

CEEn-2018CPST-003

ACUTE/UNTF NAVAJO HOUSE PLANS

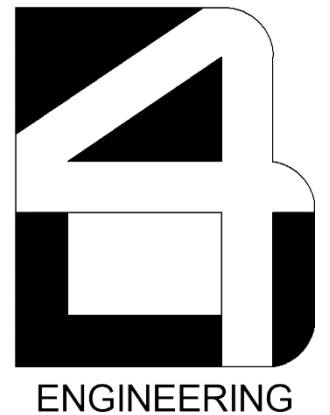
B⁴ Engineering

Benjamin Arrington

Zachary Barnett

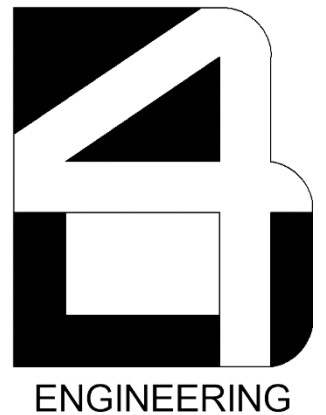
David Bell

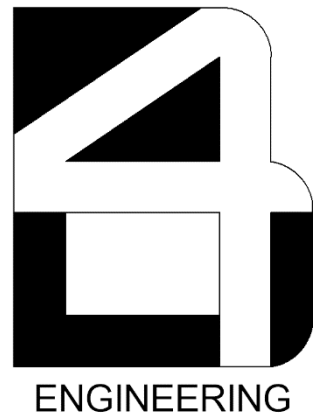
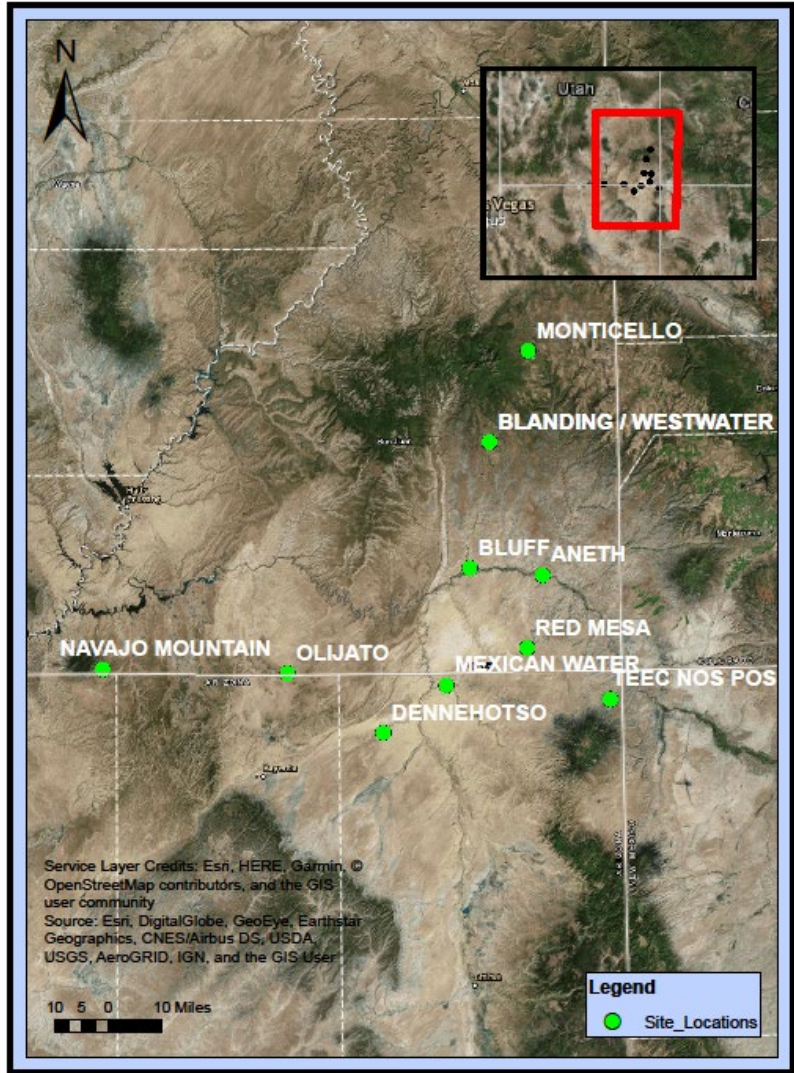
David Blake



Introduction

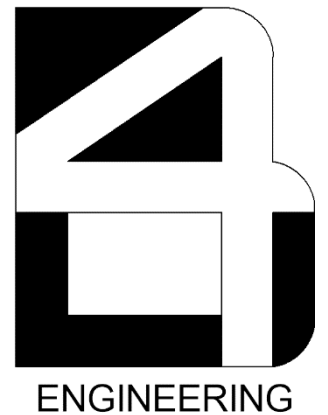
- **The engineering for the UNTF housing plans needed to be updated**
- **The Navajo Reservation does not require the use of any specific code requirements**
- **Homes are typically constructed by charity groups consisting of unskilled laborers**
- **There are 11 chapter locations with different design criteria in the UNTF**





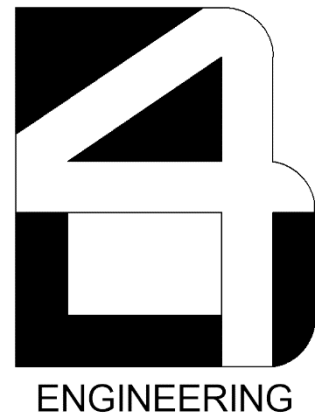
Design, Analysis and Results

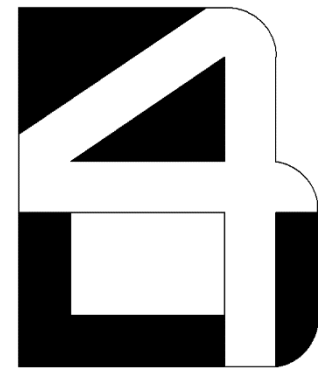
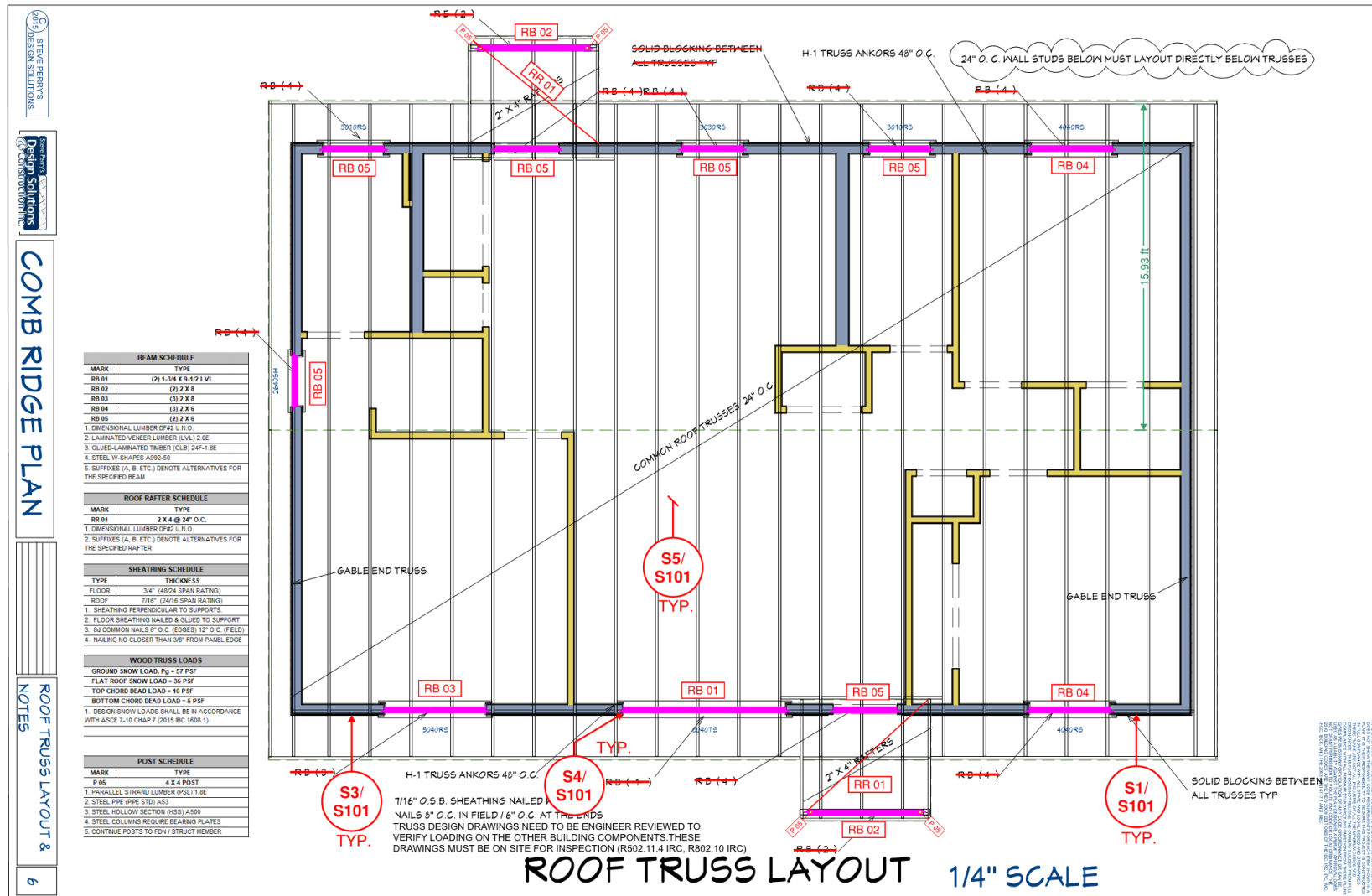
- **Design criteria were established for each of the 11 chapter locations**
 - Seismic coefficient, snow load, wind speed, frost depth, soil conditions
- **Worst-case criteria were applied to the plans**
- **Plans were engineered using the IRC and IBC methodologies and compared to the designer's callouts**




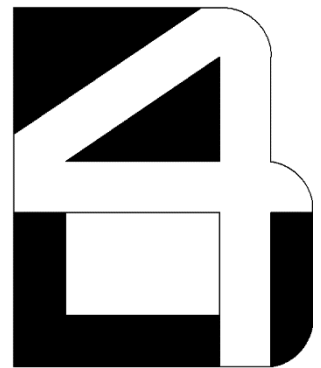
Conclusions and Recommendations

- **Our recommendation is to follow the IBC methodology**
- **Structural details and a bill of materials are included for each plan to optimize ease of construction**
- **Site-specific analysis could be performed to reduce member sizes on a case-to-case basis**





						 ENGINEERING			
						04/11/2019	BDA		
						DATE:	DESIGNED BY: BDA, DBB, DHB, ZDB		
						COMB RIDGE PLAN	ACUTE ENGINEERING		
						PROJECT NAME:	UTAH NAVAJO TRUST FUND		
						PROJECT NUMBER:	CEEN_2018CPST_003		
						CLIENT:	UTAH NAVAJO TRUST FUND		
						SPONSOR:	ACUTE ENGINEERING		
						STRUCTURAL FRAMING DETAILS			
						S101			
<p>S10 TYPICAL CONTROL JOINT FOR SINGLE REINFORCED MASONRY WALL (PLAN VIEW) SCALE: N.T.S.</p>		<p>S9 MASONRY WALL - CORNER AND INTERSECTION SCALE: N.T.S.</p>		<p>S8 CONCRETE FOOTING - MASONRY WALL SCALE: N.T.S.</p>		<p>S7 MASONRY WALL - REINFORCEMENT SCALE: N.T.S.</p>		<p>S6 WOOD STRUCTURAL PANEL SHEAR WALL SCALE: N.T.S.</p>	
<p>S5 WOOD STRUCTURAL PANEL DIAPHRAGM - UNBLOCKED SCALE: N.T.S.</p>		<p>S4 WOOD BEAM - WALL HEADER FRAMING SCALE: N.T.S.</p>		<p>S3 ROOF FRAMING - BLOCKING (150 PLF UNIT SHEAR) SCALE: N.T.S.</p>		<p>S2 SHEAR WALL - PERFORATED SCALE: N.T.S.</p>		<p>S1 DIAPHRAGM - TOP PLATE SPLICE SCALE: N.T.S.</p>	



ENGINEERING

The End

