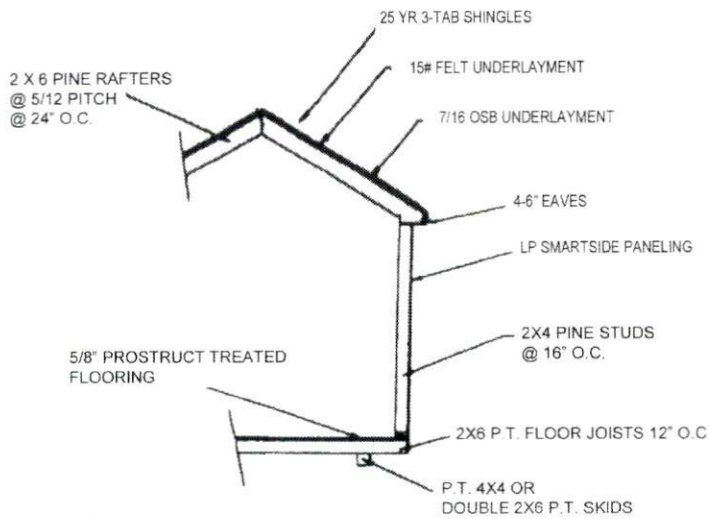
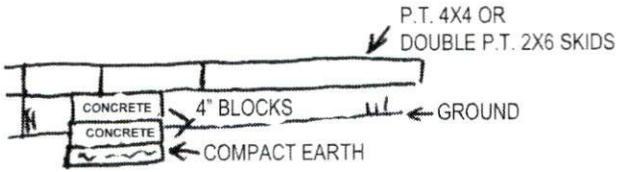


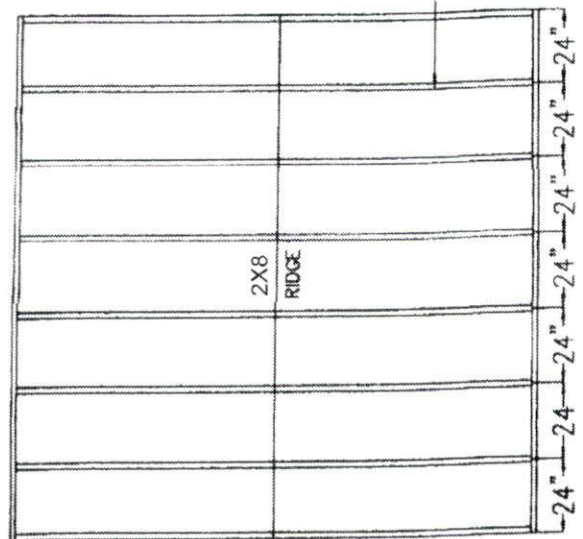
BAS BUILDINGS, LLC
3800 CENTURION DR #109
GARNER, NC 27529
(984) 269-7443

12' X 20' ORGANIZER
5/12 PITCH



*SEE ENGINEER LETTER.
BUILDING ANCHORED AT 4 CORNERS.

2X6 COMMON RAFTERS
@ 24" O.C.



ROOF FRAMING

BAS BUILDINGS, LLC
3800 CENTURION DR #109
GARNER, NC 27529
(984) 269-7443

12' X 20' ORGANIZER
5/12 PITCH

LUCAS G. A. GELO, PE

STRUCTURAL ENGINEER

2509 GRAY HAWK TRAIL
OFFICE 919.828.4966
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ZEBULON, NC 27597
CELL 919.264.3719
FAX 919.828.4967

July 18, 2019

BAS Buildings, LLC
Attn: Brad Smith
1641 Hwy 70 Bus
Garner, NC 27529

Re: Structural Certification
10', 12', & 16' Organizer Sheds

Dear Brad:

In reference to the subject project, I have performed a structural engineering analysis on three size variations of a pre-manufactured shed/barn per your request. I was provided typical construction drawings by your office for each shed variation. Based upon my analyses, please review the following:

10' Wide Organizer Shed

This variation consists of a 10' wide shed with a gable roof system. The roof consists of 2x4 rafters @ 2'-0" on center at either a 5:12 or 9:12 pitch, and the walls are constructed with 2x4 studs at 16" on center. Please be advised that the rafters shall be cross-tied with 2x4 collar ties located at the 1/3 point extending downward from the ridge and spaced at 4'-0" on center. The collar ties should be attached at each rafter with a minimum of (6) 10d nails

The floor framing consists of 2x4 joists at 16" on center supported on three (3) 4x4 "skids". Please be advised that the 2x4 floor joists can have a maximum of 10 1/2" cantilever beyond the 4x4 supports. Furthermore, please be advised that the 4x4 skids must be intermediately supported by piers at a maximum of 4' on center. Alternatively, if a double 2x6 beam is used for the skids, they must be supported at a maximum of 5' on center. The skids may bear on 8"x16" CMU piers which bear directly on the soil. The piers may be constructed with dry stacked concrete masonry units, with solid units top and bottom and hollow 8" concrete masonry units for the remainder of the pier at a maximum height of 36". The floor framing should be tied down with 30" screw anchors and 1" metal strapping across the floor joists.

Wood stud headers over openings not exceeding 6'-0" in the end walls (non-load bearing) shall be (2) 2x4 studs bearing on a single 2x4 jack stud at each end. Headers over openings not exceeding 6'-0" in the side walls (load bearing) shall be (2) 2x6 studs bearing on double 2x4 jack studs.

12' Wide Organizer Shed

This variation consists of a 12' wide shed with a gable roof system. The roof consists of 2x6 rafters @ 2'-0" on center at a 5:12 or 9:12 pitch, and the walls are constructed with 2x4 studs at 16" on center. Please be advised that the rafters shall be cross-tied with 2x4 collar ties located at the 1/3 point extending downward from the ridge and spaced at 4'-0" on center. A 2x ridge board shall be provided for the connections of the opposing rafters at the ridge. The collar ties should be attached at each rafter with a minimum of (8) 10d nails

The floor framing consists of 2x6 joists at 16" on center supported on three (3) 4x4 "skids". Please be advised that the 2x6 floor joists can have a maximum of 10 1/2" cantilever beyond the 4x4 supports. Furthermore, please be advised that the 4x4 skids must be intermediately supported by piers at a maximum of 4' on center. Alternatively, if a double 2x6 beam is used for the skids, they must be supported at a maximum of 5' on center. The skids may bear on 8"x16" CMU piers which bear directly on the soil. The piers may be constructed with dry stacked concrete masonry units, with solid units top and bottom and hollow 8" concrete

masonry units for the remainder of the pier at a maximum height of 36". The floor framing should be tied down with 30" screw anchors and 1" metal strapping across the floor joists.

Wood stud headers over openings not exceeding 6'-0" in the end walls (non-load bearing) shall be (2) 2x4 studs bearing on a single 2x4 jack stud at each end. Headers over openings not exceeding 6'-0" in the side walls (load bearing) shall be (2) 2x6 studs bearing on double 2x4 jack studs.

16' Wide Organizer Shed

This variation consists of a 16' wide shed with a gable roof system. The roof consists of 2x6 rafters @ 2'-0" on center at a 5:12 or 9:12 pitch, and the walls are constructed with 2x4 studs at 16" on center. Please be advised that the rafters shall be cross-tied with 2x4 collar ties located at the 1/3 point extending downward from the ridge and spaced at 4'-0" on center. A 2x ridge board shall be provided for the connections of the opposing rafters at the ridge. The collar ties should be attached at each rafter with a minimum of (10) 10d nails.

The floor framing consists of 2x6 joists at 16" on center supported on three (3) 4x4 "skids". Please be advised that the 2x6 floor joists can have a maximum of 10 1/2" cantilever beyond the 4x4 supports. Furthermore, please be advised that the 4x4 skids must be intermediately supported by piers at a maximum of 4' on center. Alternatively, if a double 2x6 beam is used for the skids, they must be supported at a maximum of 5' on center. The skids may bear on 8"x16" CMU piers which bear directly on the soil. The piers may be constructed with dry stacked concrete masonry units, with solid units top and bottom and hollow 8" concrete masonry units for the remainder of the pier at a maximum height of 36". The floor framing should be tied down with 30" screw anchors and 1" metal strapping across the floor joists.

Wood stud headers over openings not exceeding 6'-0" in the end walls (non-load bearing) shall be (2) 2x4 studs bearing on a single 2x4 jack stud at each end. Headers over openings not exceeding 6'-0" in the side walls (load bearing) shall be (2) 2x6 studs bearing on double 2x4 jack studs.

I hereby certify that with the above modifications, the structural framing system as shown on the drawings provided to this office, meets or exceeds the requirements of the 2018 NC State Building Code with respect to loading and serviceability, including wind loads.

I appreciate the opportunity to provide this Structural Certification for your use. Please do not hesitate to contact me if you have any questions, or if I may be of further assistance regarding this matter.

Respectfully,



Lucas G. A. Gelo, PE

/LGG



IMPERVIOUS SURFACE CALCULATIONS

Driveway(s), i.e. concrete, pavers, gravel or other compacted area	
Parking pads(s), concrete, pavers, gravel or other compacted area	
Walkway(s), concrete, pavers, gravel or other compacted area	
House or mobile home (footprint)	
Patio(s), wood slatted decks do not count	
Outbuilding 1, building footprint plus any slabs	
Outbuilding 2, building footprint plus any slabs	
Outbuilding 3, building footprint plus any slabs	
Pool apron and decking	
Other impervious areas (retaining walls, etc.)	
Proposed/new impervious area	
TOTAL IMPERVIOUS AREA IN SQUARE FEET	

$$\frac{\text{Total sq ft of imperv area}}{\text{lot area in acres}} \times 43,560 \text{ sq ft} = \text{\% impervious surface}$$

Impervious surfaces are those surfaces that water will run off. They include roofs, paved areas such as driveways, sidewalks and patios, and compacted areas such as unpaved driveways, walkways and play areas.

Additional information regarding impervious surface limits including those in the Swift Creek Watershed may be obtained by contacting Wake County Planning staff at 919.856.6335. For Neuse River Watershed impervious limits contact Wake County Environmental Services at 919.856.7400.

This sheet represents a true and accurate accounting of the existing and proposed impervious surfaces on lot _____ of _____ subdivision at the address of _____.

Name (Please print)	Signature	Date