DESIGN LOADS:

1) Design loads are all dead loads plus:
   - A) Sleeping rooms.....30 PSF
   - B) All other floors.....40 PSF
   - C) Balconies.....60 PSF
   - D) Attic floor live loading with the following:
     - I) Area accessible by stairs...30 PSF
     - II) Roof slopes > 3:12.....20 PSF
     - III) Roof slopes < 3:12.....10 PSF
   - E) Roof live load.....20 PSF or as required by code
   - F) Wind load.....90 MPH or as required by code
   - G) Snow load.....20 PSF or as required by code

2) All designs are in accordance with NORTH Carolina Residential Code, 2012 Edition and the International Residential Code. Refer to the relevant Code for any additional information not covered in these notes or the design.

3) Engineering design is for structural information only. Engineer of Record does not accept responsibility for dimensional errors, architectural errors, detailing of the waterproofing, plumbing, electrical, or mechanical information or any part of the plan not relevant to the structural information.

RESIDENTIAL FOUNDATIONS:

1) All continuous wall footings are 10"x18" for one-story, 10"x20" for two-story houses unless noted otherwise. Footings for three-story walls shall be 12"x24" unless otherwise noted. Reinforcing is as noted on the plans. Rebar is required on any compacted fill regardless of compaction.

2) All interior piers are 8"x16" CMU up to a maximum height of 32". All piers over 32" high must be filled with Type "S" mortar. Maximum height for 8"x16" filled pier is 6'-8". Piers larger than 8"x16" are noted on plans and must be filled with Type "S" mortar. For one-story structures, pier caps are to be 4" solid masonry. For two-story structures, pier caps are to be 8" of solid masonry.

3) Footings for the 8"x16" piers are 24"x36"x10" unless noted otherwise. Reinforcing is to be as noted on plan.

4) Interior thickened slab footings which occur in basements and "slab on grade" floors are 10" deep by 18" wide with (2)-#4 reinforcing bars running continuously unless noted otherwise. Thickened footings are required under all bearing walls.

5) All rebar splices shall be a minimum of 2'-0" unless otherwise noted.

6) Shallow foundations are designed for an assumed soil bearing capacity of 2,000 psf. The contractor is responsible for notifying the Engineer of Record if any soils are found to be unsuitable for this bearing capacity. The contractor is responsible for obtaining soil testing to ensure that the bearing capacity of the soil meets or exceeds this value. All fill is to be compacted to 95% density as measured by the Standard Proctor Test (ASTM D-1557).

7) All soil and fill under floors and/or within or under buildings shall have pre-construction soil treatment for protection against termites. Certification of Compliance shall be issued to the Building Department by a licensed pest control company.

8) All footing excavations shall be neat, straight, and level in the proper elevations to receive the concrete. Excessive variations in the dimensions of footings or slabs will not be permitted. Reinforcing steel and mesh shall be accurately placed and supported to maintain their position during the concrete pouring. Edge forms shall be used for concrete that will be exposed.

9) All slab penetration are to be the responsibility of the contractor. Penetration interfering with reinforcing shall be approved by the Engineer of Record prior to the placement of concrete.

10) Elevation difference between the bottom of adjacent footings shall be less than their horizontal distance apart in feet. Differential heights between footings can become excessive usually where a pier footing in a crawlspace or garage footing is next to a basement wall footing.

STEEL GENERAL NOTES:

1)All steel wide flange beams shall conform to ASTM A572 having a minimum yield stress of 50,000 psi = 50 ksi (kips per square inch, 1 kip = 1,000 pounds)

2)All steel pipes shall be Schedule 40 or better with a minimum yield stress of 35,000 psi = 35 ksi

3)All steel tubes shall conform to ASTM A500, Grade B, having a minimum yield stress of 46000 psi = 46 ksi

4)All other shapes not listed above shall conform to ASTM A36 having a minimum yield stress of 36,000 psi = 36 ksi.

5)Unless otherwise noted, all welds shall be fillet type with a minimum 3/16" leg. Welding electrodes shall be E10xx type having a minimum yield strength of 70,000 psi = 70 ksi. Welding work and materials shall conform to the American Welding Society Welding Code (AWS D.1).

6)Bolted connections shall include high strength bolts conforming to ASTM A325. Foundation anchor bolts or tie rods shall conform to ASTM A 36 having a minimum yield strength of 36,000 psi = 36 ksi.

FRAMING CONSTRUCTION - OTHER THAN ROOF:

1)See Table R602.3(1) of the Code for a fastener schedule for structural members.

2)Wood beams shall be supported by metal hangers of adequate capacity where framing into beams or ledgers. The allowable load capacity of the hanger shall be equal to or greater than the load specified on the plan. Where no load is specified, the lightest available hanger for the application is acceptable.

3)Crawl space perimeter band with 4" curtain wall and pier construction wall shall be (2)-2x10 Southern Yellow Pine #2 unless noted otherwise. Maximum clear spans are to be 4'-8" (6'-0" o.c. spacing of piers).

4)Masonry lintels:

A)For spans up to 6': Use 3 1/2" x 3 1/2" x 1/4" steel angles

B)For spans 6' up to 10': Use 5" x 3 1/2" x 5/16" steel angles

C)For spans 10' up to 18': Use 6"x 4"x 5/16" steel angle fastened to wood header w/ 1/2" diameter x 4" lag screws at 12" O.C. Extend angle 6" past opening to bear on masonry veneer at ends.

D)Temporarily support the steel angles before laying masonry. The shoring may be removed five days following the installation of masonry.

E)When structural steel beams with bottom plates are used to support masonry, the bottom plate must extend the full length of the steel beam. This provides support to the ends of the plate by bearing on the adjacent masonry jambs. The beam should be temporarily shored prior to laying the masonry. The shoring may be removed five days after laying the masonry.

5)All brick veneer over lower roofs (brick climbs) must have a structural angle lag screwed to an adjacent stud wall in accordance with detail, with steel brick stops to prevent sliding of brick.

6)All rafter braces must have (two) studs from plate though all floors to the foundation or supporting beam below. No braces shall be attached to top wall plate without studs directly under them.

7)All wood I-joists and open joists must be braced in accordance with the manufacturers directions plus details shown on plans. Load-bearing partitions, jacks, beams, and column supports must be solid blocked though floor. Trusses and plywood shall not carry concentrated point loads.

All point loads must be carried to foundations with adequate blocking and/or beams.

8)All steel columns shall bear on concrete, masonry, or steel only. Beams that bear on top of steel columns shall be welded to the column. Where steel columns bear on concrete or masonry, unless otherwise noted, a 5/8" x 6 1/2" x 6 1/2" base plate shall be used to spread the column load across the bearing surface. Base plates shall be bolted with (4)-1/2" diameter anchor bolts or expansion bolts to concrete or masonry.

9)Unless noted otherwise on the plans, all exterior facing stud walls taller than 10' shall be constructed as follows:

A)Walls 10' to 12' high:

Balloon frame 2x4 studs at 12" o.c. with 1/2" OSB sheathing and (3) king studs on each side of each opening nailed securely to the header.

B)Walls 12' to 20' high:

Balloon frame 2x6 studs at 16" o.c. (1/2" OSB sheathing required for wall heights > 17'). Provide (2)-1 3/4" x 3 1/4" LVL king studs on each side of openings 3' to 6' wide and (2)-2x6 king studs for openings less than 3' wide. Fasten king studs securely to all headers with a minimum of (12)-16d nails or (4)-3/8" diameter lag screws embedded a minimum of 4" into the header.

C)Gable end walls of rooms with vaulted ceiling joists:

Balloon frame wall and provide triple king studs on each side of openings, nailed securely to the header.

NOTE: SEE SPECIAL DESIGN OR ENGINEER FOR WALLS TALLER THAN 20' WHEN OPENINGS IN HIGH WALLS EXCEED 6' IN WIDTH, OR IF THE WALL CANNOT BE CONSTRUCTED USING ANY OF THE METHODS MENTIONED.

10)Continuous 2x6 bridging shall be nailed to diagonal or vertical web members of all open-web floor trusses over 10' long. They shall be installed near mid-span as a load distribution member. If the 2x6 bridging is not continuous, lap ends of bridging on truss space.

SECTION R408

UNDER-FLOOR SPACE

R408.1 Ventilation. The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement or cellar) shall be provided with ventilation openings through foundation walls or exterior walls. The minimum net area of ventilation openings shall not be less than 1 square foot for each 150 square feet (0.67 m2 for each 100 m2) of under-floor space area. One such ventilating opening shall be within 3 feet (914mm) of each corner of said building.

R408.2 Openings for under-floor ventilation. The minimum net area of ventilation openings shall not be less than 1 square foot (0.0929 m2) for each 150 square feet (100 m2) of underfloor space area. One such ventilating opening shall be within 3 feet (914 mm) of each corner of the building. Ventilation openings shall be covered for their height and width with any of the following materials provided that the least dimension of the covering shall not exceed ¼ inch (6.4 mm):

1. Perforated sheet metal plates not less than 0.070 inch (1.8 mm) thick.
2. Expanded sheet plates not less than 0.047 inch (1.2 mm) thick
3. Cast iron grille or grating.
4. Extruded load-bearing brick vents.
5. Hardware cloth of 0.035 inch (.89 mm) wire or heavier.
6. Corrosion-resistant wire mesh, with the least dimension being 1/8 inch (3.2 mm)

Exceptions:

1. Where warranted by climatic conditions, ventilation openings to the outdoors are not required if ventilation openings to the interior are provided.
2. The total area of ventilation openings may not be reduced to 1/1,500 of the under-floor area where the ground surface is treated with an approved vapor retarder material and the required openings are placed so as to provide cross-ventilation of the space. The installation of operable louvers shall not be prohibited.
3. Under-floor spaces used as supply plenums for distribution of heated or cooled air shall comply with the requirements of the North Carolina Mechanical Code.
4. Ventilation openings are not required where continuously operated mechanical ventilation is provided at a rate of 1.0 cfm (10 m2) for each 50 square feet (1.02 L/s) of underfloor space floor area and ground surface is covered with an approved vapor retarder material.
5. Ventilation openings are not required when ground surface is covered with an approved vapor retarder material, the space is supplied with conditioned air and the perimeter walls are insulated in accordance with Section N1102.1.7.

R408.3 Access. An access opening 18 inches by 24 inches (457mm by 610 mm) shall be provided to the under-floor space. See the North Carolina Mechanical Code for access requirements where mechanical equipment is located under floors.

11)Lower stud walls for buildings over two stories, but not more than three stories:

A)Interior walls

I)Load bearing.....2x4 @ 12" o.c.

II)Non load bearing.....2x4 @ 16" o.c.

B)Exterior walls

Use 2x6 @ 16" o.c. with 1/2" x 4' x 8' plywood sheathing at all corners and every 25': or use 2x4 @ 12" o.c. w/ 1/2: plywood sheathing solid on walls.

12)Headers shall be as shown unless noted differently on plans:

A)Interior & Exterior

I)Spans up to 2'-6".....2-2x6's

II)Spans2'-6" up to 3'-6".....2-2x8's

III)Spans 3'-6" to 6'-6".....2-2x10's

IV)Spans 6'-6" or more.....See plan

B)Headers wider than 5' shall have a minimum of three king studs on each side unless noted otherwise.

13)When ceiling joists are parallel to an exterior wall, tie the rafters near the top plate to the ceiling joists with a 2x6 strongback, a minimum of 6' long at 4' o.c. across the top of the ceiling joists. 2x4 rafter ties shall be fastened to the side of the rafter and the strongback.

14)At all exterior diagonal wall panels, each panel shall be nailed to each adjacent panel with (5)-16d nails or tied together with metal strapping nailed at four locations between floors with a minimum of (2)-16d nails into each panel at each strap. This will avoid vertical cracking in panel joints due to horizontal oscillating panels.

15)NOTE: ALL POINT LOADS FROM ROOF BRACES, JACK STUDS, BEAM SUPPORTS-WHETHER WOOD OR STEEL - CANNOT BEAR ON SHEATHING ALONE. BLOCKING EQUAL TO OR BETTER THAN THE POINT LOAD SUPPORTS ABOVE MUST BE CARRIED THROUGH ALL CONSTRUCTION TO THE FOUNDATION.

16)Unless otherwise detailed, all stick-built "false chimneys" shall be constructed with 2x4 studs at 12" o.c. balloon-framed from attic ceiling or floor. Fasten 15/32" CDX plywood on all sides of the chimney along the full length of the studs. Fasten each stud to the supporting beam or ceiling joist with a 1 1/2" x 24", 18-gauge metal strap, or a similar connector.

ROOF CONSTRUCTION:

1)All roof trusses must be built in accordance with truss manufacturers requirements. Tie-down connections to resist uplift shall be installed where required. When roof truss manufacturers do not provide the required connectors, it is the responsibility of the contractor to notify the roof truss engineer or the Engineer of Record to provide an adequate connector.

2)Rafters shall be 2x6 @ 16" o.c. Spruce-pine-fir #2 for shingles except as noted. They are to be cut into hips, ridges, etc., unless noted otherwise.

3)Collar ties shall be 2x6 @ 48" o.c. at all ridges unless noted otherwise and located a nominal 3" below the ridge. Vaulted ceilings require special collar tie or ridge beam details. See the end of Table R802.5.1 in the Code unless otherwise noted detail is on the plan.

4) A minimum of three collar ties shall be used at all ridges even if two ties must be put on one set of rafters.

5)All hips and ridges are a size larger than rafters unless noted otherwise.

6)All hogs on ceiling joists or rafters are 12' long 2x6 unless noted otherwise. Rafters may be spliced over hogs. Splice rafter hogs only at a roof brace.

7)Gable end framing must be braced parallel to ridges with a minimum of 2x6 diag. braces at 6' o.c. along the gable wall to interior ceiling joists. Braces to bear on 2x6 hogs and to the gable wall at approximately 45 degrees. Other bracing may be used with the design engineer's approval.

8)Ceiling joists when erected parallel to rafters must be sistered to rafters and nailed with (3)-16d nails at each rafter. If a kneewall is used and ceiling joists cannot touch rafters, then rafters must be tied to the ceiling joists using 2x4 or 1x6 rafter ties spaced no more than 48" o.c.

NORTH CAROLINA PROFESSIONAL SEAL 29249 ENGINEER KEVIN P. MUNSON
10/11/12

NORTH CAROLINA RESIDENTIAL STRUCTURES PC No. 3295 CERTIFICATE OF AUTHORIZATION

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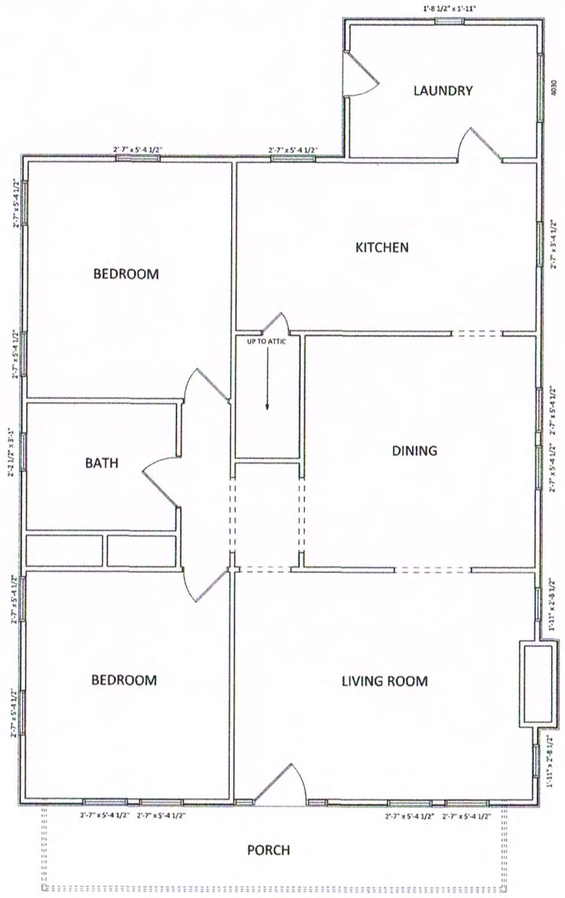
TYLER & ASHLEY CONNER ADDITION

GENERAL NOTES

SHEET G



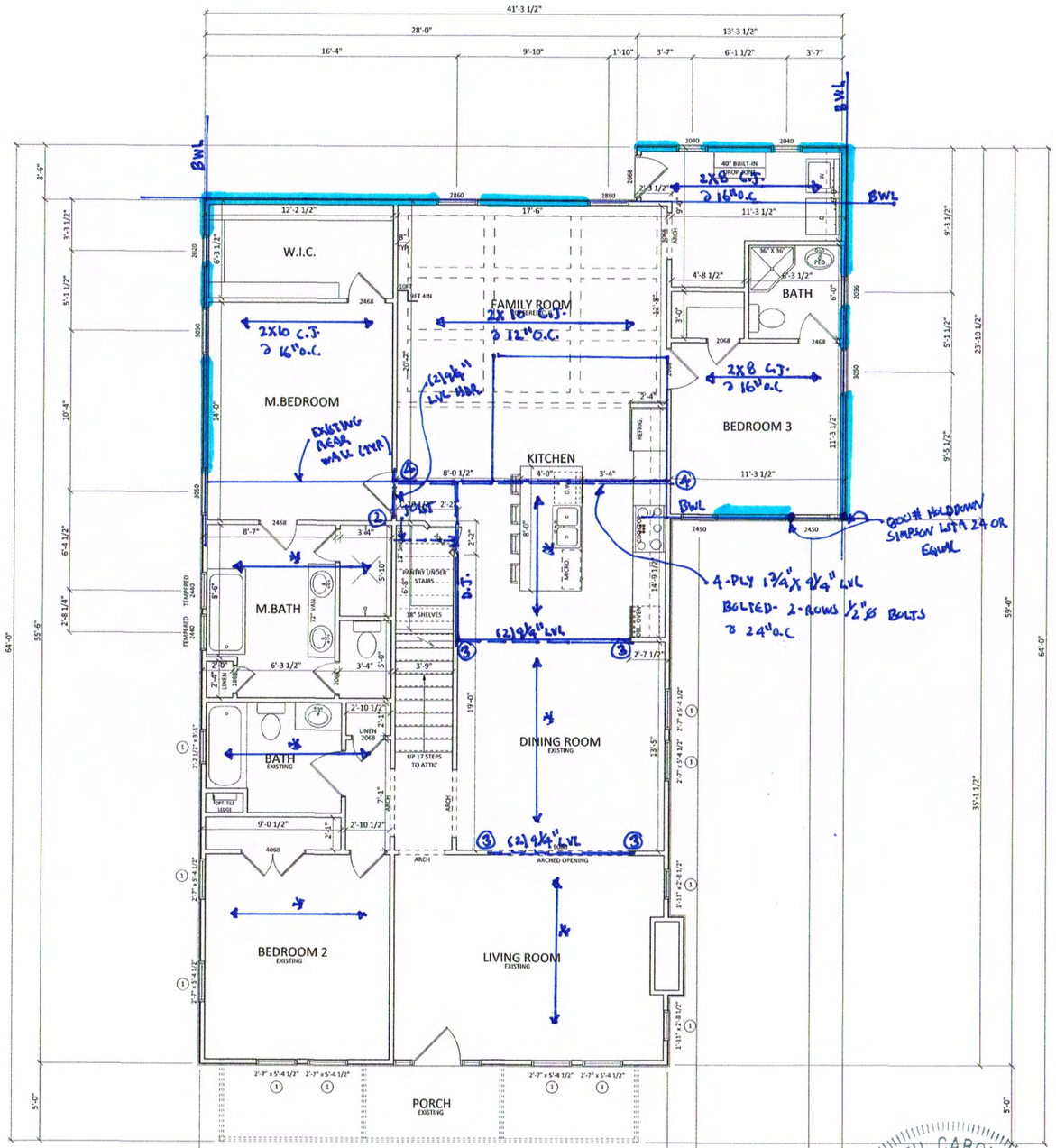
EXISTING FIRST FLOOR WALLS
SCALE: 1/4" = 1'-0"

GREENWHEEL
DEVELOPING

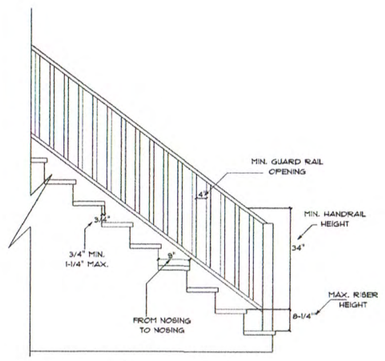
TYLER & ASHLEY CONNER
ADDITION

EXISTING
FIRST FLOOR WALLS

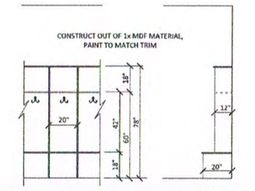
SHEET
1



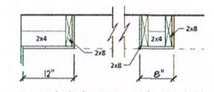
FIRST FLOOR WALLS
SCALE: 1/4" = 1'-0"



STAIR DETAIL
SCALE: 1/2" = 1'-0"



DROP ZONE DETAIL
SCALE: 1/4" = 1'



COFFER DETAIL
SCALE: 3/4" = 1'

WALL BRACING
- 90 MPH WIND ZONE · EXP B
- 10 FT WALL HEIGHT
- = METHOD CS-WSP (4NO)
- WALL BRACING MEETS OR EXCEEDS THE INTENT OF THE 2012 NCRC FOR METHOD CS-WSP

(#) = # OF STUDS

= DIRECTION OF EXISTING CEILING JOIST- CONSULT W/ ENGINEER SHOULD FIELD CONDITIONS DIFFER.

-ALL EXT./INT. LOAD BEARING HEADERS TO BE (2) 2X8'S W/ 1 JACK, 1 KING STUD E.E. U.N.O.

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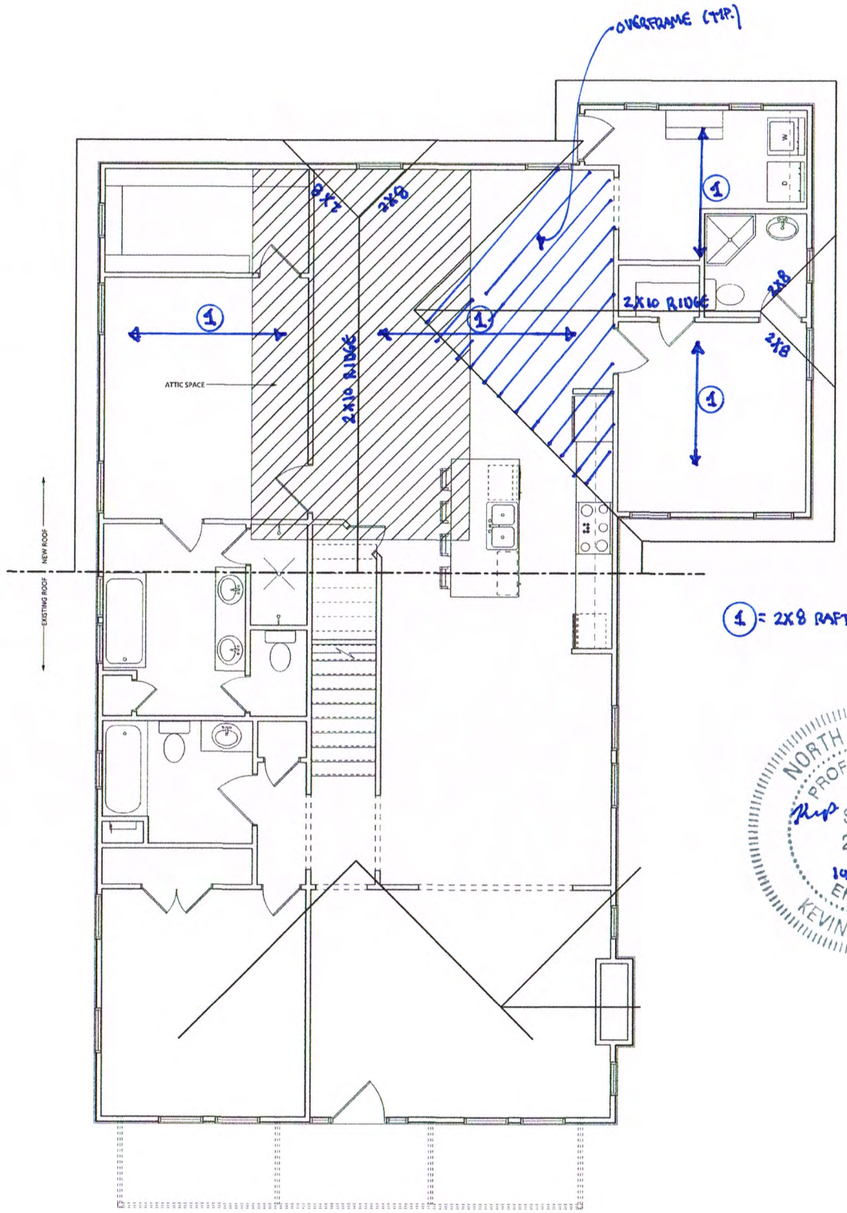
Sq Footage	
FIRST FLOOR ADDTION	730
UNFINISHED ATTIC	202
TOTAL NEW ADDITION	932
FIRST FLOOR HEATED	1963

GREENWHEEL DEVELOPING

TYLER & ASHLEY CONNER ADDITION

FIRST FLOOR WALLS

SHEET 2



1 = 2X8 RAFTERS @ 16" O.C. (SPF#2 OR BETTER)

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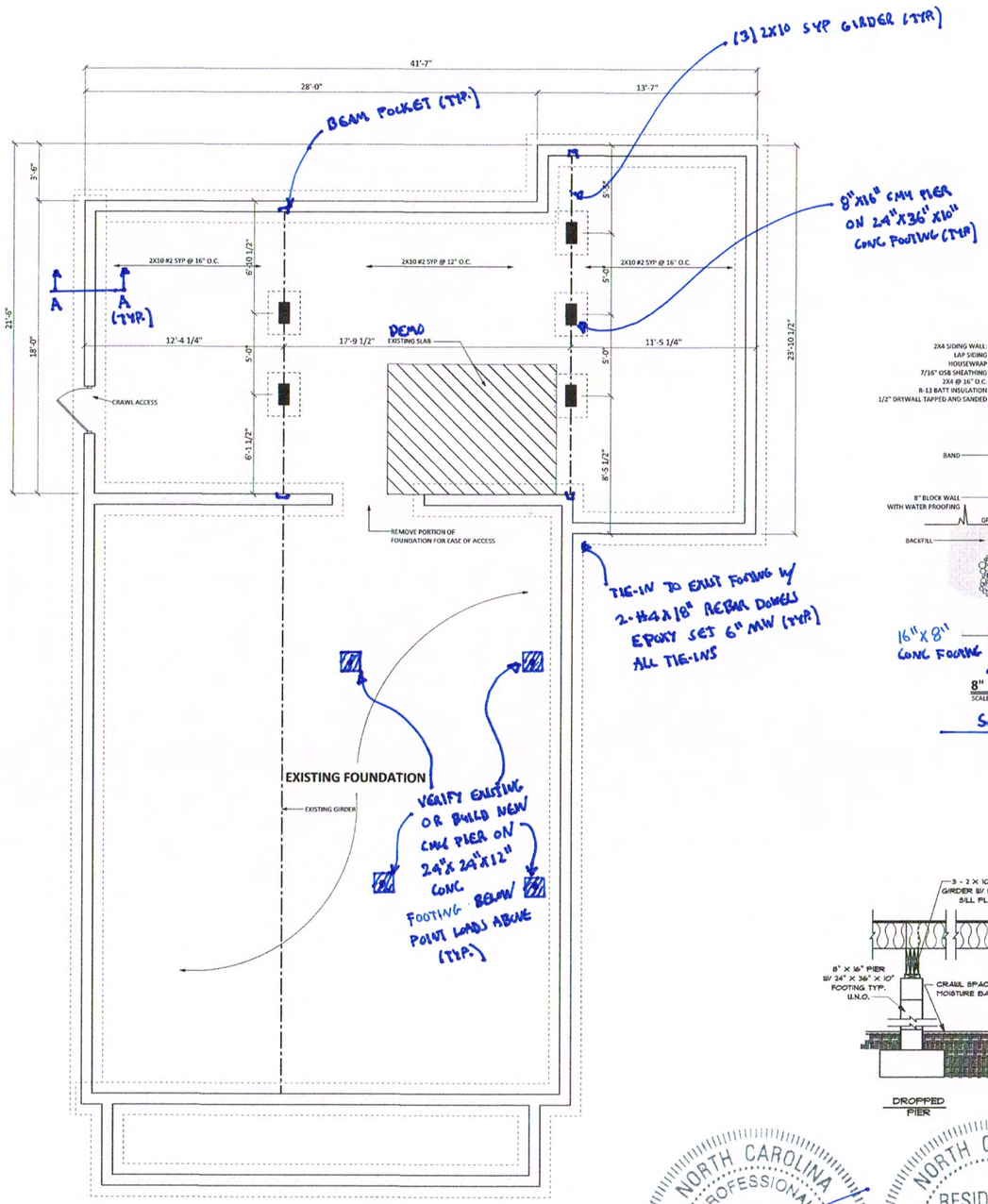
ROOF PLAN
SCALE: 1/4" = 1'-0"

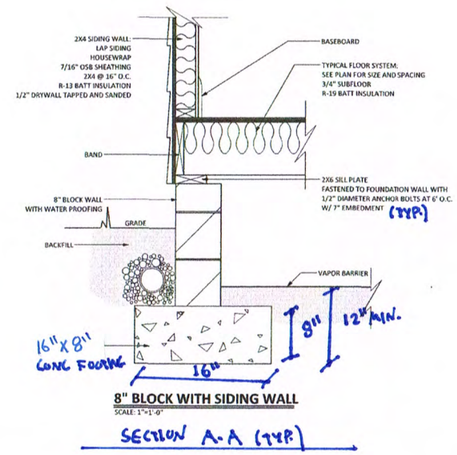
GREENWHEEL
DEVELOPING

TYLER & ASHLEY CONNER
ADDITION

ROOF PLAN

SHEET 3





8" BLOCK WITH SIDING WALL
SCALE: 1"=1'-0"

SECTION A-A (TYP)

TYPICAL HANGERS

MEMBER	HANGER
2x8	LUS28
2x10	LUS210
2x12	LUS212
(2)2x8	HUS28-2
(2)2x10	HUS210-2
(2)2x12	HUS212-2
(3)2x8	HUS28-3
(3)2x10	LUS210-3
(3)2x12	HUS12-3
(2)3-1/4"x(2)11-7/8"LVL	HGUS410
(2)1/4"x(2)7/8"LVL	HGUS414
(3)3-1/4"x(3)11-7/8"LVL	HGUS5.50/10
(3)1/4"x(3)7/8"LVL	HGUS5.50/14
(4)3-1/4"x(4)11-7/8"LVL	HGUS7.25/10
(4)1/4"x(4)7/8"LVL	HGUS7.25/14

DROPPED PIER

FLUSH PIER

NOTES:
- ALL FLOOR JOISTS 2 X 10 @ 16" O.C. SPF # 2 U.N.O.
- ALL DROPPED GIRDERS ARE 3 - 2 X 10 SYP # 2 U.N.O.
- ALL PIERS ARE 8" X 16" CMM W/ 24" X 36" X 10" FTG. U.N.O.
- INSTALL DOUBLE JOISTS UNDER ALL WALLS RUNNING PARALLEL TO JOISTS

GENERAL NOTES

1 ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES, REGULATIONS, AND FHA/VA MPB.
2 CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT SITE BEFORE BEGINNING CONSTRUCTION ANY DISCREPANCIES SHALL BE REPORTED TO CONSTRUCTION RESOURCE SERVICES INC. FOR JUSTIFICATION AND/OR CORRECTION BEFORE PROCEEDING WITH WORK. CONTRACTORS SHALL ASSUME RESPONSIBILITY FOR ERRORS THAT ARE NOT REPORTED.
3 ALL DIMENSION SHOULD BE READ OR CALCULATED AND NEVER SCALED.
4 ALL FOOTINGS TO BE BELOW FROST LINE (SEE LOCAL CODE) AND MUST REST ON UNDISTURBED SOIL CAPABLE OF HANDLEING THE BUILDING. CONSULT LOCAL ENGINEER FOR PROPER FOOTING AND REINFORCING SIZES.
5 CONTRACTOR SHALL INSURE COMPATIBILITY OF THE BUILDING WITH ALL SITE REQUIREMENTS
6 ALL FOUNDATION AND STRUCTURAL MEMBERS SHOULD BE VERIFIED AND STAMPED BY LOCAL STATE CERTIFIED STRUCTURAL ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR ADJUSTING AND VERIFYING ALL STRUCTURAL DETAILS AND CONDITIONS TO MEET ALL LOCAL CODES AND TO INSURE A QUALITY AND SAFE CONSTRUCTION

FOUNDATION PLAN
SCALE: 1/4" = 1'-0"

NORTH CAROLINA PROFESSIONAL SEAL 29249 ENGINEER KEVIN P. MUNSON
10/11/12

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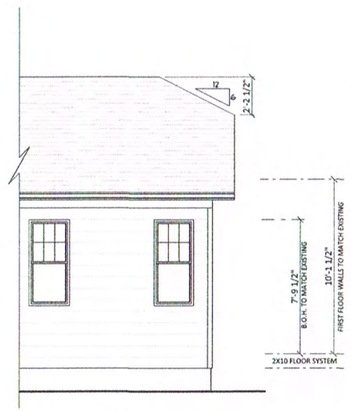
GREENWHEEL DEVELOPING

TYLER & ASHLEY CONNER ADDITION

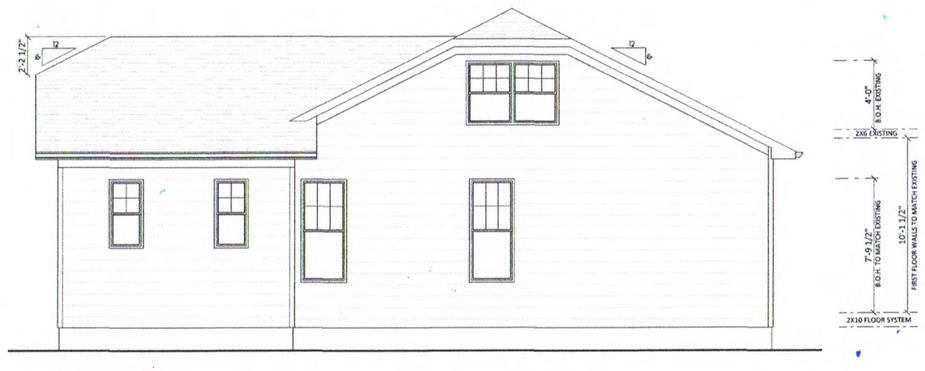
FOUNDATION PLAN

SHEET 4

EXISTING HOUSE

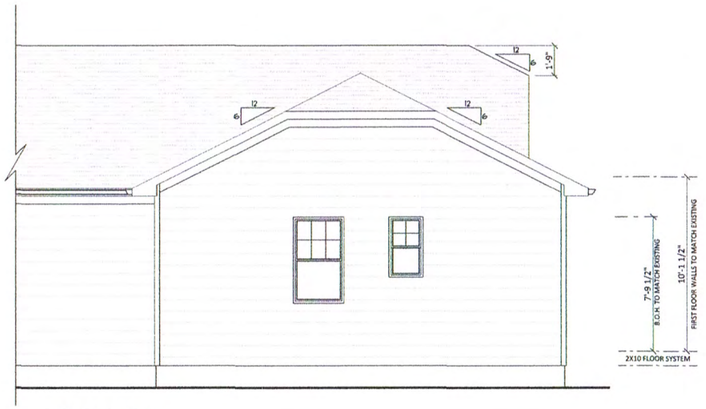


FRONT ELEVATION
SCALE: 1/4" = 1'-0"

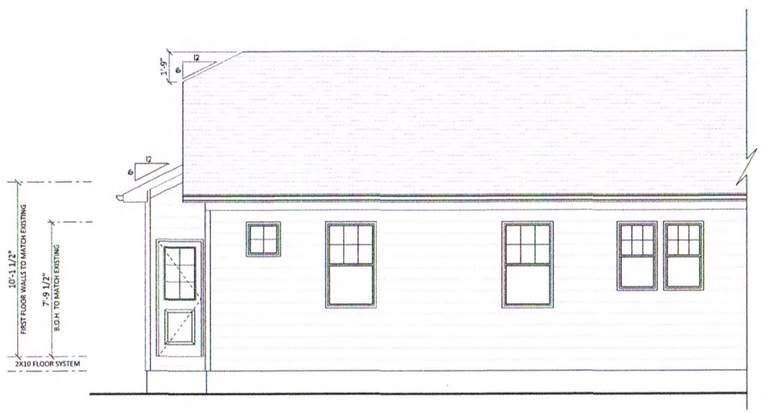


REAR ELEVATION
SCALE: 1/4" = 1'-0"

EXISTING HOUSE



RIGHT ELEVATION
SCALE: 1/4" = 1'-0"



LEFT ELEVATION
SCALE: 1/4" = 1'-0"

EXISTING HOUSE

TYLER & ASHLEY CONNER
ADDITION

ELEVATIONS

SHEET 5