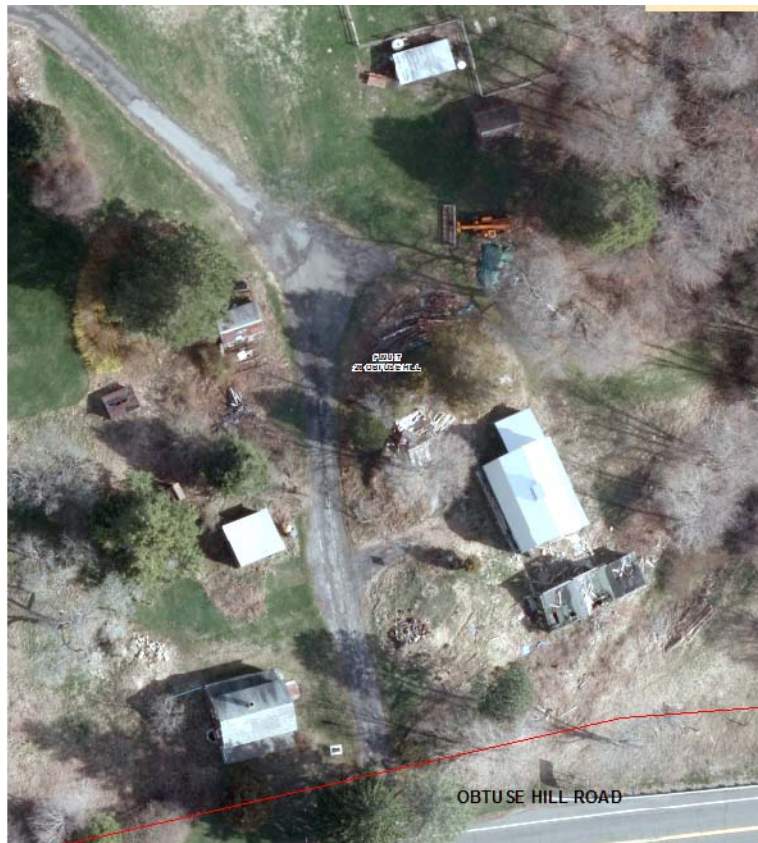


Structural Assessment and Stabilization Plan for

Gurski Homestead

26 Obtuse Hill Road
Brookfield, CT



January 7, 2014

CE Project Number 13078.00

Structural Assessment and Stabilization Plan for Gurski Homestead 26 Obtuse Hill Road Brookfield, CT

Conlon Engineering, LLC was retained by The Town of Brookfield to conduct a structural assessment and stabilization plan for buildings on the town's Gurski Homestead property. The project was done in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and was funded by a grant from the Community Investment Act of the State of Connecticut as administered by the Department of Economic and Community Development, State Historic Preservation Office (SHPO).

Our office visited the site several times to observe, measure, and assess the condition of structural elements of the various buildings. We made visual observations on the site and prepared CAD drawings of each building. Our observations and drafting efforts were aided by previous drawings prepared by others for repair work on the farm house and barn structures. The purpose of the work was to prepare preliminary engineering designs for repair and stabilization of the buildings. As we understand it, future uses of the buildings are to be determined. Since uses are unknown, design criteria used in our assessment is limited to building stabilization only. Live load, serviceability criteria, and similar occupancy criteria are to be determined pending the Town's future plans for occupancy of the buildings.

This report is divided into sections as follows:

- I. Building Inventory and Description
- II. Measured Floor Plans
- III. Narrative Describing Existing Conditions
- IV. Preliminary Stabilization Design, Prioritization, and Opinion of Probable Cost
- V. Photographs of The Structures Tied to Key Plan

The Town of Brookfield received support for this historic preservation project from the State Historic Preservation Office of the Department of Economic and Community Development with funds from the Community Investment Act of the State of Connecticut.



Conlon Engineering, LLC

I. Building Inventory and Description

Building 1: Shed

Footprint: 22'x10' (220 square feet)

Description: Post and beam construction with 3x4 timbers supporting 3/4" ship lap siding

Floor: Concrete slab on grade

Foundation: No concrete foundation. Timber framing is in contact with ground

Assessment: Salvageable with extensive repairs

Building 2: Blacksmith

Building previously repaired by others. Not included in this study.

Building 3: Corn Crib

Footprint: 16'-9"x12'-1" (202 square feet)

Description: Post and beam construction with 3x4 timbers supporting siding on three sides and 3/4"x3" vertical slats along front wall

Floor: Timbers, mostly concealed by debris

Foundation: CMU blocks sitting on grade

Assessment: Irreversibly deteriorated and not salvageable

Building 4: Shed

Footprint: 18'-4"x16'-2" (297 square feet)

Description: Post and beam construction with 3x4 and 6x6 timbers supporting tongue and groove siding

Floor: Dirt

Foundation: None

Assessment: Salvageable with extensive repairs

Building 5: Shed

Footprint: 12'-3"x8'-0" (98 square feet)

Description: Post and beam construction with 3x4 timbers supporting tongue and groove siding

Floor: Dirt

Foundation: None

Assessment: Irreversibly deteriorated and not salvageable



Conlon Engineering, LLC

Building 6: Privy

Footprint: 4'-2"x5'-3" (22 square feet)

Description: Post and beam construction with 3x4 timbers supporting tongue and groove siding

Floor: None

Foundation: CMU blocks sitting on grade

Assessment: Salvageable. Requires new foundation and extensive framing/siding repairs

Farm House

Footprint: 28'-2"x24'-3" (1,200 square feet)

Description: two-story plus basement residence with timber floor and roof framing

Floors: Wood joists with center bearing wall

Roof: Timber rafters 4' on center supporting wood plank with plywood overlay

Foundation: Mortared stone

Assessment: Fair condition. Some structural repair required. All interior finishes require repair

Main Barn

Footprint: 50'x26' (1,130 square feet, not rectangular)

Description: post and beam structure with 8x8 and 6x6 timbers supporting tongue and groove siding

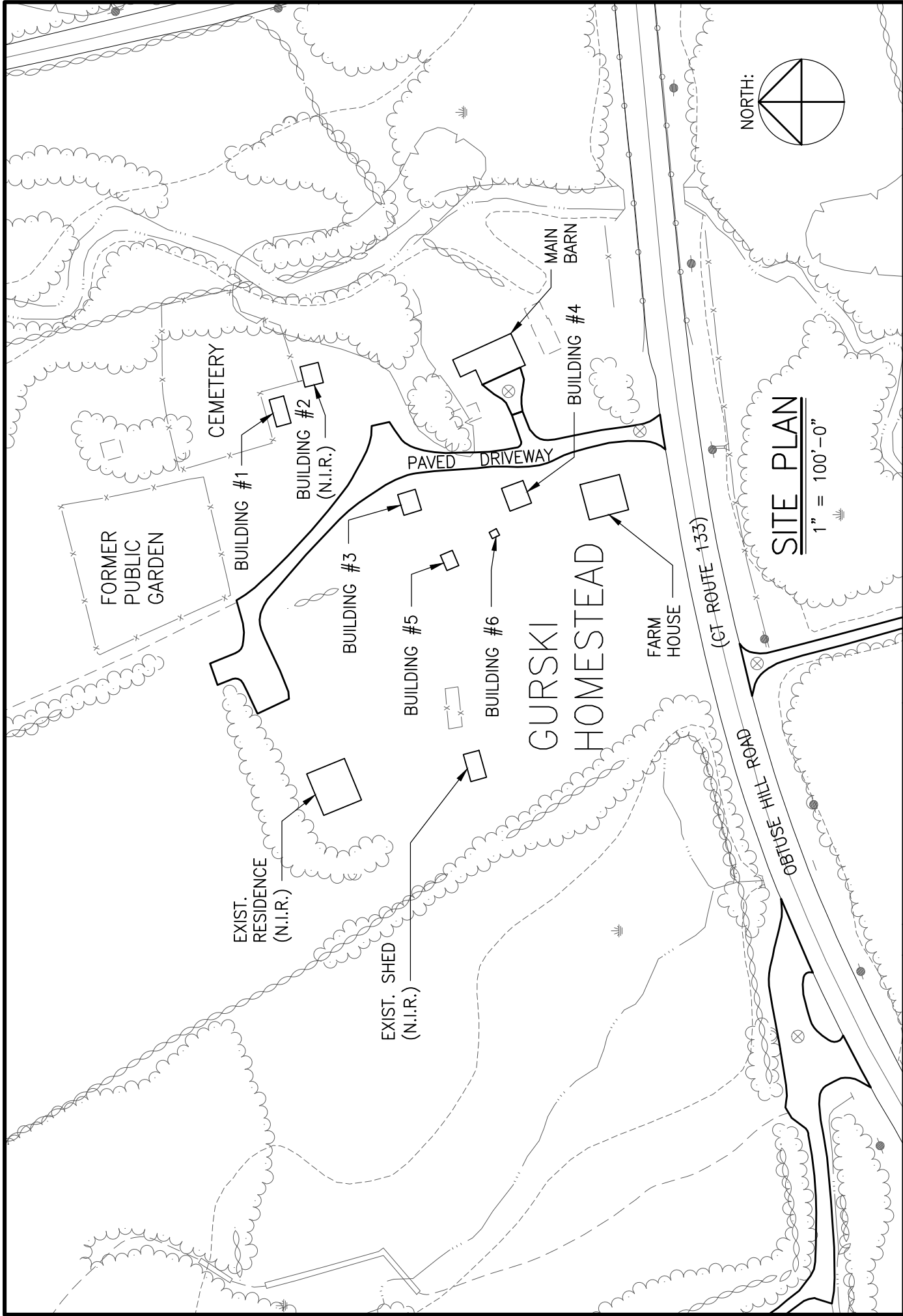
Floor: 7x7 timber joists supporting timber decking

Foundation: Mortared stone

Assessment: Roof is in fair condition (was recently repaired). Floor framing is irreversibly deteriorated and in need of replacement. Walls require additional bracing.

II. Measured Floor Plans

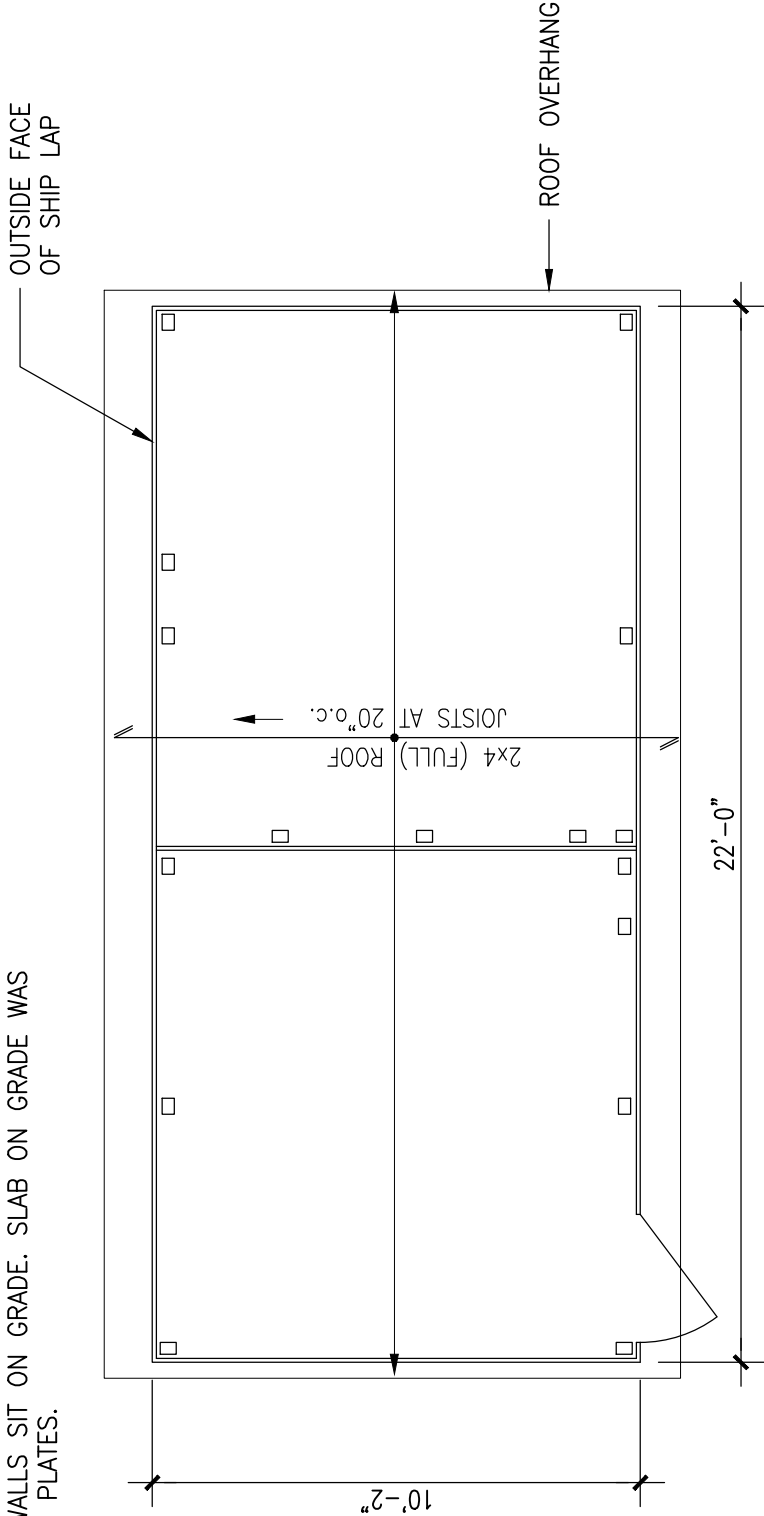
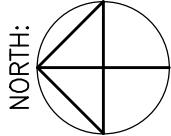
Sketches on following pages.



 Conlon Engineering, LLC Structural Engineers 203.740.0990		SCALE: AS NOTED JOB No: 13078.00 DATE: 01/07/2014		GURSKI HOMESTEAD 26 OBTUSE HILL RD. BROOKFIELD, CT	SKETCH No: SK-1
#	REVISION	DATE			

TYPICAL BUILDING #1 CONSTRUCTION:

- ROOF: ROUGH CUT WOOD ROOF JOIST PER PLAN SUPPORTING 7" SHIP LAP WOOD DECKING WITH CORRUGATED TIN ROOF.
- WALLS: 3x4 POST AND BEAM CONSTRUCTION SUPPORTING 7" SHIP LAP SIDING
- FLOOR: CAST IN PLACE SLAB ON GRADE
- FOUNDATION: NO BELOW GRADE FOUNDATION. WOOD SILL PLATES OF POST AND BEAM WALLS SIT ON GRADE. SLAB ON GRADE WAS PLACED BETWEEN SILL PLATES.



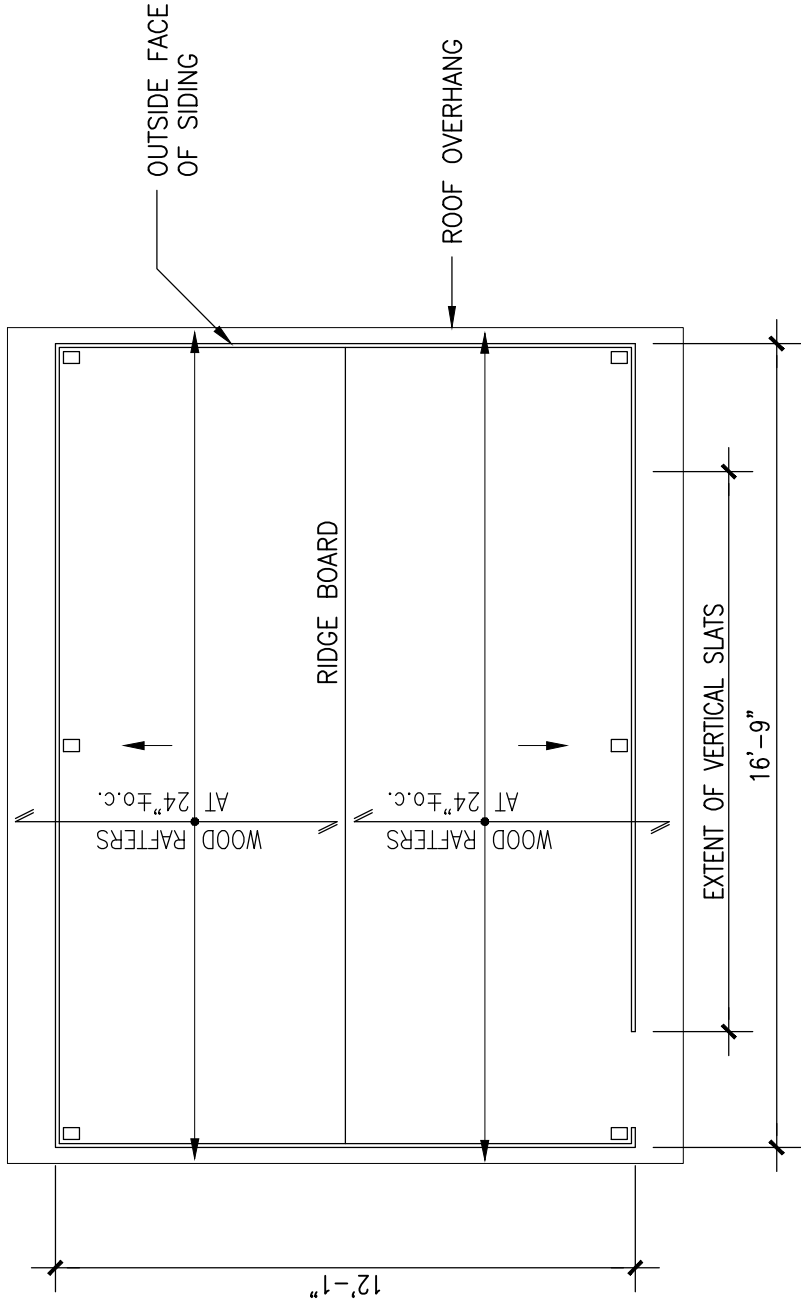
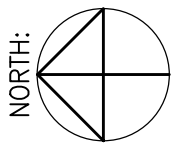
BUILDING #1 (SHED) PLAN

1/4" = 1'-0"

 Conlon Engineering, LLC Structural Engineers 203.740.0990		SCALE: AS NOTED		GURSKI HOMESTEAD		SKETCH No: SK-2
		#	REVISION	JOB No: 13078.00	DATE: 01/07/2014	
					26 OBTUSE HILL RD.	
					BROOKFIELD, CT	

TYPICAL BUILDING #3 CONSTRUCTION:

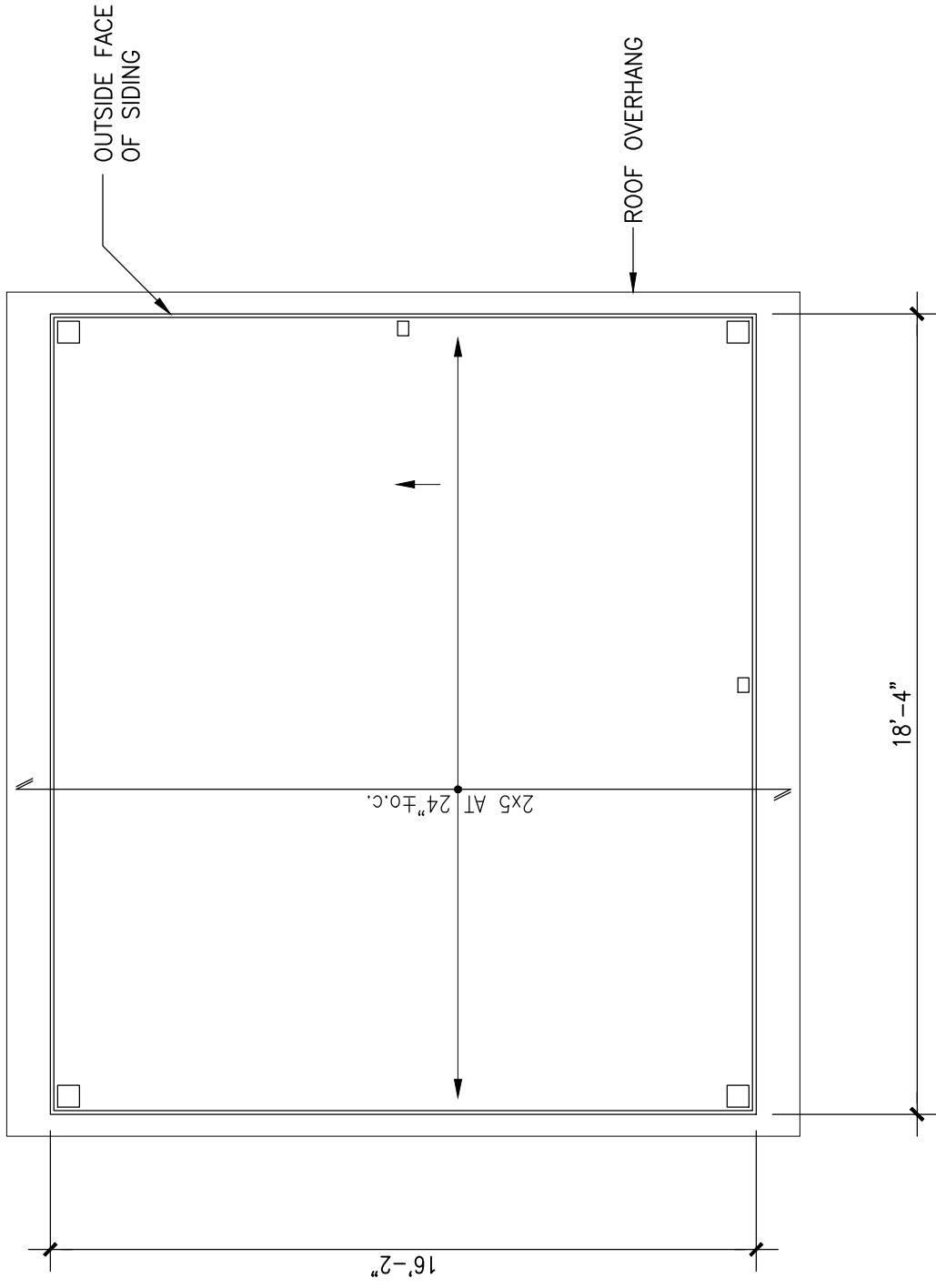
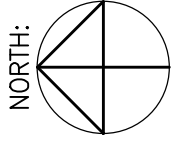
- ROOF: GABLE ROOF WITH ROUGH CUT WOOD RAFTERS PER PLAN SUPPORTING TONGUE AND GROOVE WOOD ROOF DECKING WITH ASPHALT MEMBRANE ROOFING. NO RIDGE BEAM, COLLAR TIES, OR CEILING JOISTS.
- WALLS: POST AND BEAM CONSTRUCTION SUPPORTING 7" TONGUE AND GROOVE SIDING EXCEPT WHERE VERTICAL SLATS (3/4"x3") NOTED ON PLAN.
- FLOOR: WOOD JOISTS OF UNKNOWN SIZE AND SPACING (DEBRIS COVERED).
- FOUNDATION: NO BELOW GRADE FOUNDATION. CONCRETE MASONRY UNITS SITTING ON GRADE SUPPORT CORN CRIB FRAMING. MASONRY UNITS ARE DRY LAID IN PIERS. SOME MASONRY PIERS HAVE COLLAPSED.



BUILDING #3 (CORN CRIB) PLAN

1/4" = 1'-0"

 Conlon Engineering, LLC Structural Engineers 203.740.0990		SCALE: AS NOTED		GURSKI HOMESTEAD		SKETCH No: SK-3	
		#	REVISION	JOB No: 13078.00	DATE: 01/07/2014		
						26 OBTUSE HILL RD. BROOKFIELD, CT	



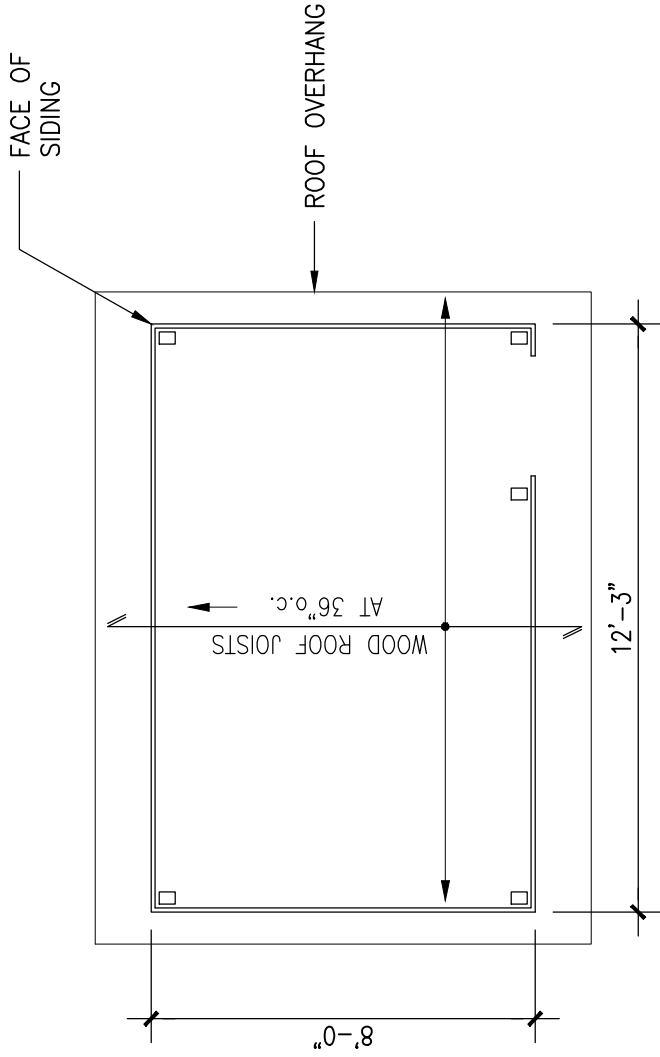
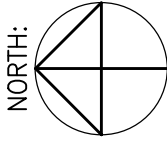
BUILDING #4 PLAN

1/4" = 1'-0"

Conlon Engineering, LLC Structural Engineers 203.740.0990 				GURSKI HOMESTEAD 26 OBTUSE HILL RD. BROOKFIELD, CT				SKETCH No: SK-4	
				SCALE: AS NOTED					
				JOB No: 13078.00					
						DATE: 01/07/2014			
#				REVISION		DATE			

TYPICAL BUILDING #5 CONSTRUCTION:

- ROOF: SHED ROOF WITH ROUGH CUT WOOD RAFTERS PER PLAN SUPPORTING WOOD ROOF DECKING WITH ASPHALT MEMBRANE ROOFING.
- WALLS: POST AND BEAM CONSTRUCTION SUPPORTING 7" TONGUE AND GROOVE SIDING.
- FLOOR: NONE
- FOUNDATION: NO BELOW GRADE FOUNDATION. WOOD SILL PLATES OF POST AND BEAM WALLS SIT ON GRADE.



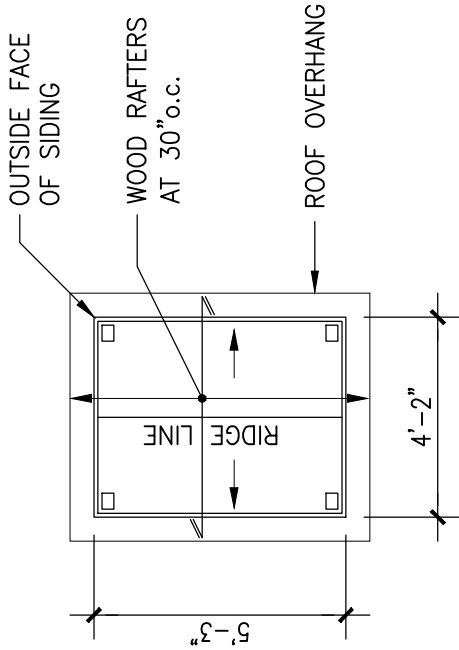
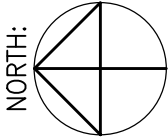
BUILDING #5 (SHED) PLAN

1/4" = 1'-0"

 Conlon Engineering, LLC Structural Engineers 203.740.0990		SCALE: AS NOTED		GURSKI HOMESTEAD		SKETCH No: SK-5
		REVISION #	DATE	JOB No: 13078.00	26 OBTUSE HILL RD. BROOKFIELD, CT	
				DATE: 01/07/2014		

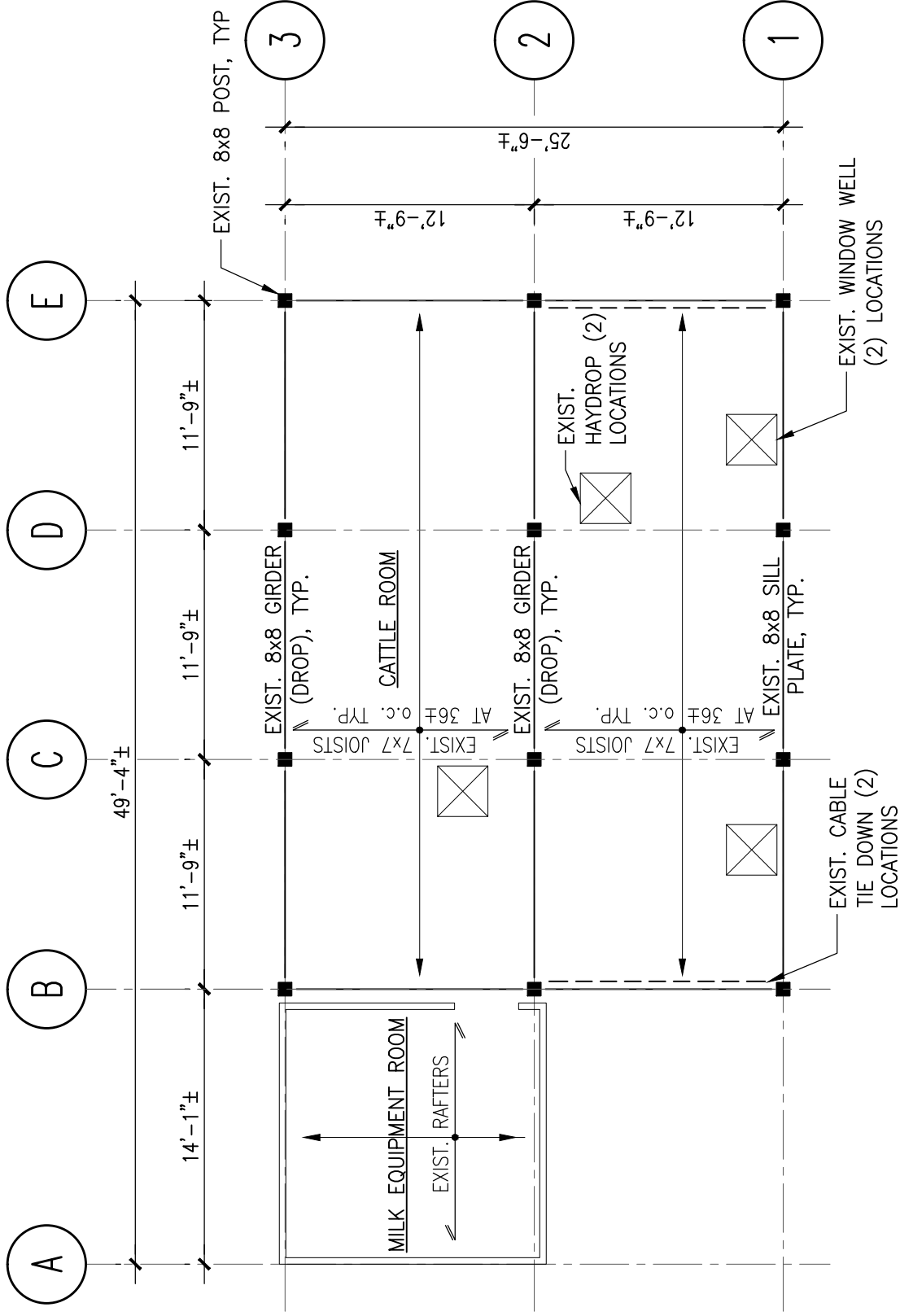
TYPICAL BUILDING #6 CONSTRUCTION:

- ROOF: GABLE ROOF WITH ROUGH CUT WOOD RAFTERS PER PLAN SUPPORTING WOOD ROOF DECKING WITH WOOD SHINGLES COVERED BY ASPHALT MEMBRANE ROOFING. NO RIDGE BEAM, COLLAR TIES, OR CEILING JOISTS.
- WALLS: POST AND BEAM CONSTRUCTION SUPPORTING TONGUE AND GROOVE SIDING.
- FLOOR: NONE
- FOUNDATION: NO BELOW GRADE FOUNDATION. WOOD SILL PLATES OF POST AND BEAM WALLS SIT ON GRADE. SOME LOOSE MASONRY/STONE PIERS NOTED, ALTHOUGH NO ORGANIZED PIER FOUNDATION EXISTS.



BUILDING #6 (PRIVY) PLAN

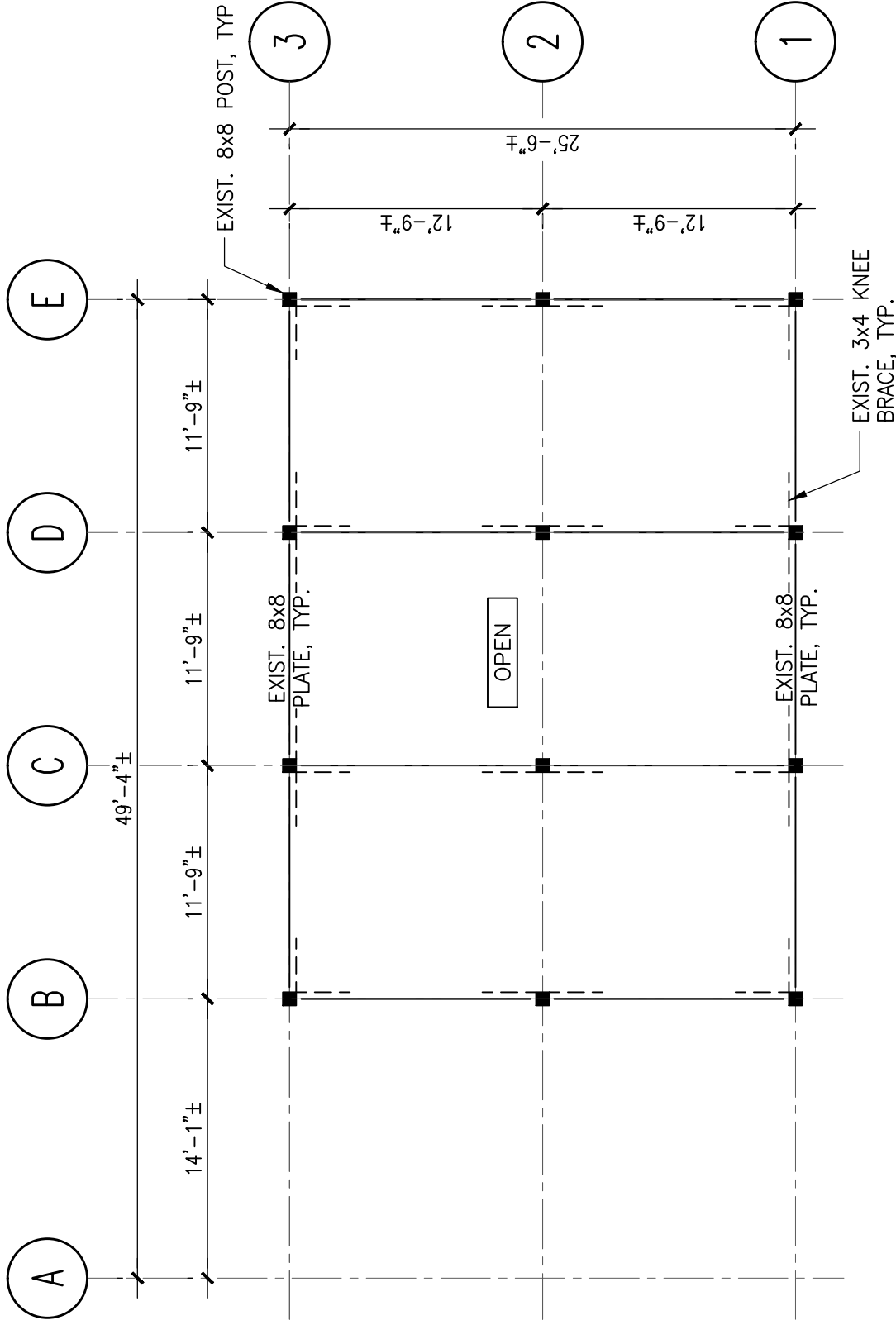
 Conlon Engineering, LLC Structural Engineers 203.740.0990								1/4" = 1'-0"					
								SCALE: AS NOTED		GURSKI HOMESTEAD 26 OBTUSE HILL RD. BROOKFIELD, CT		SKETCH No: SK-6	
				#		REVISION		DATE: 01/07/2014					



BARN FLOOR AND LOW ROOF FRAMING PLAN

1/8" = 1'-0"

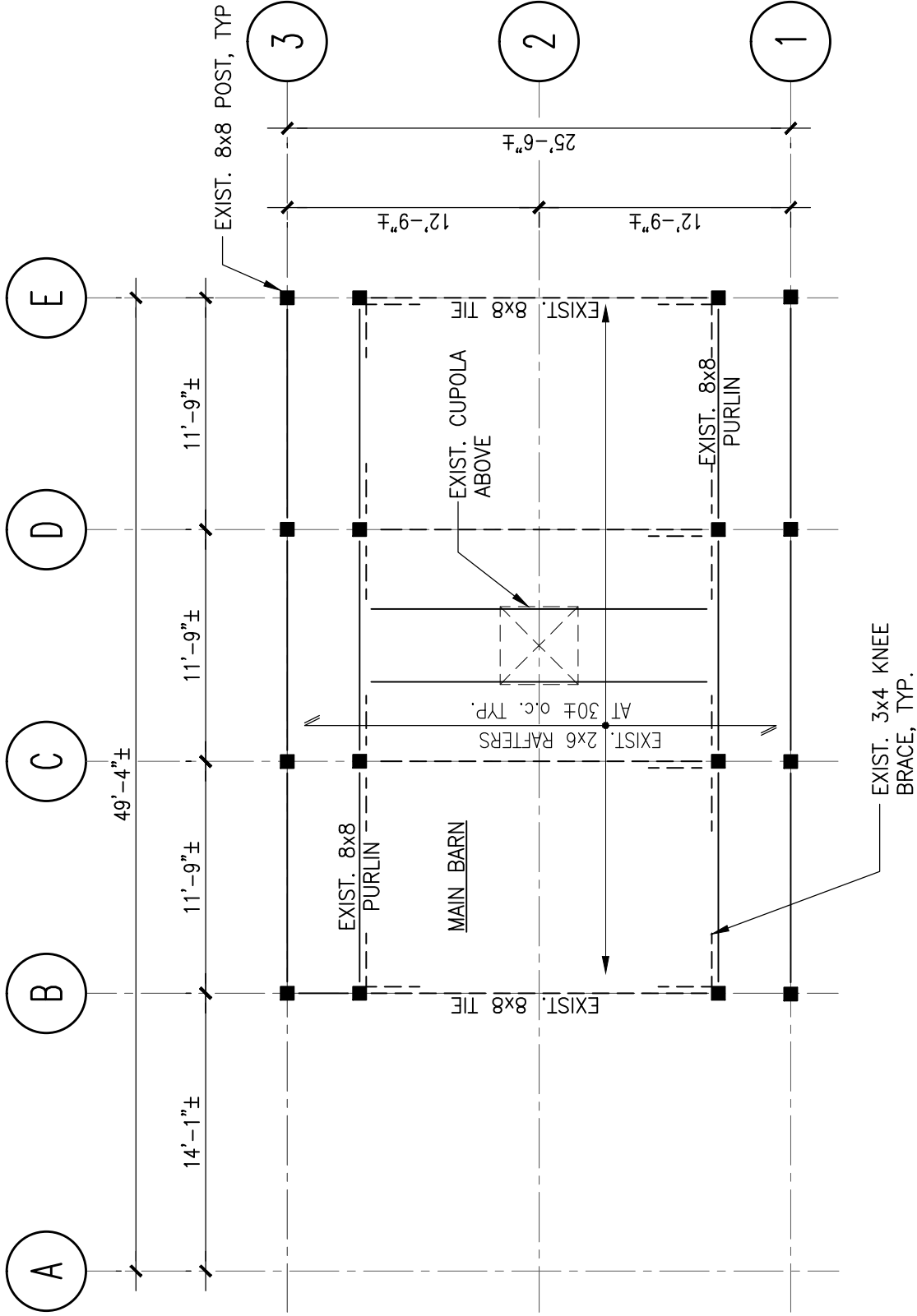
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BARN GIRT AND LOW ROOF FRAMING PLAN

1/8" = 1'-0"

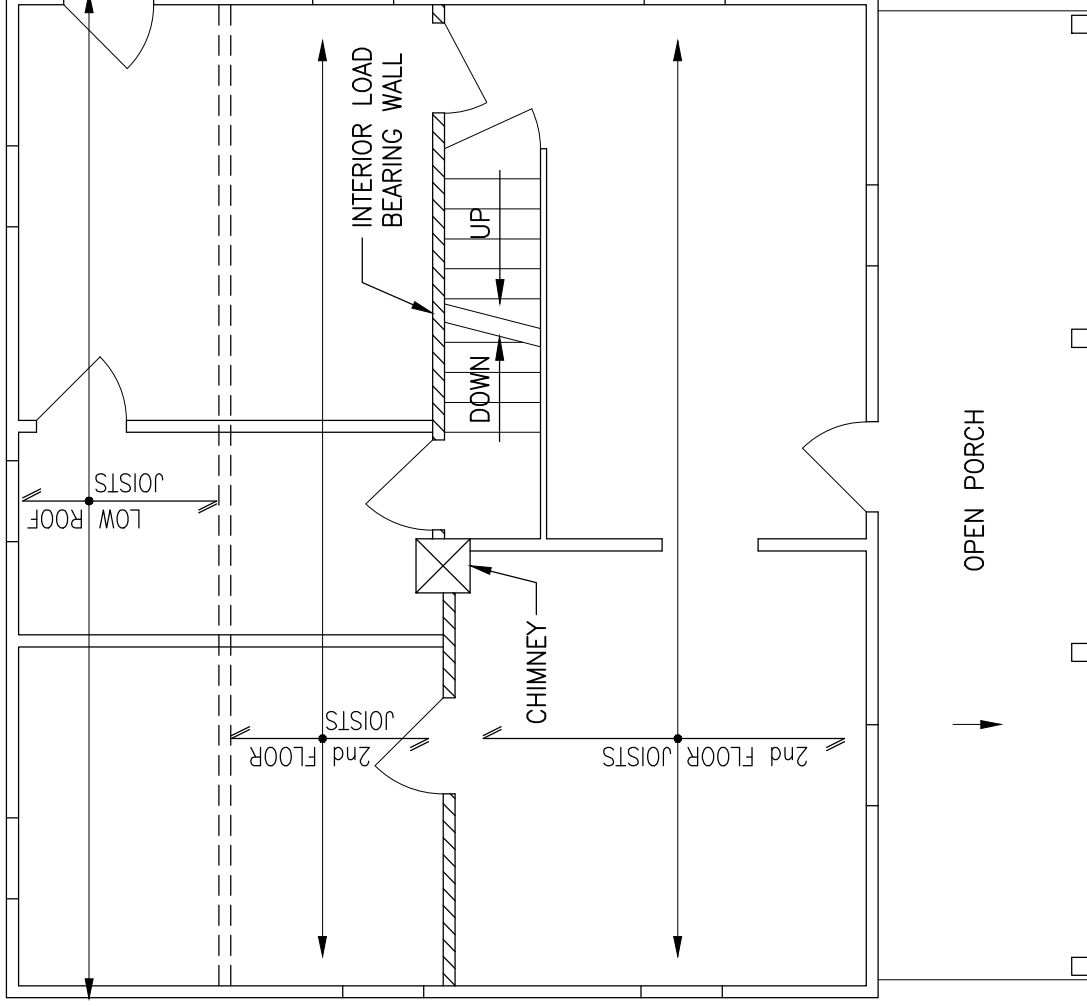
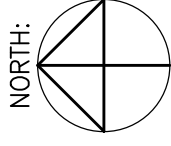
 Conlon Engineering, LLC Structural Engineers 203.740.0990	SCALE: AS NOTED JOB No: 13078.00 DATE: 01/07/2014		GURSKI HOMESTEAD 26 OBTUSE HILL RD. BROOKFIELD, CT	SKETCH No: SK-8
	#	REVISION	DATE	



BARN ROOF FRAMING PLAN

1/8" = 1'-0"

 Conlon Engineering, LLC Structural Engineers 203.740.0990					SCALE:	AS NOTED	GURSKI HOMESTEAD 26 OBTUSE HILL RD. BROOKFIELD, CT	SKETCH No: SK-9
					JOB No:	13078.00		
					DATE:	01/07/2014		
	#	REVISION	DATE					



FARM HOUSE FIRST FLOOR PLAN

3/16" = 1'-0"

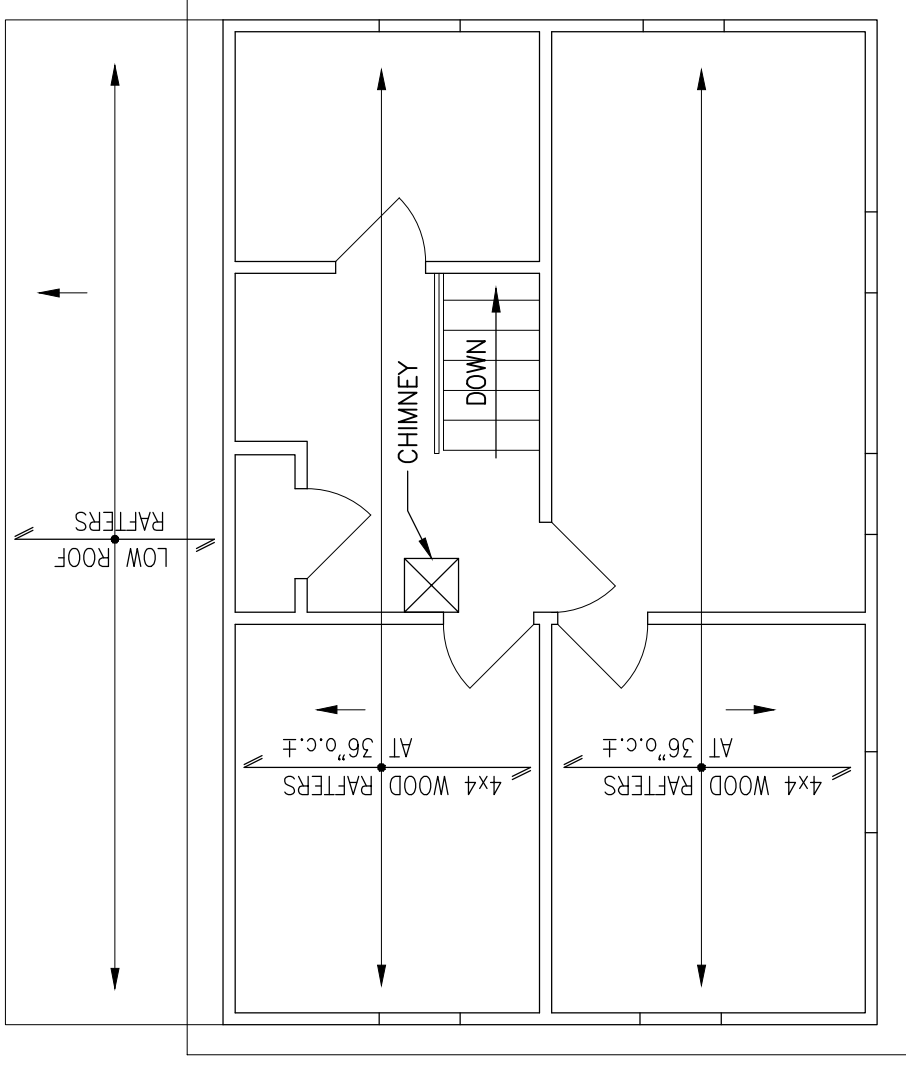
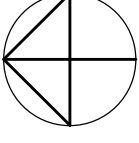
#	REVISION	DATE

SCALE:	AS NOTED
JOB No:	13078.00
DATE:	01/07/2014

GURSKI HOMESTEAD
26 OBTUSE HILL RD.
BROOKFIELD, CT

SKETCH No:
SK-10

NORTH:



FARM HOUSE SECOND FLOOR PLAN WITH ROOF FRAMING

3/16" = 1'-0"

Conlon Engineering, LLC
 Structural Engineers
 203.740.0990



#	REVISION	DATE

SCALE: AS NOTED
 JOB No: 13078.00
 DATE: 01/07/2014

GURSKI HOMESTEAD
 26 OBTUSE HILL RD.
 BROOKFIELD, CT

SKETCH No:
 SK-11



Conlon Engineering, LLC

III. Narrative Describing Existing Conditions

Building 1: Shed

Assessment: Salvageable with extensive repairs

The post and beam wall framing for this building sits atop a sill plate set on grade. The concrete slab on grade floor was cast on grade using the perimeter sill plate as a form. Since the sill plate is exposed to earth on two sides and concrete on another, its exposure is extremely severe and its condition is poor as a result. The lack of a proper foundation for this building is a major inhibition to permanent stabilization since contact between wood and the ground or concrete promotes premature decay of the wood. The building is also not founded below the Code required frost depth and is therefore vulnerable to seasonal movement of the subgrade.

The roof is framed with rough sawn rafters with rafter tail extensions beyond the face of the walls. The rafters, and particularly the tails, are severely rotted from exposure to the elements. The fascias along the rafter tails are also rotted from exposure.

Building 2: Blacksmith

Building previously repaired by others. Not included in this study.

Building 3: Corn Crib

Assessment: Irreversibly deteriorated and not salvageable

All framing for this building is severely deteriorated. Floor framing was concealed by debris along the building interior, but viewable sections are in poor condition. The roof is improperly framed, not having a ridge beam or ties at the ceiling level to hold it together. Its condition is also extremely poor and the center of the roof is severely deflected. Siding is severely deteriorated throughout, as are the roof boards and roll roofing material which was improperly used on a high slope roof. This structure cannot realistically be salvaged since the framing is deteriorated to the extent that it is hollowed out and unable to hold nails that would connect any repair pieces.

Building 4: Shed

Assessment: Salvageable with extensive repairs

The post and beam wall framing for this building sits atop a sill plate set on grade. Since the sill plate is exposed to earth its exposure is extremely severe and its condition is poor as a result. The lack of a proper foundation for this building is a major inhibition to permanent stabilization since contact between wood and the ground promotes premature decay of the wood. The building is also not founded below the Code required frost depth and is therefore vulnerable to seasonal movement of the subgrade.



Conlon Engineering, LLC

The roof is framed with rough sawn rafters with rafter tail extensions beyond the face of the walls. The rafters, and particularly the tails, are severely rotted from exposure. The fascias along the rafter tails are also rotted from exposure. The roof is improperly framed, not having a ridge beam or ties at the ceiling level to hold it together.

There is a sliding door for entry into the shed. The door moves along a metal bar mounted to the face of the building. Operation of the door is extremely difficult due to the weight of the door and binding of the slide mechanism.

Siding condition is highly variable. Some boards are in fair condition, but many are in poor condition and require replacement.

Building 5: Shed

Assessment: Irreversibly deteriorated and not salvageable

All framing for this building is severely deteriorated. The roof is in extremely poor condition and is partially collapsed. Siding and roof decking are severely deteriorated throughout, as is the roll roofing material which was improperly used on a high slope roof. This structure cannot realistically be salvaged since the framing is deteriorated to the extent that it is hollowed out and unable to hold nails that would connect any repair pieces.

Building 6: Privy

Assessment: Salvageable. Requires new foundation and extensive framing/siding repairs

The post and beam wall framing for this building sits atop a sill plate set on grade. Since the sill plate is exposed to earth its exposure is extremely severe and its condition is poor as a result. The lack of a proper foundation for this building is a major inhibition to permanent stabilization since contact between wood and the ground promotes premature decay of the wood. The building is also not founded below the Code required frost depth and is therefore vulnerable to seasonal movement of the subgrade.

The roof is framed with rough sawn rafters with rafter tail extensions beyond the face of the walls. The rafters, and particularly the tails, are severely rotted from exposure to the elements. The fascias along the rafter tails are also rotted from exposure. The roof is improperly framed, not having a ridge beam or ties at the ceiling level to hold it together.

Siding condition is highly variable. Some boards are in fair condition, but many are in poor condition and require replacement.



Conlon Engineering, LLC

Farm House

Assessment: Fair condition. Some structural repair required. All interior finishes require repair.

The roof of the house is framed with rough sawn timbers spaced at four feet on center. There is a pronounced depression in the north side of the high roof. We observed the roof framing from a position on a ladder in the attic access hatch. There is one failed timber coinciding with the depression location and another failed timber along the framing around the chimney. The original roof decking is severely rotted, although it was previously covered with plywood and is no longer supporting the roofing materials. We could not verify the thickness or span rating for the newer plywood, although we note that the rafter spacing is much greater than plywood less than 3/4" can safely span.

The floors are framed with timber joists supported on a center bearing line. Floor and ceiling finishes concealed the underlying framing from view. There is a pronounced depression at both floors near the middle of the house. This was likely related to subsidence of the first floor framing that appears to have been addressed by shoring in the basement level.

The interior plaster walls and ceilings are in extremely poor condition. Plaster is cracked and bulged throughout, and several sections are loose and delaminating from the substrate.

The exterior finishes have been partially restored. The roof covering appears to be relatively new as do some trim boards. There are two layers of siding present. The outer layer is cedar shakes. The base layer, which is visible only near the east entrance, is wood clapboard siding. The cedar shakes are in poor condition throughout. Where clapboard is visible, it is also in poor condition.

Wood window frames and trim are all in poor condition. All trim requires scraping and painting and some is rotted and in need of removal and replacement. Windows, which have wood frames with true divided lights, require scraping, painting, and reglazing. Flashing between the low roof on the north side and the clerestory wall above it is peeling off and in need of replacement. The porch roof along the south side of the house meets the front wall very near the second floor window sill elevation. This configuration is vulnerable to water infiltration with accumulating snow.

There are basement windows in window wells along the east and west walls. Window sills are near grade on the inside of the wells. This configuration is vulnerable to water infiltration through the windows during high groundwater, severe rain events, or accumulating snow.

The brick masonry chimney is exposed above the roof for about four feet. Mortar joints are deteriorated throughout the exposed height of the chimney.

The foundation is mortared stone and surrounds a shallow basement. Foundation walls are in fair condition and appear stable.



Conlon Engineering, LLC

Main Barn

Assessment: Roof is in fair condition (was recently repaired). Floor framing is irreversibly deteriorated and in need of replacement. Walls require additional bracing.

As we understand it, the barn was shored and partially repaired in 2007/2008. Most of the roof framing is new and there is temporary shoring throughout the barn. Roof framing appears to be stable and in fair condition.

The walls and roof are constructed of post and beam framing typical of early American timber framing. The walls are framed without full height or full width framing that would provide out of plane lateral stability for the walls. It is possible that a loft level was part of the original barn construction. A loft level would brace the exterior walls and tend to stabilize the building overall.

The first floor framing is in extremely poor, unstable condition. The 2007/2008 repair project included continuous lines of temporary shoring throughout the lower level for support of the first floor framing. The timber decking, which is not shored, is in extremely poor condition and not safe even for incidental access. The framing is also not engaged with the west side foundation wall. There is no positive mechanical connection between the two, and the entire building appears to have drifted away from the foundation.

The unsafe condition of the first floor framing limited observations that could be made from inside the building. We noted from the exterior that wall timbers are not holding nails or even screws reliably. We were able to pry off, by hand, a wood closure piece that was screwed through the exterior siding into the timber wall framing.

The foundation is mortared stone and is in fair condition. The west side foundation is a full height wall that retains the higher grade along that side of the barn. The wall is in fair condition, although the disengaged floor framing would normally be considered a defect since such walls typically rely on bracing by floor framing for stability.

There is a collapsed section of the barn to the south of the main barn structure. This section is completely collapsed and not salvageable.



Conlon Engineering, LLC

IV. Preliminary Stabilization Design, Prioritization, and Opinion of Probable Cost

Building 1: Shed

Assessment: Salvageable with extensive repairs including:

Budget: \$25,000

1. Construct new foundation
2. Replace rotted sill plate with pressure treated plate
3. Repair/replace rotted framing, including post bases, wall/roof framing, and fascias
4. Repair/replace rotted siding as required
5. Strengthen roof framing per Code

Building 2: Blacksmith

Building previously repaired by others. Not included in this study.

Building 3: Corn Crib

Assessment: Irreversibly deteriorated and not salvageable

Budget: \$20,000

1. Reconstruct to match existing configuration. Salvage some exterior siding for replica structure.

Building 4: Shed

Assessment: Salvageable with extensive repairs as follows:

Budget: \$30,000

1. Construct new foundation
2. Replace rotted sill plate with pressure treated plate
3. Strengthen roof framing per Code
4. Repair/replace rotted framing and siding as required

Building 5: Shed

Assessment: Irreversibly deteriorated and not salvageable

Budget: \$10,000

1. Reconstruct to match existing configuration. Salvage some exterior siding for replica structure.



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Building 6: Privy

Assessment: Salvageable with extensive repairs as follows:

Budget: \$5,000

1. Construct new foundation
2. Replace rotted sill plate with pressure treated plate
3. Strengthen roof framing per Code
4. Repair/replace rotted framing and siding as required

Farm House

Assessment: Fair condition. Some repairs required.

Budget: \$180,000 (Framing and finishes only. Mechanical/electrical work to be determined)

1. Remove and replace failed roof timbers
2. Replace siding throughout
3. Replace flashing at several locations
4. Scrape and paint all windows and trim, reglaze windows
5. Repair/replace exterior trim/window sills
6. All floor and ceiling finishes are in need or replacement. Some floor boards may be salvageable.
7. Level floor finish as required at floor depressions
8. Add areaway pumps at basement window wells
9. Repoint chimney
10. Consider heat trace along porch roof below second floor windows

Main Barn

Assessment: Roof is in fair condition (was recently repaired). Floor framing is irreversibly deteriorated and in need of replacement. Walls require additional bracing.

Budget: \$225,000

1. 100% of the main floor framing is rotted not salvageable. Remove and replace all main floor framing.
2. Construct new foundations for interior columns.
3. Timbers along exterior walls are rotted and cannot hold nails. Once main floor framing is made safe for investigation, probe wall framing and design repairs as required.
4. Configuration of gable wall framing is not stable based on current design practice. Consider adding a loft level for wall bracing.
5. Shoring was not intended to remain permanent. Roof framing will need to be investigated once main floor is made safe and permanent support designed.
6. Approximately 60% of siding may be salvaged. Balance should be replaced.



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7. Collapsed connecting structure on south side is not salvageable. Remove and dispose entirely.

V. Photographs of the Structures Tied to Key Plan

See attached appendix.

Report Limitations

This completes our report. This report is based on visual observations of structural elements that were accessible at the time of our visit. We did not perform any structural calculations or material tests on any of the building elements to determine their conformance to accepted standards. The findings associated with this report are limited to the condition of the exposed structural elements. This report does not express or imply a warranty of the building or of any of the building elements.

The opinions Conlon Engineering expresses in this report were formed utilizing the degree of skill and care ordinarily exercised by any prudent engineer in the same community under similar circumstances. Conlon Engineering assumes no responsibility for the accuracy of information contained in this report which has been obtained from the building management or their representatives, from other interested parties, or from the public domain. The conclusions presented herein represent Conlon Engineering's professional judgment based on information obtained during the course of this assignment. Conlon Engineering's evaluations, analyses, and opinions are not representations of the actual value of the property. The conclusions are based on the data provided, observations made, and conditions that existed specifically on the date of the assessment.

Conlon Engineering, LLC

Patrick Conlon, PE
Principal



V. Photographs of the Structures Tied to Key Plan

V. Photographs of the Structures Tied to Key Plan

V. Photos



Building 1

Front View



Building 1

Rear View



Building 1

Typical Interior View



Building 1

Rotted Roof Framing

V. Photos



Building 1

Timber Framing Set on Grade



Building 1

Rotted Rafter Tails

V. Photos



Building 2

Front View



Building 2

Rear View

V. Photos



Building 3

Front View



Building 3

Rear View

V. Photos



Building 3

Typical Interior View



Building 3

Typical Base Detail with CMU Block

V. Photos



Building 4

Front View



Building 4

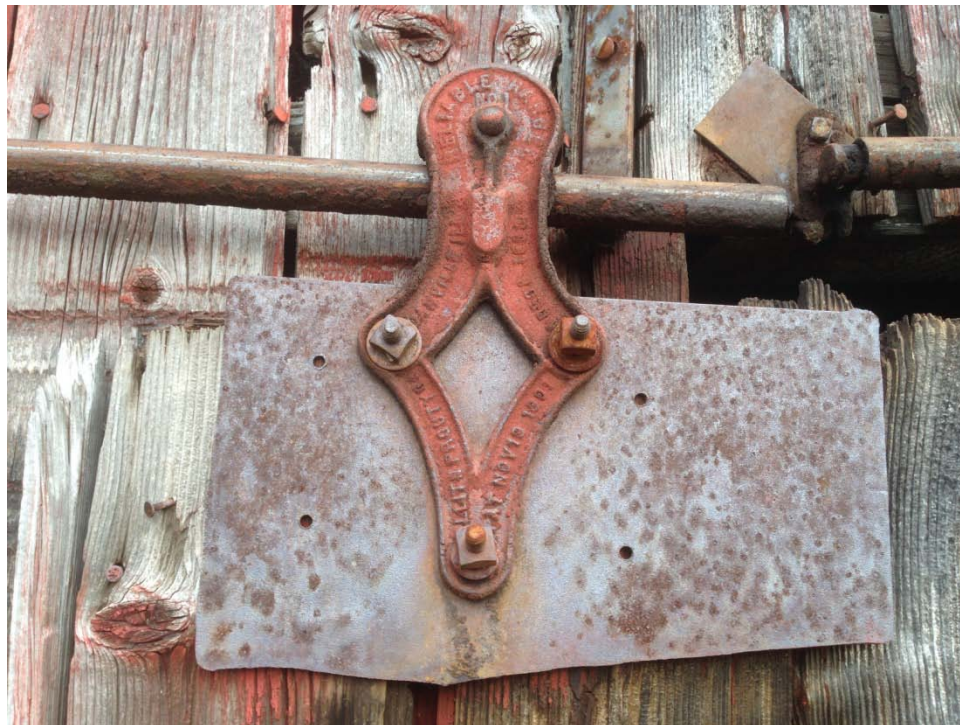
Rear View

V. Photos



Building 4

Side View



Building 4

Sliding Door Mechanism

V. Photos



Building 5

Front View



Building 5

Rear View



Building 5

Typical Roof Condition



Building 5

Typical Interior View



Building 6

Front View



Building 6

Side View



Farm House

Front View



Farm House

Side View

V. Photos



Farm House

Side View



Farm House

Rear View



Farm House

Defective Siding and Deteriorated Window Frames



Farm House

Cracked Plaster Ceiling

V. Photos



Farm House

Cracked Wall Plaster



Farm House

Cracked Wall Plaster

V. Photos



Farm House

Defective Vinyl Floor Covering



Farm House

Cracked Roof Rafter



Farm House

Defective Roof Framing Around Chimney



Farm House

Typical View of Basement

V. Photos



Barn

Front View



Barn

Rear View

V. Photos



Barn

Collapsed Adjoining Structure



Barn

Previously Repaired Roof Framing

V. Photos



Barn

Temporary Shoring for Roof



Barn

Gable Wall Framing

V. Photos



Barn

Severely Rotted Main Level Floor Fanning



Barn

Severely Rotted Main Level Floor Fanning



Barn

Severely Rotted Main Level Framing



Barn

Severely Rotted Main Level Framing



Barn

Temporary Shoring at Main Level



Barn

Severely Rotted Main Level Framing



Barn

View of Foundation



Barn

View of Floor Framing Disengaged From Foundation