NOTICE AND AGENDA

Notice is hereby given that the City Council of the City of Santaquin will hold a City Council Meeting on Wednesday, August 5, 2015, in the Council Chambers, 45 West 100 South, at 6:00 p.m.

1. **ROLL CALL**
2. **PLEDGE OF ALLEGIANCE**
3. **INVOCATION/INSPIRATIONAL THOUGHT**
4. **DECLARATION OF ANY CONFLICT OF INTEREST**
5. **CONSENT AGENDA**
   a. Minutes
      1. July 14, 2015 Special Council Meeting
      2. July 15, 2015 City Council Meeting
   b. Bills
      1. $785,056.90
5. **PUBLIC FORUM, BID OPENINGS, AWARDS, AND APPOINTMENTS**
   Public Forum is held to a 30-minute maximum with each speaker given no more than 5 minutes each. If more than 6 Speakers, time will be adjusted accordingly to meet the 30 minute requirement
6. **FORMAL PUBLIC HEARING**
7. **UNFINISHED BUSINESS**
8. **BUSINESS LICENSES**
9. **NEW BUSINESS**
   a. Discussion and Possible Action with Regard to the Mountain View Drive Project
   b. Discussion and Possible Action with Regard to Outstanding Utility Accounts Receivables
10. **INTRODUCTIONS AND ADOPTION OF ORDINANCES AND RESOLUTIONS**
    a. Resolution 08012015BP
11. **CONVENE OF THE COMMUNITY DEVELOPMENT BOARD**
12. **CONVENE OF THE SPECIAL SERVICE DISTRICT FOR ROADS MAINTENANCE**
    a. Award Bid for the 2015 Road Maintenance Projects
    b. Discussion and Possible Action with regard to Inter-local Micro-Surfacing Road Maintenance
    c. Discussion and Possible Action with regard to the Purchase of a Street Sweeper
13. **CONVENE OF THE LOCAL BUILDING AUTHORITY OF SANTAQUIN CITY**
14. **SPECIAL JOINT WORK MEETING WITH THE SANTAQUIN CITY MUSEUM BOARD**
    a. Report on Structural Analysis of the Chieftain Museum Building
    b. Review of Legal Aspects of Museum Establishment and Operations
15. **PETITIONS AND COMMUNICATIONS**
16. **REPORTS OF OFFICERS, STAFF, BOARDS, AND COMMITTEES**
    a. City Manager Reeves
    b. Assistant City Manager Marker
17. **REPORTS BY MAYOR AND COUNCIL MEMBERS**
    a. Mayor Hunsaker
    b. Council Members
18. **EXECUTIVE SESSION** (May be called to discuss the character, professional competence, or physical or mental health of an individual)
19. **EXECUTIVE SESSION** (May be called to discuss the pending or reasonably imminent litigation, and/or purchase, exchange, or lease of real property)
20. **ADJOURNMENT**

If you are planning to attend this Public Meeting and, due to a disability, need assistance in understanding or participating in the meeting, please notify the City ten or more hours in advance and we will, within reason, provide what assistance may be required.

CERTIFICATE OF MAILING/POSTING

The undersigned duly appointed City Recorder for the municipality of Santaquin City hereby certifies that a copy of the foregoing Notice and Agenda was e-mailed to the Payson Chronicle, Payson, UT, 84651, posted in 3 places; City Center, Post Office and Zions Bank as well as posted on the State of Utah's Public Website.

BY: SBFarnsworth
Susan B. Farnsworth, City Recorder

® Amendment to the agenda

MINUTES OF A REGULAR COUNCIL MEETING
HELD IN THE COUNCIL CHAMBERS
AUGUST 05, 2015

The meeting was called to order by Mayor Kirk Hunsaker at 6:00 p.m. Council Members attending: Keith Broadhead, David Hathaway, Mandy Jeffs, and Nick Miller. Matthew Carr arrived at 8:26 p.m.

Others present: City Manager Benjamin Reeves, Assistant City Manager Dennis Marker, Legal Counsel Brett Rich, Director Wade Eva, Treasurer Shannon Hoffman, Cindy Johnson, Catherine Holman, Lee Johnson, Janna Johnson, Annette Bott, Katie Davis, Keela Goudy, Brad Peterson, Matthew Roblez, Irene Farley, and Marianne Stevenson.

PLEDGE OF ALLEGIANCE
Treasurer Hoffman led the Pledge of Allegiance.

INVOCATION/INSPIRATIONAL THOUGHT
Mr. Johnson offered an Invocation.

DECLARATION OF ANY CONFLICT OF INTEREST
Council Member Broadhead stated he worked for Epic Engineering, a company which has submitted a pay request.

CONSENT AGENDA

Minutes

July 14, 2015 Special Council Meeting
July 15, 2015 City Council Meeting

Bills

$785,056.90

Council Member Miller moved to approve the Consent Agenda. Council Member Jeffs seconded the motion. The vote was follows:

Council Member Broadhead	Aye
Council Member Hathaway	Aye
Council Member Jeffs	Aye
Council Member Miller	Aye

The vote to approve the Consent Agenda passed unanimously.

PUBLIC FORUM, BID OPENINGS, AWARDS, AND APPOINTMENTS
There wasn't any need for a Public Forum, any bid openings, awards, or appointments.

FORMAL PUBLIC HEARING
No formal public hearings were held.

UNFINISHED BUSINESS
No unfinished business was discussed.

BUSINESS LICENSES
No new business licenses were reported.

NEW BUSINESS

Discussion and Possible Action with Regard to Outstanding Utility Accounts Receivables

City Manager Reeves stated the City currently has approximately $100,000 on the "books" as uncollectible Utility Bills. City Manager Reeves reported currently only the Mayor can "write off" accounts, and only for the following reasons:

- Bankruptcy
- Death

When an account is sent to collections, the collection fee of 35% is added to the total due to offset the collection costs.

The outstanding receivables are as follows:

- Before 2010 $40,613
- 2011 $ 7,656
- 2012 $13,204
- 2013 $14,719
- 2014 $25,337

It was recommended that the City begin writing off old accounts over a 3 year period, starting with those incurred before 2012. It was suggested the billings could be run through the Special Service District which would allow a lien to be placed on the property without having to go through the court system.

Council Member Miller asked if the "shut-off" policy could be revised. The Council Members were in agreement that an account would be considered "past due" if not paid by 7 day s after the due date.

It was also suggested increasing the deposit to $200.00 for those who cannot prove proof of ownership of the property.

Council Member Miller moved to have changes made to the Utility Ordinance and have it presented for consideration, have the Fee Schedule updated, and begin writing off outstanding receivables from 2011 and older. Council Member Jeffs seconded the motion. The vote was follows:

Council Member Broadhead	Aye
Council Member Hathaway	Aye
Council Member Jeffs	Aye
Council Member Miller	Aye

The motion passed unanimously.

Discussion and Possible Action with Regard to the Mountain View Drive Project

Assistant City Manager reviewed the details of the newly awarded Mountain View Drive Project. The Council authorized Greenhalgh Construction to complete Mountain View Drive, and rather than have the developer install sidewalk on the north side of the road, have him put that cost into the trail on the south side of the road. A few years back the City cashed a bond which was to be used for all the improvements. When the City cashed the bond, the City obligated itself to improve the south side. The bond that was cashed was not sufficient to cover

all the costs. The current developer has committed to installing the landscaping on both sides of the road if the City will install the trail system.

He would like to complete the landscaping in phases. During the July 15th Council Meeting there were a number of installation options presented. Alternative #3 reflected continuing the trail from Summit Ridge Parkway to Crest Dale Lane and alternative #4 to continue the trail past Crest Dale Lane to Summit Trails Drive.

Council Member Miller moved to approve Alternative #3 and have Assistant City Manager Marker draft an agreement with the property owner and options for funding of Alternative #4. (See attachment "A") Council Member Jeffs seconded the motion. The vote was follows:

Council Member Broadhead	Aye
Council Member Hathaway	Aye
Council Member Jeffs	Aye
Council Member Miller	Aye

The motion passed unanimously.

INTRODUCTIONS AND ADOPTION OF ORDINANCES AND RESOLUTIONS

Resolution 08012015BP

Council Member Miller moved to approve Resolution 08-01-2015BP as presented. Council Member Jeffs seconded the motion. The roll call vote was follows:

Council Member Broadhead	Aye
Council Member Hathaway	Aye
Council Member Jeffs	Aye
Council Member Miller	Aye

The vote to approve Resolution 08-01-2015BP was unanimous.

CONVENE OF THE COMMUNITY DEVELOPMENT BOARD

The Community Development Board was not convened.

CONVENE OF THE SPECIAL SERVICE DISTRICT FOR ROADS MAINTENANCE

Council Member Miller moved to convene the Special Service District for Roads Maintenance. Council Member Hathaway seconded the motion. The vote was follows:

Council Member Broadhead	Aye
Council Member Hathaway	Aye
Council Member Jeffs	Aye
Council Member Miller	Aye

The motion passed unanimously.

Award Bid for the 2015 Road Maintenance Projects

Director Eva reviewed the bids received for the 2015 Street Paving Project. (See attachment "B") A discussion was held as to the testing requirements. Director Eva indicated there would be a tester on site. He also requested adopting the "APWA" Standards for any future projects.

Board Member Broadhead moved to award the 2015 Road Maintenance Project to Bennett in the amount of $258,410.00, pending negotiation and a contract being approved by the Council. Board Member Miller seconded the motion. The vote was as follows:

Board Member Broadhead	Aye
Board Member Hathaway	Aye
Board Member Jeffs	Aye
Board Member Miller	Aye

The motion passed unanimously.

Discussion and Possible Action with regard to Inter-local Micro-Surfacing Road Maintenance

Board Member Miller moved to approve a contract with American Pavement Preservation, not to exceed $85,600.00, for Micro-Surfing Road Maintenance. (See attachment "C") Board Member Hathaway seconded the motion. The vote was as follows:

Board Member Broadhead	Aye
Board Member Hathaway	Aye
Board Member Jeffs	Aye
Board Member Miller	Aye

The motion passed unanimously.

Discussion and Possible Action with regard to the Purchase of a Street Sweeper

Board Member Miller moved to approve the purchase of a street sweeper not to exceed $55,000. Board Member Jeffs seconded the motion. The vote was as follows:

Board Member Broadhead	Aye
Board Member Hathaway	Aye
Board Member Jeffs	Aye
Board Member Miller	Aye

The motion passed unanimously.

Board Member Miller moved to return to the Council Meeting. Council Member Broadhead seconded the motion. The vote was follows:

Council Member Broadhead	Aye
Council Member Hathaway	Aye
Council Member Jeffs	Aye
Council Member Miller	Aye

The motion passed unanimously.

The Council members took a 5 minute break.

CONVENE OF THE LOCAL BUILDING AUTHORITY OF SANTAQUIN CITY

The Local Building Authority of Santaquin City was not convened.

SPECIAL JOINT WORK MEETING WITH THE SANTAQUIN CITY MUSEUM BOARD

Report on Structural Analysis of the Chieftain Museum Building

Mr. Roblez reported McNeil Engineering Structural completed the structural analysis of the Museum. Their cost estimate for upgrading the roof is $561,000, and the full retrofit (including the roof) would be $3,370,000.00. Mr. Roblez reviewed the full report. (See attachment "D")

Review of Legal Aspects of Museum Establishment and Operations

Assistant City manager Marker reported he attended a conference with regard to "Legal Issues for Small Museums". Information received at the training is included in a presentation labeled attachment "E".

City Staff will work with Ms. Bott to research the "Foundation" information while the Museum Board begins the inventory process.

PETITIONS AND COMMUNICATIONS

No Petitions or Communications were addressed.

REPORTS OF OFFICERS, STAFF, BOARDS, AND COMMITTEES

City Manager Reeves reported the following:

- Council Member Carr is on his way to the meeting and should arrive at any time.
- On the next Council agenda will be the review of the contract for the cell tower. They are requesting an extension of 25 years and a first right of refusal. City Manager Reeves was encouraged to strike out the first right of refusal but add a provision to subdivide the property the tower is "sitting" on.
- Sand blasting of the lines along 300 West will begin this week. The Residents along the roadway has received information pamphlets telling them mail boxes and garbage cans should be placed on the East side of the road. The Residents were also encouraged to put their house numbers on their cans.
- The contract for the Everbridge system will be ready for next Council Meeting. Chiefs Hurst and Olson are testing the system before giving final approval.
- Utah League of Cities and Town will be held in September. Anyone interested in attend should let Mr. Reeves know by Friday, August 7.
- One of the goals of the Mayor and Council Members was to improve public relations. The question was asked if they would like to hold a ribbon cutting for the new 500 East road. Council consensus held they would prefer holding a ground breaking ceremony for the new Public Works Building.
- The ground breaking at the Public Works Building is scheduled for Wednesday, August 19 at 5 p.m.

Assistant City Manager Marker

- The interviews for the new Engineer in Training (EIT) has been completed and an offer of employment was extended. The name of the individual will be announced when and if they accept the offer.
- An Orchard Days "download session" is scheduled for Wednesday the 12th at 9 a.m. It will be held in the conference room on the main floor in the City building.
- A Planning Commission meeting is scheduled for Thursday, August 13. At this time there are not many agenda items to discuss.

REPORTS BY MAYOR AND COUNCIL MEMBERS

Mayor Hunsaker

Mayor Hunsaker indicated he had been approached by 2 residents inquiring about placing an "S" on the mountain side. Commission consensus held this wait until the City has a High School.

Council Members

Council Member Hathaway reported the following:

- Pam Ahlin Farr had contacted him with regard to naming of the P.I. Pond located on the Ahlin Property. She indicated the family had been told the pond would be named after her Grandfather Theodore Ahlin. It is currently known as the Pole Canyon Urban Fishery. Council Member Broadhead suggested having a proclamation on the agenda of the next council meeting to rename the park area.
- He talked with Paige Steele with regard to holding a demolition derby in the arena. The Circuit Representative has been contacted to get additional information
- He has received complaints of the vendors being limited in the park on the last Saturday of the celebration. The issue will be discussed during the "download session".

EXECUTIVE SESSION (May be called to discuss the character, professional competence, or physical or mental health of an individual)
No Executive Session was called to discuss the character, professional competence, or physical or mental health of an individual.

EXECUTIVE SESSION (May be called to discuss the pending or reasonably imminent litigation, and/or purchase, exchange, or lease of real property)
No Executive Session was called to discuss the pending or reasonably imminent litigation, and/or purchase, exchange, or lease of real property.

ADJOURNMENT

At 8:49 p.m. Council Member Miller moved to adjourn. Council Member Jeffs seconded the motion. The vote was follows:

Council Member Broadhead	Aye
Council Member Hathaway	Aye
Council Member Jeffs	Aye
Council Member Miller	Aye

The motion passed unanimously.

Approved on August 19, 2015.

Kirk F. Hunsaker, Mayor

Susan B. Farnsworth, City Recorder

Santaquin City Mountain View Drive Extension
Trail Segments and Landscaping Discussion

Mountain View Road (North) - 15' wide, 1262' long

$	**48,725.50**	Developer's costs today with 10' of LS and 5' Sidewalk
$	3,088.00	Additional LS costs with sidewalk removed
-$	18,299.00	Sidewalk Costs Removed
$	**33,514.50**	Developer's costs with 15' of landscaping and NO sidewalk
$	**15,211.00**	**Cost difference (savings) with no sidewalk**

Mountain View Drive (South side from SR PKWY to Crest Dale Ln intersection) - 15' wide, 735' long

$	**21,434.00**	City's cost for 15' of landscaping on the South Side (1st segment)

Developer is willing to landscape both sides (1262 +735) if the City will install the trail for 1st segment
Developer will also provide structural fill to fill in the existing "hole" prior to Road Base for the Trail

Mountain View Drive (Southside from Crest Dale Ln to Summit Trails intersection) - 15' wide, 813' long

$	**23,545.00**	City's cost for 15' of landscaping on the South Side (2nd segment)

Developer may be willing to landscape this segment (813') with a Future Stone Hollow Phase (158 Lots)
If the City will install the trail for this 2nd segment

ADDENDUM 1

ADDITIVE ALTERNATE NO. 2 (2 SR PKWY TRAIL SEGMENTS)						
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Unit Price**	**Amount Option A**	**Amount Option B**
Add Alt 2 – 1	Additional Mobilization, Bonding, Etc.	LS	1	776.00	776.00	776.00
Add Alt 2 – 2	Excavate for, furnish and install 2-inch sleeve	LF	30	6.50	195.00	195.00
Add Alt 2 – 3	Excavate for, furnish and install 4-inch sleeve	LF	30	9.00	270.00	270.00
Add Alt 2 – 4	Furnish and install asphalt trail (2-1/2-inches thick)	SF	9,620	1.10	10,582.00	10,582.00
Add Alt 2 – 5	Grade, shape & compact existing roadbase	SF	10,610	.15	1,591.50	1,591.50
Add Alt 2 – 6	Excavate for, furnish and install ADA compliant curb ramp (not including curb & gutter)	EA	1	1,000.00	1,000.00	1,000.00
Additive Alternate No. 2 Total of All Unit Price Bid Items					$14,414.50	$14,414.50

ADDITIVE ALTERNATE NO. 3 (MTN. VIEW DRIVE TRAIL SEGMENT)						
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Unit Price**	**Amount Option A**	**Amount Option B**
Add Alt 3 – 1	Additional Mobilization, Bonding, Etc.	LS	1	600.00	600.00	600.00
Add Alt 3 – 2	Clear & grub, excavate and prepare trail for roadbase	SF	6,262	.53	3,318.86	3,318.86
Add Alt 3 – 3	Excavate for, furnish and install 2-inch sleeve	LF	30	6.50	195.00	195.00
Add Alt 3 – 4	Excavate for, furnish and install 4-inch sleeve	LF	30	9.00	270.00	270.00
Add Alt 3 – 5	Furnish and install asphalt trail (2-1/2-inches thick)	SF	5,566	1.10	6,122.60	6,122.60
Add Alt 3 – 6	Furnish, place and compact roadbase (6-inches thick)	TON	250		4,937.50	4,937.50

Add Alt 3 – 7	Excavate for, furnish and install ADA compliant curb ramp (not including curb & gutter)	EA	1	1,000.00	1,000.00	1,000.00
Additive Alternate No. 3 Total of All Unit Price Bid Items					$16,443.94	$16,443.94
ADDITIVE ALTERNATE NO. 4 (2 MTN. VIEW DRIVE TRAIL SEGMENTS)						
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Unit Price**	**Amount Option A**	**Amount Option B**
Add Alt 4 – 1	Additional Mobilization, Bonding, Etc.	LS	1	1,000.00	1,000.00	1,000.00
Add Alt 4 – 2	Clear & grub, excavate and prepare trail for roadbase	SF	8,625	.53	4,571.25	4,571.25
Add Alt 4 – 3	Excavate for, furnish and install 2-inch sleeve	LF	50	6.80	340.00	340.00
Add Alt 4 – 4	Excavate for, furnish and install 4-inch sleeve	LF	50	9.03	451.50	451.50
Add Alt 4 – 5	Furnish and install asphalt trail (2-1/2-inches thick)	SF	7,670	1.10	8,437.00	8,437.00
Add Alt 4 – 6	Furnish, place and compact roadbase (6-inches thick)	TON	300	19.75	5,925.00	5,925.00
Add Alt 4 – 7	Excavate for, furnish and install ADA compliant curb ramp (not including curb & gutter)	EA	2	1,000.00	2,000.00	2,000.00
Add Alt 4 – 7	Adjust manhole to grade	EA	3	750.00	2,250.00	2,250.00
Add Alt 4 – 8	Excavate for, furnish and install concrete sidewalk (5' wide)	SF	60	13.50	810.00	810.00
Additive Alternate No. 4 Total of All Unit Price Bid Items					$25,784.75	$25,784.75
Total of All Unit Price Bid Items (inc. additive alternates and options)					$314,874.96	$329,091.11

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Santaquin City
Street Paving
2015

Assume	300,000	SF	5,500	SF
Overlay	2"	Subtotal	3"	Subtotal
Bennett	$ 0.77	$ 231,000.00	$ 1.22	$ 6,710.00
Staker	$ 0.76	$ 228,000.00	$ 1.18	$ 6,490.00
Eckles	$ 0.80	$ 240,000.00	$ 1.67	$ 9,185.00
Bonneville	$ 0.99	$ 297,000.00	Not provided	$ -

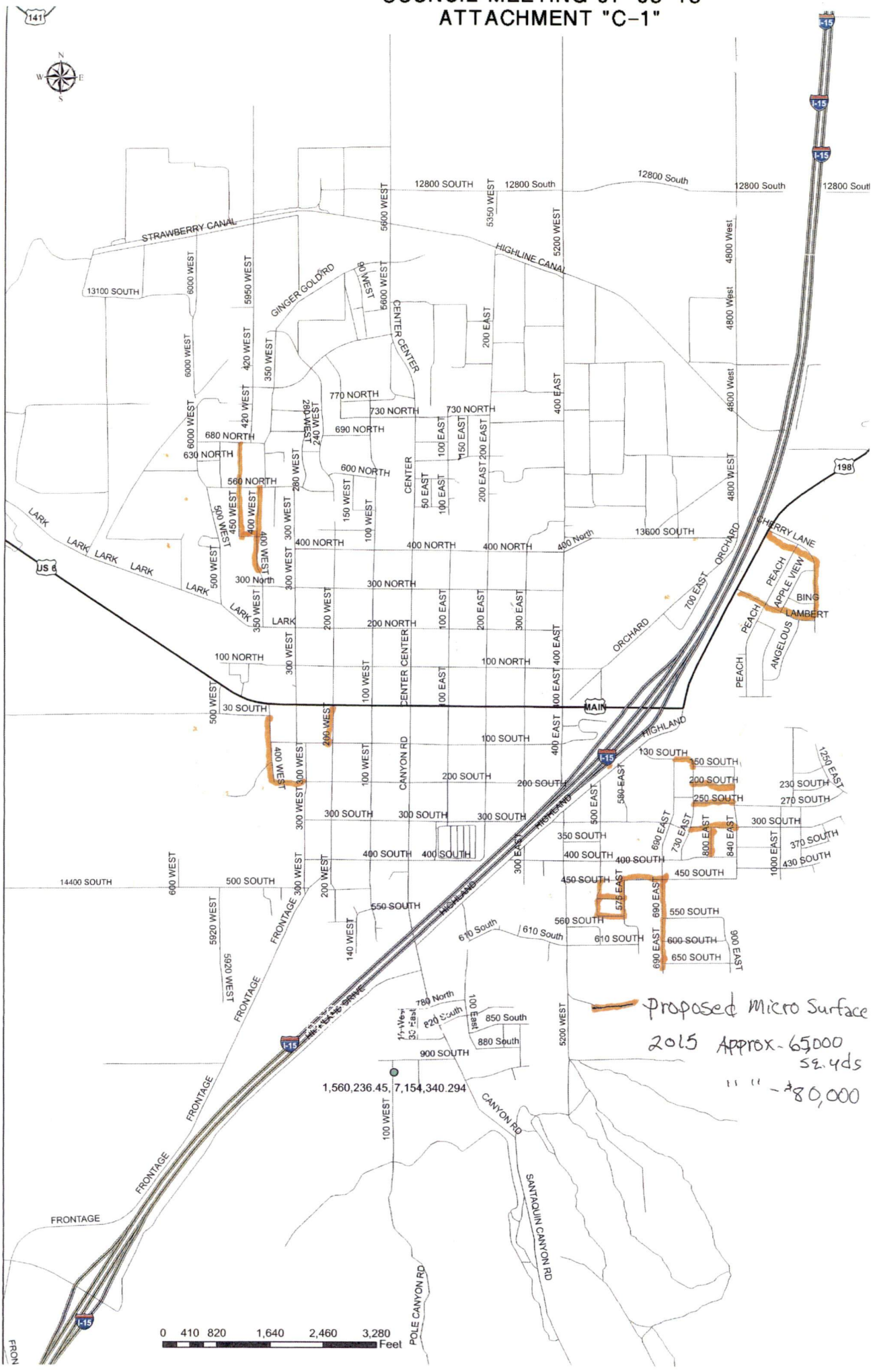
Level Course			
Assume	300	TONS	Subtotal
Bennett	$ 69.00	per ton	$ 20,700.00
Staker	$ 76.00	per ton	$ 22,800.00
Eckles	$ 75.00	per ton	$ 22,500.00
Bonneville	$ 85.00	per ton	$ 25,500.00

Traffic Control		LS	Subtotal
Bennett	$ -		$ -
Staker	$ 6,000.00		$ 6,000.00
Eckles	$ 500.00		$ 500.00
Bonneville	Not provided		$ -

Summary		
Bennett		**$ 258,410.00**
Staker		$ 263,290.00
Eckles		$ 272,185.00
Bonneville		$ 322,500.00

COUNCIL MEETING 07-05-15
ATTACHMENT "B-2"

COUNCIL MEETING 07-05-15
ATTACHMENT "C-1"



AMERICAN PAVEMENT PRESERVATION

PROPOSAL

AMERICAN PAVEMENT PRESERVATION
GENERAL ENGINEERING CONTRACTOR
NEVADA UNLIMITED LICENSE NUMBER 0051240
4725 E. CARTIER, LAS VEGAS, NV 89115
702-507-5444 OFFICE, 702-249-5811 CELL, 702-644-0128 FAX
AN EQUAL OPPORTUNITY EMPLOYER

Contractor License numbers

Arizona	ROC 261874 A
California	A 972820
Idaho	U2 0148818
New Mexico	GA 98 373518
Utah	E100 75479375551

PROPOSAL SUBMITTED TO		PHONE	FAX	DATE
City of Santaquin	Wade Eva	801-420-3006	sent by e-mail	08/04/15
STREET		JOB NAME		
		City of Santaquin slurry seal		
CITY, STATE AND ZIP CODE		JOB LOCATION		Proposal #
		City of Santaquin Utah		151405

Member of the Asphalt Seal Coat Manufactures Association and the International Slurry Surfacing Association
"SEAL THE AMERICAN WAY" WITH YOUR PAVEMENT PRESERVATION COMPANY

Proposal Item Description		Quantity	Unit	Unit Price	Total
based on Springville Utah Project specifications					$0.00
					$0.00
Mobilization		1	LS	$5,000.00	$5,000.00
					$0.00
Traffic control		1	LS	$3,900.00	$3,900.00
					$0.00
Type 2 Latex modified aggregate microsurfacing seal material		65000	SY	$1.18	$76,700.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
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					$0.00
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					$0.00
					$0.00
					$0.00
					$0.00
		ESTIMATED TOTAL COST			**$85,600.00**

Attachment A is part of this proposal and agreement

All materials guaranteed to be as specified. All work to be completed in a workmanlike manner according to standard practices. Any alteration or deviation from above specifications involving extra costs will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado, flood, and other necessary insurance. Our workers are fully covered by Workman's Compensation Insurance.

AUTHORIZED SIGNATURE _____
Eric M. Reimschiissel

NOTE: This proposal may be withdrawn by us if not accepted within __5___ days.

ACCEPTANCE OF PROPOSAL: The above prices, specifications and conditions including Attachment A are satisfactory and are hereby accepted. American Pavement Preservation. is authorized to do the work as specified. Payment will be made as outlined above.
City of Santaquin to pay for all collection costs if payment is not made as agreed

Date of Acceptance:_____ Name of Firm: City of Santaquin

Please approve proposal to have project scheduled By: _____
Owner or owners representative Title

PROPOSAL SUBMITTED TO	PHONE	FAX	DATE
City of Santaquin	801-420-3006	sent by e-mail	08/04/15

	JOB NAME	PROPOSAL #
Attachment A FOR JOB NAME	City of Santaquin slurry seal	151405

GENERAL CONDITIONS & EXCLUSIONS

Due to the current unstable crude oil prices ALL PRICES ARE BASED ON CURRENT OIL PRODUCT PRICES. Market price for oil products including fuel, lubricants, asphalt materials and liquid asphalt are current, are extremely unstable, and are subject to change at any time.
Any increase in oil products and or asphalt prices from date of proposal will be passed on to Owner.
Security, if required, to be furnished by Owner. No retention on the work to be held
Payment shall be made as the work progresses in an amount equal to the value of the work done, less the sum of any previous payments. The entire amount of the contract to be paid within 30 days after completion.
Interest will accrue at the rate of 1.5% per month on any unpaid balance remaining at 60 days from invoice date.
If proposal is accepted, entire proposal including all conditions and exclusions must be made part of contract.
Unit prices shall prevail, Excludes any item not specifically listed above. Excludes removal of hazardous waters if encountered.
Oil spots to be scraped but due to oil in the asphalt seal may not bond to these areas

Proposal to include the following:

1. Slurry Seal to meet APP 3% Latex Modified Type 2 Slurry Seal Material Specifications.
2. Traffic control by work area or road closure and barricading of parking areas by prime contractor or owner
3. Unit prices to prevail above the minimum amount quoted. Overruns at the unit prices quoted or by dividing the lump sum by the quantity
4. Water and stockpile site for slurry seal operations included
5. Covering of utilities to include metal manhole covers and water valves, owner to locate and mark items to be protected.
6. American Pavement Preservation is not responsible for any sub-base problems or any damage to the asphalt or underground items due to the weight of the machinery required to complete the work

Proposal items not included:

1. Any item not specially included
2. Removal or installation of any pavement markings including buttons, markers, reflectors, striping, etc.
3. Testing if required by owner
4. Traffic control plan and traffic control. Plan and traffic control can be obtained for an additional cost
5. Inspection costs and notifications of agencies or others affected by the work.
6. Surveying, layout, locating underground access valve covers or manhole covers.
7. Complete elimination of any drainage problems, cracking or base failures, asphalt repairs, divot patching, concrete work
8. Prevailing wage
9. Removal of vehicles and items from work area.
10. Ravel sweeping
11 Surface preparations prior to slurry seal

Notes in reference to seal coat and slurry seal

1. The complete elimination of any drainage problems or reflective cracking is not intended or guaranteed.
2. Power steering turning marks are normal and should not be cause for concern
3. The new surface to remain tender for a few weeks and during hot temperatures.
4. American Pavement Preservation is not responsible for damage to finished surface by garbage trucks, landscapers, others, or human, vehicle or animal tracking of the fresh material.
6. Parking stall oil spots to be ground as per City specification, or other wise treated, but due to penetration of the vehicle oil into the asphalt, adhesion of the slurry seal in these areas cannot be guaranteed.
7. Ravel sweeping to be completed by the property owner
8. Work area to be accessible to slurry equipment and project to be completed while crew is in the area
9. Retention not to be held on American Pavement Preservation portion of the work

American Pavement Preservation is a non-union contractor and will complete the work on a non-union basis, with non-union open merit shop employees only.
American Pavement Preservation will not sign or become signatory to any union or sign any labor agreements
American Pavement Preservation will not contribute or pay into any organized labor funds

COUNCIL MEETING 07-05-15
ATTACHMENT "D-1"

McNEIL ENGINEERING, INC.
8610 SOUTH SANDY PARKWAY - SANDY UTAH 84070
801-255-7700 - WWW.MCNEILENGINEERING.COM

CIVIL, STRUCTURAL ENGINEERING & LAND SURVEYING
PAVEMENT & ROOF CONSULTING

PROJECT	DATE	SHEET OF
Santaquin City Museum ASCE/SEI 31-03 Seismic Evaluation & ASCE/SEI 41-06 Seismic Evaluation	07-27-2015	
	DESIGNED BY TAL	PROJECT NO. 15118

ROOF ONLY

OPINION OF PROBABLE COST FOR ROOFING REPLACEMENT AND ROOF STRUCTURAL RETROFITS ONLY (INCLUDES REPLACMENT OF ARCHITECTURAL ELEMENTS DAMAGED OR REMOVED FOR STRUCTURAL WORK):

TOTAL FOR ROOF ONLY RETROFIT: $561,000*

FULL RETROFIT (INLUDING ROOF)

OPINION OF PROBABLE COST FOR ALL RETROFITS LISTED IN ROOFING AND STRUCTURAL REPORT (INCLUDING ITEMS LISTED DIRECTLY ABOVE):

$1,920,000

OPINION OF PROBABLE COST FOR REPLACEMENT OF ARCHITECTURAL ELEMENTS OF SIMILAR TYPE AS EXISTING (ELEMENTS DAMAGED OR REMOVED FOR STRUCTURAL WORK):

$1,450,000

TOTAL FOR FULL RETROFIT: $3,370,000*

*This does include architectural and structural fees. This does not include electrical or mechanical upgrades that may be necessary. This does not include any asbestos/lead paint abatement that may be necessary (note that the bat and bird guano in the attic may be considered “hazardous waste”).

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Sandy, UT 84070
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LICENSED CERTIFIED STRUCTURAL ENGINEER
#0189978-2203
MATTHEW ROBLEZ
07/27/2015
STATE OF UTAH

IMPORTANT
The seal is not in red or green ink and the signature is not in red or blue ink, then this is an unauthorized copy and is to be rejected as unsanctioned and unusable.

Structural Calculations

For

Santaquin City

Santaquin City Museum
ASCE/SEI 31-03 Seismic Evaluation &
ASCE/SEI 41-06 Seismic Rehabilitation

100 West 100 South
Santaquin, Utah

Prepared by: Tevi Lawson and Michael Ekenstam
Supervised by: Matthew Roblez, S.E.

June 30, 2015

McNeil Engineering assumes responsibility only for the items addressed herein and does not assume responsibility for the remainder of the structure. No site observations are scheduled to verify the understanding of the contractor or the proper installation of the items addressed.

These calculations have been authorized for use at the property shown above. No provisions have been made for the re-use of these calculations on any other property.

15118

SEISMIC EVALUATION REPORT

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PAVEMENT & ROOF CONSULTING

PROJECT	DATE	SHEET OF
Santaquin City Museum ASCE/SEI 31-03 Seismic Evaluation & ASCE/SEI 41-06 Seismic Evaluation	06-30-2015	
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THE SANTAQUIN CHIEFTAIN MUSEUM BUILDING
Seismic Evaluation Report

I. Introduction

The purpose of this study is to evaluate the expected performance of The Santaquin Chieftain Museum Building in Santaquin, Utah during an earthquake, and to provide general recommendations to strengthen the building, as required. The building structure was evaluated for general conformance to the requirements of ASCE 31-03, an approved national standard whose minimum seismic performance objective is Collapse prevention. It is assumed that structures that satisfy the collapse preventtion criteria of ASCE 31-03 and ASCE 41-06 may be significantly damaged in a major earthquake, but the occupants should be able to safely exit the building, as discussed in Section C below.

The evaluation is based on a LiDAR survey and cursory visual observations.

A. Seismic Evaluation Overview

Evaluating existing buildings for potential damage from an earthquake requires balancing structural engineering concerns with the current public policy of upgrading these buildings to reduce seismic risk. In general, public codes exist as a benchmark for seismic evaluation. Consequently, priorities must be developed regarding loss of life and/or building damage in the event of an earthquake. Priorities are established based on two factors:

1. The level of risk to life and property.
2. The level of risk to structural elements of the building.

The level of risk reduction determines the objective of the seismic evaluation. There are a number of seismic evaluation philosophies representing various performance goals. The evaluation of the Santaquin Chieftain Museum Building was performed using Collapse prevention objective.

B. Building Code Requirements

Generally speaking, most building departments require that a seismic upgrade be performed when one or more of the following substantial alteration issues is being addressed by the owner of a building:

1. Extensive structural repair.
2. Remodeling which substantially extends the useful physical and/or economic life of the building.
3. A Change of a significant portion of a building to an occupancy that is more hazardous.
4. Re-occupancy of a building that has been vacant for over 12 months.

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Substantial alteration requirements may also trigger additional fire safety, mechanical upgrade, or other renovations to be performed concurrent to seismic upgrades.

If a renovation is deemed a substantial alteration, the seismic provisions of the current building code, or an approved standard, is enforced. Currently, most building departments in Utah accept ASCE 31-03 and ASCE 41 - 06, the Seismic Evaluation of Existing Buildings as an approved standard. Published in 2003, ASCE 31-03 represents the most current evaluation methodology for the investigation of existing buildings.

C. Performance Based Evaluation (ASCE 31-03)

The basis of this evaluation is the American Society of Civil Engineers document Seismic Evaluation of Existing Buildings (ASCE 31-03). ASCE 31-03 is the current standard for the evaluation of existing structures. The purpose of the methodology is to provide guidance in the review of a building's response to earthquakes based on a "level of performance" philosophy.

ASCE 31-03 recommends the use of seismic forces that vary depending on the expected level of performance of the structure. The desired level of performance is chosen by the owner, in conjunction with, the design professional and local building authority.

The Life-Safety performance level allows for significant damage to both structural and non-structural components during a design earthquake. Some margin of safety against either partial or total collapse remains. Injuries may occur, but the level of risk for life-threatening injury and entrapment is low. In other words, substantial damage may be sustained by the building while still providing life-safety protection for the occupants and the ability to egress safely – re-occupancy is a secondary concern.

The Collapse Prevention performance level allows significant damage to components and continues to support gravity loads but retain no margin against collapse, and is in compliance with the acceptance criteria specified in ASCE41-06. Significant risk of injury due to falling hazards from structural debris may exist. The structure may not be technically piratical to repair and is not safe for re-occupancy as aftershock activity could induce collapse.

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The analysis methodology of ASCE 31-03 employs a three tier methodology – the quick check methodology (Tier 1 analysis), a more rigorous and calculation intensive Tier 2 analysis, and very detailed component evaluation Tier 3 analysis (involving advanced computational methods including non-linear analysis).

The Tier 1 quick check employs a set of checklists for each building type. The checklist contains a set of evaluation statements (generally qualitative) which help identify areas of concern with regard to the structures' ability to adequately transmit earthquake forces to the foundation system surrounding soils.

The Tier 2 Analysis methodology involves numerical calculations to determine the stiffness and strength of various framing elements and connections within the structure, based on material and geometric properties. The values derived from the analysis are compared to code prescribed allowable in order to determine the "weak links" in the structural system.

The Tier 3 analysis methodology is component-based evaluation procedure that relies on linear and non-linear, as well as static and dynamic analysis to verify acceptable performance. Tier 3 analysis are very computationally intensive and are generally impractical for typical buildings. A Tier 3 analysis is beyond the scope of this report.

D. Summary of Evaluation

Evaluation force Levels and their performance goals are based on the average performance of a particular building type. The do not relate in any rigorous fashion to a particular building. The general ASCE 31-03 methodology is appropriate to use as a basis for the analysis of the Santaquin Chieftain Museum Building, given its age, type of construction, and occupancy. This building was evaluated for a Life-Safety performance goal.

II. Scope of Work

The scope of work for the seismic evaluation of the Santaquin Chieftain Museum Building includes the following:

1. Visual observations of the exterior of the building.

2. Performed Lidar surveying of the structure to document the basic in situ condition of the building and create floor plan

3. Provide a Tier 1 seismic evaluation of the structure using ASCE 31-03

4. Develop preliminary mitigation (strengthening) schemes to address life-safety seismic concerns identified per ASCE 41-06.

5. Perform gravity analysis on the roof elements and provide basic strengthening recommendations.

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6. Provide a formal evaluation report outlining and summarizing the findings and recommendations.

III - **Building Description**

A. General

It should be noted that many of the observations and assumptions were based on the photographs. It is possible that there have been modifications to the building that are not accounted for in this report due to the lack of documentation or destructive field investigation.
The building appears to have been primarily constructed in 1903. The building appears to have retained the majority of its original exterior form. There appears to be additions to this structure after the original 1903 construction was completed.

The approximate footprint of the original building is 52-feet (N-S) x 50 (E-W). The building consists of two levels: 1st, and 2nd floor.

B. Document Review

Drawings were not available.

C. Foundation System

It appears that all walls are supported by both stone foundations (original construction) and concrete walls on spread footings (additions).

D. Vertical Load-Resisting System

The floor appears to be part reinforced concrete floor and part timber floor. The floor system span primarily to load bearing unreinforced masonry walls. Interior partitions are a mix of 2x6 studs and unreinforced Masonry on the second floor. On the first floor, the interior partitions are reinforced concrete. Most of the exterior walls are constructed using a triple wythes of brick creating a 12 inch thick unreinforced wall. At the 1st level, the masonry walls are built upon thick unreinforced stone foundation wall basement walls.
The roof structure is combination of timber joist rafters and site built trusses. the trusses are spaced at 16 inches on center having the lower layer acting as the ceiling joists. The roof sheathing consists of straight decking.

E. Lateral Load-Resisting System

In general, the12" triple wythe masonry walls act as shear walls for the main lateral load resisting system of the building at the upper floors. The lateral forces are transferred into the walls through the timber and concrete floor and roof diaphragms.

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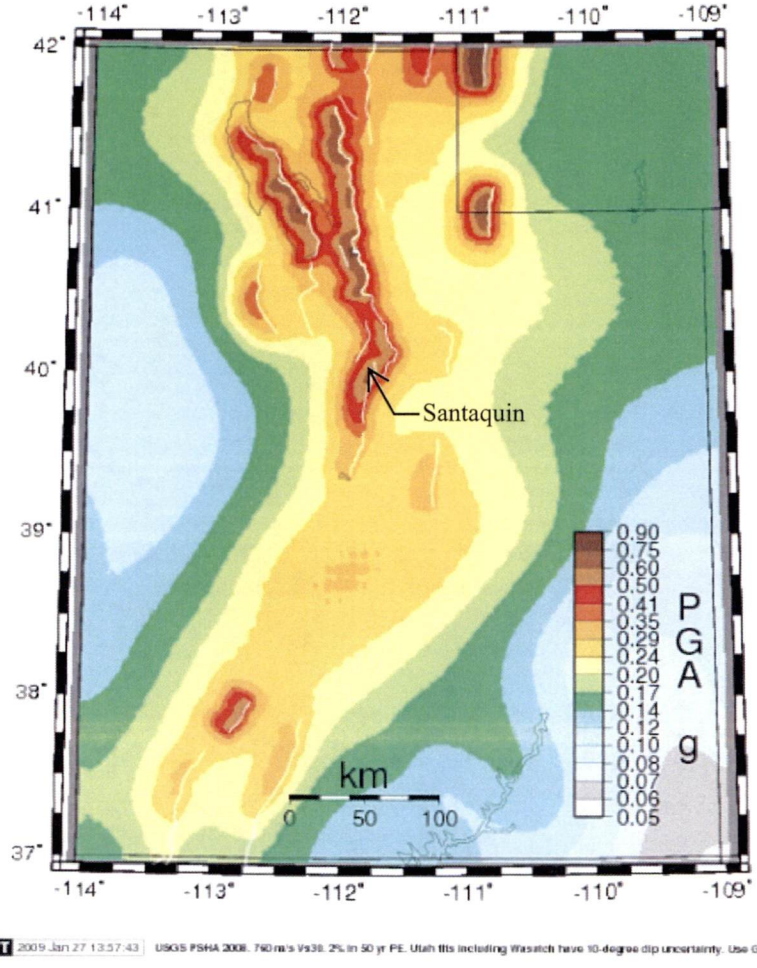
IV. Seismicity

The size of the seismic events can be compared by using either magnitude or intensity. The magnitude of an earthquake is a quantitative measure of the amount of energy released, and does not depend on the distance from the earthquake's epicenter. On the other hand, earthquake intensity is a qualitative measure of the damage level at a specific location. The modified Mercalli Index of Intensity (MMI) is common checklist for seismic reconnaissance, with an intensity of XII indicating total damage. The intensity usually decreases as the distance from the earthquake's epicenter increases. For example, an earthquake of magnitude 7.0 might generate damage of intensity VIII at the epicenter, but damage of intensity V a hundred miles from the epicenter. Therefore, magnitude may be used to compare the overall strengths of earthquakes, while intensities are used to compare the damage level at specific locations.

Utah 2008 PGA w/2% PE in 50 yr



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V. Seismic Evaluation

The supporting documentation for the evaluation is located in the Appendices. Appendix A contains photographs of the building. Appendix B contains the ASCE 31-03 checklists, which are a collection of evaluation statements to highlight potential deficiencies that require further investigation. Appendix C contains supporting calculations. Appendix D contains Figures.

B. General

During an earthquake, the horizontal acceleration of the ground induces inertial forces in buildings. These forces are proportional to the building weights; they are primarily horizontal (lateral) and must be resisted by the buildings' lateral force-resisting system. If the structures cannot resist the lateral forces induced by the seismic ground motion, they would suffer damage to both the structural and non-structural elements and potentially collapse.

All buildings have some minor level of inherent lateral force resistance, simply due to the nature of how various building materials are connected and constructed. The seismic evaluation of a building simply determines the level to which the individual elements can resist the recommended earthquake forces.

The lateral force-resisting system of the Santaquin Chieftain Museum Building was described previously. Inertial forces generated in the building must be transferred to the foundations through a continuous load path. Forces in these systems are transferred to the walls via diaphragm (horizontal beam) action of the roof or floors.

B. Analysis

The analysis methodology of ASCE 31-03 employs a three tier methodology. Except where noted otherwise in the Results section, only Tier 1 analysis (the quick check methodology) was performed on the Santaquin Chieftain Museum Building.

As discussed earlier, the analysis for Tier 1 consists of checklists composed primarily of qualitative evaluation statements. The purpose of the checklists is to identify potential deficiencies. Further analysis of these potential deficiencies may show that they are acceptable. For the original building, the checklist for building Type URM (Unreinforced Masonry Bearing Walls with Flexible Diaphragms) was used to correspond with the primary lateral force-resisting system of the structure. Both the Basic and Supplemental checklists were required due to the high seismicity of the region. The basic and Intermediate nonstructural component checklists were also used. These checklists are presented in Appendix B.

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C. Results

Per the ASCE 31-03 analysis methodology, several deficiencies were identified in the existing lateral load-resisting system. The following section contains the results of the Tier 1 analysis.

1. There is an inadequate level of shear resistance in both principle directions. The allowable shear stress of the URM walls is exceeded.

2. There is inadequate out-of-plane connection between the floor/roof diaphragms and masonry exterior walls.

3. There is inadequate in-plane shear connection between the floor/roof diaphragms and masonry exterior walls.

4. The height-to-thickness ratio of the URM walls is greater than the recommended limit at the top story for the Life Safety performance level of ASCE 31-03. The height-to-thickness ratio of the URM walls is acceptable for Collapse Prevention performance level based on ASCE 41-06 table 7-10.

5. Roof diaphragms has inadequate shear strength assuming it consists only of straight sheathed decking.

6- The total length of cracking in the exterior walls is approximately 732 linear feet.

D. Recommendations

The following recommendations were developed to address the problems outlined previously in the results.

1. We recommend the addition of shotcrete reinforced concrete walls to strengthen selected piers at the exterior masonry walls. Refer to figure 1(Appendix E) for an approximate potential layout.

2. Add out-of plane anchors between floor/roof diaphragms and walls with epoxy doweled connections at approximately 24 inches on center.

3. Add in-plane shear connection between the floor/roof diaphragms and walls consisting of continuous steel angles places from above or wood blocking placed below the existing sheathing. Epoxy dowels to exterior walls can be shared with out-of-plane anchors described in item 2.

4. Strengthen floor diaphragm with plywood or oriented strand board sheathing provided it has not been added in previous renovations.

5. Strengthen roof diaphragm with plywood sheathing or oriented strand board provided it has not been added in previous renovations.

6. Clean up bat infestation and bat guano in the attic.

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7. Provide reinforcement for the tower

8. Provide reinforcement for the site built truss connections

9. Provide additional new rafters sistered to adjacent existing rafters.

10. Provide new beams at various brace locations.

VI. Conclusions

Based on the ASCE 31-03 methodology the Santaquin Chieftain Museum Building does not currently meet the requirements for a complete lateral force-resisting system. Recommendations have been provided to mitigate the noted deficiencies.

The primary concerns appear to be insufficient shear wall capacity to resist to seismic forces, inadequate out-of-plane and in-plane connection between the diaphragms and walls, inadequate shear strength of the roof diaphragm,

The completion of the seismic retrofitting as outlined in the Recommendations section is expected to bring the buildings' performance to a Collapse prevention level as outlined in ASCE 41-06.

Based on what was observed and calculated when compared to the requirements of the International Building Code 2012 editions, the roof members did not have a discernible load path. The site built truss connections did not have the adequate capacity to resist the code prescribed loading. The main members and rafters observed are either overstressed or overspanned (deflection). The ceiling joists are overstressed due to the additional loading of bat guano. The floor joists are also overspanned compared to the code prescribed loading. Recommendations have been provided to mitigate the noted deficiencies.

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Google earth

feet 100
meters 30

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APPENDIX A

CALCULATIONS

USGS Design Maps Summary Report

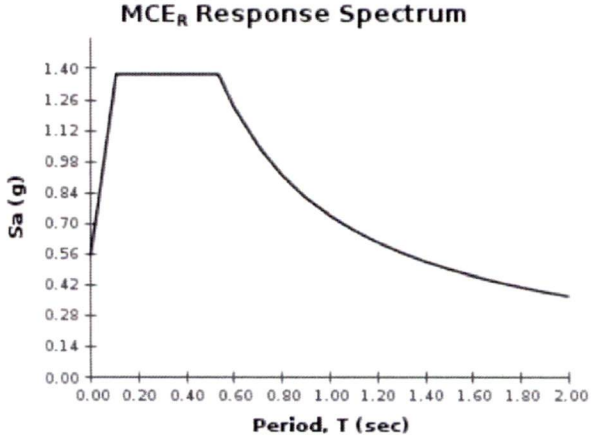
User-Specified Input

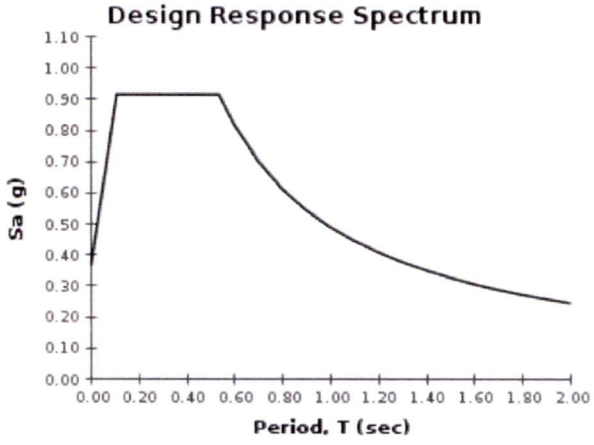
Report Title	Santaquin Museum Mon June 22, 2015 19:37:05 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	39.97°N, 111.793°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

USGS-Provided Output

S_S =	1.374 g	S_{MS} =	1.374 g	S_{DS} =	0.916 g
S_1 =	0.486 g	S_{M1} =	0.736 g	S_{D1} =	0.490 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





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TIER 1 ANALYSIS

Table 2-1. Levels of Seismicity Definitions

Level of Seismicity[1]	S_{DS}	S_{D1}
Low	<0.167g	<0.067g
Moderate	≥0.167g <0.500g	≥0.067g <0.200g
High	≥0.500g	≥0.200g

[1]Sites with S_{DS} and S_{D1} values in different levels of seismicity shall be classified as moderate.

PER TABLE 3-2 W/ HIGH LEVEL OF SEISMICITY AND LIFE SAFTETY (LS) LEVEL OF PERFORMANCE NEED TO GO THROUGH THE CHECKLIST HIGHLIGHTED IN THE TABLE BELOW

TIER 1 ANALYSIS

* BUILDING MODEL TYPE: UNREINFORCED MASONRY SHEAR WALLS WITH FLEXIBLE DIAPHRAGM

PSEUDO LATERAL FORCE

V= CSaW

C = 1

Table 3-4. Modification Factor, C

Building Type[1]	Number of Stories			
	1	2	3	=4
Wood (W1, W1A, W2) Moment Frame (S1, S3, C1, PC2A)	1.3	1.1	1.0	1.0
Shear Wall (S4, S5, C2, C3, PC1A, PC2, RM2, URMA) Braced Frame (S2)	1.4	1.2	1.1	1.0
Unreinforced Masonry (URM) Flexible Diaphragms (S1A, S2A, S5A, C2A, C3A, PC1, RM1)	1.0	1.0	1.0	1.0

[1]Defined in Table 2-2.

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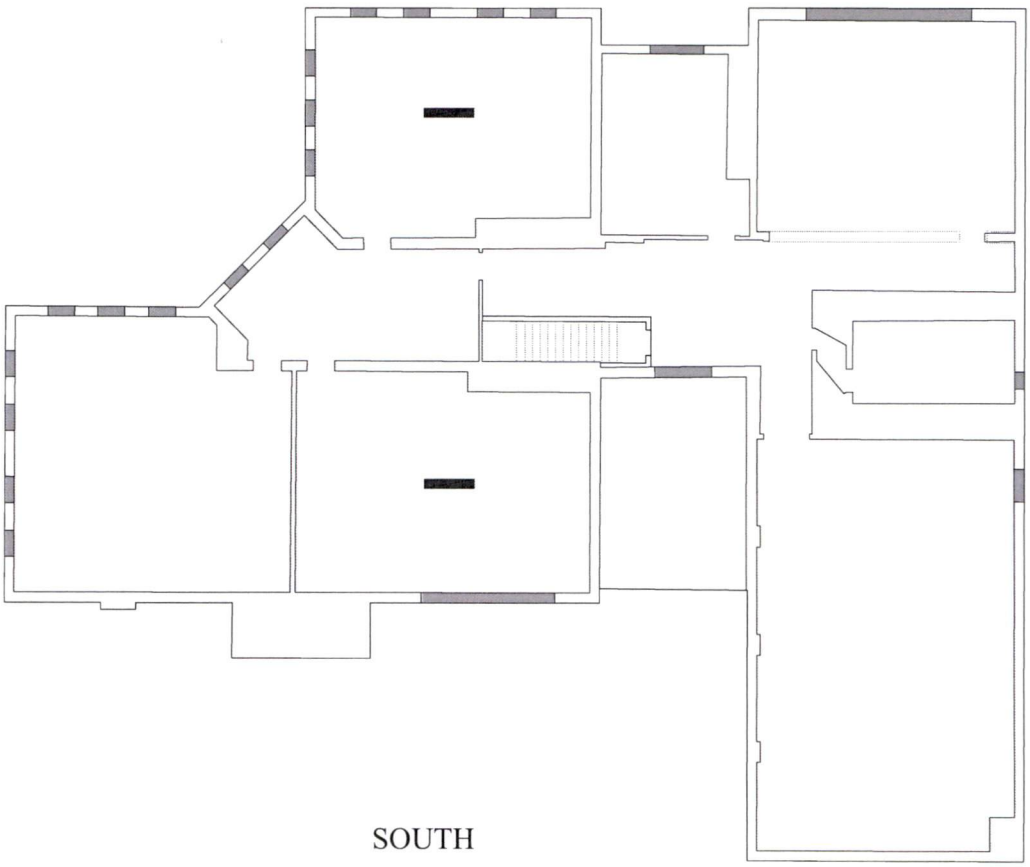
NORTH

WEST



EAST

SOUTH

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LATERAL ANALYSIS PSEUDO LATERAL FORCE

WEIGHT OF MATERIALS

URM WALLS	120	PSF
CONCRETE FLOOR	150	PCF
TIMBER FLOOR	15	PSF
ROOF	15	PSF

AREAS

AREA OF ROOF	7002	SF
AREA OF THE WOOD FLOOR	3950	SF
AREA OF THE CONCRETE FLOOR	3052	SF
TOTAL SQUARE FOOTAGE PER FLOOR	7002	SF
HEIGHT TRIBUTARY TO ROOF	6	FT
HEIGHT TRIBUTARY TO FLOOR	11	FT
TOTAL LENGTH OF WALL	425	FT

SEISMIC WEIGHT OF ELEMENTS

ROOF WEIGHT	105030	LBS
WEIGHT OF WALL TRIBUTARY TO ROOF	306000	LBS
TOTAL SEISMIC WEIGHT OF ROOF	**411.03**	KIPS

2ND FLOOR

AREAS		**WEIGHT**	
CONCRETE FLOOR	3332 SF	249900	LBS
TIMBER FLOOR	3670 SF	55050	LBS
WALL LENGTH TRIBUTARY TO CONC. FLOOR		196	FT
WALL LENGTH TRIBUTARY TO TIMBER FLOOR		229	FT
WALL HEIGH TRIBUTARY TO SECOND FLOOR		11	FT

PARTITION	**LENGTH (FT)**	**HEIGHT**	**WEIGHT**
PARTITION TRIBUTARY TO TIMBER FLOOR	114	5.5	75240
PARTITION TRIBUTARY TO CONC. FLOOR	66	5.5	43560

RIGID DIAPHRAGM WEIGHT	**552.18**	KIP
FLEXIBLE DIAPHRAGM WEIGHT	**432.57**	KIP
TOTAL SEISMIC WEIGHT OF BUILDING	**1395.78**	KIP

BASE SHEAR V= **1278.53** **KIPS**

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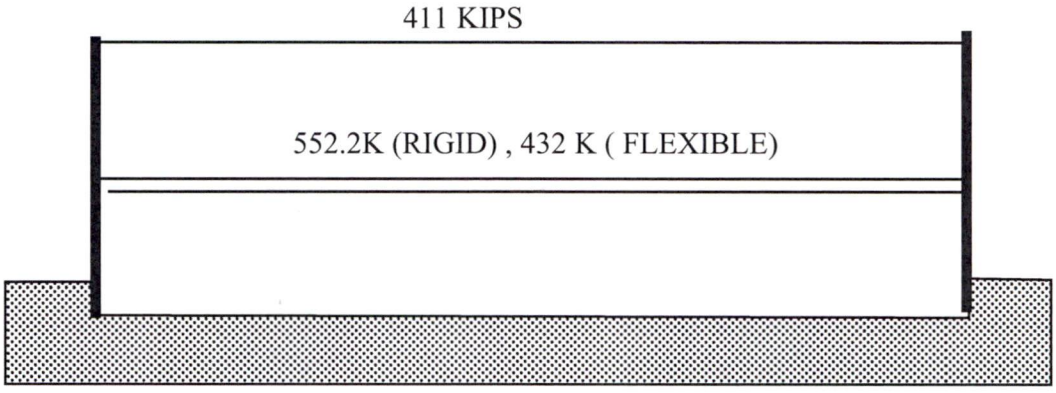

PSEUDO LATERAL SEISMIC FORCE - ASCE 31-03 ASCE 41-06

PERFORMANCE LEVEL: LIFE SAFETY (ASCE 31-03), COLLAPSE PREVENTION (ASCE 41-06)

SEISMICITY LEVEL : HIGH

CLASS C (FROM PAGE 3-12)

C = 1.00 TABLE (3-4)

PERIOD CALCULATIONS

T = *Cthn^B*

T = 0.020*25*.75 = 0.2236

Sa = S_{D1}/T = 0.49/.22 NOT TO EXCEED S_{DS}

Sa = 0.916

V= CSaW = 1*0.916*W

V= .916* 1370.3KIPS = 1279 KIPS

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801-255-7700 - WWW.MCNEILENGINEERING.COM

CIVIL, STRUCTURAL ENGINEERING & LAND SURVEYING
PAVEMENT & ROOF CONSULTING

PROJECT
Santaquin City Museum
ASCE/SEI 31-03 Seismic Evaluation &
ASCE/SEI 41-06 Seismic Evaluation

DATE: 06-30-2015
SHEET: OF
DESIGNED BY: TAL
PROJECT NO.: 15118

PSEUDO LATERAL SEISMIC FORCE - VERTICAL DISTRIBUTION

FLOOR	h_i (ftl	w_1 (kip)	hi^k	$w_i h_i^k$	C_{vx}	F_X	Vj	F_{px}
Roof	27	386.0	27.0	10,422.0	0.4	562.2	562.2	562.2
2	15	885.2	15.0	13,278.0	0.6	716.3	1,278.5	890.3
	Sum	1271.2		23,700.0	1.0	1,278.5		

COUNCIL MEETING 07-05-15
ATTACHMENT "D-20"

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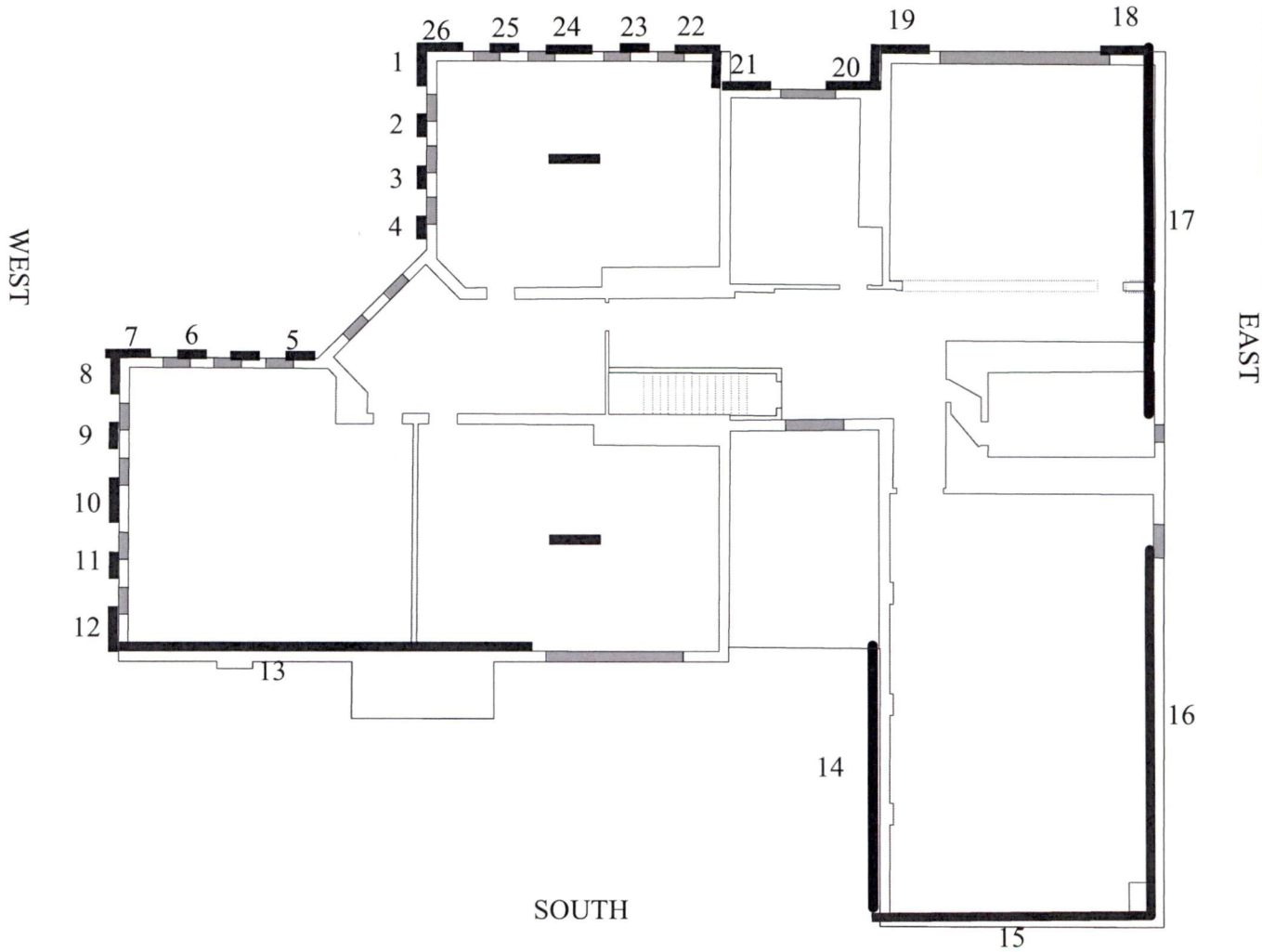
CIVIL, STRUCTURAL ENGINEERING & LAND SURVEYING
PAVEMENT & ROOF CONSULTING

PROJECT	DATE	SHEET OF
Santaquin City Museum ASCE/SEI 31-03 Seismic Evaluation & ASCE/SEI 41-06 Seismic Evaluation	06-30-2015	
	DESIGNED BY TAL	PROJECT NO. 15118

UPPER FLOOR WALL KEYPLAN
FLEXIBLE DIAPHRAGM

NORTH



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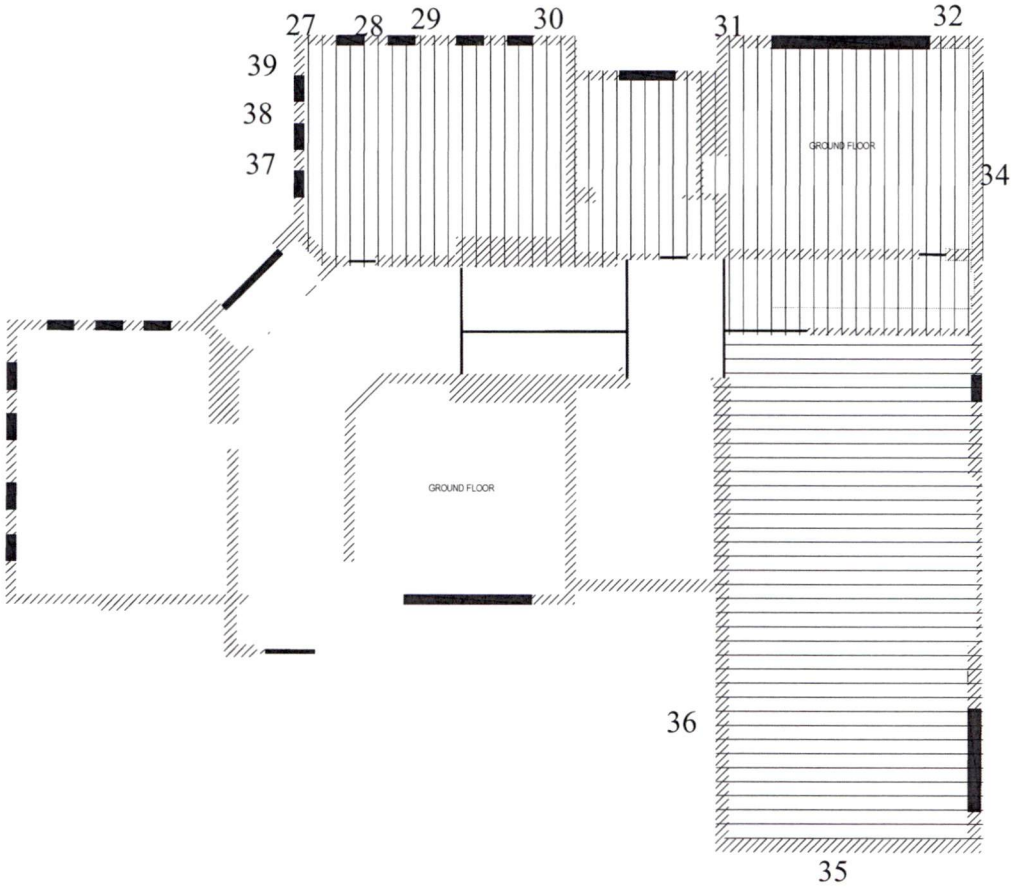
PROJECT

Santaquin City Museum
ASCE/SEI 31-03 Seismic Evaluation &
ASCE/SEI 41-06 Seismic Evaluation

DATE	SHEET OF
06-30-2015	
DESIGNED BY	PROJECT NO.
TAL	15118

KEYPLAN (FLEXIBLE DIAPHRAGM)



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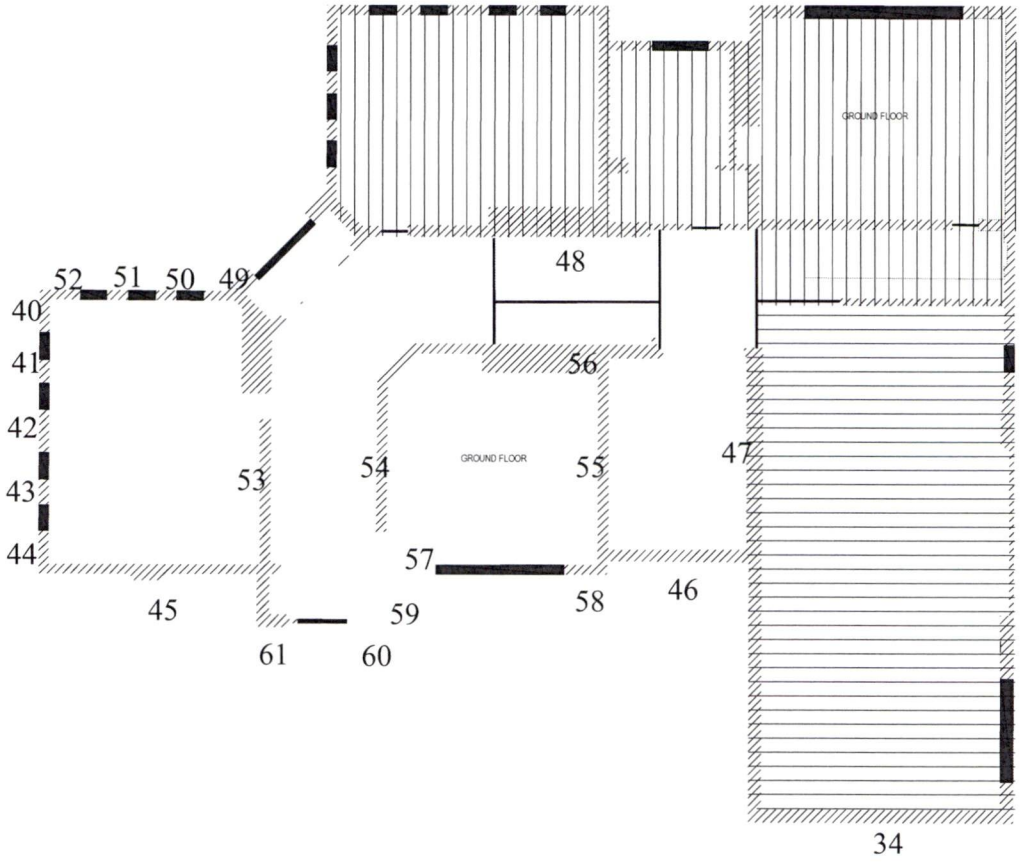
CIVIL, STRUCTURAL ENGINEERING & LAND SURVEYING
PAVEMENT & ROOF CONSULTING

PROJECT	DATE	SHEET OF
Santaquin City Museum ASCE/SEI 31-03 Seismic Evaluation & ASCE/SEI 41-06 Seismic Evaluation	06-30-2015	
	DESIGNED BY TAL	PROJECT NO. 15118

KEYPLAN (RIGID DIAPHRAGM)



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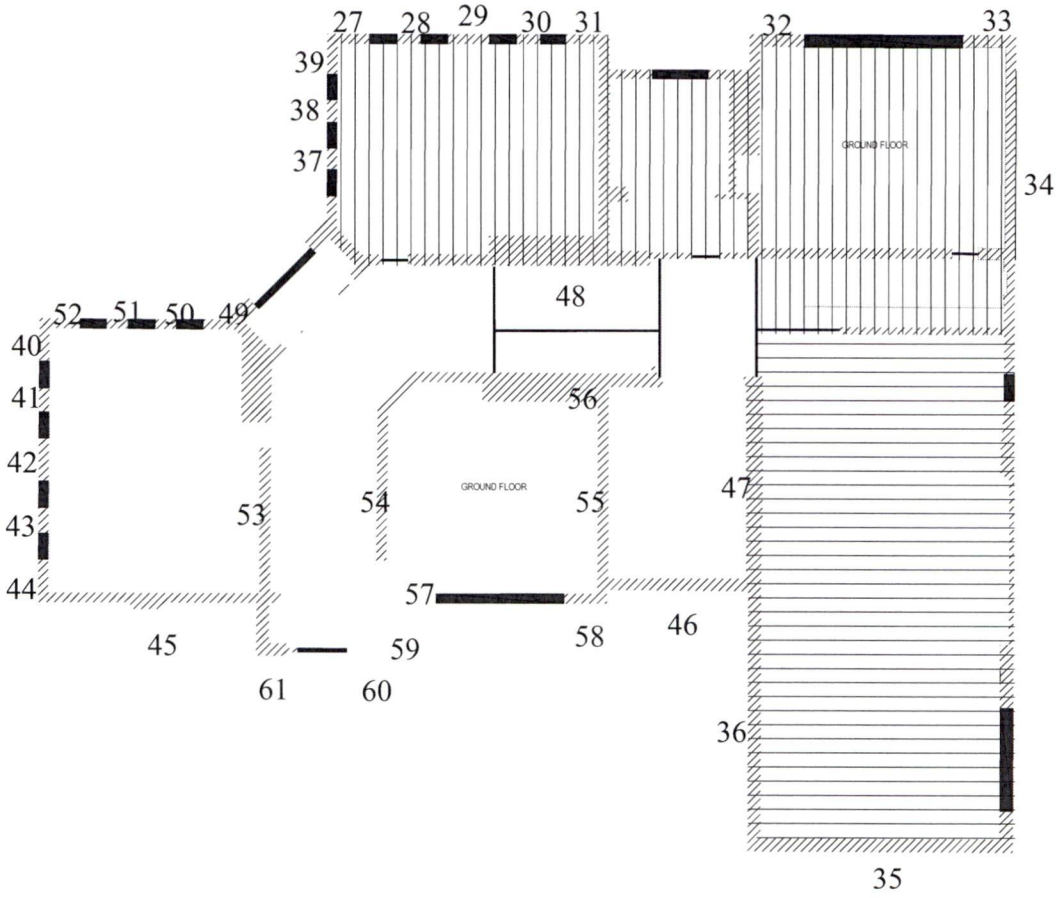
CIVIL, STRUCTURAL ENGINEERING & LAND SURVEYING
PAVEMENT & ROOF CONSULTING

PROJECT

Santaquin City Museum
ASCE/SEI 31-03 Seismic Evaluation &
ASCE/SEI 41-06 Seismic Evaluation

DATE	SHEET OF
06-30-2015	
DESIGNED BY	PROJECT NO.
TAL	15118

COMBINED KEYPLAN (FLEXIBLE AND RIDGID DIAPHRAGM)



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CIVIL, STRUCTURAL ENGINEERING & LAND SURVEYING
PAVEMENT & ROOF CONSULTING

PROJECT
Santaquin City Museum
ASCE/SEI 31-03 Seismic Evaluation &
ASCE/SEI 41-06 Seismic Evaluation

DATE: 06-30-2015
SHEET OF
DESIGNED BY: TAL
PROJECT NO.: 15118

SHEAR RESISTANCE
SECOND FLOOR - SUPPORTING
ROOF DIAPHRAGM
PER ASCE 31-03

WALL#	LENGTH (FT)	SHEAR FORCE	CROSS SECTIONAL AREA	AVAILABLE SHEAR (KIPS)	
1	4	23.4	48	2.2	NEED TIER 2 ANALYSIS
2	2.5	14.6	30	1.4	NEED TIER 2 ANALYSIS
3	2.5	14.6	30	1.4	NEED TIER 2 ANALYSIS
4	3	17.5	36	1.6	NEED TIER 2 ANALYSIS
5	3	17.5	36	1.6	NEED TIER 2 ANALYSIS
6	2.5	14.6	30	1.4	NEED TIER 2 ANALYSIS
7	4	23.4	48	2.2	NEED TIER 2 ANALYSIS
8	4.5	26.3	54	2.4	NEED TIER 2 ANALYSIS
9	2.5	14.6	30	1.4	NEED TIER 2 ANALYSIS
10	3.5	20.4	42	1.9	NEED TIER 2 ANALYSIS
11	4	23.4	48	2.2	NEED TIER 2 ANALYSIS
12	2.5	14.6	30	1.4	NEED TIER 2 ANALYSIS
	38.5				
14	52	227.8	624	28.1	NEED TIER 2 ANALYSIS
			EAST WEST DIRECTION		
13	38	159.4	456	20.5	NEED TIER 2 ANALYSIS
15	29	121.7	348	15.7	NEED TIER 2 ANALYSIS
	67				
			NORTH SOUTH DIRECTION		
16	39	45.0	468	21.1	NEED TIER 2 ANALYSIS
17	39	45.0	468	21.1	NEED TIER 2 ANALYSIS
	78				
			EAST WEST DIRECTION		
18	5	35.7	60	2.7	NEED TIER 2 ANALYSIS
19	5	35.7	60	2.7	NEED TIER 2 ANALYSIS
20	4	28.6	48	2.2	NEED TIER 2 ANALYSIS
21	4	28.6	48	2.2	NEED TIER 2 ANALYSIS
22	3	21.4	36	1.6	NEED TIER 2 ANALYSIS
23	2.5	17.8	30	1.4	NEED TIER 2 ANALYSIS
24	2.5	17.8	30	1.4	NEED TIER 2 ANALYSIS
25	2.5	17.8	30	1.4	NEED TIER 2 ANALYSIS
26	3	21.4	36	1.6	NEED TIER 2 ANALYSIS

Title Block Line 1
You can changes this area using the "Settings" menu item and then using the "Printing & Title Block" selection.
Title Block Line 6

Engineer:
Project Descr:

Project ID:

Printed: 24 JUN 2015, 1:12PM

Torsional Analysis of Rigid Diaphragm

File = S:\2015FI~1\15118\STRUCT~1\Calcs\RIGIDD~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.6.15, Ver:6.15.6.15

Lic. # : KW-06008418 — **Licensee : MCNEIL GROUP INC.**

Description : --None--

General Information

Calculations per IBC 2012, CBC 2013, ASCE 7-1

Applied Lateral Force	758.0 k
.....Additional Orthogonal Force	k
Maximum Load Used for Analysis :	758.0 k

Note: This load is the vector resolved from the above two entries and will be applied to the system of elements at angular increments.

Load Anglular Increment	15.0 deg
Accidental Eccentricity Anglular Increment	15.0 deg

Center of Rigidity Location (calculated) . . .

"X" dist. from Datum	51.534 ft
"Y" dist. from Datum	18.054 ft

Location of Shear Application :

Distance from "X" datum point	40.0 ft
Distance from "Y" datum point	17.0 ft

Accidental Torsion values per ASCE 7-05 12.8.4.2

Ecc. as % of Maximum Dimension	0.00 %

Maximum Dimensions :

Along "X" Axis	ft
Along "Y" Axis	ft

Additional Eccentricity +/- from "X" Coord. of Load Application	0.0 ft
Additional Eccentricity +/- from "Y" Coord. of Load Application	0.0 ft

Wall Information

Label : WALL 40		X Wall C.G. Location	0 ft	Wall Length	4.5 ft
		Y Wall C.G. Location	27 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	6.5877E-003 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	1.2827E-001 in			E - Shear	1 Mpsi
Label : WALL 41		X Wall C.G. Location	0 ft	Wall Length	2.5 ft
		Y Wall C.G. Location	21 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	3.7344E-002 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.3088E-001 in			E - Shear	1 Mpsi
Label : WALL 42		X Wall C.G. Location	0 ft	Wall Length	3 ft
		Y Wall C.G. Location	16 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	2.1733E-002 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	1.9240E-001 in			E - Shear	1 Mpsi
Label : WALL 43		X Wall C.G. Location	0 ft	Wall Length	2.5 ft
		Y Wall C.G. Location	10 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	3.7344E-002 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.3088E-001 in			E - Shear	1 Mpsi
Label : WALL 44		X Wall C.G. Location	0 ft	Wall Length	4.5 ft
		Y Wall C.G. Location	2.5 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	6.5877E-003 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	1.2827E-001 in			E - Shear	1 Mpsi
Label : WALL 45		X Wall C.G. Location	13.5 ft	Wall Length	27.5 ft
		Y Wall C.G. Location	0 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	7.1333E-005 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.0989E-002 in			E - Shear	1 Mpsi
Label : WALL 46		X Wall C.G. Location	72 ft	Wall Length	14 ft
		Y Wall C.G. Location	0 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	2.9563E-004 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	4.1229E-002 in			E - Shear	1 Mpsi
Label : WALL 47		X Wall C.G. Location	78 ft	Wall Length	22 ft
		Y Wall C.G. Location	12 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	1.0864E-004 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.6236E-002 in			E - Shear	1 Mpsi

COUNCIL MEETING 07-05-15
ATTACHMENT "D-26"

Torsional Analysis of Rigid Diaphragm

File = S:\2015FI~1\15118\STRUCT~1\Calcs\RIGIDD~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.6.15, Ver:6.15.6.15
Lic. # : KW-06008418
Licensee : MCNEIL GROUP INC.

Description : --None--

Wall Information

Label : WALL 48		X Wall C.G. Location	55 ft	Wall Length	28 ft
		Y Wall C.G. Location	38 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	6.9096E-005 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.0614E-002 in			E - Shear	1 Mpsi
Label : WALL 49		X Wall C.G. Location	2.25 ft	Wall Length	4.5 ft
		Y Wall C.G. Location	30 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	1.8469E-003 in	Wall Fixity	Fix-Fix	E - Bending	1 Mpsi
Minor Axis	3.2267E-002 in			E - Shear	1 Mpsi
Label : WALL 49		X Wall C.G. Location	20.5 ft	Wall Length	3 ft
		Y Wall C.G. Location	30 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	5.7333E-003 in	Wall Fixity	Fix-Fix	E - Bending	1 Mpsi
Minor Axis	4.8400E-002 in			E - Shear	1 Mpsi
Label : WALL 50		X Wall C.G. Location	14.5 ft	Wall Length	2 ft
		Y Wall C.G. Location	30 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	7.2600E-002 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.8860E-001 in			E - Shear	1 Mpsi
Label : WALL 51		X Wall C.G. Location	8.5 ft	Wall Length	2 ft
		Y Wall C.G. Location	30 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	1.8600E-002 in	Wall Fixity	Fix-Fix	E - Bending	1 Mpsi
Minor Axis	7.2600E-002 in			E - Shear	1 Mpsi
Label : WALL 53		X Wall C.G. Location	25.5 ft	Wall Length	23.5 ft
		Y Wall C.G. Location	7 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	9.5447E-005 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.4562E-002 in			E - Shear	1 Mpsi
Label : WALL 54		X Wall C.G. Location	39 ft	Wall Length	17 ft
		Y Wall C.G. Location	13 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	1.8783E-004 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	3.3953E-002 in			E - Shear	1 Mpsi
Label : WALL 55		X Wall C.G. Location	64.5 ft	Wall Length	23 ft
		Y Wall C.G. Location	12 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	9.9515E-005 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.5096E-002 in			E - Shear	1 Mpsi
Label : WALL 56		X Wall C.G. Location	57 ft	Wall Length	28 ft
		Y Wall C.G. Location	23 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	6.9096E-005 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	2.0614E-002 in			E - Shear	1 Mpsi
Label : WALL 57		X Wall C.G. Location	42 ft	Wall Length	7.75 ft
		Y Wall C.G. Location	0 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	4.6419E-004 in	Wall Fixity	Fix-Fix	E - Bending	1 Mpsi
Minor Axis	1.8735E-002 in			E - Shear	1 Mpsi
Label : WALL 58		X Wall C.G. Location	62.25 ft	Wall Length	4.5 ft
		Y Wall C.G. Location	0 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	6.5877E-003 in	Wall Fixity	Fix-Pin	E - Bending	1 Mpsi
Minor Axis	3.2267E-002 in			E - Shear	1 Mpsi
Label : WALL 59		X Wall C.G. Location	40 ft	Wall Length	5 ft
		Y Wall C.G. Location	-2.5 ft	Wall Height	11.75 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	90 deg	Wall Thickness	12 in
Major Axis	1.3165E-003 in	Wall Fixity	Fix-Fix	E - Bending	1 Mpsi
Minor Axis	2.7272E-002 in			E - Shear	1 Mpsi

Title Block Line 1
You can changes this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Project Title:
Engineer:
Project Descr:

Project ID:

COUNCIL MEETING 07-05-15
ATTACHMENT "D-27"

Torsional Analysis of Rigid Diaphragm

File = S:\2015FI~1\15118\STRUCT~1\Calcs\RIGIDD~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.6.15, Ver:6.15.6.15

Lic. # : KW-06008418 **Licensee : MCNEIL GROUP INC.**

Description : --None--

Wall Information

Label : WALL 60		X Wall C.G. Location	27 ft	Wall Length	3.5 ft
		Y Wall C.G. Location	-4 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	3.7015E-003 in	Wall Fixity	Fix-Fix	E - Bending	1 Mpsi
Minor Axis	4.1486E-002 in			E - Shear	1 Mpsi
Label : WALL 61		X Wall C.G. Location	38 ft	Wall Length	3.5 ft
		Y Wall C.G. Location	-4 ft	Wall Height	12 ft
Wall Deflections (Stiffness) for 1.0 kip load :		Wall Angle CCW	0 deg	Wall Thickness	12 in
Major Axis	3.7015E-003 in	Wall Fixity	Fix-Fix	E - Bending	1 Mpsi
Minor Axis	4.1486E-002 in			E - Shear	1 Mpsi

DESIGN SUMMARY

List of maximum shear forces applied to resisting elements

	Maximum Shear along MAJOR Axis				Maximum Shear along MINOR Axis			
Resisting Element	Load Angle	X-Ecc (ft)	Y-Ecc (ft)	Shear Force (k)	Load Angle	X-Ecc (ft)	Y-Ecc (ft)	Shear Force (k)
WALL 40	90	11.53	-1.05	5.393	165	11.53	-1.05	0.121
WALL 41	90	11.53	-1.05	0.951	180	11.53	-1.05	0.066
WALL 42	90	11.53	-1.05	1.635	0	11.53	-1.05	0.079
WALL 43	90	11.53	-1.05	0.951	345	11.53	-1.05	0.067
WALL 44	90	11.53	-1.05	5.393	345	11.53	-1.05	0.126
WALL 45	345	11.53	-1.05	229.751	90	11.53	-1.05	1.508
WALL 46	345	11.53	-1.05	55.437	270	11.53	-1.05	0.645
WALL 47	90	11.53	-1.05	190.698	0	11.53	-1.05	0.582
WALL 48	15	11.53	-1.05	225.277	270	11.53	-1.05	1.053
WALL 49	195	11.53	-1.05	8.216	90	11.53	-1.05	1.081
WALL 50	195	11.53	-1.05	0.209	90	11.53	-1.05	0.109
WALL 51	195	11.53	-1.05	0.816	90	11.53	-1.05	0.456
WALL 53	90	11.53	-1.05	295.459	345	11.53	-1.05	0.639
WALL 54	90	11.53	-1.05	129.480	0	11.53	-1.05	0.449
WALL 55	90	11.53	-1.05	208.184	0	11.53	-1.05	0.608
WALL 56	0	11.53	-1.05	218.571	270	11.53	-1.05	1.081
WALL 57	345	11.53	-1.05	35.306	90	11.53	-1.05	1.252
WALL 58	345	11.53	-1.05	2.488	270	11.53	-1.05	0.738
WALL 59	90	11.53	-1.05	18.255	345	11.53	-1.05	0.610
WALL 60	345	11.53	-1.05	4.535	90	11.53	-1.05	0.669
WALL 61	345	11.53	-1.05	4.535	90	11.53	-1.05	0.593

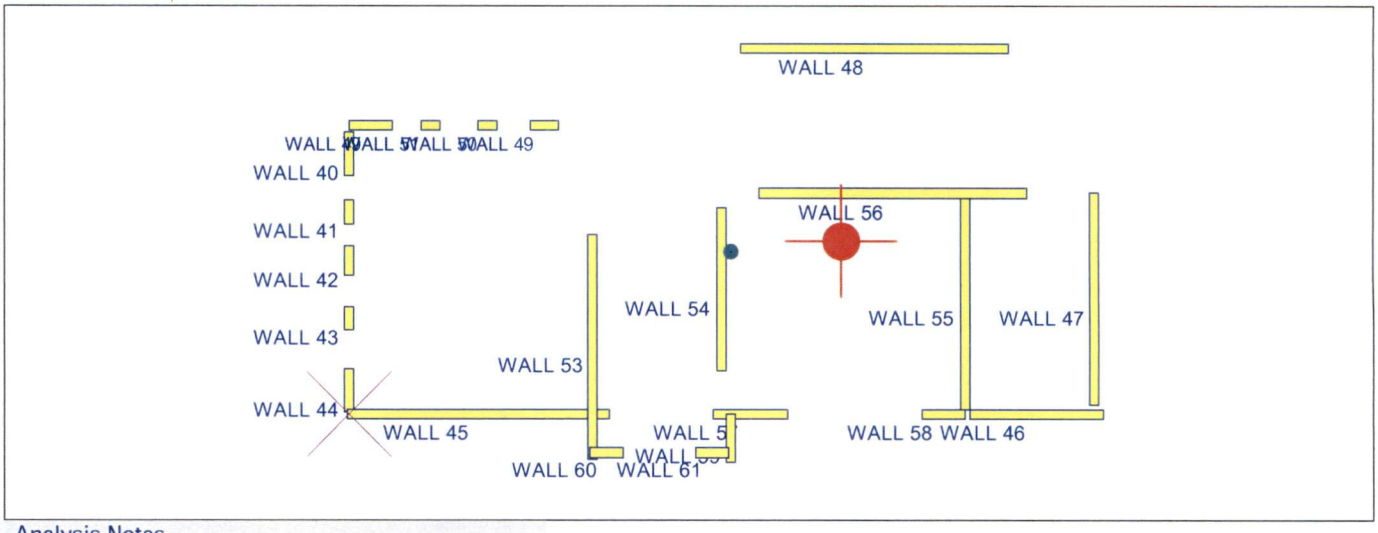
Torsional Analysis of Rigid Diaphragm

File = S:\2015FI~1\15118\STRUCT~1\Calcs\RIGIDD~1.EC6
ENERCALC, INC. 1983-2015, Build:6.15.6.15, Ver:6.15.6.15
Lic. # : KW-06008418
Licensee : MCNEIL GROUP INC.

Description : --None--

Layout of Resisting Elements

Legend : Defined Wall X Datum
Center of Rigidity Center of Mass Accidental eccentricity application boundary



Analysis Notes

This program is designed to distribute an applied load to a set of resisting elements. The applied load is considered a "shear" loading applied to a number of resisting elements.

Each resisting element data entry Specifies a deflection along a "major" and "minor" axis due to al 1,000 lb load. Each resisting element may be entered as a wall or a beam (whereby the deflection is calculated), or a specified deflection. The deflections define the stiffness of each resisting element.

Each resisting element is defined at an (X,Y) location from a datum the user has previously defined. A counter-clockwise rotation of the element can be entered with respect to a traditional "+X" axis line.

A main "shear" load and an optional orthogonal shear load are specified for distribution to the system of resisting elements. In addition the maximum orthogonal dimensions of the structure and minimum accidental eccentricity percentage are specified.

From the entered load the program calculates a resultant force vector magnitude, F. The force F is applied to the resisting elements in angular increments of 15 degrees to generate a series of resulting direct and torsional shear loads on each element. This radial application of force is then repeated at 45 degree angular separations along an elliptical path defined by the minimum accidental eccentricity.

The end result is a large table of direct shear and torsional shear values for each element from the iterated angles of load application and accidental eccentricity. These values are then searched to find the maximum applied major and minor axis shears applied to each resisting element.

McNEIL ENGINEERING, INC.
8610 SOUTH SANDY PARKWAY - SANDY UTAH 84070
801-255-7700 - WWW.MCNEILENGINEERING.COM

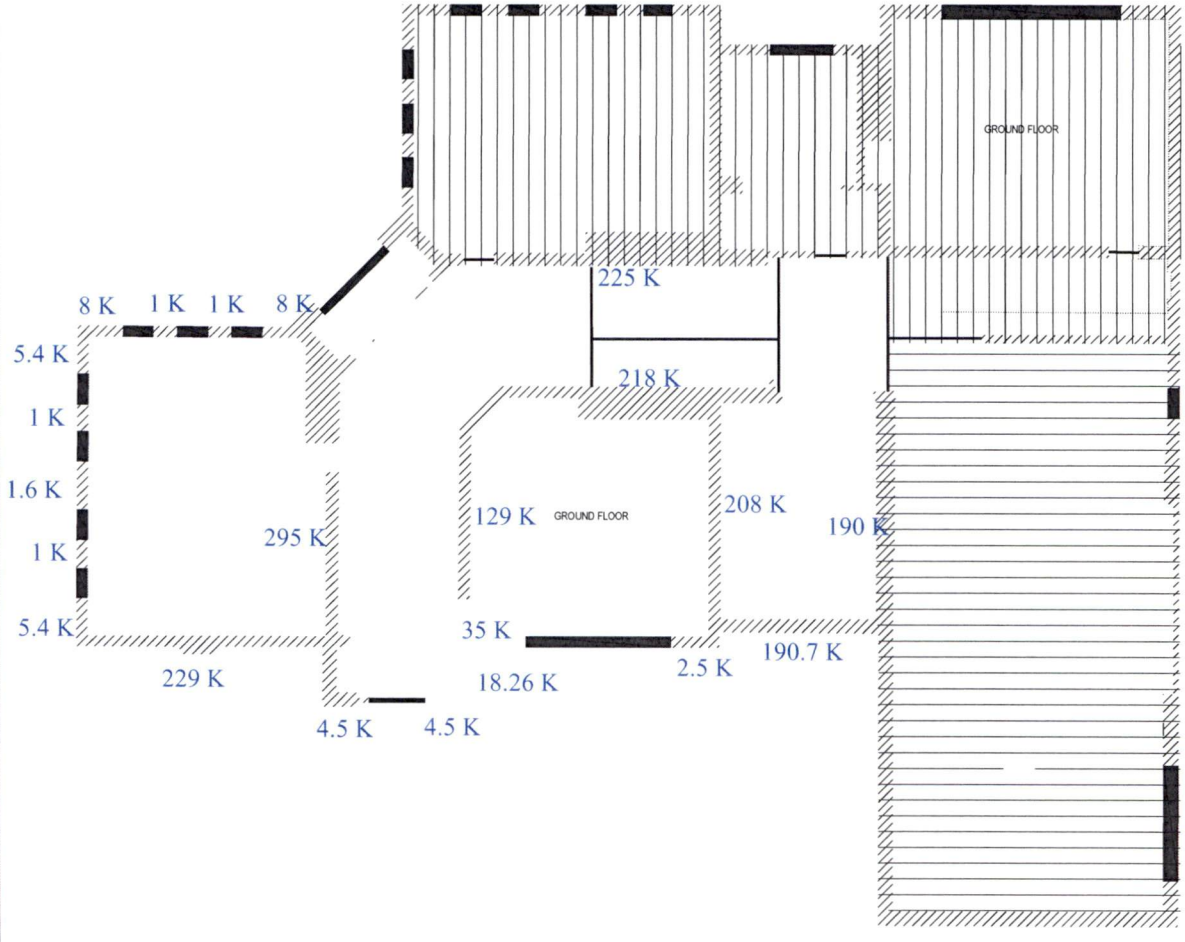
CIVIL, STRUCTURAL ENGINEERING & LAND SURVEYING
PAVEMENT & ROOF CONSULTING

PROJECT

Santaquin City Museum
ASCE/SEI 31-03 Seismic Evaluation &
ASCE/SEI 41-06 Seismic Evaluation

DATE	SHEET OF
06-30-2015	
DESIGNED BY	PROJECT NO.
TAL	15118

SHEAR FORCE TO WALLS SUPPORTING THE RIDGID DIAPRHARGM



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PROJECT
Santaquin City Museum
ASCE/SEI 31-03 Seismic Evaluation &
ASCE/SEI 41-06 Seismic Evaluation

DATE: 06-30-2015
SHEET OF
DESIGNED BY: TAL
PROJECT NO.: 15118

WALL THICKNESS	**12** IN
TOTAL CROSS SECTIONAL LENGTH (N - S)	**80** FT
TOTAL CROSS SECTIONAL LENGTH (E - W)	**62.5** FT
m- factors FOR SHEAR WALLS (FROM TABLE 3-7)	**1.5**
CLAY UNIT CAPACITY	**30** PSI
TOTLA LENGT OF WALL (EAST- WEST)	31.25 FT
TOTAL LENGTH OF WALL (NORTH- SOUTH) - MIDDLE	38 FT
TOTAL LENGTH OF WALL (NORTH- SOUTH) - EXTERIOR	9.5 FT
TOTAL SHEAR TO FLEXIBLE DIAPHRAGM	**421.8** KIPS

B. SHEAR FORCES TO WALLS SUPPORTING FLEXIBLE DIAPHRAGM

WALL #	LENGTH	SHEAR FORCES
27	5	**67.5**
28	2.75	**37.1**
29	4.75	**64.1**
30	2.5	**33.7**
31	4.25	**57.4**
32	6	**81.0**
33	6	**81.0**
34	38	**210.9**
35	30	**105.5**
36	29	**105.5**
37	2.5	**27.8**
38	2.5	**27.8**
39	5	**55.5**

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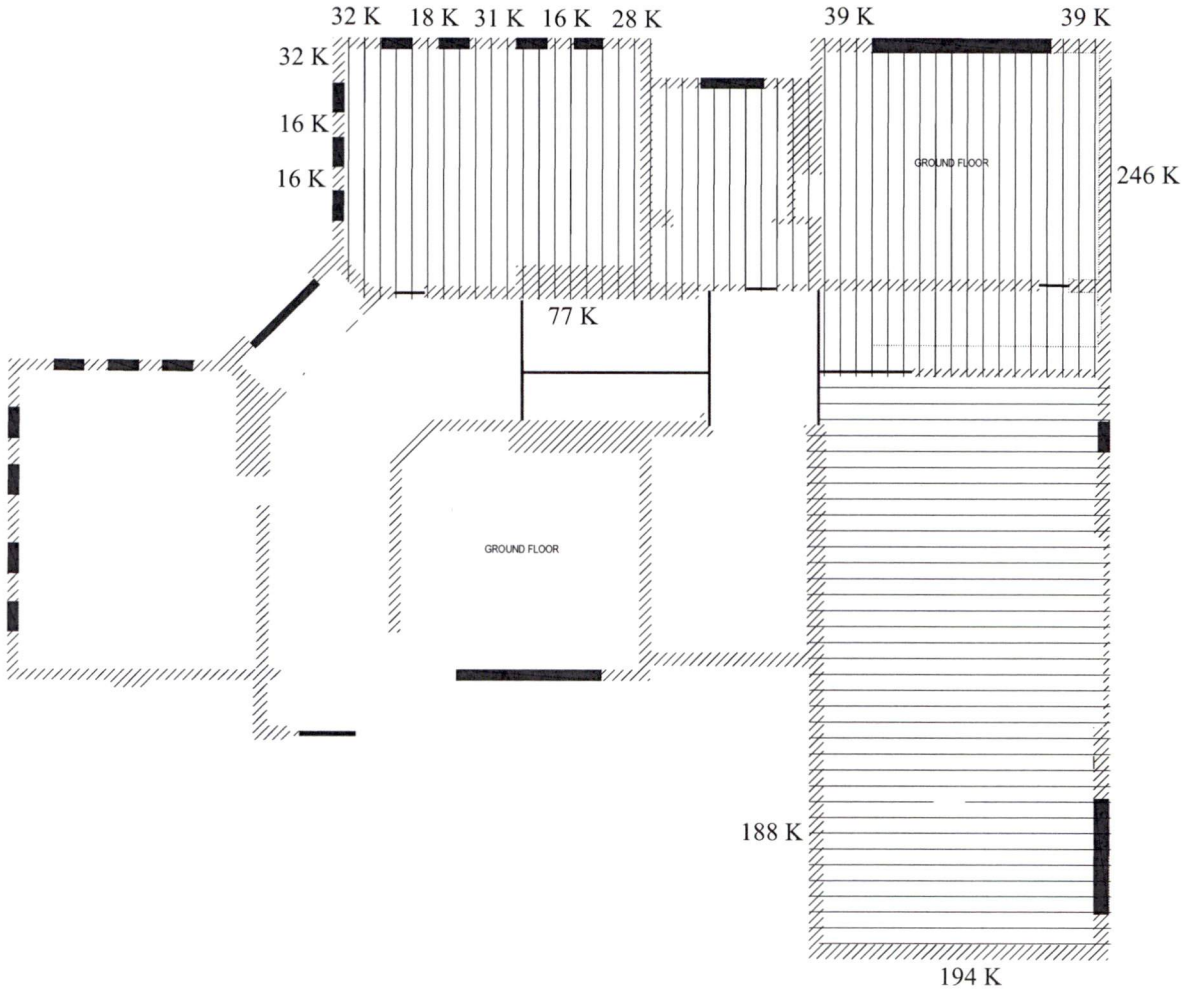
SHEAR IN FIRST FLOOR WALLS
(FLEXIBLE)



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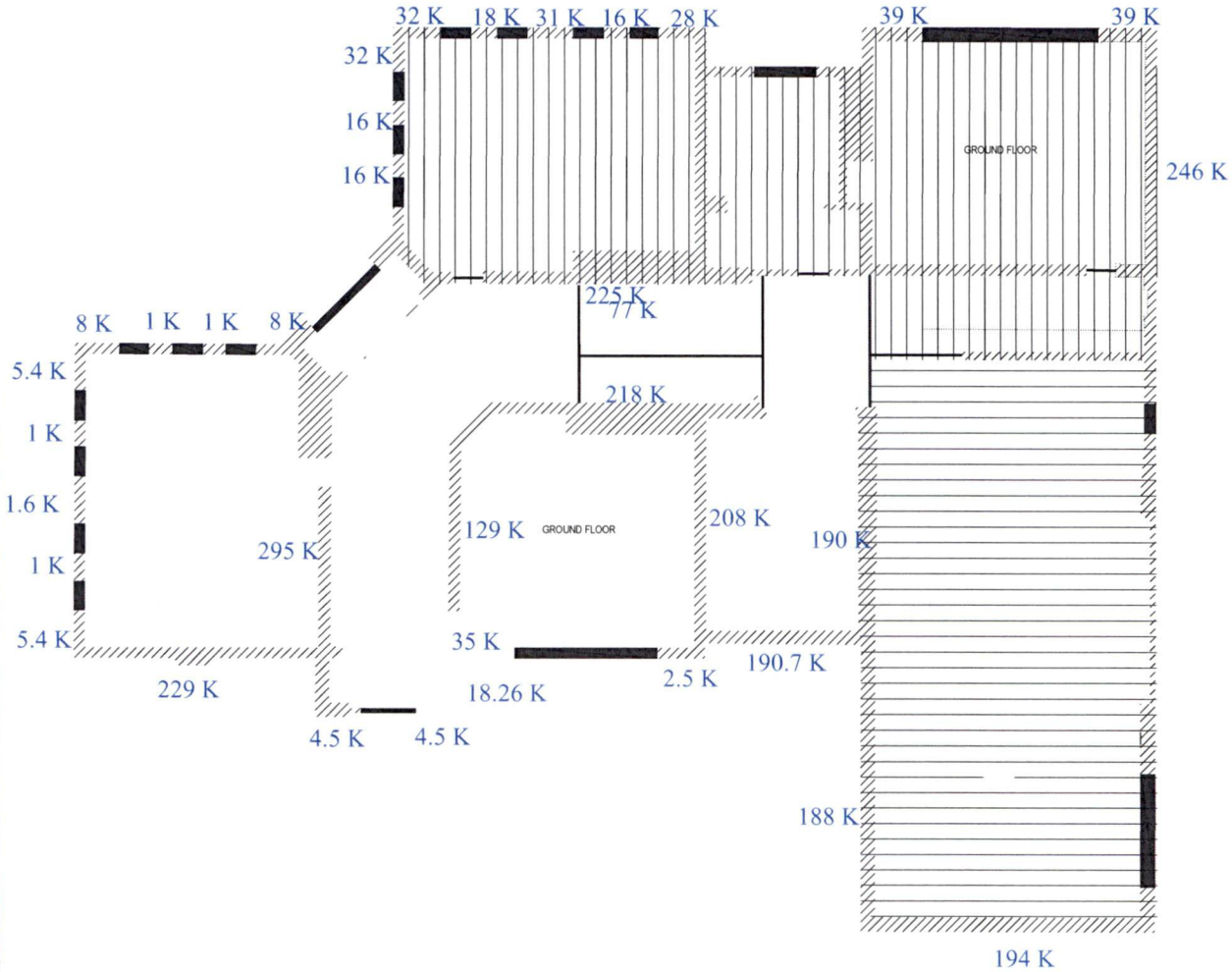
COMBINED SHEAR FORCES EVERY WALLS SUPPORTING FLOOR



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Santaquin City Museum ASCE/SEI 31-03 Seismic Evaluation & ASCE/SEI 41-06 Seismic Evaluation	06-30-2015	
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TIER 2 ANALYSIS

BASE SHEAR FOR TIER 1 AND TIER 2 ARE IDENTICAL

EQUATION 7-3 AND 7-4 OF ASCE 41-06 DETERMINE ACCEPTABLITIY OF WALL

SHEAR RESISTANCE OF A 7" SHOTCRETE WALL @ 5000 PSI = 120 PSI (7" X 12") = 10 KLF OF LENGTH

WALL #	LENGTH	SHEAR FORCES (KIPS)	$P_{D\ (KIPS)}$	$h_{eff\ (FT)}$	m -factor	ROCKING SHEAR Q_{CE} (Vr-KIPS)	mQ_{Ce} (Vr-KIPS)	SHEAR Q_{CL} (Vr-KIPS)		
1	4.0	23.4	6.24	7.67	7.7	2.9	22.5	11.5	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
2	2.5	14.6	3.9	7.67	12.3	1.1	14.0	7.2	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
3	2.5	14.6	3.9	7.67	12.3	1.1	14.0	7.2	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
4	3.0	17.5	4.68	7.67	10.2	1.6	16.8	8.6	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
5	3.0	17.5	4.68	7.67	10.2	1.6	16.8	8.6	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
6	2.5	14.6	3.9	7.67	12.3	1.1	14.0	7.2	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
7	4.0	23.4	6.24	7.67	7.7	2.9	22.5	11.5	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
8	4.5	26.3	7.02	7.67	6.8	3.7	25.3	13.0	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
9	2.5	14.6	3.9	7.67	12.3	1.1	14.0	7.2	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
10	3.5	20.4	5.46	7.67	8.8	2.2	19.7	10.1	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
11	4.0	23.4	6.24	7.67	7.7	2.9	22.5	11.5	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
12	2.5	14.6	3.9	7.67	12.3	1.1	14.0	7.2	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
13	38.0	159.4	59.28	7.67	2.0	264.3	528.7	109.4	FORCE CONTROLLED	NO GOOD-USE SHOTCRETE
14	52.0	227.8	81.12	7.67	2.0	495.0	989.9	149.8	FORCE CONTROLLED	NO GOOD-USE SHOTCRETE
15	29.0	121.7	45.24	7.67	2.0	153.9	307.9	83.5	FORCE CONTROLLED	NO GOOD-USE SHOTCRETE
16	36.0	45.0	56.16	7.67	2.0	237.2	474.5	103.7	FORCE CONTROLLED	OKAY
17	36.0	45.0	56.16	7.67	2.0	237.2	474.5	103.7	FORCE CONTROLLED	OKAY
18	5.0	3.7	7.8	7.67	6.1	4.6	28.1	14.4	DEFORMATION CONTROLLED	OKAY
19	5.0	3.7	7.8	7.67	6.1	4.6	28.1	14.4	DEFORMATION CONTROLLED	OKAY
20	4.0	2.9	6.24	7.67	7.7	2.9	22.5	11.5	DEFORMATION CONTROLLED	OKAY
21	4.0	2.9	6.24	7.67	7.7	2.9	22.5	11.5	DEFORMATION CONTROLLED	OKAY
22	3.0	2.2	4.68	7.67	10.2	1.6	16.8	8.6	DEFORMATION CONTROLLED	OKAY
23	2.5	1.8	3.9	7.67	12.3	1.1	14.0	7.2	DEFORMATION CONTROLLED	OKAY
24	2.5	1.8	3.9	7.67	12.3	1.1	14.0	7.2	DEFORMATION CONTROLLED	OKAY
25	2.5	1.8	3.9	7.67	12.3	1.1	14.0	7.2	DEFORMATION CONTROLLED	OKAY
26	3.0	2.2	4.68	7.67	10.2	1.6	16.8	8.6	DEFORMATION CONTROLLED	OKAY
27	5	67.5	7.8	7.67	6.1	4.6	28.1	14.4	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
28	2.75	37.1	4.29	7.67	11.2	2.0	22.3	7.9	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
29	4.75	64.1	7.41	7.67	6.5	4.1	26.7	13.7	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
30	2.5	33.7	3.9	7.67	12.3	2.0	24.5	7.2	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
31	4.25	57.4	6.63	7.67	7.2	3.3	23.9	12.2	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
32	6	20.2	9.36	7.67	5.1	6.6	33.7	17.3	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
33	6	20.2	9.36	7.67	5.1	6.6	33.7	17.3	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
34	52	105.5	81.12	7.67	2.0	495.0	989.9	149.8	FORCE CONTROLLED	OKAY
35	31	52.7	48.36	7.67	2.0	164.7	329.5	89.3	FORCE CONTROLLED	OKAY
36	53	105.5	82.68	7.67	2.0	495.0	989.9	152.6	FORCE CONTROLLED	OKAY
37	2.5	5.1	3.9	7.67	12.3	2.0	24.5	7.2	DEFORMATION CONTROLLED	OKAY
38	2.5	5.1	3.9	7.67	12.3	2.0	24.5	7.2	DEFORMATION CONTROLLED	OKAY
39	5	10.1	7.8	7.67	6.1	4.6	28.1	14.4	DEFORMATION CONTROLLED	OKAY
40	5	5.4	7.8	7.67	6.1	4.6	28.1	14.4	DEFORMATION CONTROLLED	OKAY
41	2.5	1	3.9	7.67	12.3	2.0	24.5	7.2	DEFORMATION CONTROLLED	OKAY
42	4	1.6	6.24	7.67	7.7	4.6	35.1	11.5	DEFORMATION CONTROLLED	OKAY
43	2.5	1	3.9	7.67	12.3	2.0	24.5	7.2	DEFORMATION CONTROLLED	OKAY
44	5	5.4	7.8	7.67	6.1	4.1	25.3	14.4	DEFORMATION CONTROLLED	OKAY
45	30	229	46.8	7.67	1.0	138.4	141.6	86.4	FORCE CONTROLLED	NO GOOD-USE SHOTCRETE
46	18	55.4	28.08	7.67	1.7	49.8	84.9	51.8	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
49	3	8	4.68	7.67	10.2	2.9	30.0	8.6	DEFORMATION CONTROLLED	OKAY
50	2.5	1	3.9	7.67	12.3	2.0	24.5	7.2	DEFORMATION CONTROLLED	OKAY
51	2.5	1	3.9	7.67	12.3	2.0	24.5	7.2	DEFORMATION CONTROLLED	OKAY
52	3	8	4.68	7.67	10.2	3.7	37.9	8.6	DEFORMATION CONTROLLED	OKAY
57	7	35	10.92	7.67	4.4	11.7	51.3	20.2	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
58	4	2.4	6.24	7.67	7.7	4.6	35.1	11.5	DEFORMATION CONTROLLED	OKAY
59	6	18	9.36	7.67	5.1	6.6	33.7	17.3	DEFORMATION CONTROLLED	NO GOOD-USE SHOTCRETE
60	3	4.5	4.68	7.67	10.2	2.0	20.5	8.6	DEFORMATION CONTROLLED	OKAY
61	3	4.5	4.68	7.67	10.2	2.0	20.5	8.6	DEFORMATION CONTROLLED	OKAY

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APPENDIX B

ASCE 31 SUMMARY DATA SHEETS

Building Name: THE SANTAQUIN CHIEFTAIN MUSEUM Date: 06-22-15

Building Address: 100 WEST 100 SOUTH , SANTAQUIN Page: _____ of _____

Job Number: 15118 Job Name: _____ By: _____ Checked: _____

ASCE 31 SUMMARY DATA SHEET

BUILDING DATA

Latitude: 39.97 Longitude: -111.793

Year Built: REPORTED 1903 Year(s) Remodeled: N/A Original Design Code: N/A

Area (sf): 7024 Length (ft): _____ Width (ft): _____

No. Stories: 2 Story Height: 11 Total Height: 30

USE ☐ Industrial ☐ Office ☐ Warehouse ☐ Hospital ☐ Residential ☐ Educational ☒ Other: MUSEUM

CONSTRUCTION DATA

Gravity Load Structural System: UNREINFORCED MASONRY WALLS

Exterior Transverse Walls: UNREINFORCED MASONRY WALLS Openings?: YES

Exterior Longitudinal Walls: UNREINFORCED MASONRY WALLS Openings?: YES

Roof Materials/Framing: COMBINATIONS OF TRUSSES AND RAFTERS

Intermediate Floors/Framing: PART CONCRETE FLOOR AND PART WOOD FLOOR

Ground Floor: SLAB ON GRADE

Columns: N/A Foundation: CONCRETE/ROCK

General Condition of Structure: FAIR

Levels Below Grade?: NONE

Special Features and Comments: N/A

LATERAL-FORCE-RESISTING SYSTEM

	Longitudinal Direction	Transverse Direction
System:	URM	URM
Vertical Elements:	UNREINFORCED MASONRY WALLS	UNREINFORCED MASONRY WALLS
Diaphragms:	TRUSSES & STICK FRAMED WOOD RAFTER	TRUSSES & STICK FRAMED WOOD RAFTER
Connections:	WOOD PANEL TO PANEL	WOOD PANEL TO PANEL

EVALUATION DATA

Spectral Response Accelerations: S_s= 1.374 S_1= 0.486

Soil Factors: Class= D F_a= 1.00 F_v= 1.514

Design Spectral Response Accelerations: S_{DS}= 0.916 S_{D1}= 0.490

Level of Seismicity: HIGH Performance Level: LIFE SAFETY

Building Period: T= 0.22 Spectral Acceleration: S_a= 0.916

Modification Factor: C= 1.0 Building Weight: W= _____

Pseudo Lateral Force: $V=CS_aW$= 0.916W

BUILDING CLASSIFICATION: URM

CHECKLISTS ATTACHED

Basic structural checklist	☒	Basic nonstructural checklist	☒
Supplemental structural checklist	☒	Intermediate nonstructural checklist	☒
Geologic Site Hazards and Foundations checklist	☒	Supplemental nonstructural checklist	☐

FURTHER EVALUATION REQUIREMENTS: DIAPHRAGM TO WALL CONNECTION; DIAPHRAGM

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APPENDIX C

TIER 1 STRUCTURAL CHECKLISTS

3.7.15A Basic Structural Checklist for Building Type URMA: Unreinforced Masonry Bearing Walls with Stiff Diaphragms

This Basic Structural Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

C3.7.15A Basic Structural Checklist for Building Type URMA

These buildings have perimeter bearing walls that consist of unreinforced clay brick, stone, or concrete masonry. Interior bearing walls, where present, also consist of unreinforced clay brick, stone, or concrete masonry. Diaphragms are stiff relative to the unreinforced masonry walls and interior framing. In older construction or large, multi-story buildings, diaphragms consist of cast-in-place concrete. In levels of low seismicity, more recent construction consists of metal deck and concrete fill supported on steel framing.

Building System

(C) NC N/A	LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)
C NC (N/A)	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)
C NC (N/A)	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)
C NC (N/A)	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)
(C) NC N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)
(C) NC N/A	VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)
(C) NC N/A	MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)

NEED TO CHECK

C NC N/A TORSION: The estimated distance between the story center of mass and the story center of rigidity shall be less than 20 percent of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6)

C NC N/A DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements. (Tier 2: Sec. 4.3.3.4)

C NC N/A MASONRY UNITS: There shall be no visible deterioration of masonry units. (Tier 2: Sec. 4.3.3.7)

C NC N/A MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar. (Tier 2: Sec. 4.3.3.8)

C NC N/A UNREINFORCED MASONRY WALL CRACKS: There shall be no existing diagonal cracks in wall elements greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy or out-of-plane offsets in the bed joint greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.11)

Lateral-Force-Resisting System

C NC N/A REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than ~~or equal to~~ 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)

C NC N/A SHEAR STRESS CHECK: The shear stress in the unreinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 30 psi for clay units and 70 psi for concrete units for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.5.1)

NEED TO CHECK

Connections

C NC N/A WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support shall be anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections shall have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 3.5.3.7. (Tier 2: Sec. 4.6.1.1)

C NC N/A TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2: Sec. 4.6.2.1)

C NC N/A GIRDER/COLUMN CONNECTION: There shall be a positive connection utilizing plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 4.6.4.1)

CANT SEE

3.7.15AS Supplemental Structural Checklist for Building Type URMA: Unreinforced Masonry Bearing Walls with Stiff Diaphragms

This Supplemental Structural Checklist shall be completed where required by Table 3-2. The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist.

Lateral-Force-Resisting System

C NC N/A PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than the following for Life Safety and Immediate Occupancy (Tier 2: Sec. 4.4.2.5.2):

TOP STORY LIMIT IS EXCEEDED

Top story of multi-story building	(9)
First story of multi-story building	15
All other conditions	13

C (NC) N/A MASONRY LAY-UP: Filled collar joints of multi-wythe masonry walls shall have negligible voids. (Tier 2: Sec. 4.4.2.5.3)

NEED TO CHECK

Diaphragms

General

(C) NC N/A OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25 percent of the wall length for Life Safety and 15 percent of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4)

(C) NC N/A OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls shall not be greater than 8 feet long for Life Safety and 4 feet long for Immediate Occupancy. (Tier 2: Sec. 4.5.1.6)

C (NC) N/A PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)

C NC (N/A) DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)

Connections

C (NC) N/A BEAM, GIRDER, AND TRUSS SUPPORTS: Beams, girders, and trusses supported by unreinforced masonry walls or pilasters shall have independent secondary columns for support of vertical loads. (Tier 2: Sec. 4.6.4.5)

3.7.16 General Basic Structural Checklist

This General Basic Structural Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

BUILDING SYSTEM

General

C NC N/A — LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)

C NC N/A — ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building shall be greater than 4 percent of the height of the shorter building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.1.2)

C NC N/A — MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)

Configuration

C NC N/A — WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)

C NC N/A — SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)

C NC N/A — GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)

C NC N/A — VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)

C NC N/A — MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)

C NC N/A — TORSION: The estimated distance between the story center of mass and the story center of rigidity shall be less than 20 percent of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6)

Condition of Materials

C NC N/A — DETERIORATION OF WOOD: There shall be no signs of decay, shrinkage, splitting, fire damage, or sagging in any of the wood members, and none of the metal connection hardware shall be deteriorated, broken, or loose. (Tier 2: Sec. 4.3.3.1)

C NC N/A — WOOD STRUCTURAL PANEL SHEAR WALL FASTENERS: There shall be no more than 15 percent of inadequate fastening such as overdriven fasteners, omitted blocking, excessive fastening spacing, or inadequate edge distance. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.3.3.2)

C NC N/A — DETERIORATION OF STEEL: There shall be no visible rusting, corrosion, cracking, or other deterioration in any of the steel elements or connections in the vertical- or lateral-force-resisting systems. (Tier 2: Sec. 4.3.3.3)

C NC N/A — DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements. (Tier 2: Sec. 4.3.3.4)

C NC N/A — POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used. (Tier 2: Sec. 4.3.3.5)

C NC N/A — PRECAST CONCRETE WALLS: There shall be no visible deterioration of concrete or reinforcing steel or evidence of distress, especially at the connections. (Tier 2: Sec. 4.3.3.6)

C NC N/A — MASONRY UNITS: There shall be no visible deterioration of masonry units. (Tier 2: Sec. 4.3.3.7)

C NC N/A — MASONRY JOINTS: The mortar shall not be easily scraped away from the joints by hand with a metal tool, and there shall be no areas of eroded mortar. (Tier 2: Sec. 4.3.3.8)

C NC N/A — CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.9)

C NC N/A — REINFORCED MASONRY WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.10)

C NC N/A — UNREINFORCED MASONRY WALL CRACKS: There shall be no existing diagonal cracks in wall elements greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy or out-of-plane offsets in the bed joint greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.11)

C NC N/A — CRACKS IN INFILL WALLS: There shall be no existing diagonal cracks in the infilled walls that extend throughout a panel greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, or out-of-plane offsets in the bed joint greater than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy. (Tier 2: Sec. 4.3.3.12)

C NC N/A — CRACKS IN BOUNDARY COLUMNS: There shall be no existing diagonal cracks wider than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy in concrete columns that encase masonry infills. (Tier 2: Sec. 4.3.3.13)

LATERAL-FORCE-RESISTING SYSTEM

Moment Frames

General

C NC N/A REDUNDANCY: The number of lines of moment frames in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. The number of bays of moment frames in each line shall be greater than or equal to 2 for Life Safety and 3 for Immediate Occupancy. (Tier 2: Sec. 4.4.1.1.1)

Moment Frames with Infill Walls

C NC N/A INTERFERING WALLS: All concrete and masonry infill walls placed in moment frames shall be isolated from structural elements. (Tier 2: Sec. 4.4.1.2.1)

Steel Moment Frames

C NC N/A DRIFT CHECK: The drift ratio of the steel moment frames, calculated using the Quick Check procedure of Section 3.5.3.1, shall be less than 0.025 for Life Safety and 0.015 for Immediate Occupancy. (Tier 2: Sec. 4.4.1.3.1)

C NC N/A AXIAL STRESS CHECK: The axial stress due to gravity loads in columns subjected to overturning forces shall be less than $0.10F_y$ for Life Safety and Immediate Occupancy. Alternatively, the axial stress due to overturning forces alone, calculated using the Quick Check procedure of Section 3.5.3.6, shall be less than $0.30F_y$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.1.3.2)

Concrete Moment Frames

C NC N/A SHEAR STRESS CHECK: The shear stress in the concrete columns, calculated using the Quick Check procedure of Section 3.5.3.2, shall be less than the greater of 100 psi or $2\sqrt{f'c}$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.1.4.1)

C NC N/A AXIAL STRESS CHECK: The axial stress due to gravity loads in columns subjected to overturning forces shall be less than $0.10f'_c$ for Life Safety and Immediate Occupancy. Alternatively, the axial stresses due to overturning forces alone, calculated using the Quick Check procedure of Section 3.5.3.6, shall be less than $0.30f'_c$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.1.4.2)

Precast Concrete Moment Frames

C NC N/A PRECAST CONNECTION CHECK: The precast connections at frame joints shall have the capacity to resist the shear and moment demands calculated using the Quick Check procedure of Section 3.5.3.5. (Tier 2: Sec. 4.4.1.5.1)

Frames Not Part of the Lateral-Force-Resisting System

C NC N/A COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical-load-carrying system. (Tier 2: Sec. 4.4.1.6.1)

Shear Walls

General

C NC N/A REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)

Concrete Shear Walls

C NC N/A SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the greater of 100 psi or $2\sqrt{f'c}$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.1)

C NC N/A REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be not less than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18 inches for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.2)

C NC N/A COLUMN SPLICES: Steel columns encased in shear-wall-boundary elements shall have splices that develop the tensile strength of the column. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.9)

Precast Concrete Shear Walls

C NC N/A SHEAR STRESS CHECK: The shear stress in the precast panels, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the greater of 100 psi or $2\sqrt{f'c}$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.3.1)

C NC N/A REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be not less than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18 inches for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.3.2)

Reinforced Masonry Shear Walls

C NC N/A SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 70 psi for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.4.1)

C NC N/A REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls shall be greater than 0.002 for Life Safety and Immediate Occupancy of the wall with the minimum of 0.0007 for Life Safety and Immediate Occupancy in either of the two directions; the spacing of reinforcing steel shall be less than 48 inches for Life Safety and Immediate Occupancy; and all vertical bars shall extend to the top of the walls. (Tier 2: Sec. 4.4.2.4.2)

Unreinforced Masonry Shear Walls

C NC N/A SHEAR STRESS CHECK: The shear stress in the unreinforced masonry shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than 30 psi for clay units and 70 psi for concrete units for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.5.1)

Infill Walls in Frames

C NC N/A WALL CONNECTIONS: Masonry shall be in full contact with frame for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.6.1)

NEED TO CHECK

Walls in Wood-Frame Buildings

C NC N/A SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the following values for Life Safety and Immediate Occupancy (Tier 2: Sec. 4.4.2.7.1):

Structural panel sheathing:	1,000 plf
Diagonal sheathing:	700 plf
Straight sheathing:	100 plf
All other conditions:	100 plf

C NC N/A STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings shall not rely on exterior stucco walls as the primary lateral-force-resisting system. (Tier 2: Sec. 4.4.2.7.2)

C NC N/A GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard shall not be used as shear walls on buildings over one story in height with the exception of the uppermost level of a multi-story building. (Tier 2: Sec. 4.4.2.7.3)

C NC N/A NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 for Life Safety and 1.5-to-1 for Immediate Occupancy shall not be used to resist lateral forces developed in the building in levels of moderate and high seismicity. Narrow wood shear walls with an aspect ratio greater than 2-to-1 for Immediate Occupancy shall not be used to resist lateral forces developed in the building in levels of low seismicity. (Tier 2: Sec. 4.4.2.7.4)

C NC N/A WALLS CONNECTED THROUGH FLOORS: Shear walls shall have interconnection between stories to transfer overturning and shear forces through the floor. (Tier 2: Sec. 4.4.2.7.5)

C NC N/A HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story due to a sloping site, all shear walls on the downhill slope shall have an aspect ratio less than 1-to-1 for Life Safety and 1-to-2 for Immediate Occupancy. (Tier 2: Sec. 4.4.2.7.6)

C NC N/A CRIPPLE WALLS: Cripple walls below first-floor-level shear walls shall be braced to the foundation with wood structural panels. (Tier 2: Sec. 4.4.2.7.7)

C NC N/A OPENINGS: Walls with openings greater than 80 percent of the length shall be braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or shall be supported by adjacent construction through positive ties capable of transferring the lateral forces. (Tier 2: Sec. 4.4.2.7.8)

Braced Frames

General

C NC N/A REDUNDANCY: The number of lines of braced frames in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. The number of braced bays in each line shall be greater than 2 for Life Safety and 3 for Immediate Occupancy. (Tier 2: Sec. 4.4.3.1.1)

C NC N/A AXIAL STRESS CHECK: The axial stress in the diagonals, calculated using the Quick Check procedure of Section 3.5.3.4, shall be less than $0.50F_y$ for Life Safety and for Immediate Occupancy. (Tier 2: Sec. 4.4.3.1.2)

C NC N/A COLUMN SPLICES: All column splice details located in braced frames shall develop the tensile strength of the column. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.3.1.3)

DIAPHRAGMS

Precast Concrete Diaphragms

C NC N/A TOPPING SLAB: Precast concrete diaphragm elements shall be interconnected by a continuous reinforced concrete topping slab. (Tier 2: Sec. 4.5.5.1)

CONNECTIONS

Anchorage for Normal Forces

C (NC) N/A WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support shall be anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections shall have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 3.5.3.7. (Tier 2: Sec. 4.6.1.1)

C NC (N/A) WOOD LEDGERS: The connection between the wall panels and the diaphragm shall not induce cross-grain bending or tension in the wood ledgers. (Tier 2: Sec. 4.6.1.2)

Shear Transfer

C (NC) N/A TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2 Sec. 4.6.2.1)

C NC (N/A) TRANSFER TO STEEL FRAMES: Diaphragms shall be connected for transfer of loads to the steel frames for Life Safety, and the connections shall be able to develop the lesser of the strength of the frames or the diaphragms for Immediate Occupancy. (Tier 2: Sec. 4.6.2.2)

C NC (N/A) TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements shall be doweled for transfer of forces into the shear wall or frame elements for Life Safety, and the dowels shall be able to develop the lesser of the shear strength of the walls, frames, or slabs for Immediate Occupancy. (Tier 2: Sec. 4.6.2.3)

Vertical Components

C NC (N/A) STEEL COLUMNS: The columns in lateral-force-resisting frames shall be anchored to the building foundation for Life Safety, and the anchorage shall be able to develop the lesser of the tensile capacity of the column, the tensile capacity of the lowest level column splice (if any), or the uplift capacity of the foundation, for Immediate Occupancy. (Tier 2: Sec. 4.6.3.1)

C NC (N/A) CONCRETE COLUMNS: All concrete columns shall be doweled into the foundation for Life Safety, and the dowels shall be able to develop the tensile capacity of reinforcement in columns of lateral-force-resisting system for Immediate Occupancy. (Tier 2: Sec. 4.6.3.2)

C NC (N/A) WOOD POSTS: There shall be a positive connection of wood posts to the foundation. (Tier 2: Sec. 4.6.3.3)

C NC (N/A) WOOD SILLS: All wood sills shall be bolted to the foundation. (Tier 2: Sec. 4.6.3.4)

C (NC) N/A FOUNDATION DOWELS: Wall reinforcement shall be doweled into the foundation for Life Safety, and the dowels shall be able to develop the lesser of the strength of the walls or the uplift capacity of the foundation for Immediate Occupancy. (Tier 2: Sec. 4.6.3.5)

C NC (N/A) SHEAR-WALL-BOUNDARY COLUMNS: The shear-wall-boundary columns shall be anchored to the building foundation for Life Safety, and the anchorage shall be able to develop the tensile capacity of the column for Immediate Occupancy. (Tier 2: Sec. 4.6.3.6)

C NC N/A PRECAST WALL PANELS: Precast wall panels shall be connected to the foundation for Life Safety and the connections shall be able to develop the strength of the walls for Immediate Occupancy. (Tier 2: Sec. 4.6.3.7)

C NC N/A WALL PANELS: Metal, fiberglass, or cementitious wall panels shall be positively attached to the foundation for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.6.3.8)

Interconnection of Elements

C NC N/A GIRDER/COLUMN CONNECTION: There shall be a positive connection utilizing plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 4.6.4.1)

Panel Connections

C NC N/A ROOF PANELS: Metal, plastic, or cementitious roof panels shall be positively attached to the roof framing to resist seismic forces for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.6.5.1)

C NC N/A WALL PANELS: Metal, fiberglass, or cementitious wall panels shall be positively attached to the framing to resist seismic forces for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.6.5.2)

3.7.16S General Supplemental Structural Checklist

This General Supplemental Structural Checklist shall be completed where required by Table 3-2. The General Basic Structural Checklist shall be completed prior to completing this General Supplemental Structural Checklist.

LATERAL-FORCE-RESISTING SYSTEM

Moment Frames

Steel Moment Frames

C NC N/A MOMENT-RESISTING CONNECTIONS: All moment connections shall be able to develop the strength of the adjoining members or panel zones. (Tier 2: Sec. 4.4.1.3.3)

C NC N/A PANEL ZONES: All panel zones shall have the shear capacity to resist the shear demand required to develop 0.8 times the sum of the flexural strengths of the girders framing in at the face of the column. (Tier 2: Sec. 4.4.1.3.4)

C NC N/A COLUMN SPLICES: All column splice details located in moment-resisting frames shall include connection of both flanges and the web for Life Safety, and the splice shall develop the strength of the column for Immediate Occupancy. (Tier 2: Sec. 4.4.1.3.5)

C NC N/A STRONG COLUMN/WEAK BEAM: The percentage of strong column/weak beam joints in each story of each line of moment-resisting frames shall be greater than 50 percent for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.1.3.6)

C NC N/A COMPACT MEMBERS: All frame elements shall meet section requirements set forth by *Seismic Provisions for Structural Steel Buildings* Table I-9-1 (AISC, 1997). (Tier 2: Sec. 4.4.1.3.7)

C NC N/A BEAM PENETRATIONS: All openings in frame-beam webs shall be less than ¼ of the beam depth and shall be located in the center half of the beams. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.1.3.8)

C NC N/A GIRDER FLANGE CONTINUITY PLATES: There shall be girder flange continuity plates at all moment-resisting frame joints. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.1.3.9)

C NC N/A OUT-OF-PLANE BRACING: Beam-column joints shall be braced out-of-plane. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.1.3.10

C NC N/A BOTTOM FLANGE BRACING: The bottom flanges of beams shall be braced out-of-plane. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.1.3.11)

Concrete Moment Frames

C NC N/A FLAT SLAB FRAMES: The lateral-force-resisting system shall not be a frame consisting of columns and a flat slab/plate without beams. (Tier 2: Sec. 4.4.1.4.3)

C NC N/A PRESTRESSED FRAME ELEMENTS: The lateral-force-resisting frames shall not include any prestressed or post-tensioned elements where the average prestress exceeds the lesser of 700 psi or $f'_c/6$ at potential hinge locations. The average prestress shall be calculated in accordance with the Quick Check procedure of Section 3.5.3.8. (Tier 2: Sec. 4.4.1.4.4)

C NC N/A CAPTIVE COLUMNS: There shall be no columns at a level with height/depth ratios less than 50 percent of the nominal height/depth ratio of the typical columns at that level for Life Safety and 75 percent for Immediate Occupancy. (Tier 2: Sec. 4.4.1.4.5)

C NC N/A PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than 30. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.4.4)

Unreinforced Masonry Shear Walls

C NC N/A PROPORTIONS: The height-to-thickness ratio of the shear walls at each story shall be less than the following for Life Safety and Immediate Occupancy (Tier 2: Sec. 4.4.2.5.2):

Top story of multi-story building:	9
First story of multi-story building:	15
All other conditions:	13

C NC N/A MASONRY LAY-UP: Filled collar joints of multi-wythe masonry walls shall have negligible voids. (Tier 2: Sec. 4.4.2.5.3)

Infill Walls in Frames

C NC N/A PROPORTIONS: The height-to-thickness ratio of the infill walls at each story shall be less than 9 for Life Safety in levels of high seismicity, 13 for Immediate Occupancy in levels of moderate seismicity, and 8 for Immediate Occupancy in levels of high seismicity. (Tier 2: Sec. 4.4.2.6.2)

C NC N/A SOLID WALLS: The infill walls shall not be of cavity construction. (Tier 2: Sec. 4.4.2.6.3)

C NC N/A INFILL WALLS: The infill walls shall be continuous to the soffits of the frame beams and to the columns to either side. (Tier 2: Sec. 4.4.2.6.4)

Walls in Wood-Frame Buildings

C NC N/A HOLD-DOWN ANCHORS: All shear walls shall have hold-down anchors constructed per acceptable construction practices, attached to the end studs. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.7.9)

Braced Frames

General

C NC N/A SLENDERNESS OF DIAGONALS: All diagonal elements required to carry compression shall have Kl/r ratios less than 120. (Tier 2: Sec. 4.4.3.1.4)

C NC N/A CONNECTION STRENGTH: All the brace connections shall develop the yield capacity of the diagonals. (Tier 2: Sec. 4.4.3.1.5)

C NC N/A OUT-OF-PLANE BRACING: Braced frame connections attached to beam bottom flanges located away from beam-column joints shall be braced out-of-plane at the bottom flange of the beams. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.3.1.6)

Concentrically Braced Frames

C NC N/A K-BRACING: The bracing system shall not include K-braced bays. (Tier 2: Sec. 4.4.3.2.1)

C NC N/A TENSION-ONLY BRACES: Tension-only braces shall not comprise more than 70 percent of the total lateral-force-resisting capacity in structures over two stories in height. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.3.2.2)

C NC N/A CHEVRON BRACING: The bracing system shall not include chevron, or V-braced, bays. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.3.2.3)

C NC N/A CONCENTRICALLY BRACED FRAME JOINTS: All the diagonal braces shall frame into the beam-column joints concentrically. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.3.2.4)

DIAPHRAGMS

General

C NC N/A DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors and shall not have expansion joints. (Tier 2: Sec. 4.5.1.1)

C NC N/A CROSS TIES: There shall be continuous cross ties between diaphragm chords. (Tier 2: Sec. 4.5.1.2)

C NC N/A ROOF CHORD CONTINUITY: All chord elements shall be continuous, regardless of changes in roof elevation. (Tier 2: Sec. 4.5.1.3)

C NC N/A OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25 percent of the wall length for Life Safety and 15 percent of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4)

C NC N/A OPENINGS AT BRACED FRAMES: Diaphragm openings immediately adjacent to the braced frames shall extend less than 25 percent of the frame length for Life Safety and 15 percent of the frame length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.5)

C NC N/A OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls shall not be greater than 8 feet long for Life Safety and 4 feet long for Immediate Occupancy. (Tier 2: Sec. 4.5.1.6)

C NC N/A PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)

C NC N/A DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)

Wood Diaphragms

C NC N/A STRAIGHT SHEATHING: All straight sheathed diaphragms shall have aspect ratios less than 2-to-1 for Life Safety and 1-to-1 for Immediate Occupancy in the direction being considered. (Tier 2: Sec. 4.5.2.1)

C NC N/A SPANS: All wood diaphragms with spans greater than 24 feet for Life Safety and 12 feet for Immediate Occupancy shall consist of wood structural panels or diagonal sheathing. Wood commercial and industrial buildings may have rod-braced systems. (Tier 2: Sec. 4.5.2.2)

C NC N/A UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms shall have horizontal spans less than 40 feet for Life Safety and 30 feet for Immediate Occupancy and shall have aspect ratios less than or equal to 4-to-1 for Life Safety and 3-to-1 for Immediate Occupancy. (Tier 2: Sec. 4.5.2.3)

Metal Deck Diaphragms

C NC N/A NON-CONCRETE FILLED DIAPHRAGMS: Untopped metal deck diaphragms or metal deck diaphragms with fill other than concrete shall consist of horizontal spans of less than 40 feet and shall have span/depth ratios less than 4-to-1. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.3.1)

Other Diaphragms

C NC N/A OTHER DIAPHRAGMS: The diaphragm shall not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Tier 2: Sec. 4.5.7.1)

CONNECTIONS

Anchorage For Normal Forces

C NC N/A PRECAST PANEL CONNECTIONS: There shall be at least two anchors from each precast wall panel into the diaphragm elements for Life Safety and the anchors shall be able to develop the strength of the panels for Immediate Occupancy. (Tier 2: Sec. 4.6.1.3)

C NC N/A STIFFNESS OF WALL ANCHORS: Anchors of concrete or masonry walls to wood structural elements shall be installed taut and shall be stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 inch prior to engagement of the anchors. (Tier 2: Sec. 4.6.1.4)

Vertical Components

C NC N/A WOOD SILL BOLTS: Sill bolts shall be spaced at 6 feet or less for Life Safety and 4 feet or less for Immediate Occupancy, with proper edge and end distance provided for wood and concrete. (Tier 2: Sec. 4.6.3.9)

C NC N/A UPLIFT AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy. (Tier 2: Sec. 4.6.3.10)

Interconnection Of Elements

C NC ~~N/A~~ GIRDERS: Girders supported by walls or pilasters shall have at least two ties securing the anchor bolts for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.6.4.2)

C NC ~~N/A~~ CORBEL BEARING: If the frame girders bear on column corbels, the length of bearing shall be greater than 3 inches for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.6.4.3)

C NC ~~N/A~~ CORBEL CONNECTIONS: The frame girders shall not be connected to corbels with welded elements. (Tier 2: Sec. 4.6.4.4)

C ~~NC~~ N/A BEAM, GIRDER, AND TRUSS SUPPORTS: Beams, girders, and trusses supported by unreinforced masonry walls or pilasters shall have independent secondary columns for support of vertical loads. (Tier 2: Sec. 4.6.4.5)

Panel Connections

C NC ~~N/A~~ ROOF PANEL CONNECTIONS: Roof panel connections shall be spaced at or less than 12 inches for Life Safety and 8 inches for Immediate Occupancy. (Tier 2: Sec. 4.6.5.3)

3.8 Geologic Site Hazards and Foundations Checklist

This Geologic Site Hazards and Foundations Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

Geologic Site Hazards

The following statements shall be completed for buildings in levels of high or moderate seismicity.

C NC N/A LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.1.1)

C NC N/A SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure. (Tier 2: Sec. 4.7.1.2)

C NC N/A SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated. (Tier 2: Sec. 4.7.1.3)

Condition of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

C NC N/A FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.1)

The following statement shall be completed for buildings in levels of high or moderate seismicity being evaluated to the Immediate Occupancy Performance Level.

C NC N/A DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.2)

Capacity of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

C NC N/A POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 feet for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.3.1)

The following statements shall be completed for buildings in levels of moderate seismicity being evaluated to the Immediate Occupancy Performance Level and for buildings in levels of high seismicity.

C NC N/A OVERTURNING: The ratio of the horizontal dimension of the lateral-force-resisting system at the foundation level to the building height (base/height) shall be greater than $0.6S_a$. (Tier 2: Sec. 4.7.3.2)

C NC N/A TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C. (Section 3.5.2.3.1, Tier 2: Sec. 4.7.3.3)

C NC N/A DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.4)

C NC N/A SLOPING SITES: The difference in foundation embedment depth from one side of the building to another shall not exceed one story in height. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.5)

3.9 Nonstructural Checklists

The following checklists are included in this section:

- Basic Nonstructural Component Checklist (Section 3.9.1)
- Intermediate Nonstructural Component Checklist (Section 3.9.2)
- Supplemental Nonstructural Component Checklist (Section 3.9.3)

These checklists shall be completed where required by Table 3-2. The Basic Nonstructural Component Checklist shall be completed prior to completing the Intermediate Nonstructural Component Checklist. The Intermediate Nonstructural Component Checklist shall be completed prior to completing the Supplemental Nonstructural Component Checklist.

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PAVEMENT & ROOF CONSULTING

PROJECT	DATE	SHEET OF
Santaquin City Museum ASCE/SEI 31-03 Seismic Evaluation & ASCE/SEI 41-06 Seismic Evaluation	06-30-2015	
	DESIGNED BY TAL	PROJECT NO. 15118

APPENDIX D

PHOTOS

Figure 1- West exterior view

Figure 2- South exterior view

Figure 3- North exterior view

Figure 4- North side showing cracks

Figure 5- South exterior with hole

Figure 5- North exterior showing windows

Figure 7- West exterior with Cracks

Figure 8- Stone foundation

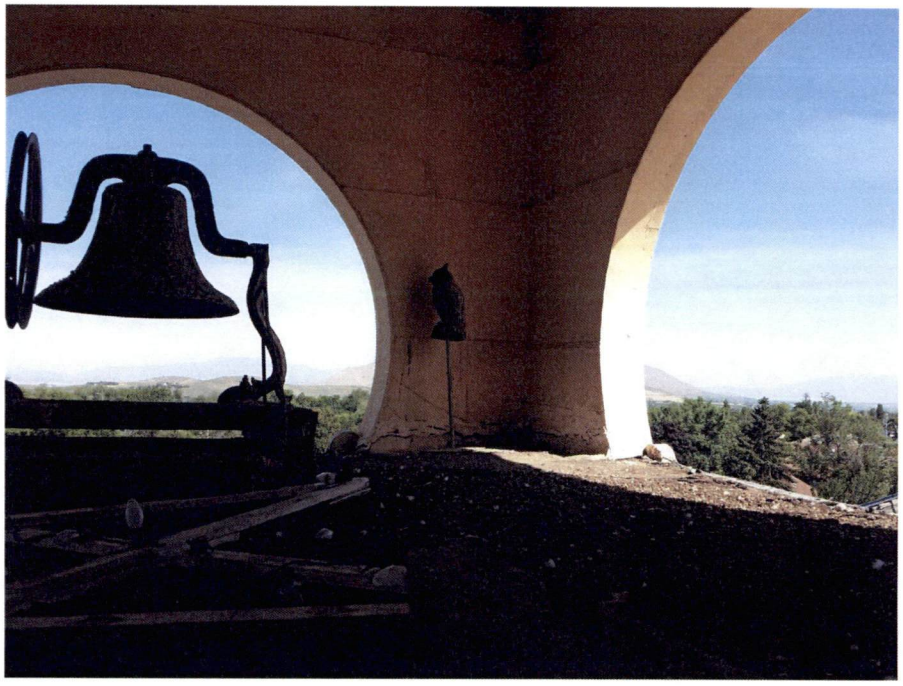

Figure 9- Tower at entrance

Figure 10- Framing support for tower

Figure 11- Tower wall showing cracks

Figure 12- Framing support for tower

Figure 13- Roof framing

Figure 14- Roof framing

Figure 13 - Support base for tower

Figure 14- Roof framing

Figure 13- Roof framing

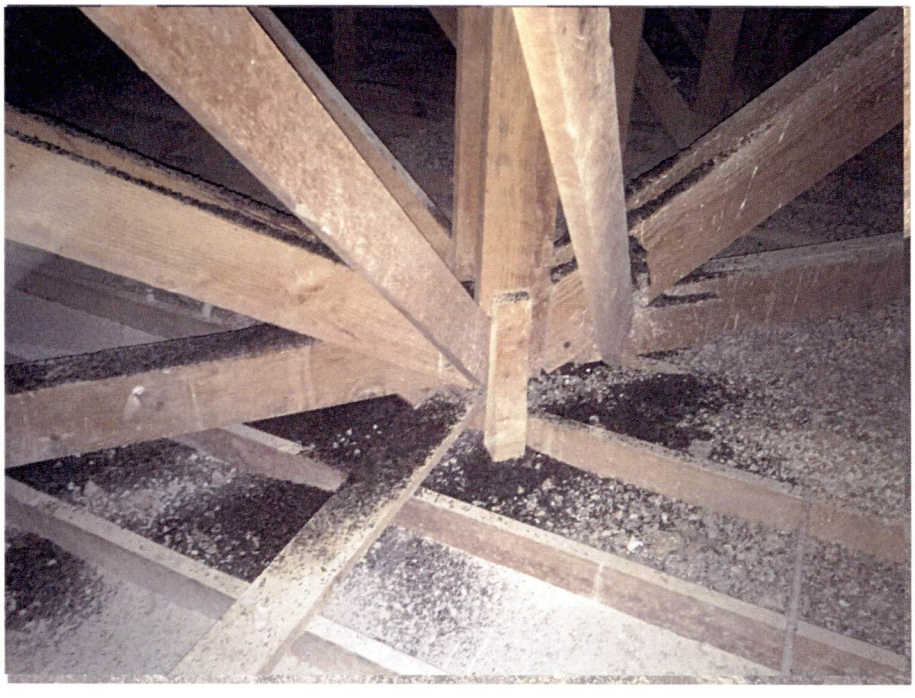

Figure 14- bat guano in the attic

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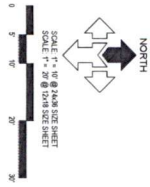
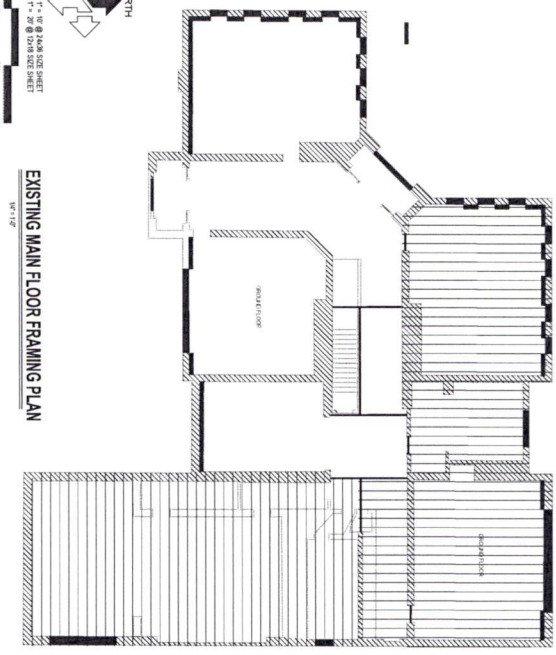
Santaquin City Museum ASCE/SEI 31-03 Seismic Evaluation & ASCE/SEI 41-06 Seismic Evaluation	06-30-2015	
	DESIGNED BY TAL	PROJECT NO. 15118

APPENDIX E

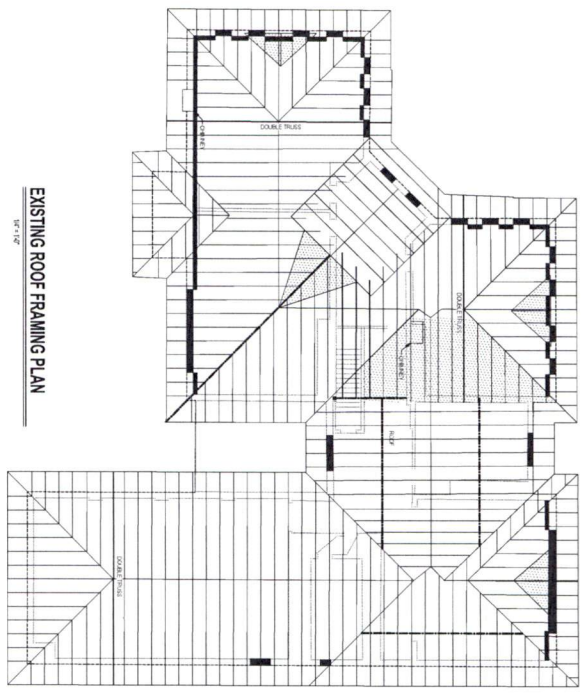
BUILDING PLANS AND RETROFIT DETAILS





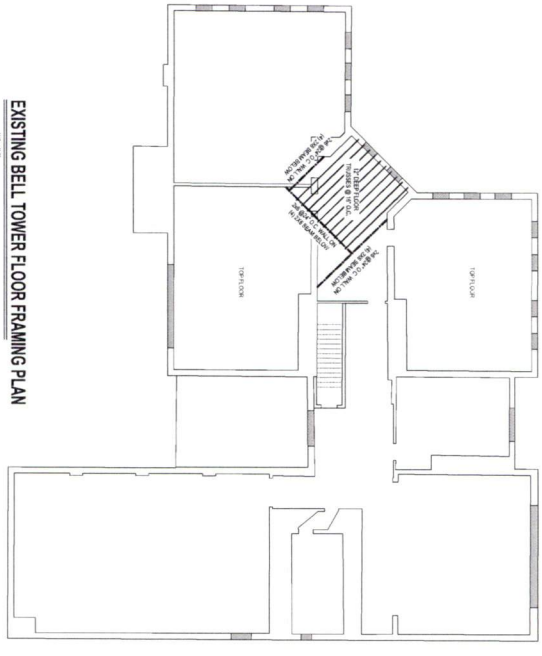
EXISTING MAIN FLOOR FRAMING PLAN

1/4"=1'-0"



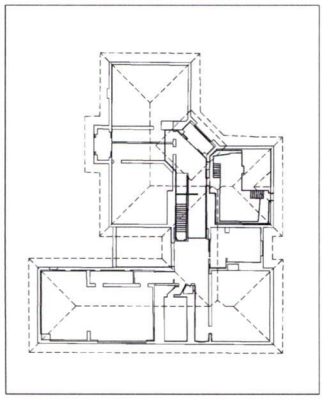
EXISTING ROOF FRAMING PLAN

1/4"=1'-0"



EXISTING BELL TOWER FLOOR FRAMING PLAN

1/4"=1'-0"



N.T.S

S1.00	EXISTING FRAMING PLANS

SHEET:	1 OF 2
DATE:	06/23/15
CHECKED BY:	MJE
DRAWN BY:	NSC
PROJECT NO:	15118

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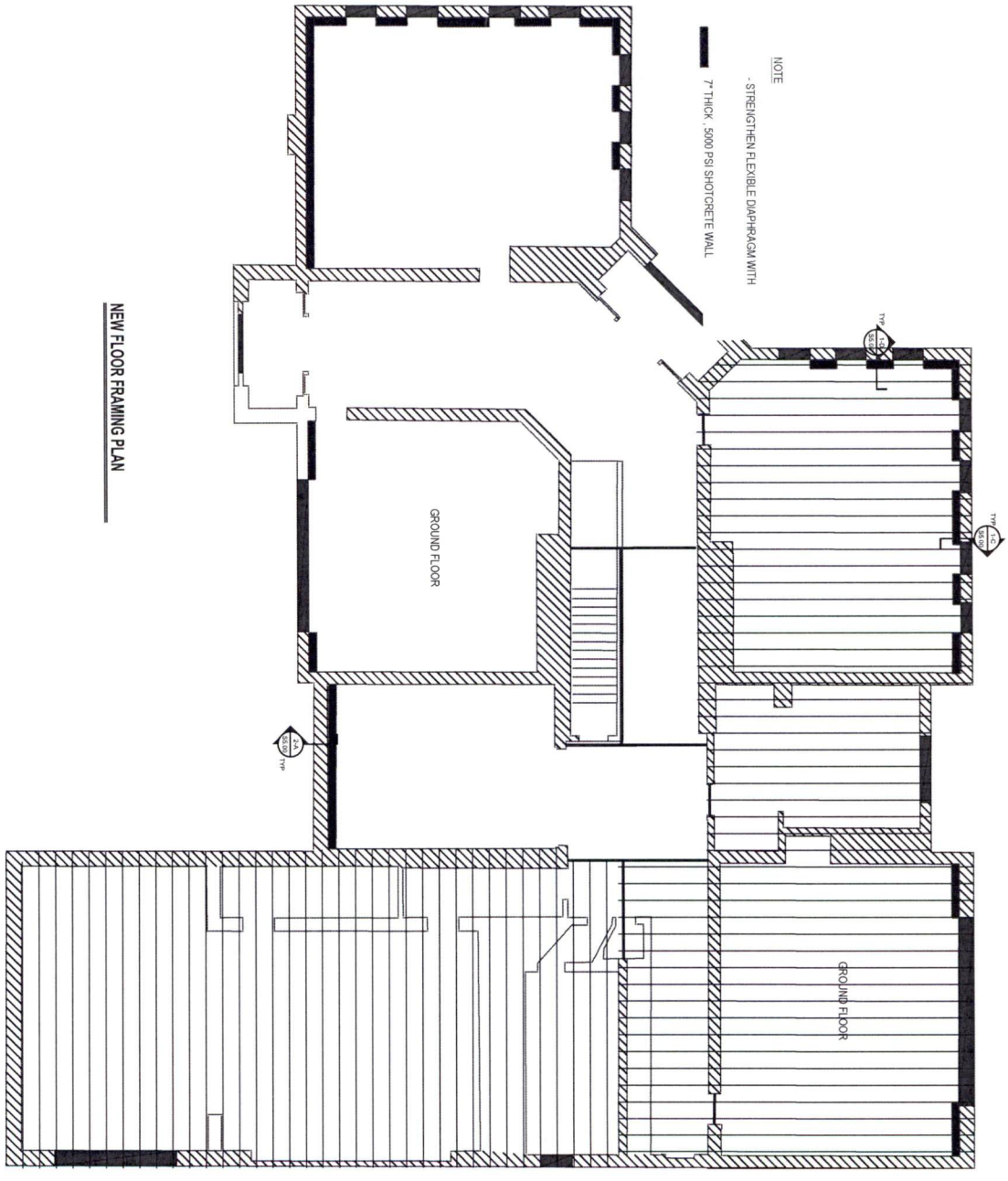
COUNCIL MEETING 07-05-15
ATTACHMENT "D-68"



PROJECT NO:	15118
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CHECKED BY:	MJE
DATE:	06/25/15
SHEET:	2 OF 2

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S2.00
NEW ROOF FRAMING PLANS

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ATTACHMENT "D-69"

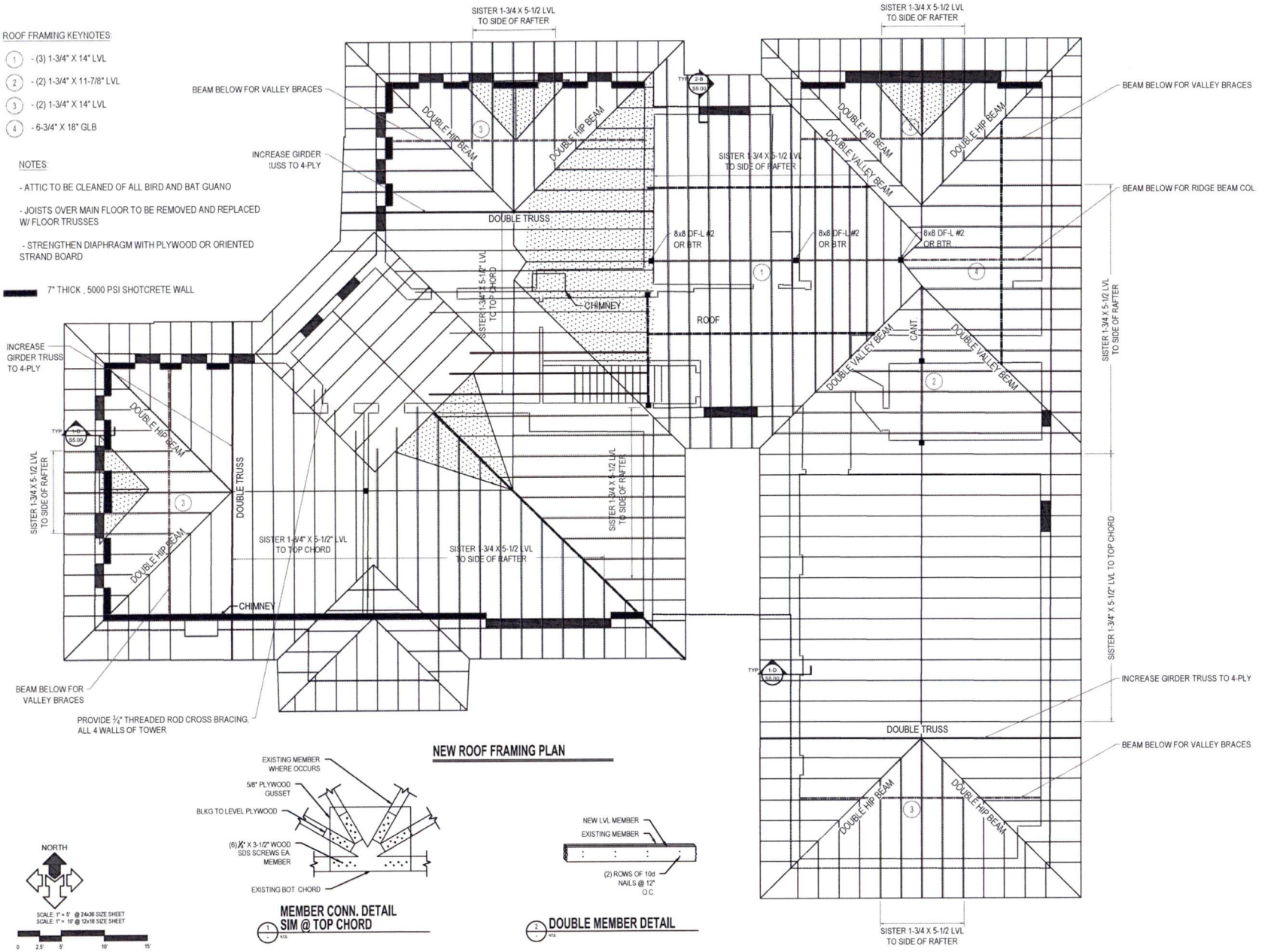
ROOF FRAMING KEYNOTES:

1. - (3) 1-3/4" X 14" LVL
2. - (2) 1-3/4" X 11-7/8" LVL
3. - (2) 1-3/4" X 14" LVL
4. - 6-3/4" X 18" GLB

NOTES:

- ATTIC TO BE CLEANED OF ALL BIRD AND BAT GUANO
- JOISTS OVER MAIN FLOOR TO BE REMOVED AND REPLACED W/ FLOOR TRUSSES
- STRENGTHEN DIAPHRAGM WITH PLYWOOD OR ORIENTED STRAND BOARD

7" THICK , 5000 PSI SHOTCRETE WALL



NEW ROOF FRAMING PLAN

MEMBER CONN. DETAIL SIM @ TOP CHORD

DOUBLE MEMBER DETAIL

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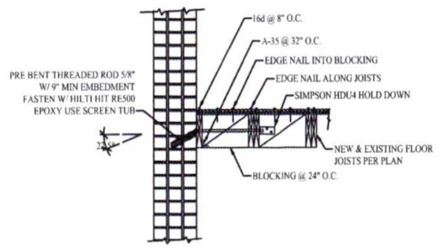
SHEET: 2 OF 2

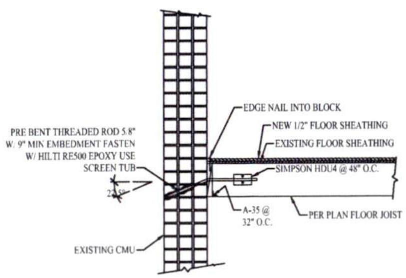
NEW ROOF FRAMING PLANS

S2.00

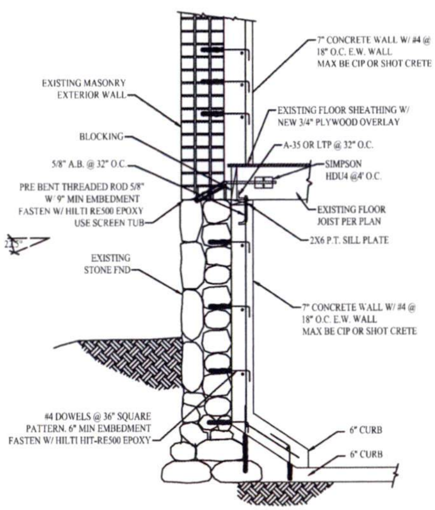
COUNCIL MEETING 07–05–15
ATTACHMENT "D–70"



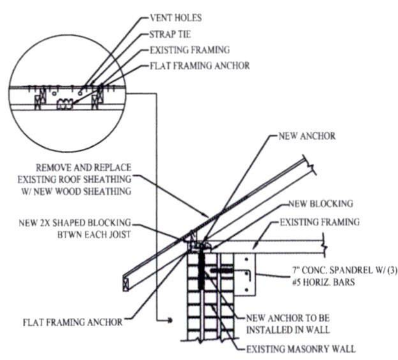
1-D S5.00 2ND FLOOR CONN.



1-C S5.00 2ND FLOOR CONNECTION

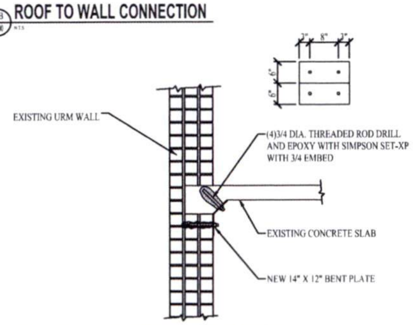


1-A S5.00 FOUNDATION & FOOTING



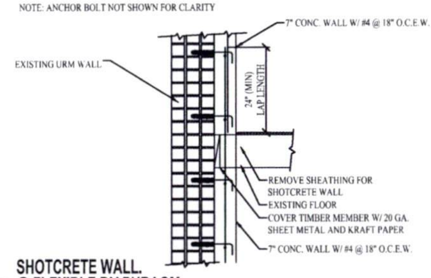
MAX BE CIP OR SHOT CRETE

2-B S5.00 ROOF TO WALL CONNECTION



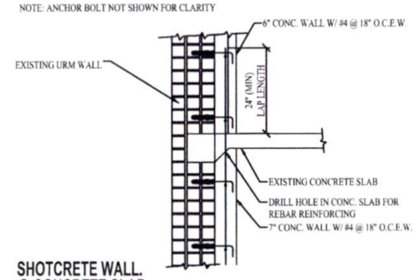
2-A S5.00 CONCRETE SLAB TO WALL CONNECTION

NOTE: ANCHOR BOLT NOT SHOWN FOR CLARITY



3-B S5.00 SHOTCRETE WALL. @ FLEXIBLE DIAPHRAGM

NOTE: ANCHOR BOLT NOT SHOWN FOR CLARITY



3-A S5.00 SHOTCRETE WALL. @ CONCRETE SLAB

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SHEET: 2 OF 1

STRUCTURAL DETAILS

S5.00

Museum Legal Issues

Prepared By

Assistant City Manager, Dennis Marker

Information gleaned from Training provided by Pamela White,
"Legal Issues for Small Museums"

Definitions

Museum: "A non-profit making permanent institution in the service of society and of its development, open to the public, which acquires, conserves, researches, communicates and exhibits, for purposes of study, education and enjoyment, the tangible and intangible evidence of people and their environments."

Public Trust Doctrine: The principle that certain natural and cultural resources are preserved for public use, and that any collection entity must protect and maintain these resources for the public's use.

Collection Entity: May include a government museum or private museum incorporated under a state's nonprofit corporation statues. Private museums will typically be a Charitbale Trust, Association, or Corporation.

Definitions

Provenance: A place of origin, especially that of a work of art or archaeological specimen. (Direct application: How an object has changed hands since it's creation)

Ownership: Person or entity having authority to determine use, disposal, or benefit to be derived from a particular object. (Direct application: Possession is not the same as Ownership. Provenance documentation is critical for museum artifacts)

Bailor: A person who has delivered personal property to another person or entity (e.g. museum) and which is to receive the item back after a predetermined time or purpose.

Donor: A person who donates an item to the museum

Acquisition of Items

Purchase

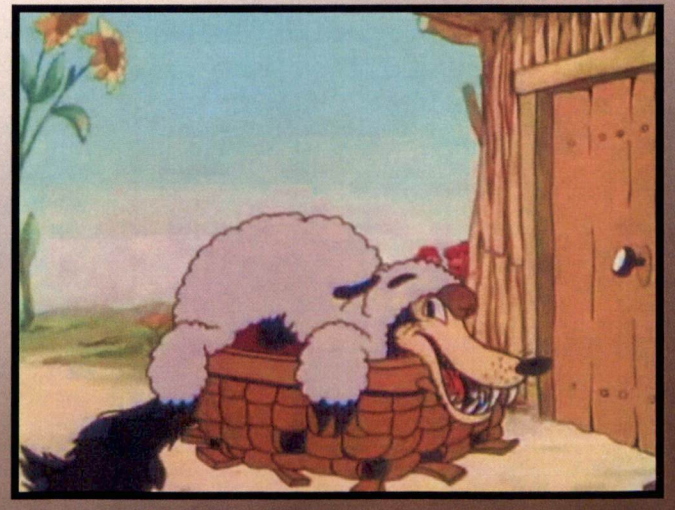
Donation/Gift/Will

Bailment (time/purpose?)

Loan from another Museum

Door Step Drop Off

Provenance?



Museum Organizational Status

Private Organization

- Established Museum Non-Profit Foundation in 1992 (ie. Corporation)
- Accepted Donations
- Accepted Bailments
- Museum Foundation Terminated?

City Organization

- Purchased Building
- Hired Building Cleaning Staff (2000)
- Created City Museum Board (2013)
- Hired City Curator Staff (2013)

There has been no official acceptance of the museum collection by Santaquin City from the Santaquin Chieftain Museum Foundation

Museum Collection Status

Private Organization

- Need to Determine Foundation Status
- Need to Determine "Ownership" of collection
- Need to determine offer to make collection "Public"

City Organization

- Providing Resources for Inventory & Collection Maintenance
- Need to determine future of structure
- Need to determine willingness to accept artifacts

Deaccessioning to the City

The act of selling objects from a museum's or gallery's collections, especially with a view to acquiring funds for the purchase of other works.

Private Organization

- Determine "Ownership" (bailments vs owned by the museum.)
- Contact Bailors to determine willingness to have pieces offered to the City for continued bailment or ownership.
- Insurance of Bailed pieces

City Organization

Need to determine

- Willingness to accept bailments
- Willingness to accept artifacts

Insurance of Bailed pieces or collection

"Artifacts are not Assets"