF FOR ROOF PITCHES OF 2.25/12 TO 7/12  
 - 21 LBS/SF FOR ROOF PITCHES OF 7/12 TO 12/12  
 VALUES STATED ARE FOR ROOFS WITH A MEAN HGT. OF 50 FT. OR LESS. ROOFS W/ MEAN HGT. GREATER THAN 50 FT. MUST SHOW SPECIFIC INFORMATION FOR CLADDING.  
 MEAN ROOF HEIGHT: 18'-0"



**NOTES**



**DESIGN LOADS**  
This residence is based on the following code and loads. Client is responsible for any variations and/or applicable local requirements.

- Building codes
  - 2018 International Residential Code
  - Minimum Design Loads for Building and Other Structures, ASCE 7-2010.
- Roof Dead Load 15 PSF
- Roof Live Load 20 PSF
- Typical Floor Dead Load 10 PSF
- Floor Live Loads
  - Rooms other than sleeping rooms 40 PSF
  - Sleeping Rooms 20 PSF
  - Stairs 40 PSF
  - Decks 40 PSF
  - 60 PSF
- Wind Loads / Data
  - Ultimate Design Wind Speeds 115 MPH
  - Wind Importance Factor, I<sub>w</sub> 1.20
  - Exposure B
  - Halls (Component and Cladding) 25 PSF
  - Roofs (Component and Cladding) 25 PSF
  - Roof Slopes 2.25/12 to 1/12 54.8 PSF
  - Roof Slopes 1/12 to 1/12 21 PSF
- Seismic Loads / Data
  - Seismic Use Group O/TS
  - Spectral Response Coefficient, SDS 0.17g and 0.25g
  - Risk Class D
  - Seismic Importance Factor, I<sub>s</sub> 1.00
  - Seismic Design Category B

**FOUNDATIONS & CRANL SPACES**

- Foundations shall conform to the requirements of the Residential Building Code, Chapter 4. Should a conflict occur between these drawings and the aforementioned building code references the more stringent shall govern.
- The architect has not received a subsurface investigation. The foundation is based upon an assumed soil bearing capacity of 3000 psf not bearing. Verification of this assumed value is the responsibility of the owner or contractor should any adverse soil condition be encountered the architect must be contacted before proceeding.
- Foundations shall extend not less than 12 inches below the finished natural grade and in no case less than the frost depth. Foundation walls and assumed grade rest on earth pressures of 50 psf or less, unbraced fill and foundation wall construction shall conform to Table 404.1 of the Residential Building Code. This topography has not been provided to TightLines Designs. Report any unusual site conditions to TightLines Designs before construction.
- Any fill shall be placed under the direction or recommendation of a licensed professional engineer. The resulting soil shall be compacted to a minimum of 95 percent maximum dry density.
- Excavations for footings shall be lined temporarily with a 6 mil polyethylene if placement of concrete does not occur within 24 hours of excavation.
- No concrete shall be poured against any substrate containing water, ice, frost, or loose material.
- Enlarged perimeter footings are to be poured monolithically with wall footings. Reinforcement for wall footings, if any, shall not continue through column.
- Crawl space vents to be 8"x8" w/ min. 50% free air, and shall be located within 5' of each corner unless closed crawl space. Crawl space door may serve as vent.
- Install 6 mil vapor barrier below all slabs and on ground area within all excavations.
- Provide min. 18"x24" access panel or larger as required by the Mechanical Code when mechanical equipment is located in the crawlspace.
- Remove earth as required to achieve a minimum clearance from ground to underside of floor joists of 8".
- Provide foundation drains at all foundation walls. Coordinate location to daylight with owner.

**CONCRETE**

- Concrete shall have normal weight aggregate and a minimum compressive strength (f<sub>c</sub>) at 28 days as listed below.
  - Footings 3000 psi
  - Slabs-on-grade 4000 psi
  - Elevated Slabs 3500 psi
- Concrete shall be proportioned, mixed, and placed in accordance with ACI 308 latest edition "Building Code Requirements for Reinforced Concrete and ACI 309 latest edition "Specifications for Structural Concrete for Building".
- Reinforced air must be used in all concrete that will be exposed to freezing and thawing and deicing chemicals. Amount of air entrainment (percent) shall be in accordance with the following schedule with a range of +/- 1 to +/- 2 percentage points of the target value.
  - Footings 5%
  - Interior Slabs 0% see note below.
  - Exterior Slabs 5%
- Note: It is recommended that interior slabs to be given a smooth, dense, hard-finished finish not contain entrained air since blistering or delamination may occur. If slab will be exposed to deicing or other aggressive chemicals contact TightLines Designs for proper air entrainment requirements.
- No admixtures shall be added to any structural concrete without written permission of the architect.
- CONCRETE SLABS ON GRADE**
  - Concrete slabs on grade shall be constructed in accordance with ACI 302.1R-16 "Guide for Concrete Slab and Slab Construction".
  - The architect is not responsible for differential settlement, slab cracking or other future defects resulting from unrepaired concrete.
  - Control joints shall be spaced in slabs on grade at a maximum of 30'-0" O.C. unless noted otherwise.
  - Control joints shall be produced using conventional processes within 4 to 12 hours after the slab has been finished.
  - Reinforcing steel shall not extend through the control joint.
  - Any welded wire fabric for concrete slabs on grade shall be applied in flat sheets.
  - All welded wire fabric for concrete slabs on grade shall be placed 2" from top of slab. The WFF shall be securely supported during the concrete pour.

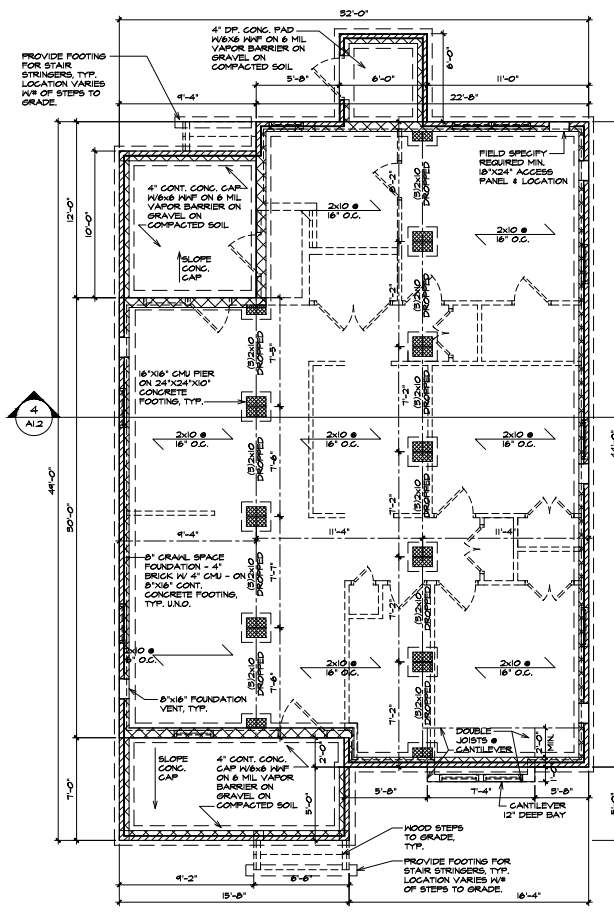
**FOUNDATION & FLOOR FRAMING NOTES**

- All dimensions structured from the outside edge of the thickened slab
- Install 6 mil vapor barrier below slab
- See sheet AU 4 AS1 for additional foundation & framing notes
- FLOOR FRAMING NOTES**
  - Floors shall be constructed in accordance with the requirements listed in the Residential Building Code Chapter 5.
  - Floors are designed for the uniformly distributed loads shown in the general structural notes. Special loading conditions must be reported to TightLines Designs. TightLines Designs is not responsible for floor defects resulting from unreported conditions.
  - S.P. denotes a point load from above. Provide solid blocking to foundation w/ the same number of studs as above. Provide solid blocking to foundation w/ the same number of studs as above.
  - Install double joists or see live load, diag. for support under parallel non load bearing partitions above top.
  - Floor sheathing shall be APA rated sheathing exposure 1 or 2, 5/8" T&G gird and attached to its supporting framing with 1-8d EC nail at 6" O.C. At panel edges and at 12" O.C. in panel field unless otherwise noted on the plans. Sheathing shall be applied perpendicular to framing. Panel and joints shall occur over framing.
  - Joists framing into the side of a girder shall be supported by a 2x2 ledger or by manifold, recommended hangers.
- FLOOR PLAN NOTES**
  - All interior walls shown @ 3 1/2" wide & exterior walls shown w/ sheathing @ 6" wide. All dimensions are drawn to face of stud at interior walls and to exterior sheathing on exterior walls.
  - All windows to have screens.
  - Provide plastic coated wire shelving w/ 1/8" steel rod in coat closet & bedroom closets, one (1) shelf in laundry closet & four (4) shelves in pantry.
  - See above for additional framing notes.

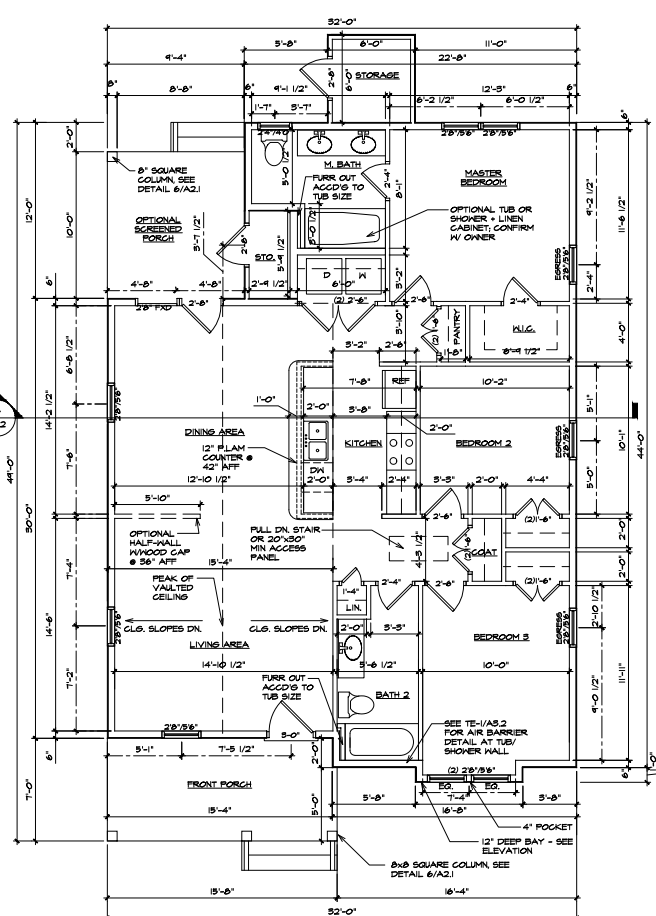


Carson II Mirrored  
1254 TOTAL HEATED SF  
104 SF FRONT PORCH

- GENERAL STRUCTURAL NOTES:**
- The structure is only stable in its completed form. The contractor shall provide all required temporary bracing during construction to stabilize the structure.
  - The architect is not responsible for construction sequences, methods, or techniques in connection with the construction of this structure. The architect will not be held responsible for the contractor's failure to conform to the construction documents, should any non-conformities occur.
  - Verification of assumed field conditions is not the responsibility of the architect. The contractor shall verify the field conditions for accuracy and report any discrepancies to TightLines Designs before construction begins.
  - This structure and all construction shall conform to all applicable sections of the residential code and any local laws where the structure is to be constructed.



FOUNDATION PLAN



FLOOR PLAN

THIS PLAN IS AUTHORIZED FOR THIS ADDRESS ONLY AND IS NOT TO BE USED FOR ANY ADDITIONAL ADDRESSES WITHOUT THE PURCHASE OF ADDITIONAL LICENSES OR WRITTEN AUTHORIZATION FROM TIGHTLINES:  
Single-Use License  
230 Cedar Avenue  
Knoxville, TN.

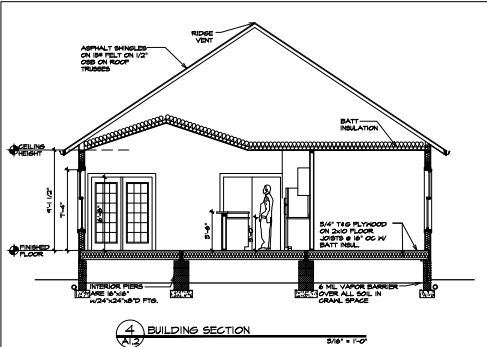


Carson II  
Mirrored

date	01.15.20
drafter	D.A.S.
checked by	C.L.B.
proj. no.	I-21015.1
revisions	date

Floorplan, Foundation Plan, Notes

A1.1



**TABLE 1001.1-1 MINIMUM DESIGN STRESSES**

Member	Species	Grade	Design Stress (ksi)	Design Stress (MPa)
1. Joists, Rafters, and Head Studs and Beams-Splice	Pine No. 2	1.2	1.8	12.4
		1.2	2.4	16.5
2. LVL or PSL	Pine No. 2	2.1	1.8	12.4
		2.1	2.4	16.5
3. Studs	Spruce Pine No. 2	2.1	1.8	12.4
		2.1	2.4	16.5
4. Beams	Pine No. 2	2.1	1.8	12.4
		2.1	2.4	16.5
5. Trusses	Pine No. 2	2.1	1.8	12.4
		2.1	2.4	16.5

**TIMBER**

1. Solid sawn wood framing shall conform to the specifications as listed in the National Forest Products Association "National Design Specification for Wood Construction" (latest edition (NDS)). The framing shall be of the species and grade as listed below.
  - 1.1. Joists, Rafters, and Head Studs and Beams-Splice Pine No. 2
  - 1.2. Studs Spruce Pine No. 2 or Stud Grade
2. LVL or PSL shall be the following minimum design stresses.
  - 2.1. E = 1.8 x 10<sup>6</sup> PSI
  - 2.2. F<sub>b</sub> = 2600 PSI
  - 2.3. F<sub>v</sub> = 285 PSI
  - 2.4. F<sub>c</sub> = 100 PSI
3. Lumber in contact with concrete, masonry, or earth shall be pressure treated in accordance with ANFA standard C-3. All other exposed timber shall be treated in accordance with ANFA standard C-2.
4. Nails shall be common wire nails unless otherwise noted.
5. Lag screws shall conform to ANSI / ASME standard B18.2.1-H-1. Lead holes for lag screws shall be in accordance with NDS specifications.
6. Beams containing multiple piles of lumber shall have each pile attached to its adjacent pile with 3 1/2" dia. bolts @ 12" O.C.
7. Truss plate become shall be attached w/ 1/2" through bolts at 24" O.C. staggered w/ (2) bolts 6" from each end.

**HALL FRAMING NOTES**

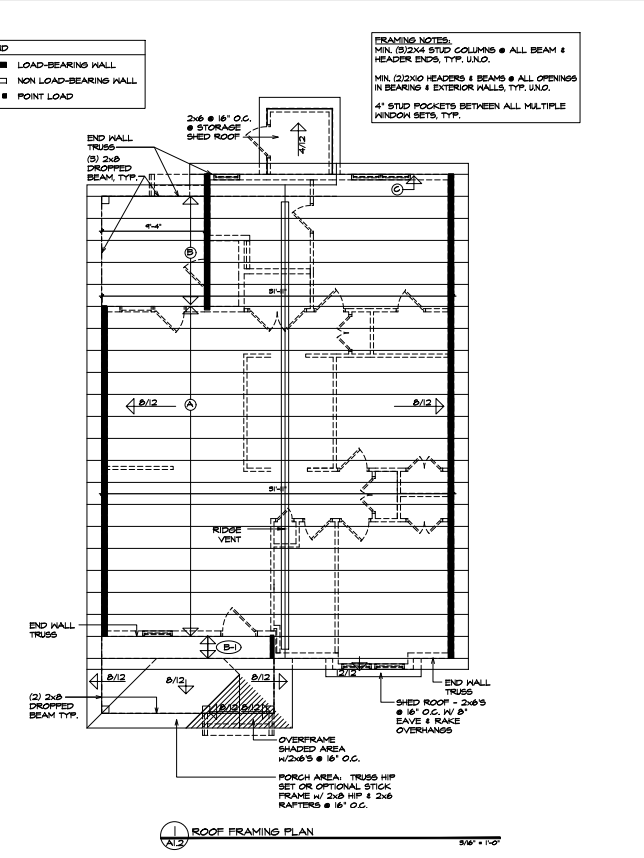
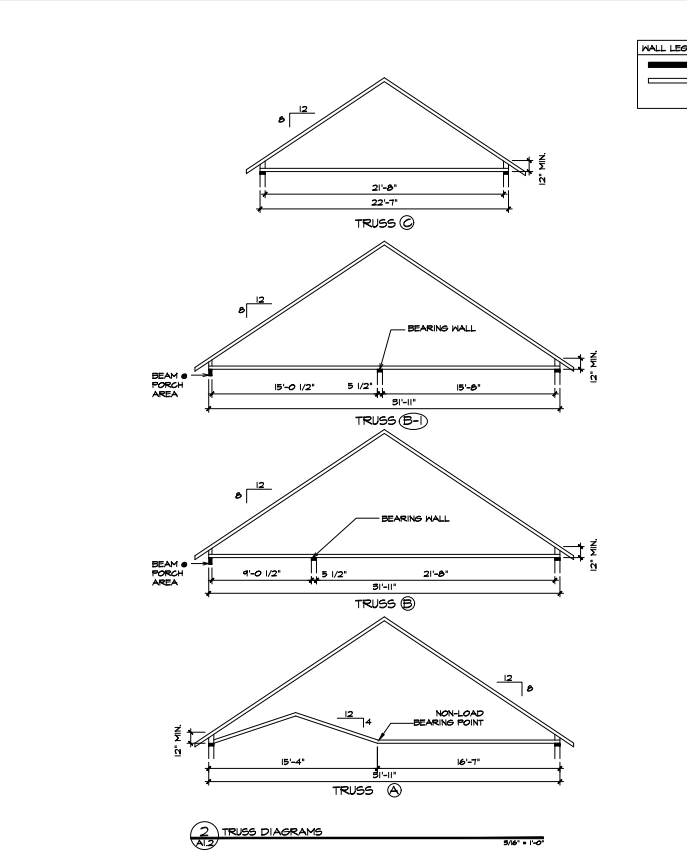
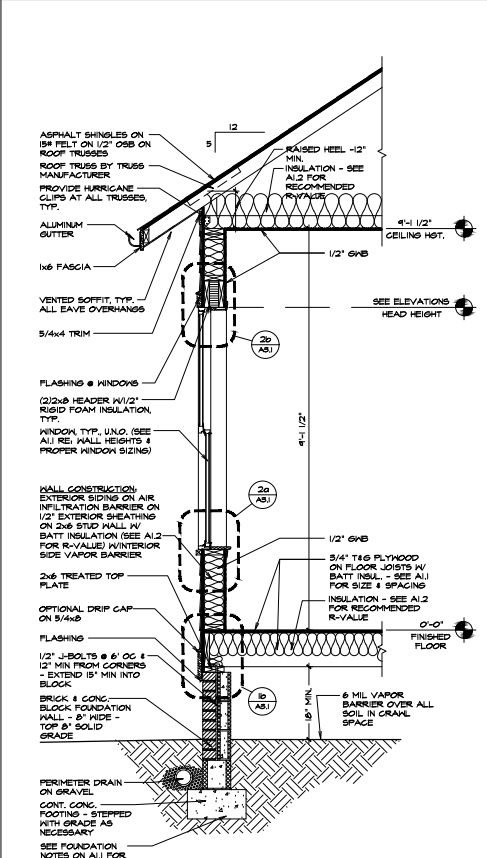
1. Unless otherwise noted on the plans, all framing is assumed to be standard wood framing. Framing shall comply with the requirements of the Residential Code Chapter 6. Should a conflict occur between these drawings and the aforementioned code references the more stringent shall govern.
2. Studs for wall framing shall consist of 2x nominal framing and be constructed in accordance with the requirements listed below. Studs listed in the following schedule shall have a maximum height of 10'-0".
 

Location	Stud Size	Grade	Spacing
2.1 Interior non-bearing walls	2x4	Stud	24" O.C.
2.2 Interior bearing walls	2x4	Stud	16" O.C.
2.3 Exterior walls	2x6 w/pt	no.2	16" O.C.
3. Studs shall be continuous from the same grade to the ceiling or roof. Studs shall only be discontinuous at beams / headers for windows or door openings. King studs shall be continuous with the same requirement as stud walls.
4. All headers at end openings and at bearing walls shall be (2) 2x6 (unless noted otherwise). Provide continuous king studs on each side of the jack studs, unless otherwise noted on the drawings provide jack studs in accordance with the following schedule.
 

Opening	No. of Jack Studs
4.1. less than 4'-0"	1 ea. End
4.2. 4'-1" to 6'-0"	2 ea. End
4.3. 6'-1" to 12'-0"	5 ea. End
4.4. over 12'-0"	4 ea. End, or see plans
5. All beam bearing on interior framing shall have full bearing for the width of the beam and supported by a minimum of three studs. Where beams bear on a wall parallel to the beam the beam shall have a minimum bearing length of 4'-0".
6. Individual studs forming a column shall be attached together with one 10d CC nail @ 6" O.C. staggered. The stud column shall be continuous to the foundation or beam. The column shall be properly blocked at all floor levels to ensure proper load transfer.
7. All exterior walls shall be sheathed per section R602.10.5 of the Residential Code. Wall sheathing shall be APA rated structural sheathing. Wall sheathing shall be attached to its supporting wall framing with 1x6 CC nail @ 6" O.C. At panel edges and 12" O.C. in panel field unless otherwise noted on the plans. Sheathing shall have a span rating consistent with the framing spacing. Apply air infiltration barrier over the sheathing as required by the Residential Code.

**ROOF FRAMING NOTES**

1. Unless otherwise noted on the plans, all framing is assumed to be standard wood framing. Framing shall comply with the requirements of the Residential Code Chapter 6.
2. Rafters are designed for the uniformly distributed loads shown in the general structural notes. Special loading conditions must be reported to TightLines Designs. TightLines Designs is not responsible for defects resulting from improper conditions.
3. Rafters shall be framed with roof trusses at 24" O.C. unless noted otherwise. Trusses shall be designed and/or reviewed by a licensed structural engineer.
4. All rafter and jack framing a 2x4 color (see beam) shall be provided every third set of rafters. They shall be placed in the upper third of the roof and attached to each rafter with 4x6 CC nails.
5. Proper roof drainage shall be maintained at all roof conditions.
  - 5.1. Rafters shall be sheathed with 5/8" APA rated structural sheathing exposure 1 or 2. Roof sheathing shall be continuous over the supports and attached to its supporting roof framing with 1x6 CC nail @ 6" O.C. At panel edges and 12" O.C. in panel field unless otherwise noted on the plans. Sheathing shall be applied perpendicular to framing. Sheathing shall have a span rating consistent with the framing spacing. Use suitable edge support by use of plywood clips or lumber blocking unless otherwise noted. Panel and joints shall occur over framing. Sheathing shall have a 1/8" gap at panel ends and edges as recommended in accordance with the APA.
  - 5.2. Apply battling felt over the sheathing as required by the Residential Code with two layers for slopes 2:12 to 4:12 and one layer for slopes 4:12.
  - 5.3. Install a Simpson HD24 Hurricane Tie at every connection between trusses and top plates.



**ROOF FRAMING NOTES**

1. ROOF PLAN AND PITCHES ARE INDICATED IN ROOF PLAN. REFER TO ENGINEERED TRUSS DRAWINGS FOR FINAL ROOF CONSTRUCTION.
2. PROVIDE TWO LAYERS 15# FELT UNDERLAYMENT FOR ROOFS 2:12 TO 4:12 AND ONE LAYER FOR ROOFS 4:12.

**TRUSS NOTES**

1. DIMENSIONS ARE OUTSIDE TO OUTSIDE OF STUDS.
2. THESE ARE DIAGRAMATIC TRUSS CONFIGURATIONS. REFER TO ENGINEERED TRUSS DRAWINGS FOR ALL FINAL TRUSS DIMENSIONS, LAYOUTS AND CONSTRUCTION NOTES.
3. ROOF TRUSSES TO BE ENGINEERED & ENGINEERED BY A LICENSED ENGINEER.
4. ALL TRUSS LOADS TO BEAR ON OUTSIDE WALLS ONLY UNTO.
5. COORDINATE TRUSS LAYOUT TO PROVIDE 20"x30" MIN ATTIC ACCESS PANEL OR FULL DOWN STAIR AT LOCATION INDICATED ON 1/A.I.

**OVERHANGS NOTES**

1. RECOMMENDED RAKE OVERHANGS: 1'-0"
2. RECOMMENDED EAVE OVERHANGS: 1'-4"

**ROOF VENT CALCULATIONS**

1212 SF ROOF AREA / 900 = 4.24 SF VENT REQUIRED  
 4.24 x 30% = 1.27 SF VENT REQD IN UPPER ROOF AREA

40 LF HORIZ. RIDGE VENT x .09 SF/LF = 3.6 SF VENT IN UPPER ROOF AREA

THIS PLAN IS AUTHORIZED FOR THIS ADDRESS ONLY AND IS NOT TO BE USED FOR ANY ADDITIONAL ADDRESSES WITHOUT THE PURCHASE OF ADDITIONAL LICENSES OR WRITTEN AUTHORIZATION FROM TIGHTLINES: Single-Use License 230 Cedar Avenue Knoxville, TN

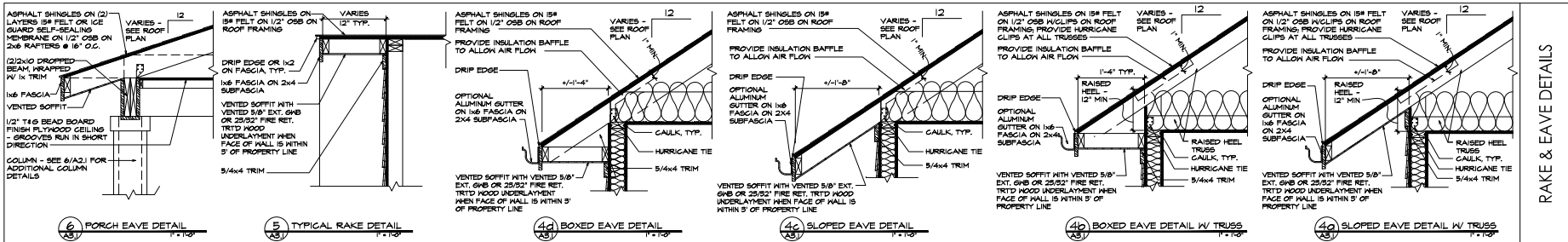


Carson II Mirrored

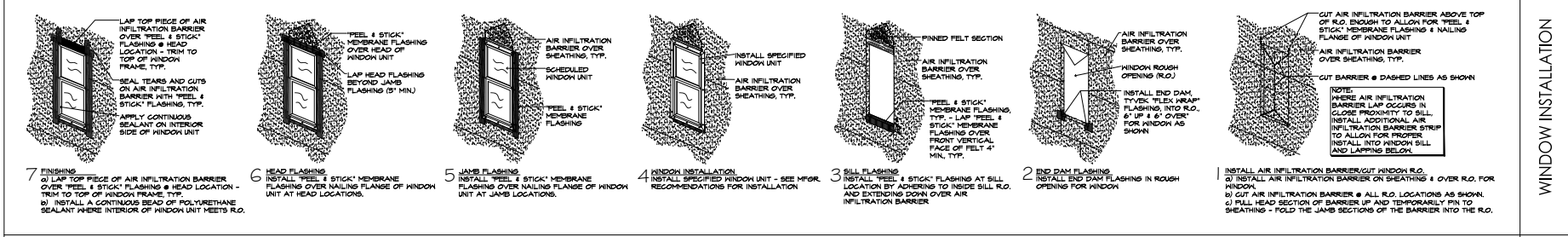
date 01.15.20  
 drafter D.A.S.  
 checked by C.L.B.  
 proj. no. I-21015.1  
 revisions date

Floor & Roof Framing, Trusses, Sections, & Insulation Notes

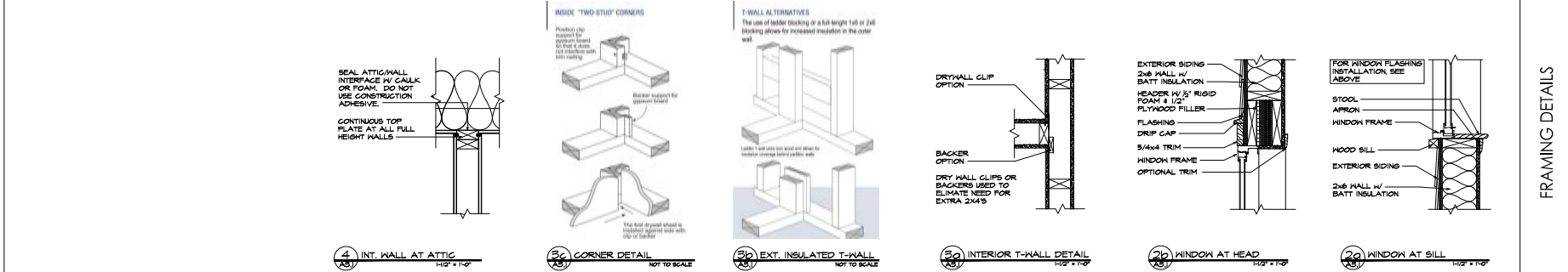
A1.2



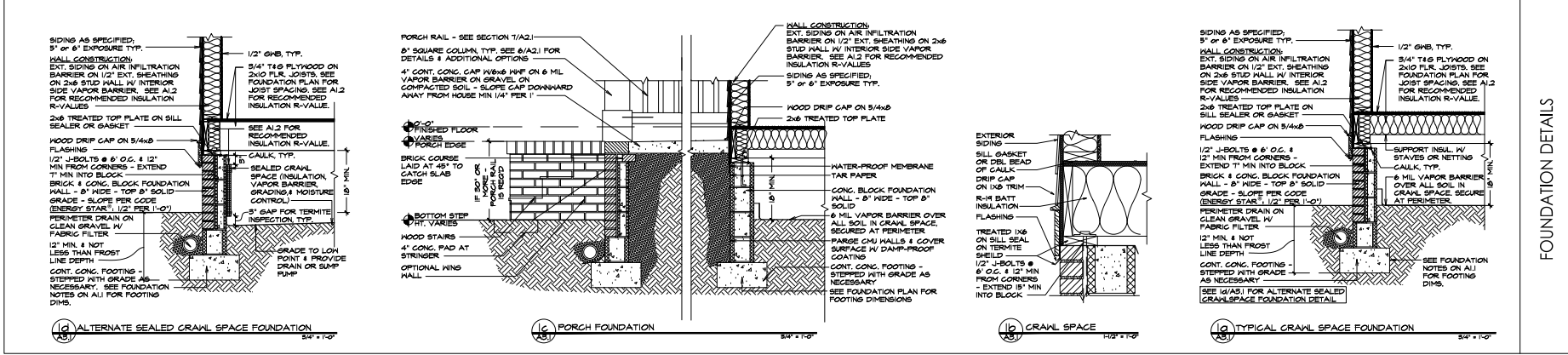
RAKE & EAVE DETAILS



WINDOW INSTALLATION



FRAMING DETAILS



FOUNDATION DETAILS

THIS PLAN IS AUTHORIZED FOR THIS ADDRESS ONLY AND IS NOT TO BE USED FOR ANY ADDITIONAL ADDRESSES WITHOUT THE PURCHASE OF ADDITIONAL LICENSES OR WRITTEN AUTHORIZATION FROM TIGHTLINES:  
 Single-Use License  
 230 Cedar Avenue  
 Knoxville, TN

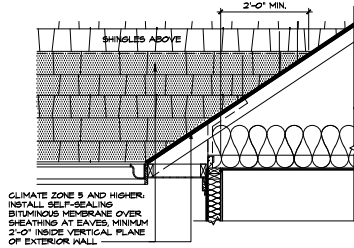
**TightLines Designs**  
 CONSTRUCTION DETAILS

**Construction Details**

date 01.15.21  
 drafter D.A.S.  
 checked by C.L.B.  
 proj. no. 1-21015.1

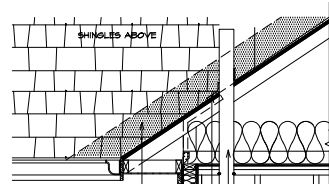
Foundation, Wall & Roof Framing Details

**A3.1**



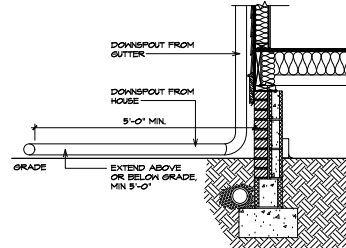
CLIMATE ZONE 5 AND HIGHER.  
INSTALL SELF-SEALING  
BITUMINOUS MEMBRANE OVER  
SHEATHING AT EAVES, MINIMUM  
2'-0" INSIDE VERTICAL PLANE  
OF EXTERIOR WALL.

**(M 2) BITUMINOUS MEMBRANE AT EAVES**  
AS 2.2 \*SEE AS 1 FOR TYPICAL RAKE & EAVE DETAILS\* 5/4" x 1/2"

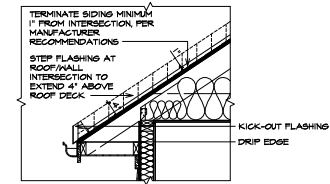


INSTALL SELF-SEALING  
BITUMINOUS MEMBRANE AT  
ALL VALLEY & ROOF  
DECK PENETRATIONS.  
CAULK OPENING PER  
TE 4/AS 2.

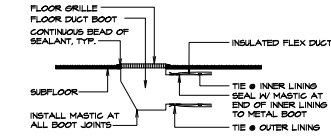
**(M 3) ROOF DECK PENETRATIONS**  
AS 2.2 \*SEE AS 1 FOR TYPICAL RAKE & EAVE DETAILS\* 5/4" x 1/2"



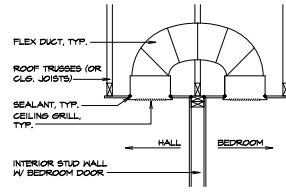
**(M 2) GUTTERS & DOWNSPOUTS**  
AS 2.2 \*SEE AS 1 FOR TYPICAL FOUNDATION DETAILS\* 5/4" x 1/2"



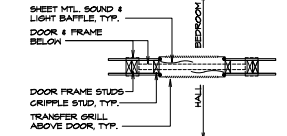
**(M 1) KICK-OUT FLASHING AT ROOF/HALL INTERSECTION**  
AS 2.2 \*SEE AS 1 FOR TYPICAL RAKE & EAVE DETAILS\* 5/4" x 1/2"



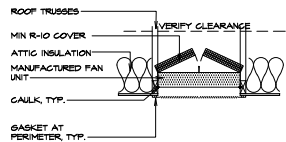
**(H 1) TYPICAL DUCT BOOT SEAL**  
5/4" x 1/2"



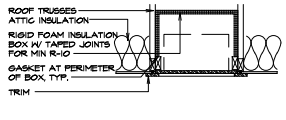
**(H 2) BEDROOM PRESSURE BALANCE: JUMPER DUCT**  
5/4" x 1/2"



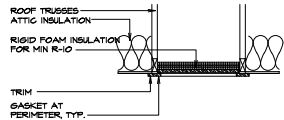
**(H 3) BEDROOM PRESSURE BALANCE: TRANSFER GRILLE**  
5/4" x 1/2"



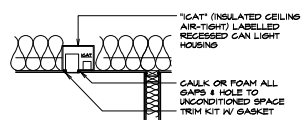
**(TE 2) TYPICAL WHOLE HOUSE FANS**  
5/4" x 1/2"



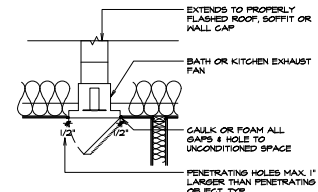
**(TE 6) TYPICAL ATTIC FULL-DOWN STAIRS**  
5/4" x 1/2"



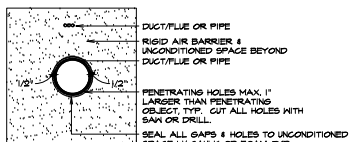
**(TE 7) TYPICAL ATTIC ACCESS PANEL**  
5/4" x 1/2"



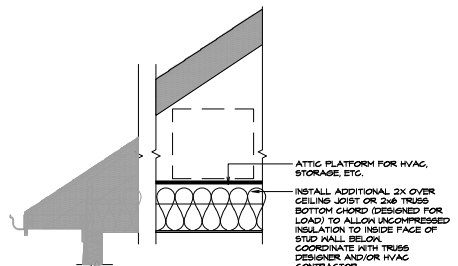
**(TE 8) TYPICAL ICAT RECESSED LIGHTING FIXTURES**  
5/4" x 1/2"



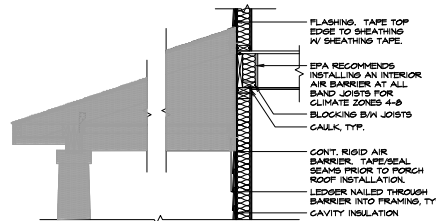
**(TE 3) TYPICAL BATH & KITCHEN EXHAUST FANS**  
5/4" x 1/2"



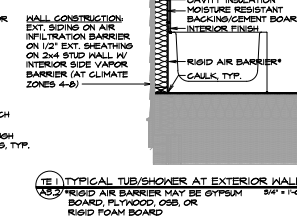
**(TE 4) TYPICAL PENETRATIONS TO UNCONDITIONED SPACE**  
5/4" x 1/2"



**(TE 5) TYPICAL INSULATION AT ATTIC PLATFORM**  
5/4" x 1/2"



**(TE 2) TYPICAL WALL ADJOINING PORCH ROOF**  
5/4" x 1/2"



**(TE 1) TYPICAL TUB/SHOWER AT EXTERIOR WALL**  
AS 2.2 RIGID AIR BARRIER MAY BE GYPSUM BOARD, PLYWOOD OSB, OR RIGID FOAM BOARD 5/4" x 1/2"

WATER MANAGEMENT

HVAC QUALITY

THERMAL ENCLOSURE

THIS PAGE CONTAINS ILLUSTRATED DETAILS THAT ARE REQUIRED FOR ENERGY STAR® CERTIFICATION AND ARE RECOMMENDED FOR THE CONSTRUCTION OF ANY TIGHTLINES HOUSE. THIS SHEET IS NOT A COMPREHENSIVE CHECKLIST FOR ANY CERTIFICATION PROCESS.

**TightLines Designs**  
Creating TightLines Houses

**ENERGY STAR®**  
Details

date 01.15.21  
drafter D.A.S.  
checked by C.L.B.  
proj. no. T-21015.1

ENERGY STAR®  
Details  
**A3.2**

# Green Opportunities

Green Opportunities is a collection of ideas for achieving more sustainable construction habits and a greener home. The italic text elaborates about the intent and its relationship to TightLines Designs. We highly recommend participation in a green certification program to ensure that your home conserves energy, natural resources, and maintains optimal indoor air quality. Take a look at the resources below to get started finding a certification program that is right for you.

### Green Certification Programs

Program	Intent	Website
National Association of Home Builders LEED for Homes	National Rating System for Energy, Resources, & Indoor Air Quality	<a href="http://www.nahbgreen.org/Guidelines/in%20standard%20.aspx">http://www.nahbgreen.org/Guidelines/in%20standard%20.aspx</a> <a href="http://www.greenhomeguide.org/">http://www.greenhomeguide.org/</a>
Enterprise Green Communities	Framework for developers to pursue green building in affordable multi- and single-family developments	<a href="http://www.greencommunitiesonline.org/">http://www.greencommunitiesonline.org/</a>
Earthcraft	Southeast Rating System for Energy, Resources, & Indoor Air Quality	<a href="http://www.earthcrafthouse.com/">http://www.earthcrafthouse.com/</a>
Greenbuilt	Statewide Rating System for Energy, Resources, & Indoor Air Quality	<a href="http://www.greenbuilt.org/">http://www.greenbuilt.org/</a>

### LOCATION

<p><b>Site Selection</b></p> <ul style="list-style-type: none"> <li>• Built above 100 year floodplain</li> <li>• Not built on habitat for threatened or endangered species</li> <li>• Not built within 100 ft of water, including wetlands</li> <li>• Not built on land that was public parkland prior to acquisition</li> <li>• Not built on land with prime soils, unique soils, or soils of state significance</li> </ul> <p><b>Preferred Locations</b></p> <ul style="list-style-type: none"> <li>• Edge Development</li> <li>• TOD</li> <li>• Previously Developed</li> <li>• Greyfields/Brownfield Site</li> </ul> <p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Existing Infrastructure</li> </ul> <p><b>Community Resources/Transit</b></p> <ul style="list-style-type: none"> <li>• Community Resources/Transit</li> </ul>	<p>Selecting an appropriate site is the first step in building a green home. The intent is to minimize the home's impact on the environment and to preserve significant species, open space, soil, or community amenities.</p> <p>Minimize site disturbance on- and off-site.</p> <p>Reduce the use of fossil fuels by building near shopping centers, parks/greenways, and mass transit systems.</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### SUSTAINABLE SITES

<p><b>Site Stewardship</b></p> <p><b>Erosion Controls During Construction</b></p> <ul style="list-style-type: none"> <li>• Stockpile and protect topsoil from erosion</li> <li>• Control the path and velocity of runoff with silt fencing or equivalent</li> <li>• Protect stream inlets, streams, and lakes with straw bales, silt fencing, etc.</li> <li>• Provide weaves to divert surface water from hillsides</li> <li>• Use ties, erosion blankets, compost blankets, etc. on sloped areas</li> </ul> <p><b>Minimize Disturbed Area of Site</b></p> <ul style="list-style-type: none"> <li>• Develop tree/plant preservation plan with "no-disturbance" zones</li> <li>• Rehabilitate silt/undo soil compaction and remove invasive plants</li> <li>• Maximize number of units per acre or build on smaller lot</li> </ul> <p><b>Landscaping</b></p> <p><b>Basic Landscaping Design</b></p> <ul style="list-style-type: none"> <li>• Use drought tolerant turf</li> <li>• Do not use turf in densely shaded areas</li> <li>• Do not use turf in areas with slope of 25%</li> <li>• Add mulch or soil amendments as appropriate</li> <li>• Till compacted soil to at least 6 inches</li> </ul> <p><b>Limit Conventional Turf</b></p> <p><b>Drought Tolerant Plants</b></p> <p><b>Reduce Overall Irrigation Demand</b></p> <p><b>Reduce Local Heat Island Effects</b></p> <p><b>Reduce Local Heat Island Effects</b></p> <ul style="list-style-type: none"> <li>• Locate trees/plantings to provide shade for hardscapes</li> <li>• Install light colored hardscapes</li> <li>• Do not use turf in areas with slope of 25%</li> </ul> <p><b>Storm Water Management</b></p> <p><b>Maximize Permeable Area of Lot</b></p> <ul style="list-style-type: none"> <li>• Vegetative landscape</li> <li>• Permeable paving</li> <li>• Impermeable surfaces directed to infiltration features</li> </ul> <p><b>Permanent Erosion Control Options</b></p> <ul style="list-style-type: none"> <li>• For portions of lot on steep slopes, use terracing and retaining walls</li> <li>• Plant trees, shrubs or groundcover</li> </ul> <p><b>Management of Runoff from Roof</b></p> <ul style="list-style-type: none"> <li>• Install permanent storm water controls to manage runoff from the home</li> <li>• Install vegetated roof</li> </ul>	<p>Preventing erosion aids in maintaining soil quality and prevents soil runoff that pollutes lakes and streams.</p> <p>Using water responsibly includes limiting the use of potable water for irrigation. This can be done by selecting drought-tolerant plants, limiting turf, and mulching.</p> <p>The heat island effect occurs when areas experience unnaturally elevated temperatures that are caused by increased heat retention in man-made materials such as dark roofs or asphalt. Heat islands affect human comfort and wildlife patterns. Heat islands can be avoided by selecting light colored building materials or shading heat retaining materials.</p> <p>Runoff from hard surfaces washes pollutants directly into water systems that are used to yield food or drinking water to residents. Also, it is important that soils retain rainwater to naturally irrigate landscapes.</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### WATER EFFICIENCY

<p><b>Water Reuse</b></p> <p><b>Rainwater Harvesting System</b></p> <p><b>Graywater Reuse System</b></p> <p><b>Use of Municipal Recycled Water System</b></p> <p><b>Irrigation System</b></p> <p><b>High-Efficiency Irrigation System</b></p> <ul style="list-style-type: none"> <li>• Irrigation system designed by EPA Water Sense certified professional</li> <li>• Irrigation system with head-to-head coverage</li> <li>• Install central shut-off valve</li> <li>• Install sub-meter for the irrigation system</li> <li>• Use drip irrigation for planting beds</li> <li>• Create separate zones for each type of bedding</li> <li>• Install timer or controller for each watering zone</li> <li>• Install pressure-regulating devices</li> <li>• High-efficiency nozzles with distribution uniformity of at least 0.70</li> <li>• Check valves in heads</li> <li>• Install moisture sensor or rain delay controller</li> </ul> <p><b>Reduce Overall Irrigation Demand</b></p> <p><b>Indoor Water Use</b></p> <p><b>High-Efficiency Fixtures and Fittings</b></p> <ul style="list-style-type: none"> <li>• Average flow rate of lavatory faucets is ≤ 2.0 gpm</li> <li>• Average flow rate for all showers is ≤ 2.0 gpm per stall</li> <li>• Average flow rate for all toilets is ≤ 1.3 gpm</li> <li>• gpf, or toilets are dual flush or toilets must meet the EPA Water Sense specification</li> </ul>	<p>Rain barrels are a simple and inexpensive way to collect rainwater from your home's roof for irrigation use.</p> <p>For example: flushing your toilet or irrigating your lawn with kitchen, laundry, or laundry water.</p> <p>For example: using non-potable water for car washing or irrigation.</p> <p>If irrigation is desired, installing an efficient system is the responsible solution.</p> <p>Availability of drinking water is becoming a growing concern for communities across the United States. Do your part to reduce wasteful water use and ensure ample resources for future generations.</p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### ENERGY & ATMOSPHERE

<p><b>Optimize Energy Performance</b></p> <p><b>Performance of ENERGY STAR® for Homes</b></p> <p><b>Exceptional Energy Performance</b></p> <p><b>Water Heating</b></p> <ul style="list-style-type: none"> <li>• Efficient hot water distribution system options</li> <li>• Structured plumbing system</li> <li>• Central manifold distribution system</li> <li>• Compact design of conventional system</li> </ul> <p><b>Pipe Insulation</b></p> <p><b>Refrigerant Management</b></p> <p><b>Refrigerant Charge Test</b></p> <p><b>Appropriate HVAC Refrigerant Options</b></p> <ul style="list-style-type: none"> <li>• Use no refrigerants</li> <li>• Use non-HCFC refrigerants</li> <li>• Use refrigerants that comply with global warming potential equation</li> </ul>	<p>See sheet A3.2 for ENERGY STAR® Details.</p> <p>Contact a Certified Energy Rater to learn more about the opportunities to increase energy performance. Often energy performance is an excellent investment due to a short pay-back period. Find a Certified Energy Rater at <a href="http://www.nrel.gov/">http://www.nrel.gov/</a></p>
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### MATERIALS & RESOURCES

<p><b>Material Efficient Framing</b></p> <p><b>Framing Efficiency Options</b></p> <ul style="list-style-type: none"> <li>• Precut framing packages</li> <li>• Open-web floor trusses</li> <li>• Structural insulated panel walls</li> <li>• Structural insulated panel roof</li> <li>• Structural insulated panel floors</li> <li>• Stud spacing greater than 16" on center</li> <li>• Ceiling joist spacing greater than 16" on center</li> <li>• Floor joist spacing greater than 16" on center</li> <li>• Roof rafter spacing greater than 16" on center</li> <li>• Size headers for loads; ladder blocking; drywall clips; 2-stud corners</li> </ul> <p><b>Off-site Fabrication Options</b></p> <ul style="list-style-type: none"> <li>• Panelized construction</li> <li>• Modular, prefabricated construction</li> </ul> <p><b>Environmentally Preferable Products</b></p> <p><b>Wood Products</b></p> <ul style="list-style-type: none"> <li>• Use non-tropical wood</li> <li>• Use reclaimed wood</li> <li>• FSC (Forest Stewardship Council) Certified Tropical Wood</li> </ul> <p><b>Environmentally Preferable Products</b></p> <ul style="list-style-type: none"> <li>• Low emission</li> <li>• Produced locally</li> </ul> <p><b>Waste Management</b></p> <p><b>Construction Waste Management Planning</b></p> <ul style="list-style-type: none"> <li>• Determine where waste can be diverted for reuse or recycling</li> <li>• Identify vendor that can sort and divert waste from landfill</li> </ul> <p><b>Construction Waste Reduction</b></p> <ul style="list-style-type: none"> <li>• Document amount of waste diverted from landfill</li> </ul> <p><b>Designated cutting area</b></p> <p><b>On-site recycling</b></p>	<p>Framing Efficiency refers to efficient use of materials and the ability to insulate properly to allow for energy efficiency within the home.</p> <p>TightLines Designs feature open web floor trusses (2-story homes) and roof trusses (all homes excluding 1.5-story). See sheet A3.1 for ladder blocking, drywall clips, and 2-stud corner diagrams.</p> <p>Having a designated cutting area discourages wasteful practices. Example: if blocking is needed, blocking can be gathered from the scraps in the cutting area, rather than cutting a long board into small pieces.</p> <p>On-site recycling for plastic and aluminum drink bottles keeps the project green throughout the construction phase.</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### INDOOR ENVIRONMENTAL QUALITY

<p><b>ENERGY STAR with Indoor Air Plus</b></p> <p>ENERGY STAR with Indoor Air Plus</p> <p><b>Combustion Venting</b></p> <p><b>Basic Combustion Venting Measures</b></p> <ul style="list-style-type: none"> <li>• No unvented combustion appliances</li> <li>• Carbon monoxide monitors on each floor</li> <li>• No fireplace installed</li> <li>• Space, water heating equipment designed with closed combustion, power-vented exhaust, or located in open-air facility</li> </ul> <p><b>Moisture Control</b></p> <p><b>Moisture Load Control Options</b></p> <ul style="list-style-type: none"> <li>• Additional dehumidification system</li> <li>• Central HVAC system equipped with additional dehumidification mode</li> </ul> <p><b>Outdoor Air Ventilation</b></p> <ul style="list-style-type: none"> <li>• Outdoor Air Ventilation</li> </ul> <p><b>Local Exhaust</b></p> <p><b>Basic Local Exhaust</b></p> <ul style="list-style-type: none"> <li>• Bathroom and kitchen exhaust meets ASHRAE Std. 62.2 air flow requirement</li> <li>• Fans and ducts designed and installed to ASHRAE Std. 62.2</li> <li>• Air exhausted to outdoors</li> <li>• ENERGY STAR labeled bathroom exhaust fans</li> </ul> <p><b>Enhanced Local Exhaust Options</b></p> <ul style="list-style-type: none"> <li>• Occupancy sensor</li> <li>• Automatic humidistat controller</li> <li>• Automatic timer tied to switch</li> <li>• Continuously operating exhaust fan</li> </ul> <p><b>Distribution of Space Heating and Cooling</b></p> <p><b>Room by Room Local Calculations</b></p> <p><b>Return Air Flow/Room-by-Room Controls Options</b></p> <p><b>Forced Air Systems</b></p> <ul style="list-style-type: none"> <li>• Return air opening of 1 sq. inch per cfm of supply</li> <li>• Limited pressure differential between closed room and adjacent spaces</li> </ul> <p><b>Nonducted HVAC Systems</b></p> <ul style="list-style-type: none"> <li>• Flow control valves on every radiator</li> </ul> <p><b>Third Party Performance Test/Multiple Zones</b></p> <p><b>Forced Air Systems</b></p> <ul style="list-style-type: none"> <li>• Have supply air flow rates in each room tested and confirmed</li> <li>• Nonducted HVAC Systems</li> <li>• Install at least two distinct zones with independent thermostat control</li> </ul> <p><b>Air Filtering</b></p> <p><b>Higher Quality Air Filters</b></p> <p>A simple option to remove dust and pollutants from indoor air.</p> <p><b>Contaminant Control</b></p> <p><b>Indoor Contaminant Control during Construction</b></p> <p><b>Indoor Contaminant Control</b></p> <ul style="list-style-type: none"> <li>• Design and install permanent walk-off mats at each entry</li> <li>• Design shoe removal and storage space near primary entryway</li> <li>• Install central vacuum system with exhaust to outdoors</li> </ul> <p><b>Pre-occupancy Flush</b></p> <p><b>Radon Protection</b></p> <p><b>Radon-Resistant Construction</b></p> <p><b>Radon Testing</b></p> <p><b>Garage Pollutant Protection</b></p> <p><b>No HVAC in Garage</b></p> <p><b>Minimize Pollutants from Garage</b></p> <ul style="list-style-type: none"> <li>• Seal all penetrations and connecting floor and ceiling joint bays</li> <li>• Paint walls and ceilings of shared walls, including garage</li> <li>• Weather-strip all doors leading into home</li> <li>• Carbon monoxide detectors in rooms that share a door with garage</li> <li>• Seal all penetrations and cracks at the base of walls</li> </ul> <p><b>Exhaust Fan in Garage</b></p> <ul style="list-style-type: none"> <li>• Fan runs continuously</li> <li>• Fan designed with automatic timer control</li> </ul> <p><b>Detached Garage or No Garage</b></p> <p>With a TightLines Design, you can often receive green certification points for not having a garage.</p>	<p>Simple steps to ensure healthy indoor air can make a tremendous difference in the health of your family. Visit <a href="http://www.energystar.gov/indoorairplus">http://www.energystar.gov/indoorairplus</a> for more information.</p> <p>Properly venting and monitoring combustion devices ensures the safety of homeowners from fire and carbon monoxide poisoning.</p> <p>Provide additional fresh air into the home with enhanced outdoor air ventilation.</p> <p>Amplify exhausting damp kitchen and bath air from the home prevents the opportunity for mold and mildew growth.</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

THIS PAGE CONTAINS A LIST OF SUGGESTIONS THAT TIGHTLINES DESIGNS BELIEVES WILL BE BENEFICIAL IN THE CONSTRUCTION OF A TIGHTLINES HOUSE. THIS IS NOT INTENDED AS A SPECIFICATION SHEET, NOR IS IT A COMPREHENSIVE CHECK LIST FOR ANY CERTIFICATION PROCESS.



Green Opportunities

date 01.15.21  
 drafted D.A.S.  
 checked by C.L.B.  
 proj. no. T-21015.1  
 -- --

"Green" Opportunities

G1