

Silver Creek Town Hall Structural Assessment

**Silver Creek Township
1891 Town Road, Two Harbors, MN 55616**

August 26, 2025
KOA No. 251139

Revision 0



Prepared For:

Silver Creek Township
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I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION,
OR REPORT WAS PREPARED BY ME OR UNDER MY
DIRECT SUPERVISION AND THAT I AM A DULY
LICENSED PROFESSIONAL ENGINEER UNDER THE
LAWS OF THE STATE OF MINNESOTA.

NAME: SERENA J. KELLER

SIGNATURE: 

DATE: 08/26/2025

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INTRODUCTION

General

At the request of Silver Creek Township (SCT), Krech Ojard & Associates, Inc. (KOA) performed a structural condition assessment of the Silver Creek Town Hall building located at 1819 Town Road in Two Harbors, Minnesota. The intent of the structural assessment was to provide general structural condition observations and recommendations for repairs and maintenance of the building.

Design drawings for the building were not provided. Bollig Engineering's *Township Hall Feasibility Study* (Version 2, dated July 2, 2025), was provided to KOA for review and to provide context for potential future modifications being proposed for the Town Hall building.

The condition assessment included review of the building's primary structural systems including the foundations, building framing systems, and the roof truss framing. This report summarizes our findings and provides a summary of our recommendations.

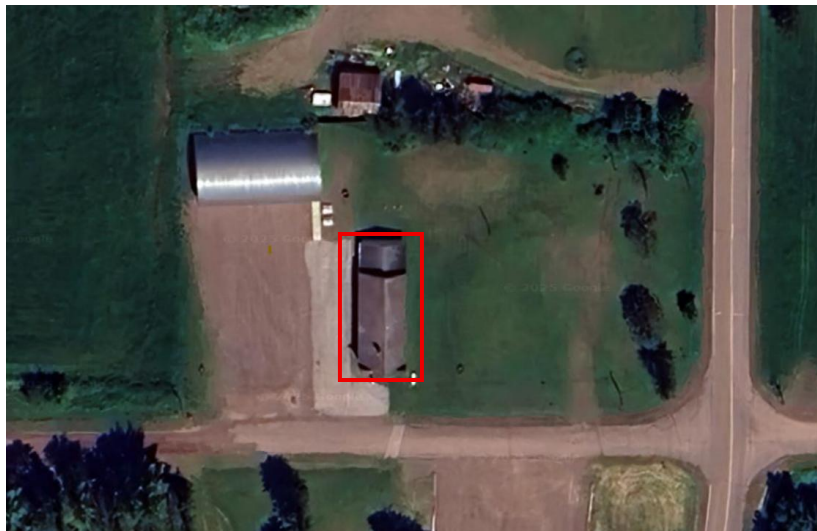


Figure 1: Silver Creek Town Hall (source: Google Earth)

Background

The Silver Creek Town Hall building was originally constructed in 1914 and includes a kitchen, a storage room opposite the kitchen, and a gathering hall. The original building is wood framed construction with a poured concrete exterior foundation. A crawl space exists under the entire building footprint. A timber beam, supported by concrete pedestals, runs north-south and supports the floor joists at the building midspan. Rails were installed to provide midspan support for the floor joists between the middle timber beam and the foundation walls. The rails are supported by masonry block pedestals on concrete footings. There is a gable-style roof with a shingle covering. The exterior is clad with wood siding and most of the windows have been replaced. A wood framed porch is at the building entrance on the south face. Two steel posts clad with wood provide support of the porch roof south of the building face.

In 1986 an addition was added to the north end of the building. The addition includes a ramped building entrance, lobby, and two bathrooms. The foundation is constructed of Concrete Masonry Units (CMU).

A crawl space exists under the entire addition's footprint. The addition is wood framed with a gable roof system.

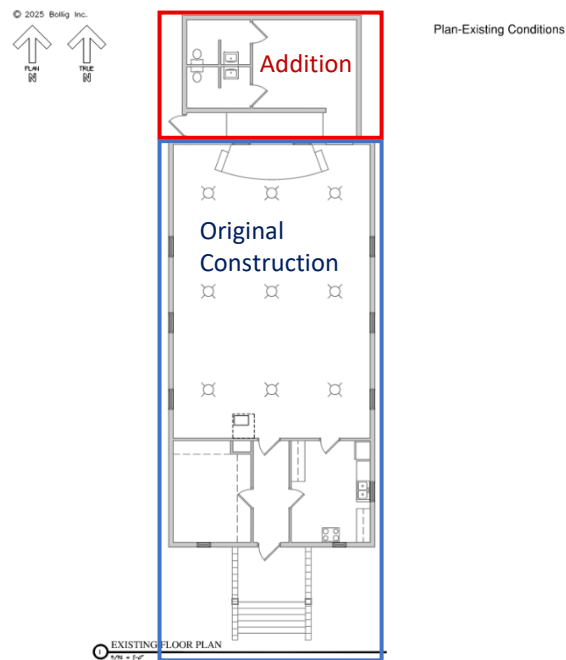


Figure 2: Floor Plan and Era of Construction
(source: Bollig Engineering)

SITE OBSERVATIONS

KOA performed site assessment work including visual observations and documentation of the visible and apparent structural components of the building on August 4 and 21, 2025. KOA's observations during the site visits were made from the crawl spaces beneath the building, attic access points, from the main floor, and from the ground. No destructive or non-destructive testing was performed at the time of the visual assessment. General condition assessments are made in comparison to structures of similar construction, age, and use.

The following summarizes key observations broken down by building era and structural component type.

For foundation observation locations and element labeling, refer to the *Foundation Key Plan* provided on SSK01 in *Appendix A*.

Original Building: Concrete Exterior Foundations

- The original building has a poured concrete foundation. The interior of the foundation walls were not visible due to spray insulation covering the surfaces.
- There were multiple cracks noted at the south foundation wall:
 - A vertical crack was noted about 17-20" from the southeast corner (*Photo 1 & 2*)

- Vertical crack(s) were noted at the west rail beam bearing, spalling of the concrete/grout infill was also noted (*Photo 3*)
- Minor cracks were noted in the east rail beam bearing in the grout and foundation wall (*Photo 4*)
- Spalling was noted at the northwest corner of the foundation walls. (*Photos 5 & 6*)
- Along the east and west walls, intermittent temperature and shrinkage cracks were observed. (*Photos 7-9*)

Original Building: Crawl Space Interior Supports

- The original building has a series of concrete and block pedestals as interior foundations for the floor framing. The central timber beam is supported by seven (7) concrete pedestals, and the two (2) rail beams are each supported by five (5) masonry pedestals on concrete footings.
- The masonry pedestals have settled – they are no longer supporting the rail beams and floor framing above. (*Photos 10 & 11*)
- Masonry pedestals P9 through P12 (under the west rail) have varying degrees of cracking and broken pieces noted at the blocks. (*Photos 12 & 13*)
- The stone on top of the masonry pedestal P15 is cracked. (*Photo 14*)
- Spalls were noted at the tops of pedestals P1 and P2. (*Photo 15*)

Original Building: First Floor Framing

- The floor framing was in generally fair condition. It consists of double 2x12's spanning half the floor span from east to west, with a central 6x8 timber beam running north to south, and timber decking for the subfloor. (*Photos 16-18*)
- The southern most timber beam has been sistered with additional timber framing on each side – from P6 to P7. (*Photo 19*)
- The timber beam was sistered between P4 and P5 on the east side. (*Photo 20*)
- A few horizontal checks were noted in the timber beams, the most notable between P5 and P6. (*Photo 21*)
- The rail beams are not currently supporting the floor joists at their midspan as intended, see the foundation section for additional observations related to this.

Original Building: Attic / Roof Framing

- The original building's attic/roof framing appeared to be in generally fair to good condition and consisted of wood rafters spanning in the east-west direction with plank decking. (*Photos 22 & 23*)
- Areas of moisture staining were noted – most notably at the southeastern area of the roof. (*Photo 24*)

Original Building: Entrance Porch

- The porch (roof and floor) is supported at the building's south wall and by two steel posts at the south side of the porch roof. The posts are supported by CMU strip foundations that do not appear to be installed to frost depth. (*Photos 25 & 26*)
- The porch is generally sloping towards the east and towards the north – indicative of frost cycle movement of the non-frost depth foundations. (*Photos 27 & 28*)
- There is no apparent positive attachment from the posts to the CMU foundations

- The eastern post's block foundation is tipping towards the east, and cracking and damage at the masonry joints was noted. *(Photo 29)*

1986 Addition: Foundations

- The addition has a CMU foundation that is in generally poor condition.
- Multiple areas with cracking were observed at the east wall:
 - Cracks through the CMU blocks at the southeast corner *(Photo 30)*
 - Vertical cracks through the CMU block noted about 2/3 - 3/4 up the length of the wall (from the southeast corner) *(Photo 31 & 32)*
 - Separation of the CMU at a vertical grout joint *(Photo 33)*
 - Multiple vertical cracks and broken CMU noted at the northeastern corner *(Photo 34)*
- Multiple areas with cracking were observed at the north wall:
 - The CMU block at the northeast corner has broken, and there is additional cracking in the north wall near the corner *(Photo 35)*
 - Vertical cracks and separation were noted at the west corner *(Photo 36)*
 - The interior face of the north wall was largely not visible due to plastic vapor barrier being present.
- Multiple areas with cracking were observed at the west wall:
 - A horizontal crack through the CMU blocks was noted starting at the southwest corner and running about half the length of the wall *(Photos 37 & 38)*
 - There is cracking and horizontal separation noted along the CMU bed joint for the northern 3/4 of the wall *(Photos 38 & 39)*
 - Vertical cracks through the CMU and at the CMU head joints were noted in the midspan of the wall *(Photos 39 & 40)*

1986 Addition: First Floor Framing

- The floor framing was in generally fair to good condition and consisted of wood joists and plywood decking. *(Photo 41)*
- Local areas of moisture staining were noted in the plywood panels. *(Photo 42)*

1986 Addition: Attic / Roof Framing

- The addition's attic/roof framing appeared to be in generally good condition and consisted of wood rafters spanning in the east-west direction with plywood decking. *(Photo 43)*
- Moisture staining was noted at the western decking, primarily noted at the northern half. *(Photo 44)*
- A local area of moisture staining was observed at the east decking.

Additional Observations

- The chimney above the roof has lost multiple bricks and it appears that several more are loose; most notable at the south face, also noted at the north face. *(Photos 45 & 46)*
- A kitchen drainpipe that discharges to the exterior of the east building wall is cracked and no longer functioning properly. *(Photos 8 & 45)*
- The roof systems (shingles and membrane) have areas of deterioration and failure with the most notable deterioration being located at the north end of the original building roof. *(Photo 46)*
- The wood siding is beyond its useful life. *(Photo 47)*

SIGNIFICANT FINDINGS AND CONCLUSIONS

Building Foundations and Floor Framing

The following conclusions were made for the observations made in the crawl spaces:

1. Overall, the floor framing appears to be in generally fair to good condition. Checks that were noted in the timber beams do not appear to affect the structural capacity. Water staining at the joists, floor decking, and floor planks indicate water intrusion has occurred, but it appears to have been previously addressed, and does not appear to affect the structural capacity.
2. To restore the floor to its previously reinforced capacity, the pedestals beneath the rail beams should be repaired so that they properly support the rail beams and the floor joists at their midspans.

In order to meet current code specified live loading requirements for assembly areas (100psf), it may be necessary to add additional pedestals to fully support the rail beams. Additional engineering analysis, beyond this report's scope of work, would be required to determine the capacity of the existing floor framing and to provide clarification on whether additional support locations may be required at the rail or timber beams. Preliminary capacity checks of the joists indicated that they are likely sufficient for assembly loading if supported by three equally spaced girder lines.

3. The exterior foundation wall of the original building is in generally fair condition. The spalling at the northwest corner of the foundation wall indicates that water seepage may have occurred in this area. A downspout for the gutter system has been installed in this location, and as such, continued water damage at this corner is not anticipated.
4. The exterior foundation wall of the addition is in poor condition and the service life remaining for this system is limited. There are multiple areas with cracking and damaged CMU blocks. The damage seems to indicate that water may have infiltrated the block and that freeze-thaw cycles led to cracking and/or breakage of the CMU.
5. The porch foundation system is in poor condition. There is evidence of frost heaving and movement of the foundations beneath the porch posts.

Building Roof Structural Systems

The following conclusions were made for the observations in the attic spaces related to the roof structural systems:

1. The attic and roof framing systems appear to be in fair to good condition. No areas of distress or areas of structural concern were observed.
2. Water staining on roof framing members and decking indicate water intrusion has occurred. Missing or damaged building envelope components, such as shingles or proper sealing around roof penetrations, provide an opportunity for additional water damage.

STRUCTURAL RECOMMENDATIONS

Based on the assessment summarized above, KOA's structural recommendations are as follows:

1. The following foundation conditions are recommended to be addressed by a qualified professional(s):
 - a. The cracking in the original building's concrete walls should be repaired to prevent water infiltration into the systems. Recommendations for what should be used to fill/repair cracks are as follows:
 - i. Cracks less than 1/8-inch thick: epoxy crack injection system
 - ii. Cracks larger than 1/8-inch thick: flexible sealant
 - b. The spalls noted at the northeast corner of the concrete foundation walls and at the west rail beam southern bearing should be repaired.
 - c. Replace the block pedestals at the rail beams. It is recommended that a timber system be used in lieu of the blocks that currently exist. Shimming should be installed at the top of the pedestals to ensure the rail beams are supporting the floor joists. Additional shims should be installed at joist locations along the rail beams, between pedestals, so that the floor loading will be transferred to these beams. Due to expansion and contraction due to moisture variations, monitoring of the pedestals and shims should occur, and plans for regular maintenance and reshimming should be anticipated.

The joists are not able to support assembly loading without three interior support lines. If repairs to the pedestals are not made, it would be recommended to limit and post the allowable floor live loading of the building.
 - d. The damage observed at the addition's foundation is significant. It is our recommendation that plans to demolish the existing foundation system be made as the remaining service life of the CMU foundation is limited. Should a new addition be constructed, the foundations should be installed to frost depth or protected from heave.
 - e. The foundation system for the front porch is inadequate. It is recommended that the porch be temporarily resupported so that new properly sized frost depth foundations can be installed under the posts.
2. The following additional repairs and consideration are recommended to address non-structural observations:
 - a. Repair and/or perform maintenance on the building cladding systems, including the shingles and roof covering systems and the deteriorating wood siding.
 - b. Repair the damaged kitchen water drainage pipe at the east wall to prevent water from discharging to grade.
 - c. Repair or replace the chimney extension above the roof to prevent further damage and/or loss of bricks.

LIMITATION AND STANDARD OF CARE

This work was completed with the degree of care and skill ordinarily exercised by similar design professionals in this location, at this time, under similar budgetary, time and scope constraints. No warranty is implied. Identification of hazardous material remains the sole responsibility of the Owner.

The use of these findings, conclusions, or recommendations for any other purpose is at the sole risk of the user. KOA has no direct knowledge of concealed construction or subsurface conditions beyond what was exposed during our investigation. Comments regarding concealed construction or subsurface conditions are professional opinions, derived in accordance with current standards of professional practice and based on KOA 's engineering experience and judgment.

Any repairs recommended in this report are intended to describe the nature and scope of work required to restore safety, serviceability, and appearance of elements to their pre-damaged condition, utilizing established methods and materials. This report shall not be used as the basis for construction, as implementation of the repairs recommended herein may require additional architectural, engineering, and/or regulatory considerations, possibly including development of design drawings and specifications.

APPENDIX A – KEY PLAN AND PHOTOS

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INDICATES AREAS
WITH NOTED
CRACKS AT
INTERIOR, TYP

CRAWL
SPACE
ACCESS

CONCRETE
MASONRY UNITS

WOOD FLOOR
JOISTS, TYP

INDICATES APPROXIMATE
LOCATIONS OF NOTED
CRACKS AT EXTERIOR, TYP

WOOD FLOOR
JOISTS, TYP

CONCRETE
WALL

BLOCK
PEDESTAL ON
SPREAD
FOOTINGS

CRAWL SPACE
ACCESS, EACH
SIDE

RAIL, BEAM

CONCRETE
PEDESTALS

TIMBER BEAM,
(4) BEAMS,
(8) SPANS

CONCRETE
MASONRY UNITS

1

KEY PLAN - FOUNDATION
NOT TO SCALE



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SILVER CREEK TOWNSHIP
SILVER CREEK TOWN HALL
STRUCTURAL ASSESSMENT
SILVER CREEK, MINNESOTA

KEY PLAN - FOUNDATION

JOB No: 251139
DRAWN BY: SJK
CHECKED BY: SJK

SHEET:

SSK01

A	08/25/25	STRUCTURAL ASSESSMENT
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Photo 1: Vertical Cracks at SW Building Foundation



Photo 2: Crack at SW Building Foundation



Photo 3: Vertical Cracks at SW Wall & Grout Spalling at Beam Bearing



Photo 4: Crack at SE Building Foundation at Beam Bearing



Photo 5: Spalling at NE Building Foundation Corner



Photo 6: Spalling at NE Building Foundation Corner



Photo 7: West Foundation Wall



Photo 8: East Foundation Wall – Crack and Broken Pipe



Photo 9: Crack at East Foundation Wall



Photo 10: Pedestal Settlement – Gap between Rail Beam and Floor Framing (West)



Photo 11: Pedestal Settlement – Gap between Rail Beam and Floor Framing (East)



Photo 12: Pedestal Damage (P10)



Photo 13: Pedestal Damage (P11)



Photo 14: Pedestal Stone Cracking (P15)



Photo 15: Spalls at Top of Pedestals P1 and P2



Photo 16: Typical Floor Framing Condition (West)



Photo 17: Typical Floor Framing Condition – Checks in Timber Beam (West)



Photo 18: Typical Floor Framing Condition (East)



Photo 19: Sistered Beam (P6-P7)



Photo 20: Sistered Beam (P4-P5)



Photo 21: Checks in Timber Beam



Photo 22: Roof Framing – Original Building



Photo 23: Roof Framing – Original Building



Photo 24: Moisture Staining at Roof – Original Building



Photo 25: Building Elevation Looking North – Front Entrance Porch



Photo 26: SW Porch Post CMU Foundation



Photo 27: Porch Sloping Towards East



Photo 28: Porch Sloping Towards North



Photo 29: Damaged and Tipping East Porch Post Foundation



Photo 30: Addition – Cracking at the SE CMU



Photo 31: Addition - Cracking at CMU 2/3-3/4 Along the East CMU Wall



Photo 32: Addition - Cracking at CMU 2/3-3/4 Along the East CMU Wall



Photo 33: Addition – Separation at CMU Vertical Grout Joint at East Wall



Photo 34: Addition – Cracking and Broken CMU Block at the NE Corner



Photo 35: Addition – Cracking and Broken CMU Block at the NE Corner



Photo 36: Addition – Cracking and Broken CMU Block at the NW Corner



Photo 37: Addition – Horizontal Cracking through the CMU at the West Wall



Photo 38: Addition – Horizontal Cracking through the CMU and at CMU Joint at the West Wall



Photo 39: Addition – Vertical and Horizontal Cracking in CMU and Joints at the West Wall



Photo 40: Addition – Vertical and Horizontal Cracking in CMU and Joints at the West Wall



Photo 41: Addition – Typical Floor Framing



Photo 42: Addition – Moisture Staining in Floor Decking



Photo 43: Addition – Roof Framing Typical Condition



Photo 44: Addition – Attic Roof Moisture Staining at West Decking



Photo 45: Chimney – Looking SE



Photo 46: Chimney – Looking NE



Photo 45: Broken Drain Pipe at East Wall (Outside of Kitchen)



Photo 46: SW Roof



Photo 47: Example of Deteriorating Siding